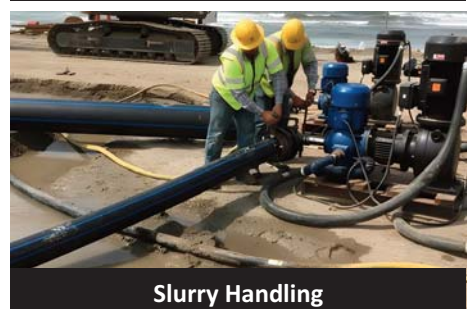




MATERIAL HANDLING HOSE ASSEMBLIES

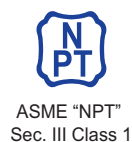
Engineered Solutions For Pipe Motion



www.thorburnflex.com



Thorburn Flex is an innovative manufacturer of specialized engineered flexible piping systems (i.e. custom hose assemblies and expansion joints). Since 1954, Thorburn's corporate mission evolution and business philosophy have been customer driven and targeted to select niche applications where Thorburn can achieve clear positions of sustainable technological and market share leadership. Thorburn is committed to a policy of continuous development and research to provide engineered solutions for pipe motion that set the industry standards for quality, safety, environmental protection, durability and value.



ISCIR Romania | CNCAN Romania | EN 13480-2002 | HAF 604 China | TSG China

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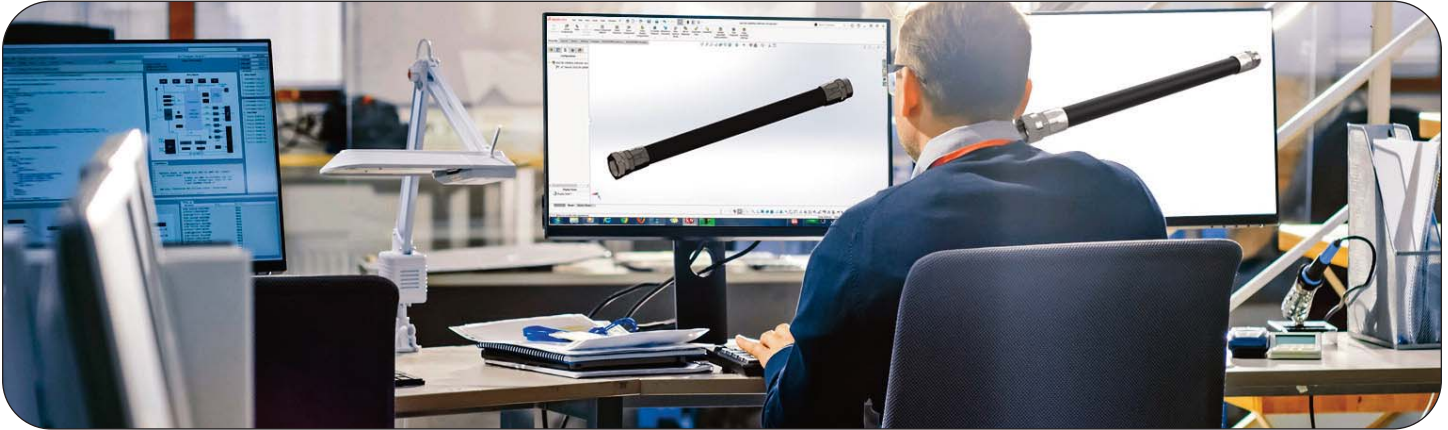
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Engineered Industrial Hose Assemblies



Thorburn's design team uses FEA & Solidworks to provide engineered pipe motion solutions

Engineering Capabilities & Experience

Thorburn's design engineering expertise is supported by advanced FEA software that offers powerful and complete solutions for both routine and sophisticated engineering problems. Thorburn's engineers can analyse and provide innovative solutions for pipe and duct motion problems including dynamic vibration, nonlinear static, linear static, thermal gradient through material wall thickness, acoustic impedance and fatigue using a common model data structure and integrated solver technology.

Design & Materials

- ASME Code Sections I, II, III, VIII, IX, B31.1 & B31.3
- ISO 10380 Corrugated Metal Hose & Hose Assemblies
- NACE MRO175-2009/ISO 15156-2009 compliance
- FEA - Finite Element Analysis

Welding and Fabrication Capabilities

- Arc, Pulse Arc, TIG, MIG, Core Wire
- Tube Welding, Track Welding, Automated Flame Cutting & Welding
- Rolls, Positioners, Turntables
- Automated Tube Welding 6mm (1/4") to 300mm (12")
- Lifting Capacity 22,000 lbs (10,000 kg)
- Crimping from 3 mm (1/8") to 600 mm (24")

NDT/NDE Programs & Design Verification Testing

- Weld X-Ray to 300KV-5MA / Welds Dye Penetrant to ASME Sec V
- Vacuum Testing 29.9" HG and Hydrostatic or Nitrogen Pressure Testing to 1,000 bar (15,000 psi)
- Impulse Testing to 680 bar (10,000 psi) at 204°C (400°F).
- Burst Testing up to 4,000 bar (60,000 psi)
- Pliability Fatigue & Deflection Testing ISO 10380:2012
- Seismic & Vibration Analysis in Acceptance with ASME Sec III
- Helium Mass Spectrometer Leak Testing

Fabrication Certification

- Welders and welding procedures: ASME Section VIII, IX, B31.1, B31.3, CSA B51 and Section III NPT (in progress)
- EN13480-2002: European Industrial Metallic Piping Standard & 97/23/EC (Pressure Equipment Directive)
- Canadian Gas Association (CGA) Certification: Standards CAN/CGA-8.1-M86, CGA96, UL96, UL536
- ISO 10380 Corrugated Metal Hose & Hose Assemblies
- Pressure Vessel Certification: CRN 0H0012. All Canadian Provinces & Territories
- Monel Chlorine Transfer: Chlorine Institute Spec. 135-3
- Hose Assemblies Degreased, Cleaned and Capped for Oxygen or Chlorine Service

Quality Assurance Certification & Compliance

- CSA N299.1, ISO 9001, ASME B31.1, B31.3 Section III, ASME Section VIII, Div 1 "U", CSA B51, NCA 4000 NQA-1, CSA N285.0, ASME NPT, AS 9100 (in progress), ISO IEC 17025



Hose Assembly Burst Testing (up to 4000 bar)

Industrial Hose Manufacturing



DN 3 (1/8") to DN600 (24") Crimper, largest in the world - more than 3 million lbf (1.5 million kgf)



Fitting to End Joint CNC Manufacturing



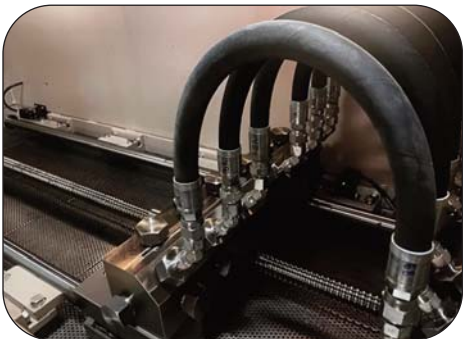
Precision Machining



Fitting To End Joint Quality Inspection



Fitting To End Joint Crimping Process



Hose Assembly Impulse Testing
(@ 150°C up to 1000 bar)



Hose Assembly Proof Testing
up to 1000 bar

Typical Material Handling Hose Applications



Concrete Placement and Aggregate Handling



Aggregate Conveyor Systems



Silo Grain Conveying Systems



Sand Blasting



Bulk Unloading Systems



Pneumatic Conveying System



Material Recovery and Cleanup



Commercial Sewer Cleaning



Mud Pump Discharge Lines



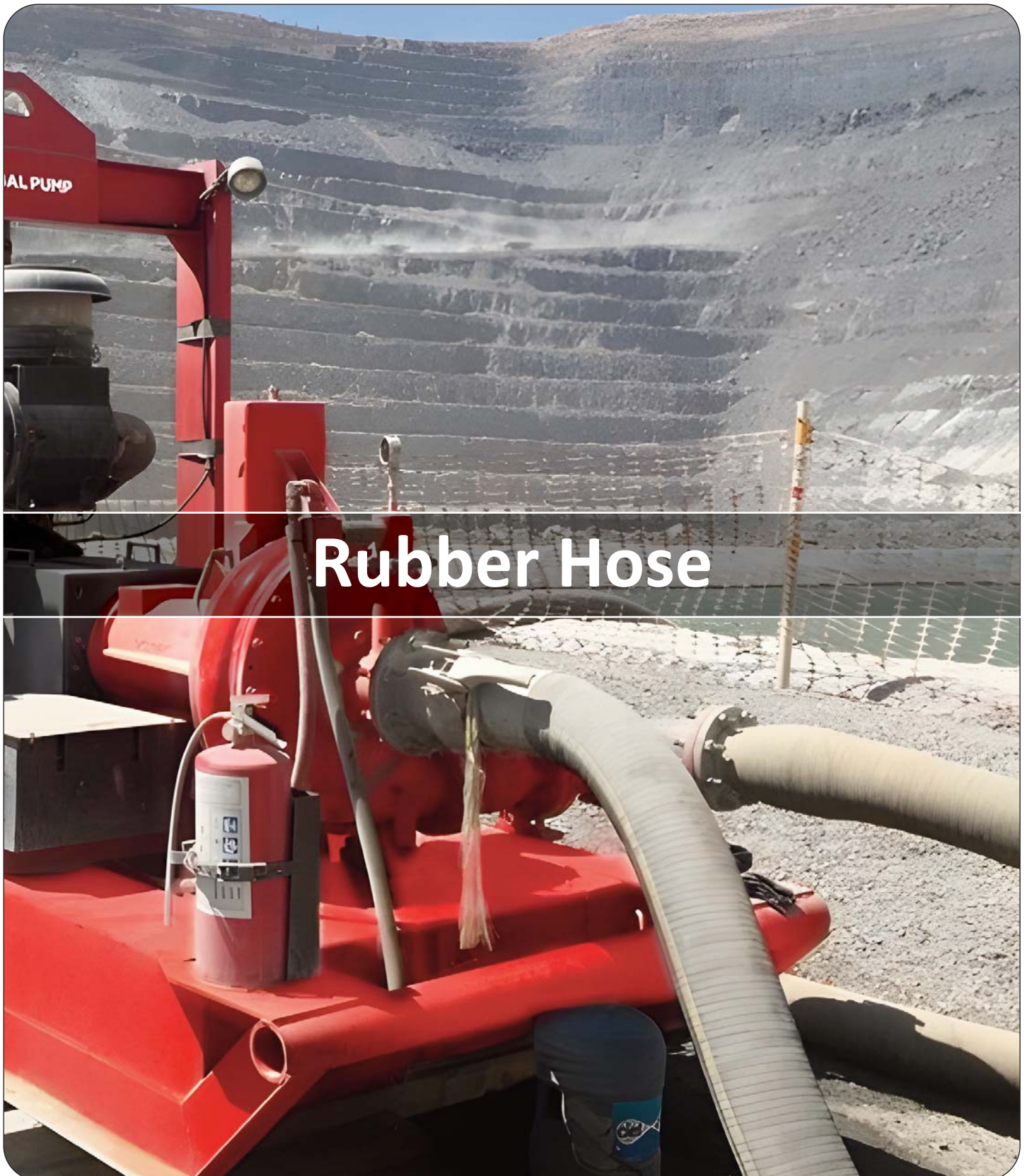
Industrial Sand Dredging



Slurry Vacuuming



Industrial Leaf Collection



Thorburn Series 62TMH™ Sand Blast Hose

Mandrel-Built Heavy-Duty Abrasive Blast Hose



Sandblasting Metal Spool Pipe

Thorburn Series 62TMH™: Is ideal for severe-duty abrasive blasting, combining a thick natural rubber wear tube with rugged textile reinforcement for reliable performance under continuous, high-velocity service. Its heavy-wall construction provides exceptional resistance to sand, steel shot, garnet and other aggressive blast media that rapidly wear conventional hose. The static-conductive tube helps safely dissipate electrical buildup, while the reinforced construction withstands repeated flexing, pressure cycles and demanding jobsite handling. A tough, abrasion- and weather-resistant cover protects against dragging and exterior wear. Designed for shipyards, fabrication shops, blast rooms and industrial surface preparation, the 62TMH delivers the durability and extended service life required for demanding professional blasting operations.

Features

- Thick natural rubber tube delivers exceptional abrasion resistance
- Heavy-wall construction extends service life under continuous blasting
- Static-conductive tube helps safely dissipate electrical buildup
- Multi-layer reinforcement withstands pressure, flexing and demanding handling
- Rugged cover resists abrasion, weathering and jobsite damage

Applications

- Heavy-duty industrial abrasive blasting and surface preparation
- Shipyard hull cleaning and coating preparation
- Steel fabrication blasting and surface finishing
- Fixed blast rooms and automated blasting systems
- Concrete, masonry and structural surface preparation

Construction

Tube: Smooth, Black, abrasion resistant, static conductive, natural rubber

Reinforcement: Multiple layers of high tensile synthetic cords

Cover: Black, pin pricked, static, abrasion and weather resistant synthetic rubber

Operating Temperature: -40°C to 95°C (-40°F to 203°F)

Maximum Hose Length: Up to 30m (100 ft)

Safety Factor: 3:1

End Fittings: Sandblast Couplings (Pg 68-69), Clamps (Pg 110-114)

Thorburn Part #	Nominal Hose I.D.		Nominal Hose O.D.		Design Pressure (20°C (68°F))		Minimum Bend Radius		Weight	
	mm	in	mm	in	bar	psi	mm	in	kg/m	lb/ft
62TMH-08	13	1/2	28	1.1	10.3	150	127	5.0	0.48	0.32
62TMH-12	19	3/4	38	1.5	10.3	150	191	7.5	0.91	0.61
62TMH-16	25	1	48	1.9	10.3	150	254	10.0	1.46	0.96
62TMH-20	32	1 1/4	56	2.2	10.3	150	318	12.5	1.71	1.15
62TMH-24	38	1 1/2	61	2.4	10.3	150	381	15.0	1.90	1.26
62TMH-32	51	2	74	2.9	10.3	150	508	20.0	2.31	1.55
62TMH-40	64	2 1/2	86	3.4	10.3	150	635	25.0	2.99	2.01
62TMH-48	76	3	104	4.1	10.3	150	762	30.0	4.08	2.74

Thorburn Series 662TMH™ Vacuum Return Sand Suction Hose

Mandrel Hand-Built Heavy-Duty Abrasive Recovery & Vacuum Hose



Abrasive Material Recovery

Thorburn Series 662TMH™: Supports severe-duty abrasive recovery, combining a 6 mm (1/4") natural gum rubber wear tube with double steel-wire helix reinforcement for exceptional durability and vacuum stability. The thick tube withstands continuous suction of sand, grit, spent blast media and other highly abrasive materials, while the reinforced construction resists collapse under demanding vacuum conditions. Its corrugated cover provides flexibility while protecting against dragging, weathering and jobsite abuse. Designed for blast recovery systems, industrial vacuum equipment and abrasive material transfer, the 662TMH™ is the preferred choice where continuous service, high wear resistance and extended hose life are more important than lightweight handling.

Features

- 6 mm natural gum tube maximizes abrasive wear life
- Double steel-wire helix provides exceptional vacuum collapse resistance
- Static wire safely dissipates electrical buildup during material transfer
- Corrugated cover improves flexibility and demanding jobsite handling
- Heavy-duty construction delivers extended continuous-service hose life

Applications

- Heavy-duty sand and abrasive blast recovery systems
- Industrial vacuum trucks handling abrasive materials
- Shipyard blasting and spent-media recovery operations
- Foundry sand and abrasive material vacuum transfer
- Continuous-duty grit and blast-media return lines

Construction

Tube: Smooth, tan, ultra abrasive resistant natural gum rubber

Tube Thickness: 6mm (1/4")

Reinforcement: High tensile steel double wire helix with static wire embedded in layers of textile cords

Cover: Corrugated, black, wrapped finish, weather and abrasion resistant synthetic rubber

Operating Temperature: -40°C to 70°C (-40°F to 158°F)

Maximum Hose Length: Up to 30m (100 ft)

Safety Factor: 3:1

End Fittings: Clamps (Pg 110-114)

Thorburn Part #	Nominal Hose I.D.		Nominal Hose O.D.		Design Pressure (20°C (68°F))		Vacuum (20°C (68°F))		Minimum Bend Radius		Weight	
	mm	in	mm	in	bar	psi	Hg (mm)	Hg (in)	mm	in	kg/m	lb/ft
662TMH-24	38	1 1/2	56	2.2	5.2	75	737	29	229	9.0	1.68	1.13
662TMH-32	51	2	69	2.7	5.2	75	737	29	305	12.0	2.29	1.54
662TMH-40	64	2 1/2	84	3.3	5.2	75	737	29	381	15.0	2.98	2.00
662TMH-48	76	3	100	3.8	5.2	75	711	28	257	18.0	3.45	2.32
662TMH-64	102	4	122	4.8	5.2	75	711	28	610	24.0	4.42	2.97
662TMH-80	127	5	147	5.8	5.2	75	711	28	762	30.0	5.88	3.95
662TMH-96	152	6	175	6.9	5.2	75	711	28	914	36.0	7.80	5.24
662TMH-128	203	8	229	9.0	5.2	75	711	28	1219	48.0	11.56	7.77

Thorburn Series 68TMH™ Vacuum Hose

Lightweight Flexible Abrasive Vacuum & Recovery Hose



Mobile blasting equipment service

Thorburn Series 68TMH™: Is suited for light-to-moderate abrasive vacuum service where flexibility, maneuverability, and easy handling are essential. Its lightweight construction allows operators to move, position, and route the hose easily around blasting equipment, work areas, and confined spaces. The abrasion-resistant natural gum tube effectively handles sand, grit, and spent blasting media, while steel-wire helix reinforcement helps maintain hose shape during vacuum operation. Its corrugated cover enhances flexibility and resists normal dragging, weathering, and jobsite wear. Compared with the heavier 662TMH™, the 68TMH™ is ideal for portable equipment, shorter runs, and intermittent recovery applications where handling and routing flexibility are priorities.

Features

- Lightweight construction reduces handling effort and operator fatigue
- Corrugated design provides excellent flexibility for easier routing
- Natural gum tube resists sand and abrasive media
- Steel-wire helix maintains hose shape under vacuum
- Flexible construction simplifies positioning around portable recovery equipment

Applications

- Portable sand and abrasive blast recovery systems
- Industrial vacuum cleanup of sand and grit
- Spent blasting media vacuum return lines
- Mobile blasting and surface preparation equipment
- Confined-area abrasive recovery requiring flexible hose routing
- Light-duty sand and abrasive material suction

Construction

Tube: Corrugated, black, abrasion-resistant natural rubber blend

Tube Thickness: 2 mm below 102 mm (4"); 3.2 mm from 102 mm (4") through 150 mm (6")

Reinforcement: High-tensile steel-wire helix embedded in textile cord layers

Cover: Corrugated black, abrasion- and weather-resistant synthetic rubber

Operating Temperature: -30°C to 80°C (-25°F to 180°F)

Maximum Hose Length: Up to 30 m (100 ft)

Safety Factor: 3:1

End Fittings: Crimp Fittings (Pages 55-59), Combination Nipples (Pages 60-61), Camlock Couplings (Pages 70-85), Clamps (Pg 110-114)

Thorburn Part #	Nominal Hose I.D.		Nominal Hose O.D.		Design Pressure (20°C (68°F))		Vacuum (20°C (68°F))		Minimum Bend Radius		Weight	
	mm	in	mm	in	bar	psi	Hg (mm)	Hg (in)	mm	in	kg/m	lb/ft
68TMH-16	25	1	36	1.4	2.8	40	610	24	102	4.0	0.58	0.39
68TMH-20	32	1 1/4	43	1.7	2.8	40	610	24	127	5.0	0.71	0.48
68TMH-24	38	1 1/2	51	2.0	2.8	40	610	24	152	6.0	0.89	0.60
68TMH-32	51	2	61	2.4	2.8	40	508	20	178	7.0	1.58	1.06
68TMH-40	64	2 1/2	76	3.0	2.8	40	457	18	254	10.0	1.68	1.13
68TMH-48	76	3	86	3.4	2.8	40	356	14	305	12.0	1.79	1.20
68TMH-56	89	3 1/2	99	3.9	2.8	40	305	12	356	14.0	1.92	1.29
68TMH-64	102	4	114	4.5	2.8	40	305	12	381	15.0	2.89	1.94
68TMH-72	114	4 1/2	127	5.0	2.8	40	254	10	457	18.0	4.08	2.74
68TMH-80	127	5	140	5.5	2.8	40	254	10	559	22.0	5.27	3.54
68TMH-96	152	6	165	6.5	2.8	40	254	10	610	24.0	5.71	3.84

Thorburn Series 168TMH™ Vacuum Hose

High-Temperature EPDM Flexible Vacuum Recovery Hose



Condensate recovery system

Thorburn Series 168TMH™: Supports elevated-temperature vacuum recovery where flexibility, abrasion resistance, and easy handling are essential. Its EPDM Type H tube and cover provide excellent heat, steam, weather, and aging resistance for demanding industrial service up to 125°C (260°F). The abrasion-resistant tube handles sand, grit, blasting media, and process materials, while steel-wire helix reinforcement maintains hose shape under vacuum. Its corrugated cover enhances flexibility for portable equipment, short runs, and confined routing. Sharing the lightweight construction of the 68TMH™, the 168TMH™ is ideal for applications involving hot air, fumes, condensate, or heated process materials requiring superior thermal and environmental resistance.

Features

- EPDM Type H construction withstands elevated service temperatures
- Temperature rated to 100°C (212°F) continuous service
- Lightweight construction provides easy handling and positioning
- Corrugated cover improves flexibility through confined routing
- Steel-wire helix provides reliable vacuum collapse resistance

Applications

- Hot scale and cooling water recovery
- Hot air and industrial fume extraction systems
- Hot condensate and pulp recovery operations
- Portable blast recovery at elevated temperatures
- Hot aqueous Chemical recovery

Construction

Tube: Smooth, black, abrasion-resistant EPDM Type H blend

Tube Thickness: 2mm mm (3/32") below 102 mm (4"); 3.2 mm (1/8") from 102 mm (4") through 150 mm (6")

Reinforcement: High-tensile steel-wire helix embedded in textile cord layers

Cover: Corrugated black, abrasion- and weather-resistant EPDM Type H blend

Operating Temperature: -40°C to 125°C (-40°F to 260°F)

Maximum Hose Length: Up to 30 m (100 ft)

Safety Factor: 3:1

End Fittings: Crimp Fittings (Pages 55-59), Combination Nipples (Pages 60-61), Camlock Couplings (Pages 70-85), Clamps (Pg 110-114)

Thorburn Part #	Nominal Hose I.D.		Nominal Hose O.D.		Design Pressure (20°C (68°F))		Vacuum (20°C (68°F))		Minimum Bend Radius		Weight	
	mm	in	mm	in	bar	psi	Hg (mm)	Hg (in)	mm	in	kg/m	lb/ft
168TMH-16	25	1	36	1.4	2.8	40	610	24	102	4.0	0.58	0.39
168TMH-20	32	1 1/4	43	1.7	2.8	40	610	24	127	5.0	0.71	0.48
168TMH-24	38	1 1/2	51	2.0	2.8	40	610	24	152	6.0	0.89	0.60
168TMH-32	51	2	61	2.4	2.8	40	508	20	178	7.0	1.58	1.06
168TMH-40	64	2 1/2	76	3.0	2.8	40	457	18	254	10.0	1.68	1.13
168TMH-48	76	3	86	3.4	2.8	40	356	14	305	12.0	1.79	1.20
168TMH-56	89	3 1/2	99	3.9	2.8	40	305	12	356	14.0	1.92	1.29
168TMH-64	102	4	114	4.5	2.8	40	305	12	381	15.0	2.89	1.94
168TMH-72	114	4 1/2	127	5.0	2.8	40	254	10	457	18.0	4.08	2.74
168TMH-80	127	5	140	5.5	2.8	40	254	10	559	22.0	5.27	3.54
168TMH-96	152	6	165	6.5	2.8	40	254	10	610	24.0	5.71	3.84

Thorburn Series 63TMH™ Leaf Collector Hose

Mandrel Hand-Built Flexible Municipal Leaf & Debris Vacuum Hose



Industrial Leaf Collection

Thorburn Series 63TMH™: Handles high-volume collection of leaves, grass, clippings and lightweight debris, combining excellent flexibility with dependable abrasion resistance for municipal and landscaping vacuum equipment. Its 3.2 mm (1/8") natural rubber tube withstands repeated contact with leaves, twigs, dirt and roadside debris, while the steel-wire helix maintains hose shape under suction. The corrugated rubberized fabric cover provides exceptional flexibility for frequent repositioning around trucks, curbs and collection areas. Lightweight construction reduces operator effort while the unrestricted bore promotes efficient airflow and debris movement. Designed for seasonal and everyday cleanup, the 63TMH™ delivers the maneuverability, durability and suction performance required for mobile leaf and debris collection.

Features

- 3.2 mm natural rubber tube resists debris abrasion
- Lightweight construction reduces operator handling effort
- Corrugated cover provides exceptional flexibility and maneuverability
- Steel-wire helix maintains hose shape during suction
- Unrestricted bore promotes efficient airflow and debris movement

Applications

- Municipal leaf and roadside debris collection trucks
- Commercial landscaping leaf and grass collection equipment
- Street, sidewalk and parking-area debris vacuuming
- Parks and public-space seasonal cleanup operations
- Grass, clippings and lightweight yard debris collection

Construction

Tube: Red, ultra-abrasion-resistant natural rubber

Tube Thickness: 3.2 mm (1/8")

Reinforcement: High-tensile steel-wire helix embedded in textile cord layers

Cover: Corrugated black rubberized fabric

Operating Temperature: -35°C to 60°C (-30°F to 140°F)

Maximum Hose Length: Up to 30 m (100 ft)

Safety Factor: 3:1

End Fittings: Clamps (Pages 110-114)

Thorburn Part #	Nominal Hose I.D.		Nominal Hose O.D.		Design Pressure (20°C (68°F))		Vacuum (20°C (68°F))		Minimum Bend Radius		Weight	
	mm	in	mm	in	bar	psi	Hg (mm)	Hg (in)	mm	in	kg/m	lb/ft
663TMH-32	51	2	69	2.7	2.1	30	737	29	203	8.0	1.41	0.95
663TMH-40	64	2 1/2	79	3.1	2.1	30	737	29	254	10.0	1.68	1.13
663TMH-48	76	3	94	3.7	2.1	30	737	29	305	12.0	2.08	1.40
663TMH-64	102	4	119	4.7	1.7	25	711	28	406	16.0	2.95	1.98
663TMH-80	127	5	145	5.7	1.4	20	660	26	508	20.0	3.57	2.40
663TMH-96	152	6	172	6.8	1.1	16	584	23	610	24.0	4.24	2.85
663TMH-112	178	7	198	7.8	1.0	14	457	18	711	28.0	4.91	3.30
663TMH-128	203	8	226	8.9	0.8	12	305	12	813	32.0	5.58	3.75
663TMH-160	254	10	277	10.9	0.7	10	203	8	1016	40.0	7.66	5.15
663TMH-192	305	12	328	12.9	0.6	8	127	5	1219	48.0	9.15	6.15

Thorburn Series 663TMH™ Wet & Dry Vacuum Hose

Mandrel Hand-Built Severe Vacuum Service



Municipal Sewer Cleaning

Thorburn Series 663TMH™: Is built for demanding wet and dry industrial vacuum service, the 663TMH™ combines a 6.4 mm (1/4") natural gum rubber tube with rugged reinforcement for exceptional abrasion resistance and extended service life. Its smooth bore handles sludge, slurry, wastewater, dust, chips, shavings and abrasive debris while promoting efficient material flow. Steel-wire helix reinforcement maintains hose shape under demanding suction, while the corrugated cover provides flexibility for mobile equipment and difficult routing. Designed for municipal, industrial and material-handling operations, the 663TMH™ is the preferred heavy-duty choice where abrasive materials, mixed wet-and-dry debris and continuous vacuum service demand greater durability than lightweight collection hoses.

Features

- 6.4 mm natural gum tube maximizes abrasion resistance
- Handles wet, dry and mixed abrasive materials
- Smooth bore promotes efficient high-volume material transfer
- Steel-wire helix provides dependable vacuum collapse resistance
- Corrugated cover combines flexibility with demanding-service durability

Applications

- Industrial wet and dry vacuum systems
- Sludge, slurry and wastewater vacuum transfer
- Dust, chips and abrasive debris collection
- Municipal sewer and catch-basin vacuum cleaning
- Mining, quarry and aggregate vacuum recovery

Construction

Tube: Smooth, red, abrasion-resistant pure natural gum rubber

Tube Thickness: 6.4 mm (1/4")

Reinforcement: High-tensile steel-wire helix embedded in textile cord layers

Cover: Corrugated black, abrasion- and weather-resistant synthetic rubber

Operating Temperature: -30°C to 80°C (-25°F to 180°F)

Maximum Hose Length: Up to 30 m (100 ft)

Safety Factor: 3:1

End Fittings: Crimp Fittings (Pages 55-59), Combination Nipples (Pages 60-61), Shank Couplings (Pages 62-63), Split Flange Couplings (Page 64), Bauer Couplings (Pages 86-89), Perrot Couplings (Pages 90-93), Clamps (Pages 110-114)

Thorburn Part #	Nominal Hose I.D.		Nominal Hose O.D.		Design Pressure (20°C (68°F))		Vacuum (20°C (68°F))		Minimum Bend Radius		Weight	
	mm	in	mm	in	bar	psi	Hg (mm)	Hg (in)	mm	in	kg/m	lb/ft
63TMH-48	76	3	100	3.8	2.1	30	737	29	305	12.0	3.41	2.29
63TMH-64	102	4	122	4.8	2.1	30	737	29	406	16.0	4.79	3.22
63TMH-80	127	5	147	5.8	2.1	30	737	29	508	20.0	6.58	4.42
63TMH-96	152	6	175	6.9	2.4	35	737	29	610	24.0	8.88	5.97
63TMH-128	203	8	229	9.0	2.8	40	737	29	812	32.0	13.33	8.96

Thorburn Series 64TMH™ Softwall Discharge Hose

Lightweight Flexible Dry Bulk Material Discharge Hose



Silo Grain Conveying Systems

Thorburn Series 64TMH™: Handles gravity and low-pressure discharge of dry bulk materials, offering a lightweight, flexible connection for unloading trucks, silos, hoppers and storage systems. Its smooth anti-static natural rubber tube handles cement, limestone, grain, pellets and powders while resisting abrasion from continuous material flow. Multiple textile cord layers provide strength without a wire helix, allowing easier positioning, bending and coiling between discharge points. Available with three tube thicknesses, the 64TMH™ lets users match abrasion protection to application severity. Its large-diameter, softwall construction promotes unrestricted high-volume flow, making it an excellent choice for efficient bulk unloading where flexibility, handling and wear resistance are essential.

Features

- Softwall construction provides exceptional flexibility and easy handling
- Anti-static natural rubber tube handles abrasive dry materials
- Three tube thicknesses match different abrasion requirements
- Smooth bore promotes unrestricted high-volume material discharge
- Wire-free reinforcement simplifies positioning, bending and coiling

Applications

- Dry bulk tanker gravity discharge operations
- Cement and limestone truck unloading service
- Grain and agricultural product gravity discharge
- Silo and hopper bulk material discharge
- Pellet and granular material unloading operations

Construction

Tube: Smooth, black, abrasion-resistant, anti-static natural rubber

Tube Thickness: (A) 3.2 mm (1/8"), (B) 4.8 mm (3/16"), (C) 6.4 mm (1/4")

Reinforcement: Multiple layers of high-tensile synthetic textile cords

Cover: Black, abrasion- and weather-resistant synthetic rubber

Operating Temperature: -30°C to 80°C (-25°F to 180°F)

Maximum Hose Length: Up to 30 m (100 ft)

Safety Factor: 3:1

End Fittings: Camlock Couplings (Pages 70-85), Bauer Couplings (Pages 86-89), Perrot Couplings (Pages 90-93), Bolt-On Couplings (Pages 94-99), Clamps (Pages 110-114)

Thorburn Part #	Nominal Hose I.D.		Nominal Hose O.D.		Design Pressure (20°C (68°F))		Weight	
	mm	in	mm	in	bar	psi	kg/m	lb/ft
64TMH(X)-32	51	2	66	2.6	13.8	200	2.08	1.40
64TMH(X)-48	76	3	91	3.6	8.6	125	2.83	1.90
64TMH(X)-64	102	4	117	4.6	6.9	100	3.27	2.20
64TMH(X)-80	127	5	142	5.6	6.9	100	4.91	3.30
64TMH(X)-96	152	6	168	6.6	6.9	100	5.66	3.80

Note: X = Tube thickness. Put suffix **A** - 3.2mm (1/8"), **B** - 4.8mm (3/16"), **C** - 6.4mm (1/4")

Custom ID sizes and tube thicknesses are available to fit over and clamp onto a scheduled OD pipe.

Thorburn Series 65TMH™ Hardwall Suction & Discharge Hose

Heavy-Duty Dry Bulk Material Suction & Discharge Hose



Aggregate Conveyor Systems

Thorburn Series 65TMH™: Is suited for heavy-duty suction and discharge of abrasive dry bulk materials, featuring a 6.4 mm (1/4") wear tube with steel-wire helix reinforcement for demanding material-transfer service. Its smooth, abrasion-resistant bore handles rock salt, limestone, silica, chalk, pellets and powders while promoting efficient material flow. The hardwall construction maintains hose shape under vacuum and provides greater kink and crush resistance during loading, unloading and pneumatic transfer operations. An embedded static wire helps dissipate electrical buildup during dry-material movement. Designed specifically for bulk transport and processing systems, the 65TMH™ provides a rugged, versatile connection between trucks, silos, hoppers and material-handling equipment requiring both suction and discharge capability.

Features

- 6.4 mm wear tube withstands abrasive bulk materials
- Hardwall construction supports suction and discharge service
- Steel-wire helix provides dependable vacuum collapse resistance
- Static wire dissipates buildup during dry material transfer
- Corrugated cover combines durability with handling flexibility

Applications

- Dry bulk tanker suction and discharge service
- Silo and hopper loading and unloading systems
- Pneumatic transfer of powders and granular materials
- Rock salt and limestone bulk transfer
- Silica, chalk and mineral material transfer

Construction

Tube: Smooth, abrasion-resistant natural rubber blend

Tube Thickness: 6.4 mm (1/4")

Reinforcement: High-tensile steel-wire helix and static wire embedded in textile cord layers

Cover: Corrugated black, abrasion- and weather-resistant rubber blend

Operating Temperature: -40°C to 82°C (-40°F to 180°F)

Maximum Hose Length: Up to 30 m (100 ft)

Safety Factor: 3:1

End Fittings: Crimp Fittings (Pages 55-59), Combination Nipples (Pages 60-61), Camlock Couplings (Pages 70-85), Clamps (Pages 110-114)

Thorburn Part #	Nominal Hose I.D.		Nominal Hose O.D.		Design Pressure (20°C (68°F))		Vacuum (20°C (68°F))		Minimum Bend Radius		Weight	
	mm	in	mm	in	bar	psi	Hg (mm)	Hg (in)	mm	in	kg/m	lb/ft
65TMH-20	32	1 1/4	46	1.8	5.2	75	737	29	127	5.0	1.15	0.77
65TMH-24	38	1 1/2	53	2.1	5.2	75	737	29	152	6.0	1.65	1.11
65TMH-32	51	2	66	2.6	5.2	75	737	29	203	8.0	2.23	1.50
65TMH-40	64	2 1/2	79	3.1	5.2	75	737	29	254	10.0	2.46	1.65
65TMH-48	76	3	91	3.6	5.2	75	737	29	305	12.0	3.35	2.25
65TMH-64	102	4	119	4.7	5.2	75	737	29	406	16.0	4.36	2.93
65TMH-80	127	5	145	5.7	5.2	75	737	29	508	20.0	5.70	3.83
65TMH-96	152	6	170	6.7	5.2	75	737	29	610	24.0	7.44	5.00
65TMH-128	203	8	231	9.1	5.2	75	737	29	813	32.0	15.03	10.10

Thorburn Series 990TMH™ Mud Pump Suction & Discharge Hose

Heavy-Duty Oilfield Drilling Mud Suction & Discharge Hose



Mud Pump Suction & Discharge

Thorburn Series 990TMH™ is engineered for heavy-duty suction and discharge of drilling mud, the 990TMH™ provides dependable fluid transfer between slush pits, mud tanks, mixing systems and slush pumps. Its abrasion- and oil-resistant tube withstands drilling fluids, suspended solids and continuous mud circulation, while steel-wire helix reinforcement maintains hose integrity under suction and discharge conditions. Multiple textile reinforcement layers provide strength against pressure, pulsation and demanding rig operation. The rugged oil-, abrasion- and weather-resistant cover protects against harsh wellsite exposure and repeated handling. Flexible for easier equipment connections and routing, the 990TMH™ is purpose-built for drilling rigs and oilfield mud systems requiring reliable, high-volume transfer of abrasive drilling fluids.

Features

- Oil-resistant tube handles abrasive drilling mud and solids
- Steel-wire helix provides reliable suction collapse resistance
- Reinforced construction withstands discharge pressure and pulsation
- Flexible design simplifies routing around drilling equipment
- Rugged cover withstands oil, abrasion and weather exposure

Applications

- Slush pit to mud pump suction lines
- Mud pump discharge to circulation systems
- Drilling mud tank suction and discharge
- Mud mixing and recirculation system connections
- Abrasive drilling fluid transfer between rig equipment

Construction

Tube: Black, abrasion- and oil-resistant synthetic HNBR rubber

Reinforcement: High-tensile steel-wire helix embedded in multiple textile cord layers

Cover: Black, oil, abrasion and weather resistant synthetic rubber

Operating Temperature: -40°C to 100°C (-40°F to 212°F)

Maximum Hose Length: Up to 30 m (100 ft)

Safety Factor: 3:1

End Fittings: Crimp Fittings (Pages 55-59), Clamps (Pages 110-114)

Thorburn Part #	Nominal Hose I.D.		Nominal Hose O.D.		Design Pressure (20°C (68°F))		Vacuum (20°C (68°F))		Minimum Bend Radius		Weight	
	mm	in	mm	in	bar	psi	Hg (mm)	Hg (in)	mm	in	kg/m	lb/ft
990TMH-16	25	1	33	1.3	10.3	150	711	28	152	6.0	0.60	0.40
990TMH-24	38	1 1/2	48	1.9	10.3	150	711	28	229	9.0	1.11	0.75
990TMH-32	51	2	61	2.4	10.3	150	711	28	305	12.0	1.68	1.13
990TMH-40	64	2 1/2	76	3.0	10.3	150	711	28	381	15.0	2.12	1.42
990TMH-48	76	3	89	3.5	10.3	150	711	28	457	18.0	2.75	1.85
990TMH-64	102	4	114	4.5	10.3	150	711	28	610	24.0	3.81	2.56
990TMH-96	152	6	168	6.6	10.3	150	711	28	914	36.0	7.19	4.83
990TMH-128	203	8	226	8.9	10.3	150	711	28	1219	48.0	13.22	8.00
990TMH-160	254	10	279	11.0	10.3	150	711	28	1524	60.0	18.26	12.27
990TMH-192	305	12	330	13.0	10.3	150	711	28	1829	72.0	20.68	13.90

Thorburn Series 991TMH™ Dredge Sleeve & Sand Discharge Hose

Heavy-Duty Abrasive Dredging & Slurry Discharge Service



Industrial Sand Dredging

Thorburn Series 991TMH™ is designed for heavy-duty discharge of sand, slurry, silt and abrasive sediment, the 991TMH™ provides a rugged flexible connection for dredging and marine material-handling systems. Its abrasion-resistant rubber tube withstands continuous high-volume flow of solids-laden slurry, while multiple spirally wound textile cord layers provide strength for demanding discharge service. The wire-free construction provides flexibility between dredge pumps, booster pumps, barges and discharge pipelines while helping accommodate movement, vibration and equipment misalignment. A rugged wrapped cover withstands abrasion, weather and exposed marine conditions. Purpose-built for dredging, reclamation and marine construction, the 991TMH™ delivers dependable wear life and flexibility where abrasive slurry must be continuously pumped and discharged.

Features

- Abrasion-resistant tube withstands sand and solids-laden slurry
- Textile reinforcement supports demanding dredge discharge pressures
- Wire-free construction provides flexible pump-to-pipeline connections
- Flexible sleeve accommodates vibration, movement and equipment misalignment
- Rugged cover withstands abrasion, weather and marine exposure

Applications

- Cutter suction dredger slurry discharge lines
- Booster pump flexible discharge connections
- Dredge pump to pipeline discharge sleeves
- Sand and sediment barge discharge systems
- Land reclamation slurry discharge pipelines

Construction

Tube: Black, abrasion-resistant synthetic rubber

Reinforcement: Multiple layers of high-tensile, spirally wound synthetic cords

Cover: Black, abrasion- and weather-resistant synthetic rubber, wrapped finish

Operating Temperature: -30°C to 82°C (-22°F to 180°F)

Maximum Hose Length: Up to 30 m (100 ft)

Safety Factor: 3:1

End Fittings: Crimp Fittings (Pages 55-59), Combination Nipples (Pages 60-61), Clamps (Pages 110-114)

Thorburn Part #	Nominal Hose I.D.		Nominal Hose O.D.		Design Pressure (20°C (68°F))		Tube Thickness		Weight	
	mm	in	mm	in	bar	psi	mm	in	kg/m	lb/ft
991TMH-72	114	4 1/2	145	5.7	5.2	75	10	3/8	8.11	5.45
991TMH-96	152	6	185	7.3	5.2	75	10	3/8	11.18	7.51
991TMH-106	168	6 5/8	205	8.1	5.2	75	10	3/8	13.78	9.26
991TMH-138	219	8 5/8	259	10.2	5.2	75	10	3/8	19.30	12.97
991TMH-172	273	10 3/4	318	12.5	3.4	50	13	1/2	26.53	17.83
991TMH-204	324	12 3/4	371	14.6	3.4	50	13	1/2	33.93	22.80
991TMH-224	356	14	406	16.0	2.8	40	13	1/2	40.49	27.21
991TMH-256	406	16	457	18.0	2.8	40	13	1/2	45.87	30.82

Note: For higher pressures see Thorburn Series 60TMH hose assemblies.

Thorburn Series 992TMH™ Dredge & Slurry Suction Hose

Extra-Heavy-Duty Abrasive Dry Vacuum Service



Vacuum and material recovery unit

Thorburn Series 992TMH™: Is manufactured for severe suction of sand, slurry, sludge and solids-laden water, the 992TMH™ provides exceptional wear protection for dredging and abrasive wet-material recovery. Its extra-thick 8 mm (5/16") natural gum tube withstands continuous scouring from sand and suspended solids, providing extended service life in high-wear applications. Multiple fabric reinforcement layers with steel-wire helix maintain hose integrity under demanding vacuum conditions and help prevent collapse during suction. The corrugated cover provides flexibility for dredging equipment, vacuum trucks and mobile pumping systems. Purpose-built for abrasive wet suction, the 992TMH™ excels where heavy solids concentrations, continuous vacuum and severe internal wear demand maximum tube protection and dependable performance.

Features

- 8 mm natural gum tube maximizes abrasion protection
- Wire helix prevents collapse under demanding vacuum service
- Handles concentrated sand, slurry and solids-laden water
- Corrugated cover provides flexibility around mobile equipment
- Heavy construction delivers extended severe-service wear life

Applications

- Dredge pump abrasive slurry suction lines
- Sand and sediment suction from excavation sites
- Sludge and solids-laden water vacuum recovery
- Vacuum truck abrasive slurry suction service
- Marine dredging sand and silt recovery
- Quarry and aggregate slurry suction operations

Construction

Tube: Tan, abrasion-resistant natural gum rubber

Tube Thickness: 8 mm (5/16")

Reinforcement: Multiple textile fabric layers reinforced with steel-wire helix

Cover: Green, corrugated, abrasion- and weather-resistant synthetic rubber blend

Operating Temperature: -40°C to 71°C (-40°F to 160°F)

Maximum Hose Length: Up to 30 m (100 ft)

Safety Factor: 3:1

End Fittings: Crimp Fittings (Pages 55-59), Combination Nipples (Pages 60-61), Clamps (Pages 110-114)

Thorburn Part #	Nominal Hose I.D.		Nominal Hose O.D.		Vacuum (20°C (68°F))		Minimum Bend Radius		Weight	
	mm	in	mm	in	Hg (mm)	Hg (in)	mm	in	kg/m	lb/ft
992TMH-40	64	2 1/2	91	3.6	737	29	381	15.0	4.90	3.29
992TMH-48	76	3	104	4.1	737	29	457	18.0	5.73	3.85
992TMH-64	102	4	130	5.1	737	29	610	24.0	7.62	5.12
992TMH-96	152	6	178	7.0	737	29	914	36.0	9.00	6.05
992TMH-128	203	8	229	9.0	737	29	1219	48.0	12.9	8.70
992TMH-160	254	10	285	11.2	737	29	1524	60.0	16.79	11.28

Thorburn Series 993TMH™ Coal Dust Injection Hose

Heavy-Duty Antistatic & Flame-Retardant Pneumatic Discharge Hose



Pulverized Coal Injection (PCI) System

Thorburn Series 993TMH™ is purpose built for pneumatic discharge and injection of pulverized coal, coal dust, and abrasive dry fuels, combining exceptional wear resistance with antistatic and flame-retardant protection. Its 7 mm polyurethane tube withstands continuous high-velocity particle impact, delivering extended service life in severe abrasive applications. Calendered fabric reinforcement manages pressure fluctuations while maintaining flexibility between feeders, conveying lines, and injection equipment. The EPDM cover features fiberglass reinforcement, electrical resistance below $10^6 \Omega$, and flame-retardant properties for demanding coal-handling environments. Ideal for power generation, cement production, and industrial fuel systems requiring reliable, controlled transfer of combustible dry materials.

Features

- 7 mm polyurethane tube withstands high-velocity abrasive particles
- Antistatic construction provides electrical resistance below $10^6 \Omega$
- Flame-retardant cover enhances protection in coal-handling environments
- Fabric reinforcement withstands pneumatic pressure and flow fluctuations
- Flexible construction simplifies routing to coal injection equipment

Applications

- Pulverized coal feeder to burner injection lines
- Coal dust pneumatic discharge and injection systems
- Cement kiln pulverized fuel injection lines
- Power plant coal burner feed connections
- Industrial furnace pulverized fuel injection systems

Construction

Tube: Blue, abrasion-resistant polyurethane rubber

Tube Thickness: 7 mm

Reinforcement: Calendered fabric reinforcement

Cover: Black, abrasion-resistant EPDM outer layer bonded to two-ply fiberglass; antistatic, fabric-textured and flame-retardant

Operating Temperature: -30°C to 82°C (-22°F to 180°F)

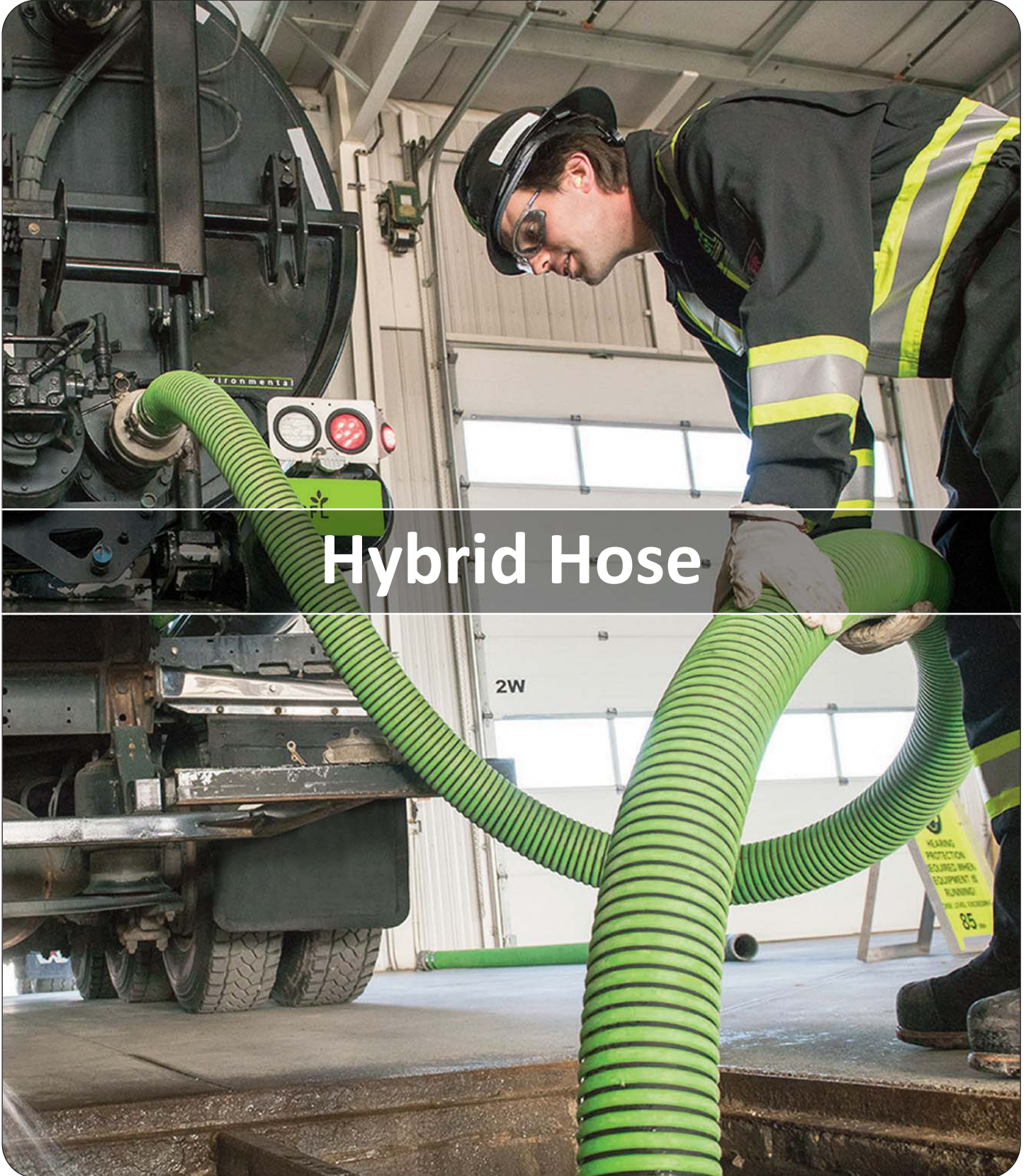
Electrical Properties: Electrical resistance through hose wall: $R < 10^6 \Omega$

Maximum Hose Length: Up to 40 m (131 ft)

Safety Factor: 6:1

End Fittings: Crimp Fittings (Pages 55-59), Clamps (Pages 110-114)

Thorburn Part #	Nominal Hose I.D.		Nominal Hose O.D.		Design Pressure (20°C (68°F))		Vacuum (20°C (68°F))		Minimum Bend Radius		Weight	
	mm	in	mm	in	bar	psi	Hg (mm)	Hg (in)	mm	in	kg/m	lb/ft
993TMH-12	19	3/4	49	1.9	25.0	363	376	14.8	97	3.8	2.34	1.57
993TMH-16	25	1	55	2.2	25.0	363	376	14.8	127	5.0	2.79	1.87
993TMH-20	32	1 1/4	62	2.4	25.0	363	376	14.8	160	6.3	3.18	2.14
993TMH-24	38	1 1/2	70	2.8	25.0	363	376	14.8	191	7.5	3.43	2.30
993TMH-32	51	2	80	3.2	25.0	363	376	14.8	254	10.0	4.64	3.12
993TMH-40	64	2 1/2	95	3.7	25.0	363	376	14.8	318	12.5	5.61	3.77
993TMH-48	76	3	110	4.3	25.0	363	376	14.8	381	15.0	6.59	4.43
993TMH-56	89	3 1/2	120	4.7	25.0	363	376	14.8	445	17.5	7.18	4.82
993TMH-64	102	4	130	5.1	25.0	363	376	14.8	508	20.0	7.40	4.97
993TMH-80	127	5	155	6.1	30.0	435	376	14.8	635	25.0	7.50	5.04



Thorburn Series 110TMH™ SBR Suction & Discharge Hose

Ultra-Lightweight Highly Flexible Full-Vacuum Wet & Dry Service



Industrial Vacuum Truck

Thorburn Series 110TMH™: Is designed for full-vacuum suction and low-pressure discharge where flexibility and reduced hose weight are essential. Its static-dissipating SBR construction with a rigid PVC helix provides dependable vacuum stability while weighing up to 40% less than conventional rubber vacuum hoses. The lightweight design reduces operator effort and simplifies long hose runs. Its abrasion-resistant bore handles sand, powders, pellets, slurry, and industrial debris in wet or dry service. Highly flexible for confined spaces and mobile equipment, it's ideal for frequent hose movement and repositioning.

Features

- Up to 40% lighter than conventional rubber hose
- Highly flexible for frequent movement and difficult routing
- Rigid PVC helix maintains stability under full vacuum
- Static-dissipating tube requires no separate grounding wire
- Handles wet and dry suction plus low-pressure discharge

Applications

- Mobile industrial vacuum truck suction lines
- Wet and dry plant cleanup operations
- Sand, slurry and general debris vacuum recovery
- Powder and pellet vacuum transfer systems
- Confined-space vacuum cleaning requiring lightweight hose

Construction

Tube: Static-dissipating SBR (styrene-butadiene rubber) with rigid PVC helix

Operating Temperature: -40°C to 65°C (-40°F to 150°F)

Maximum Hose Length: Up to 30 m (100 ft)

Safety Factor: 3:1

End Fittings: Camlock Couplings (Pages 70-85), Bauer Couplings (Pages 86-89), Perrot Couplings (Pages 90-93), Bolt-On Couplings (Pages 94-99)

Clamping: Spiral Clamps (Page 115)

Accessories: Banding Sleeves (Pg 121), Banding Coils (Pg 122), required for sealing

Thorburn Part #	Nominal Hose I.D.		Nominal Hose O.D.		Design Pressure (20°C (68°F))		Vacuum (20°C (68°F))		Minimum Bend Radius		Weight	
	mm	in	mm	in	bar	psi	Hg (mm)	Hg (in)	mm	in	kg/m	lb/ft
110TMH-20	32	1 1/4	41	1.6	3.1	45	737	29	51	2.0	0.46	0.31
110TMH-24	38	1 1/2	48	1.9	3.1	45	737	29	51	2.0	0.56	0.37
110TMH-32	51	2	61	2.4	2.8	40	737	29	64	2.5	0.74	0.50
110TMH-40	64	2 1/2	74	2.9	2.4	35	737	29	64	2.5	1.31	0.88
110TMH-48	76	3	89	3.5	2.4	35	737	29	76	3.0	1.64	1.10
110TMH-56	89	3 1/2	104	4.1	2.1	30	737	29	102	4.0	2.00	1.35
110TMH-64	102	4	119	4.7	2.1	30	737	29	114	4.5	2.63	1.77
110TMH-80	127	5	147	5.8	2.1	30	711	28	127	5.0	3.68	2.47
110TMH-96	152	6	172	6.8	2.1	30	711	28	229	9.0	4.58	3.08
110TMH-112	178	7	198	7.8	2.1	30	686	27	356	14.0	6.10	4.10
110TMH-128	203	8	229	9.0	2.1	30	686	27	381	15.0	8.41	5.65
110TMH-160	254	10	285	11.2	1.9	28	635	25	762	30.0	13.2	8.88
110TMH-192	305	12	338	13.3	1.7	25	635	25	1016	40.0	15.5	10.43

Note: For higher temperatures above 40°C, consult Thorburn for specific vacuum and pressure ratings.

Thorburn Series 111TMH™ EPDM Suction & Discharge Hose

Lightweight Flexible Full-Vacuum Wet & Dry Service to 104°C



Sludge & Slurry Submersible Pumps

Thorburn Series 111TMH™: Is engineered for full-vacuum suction and low-pressure discharge where elevated temperatures, flexibility and easy handling are essential. Its static-dissipating EPDM construction provides excellent resistance to heat, hot air, water, steam exposure and environmental aging for service temperatures up to 104°C (250°F). An integrated polyethylene helix with metal helical wire maintains hose shape under full vacuum while preserving flexibility for frequent movement and difficult routing. Suitable for wet or dry materials with moderate abrasion, the 111TMH™ handles hot process air, dust, powders, pellets, slurry and industrial waste. Its lightweight construction makes it ideal for high-temperature vacuum and transfer applications where conventional heavy rubber hose is difficult to handle.

Features

- EPDM construction withstands temperatures to 104°C (250°F)
- Lightweight design reduces handling effort during hose movement
- Highly flexible for difficult routing around processing equipment
- Reinforced helix maintains hose shape under full vacuum
- Static-dissipating construction handles wet and dry materials

Applications

- High-temperature industrial vacuum and cleanup systems
- Hot air and process fume extraction
- Hot wet material vacuum recovery operations
- Heated powder and pellet vacuum transfer
- High-temperature slurry and wastewater vacuum service

Construction

Tube: Black, static-dissipating EPDM with polyethylene helix and metal helical wire

Operating Temperature: -40°C to 104°C (-40°F to 250°F)

Maximum Hose Length: Up to 30 m (100 ft)

Safety Factor: 3:1

End Fittings: Camlock Couplings (Pages 70-85), Bauer Couplings (Pages 86-89), Perrot Couplings (Pages 90-93), Bolt-On Couplings (Pages 94-99)

Clamping: Spiral Clamps (Page 115)

Accessories: Banding Sleeves (Page 121), Banding Coils (Page 122), required for sealing

Thorburn Part #	Nominal Hose I.D.		Nominal Hose O.D.		Design Pressure (20°C (68°F))		Vacuum (20°C (68°F))		Minimum Bend Radius		Weight	
	mm	in	mm	in	bar	psi	Hg (mm)	Hg (in)	mm	in	kg/m	lb/ft
111TMH-48	76	3	91	3.6	435	30	Full	Full	140	5.5	1.98	1.33
111TMH-64	102	4	119	4.7	435	30	Full	Full	140	5.5	2.60	1.75
111TMH-80	127	5	147	5.8	435	30	Full	Full	216	8.5	4.55	3.06
111TMH-96	152	6	175	6.9	435	30	711	28	254	10.0	5.15	3.46
111TMH-128	203	8	231	9.1	435	30	686	27	381	15.0	8.93	6.00

Note: For higher temperatures above 40°C, consult Thorburn for specific vacuum and pressure ratings.

Thorburn Series 120TMH™ EPDM Suction & Discharge Hose

Lightweight Ultra-Flexible Full-Vacuum Water, Wastewater & Mild Chemical Service



Sewer handling truck

Thorburn Series 120TMH™: Is ideal for full-vacuum suction and low-pressure discharge of water, wastewater and compatible mild chemicals, the 120TMH™ combines exceptional flexibility with lightweight handling for demanding wet service. Its smooth EPDM bore provides excellent resistance to water, dilute acids, alkalis and environmental aging while promoting unrestricted liquid flow. A rigid external PVC helix maintains hose shape under vacuum and protects against dragging and jobsite wear without the weight of conventional wire-reinforced hose. Highly flexible in long lengths, the 120TMH™ is easily positioned around pumps, tanks and confined work areas. It is an excellent choice for dewatering, wastewater, septic, agricultural and general industrial liquid-transfer applications requiring frequent hose movement.

Features

- Lightweight EPDM construction simplifies handling of long hose runs
- Ultra-flexible design simplifies routing around pumps and tanks
- Smooth EPDM bore handles water and mild chemicals
- Rigid PVC helix maintains shape under full vacuum
- External helix protects hose during dragging and positioning

Applications

- Construction and excavation site dewatering
- Septic tank and cesspool vacuum service
- Wastewater and liquid waste suction operations
- Agricultural irrigation pump suction and discharge
- Mild chemical solution suction and transfer

Construction

Tube: Smooth, acid-resistant EPDM with rigid external PVC helix

Operating Temperature: -40°C to 65°C (-40°F to 150°F)

Maximum Hose Length: Up to 30 m (100 ft)

Safety Factor: 3:1

End Fittings: Camlock Couplings (Pages 70-85), Bauer Couplings (Pages 86-89), Perrot Couplings (Pages 90-93), Bolt-On Couplings (Pages 94-99)

Clamping: Spiral Clamps (Page 115)

Accessories: Banding Sleeves (Page 121), Banding Coils (Page 122), required for sealing

Thorburn Part #	Nominal Hose I.D.		Nominal Hose O.D.		Design Pressure (20°C (68°F))		Vacuum (20°C (68°F))		Minimum Bend Radius		Weight	
	mm	in	mm	in	bar	psi	Hg (mm)	Hg (in)	mm	in	kg/m	lb/ft
120TMH-16	25	1	36	1.4	4.5	65	Full	Full	51	2.0	0.42	0.28
120TMH-20	32	1 1/4	41	1.6	4.1	60	Full	Full	76	3.0	0.49	0.33
120TMH-24	38	1 1/2	48	1.9	3.4	50	Full	Full	76	3.0	0.65	0.44
120TMH-32	51	2	64	2.5	3.4	50	Full	Full	127	5.0	1.00	0.67
120TMH-40	64	2 1/2	79	3.1	3.1	45	Full	Full	140	5.5	1.41	0.95
120TMH-48	76	3	91	3.6	3.1	45	Full	Full	178	7.0	1.70	1.14
120TMH-64	102	4	119	4.7	2.8	40	Full	Full	279	11.0	2.74	1.84
120TMH-96	152	6	175	6.9	2.1	30	711	28	508	20.0	4.57	3.07

Note: For higher temperatures above 40°C, consult Thorburn for specific vacuum and pressure ratings.

Thorburn Series 140TMH™ SBR Blower & Suction Hose

Extra-Flexible Abrasion-Resistant Dry Material & Air Service



Insulation blowing service

Thorburn Series 140TMH™ is designed for lightweight suction and very low-pressure discharge of air, dust and moderately abrasive dry materials, the 140TMH™ delivers exceptional flexibility where frequent movement and tight routing are essential. Its static-dissipating SBR construction provides good abrasion resistance for sawdust, powders, granules and light industrial debris without the weight of conventional rubber material-handling hose. A rigid PVC helix maintains hose shape during suction and blower service while allowing an exceptionally tight bend radius. Lightweight and easy to position, suspend and reposition, the 140TMH™ is ideal for portable dust collectors, blowers, woodworking equipment and ventilation systems requiring a highly maneuverable hose for continuous air-flow and light dry-material movement.

Features

- Extra-flexible construction provides exceptional maneuverability and tight routing
- Lightweight design simplifies installation, suspension and frequent repositioning
- SBR tube provides good resistance to abrasion
- Static-dissipating construction reduces buildup during dry material movement
- PVC helix supports suction and low-pressure blower service

Applications

- Portable industrial dust collection and extraction systems
- Woodworking sawdust and wood chip collection
- Blower discharge of light dry materials
- Fine powder and granule suction systems
- Ventilation and low-pressure air movement systems

Construction

Tube: Static-dissipating SBR rubber blended with carbon black and rigid PVC helix

Operating Temperature: -40°C to 60°C (-40°F to 140°F)

Maximum Hose Length: Up to 30 m (100 ft)

Safety Factor: 3:1

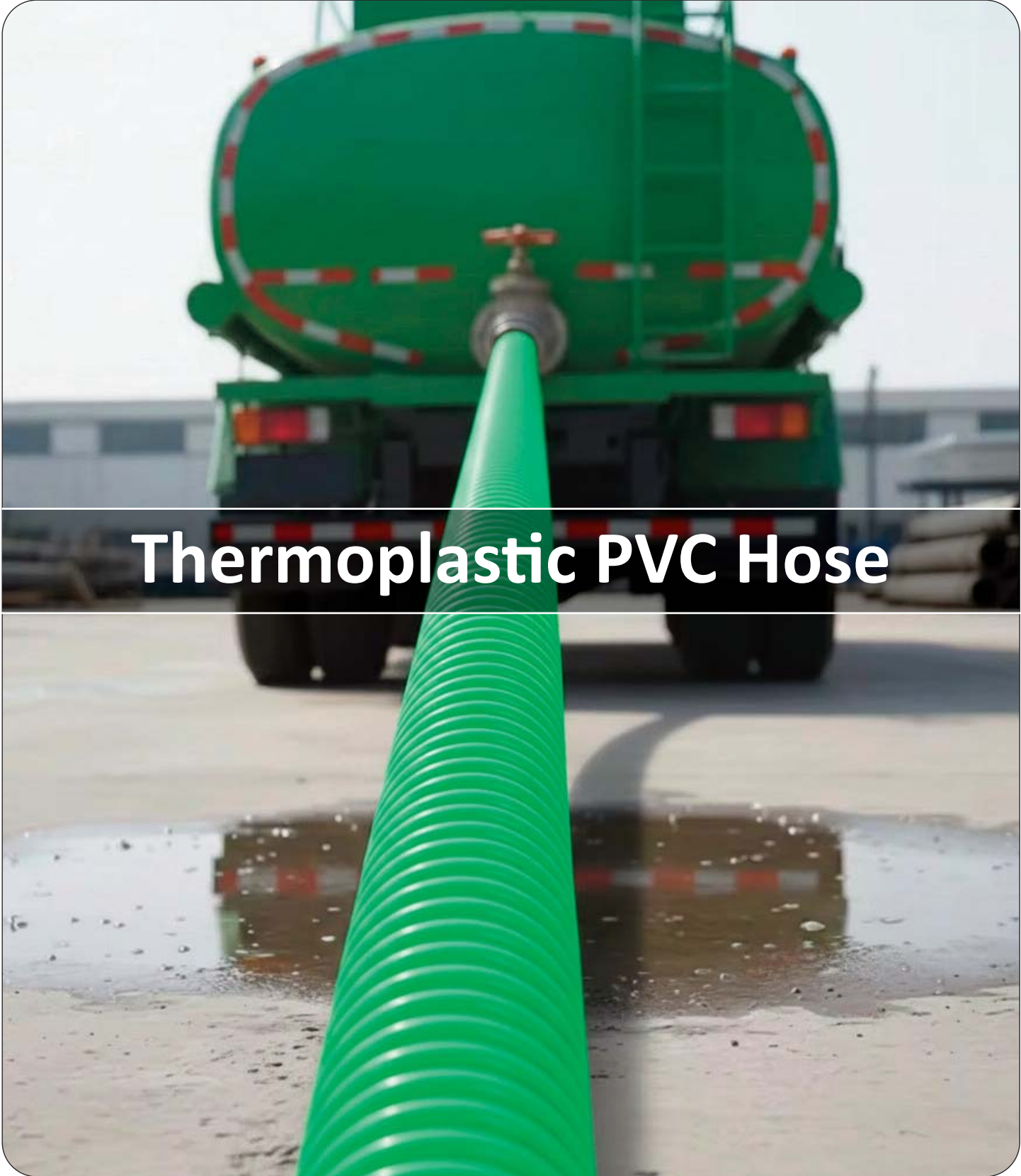
End Fittings: Combination Nipples (Pages 60-61), Camlock Couplings (Pages 70-85)

Clamping: Spiral Clamps (Page 115)

Accessories: Banding Sleeves (Page 121), Banding Coils (Page 122)

Thorburn Part #	Nominal Hose I.D.		Nominal Hose O.D.		Design Pressure (20°C (68°F))		Vacuum (20°C (68°F))		Minimum Bend Radius		Weight	
	mm	in	mm	in	bar	psi	Hg (mm)	Hg (in)	mm	in	kg/m	lb/ft
140TMH-40	64	2 1/2	74	2.9	1.2	18	635	25	64	2.5	1.06	0.71
140TMH-48	76	3	86	3.4	0.9	13	584	23	76	3.0	1.37	0.92
140TMH-64	102	4	114	4.5	0.9	13	508	20	102	4.0	2.23	1.50
140TMH-80	127	5	142	5.6	0.6	8	381	15	127	5.0	2.50	1.68
140TMH-96	152	6	170	6.7	0.6	8	381	15	229	9.0	3.57	2.40
140TMH-112	178	7	221	8.7	0.6	8	381	15	254	10.0	4.46	3.00
140TMH-128	203	8	229	9.0	0.6	8	381	15	305	12.0	6.55	4.40

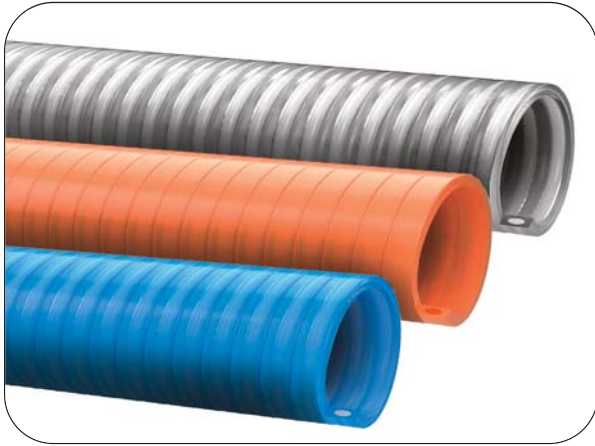
Note: For higher temperatures above 40°C, consult Thorburn for specific vacuum and pressure ratings.

A photograph showing a green thermoplastic PVC hose connected to a green tanker truck. The hose is extended from the truck's rear and lies on a wet, reflective pavement. The truck's tank is visible in the background, featuring red and white reflective safety stripes. The text "Thermoplastic PVC Hose" is overlaid in white on the middle of the image.

Thermoplastic PVC Hose

Thorburn Series 160PMH™ PVC Suction & Discharge Hose

Lightweight Flexible General-Purpose Wet Service (Formerly Plasto-Flex)



Dewatering system

Thorburn Series 162PMH™: Is constructed for suction and low-pressure discharge of water and general-purpose liquids, the 162PMH™ provides a lightweight, flexible and economical solution for everyday pumping applications. Its phthalate-free PVC construction resists moisture, weathering and normal jobsite wear, while the rigid PVC helix maintains hose shape under suction and provides excellent crush resistance. A smooth bore promotes unrestricted flow with minimal friction loss for efficient pump performance. Easy to carry, position and connect in long lengths, the 162PMH™ is ideally suited for construction dewatering, irrigation, drainage, wastewater and industrial liquid transfer. Multiple color options simplify hose identification while providing a versatile wet-service hose for portable and stationary pumping systems.

Features

- Lightweight PVC construction simplifies handling and pump connections
- Rigid PVC helix provides dependable suction collapse resistance
- Smooth bore promotes efficient high-volume liquid flow
- Flexible construction simplifies routing around pumps and equipment
- Phthalate-free PVC provides economical general-purpose wet service

Applications

- Construction site dewatering and drainage pumping
- Agricultural irrigation pump suction and discharge
- Stormwater and surface water pumping operations
- Municipal wastewater and drainage transfer service
- Industrial water and general liquid transfer

Construction

Tube: Phthalate-free PVC with rigid PVC helix

Cover: Smooth PVC, sizes 3/4" through 4"; corrugated PVC, sizes 6" through 8"

Color: Clear (Code C), Orange (Code O), Blue (Code B)

Operating Temperature: -20°C to 65°C (-4°F to 150°F)

Maximum Hose Length: Up to 30 m (100 ft)

Safety Factor: 3:1

End Fittings: Combination Nipples (Pages 60-61),

Camlock Couplings (Pages 70-85), Clamps (Pages 110-114)

Accessories: Banding Sleeves (Page 121), Banding Coils (Page 122)

Thorburn Part #	Nominal Hose I.D.		Nominal Hose O.D.		Design Pressure (20°C (68°F))		Vacuum (20°C (68°F))		Minimum Bend Radius		Weight	
	mm	in	mm	in	bar	psi	Hg (mm)	Hg (in)	mm	in	kg/m	lb/ft
160PMH(X)-12	19	3/4	25	1.0	7.9	115	Full	Full	76	3.0	0.31	0.21
160PMH(X)-16	25	1	33	1.3	6.9	100	Full	Full	102	4.0	0.40	0.27
160PMH(X)-20	32	1 1/4	41	1.6	6.9	100	Full	Full	114	4.5	0.54	0.36
160PMH(X)-24	38	1 1/2	46	1.8	6.9	100	Full	Full	152	6.0	0.71	0.48
160PMH(X)-32	51	2	58	2.3	6.9	100	Full	Full	203	8.0	1.06	0.71
160PMH(X)-40	64	2 1/2	74	2.9	4.8	70	Full	Full	254	10.0	1.43	0.96
160PMH(X)-48	76	3	86	3.4	4.8	70	Full	Full	301	12.0	1.86	1.25
160PMH(X)-64	102	4	114	4.5	4.1	60	Full	Full	406	16.0	2.90	1.95
160PMH(X)-96	152	6	173	6.8	2.8	40	711	28	610	24.0	5.60	3.76
160PMH(X)-128	203	8	226	8.9	2.1	30	711	28	813	32.0	8.93	6.00

X = Hose Color. Please put suffix **C** = Clear, **O** = Orange, **B** = Blue. **Note:** For higher temperatures above 40°C, consult Thorburn for specific vacuum and pressure ratings.

Thorburn Series 162PMH™ PVC Suction & Discharge Hose

Extra-Flexible Full-Vacuum Water Suction & Discharge Hose (Formerly Plasto-Flex)



Pump suction and discharge

Thorburn Series 162PMH™: Is built for water suction and discharge where flexibility, full-vacuum capability and easy handling are essential, the 162PMH™ combines durable PVC construction with a rigid PVC helix for dependable wet-service performance. Its corrugated exterior provides an exceptionally tight 2:1 bend radius, allowing easier routing around pumps, equipment and confined jobsites. The rigid helix resists crushing and collapse under full vacuum, while the smooth bore promotes efficient, unrestricted water flow. Lightweight construction simplifies positioning, dragging and connection to portable pumping equipment. Available in clear or green, the 162PMH™ is an ideal choice for dewatering, irrigation, pump suction and general industrial water-transfer applications.

Features

- Full-vacuum rated for demanding water suction service
- 2:1 bend radius provides exceptional routing flexibility
- Rigid PVC helix resists crushing and vacuum collapse
- Smooth bore promotes efficient, unrestricted water flow
- Lightweight construction simplifies handling, positioning & pump connections

Applications

- Construction and rental pump dewatering
- Agricultural irrigation and water transfer
- Full-vacuum pump suction and discharge
- Municipal water removal and drainage
- Industrial water transfer and cleanup
- General-purpose wet-service pumping applications

Construction

Tube: Smooth PVC with rigid PVC helix

Cover: Corrugated PVC

Color: Clear (Code C), Green (Code G)

Operating Temperature: -20°C to 65°C (-4°F to 150°F)

Maximum Hose Length: Up to 30 m (100 ft)

Safety Factor: 3:1

End Fittings: Combination Nipples (Pages 60-61),

Camlock Couplings (Pages 70-85)

Clamping: Spiral Clamps (Page 115)

Accessories: Banding Sleeves (Page 121), Banding Coils (Page 122)

Thorburn Part #	Nominal Hose I.D.		Nominal Hose O.D.		Design Pressure (20°C (68°F))		Vacuum (20°C (68°F))		Minimum Bend Radius		Weight	
	mm	in	mm	in	bar	psi	Hg (mm)	Hg (in)	mm	in	kg/m	lb/ft
162PMH(X)-24	38	1 1/2	48	1.9	3.4	50	Full	Full	76	3.0	0.51	0.34
162PMH(X)-32	51	2	61	2.4	3.4	50	Full	Full	102	4.0	0.77	0.52
162PMH(X)-48	76	3	91	3.6	3.1	45	Full	Full	152	6.0	1.76	1.18
162PMH(X)-64	102	4	123	4.8	2.4	35	Full	Full	203	8.0	2.87	1.93

X = Hose Color. Please put suffix **C** = Clear, **G** = Green **Note:** For higher temperatures above 40°C, consult Thorburn for specific vacuum and pressure ratings.

Thorburn Series 164PMH™ PVC Suction & Discharge Hose

Extra-Heavy-Duty Full-Vacuum Cold Weather Wet Service to -40°C



Slurry mixing and transfer pump

Thorburn Series 164PMH™: Is designed for full-vacuum suction and low-pressure discharge of water, wastewater and light slurry in severe cold-weather environments, the 164PMH™ combines extra-thick PVC construction with dependable flexibility down to -40°C (-40°F). Its heavy rigid PVC helix maintains hose shape under full vacuum and provides excellent crush resistance during demanding pumping operations. An integral static-dissipating wire helps control electrical buildup, while the smooth bore promotes unrestricted liquid flow. The corrugated exterior improves bending and handling around pumps, tanks and mobile equipment. Designed for rugged wet service rather than highly abrasive solids, the 164PMH™ is ideal for dewatering, bypass pumping and industrial liquid transfer where cold temperatures challenge conventional PVC hose.

Features

- Low-temperature PVC remains flexible down to -40°C
- Heavy PVC helix maintains shape under full vacuum
- Extra-thick wall provides rugged wet-service durability
- Integral static wire helps dissipate electrical buildup
- Corrugated construction improves flexibility and equipment routing

Applications

- Cold-weather construction dewatering and drainage pumping
- Winter water suction and discharge operations
- Municipal wastewater and bypass pumping service
- Industrial liquid vacuum and pump transfer
- Light slurry suction and discharge operations

Construction

Tube: Smooth, extra-thick, low-temperature PVC with heavy-duty rigid PVC helix and integral static-dissipating wire

Cover: Corrugated PVC

Operating Temperature: -40°C to 65°C (-40°F to 150°F)

Maximum Hose Length: Up to 30 m (100 ft)

Safety Factor: 3:1

End Fittings: Combination Nipples (Pages 60-61)

Clamping: Spiral Clamps (Page 115)

Accessories: Banding Sleeves (Page 121), Banding Coils (Page 122)

Thorburn Part #	Nominal Hose I.D.		Nominal Hose O.D.		Design Pressure (20°C (68°F))		Vacuum (20°C (68°F))		Minimum Bend Radius		Weight	
	mm	in	mm	in	bar	psi	Hg (mm)	Hg (in)	mm	in	kg/m	lb/ft
164PMH-24	38	1 1/2	46	1.8	6.9	100	Full	Full	114	4.5	0.60	0.40
164PMH-32	51	2	61	2.4	6.9	100	Full	Full	152	6.0	1.12	0.75
164PMH-40	64	2 1/2	74	2.9	6.2	90	Full	Full	191	7.5	1.47	0.99
164PMH-48	76	3	91	3.6	5.5	80	Full	Full	229	9.0	1.99	1.34
164PMH-64	102	4	119	4.7	4.4	65	Full	Full	301	12.0	3.20	2.15
164PMH-96	152	6	175	6.9	3.4	50	Full	Full	457	18.0	5.60	3.76
164PMH-128	203	8	231	9.1	2.4	35	Full	Full	610	24.0	8.81	5.92

Note: For higher temperatures above 40°C, consult Thorburn for specific vacuum and pressure ratings.

Thorburn Series 141PMH™ PVC Suction & Blower Hose

Lightweight Ultra-Flexible Light-Duty Air, Dust & Ventilation Service



Debris loading equipment

Thorburn Series 141PMH™: Is ideal for very low suction and very low-pressure discharge of air, dust, fumes and lightweight non-abrasive materials, the 141PMH™ provides an economical solution where maximum flexibility and minimum hose weight are priorities. Its thin-wall PVC construction bends easily around machinery, portable equipment and confined installations, while the rigid PVC helix maintains hose shape during light vacuum and blower service. The corrugated profile provides exceptional maneuverability and makes long hose runs easier to carry, position and suspend. Intended for airflow and low-wear dry materials rather than abrasive solids, the 141PMH™ is ideally suited for ventilation, fume extraction, light dust collection and general-purpose air-handling systems requiring frequent hose movement.

Features

- Ultra-lightweight PVC construction minimizes handling and installation effort
- Highly flexible profile provides excellent tight-radius routing
- Rigid PVC helix supports light suction and blower service
- Corrugated construction simplifies positioning, suspension & frequent movement
- Economical construction suits non-abrasive dry material handling

Applications

- Portable ventilation and air extraction systems
- Fume and vapor extraction from work areas
- Light dust collection around machinery and equipment
- Woodworking dust and fine sawdust extraction
- Blower discharge for air and lightweight materials

Construction

Tube: Flexible PVC with rigid PVC helix

Operating Temperature: -29°C to 65°C (-20°F to 150°F)

Maximum Hose Length: Up to 30 m (100 ft)

Safety Factor: 3:1

Clamping: Spiral Clamps (Page 115)

Accessories: Banding Sleeves (Page 121), Banding Coils (Page 122)

Thorburn Part #	Nominal Hose I.D.		Nominal Hose O.D.		Design Pressure (20°C (68°F))		Vacuum (20°C (68°F))		Minimum Bend Radius		Weight	
	mm	in	mm	in	bar	psi	Hg (mm)	Hg (in)	mm	in	kg/m	lb/ft
141PMH-64	102	4	117	4.6	0.6	8	330	13	102	4.0	1.26	0.85
141PMH-64	127	5	142	5.6	0.5	7	254	10	127	5.0	1.38	0.93
141PMH-96	152	6	168	6.6	0.4	6	178	7	152	6.0	1.99	1.34
141PMH-112	178	7	193	7.6	0.3	4	152	6	178	7.0	2.28	1.53
141PMH-128	203	8	218	8.6	0.3	4	127	5	203	8.0	2.98	2.00

Note: For higher temperatures above 40°C, consult Thorburn for specific vacuum and pressure ratings.

Thorburn Series 137PMH™ PVC Flex Pipe

Flexible Schedule 40 Compatible Water Circulation Pipe



Commercial pool plumbing

Thorburn Series 137PMH™ is constructed for permanent and semi-permanent water circulation systems, the 137PMH™ combines the installation convenience of flexible hose with the secure connections of PVC piping. Its smooth PVC bore promotes efficient water flow, while rigid PVC helix reinforcement prevents kinking and maintains shape around equipment and confined spaces. The flexible construction follows curved routing with fewer elbows and joints, simplifying installation while reducing potential leak points. Designed for solvent-weld connection directly into compatible Schedule 40 PVC fittings, the 137PMH™ is ideal for pools, spas, water features and recreational water systems. Supplied in long continuous lengths, it provides a practical alternative to complex rigid piping layouts.

Features

- Flexible construction reduces elbows, joints and installation complexity
- Solvent-welds directly into compatible Schedule 40 PVC fittings
- Smooth bore promotes efficient continuous water circulation
- Rigid PVC helix resists kinking around curved installations
- Long lengths reduce connections and potential leak points

Applications

- Commercial pool filtration and circulation piping
- Spa and hot tub water circulation
- Waterpark filtration and water circulation systems
- Fountain and decorative water feature piping
- Aquatic facility pump and filtration connections

Construction

Tube: Smooth PVC with rigid PVC helix

Cover: Smooth PVC

Operating Temperature: -20°C to 65°C (-4°F to 150°F)

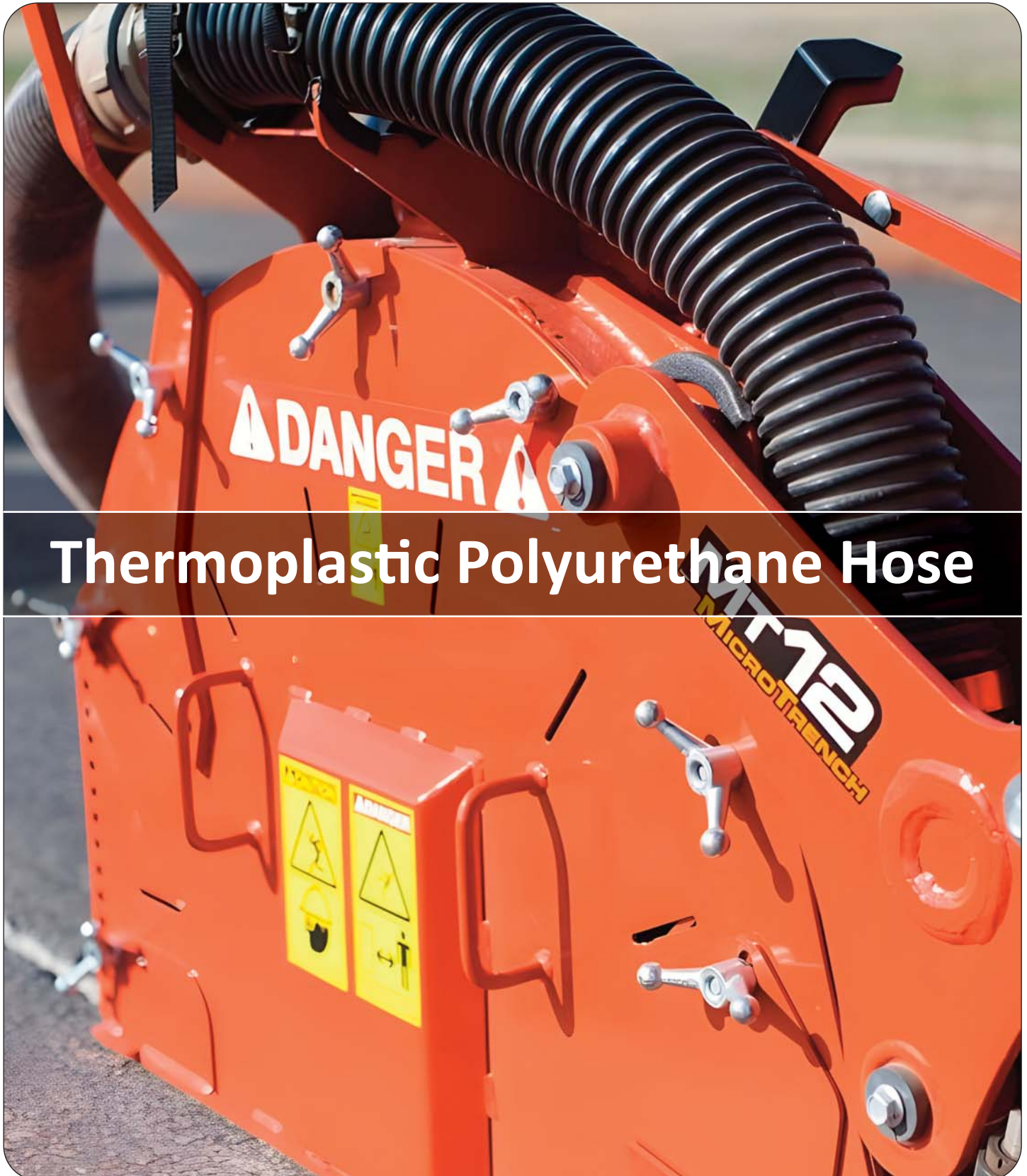
Maximum Hose Length: Up to 30 m (100 ft)

Safety Factor: 3:1

End Fittings: Compatible Schedule 40 PVC Connectors, Clamps (Pages 110-114)

Thorburn Part #	Nominal Hose I.D.		Nominal Hose O.D.		Design Pressure (20°C (68°F))		Vacuum (20°C (68°F))		Minimum Bend Radius		Weight	
	mm	in	mm	in	bar	psi	Hg (mm)	Hg (in)	mm	in	kg/m	lb/ft
137PMH-08	13	1/2	23	0.9	6.9	100	711	28	51	2.0	0.20	0.14
137PMH-12	19	3/4	28	1.1	6.9	100	711	28	76	3.0	0.31	0.21
137PMH-16	25	1	33	1.3	6.9	100	711	28	102	4.0	0.42	0.28
137PMH-20	32	1 1/4	43	1.7	5.5	80	711	28	127	5.0	0.55	0.37
137PMH-24	38	1 1/2	48	1.9	4.8	70	711	28	152	6.0	0.65	0.44
137PMH-32	51	2	61	2.4	4.8	70	711	28	203	8.0	0.86	0.58
137PMH-48	76	3	89	3.5	4.5	65	711	28	305	12.0	1.79	1.20

Note: For higher temperatures above 40°C, consult Thorburn for specific vacuum and pressure ratings.



Thermoplastic Polyurethane Hose

Thorburn Series 1664PMH™ Polyurethane Hose

Ultra-Flexible Polyurethane-Lined Abrasive Material Suction Hose



Pneumatic Conveying System

Thorburn Series 1664PMH™: Is manufactured for suction and vacuum transfer of abrasive dry materials, the 1664PMH™ combines a wear-resistant polyurethane liner with exceptional flexibility for demanding material-handling systems. Its smooth polyurethane wear surface provides extended service life when conveying pellets, powders, chips, grain and abrasive debris, while the rigid PVC helix provides dependable vacuum and crush resistance. A tight 2:1 bend radius allows easy routing around equipment and through confined installations. The lightweight convoluted construction remains flexible to -40°C (-40°F), while the charge-reducing cover helps minimize static buildup during dry-material transfer. Available through 10-inch I.D. for industrial vacuum, pneumatic conveying and material recovery applications.

Features

- Polyurethane liner provides superior abrasive wear resistance
- 2:1 bend radius delivers exceptional routing flexibility
- Rigid PVC helix provides vacuum and crush resistance
- Charge-reducing cover helps minimize static buildup
- Remains flexible in temperatures down to -40°C

Applications

- Plastic pellet and granular material conveying
- Abrasive powder and dry material transfer
- Wood chip and sawdust collection systems
- Grain and bulk material vacuum transfer
- Industrial dust and debris collection

Construction

Tube: Smooth, abrasion-resistant polyurethane with rigid PVC helix

Cover: Black, convoluted, charge-reducing PVC

Operating Temperature: -40°C to 65°C (-40°F to 150°F)

Maximum Hose Length: Up to 30 m (100 ft)

Safety Factor: 3:1

End Fittings: Combination Nipples (Pages 60-61)

Clamping: Spiral Clamps (Page 115)

Accessories: Banding Sleeves (Page 121), Banding Coils (Page 122)

Thorburn Part #	Nominal Hose I.D.		Nominal Hose O.D.		Design Pressure (20°C (68°F))		Vacuum (20°C (68°F))		Minimum Bend Radius		Weight	
	mm	in	mm	in	bar	psi	Hg (mm)	Hg (in)	mm	in	kg/m	lb/ft
1664PMH-20	32	1 1/4	38	1.5	3.4	50	Full	Full	51	2.0	0.33	0.22
1664PMH-24	38	1 1/2	50	1.9	3.4	50	Full	Full	76	3.0	0.68	0.46
1664PMH-32	51	2	61	2.4	2.8	40	Full	Full	102	4.0	0.97	0.65
1664PMH-40	64	2 1/2	79	3.1	2.8	40	Full	Full	127	5.0	1.32	0.89
1664PMH-48	76	3	94	3.7	2.8	40	Full	Full	152	6.0	1.83	1.23
1664PMH-56	89	3 1/2	107	4.2	2.4	35	Full	Full	178	7.0	2.20	1.48
1664PMH-64	102	4	123	4.8	2.4	35	Full	Full	254	10.0	3.00	2.02
1664PMH-80	127	5	147	5.8	2.4	35	711	28	381	15.0	3.72	2.50
1664PMH-96	152	6	173	6.8	2.1	30	711	28	457	18.0	5.71	3.84
1664PMH-128	203	8	234	9.2	2.1	30	711	28	559	22.0	9.70	6.52
1664PMH-160	254	10	295	11.6	1.7	25	610	24	660	26.0	16.25	10.92

Note: For higher temperatures above 40°C, consult Thorburn for specific vacuum and pressure ratings.

Thorburn Series 1665PMH™ Polyurethane Lined Hose

Heavy-Duty Abrasive Dry Material Service with Grounding Wire



Woodshop sawdust collection system

Thorburn Series 1665PMH™: Is engineered for full-vacuum suction and low-pressure discharge of abrasive dry materials where extended wear life and static control are essential. Its extra-thick polyurethane tube provides superior abrasion resistance for powders, pellets, plastic regrind, grain, chips and other aggressive particulate while remaining lighter and more flexible than conventional thick-wall rubber material-handling hose. A rigid PVC helix maintains hose shape under full vacuum and provides crush resistance during demanding industrial service. An integral grounding wire safely dissipates static generated by high-velocity dry-material movement. Designed for continuous material handling, the 1665PMH™ is ideal for pneumatic conveying, bulk transfer and recovery systems requiring increased wear protection without the weight and handling demands of heavy rubber hose.

Features

- Extra-thick polyurethane tube provides extended abrasive wear life
- Grounding wire dissipates static during dry material transfer
- Rigid PVC helix maintains shape under full vacuum
- Lightweight construction simplifies handling around processing equipment
- Flexible design provides easier routing than heavy rubber hose

Applications

- Plastic regrind and resin vacuum transfer systems
- Abrasive powder and pellet pneumatic conveying
- Industrial bulk solids vacuum loading systems
- Wood chip and abrasive sawdust collection
- Grain and feed bulk transfer systems

Construction

Tube: Extra-thick, abrasion-resistant polyurethane with rigid PVC helix and integral grounding wire

Cover: Black, convoluted PVC

Operating Temperature: -20°C to 65°C (-4°F to 150°F)

Maximum Hose Length: Up to 30 m (100 ft)

Safety Factor: 3:1

End Fittings: Combination Nipples (Pages 60-61)

Clamping: Spiral Clamps (Page 115)

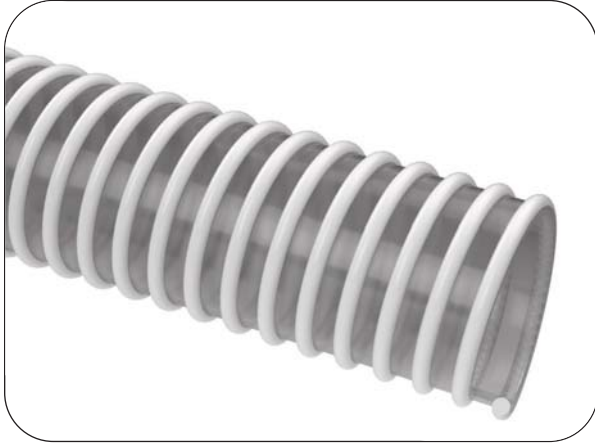
Accessories: Banding Sleeves (Page 121), Banding Coils (Page 122)

Thorburn Part #	Nominal Hose I.D.		Nominal Hose O.D.		Design Pressure (20°C (68°F))		Vacuum (20°C (68°F))		Minimum Bend Radius		Weight	
	mm	in	mm	in	bar	psi	Hg (mm)	Hg (in)	mm	in	kg/m	lb/ft
1665PMH-40	64	2 1/2	76	3.0	3.1	45	Full	Full	191	7.5	1.37	0.92
1665PMH-48	76	3	97	3.8	3.1	45	Full	Full	229	9.0	2.23	1.50
1665PMH-64	102	4	124	4.9	2.8	40	Full	Full	305	12.0	3.45	2.32
1665PMH-80	127	5	150	5.9	2.4	35	Full	Full	381	15.0	5.10	3.43
1665PMH-96	152	6	183	7.2	2.4	35	Full	Full	457	18.0	6.76	4.54
1665PMH-128	203	8	241	9.5	2.4	35	711	28	610	24.0	11.21	7.53
1665PMH-160	254	10	292	11.5	1.5	22	610	24	762	30.0	14.73	9.90

Note: For higher temperatures above 40°C, consult Thorburn for specific vacuum and pressure ratings.

Thorburn Series 1670PMH™ Polyurethane Lined Hose

Lightweight Flexible Agricultural & Dry Material Suction & Discharge Handling Service



Plastic processing equipment

Thorburn Series 1670PMH™: Is built for full-vacuum suction and low-pressure discharge of fertilizer, seed, grain, pellets and other moderately abrasive dry materials. Its polyurethane tube provides excellent wear resistance while maintaining the lightweight flexibility required for agricultural equipment and frequently moved transfer lines. A rigid PVC helix maintains hose shape under full vacuum and provides crush resistance without the weight of conventional wire-reinforced rubber hose. The convoluted static-dissipating PVC cover improves flexibility and helps control electrical buildup during dry-material movement. Remaining flexible to -40°C (-40°F), the 1670PMH™ is ideally suited for air seeders, fertilizer equipment, grain handling and light industrial conveying where easy routing, cold-weather performance and dependable abrasion resistance are essential.

Features

- Lightweight construction simplifies equipment routing and frequent handling
- Polyurethane tube provides excellent dry-material abrasion resistance
- Rigid PVC helix maintains shape under full vacuum
- Transparent static-dissipating cover helps control electrical buildup
- Remains flexible in temperatures down to -40°C

Applications

- Air seeder seed and fertilizer transfer
- Dry fertilizer loading and spreading equipment
- Grain and feed vacuum transfer systems
- Plastic pellet and resin conveying lines
- Agricultural seed handling and planting equipment

Construction

Tube: Abrasion-resistant polyurethane with rigid PVC helix

Cover: Convoluted, static-dissipating PVC

Operating Temperature: -40°C to 65°C (-40°F to 150°F)

Maximum Hose Length: Up to 30 m (100 ft)

Safety Factor: 3:1

End Fittings: Combination Nipples (Pages 60-61)

Clamping: Spiral Clamps (Page 115)

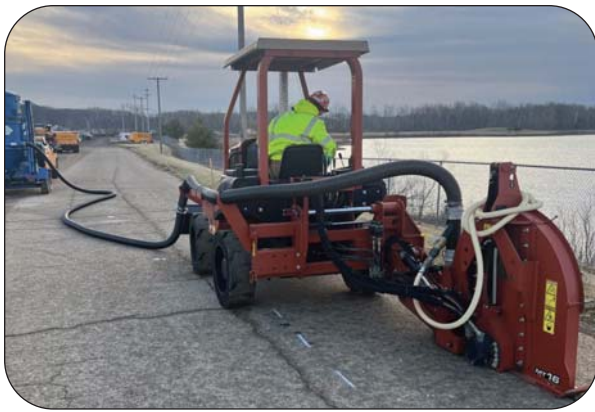
Accessories: Banding Sleeves (Page 121), Banding Coils (Page 122)

Thorburn Part #	Nominal Hose I.D.		Nominal Hose O.D.		Design Pressure (20°C (68°F))		Vacuum (20°C (68°F))		Minimum Bend Radius		Weight	
	mm	in	mm	in	bar	psi	Hg (mm)	Hg (in)	mm	in	kg/m	lb/ft
1670PMH-24	38	1 1/2	48	1.9	3.4	50	Full	Full	76	3.0	0.63	0.42
1670PMH-32	51	2	61	2.4	2.8	40	Full	Full	152	6.0	0.88	0.59
1670PMH-40	64	2 1/2	79	3.1	2.8	40	Full	Full	191	7.5	1.19	0.80
1670PMH-48	76	3	91	3.6	2.8	40	Full	Full	229	9.0	1.76	1.18
1670PMH-64	102	4	122	4.8	2.4	35	Full	Full	305	12.0	2.90	1.95

Note: For higher temperatures above 40°C, consult Thorburn for specific vacuum and pressure ratings.

Thorburn Series 1668PMH™ Polyurethane Lined Hose

Clear, Lightweight Abrasion-Resistant Dry Material Hose with Grounding Wire



Micro-trenching excavation

Thorburn Series 1668PMH™: Is designed for suction and low-pressure discharge of abrasive dry materials where visual flow monitoring, flexibility and easy handling are essential. Its clear construction allows operators to observe powders, pellets, resin and granules moving through the hose, helping identify flow interruptions and material buildup. The polyurethane tube provides excellent abrasion resistance while remaining lightweight and flexible for frequently moved processing equipment. A rigid PVC helix maintains hose shape during suction, while an integral grounding wire dissipates static generated by dry-material movement. Remaining flexible to -40°C (-40°F), the 1668PMH™ is ideal for plastics, packaging and processing systems where product visibility, abrasion resistance and maneuverability are required in one versatile material-transfer hose.

Features

- Clear construction provides continuous visual material flow monitoring
- Polyurethane tube provides excellent dry-material abrasion resistance
- Lightweight flexible construction simplifies frequent hose repositioning
- Grounding wire dissipates static during dry material transfer
- Remains flexible in temperatures down to -40°C

Applications

- Plastic pellet and resin vacuum transfer
- Powder and granule material conveying systems
- Packaging equipment dry ingredient transfer lines
- Processing equipment material feed and recovery
- Hopper loading and unloading of dry materials

Construction

Tube: Abrasion-resistant polyurethane with rigid PVC helix and integral grounding wire

Cover: Clear, convoluted PVC

Operating Temperature: -40°C to 65°C (-40°F to 150°F)

Maximum Hose Length: Up to 30 m (100 ft)

Safety Factor: 3:1

End Fittings: Combination Nipples (Pages 60-61)

Clamping: Spiral Clamps (Page 115)

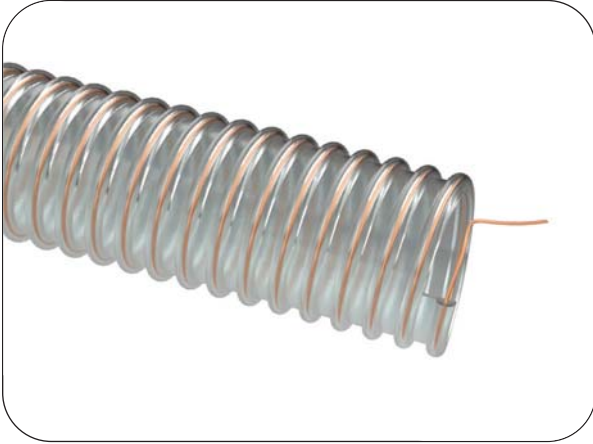
Accessories: Banding Sleeves (Page 121), Banding Coils (Page 122)

Thorburn Part #	Nominal Hose I.D.		Nominal Hose O.D.		Design Pressure (20°C (68°F))		Vacuum (20°C (68°F))		Minimum Bend Radius		Weight	
	mm	in	mm	in	bar	psi	Hg (mm)	Hg (in)	mm	in	kg/m	lb/ft
1668PMH-48	76	3	91	3.6	2.8	40	Full	Full	229	9.0	1.35	0.91
1668PMH-64	102	4	119	4.7	2.4	35	711	28	305	12.0	2.23	1.50
1668PMH-80	127	5	140	5.5	2.4	35	711	28	381	15.0	2.71	1.82
1668PMH-96	152	6	170	6.7	2.1	30	635	25	457	18.0	3.33	2.24
1668PMH-128	203	8	224	8.8	2.1	30	635	25	610	24.0	4.46	3.00

Note: For higher temperatures above 40°C, consult Thorburn for specific vacuum and pressure ratings.

Thorburn Series 1669PMH™ Polyurethane Lined Suction Hose

Clear Ultra-Lightweight Polyurethane Dry Material Transfer Hose with Grounding Wire



Pneumatic Conveyor

Thorburn Series 169UL™: Is ideal for plastics processing and smaller dry-material conveying systems where lightweight handling, tight routing and visual flow monitoring are essential, the 1669PMH™ combines a clear polyurethane wear surface with an ultra-light polypropylene helix construction. Its abrasion-resistant polyurethane liner provides dependable service when conveying plastic pellets, regrind, powders and other dry materials. A tight 2:1 bend radius simplifies routing around compact processing equipment, while the clear construction allows operators to visually monitor material flow and identify blockages. An integrated grounding wire provides a continuous path for static dissipation when properly bonded. Available in 1-1/2" through 3" sizes for compact conveying, loading and vacuum-transfer systems.

Features

- Ultra-lightweight construction simplifies frequent handling and repositioning
- Clear wall allows visual monitoring of material flow
- Polyurethane liner provides excellent abrasive wear resistance
- 2:1 bend radius simplifies compact equipment routing
- Grounding wire provides path for static dissipation

Applications

- Plastic pellet and resin conveying systems
- Regrind and recycled plastic material transfer
- Powder and granular material vacuum conveying
- Injection molding material feed systems
- Compact plastics processing equipment connections

Construction

Tube: Clear, abrasion-resistant polyurethane with rigid polypropylene helix and grounding wire

Cover: Clear, convoluted polypropylene

Operating Temperature: -40°C to 65°C (-40°F to 150°F)

Maximum Hose Length: Up to 30 m (100 ft)

Safety Factor: 3:1

End Fittings: Combination Nipples (Pages 60-61)

Clamping: Spiral Clamps (Page 115)

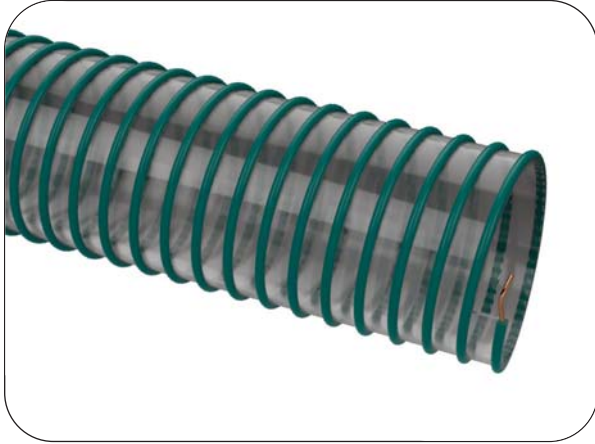
Accessories: Banding Sleeves (Page 121), Banding Coils (Page 122)

Thorburn Part #	Nominal Hose I.D.		Nominal Hose O.D.		Design Pressure (20°C (68°F))		Vacuum (20°C (68°F))		Minimum Bend Radius		Weight	
	mm	in	mm	in	bar	psi	Hg (mm)	Hg (in)	mm	in	kg/m	lb/ft
1669PMH-24	38	1 1/2	48	1.9	1.4	20	559	22	76	3.0	0.58	0.39
1669PMH-32	51	2	61	2.4	1.0	15	533	21	102	4.0	0.71	0.48
1669PMH-40	64	2 1/2	76	3.0	0.7	10	483	19	127	5.0	0.82	0.55
1669PMH-48	76	3	91	3.6	0.7	10	457	18	152	6.0	1.01	0.68

Note: For higher temperatures above 40°C, consult Thorburn for specific vacuum and pressure ratings.

Thorburn Series 1671PMH™ TPU Lined Suction Hose

Transparent, Ultra-Light, Abrasion-Resistant, Flexible with Grounding Wire



Mulch blowing truck

Thorburn Series 1671PMH™ is a premium transparent ester-based TPU hose designed for abrasive dry-material handling. It combines excellent abrasion resistance, flexibility, lightweight handling, and clear material-flow visibility. Its durable TPU construction withstands wear, tearing, and repeated flexing when conveying powders, granules, pellets, dust, and abrasive particles. A rigid PVC helix maintains shape during suction, while an integral grounding wire helps dissipate static. Flexible to -40°C (-40°F), it is ideal for mobile and processing equipment requiring visibility, durability, and frequent movement.

Features

- Transparent TPU provides continuous visual material flow monitoring
- Ester TPU delivers excellent abrasion and tear resistance
- Ultra-lightweight construction provides exceptional flexibility & maneuverability
- TPU withstands repeated bending and dynamic hose movement
- Grounding wire dissipates static during dry material transfer

Applications

- Plastic pellet and resin vacuum transfer systems
- Powder and granule material conveying lines
- Mobile processing equipment requiring visible material flow
- Mulch, bark and wood chip transfer
- Machine feed lines requiring blockage visibility

Construction

Tube: Transparent ester-based thermoplastic polyurethane (TPU) with rigid PVC helix and integral grounding wire

Cover: Transparent, convoluted TPU

Operating Temperature: -40°C to 65°C (-40°F to 150°F)

Maximum Hose Length: Up to 30 m (100 ft)

Safety Factor: 3:1

End Fittings: Combination Nipples (Pages 60-61), Camlock Couplings (Pages 70-85), Bauer Couplings (Pages 86-89), Perrot Couplings (Pages 90-93), Bolt-On Couplings (Pages 94-99), Clamps (Pages 110-114)

Clamping: Spiral Clamps (Page 115)

Accessories: Banding Sleeves (Page 121), Banding Coils (Page 122), required for sealing

Thorburn Part #	Nominal Hose I.D.		Nominal Hose O.D.		Design Pressure (20°C (68°F))		Vacuum (20°C (68°F))		Minimum Bend Radius		Weight	
	mm	in	mm	in	bar	psi	Hg (mm)	Hg (in)	mm	in	kg/m	lb/ft
1671PMH-24	38	1 1/2	46	1.8	1.4	20	559	22	38	1.5	0.34	0.23
1671PMH-32	51	2	61	2.4	1.0	15	533	21	51	2.0	0.48	0.32
1671PMH-40	64	2 1/2	74	2.9	0.7	10	483	19	64	2.5	0.58	0.39
1671PMH-48	76	3	89	3.5	0.7	10	457	18	76	3.0	0.86	0.58
1671PMH-64	102	4	114	4.5	0.6	8	330	13	102	4.0	1.15	0.77
1671PMH-80	127	5	140	5.5	0.5	7	254	10	127	5.0	1.32	0.89
1671PMH-96	152	6	165	6.5	0.4	6	178	7	152	6.0	1.71	1.15
1671PMH-128	203	8	218	8.6	0.3	4	127	5	203	8.0	2.60	1.75

Note: For higher temperatures above 40°C, consult Thorburn for specific vacuum and pressure ratings.



Cement, Concrete & Plaster Hose

Thorburn Series 166TPM™ Cement Placement Hose

Sand, Dry Cement & Powder Discharge Hose



Thorburn Series 166TPM™: Is constructed for pneumatic discharge of dry cement, sand, powders and other abrasive bulk materials, the 166TPM™ combines dependable material flow with excellent wear resistance and static dissipation. Its smooth NR/SBR rubber tube blend withstands abrasion from fast-moving dry materials while helping dissipate static buildup during transfer. Multiple textile reinforcement plies provide strength while maintaining the flexibility required for loading, unloading and placement operations. Available with 3 mm, 5 mm or 6 mm tube thicknesses, the hose can be selected to match application severity and desired wear life. A rugged NBR/EPDM cover resists abrasion and weathering for dependable service in demanding construction and industrial environments.

Key Features

- Static-dissipating SBR tube for safe transfer of dry materials
- Durable SBR/EPDM blend cover for abrasion, weather, and ozone resistance
- Flexible, impact-resistant construction for reliable flow in demanding conditions
- Designed for bulk discharge of tube sand, dry cement, and powders

Applications

- Pneumatic dry cement loading and discharge
- Sand transfer and placement operations
- Bulk powder loading and unloading systems
- Construction-site cement and dry-material delivery
- Industrial dry bulk material transfer systems

Construction

Tube: Black, smooth, static-dissipating NR/SBR rubber

Tube Thickness: Code A – 3 mm (1/8"); Code B – 5 mm (3/16"); Code C – 6 mm (1/4")

Reinforcement: Multiple plies of high-strength synthetic fabric

Cover: Black, abrasion- and weather-resistant NBR/EPDM blend

Operating Temperature: -40°C to 85°C (-40°F to 185°F)

Maximum Hose Length: Up to 30 m (100 ft)

Safety Factor: 3:1

End Fittings: Concrete Couplings (Pages 65-67), Clamps (Pg 110-114)



Cement spray placement

Thorburn Part #	Nominal Hose I.D.		Nominal Hose O.D.		Design Pressure (20°C (68°F))		Minimum Bend Radius		Tube Thickness		Weight	
	mm	in	mm	in	bar	psi	mm	in	mm	in	kg/m	lb/ft
166TPM-A-64	102	4	114	4.5	5.2	75	1016	40.0	3	1/8	2.38	1.60
166TPM-A-80	127	5	140	5.5	5.2	75	1270	50.0	3	1/8	2.80	1.88
166TPM-B-64	102	4	114	4.7	5.2	75	1016	40.0	5	3/16	3.60	2.42
166TPM-B-80	127	5	140	5.7	5.2	75	1270	50.0	5	3/16	4.35	2.92
166TPM-C-64	102	4	114	5.8	5.2	75	1016	40.0	6	1/4	4.81	3.23
166TPM-C-80	127	5	140	5.8	5.2	75	1270	50.0	6	1/4	5.66	3.80

Thorburn Series 167TPM™ Concrete Placement Hose

800 PSI High-Pressure Concrete Pumping & Placement Hose



Concrete placement

Thorburn Series 167TPM™ is designed for high-pressure pumping and placement of wet concrete, grout and cementitious materials, the 167TPM™ delivers dependable performance under the demanding pressure, abrasion and movement of active construction sites. Rated to 800 psi working pressure, its 6 mm (1/4") abrasion-resistant natural rubber blend tube provides a durable wear barrier against highly abrasive concrete mixes. Multiple layers of high-tensile textile reinforcement provide pressure strength while maintaining the flexibility required for placement and handling. The anti-static construction helps dissipate electrical buildup, while the rugged SBR/EPDM cover withstands abrasion, weathering and jobsite exposure. Its reinforced construction helps resist kinking and vibration for reliable concrete flow during continuous pumping operations.

Features

- 800 psi working pressure for demanding concrete pumping
- 6 mm abrasion-resistant tube provides extended wear life
- High-tensile textile reinforcement resists pressure, kinking and vibration
- Anti-static construction helps safely dissipate electrical buildup
- Rugged cover withstands abrasion, weathering and jobsite exposure

Applications

- High-pressure wet concrete pumping and placement
- Concrete pump discharge and placement lines
- Structural foundations, slabs and wall pours
- Bridge, tunnel and infrastructure concrete placement
- Grout and cementitious material pumping operations

Construction

Tube: Black, smooth, anti-static, abrasion-resistant natural rubber blend

Tube Thickness: 6 mm (1/4")

Reinforcement: Multiple layers of high-tensile textile cords

Cover: Black, anti-static, abrasion- and weather-resistant SBR/EPDM blend

Working Pressure: 800 psi (55 bar)

Operating Temperature: -30°C to 70°C (-22°F to 158°F)

Maximum Hose Length: Up to 30 m (100 ft)

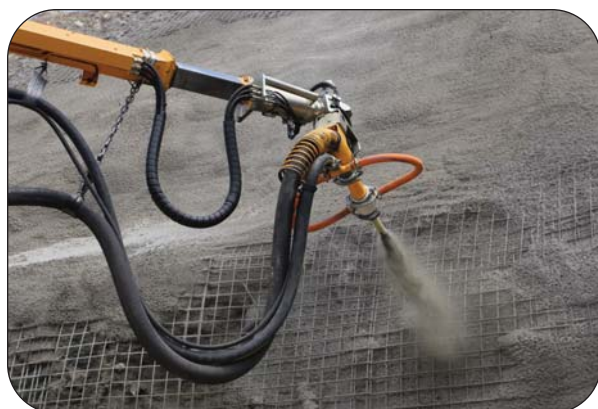
Safety Factor: 3:1

End Fittings: Concrete Couplings (Pages 65-67), Clamps (Pg 110-114)

Thorburn Part #	Nominal Hose I.D.		Nominal Hose O.D.		Design Pressure (20°C (68°F))		Minimum Bend Radius		Weight	
	mm	in	mm	in	bar	psi	mm	in	kg/m	lb/ft
167TPM-32	51	2	69	2.7	55	800	356	14.0	2.10	1.41
167TPM-48	76	3	97	3.8	55	800	406	16.0	3.57	2.40
167TPM-64	102	4	127	5.0	55	800	660	26.0	6.29	4.23

Thorburn Series 168TPM™ Concrete Placement Hose

1300 PSI Steel-Wire Reinforced Concrete Pumping Hose



Concrete placement

Thorburn Series 168TPM™: Is engineered for very high-pressure pumping and placement of wet concrete, grout and cementitious materials, the 168TPM™ delivers 1300 psi working pressure for the most demanding concrete applications. High-tensile spiral steel-wire reinforcement provides exceptional pressure strength, structural stability and kink resistance while maintaining dependable material flow during severe pumping cycles. Its smooth, anti-static natural rubber blend tube withstands the abrasive action of concrete while helping dissipate electrical buildup. A rugged anti-static rubber cover protects against abrasion, weathering and demanding jobsite conditions. Designed for concrete pumps, boom applications, high-rise construction and critical pours where maximum pressure capability, durability and dependable performance are required.

Features

- 1300 psi working pressure for severe concrete pumping
- Spiral steel-wire reinforcement delivers exceptional pressure strength
- Abrasion-resistant tube withstands aggressive wet concrete mixtures
- Reinforced construction resists kinking during demanding placement
- Anti-static construction helps safely dissipate electrical buildup

Applications

- Very high-pressure concrete pumping and placement
- Concrete pump and boom delivery lines
- High-rise concrete pumping and placement operations
- Long-distance concrete delivery and placement lines
- Shotcrete and specialty concrete pumping applications

Construction

Tube: Black, smooth, anti-static, abrasion-resistant natural rubber blend

Reinforcement: High-tensile spirally wound steel wire

Cover: Black, anti-static, abrasion- and weather-resistant natural rubber blend

Working Pressure: 1300 psi (90 bar)

Operating Temperature: -30°C to 85°C (-22°F to 185°F)

Maximum Hose Length: Up to 30 m (100 ft)

Safety Factor: 3:1

End Fittings: Concrete Couplings (Pages 65-67), Clamps (Pg 110-114)

Thorburn Part #	Nominal Hose I.D.		Nominal Hose O.D.		Design Pressure (20°C (68°F))		Minimum Bend Radius		Weight	
	mm	in	mm	in	bar	psi	mm	in	kg/m	lb/ft
168TPM-32	51	2	74	2.9	90	1300	406	16.0	2.90	1.95
168TPM-48	76	3	102	4.0	90	1300	610	24.0	5.40	3.63
167TPM-64	102	4	130	5.1	90	1300	813	32.0	7.90	5.31

Thorburn Series 169TPM™ Plaster Placement Hose

800 PSI Plaster, Grout & Gypsum Placement Hose



Plaster spray placement

Thorburn Series 169TPM™: Is purpose built for high-pressure spraying and placement of plaster, grout, gypsum and cementitious mixtures, the 169TPM™ combines 800 psi working pressure with the flexibility needed for controlled material delivery at the application point. Its smooth, abrasion-resistant NR/SBR tube promotes consistent flow while withstanding wear from sand-filled and abrasive mixtures. Multiple plies of high-tensile textile reinforcement provide pressure strength without sacrificing jobsite handling. An integrated static wire helps dissipate electrical buildup during material transfer, while the pin-pricked SBR/EPDM cover provides durable protection against abrasion and weathering. Ideal for plastering, grouting, rendering and spraying applications requiring reliable pressure, flexible handling and precise material placement.

Features

- 800 psi working pressure for high-pressure material placement
- Abrasion-resistant tube promotes smooth, consistent material flow
- Textile reinforcement combines pressure strength with flexible handling
- Integrated static wire helps safely dissipate electrical buildup
- Pin-pricked cover resists abrasion and demanding jobsite exposure

Applications

- High-pressure plaster spraying and wall finishing
- Grout pumping and precision placement operations
- Gypsum spraying for walls and ceilings
- Cementitious render and stucco spraying applications
- Sand-filled plaster and mortar placement

Construction

Tube: Black, smooth, abrasion-resistant NR/SBR rubber blend

Reinforcement: Multiple plies of high-tensile synthetic fabric with static wire

Cover: Black, pin-pricked, abrasion- and weather-resistant SBR/EPDM blend

Working Pressure: 800 psi (55 bar)

Operating Temperature: -40°C to 70°C (-40°F to 158°F)

Maximum Hose Length: Up to 30 m (100 ft)

Safety Factor: 3:1

End Fittings: Concrete Couplings (Pages 65-67), Clamps (Pg 110-114)

Thorburn Part #	Nominal Hose I.D.		Nominal Hose O.D.		Design Pressure (20°C (68°F))		Weight	
	mm	in	mm	in	bar	psi	kg/m	lb/ft
169TPM-16	25	1	43	1.7	55	800	1.56	1.05
169TPM-24	38	1 1/2	56	2.2	55	800	1.59	1.07
169TPM-32	51	2	71	2.8	55	800	2.13	1.43
169TPM-40	64	2 1/2	84	3.3	55	800	2.57	1.73

Thorburn Series 170TPM™ Guniting Hose

150 PSI Dry-Mix Guniting & Shotcrete Delivery Hose



Guniting spray placement

Thorburn Series 170TPM™: Is designed for high-velocity pneumatic delivery of dry sand and cement mixtures in Guniting and dry-process shotcrete applications, the 170TPM™ combines exceptional abrasion resistance with the flexibility required for controlled nozzle placement. Its 6 mm (1/4") pure gum rubber tube provides a thick wear barrier against the continuous impact of fast-moving abrasive materials. Multiple plies of high-tensile textile reinforcement provide dependable 150 psi working pressure while maintaining flexible handling around forms, slopes and confined areas. An integrated static wire helps dissipate electrical buildup during pneumatic transfer, while the pin-pricked SBR/EPDM cover withstands abrasion, weathering and demanding jobsite conditions for reliable, long-lasting service.

Features

- 6 mm pure gum tube maximizes abrasion resistance
- 150 psi working pressure for dry-mix guniting delivery
- Textile reinforcement combines strength with flexible nozzle handling
- Static wire helps safely dissipate electrical buildup
- Pin-pricked cover withstands abrasion and jobsite exposure

Applications

- Dry-process guniting spraying and placement
- Dry-mix shotcrete delivery to spray nozzles
- Tunnel lining and underground reinforcement
- Swimming pool shell construction and repair
- Slope stabilization and retaining wall construction

Construction

Tube: Tan, smooth, abrasion-resistant pure gum rubber

Tube Thickness: 6 mm (1/4")

Reinforcement: Multiple plies of high-tensile synthetic fabric with static wire

Cover: Tan, pin-pricked, abrasion- and weather-resistant SBR/EPDM blend

Working Pressure: 150 psi (10 bar)

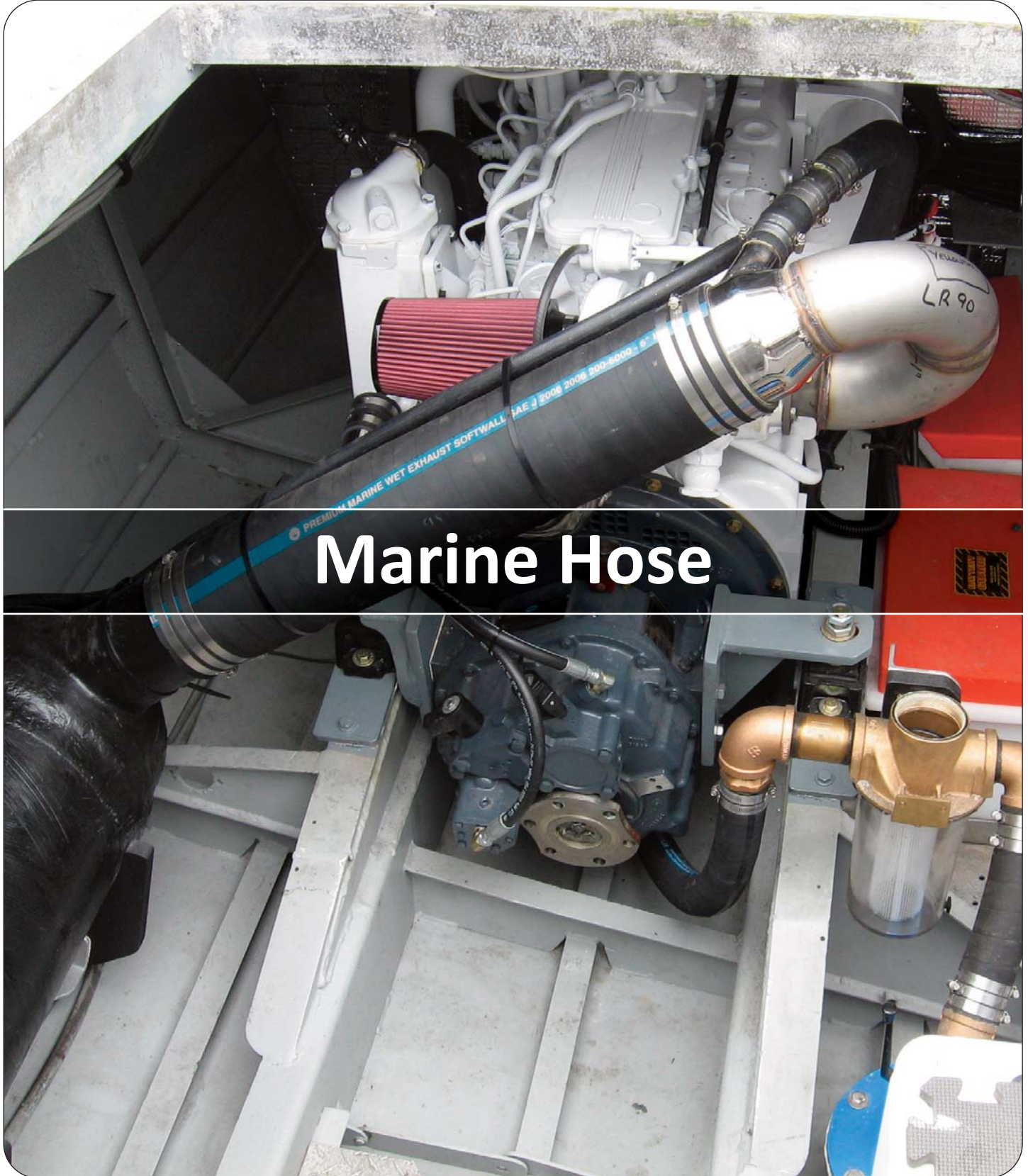
Operating Temperature: -40°C to 70°C (-40°F to 158°F)

Maximum Hose Length: Up to 30 m (100 ft)

Safety Factor: 3:1

End Fittings: Guniting Couplings (Page 67), Clamps (Pg 110-114)

Thorburn Part #	Nominal Hose I.D.		Nominal Hose O.D.		Design Pressure (20°C (68°F))		Minimum Bend Radius		Weight	
	mm	in	mm	in	bar	psi	mm	in	kg/m	lb/ft
170TPM-24	38	1 1/2	61	2.4	10	150	381	15.0	1.64	1.10
170TPM-26	41	1 5/8	64	2.5	10	150	419	16.5	2.08	1.40
170TPM-32	51	2	74	2.9	10	150	508	20.0	2.46	1.65
170TPM-40	64	2 1/2	99	3.9	10	150	635	25.0	3.42	2.30



Thorburn Series 138PMH™ PVC Marine Suction Hose

Premium Marine Plumbing Suction & Discharge Hose



Thorburn Series 138PMH™: Is ideal for dependable onboard plumbing, the 138PMH™ combines a smooth, white, odor-resistant PVC tube with rigid PVC helix reinforcement for reliable suction and discharge service. Its flexible corrugated construction routes easily through confined engine rooms, bilges and equipment spaces while resisting kinking and crushing that can restrict flow. The smooth bore promotes efficient transfer and helps simplify cleaning, while the white construction provides a clean, professional appearance for marine installations. Designed for bilge discharge, drains, live wells and general marine plumbing, the 138PMH™ withstands moisture, saltwater exposure and continuous vessel movement while providing durable, flexible performance in recreational and commercial marine service.

Features

- Odor-resistant white PVC provides clean marine plumbing installations
- Rigid PVC helix resists kinking, crushing and collapse
- Smooth bore promotes unrestricted flow and easier cleaning
- Corrugated construction provides flexibility in confined installation spaces
- Compatible with 1½-inch molded cuffs for secure connections

Applications

- Marine bilge pump suction and discharge
- Livewell and bait tank circulation systems
- Onboard drain and wastewater transfer lines
- Freshwater supply and general marine plumbing
- Marine sanitation and waste transfer systems

Construction

Tube: Smooth, white, odor-resistant PVC

Reinforcement: Rigid PVC helix

Cover: White, corrugated PVC

Operating Temperature: -20°C to 65°C (-4°F to 150°F)

Maximum Hose Length: Up to 30 m (100 ft)

Safety Factor: 3:1

Clamping: Spiral Clamps (Page 115)

Accessories: Banding Sleeves (Page 121), Banding Coils (Page 122)



Marine bilge discharge system

Thorburn Part #	Nominal Hose I.D.		Nominal Hose O.D.		Design Pressure (20°C (68°F))		Minimum Bend Radius		Vacuum (20°C (68°F))		Weight	
	mm	in	mm	in	bar	psi	mm	in	Hg (mm)	Hg (in)	kg/m	lb/ft
138PMH-16	25	1	31	1.2	3.1	45	25	1.0	Full	Full	0.22	0.15
138PMH-20	32	1 1/4	38	1.5	2.8	40	38	1.5	Full	Full	0.30	0.20
138PMH-24	38	1 1/2	46	1.8	2.8	40	51	2.0	Full	Full	0.37	0.25
138PMH-32	51	2	58	2.3	2.4	35	64	2.5	660	26	0.46	0.31

Note: For higher temperatures above 40°C, consult Thorburn for specific vacuum and pressure ratings.

Thorburn Series 57TPS™ Softwall Rubber Marine Hose

Flexible Softwall Marine Wet Exhaust Hose



Wet exhaust system with hardwall hose

Thorburn Series 57TPS™ (Softwall): Is designed specifically for water-cooled marine exhaust systems, the 57TPS™ combines heat-resistant rubber construction with the flexibility required for routing through confined engine compartments. Its reinforced softwall design handles hot exhaust gases, cooling water, vibration and pulsation while maintaining dependable flow during continuous engine operation. The durable rubber tube resists heat, moisture and engine effluents, while the rugged cover withstands saltwater, oil and demanding marine environments. Highly flexible construction simplifies installation around machinery and through restricted spaces. Designed for propulsion engines, generators and auxiliary equipment, the 57TPS™ provides dependable wet-exhaust discharge service for recreational, commercial and workboat applications.

Features

- Heat-resistant rubber withstands water-cooled marine exhaust service
- Softwall construction provides exceptional flexibility for confined routing
- Reinforced design withstands vibration, pulsation and exhaust pressure
- Rubber construction resists saltwater, oil and engine effluents
- Flexible design simplifies installation around marine engine equipment

Applications

- Inboard engine wet exhaust discharge systems
- Marine generator wet exhaust connections
- Auxiliary engine water-cooled exhaust lines
- Recreational boat and yacht exhaust systems
- Commercial vessel wet exhaust installations

Construction

Tube: Black EPDM Type H blend

Reinforcement: High tensile spirally wound nylon tire cord

Cover: Black abrasion and weather resistant EPDM Type H blend

Operating Temperature: -40°C to 121°C (-40°F to 250°F)

Maximum Hose Length: Up to 30m (100 ft)

Safety Factor: 3:1

Compliances: Meets SAE J2006 Type R1

End Fittings: Clamps (Pg 110-114)

Thorburn Part #	Nominal Hose I.D.		Nominal Hose O.D.		Design Pressure (20°C (68°F))		Weight	
	mm	in	mm	in	bar	psi	kg/m	lb/ft
57TPS-18	29	1 1/8	38	1.5	17.2	250	0.87	0.59
57TPS-20	32	1 1/4	43	1.7	17.2	250	1.01	0.68
57TPS-21	33	1 5/16	46	1.8	17.2	250	1.04	0.70
57TPS-22	35	1 3/8	46	1.8	17.2	250	1.15	0.77
57TPS-24	38	1 1/2	48	1.9	17.2	250	1.18	0.79
57TPS-26	41	1 5/8	53	2.1	17.2	250	1.26	0.85
57TPS-28	45	1 3/4	56	2.2	17.2	250	1.38	0.93
57TPS-30	48	1 7/8	58	2.3	17.2	250	1.50	1.01
57TPS-32	51	2	61	2.4	13.8	200	1.80	1.21
57TPS-34	54	2 1/8	69	2.7	13.8	200	1.86	1.25
57TPS-36	57	2 1/4	71	2.8	13.8	200	2.05	1.38
57TPS-38	60	2 3/8	74	2.9	13.8	200	2.31	1.55
57TPS-40	64	2 1/2	79	3.1	10.3	150	2.43	1.63
57TPS-42	67	2 5/8	81	3.2	10.3	150	2.49	1.67
57TPS-46	73	2 7/8	86	3.4	10.3	150	2.60	1.75
57TPS-48	76	3	91	3.6	8.6	125	2.72	1.83
57TPS-50	79	3 1/8	94	3.7	8.6	125	3.11	2.09
57TPS-56	89	3 1/2	104	4.1	8.6	125	3.59	2.41
57TPS-64	102	4	117	4.6	6.9	100	3.64	2.45
57TPS-66	105	4 1/8	119	4.7	6.9	100	3.87	2.60
57TPS-72	108	4 1/2	130	5.1	6.9	100	4.24	2.85
57TPS-80	127	5	142	5.6	6.9	100	4.48	3.01

Thorburn Series 57TPH™ Rubber Hardwall Marine Hose

Full-Vacuum Hardwall Marine Wet Exhaust Hose



Wet exhaust system with softwall hose

Thorburn Series 57TPH™ (Hardwall): Is engineered for water-cooled marine exhaust systems requiring full-vacuum capability and maximum structural support, the 57TPH™ combines heat-resistant rubber construction with an embedded steel-wire helix for demanding engine-room service. Its reinforced hardwall design resists collapse, kinking and crushing under full vacuum while handling hot exhaust gases, cooling water, vibration and pulsation. The wire helix maintains hose integrity through bends and demanding routing where additional support is essential. Durable rubber compounds resist saltwater, oil and engine effluents for extended service life. Designed for propulsion engines, generators and auxiliary equipment, the 57TPH™ delivers dependable wet-exhaust performance under pressure or full-vacuum operating conditions.

Features

- Full-vacuum rated for demanding marine exhaust service
- Steel-wire helix prevents collapse, kinking and crushing
- Hardwall construction provides exceptional structural stability
- Heat-resistant rubber withstands water-cooled exhaust conditions
- Resists saltwater, oil and demanding engine-room exposure

Thorburn Part #	Nominal Hose I.D.		Nominal Hose O.D.		Design Pressure (20°C (68°F))		Minimum Bend Radius		Weight	
	mm	in	mm	in	bar	psi	mm	in	kg/m	lb/ft
57TPH-08	13	1/2	20	0.8	5.2	75	64	2.5	0.36	0.24
57TPH-10	16	5/8	23	0.9	5.2	75	79	3.1	0.40	0.27
57TPH-12	19	3/4	28	1.1	5.2	75	97	3.8	0.43	0.29
57TPH-14	22	7/8	31	1.2	5.2	75	112	4.4	0.51	0.34
57TPH-16	25	1	33	1.3	5.2	75	127	5.0	0.55	0.37
57TPH-18	29	1 1/8	36	1.4	5.2	75	142	5.6	0.61	0.41
57TPH-20	32	1 1/4	38	1.5	5.2	75	160	6.3	0.71	0.48
57TPH-21	33	1 5/16	41	1.6	5.2	75	168	6.6	0.77	0.52
57TPH-22	35	1 3/8	43	1.7	5.2	75	175	6.9	0.80	0.54
57TPH-24	38	1 1/2	46	1.8	5.2	75	191	7.5	0.88	0.59
57TPH-26	41	1 5/8	48	1.9	5.2	75	206	8.1	0.92	0.62
57TPH-28	45	1 3/4	53	2.1	5.2	75	224	8.8	1.00	0.67
57TPH-30	48	1 7/8	56	2.2	5.2	75	239	9.4	1.04	0.70
57TPH-32	51	2	58	2.3	3.4	50	254	10.0	1.19	0.80
57TPH-34	54	2 1/8	61	2.4	3.4	50	269	10.6	1.31	0.88
57TPH-36	57	2 1/4	66	2.6	3.4	50	287	11.3	1.34	0.90
57TPH-38	60	2 3/8	69	2.7	3.4	50	302	11.9	1.37	0.92
57TPH-40	64	2 1/2	71	2.8	3.4	50	318	12.5	1.45	1.00
57TPH-42	67	2 5/8	74	2.9	3.4	50	333	13.1	1.56	1.05
57TPH-44	70	2 3/4	79	3.1	3.4	50	351	13.8	1.64	1.10
57TPH-46	73	2 7/8	81	3.2	3.4	50	366	14.4	1.68	1.13
57TPH-48	76	3	84	3.3	2.8	40	381	15.0	1.76	1.18
57TPH-50	79	3 1/8	86	3.4	2.8	40	396	15.6	1.96	1.32
57TPH-52	83	3 1/4	91	3.6	1.7	25	414	16.3	2.02	1.36
57TPH-56	89	3 1/2	97	3.8	1.7	25	445	17.5	2.14	1.44
57TPH-64	102	4	109	4.3	1.7	25	508	20.0	2.37	1.59
57TPH-72	114	4 1/2	122	4.8	1.7	25	572	22.5	2.75	1.85
57TPH-80	127	5	135	5.3	1.7	25	635	25.0	3.04	2.04
57TPH-96	152	6	160	6.3	1.7	25	762	30.0	3.51	2.36

Applications

- Full-vacuum marine wet exhaust systems
- Inboard propulsion engine wet exhaust lines
- Marine generator wet exhaust connections
- Auxiliary engine water-cooled exhaust systems
- Commercial vessel and workboat exhaust installations

Construction

Tube: Black EPDM Type H blend

Reinforcement: High tensile spirally wound nylon tire cord with an embedded steel wire helix

Cover: Black abrasion and weather resistant EPDM Type H blend

Operating Temperature: -40°C to 121°C (-40°F to 250°F)

Maximum Hose Length: Up to 30m (100 ft)

Safety Factor: 3:1

Compliances: Meets SAE J2006 Type R2

End Fittings: Clamps (Pg 110-114)



Sewer Cleaning Hose

Thorburn Series 47TSP™ Polyolefin Sewer Cleaning Hose

Up to 5,000 PSI Professional Sewer Jetting Hose



Sewer cleaning service

Thorburn Series 132TMH™: Is purpose built for professional high-pressure sewer and drain cleaning, the 47TSP™ delivers working pressures up to 5,000 psi in a lightweight, flexible construction designed for demanding jetting service. Its seamless polyolefin tube provides efficient water flow and excellent resistance to hydrolysis, while bonded high-tensile polyester reinforcement provides pressure strength with controlled volumetric expansion. A tough ether-based polyurethane cover delivers exceptional abrasion, cut and weather resistance as the hose travels through pipelines and across demanding surfaces. Flexible construction improves maneuverability through bends and restricted lines, while lengths up to 183 m (600 ft) provide extended reach for municipal, commercial and industrial sewer-cleaning equipment.

Features

- Up to 5,000 psi for professional sewer jetting
- Seamless polyolefin tube provides excellent hydrolysis resistance
- Bonded polyester reinforcement controls expansion under pressure
- Polyurethane cover resists abrasion, cuts and harsh environments
- Lightweight design improves maneuverability around bends.

Applications

- High-pressure municipal sewer cleaning and flushing
- Commercial drain and pipeline jetting
- Industrial wastewater line cleaning and maintenance
- Lateral line and restricted-pipe jetting
- Sewer blockage removal and debris flushing

Construction

Tube: Polyurethane (Sizes 1/4" - 1") | Polyolefin (Sizes 1 1/4" - 1 1/2")

Reinforcement: High-tensile polyester fiber braid bonded to inner tube

Cover: Perforated ether-based polyurethane bonded to reinforcement

Operating Temperature: -40°C to 93°C (-40°F to 200°F)

Maximum Hose Length: Up to 183 m (600 ft)

Safety Factor: 2.5:1

End Fittings: Crimp Couplings (Pages 55-59), Clamps (Pg 110-114)

Thorburn Part # (Cover Color)	Nominal Hose I.D.		Nominal Hose O.D.		Design Pressure (20°C (68°F))		Minimum Bend Radius		Weight	
	mm	in	mm	in	bar	psi	mm	in	kg/m	lb/ft
47TSP-04 (Red)	6	1/4	13	0.5	345	5000	64	2.5	0.07	0.05
47TSP-06 (Red)	10	3/8	18	0.7	345	5000	76	3.0	0.19	0.13
47TSP-08 (Red)	13	1/2	20	0.8	345	5000	102	4.0	0.19	0.13
47TSP-12 (Green)	19	3/4	33	1.3	276	4000	127	5.0	0.43	0.29
47TSP-16 (Green)	25	1	41	1.6	276	4000	203	8.0	0.61	0.41
47TSP-20 (Blue)	32	1 1/4	46	1.8	207	3000	254	10.0	0.88	0.59
47TSP-24 (Orange)	38	1 1/2	56	2.2	172	2500	381	15.0	1.40	0.94



Conduit Hose

Thorburn Series 70TMH™ Rubber Mining Conduit Hose

Flexible Non-Conductive Mining Cable Protection Conduit



Thorburn Series 70TMH™: Is manufactured to protect electrical and control cables in demanding mining environments, the 70TMH™ provides a flexible, non-conductive rubber barrier against abrasion, moisture, oil, weathering and everyday mechanical abuse. Its non-reinforced construction allows easy routing around mining equipment, conveyors and confined underground installations while maintaining an open I.D. for efficient cable pulling and replacement. Flame-resistant rubber construction provides added protection in hazardous mining environments, while the smooth bore simplifies installation over electrical and control cables. Available from 1/2" through 4" I.D., the 70TMH™ provides durable, flexible cable protection for underground mines, surface operations and mobile mining equipment.

Features

- Non-conductive rubber provides protective cable routing
- Flame-resistant construction supports demanding mining environments
- Non-reinforced design provides exceptional installation flexibility
- Open I.D. simplifies cable pulling and replacement
- Rubber construction resists abrasion, oil and weathering

Applications

- Underground mine electrical cable protection
- Mining equipment power and control cables
- Conveyor system electrical cable routing
- Mobile mining machinery cable protection
- Tunneling equipment electrical cable protection

Construction

Tube: Black, abrasion- and oil-resistant synthetic rubber

Reinforcement: Non-reinforced

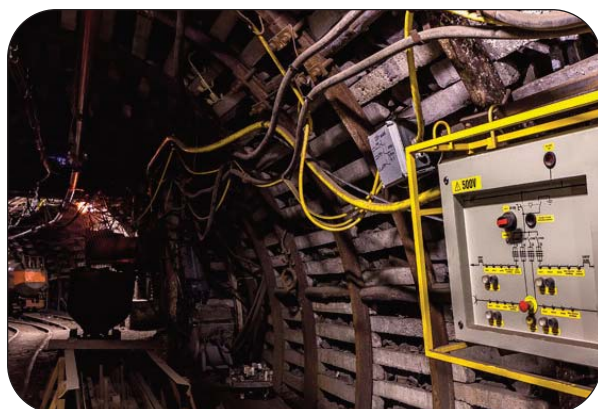
Cover: Black, abrasion and weather resistant synthetic rubber

Operating Temperature: -32°C to 93°C (-25°F to 200°F)

Maximum Hose Length: Up to 30 m (100 ft)

Compliances: Meets MSHA 2G - IC-34/3

End Fittings: Clamps (Pg 110-114)



Cables in mines

Thorburn Part #	Nominal Hose I.D.		Nominal Hose O.D.		Weight	
	mm	in	mm	in	kg/m	lb/ft
70TMH-08	13	1/2	23	0.9	0.48	0.32
70TMH-12	19	3/4	31	1.2	0.64	0.43
70TMH-16	25	1	36	1.4	0.80	0.54
70TMH-20	32	1 1/4	43	1.7	0.97	0.65
70TMH-24	38	1 1/2	48	1.9	1.13	0.76
70TMH-32	51	2	61	2.4	1.46	0.98
70TMH-40	64	2 1/2	74	2.9	1.80	1.21
70TMH-48	76	3	86	3.4	2.13	1.43
70TMH-56	89	3 1/2	99	3.9	2.23	1.50
70TMH-64	102	4	112	4.4	2.78	1.87

Thorburn Series 770TMH™ Rubber Mining Conduit Hose

Fabric-Reinforced Flexible Mining Cable Protection Conduit



Cable protection for mines

Thorburn Series 770TMH™: is constructed for electrical and control cables exposed to demanding mechanical abuse, the 770TMH™ combines flexible rubber construction with high-tensile fabric reinforcement for increased strength and durability. Its reinforced construction provides added resistance to crushing, dragging and impact while remaining flexible for routing around mining equipment, conveyors and confined underground installations. The abrasion- and oil-resistant rubber tube protects cables from harsh operating conditions, while the smooth, open I.D. simplifies cable pulling and replacement. A rugged weather-resistant cover withstands demanding mine environments. Available from 1/2" through 4" I.D., the 770TMH™ provides reinforced cable protection for underground, surface and mobile mining equipment.

Features

- Fabric reinforcement increases crush and mechanical damage resistance
- Flexible construction simplifies routing around mining equipment
- Open I.D. simplifies cable pulling and replacement
- Rubber construction resists abrasion, oil and impact
- Rugged cover withstands weathering and demanding mine environments

Applications

- Underground mine electrical cable protection
- Mobile mining equipment cable routing
- Conveyor and material-handling system cable protection
- Crusher and processing equipment electrical cables
- Tunneling machinery power and control cables

Construction

Tube: Black, abrasion- and oil-resistant synthetic rubber

Reinforcement: Single layer of high-tensile spirally wound fabric

Cover: Black, abrasion- and weather-resistant synthetic rubber

Operating Temperature: -32°C to 93°C (-25°F to 200°F)

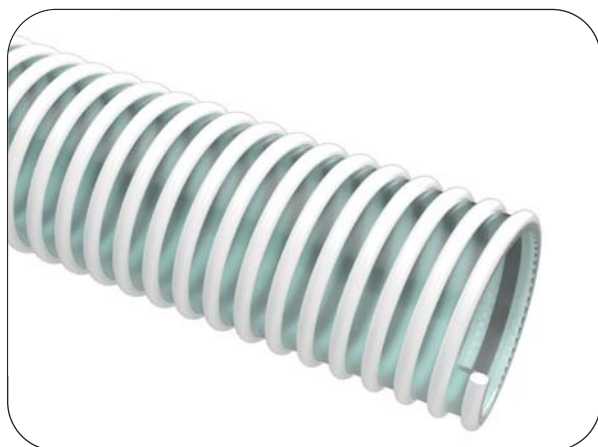
Maximum Hose Length: Up to 30 m (100 ft)

End Fittings: Clamps (Pg 110-114)

Thorburn Part #	Nominal Hose I.D.		Nominal Hose O.D.		Weight	
	mm	in	mm	in	kg/m	lb/ft
770TMH-08	13	1/2	23	0.9	0.48	0.32
770TMH-12	19	3/4	31	1.2	0.64	0.43
770TMH-16	25	1	36	1.4	0.80	0.54
770TMH-20	32	1 1/4	43	1.7	0.97	0.65
770TMH-24	38	1 1/2	48	1.9	1.13	0.76
770TMH-32	51	2	61	2.4	1.46	0.98
770TMH-40	64	2 1/2	74	2.9	1.80	1.21
770TMH-48	76	3	86	3.4	2.13	1.43
770TMH-56	89	3 1/2	99	3.9	2.23	1.50
770TMH-64	102	4	112	4.4	2.78	1.87

Thorburn Series 771PMH™ PVC Conduit Hose

Lightweight, Pre-Slit Cable Protector



Split Electrical Conduit

Thorburn Series 771PMH™: Is ideal for fast protection and organization of cables, hoses and bundled lines, the 771PMH™ combines lightweight PVC construction with a pre-slit design that allows installation without disconnecting existing equipment. The longitudinal opening simplifies insertion, removal and replacement of individual lines, reducing installation and maintenance time. A rigid PVC helix provides crush resistance and helps maintain the conduit's shape, while the corrugated construction remains flexible for routing around machinery and through confined spaces. Durable PVC protects bundled lines against abrasion, dirt, moisture and everyday mechanical wear. Available from 1/2" through 4" I.D. for mining, industrial equipment and mobile machinery installations.

Features

- Pre-slit design installs without disconnecting existing lines
- Lightweight PVC simplifies handling and equipment installation
- Rigid PVC helix provides crush and shape resistance
- Corrugated construction provides flexible routing around equipment
- Protects bundled lines from abrasion, dirt and moisture

Applications

- Mining equipment cable and hose protection
- Mobile machinery bundled line protection
- Hydraulic hose and electrical cable organization
- Industrial equipment cable and hose routing
- Retrofit protection for existing installed lines

Construction

Tube: PVC with rigid PVC helix

Configuration: Longitudinally pre-slit for line insertion

Cover: Corrugated PVC

Operating Temperature: -20°C to 65°C (-4°F to 150°F)

Maximum Hose Length: Up to 30 m (100 ft)

Clamping: Spiral Clamps (Page 115)

Thorburn Part #	Nominal Hose I.D.		Nominal Hose O.D.		Minimum Bend Radius		Weight	
	mm	in	mm	in			kg/m	lb/ft
771PMH-16	25	1	33	1.3	25	1.00	0.21	0.14
771PMH-20	32	1 1/4	38	1.5	32	1.25	0.27	0.18
771PMH-24	38	1 1/2	46	1.8	38	1.50	0.31	0.21
771PMH-32	51	2	58	2.3	51	2.00	0.42	0.28
771PMH-40	64	2 1/2	71	2.8	64	2.50	0.58	0.39
771PMH-48	76	3	86	3.4	76	3.00	0.67	0.45
771PMH-56	89	3 1/2	1.0	3.8	89	3.50	0.76	0.51
771PMH-64	102	4	112	4.4	102	4.00	0.95	0.64

Note: For higher temperatures above 40°C, consult Thorburn for specific vacuum and pressure ratings.

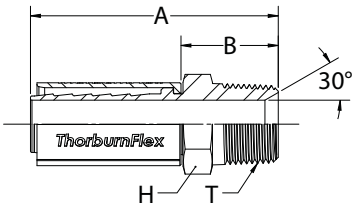
End Fittings



Thorburn Crimp End Fittings



Series MP | Male Pipe NPT Rigid

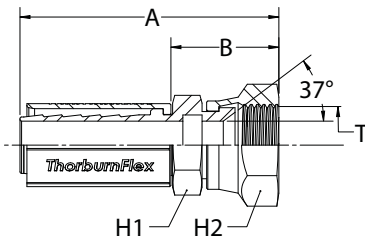


Part Number	Nominal Hose I.D.		Fitting Size		Thread Size	A		B - Cutoff Allowance		H Hex
	Inch	mm	Inch	mm		Inch	mm	Inch	mm	
TR40-12-12MP	3/4	20	3/4	20	3/4-14	3.22	82	1.51	38	1.13
TR40-16-16MP	1	25	1	25	1-11 1/2	3.69	94	1.98	50	1.38
TR40-20-20MP	1 1/4	30	1 1/4	30	1 1/4-11 1/2	4.39	112	2.09	53	1.75
TR40-24-24MP	1 1/2	40	1 1/2	40	1 1/2-11 1/2	4.82	122	2.18	55	2.00
TR40-32-32MP	2	50	2	50	2-11 1/2	5.86	149	2.33	59	2.50
TR40-48-48MP	3	80	3	80	3-8	6.50	165	3.40	86	3.50

Materials: 316 Stainless Steel. Material ordering codes are found on Page 124

Thorburn Crimp End Fittings

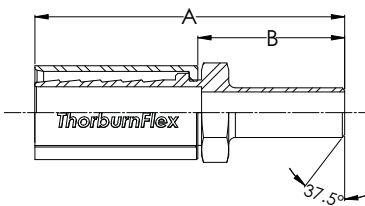
Series FJX | Female JIC 37° Swivel



Part Number	Nominal Hose I.D.		Fitting Size		Thread Size	A		B - Cutoff Allowance		H2 Hex	H1 Hex
	Inch	mm	Inch	mm		Inch	mm	Inch	mm	Inch	Inch
TR40-12-12FJX	3/4	20	3/4	20	1 1/16-12	3.39	86	1.68	43	1.00	1.25
TR40-16-16FJX	1	25	1	25	1 5/16-12	3.63	92	1.92	49	1.25	1.50
TR40-20-20FJX	1 1/4	30	1 1/4	30	1 5/8-12	4.58	116	2.28	58	2.00	2.00
TR40-24-24FJX	1 1/2	40	1 1/2	40	1 7/8-12	5.10	130	2.46	63	2.25	2.25
TR40-32-32FJX	2	50	2	50	2 1/2-12	6.45	164	2.92	74	2.50	2.88

Materials: 316 Stainless Steel. Material ordering codes are found on Page 124

Series BWT | Butt Weld Tube

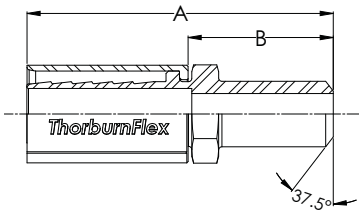


Part Number	Nominal Hose I.D.		Tube O.D.		A		B - Cutoff Allowance	
	Inch	mm	Inch	mm	Inch	mm	Inch	mm
TR40-12-12BWT	3/4	20	3/4	20	4.00	100	1.70	43
TR40-16-16BWT	1	25	1	25	4.25	108	1.70	43
TR40-24-24BWT	1 1/2	40	1 1/2	40	4.50	114	2.70	69
TR40-32-32BWT	2	50	2	50	5.00	127	3.50	89
TR40-48-48BWT	3	75	3	75	5.75	146	3.75	95
TR40-64-64BWT	4	100	4	100	6.00	152	4.00	100

Materials: 316 Stainless Steel. Material ordering codes are found on Page 124

Thorburn Crimp End Fittings

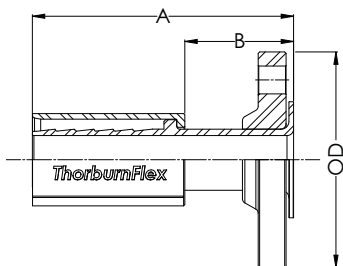
Series BWP | Butt Weld Pipe



Part Number	Nominal Hose I.D.		Pipe O.D.		A		B - Cutoff Allowance	
	Inch	mm	Inch	mm	Inch	mm	Inch	mm
TR40-12-12BWP	3/4	20	1.1	28	4.00	100	1.70	43
TR40-16-16BWP	1	25	1.3	33	4.25	108	1.70	43
TR40-24-24BWP	1 1/2	40	1.9	48	4.50	114	2.70	69
TR40-32-32BWP	2	50	2.4	61	5.00	127	3.50	89
TR40-48-48BWP	3	75	3.5	89	5.75	146	3.75	95
TR40-64-64BWP	4	100	4.5	114	6.00	152	4.00	100

Materials: 316 Stainless Steel. Material ordering codes are found on Page 124

Series LF | Swivel Flange 150 lbs

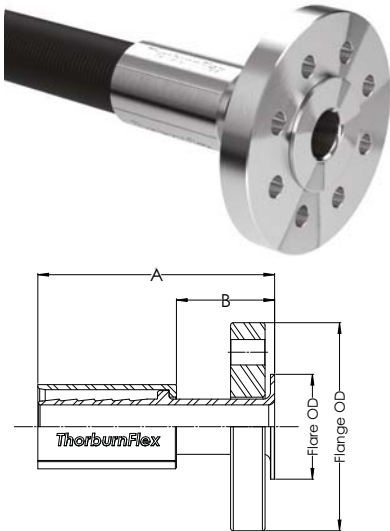


Part Number	Nominal Flange Size		A		B - Cutoff Allowance		Bolt Holes	Bolt Circle	Stub Flare O.D.		Flange O.D.	
	Inch	mm	Inch	mm	Inch	mm	#	Inch	Inch	mm	Inch	mm
TR40-12-12LF	3/4	20	3.1	79	1.50	38	4	2.75	1.69	42.9	2.75	70
TR40-16-16LF	1	25	3.4	86	1.65	42	4	2.13	2.00	50.8	3.13	79
TR40-20-20LF	1 1/4	30	3.9	99	1.68	43	4	3.50	2.50	63.5	4.63	118
TR40-24-24LF	1 1/2	40	4.0	102	1.85	47	4	3.98	2.87	73.0	5.00	127
TR40-32-32LF	2	50	5.7	145	2.70	69	4	4.75	3.63	92.1	6.00	152
TR40-48-48LF	3	75	6.0	152	2.90	74	4	6.00	5.00	127.0	7.50	191
TR40-64-64LF	4	100	7.0	178	3.50	89	8	7.50	6.19	157.2	9.00	229
TR40-96-96LF	6	150	9.0	229	4.00	102	8	9.50	8.50	215.9	11.0	279

Materials: 316 Stainless Steel. Material ordering codes are found on Page 124

Thorburn Crimp End Fittings

Series LFPN | Swivel Flange PN10/PN16

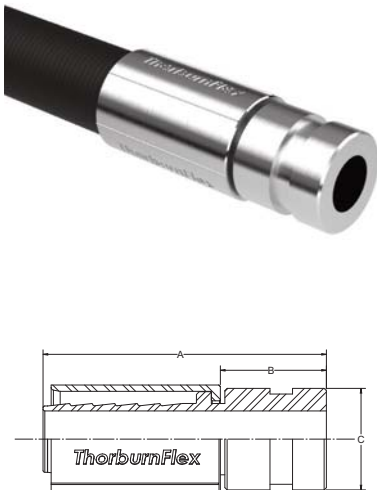


Part Number	Nominal Flange Size		A		B - Cutoff Allowance		Bolt Holes	Bolt Circle	Stub Flare O.D.		Flange O.D.	
	Inch	mm	Inch	mm	Inch	mm	#	Inch	Inch	mm	Inch	mm
TR40-12-12LFPN	3/4	20	3.1	79	1.50	38	4	2.95	2.28	58	4.13	105
TR40-16-16LFPN	1	25	3.4	86	1.65	42	4	3.35	2.68	68	4.53	115
TR40-20-20LFPN	1 1/4	30	3.9	99	1.68	43	4	3.94	3.07	78	5.51	140
TR40-24-24LFPN	1 1/2	40	4.0	102	1.85	47	4	4.33	3.46	88	5.91	150
TR40-32-32LFPN	2	50	5.7	145	2.70	69	4	4.92	4.02	102	6.50	165
TR40-48-48LFPN	3	75	6.0	152	2.90	74	8	6.30	5.43	138	7.87	200
TR40-64-64LFPN	4	100	7.0	178	3.50	89	8	7.09	6.22	158	8.66	220
TR40-96-96LFPN	6	150	9.0	229	4.00	102	8	9.45	8.35	212	11.22	285

Materials: 316 Stainless Steel. Material ordering codes are found on Page 124

Note: Other flange drillings available upon request (ANSI 300lbs, PN10, PN16, PN25).

Series VC | Victaulic Couplings

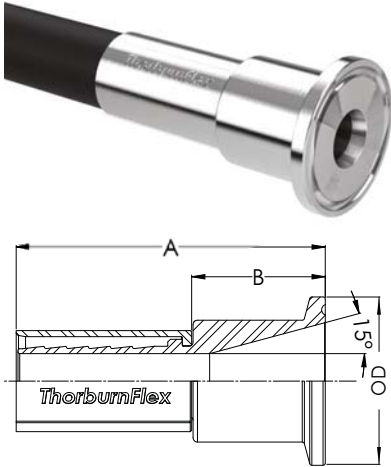


Part Number	Nominal Hose I.D.		Fitting Size		A		B - Cutoff Allowance		C O.D.	
	Inch	mm	Inch	mm	Inch	mm	Inch	mm	Inch	mm
TR40-12-12VC	3/4	20	3/4	20	4.75	121	3.00	75	1.26	32
TR40-16-16VC	1	25	1	25	5.25	133	3.50	89	1.63	41
TR40-24-24VC	1 1/2	40	1 1/2	40	6.75	171	4.00	100	2.14	54
TR40-32-32VC	2	50	2	50	8.03	204	4.50	114	2.64	67
TR40-48-48VC	3	75	3	75	8.75	222	5.25	133	3.70	94
TR40-64-64VC	4	100	4	100	9.00	229	5.50	140	4.71	120
TR40-96-96VC	6	150	6	150	11.00	279	6.7	170	7.09	180

Materials: 316 Stainless Steel. Material ordering codes are found on Page 124

Thorburn Crimp End Fittings

Series TC | Tri-Clamp Sanitary Flange



Part Number	Nominal Hose I.D.		Nominal Flange Size		A		B - Cutoff Allowance		Flange I.D.		Flange O.D.	
	Inch	mm	Inch	mm	Inch	mm	Inch	mm	Inch	mm	Inch	mm
TR40-08-08STC	1/2	12	1/2	12	2.3	58	1.25	32	0.88	22	1.98	50.5
TR40-12-12STC	3/4	20	3/4	20	2.3	58	1.25	32	0.88	22	1.98	50.5
TR40-16-16STC	1	25	1	25	2.3	58	1.25	32	0.88	22	1.98	50.5
TR40-24-24STC	1 1/2	40	1 1/2	40	2.5	64	1.25	32	1.39	35	1.98	50.5
TR40-32-32STC	2	50	2	50	2.6	66	1.25	32	1.87	47	2.52	64
TR40-48-48STC	3	75	3	75	2.9	74	1.25	32	2.87	73	3.58	91
TR40-64-64STC	4	100	4	100	3.5	89	1.25	32	3.83	97	4.68	119

Materials: 316 Stainless Steel. Material ordering codes are found on Page 124
Please see Sanitary Clamps (Pages 101 - 104)

Series TCDC | Tapered Tri-Clamp Dust Caps



Part Number	Nominal Hose I.D.	
	Inch	mm
TCDC-08-P-X	1/2	13
TCDC-12-P-X	3/4	19
TCDC-16-P-X	1	25
TCDC-24-P-X	1 1/2	38
TCDC-32-P-X	2	51
TCDC-48-P-X	3	76
TCDC-64-P-X	4	102

X = Colors - Red (R), Blue (B), Grey (G), Yellow (Y)

Protect sanitized pipelines and flow equipment from dust, insects, and contamination with snap-on style end dust caps. Made from durable polypropylene, they ensure system integrity while supporting color-coded facility programs to reduce cross-contamination and improve organization.

Sizes 1/2" and 3/4":

Colors: Red, Blue, Grey, Yellow

Chain: No Chain

Sizes 1", 1 1/2", 2", 3", 4":

Colors: Red, Blue, Grey, Yellow

Chain: Optional (add suffix "CH" at the end of the part number).

Thorburn Combination Hose Shank Couplings - Low Pressure



Thorburn combination hose shank couplings are designed for use on hose without enlargement of hose ends. Especially suitable for wire-woven hose to convey fuel or water fluids at low pressure by suction or discharge. Serrated shank attached to hose using positive sealing round wire clamps, single or double bolt clamps or flat bands. Not recommended for steam service. Not recommended for compressed air service for sizes 1 1/4" and above. **Other materials available upon request.**

Style 11IC | Male NPT



Note: Requires a clamp or ferrule to secure Thorburn Style 11IC fittings to a hose (See Pages 110 to 119)

Style 11IC			NPT End Materials			Hose ID		Thread
Plated Steel	316SS	Aluminum	Brass	Nylon	Poly propylene	in	mm	in
11IC12-CP	11IC12-S6	11IC12-AL	11IC12-BB	-	11IC12-PP	3/4	20	3/4-14
11IC16-CP	11IC16-S6	11IC16-AL	11IC16-BB	-	11IC16-PP	1	25	1-11 1/2
11IC20-CP	11IC20-S6	11IC20-AL	11IC20-BB	11IC20-NN	-	1 1/4	32	1 1/4-11 1/2
11IC24-CP	11IC24-S6	11IC24-AL	11IC24-BB	11IC24-NN	11IC24-PP	1 1/2	38	1 1/2-11 1/2
11IC32-CP	11IC32-S6	11IC32-AL	11IC32-BB	11IC32-NN	11IC32-PP	2	50	2-11 1/2
11IC40-CP	11IC40-S6	11IC40-AL	11IC40-BB	-	-	2 1/2	64	2-8
11IC48-CP	11IC48-S6	11IC48-AL	11IC48-BB	11IC48-NN	11IC48-PP	3	76	3-8
11IC64-CP	11IC64-S6	11IC64-AL	11IC64-BB	-	-	4	102	4-8
11IC80-CP	11IC80-S6	11IC80-AL	11IC80-BB	-	-	5	127	5-8
11IC96-CP	11IC96-S6	11IC96-AL	11IC96-BB	-	-	6	152	6-8
11IC128-CP	11IC128-S6	11IC128-AL	-	-	-	8	203	8-8
11IC160-CP	11IC160-S6	-	-	-	-	10	254	10-8
11IC192-CP	11IC192-S6	-	-	-	-	12	305	12-8

Style 11IFS | Stub End for Floating Flanges



USAGE

To put a floating flange on at least one end of a hose assembly so that torsional stress is relieved in the hose and for ease in connecting to another flanged outlet.

Style 11IFS		Hose ID	
Plated Steel	316SS	in	mm
11IFS12-CP	11IFS12-S6	3/4	20
11IFS16-CP	11IFS16-S6	1	25
11IFS20-CP	11IFS20-S6	1 1/4	32
11IFS24-CP	11IFS24-S6	1 1/2	38
11IFS32-CP	11IFS32-S6	2	50
11IFS40-CP	11IFS40-S6	2 1/2	64
11IFS48-CP	11IFS48-S6	3	76
11IFS64-CP	11IFS64-S6	4	102
11IFS80-CP	11IFS80-S6	5	127
11IFS96-CP	11IFS96-S6	6	152
11IFS128-CP	11IFS128-S6	8	203
11IFS160-CP	11IFS160-S6	10	254
11IFS192-CP	11IFS192-S6	12	305

Note: Requires a clamp or ferrule to secure Thorburn Style 11IFS fittings to a hose (Pages 110 to 119)

Thorburn Combination Hose Shank Couplings - Low Pressure

Style 11IV | Victaulic Grooved End



Note: Requires a clamp or ferrule to secure Thorburn Style 11IV fittings to a hose (See Pages 110 to 119)

Style 11IV		Hose ID	
Plated Steel	316SS	in	mm
11IV12-CP	11IV12-S6	3/4	19
11IV16-CP	11IV16-S6	1	25
11IV20-CP	11IV20-S6	1 1/4	32
11IV24-CP	11IV24-S6	1 1/2	38
11IV32-CP	11IV32-S6	2	51
11IV40-CP	11IV40-S6	2 1/2	64
11IV48-CP	11IV48-S6	3	76
11IV64-CP	11IV64-S6	4	102
11IV80-CP	11IV80-S6	5	127
11IV96-CP	11IV96-S6	6	152
11IV128-CP	11IV128-S6	8	203
11IV160-CP	11IV160-S6	10	254
11IV192-CP	11IV192-S6	12	305

Style 11IW | Welded End



Note: Requires a clamp or ferrule to secure Thorburn Style 11IW fittings to a hose (See Pages 110 to 119)

Style 11IW		Hose ID	
Carbon Steel	316SS	in	mm
11IW12-CS	11IW12-S6	3/4	19
11IW16-CS	11IW16-S6	1	25
11IW20-CS	11IW20-S6	1 1/4	32
11IW24-CS	11IW24-S6	1 1/2	38
11IW32-CS	11IW32-S6	2	51
11IW40-CS	11IW40-S6	2 1/2	64
11IW48-CS	11IW48-S6	3	76
11IW64-CS	11IW64-S6	4	102
11IW80-CS	11IW80-S6	5	127
11IW96-CS	11IW96-S6	6	152
11IW128-CS	11IW128-S6	8	203
11IW160-CS	11IW160-S6	10	254
11IW192-CS	11IW192-S6	12	305

Style 25I | Hose Mender



Note: Requires a clamp or ferrule to secure Thorburn Style 25I fittings to a hose (See Pages 110 to 119)

Style 25I			Hose ID	
Plated Steel	316SS	Nylon	in	mm
25I12-CP	25I12-S6	25I12-NN	3/4	19
25I16-CP	25I16-S6	25I16-NN	1	25
25I20-CP	25I20-S6	25I20-NN	1 1/4	32
25I24-CP	25I24-S6	25I24-NN	1 1/2	38
25I32-CP	25I32-S6	25I32-NN	2	51
25I40-CP	25I40-S6	25I40-NN	2 1/2	64
25I48-CP	25I48-S6	25I48-NN	3	76
25I64-CP	25I64-S6	25I64-NN	4	102
25I80-CP	25I80-S6	25I80-NN	5	127
25I96-CP	25I96-S6	25I96-NN	6	152
25I128-CP	25I128-S6	25I128-NN	8	203
25I160-CP	25I160-S6	25I160-NN	10	254
25I192-CP	25I192-S6	25I192-NN	12	305

Thorburn Shank Couplings For Water Discharge & Suction Services



Thorburn shank couplings are used for large diameter, low pressure, suction and discharge water hose. The couplings connect together with a threaded swivel nut and an rubber gasket that is included on the female side of the coupling. External clamps or crimped ferrules secure inside of the hose to the serrated shank. Thorburn male and female shank couplings are available in aluminium, brass and malleable iron. Pin lugs are used on all sizes of the female coupling half and 3 inches (76 mm) and above for the male coupling half making it easy to tighten by hand or with a spanner tool. The female pipe swivel has an NPSM (National Pipe Straight Mechanical) thread. The NPSM pipe swivel seats on a 30° seat and is visible down inside of the swivel nut. The swivel nut is permanently attached to the body and mates with the male pipe thread end that also has a 30° seat and together form a metal-to-metal seal. Thorburn shank couplings require a clamp or crimped ferrule to make a leak tight connection up to and including the burst pressure of the hose assembly.

Style 14I | Complete Set



Note: Requires a clamp or ferrule to secure Thorburn Style 14I fittings to a hose (See Pages 110 to 119)

Thorburn Part #			Hose ID		NPSM Thread Size
Aluminum Malleable Iron Swivel Nut	Brass	Plated Malleable Iron Swivel Nut	in	mm	in
14I16-AM	14I16-BB	14I16-MP	1	25	1 - 1 1/2
14I20-AM	14I20-BB	14I20-MP	1 1/4	32	1 1/4 - 1 1/2
14I24-AM	14I24-BB	14I24-MP	1 1/2	38	1 1/2 - 1 1/2
14I32-AM	14I32-BB	14I32-MP	2	51	2 - 1 1/2
14I40-AM	14I40-BB	14I40-MP	2 1/2	64	2 1/2 - 8
14I48-AM	14I48-BB	14I48-MP	3	76	3 - 8
14I64-AM	14I64-BB	14I64-MP	4	102	4 - 8
-	-	14I80-MP	5	127	5 - 8
14I96-AM	14I96-BB	14I96-MP	6	152	6 - 8

Thorburn Shank Couplings For Water Discharge & Suction Services

Style 15I | Female Half



Note: Requires a clamp or ferrule to secure Thorburn Style 15I fittings to a hose (See Pages 110 to 119)

Thorburn Part #			Hose ID		NPSM Thread Size
Aluminum Malleable Iron Swivel Nut	Brass	Plated Malleable Iron Swivel Nut	in	mm	in
15I16-AM	15I16-BB	15I16-MP	1	25	1 - 1 1/2
15I20-AM	15I20-BB	15I20-MP	1 1/4	32	1 1/4 - 1 1/2
15I24-AM	15I24-BB	15I24-MP	1 1/2	38	1 1/2 - 1 1/2
15I32-AM	15I32-BB	15I32-MP	2	51	2 - 1 1/2
15I40-AM	15I40-BB	15I40-MP	2 1/2	64	2 1/2 - 8
15I48-AM	15I48-BB	15I48-MP	3	76	3 - 8
15I64-AM	15I64-BB	15I64-MP	4	102	4 - 8
-	-	15I80-MP	5	127	5 - 8
15I96-AM	15I96-BB	15I96-MP	6	152	6 - 8

Style 16I | Male Half



Note: Requires a clamp or ferrule to secure Thorburn Style 16I fittings to a hose (See Pages 110 to 119)

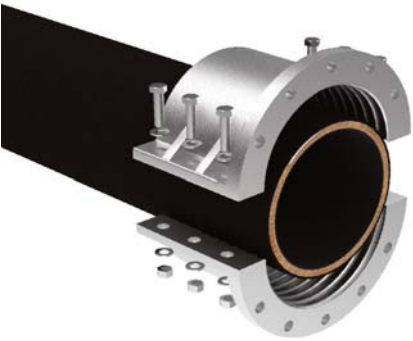
Thorburn Part #			Hose ID		NPSM Thread Size
Aluminum Malleable Iron Swivel Nut	Brass	Plated Malleable Iron Swivel Nut	in	mm	in
16I16-AM	16I16-BB	16I16-MP	1	25	1 - 1 1/2
16I20-AM	16I20-BB	16I20-MP	1 1/4	32	1 1/4 - 1 1/2
16I24-AM	16I24-BB	16I24-MP	1 1/2	38	1 1/2 - 1 1/2
16I32-AM	16I32-BB	16I32-MP	2	51	2 - 1 1/2
16I40-AM	16I40-BB	16I40-MP	2 1/2	64	2 1/2 - 8
16I48-AM	16I48-BB	16I48-MP	3	76	3 - 8
16I64-AM	16I64-BB	16I64-MP	4	102	4 - 8
-	-	16I80-MP	5	127	5 - 8
16I96-AM	16I96-BB	16I96-MP	6	152	6 - 8

Thorburn Hose Split Flange Couplings for Abrasive Material



Thorburn splitflange coupling system is engineered to deliver uncompromising strength, secure alignment, and long-lasting performance in the toughest material-handling environments. Designed with a two-piece, bolt-together construction, it allows fast installation and easy maintenance without removing existing lines. Crafted from rugged, wear-resistant metal, the coupling withstands severe abrasion from sand, gravel, cement, and other high-velocity particulates. Its precision-fit design ensures a tight, leak-free seal that enhances system efficiency and reduces costly downtime. Built for durability, reliability, and safety, this split flange coupling is the ideal choice for mining, construction, and heavy industrial applications moving highly abrasive media.

Style FAS150 | Smooth Cover Coupling



Thorburn Part #	Hose ID		Bolt Holes
	mm	in	#
FAS150-32	51	2	6
FAS150-40	64	2 1/2	6
FAS150-48	76	3	6
FAS150-64	102	4	6
FAS150-80	127	5	6
FAS150-96	152	6	6
FAS150-128	203	8	8
FAS150-160	254	10	12
FAS150-192	305	12	12

Available in Aluminum or Maleable Iron, complete with bolts, nuts and washers

Style FAC150 | Corrugated Cover Coupling



Thorburn Part #	Hose ID		Bolt Holes
	mm	in	#
FAC150-32	51	2	6
FAC150-40	64	2 1/2	6
FAC150-48	76	3	6
FAC150-64	102	4	6
FAC150-80	127	5	6
FAC150-96	152	6	6
FAC150-128	203	8	8
FAC150-160	254	10	12
FAC150-192	305	12	12

Available in Aluminum or Maleable Iron, complete with bolts, nuts and washers

Style FAG150 | Flange Gaskets



Thorburns FAG150 flange gaskets are available for situations where flanges are attached on-site and mating surfaces are not optimal. Its highly conformable material fills irregularities, scratches, and uneven surfaces to create a secure, leak-resistant seal without excessive bolt torque. Designed for quick, reliable sealing in remote or uncontrolled environments, it delivers dependable performance during repairs, retrofits, and field assembly.

Thorburn Hose Couplings for Concrete Placement Hose



Thorburn’s concrete placement hose crimp coupling is engineered for maximum strength and reliability in high-pressure concrete delivery systems. Precision-machined from heavy-duty steel, it delivers a secure, leak-free connection that withstands vibration, abrasion, and the demanding flow of concrete mixtures. Its crimped design ensures consistent compression and superior pull-off resistance, enhancing safety during pumping operations. Compatible with industry-standard concrete placement hoses, this coupling streamlines setup and reduces downtime on construction sites. Built for durability and peak performance, it provides contractors with a dependable, long-lasting solution for concrete pours in commercial, industrial, and infrastructure applications.

Style TSIO | One Piece Design Raised End California Type



Note: Requires a clamp or ferrule to secure Thorburn Style 15I fittings to a hose (See Pages 110 to 119)

Thorburn Part #	Hose ID	
	mm	in
TSIO-32	51	2
TSIO-40	64	2 1/2
TSIO-48	76	3
TSIO-64	102	4
TSIO-80	127	5

Thorburn Hose Couplings for Concrete Placement Hose

Style TSIH | Heavy Duty Raised End California Type



Note: Requires a clamp or ferrule to secure Thorburn Style 15I fittings to a hose
(See Pages 110 to 119)

Thorburn Part #	Hose ID	
	mm	in
TSIH-32	51	2
TSIH-40	64	2 1/2
TSIH-48	76	3
TSIH-64	102	4
TSIH-80	127	5

Style TSIV | Grooved Insert



Note: Requires a clamp or ferrule to secure Thorburn Style 15I fittings to a hose
(See Pages 110 to 119)

Thorburn Part #	Hose ID	
	mm	in
TSIV-32	51	2
TSIV-40	64	2 1/2
TSIV-48	76	3
TSIV-64	102	4
TSIV-80	127	5

Style TSIM | Male NPT Insert



Note: Requires a clamp or ferrule to secure Thorburn Style 15I fittings to a hose
(See Pages 110 to 119)

Thorburn Part #	Hose ID	
	mm	in
TSIM-32	51	2
TSIM-40	64	2 1/2
TSIM-48	76	3
TSIM-64	102	4
TSIM-80	127	5

Thorburn Hose Couplings for Concrete Placement Hose

Style TSICF | Concrete Coupling Clamps Fixed Tension



Thorburn Part #	Hose ID	
	mm	in
TSICF-32	51	2
TSICF-40	64	2 1/2
TSICF-48	76	3
TSICF-64	102	4
TSICF-80	127	5

Style TSICA | Concrete Coupling Clamps Adjustable Tension



Thorburn Part #	Hose ID	
	mm	in
TSICA-32	51	2
TSICA-40	64	2 1/2
TSICA-48	76	3
TSICA-64	102	4
TSICA-80	127	5

Thorburn Hose Couplings for Guniting Shotcrete Hose

Style TSGN | Complete Set



Thorburn Part #	Hose ID	
	mm	in
TSGN-24	38	1 1/2
TSGN-26	41	1 5/8
TSGN-32	51	2
TSGN-40	64	2 1/2

Thorburn Sandblast Hose Couplings



Thorburn’s sandblasting hose couplings are engineered to deliver secure, high-performance connections in demanding abrasive blasting environments. Built from tough, wear-resistant metal or reinforced nylon, they maintain a tight, reliable seal under high-pressure air-flow and continuous exposure to grit, sand, and blasting media. Their quick-locking design ensures fast installation and dependable hose retention, reducing downtime and maximizing productivity on the job site. Precision-machined ends provide smooth airflow and minimize turbulence for consistent blasting performance. Designed for durability, safety, and ease of use, these couplings are the trusted choice for contractors, fabrication shops, and industrial blasting operations seeking long-lasting reliability.

Style TSBN | Sandblast Nozzle Holder



Thorburn Part #	Hose ID	
	mm	in
TSBN-08	13	1/2
TSBN-12	19	3/4
TSBN-16	25	1
TSBN-20	32	1 1/4
TSBN-24	38	1 1/2
TSBN-32	51	2
TSBN-40	64	2 1/2
TSBN-48	76	3

Available in Aluminum or Brass

Thorburn Sandblast Hose Couplings

Style TSBQ | Sandblast Coupling



Thorburn Part #	Hose ID	
	mm	in
TSBQ-08	13	1/2
TSBQ-12	19	3/4
TSBQ-16	25	1
TSBQ-20	32	1 1/4
TSBQ-24	38	1 1/2
TSBQ-32	51	2
TSBQ-40	64	2 1/2
TSBQ-48	76	3

Available in Aluminum, Brass or Plated Iron

Style TSBFA | Female NPT Adapter



Thorburn Part #	Hose ID	
	mm	in
TSBFA-08	13	1/2
TSBFA-12	19	3/4
TSBFA-16	25	1
TSBFA-20	32	1 1/4
TSBFA-24	38	1 1/2
TSBFA-32	51	2
TSBFA-40	64	2 1/2
TSBFA-48	76	3

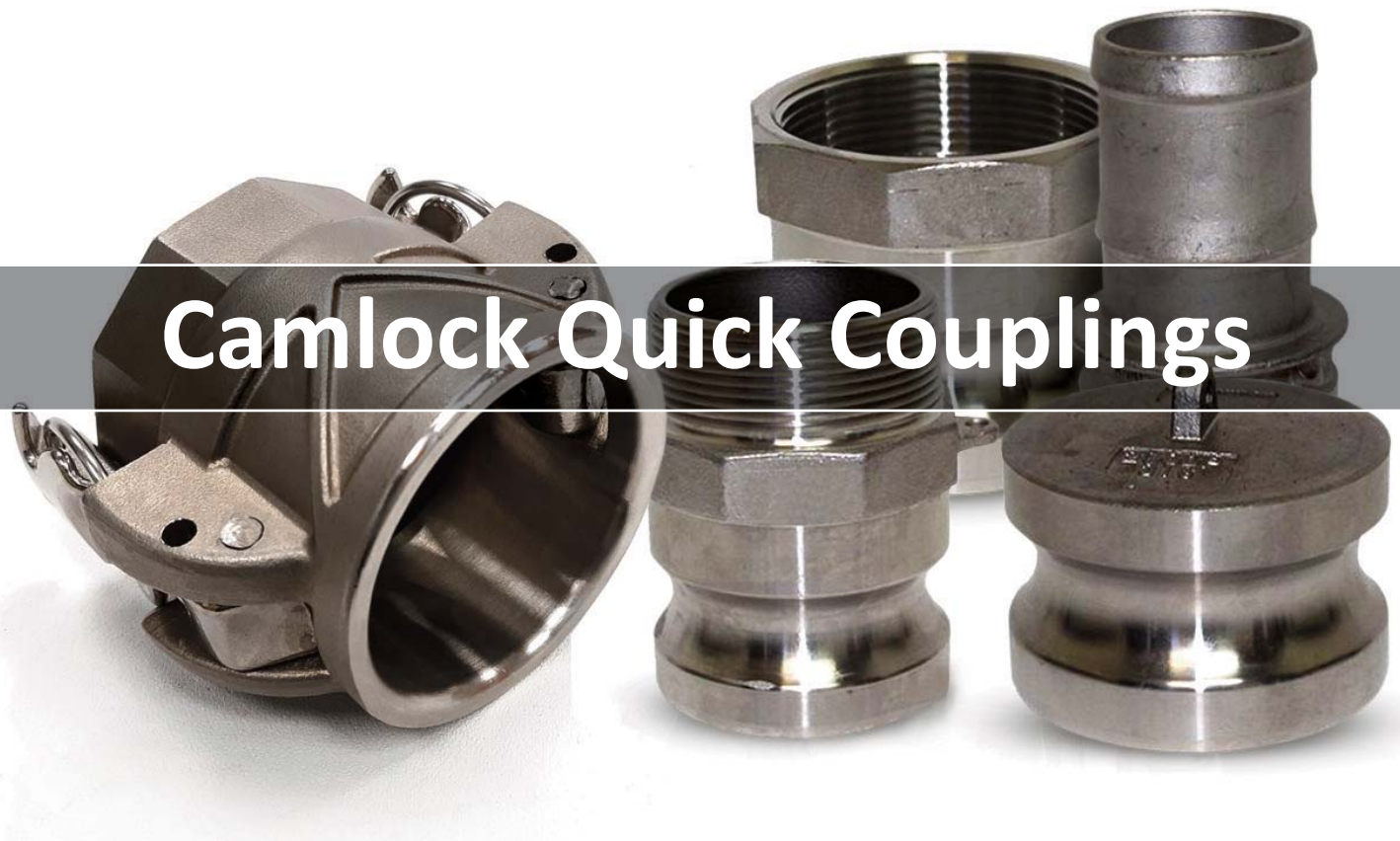
Available in Aluminum, Brass or Plated Iron

Style TSBG | O-Ring Gasket



Sandblast coupling replacement o-ring gaskets.
One size fits all - Sold in bags of 50

Camlock Quick Couplings

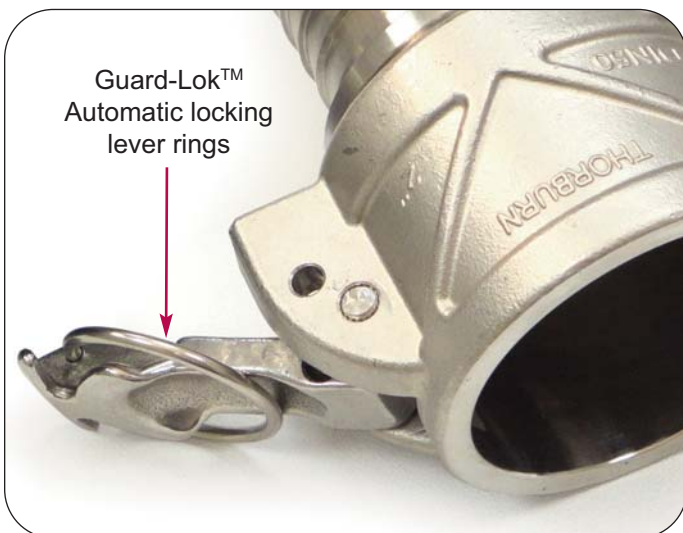


Thorburn Series 733-HD - High Pressure Camlock Couplings



Thorburn Series 733-HD camlock couplings are connected by opening the four coupler levers and inserting the male adapter into the coupler. Closing the four coupler levers by hand produces a uniform gasket compression without special tools. This feature provides for quick connection & disconnection of hose assemblies from pumps, tanks and other equipment. Thorburn Series 733-HD high pressure four lever camlock coupling system is designed for applications which require higher working pressures than Thorburn's 2 lever camlock coupling system. All 733 style couplings are supplied with Thorburn's Guard-Lok™ locking feature (standard). Conforms to DIN 2828 and A-A-59326 (MIL-C-27487) specifications to ensure interchangeability.

Thorburn's Guard-Lok™ Technology



Thorburn's Guard-Lok™ Technology

Prevents Accidental Opening During Operation

Thorburn's Camlock high pressure coupling series have a mechanism built into the levers which prevent accidental disconnection during operation. The coupling levers lock automatically into the coupler body, in the closed position and stay locked until opened manually. Ideal for applications where vibration is present, hose assemblies are dragged or the coupling could be accidentally opened resulting in disastrous spillage.

Guard-Lok™ Advantages

- Locks shut with one smooth motion
- Levers automatically lock to the body when closed
- Prevents accidental disconnection and loss of fluids during operation
- Effortless operation and simple to unlock
- Simple streamlined design does not require loose parts, clips or springs

Thorburn Camlock Gaskets



Thorburn's Camlock Gaskets fit in the grooves of the female camlock or cam and groove couplings. The pressure of the fitting pushes against the gasket to create a tight seal. Our gaskets are designed to provide a touch seal and can be used safely within the food, petrochemical, and pharmaceutical industries. With an elastomer core and FEP/PFA exterior, the seals are perfect for chemical resistance. Thorburn's encapsulated gaskets have a non-stick finish, allowing for easier insertion and leak-free service. Thorburn Standard gasket material is Buna Nitrile, EPDM, PTFE, FKM and PTFE FKM.

Features

- All wetted parts PTFE
- Suitable for most brands of Camlocks
- Easy to replace
- Various materials available
(refer to chemical resistance charts, Page 139)

Buna Nitrile Type Gaskets

Part Number	Size		Material (Standard)	Minimum Temperature		Maximum Temperature	
	in	mm		°F	°C	°F	°C
12TCFG-D	3/4	19	Nitrile Buna	-40	-40	93	34
16TCFG-D	1	25	Nitrile Buna	-40	-40	93	34
20TCFG-D	1 1/4	32	Nitrile Buna	-40	-40	93	34
24TCFG-D	1 1/2	38	Nitrile Buna	-40	-40	93	34
32TCFG-D	2	51	Nitrile Buna	-40	-40	93	34
40TCFG-D	2 1/2	64	Nitrile Buna	-40	-40	93	34
48TCFG-D	3	76	Nitrile Buna	-40	-40	93	34
64TCFG-D	4	102	Nitrile Buna	-40	-40	93	34
80TCFG-D	5	127	Nitrile Buna	-40	-40	93	34
96TCFG-D	6	152	Nitrile Buna	-40	-40	93	34

EPDM Type Gaskets

Part Number	Size		Material	Minimum Temperature		Maximum Temperature	
	in	mm		°F	°C	°F	°C
12TCFG-H	3/4	19	EPDM	-30	-34	149	65
16TCFG-H	1	25	EPDM	-30	-34	149	65
20TCFG-H	1 1/4	32	EPDM	-30	-34	149	65
24TCFG-H	1 1/2	38	EPDM	-30	-34	149	65
32TCFG-H	2	51	EPDM	-30	-34	149	65
40TCFG-H	2 1/2	64	EPDM	-30	-34	149	65
48TCFG-H	3	76	EPDM	-30	-34	149	65
64TCFG-H	4	102	EPDM	-30	-34	149	65
96TCFG-H	6	152	EPDM	-30	-34	149	65

FKM Type Gaskets

Part Number	Size		Material	Minimum Temperature		Maximum Temperature	
	in	mm		°F	°C	°F	°C
12TCFG-I	3/4	19	FKM	-40	-40	200	93
16TCFG-I	1	25	FKM	-40	-40	200	93
20TCFG-I	1 1/4	32	FKM	-40	-40	200	93
24TCFG-I	1 1/2	38	FKM	-40	-40	200	93
32TCFG-I	2	51	FKM	-40	-40	200	93
40TCFG-I	2 1/2	64	FKM	-40	-40	200	93
48TCFG-I	3	76	FKM	-40	-40	200	93
64TCFG-I	4	102	FKM	-40	-40	200	93
96TCFG-I	6	152	FKM	-40	-40	200	93

PTFE Envelope Type Gaskets

Part Number	Size		Material	Minimum Temperature		Maximum Temperature	
	in	mm		°F	°C	°F	°C
12TCFG-JD	3/4	19	PTFE Env.	-40	-40	93	34
16TCFG-JD	1	25	PTFE Env.	-40	-40	93	34
20TCFG-JD	1 1/4	32	PTFE Env.	-40	-40	93	34
24TCFG-JD	1 1/2	38	PTFE Env.	-40	-40	93	34
32TCFG-JD	2	51	PTFE Env.	-40	-40	93	34
40TCFG-JD	2 1/2	64	PTFE Env.	-40	-40	93	34
48TCFG-JD	3	76	PTFE Env.	-40	-40	93	34
64TCFG-JD	4	102	PTFE Env.	-40	-40	93	34
96TCFG-JD	6	152	PTFE Env.	-40	-40	93	34

PTFE-FKM Envelope Type Gaskets

Part Number	Size		Material	Minimum Temperature		Maximum Temperature	
	in	mm		°F	°C	°F	°C
12TCFG-JI	3/4	19	PTFE/FKM Env.	-40	-40	200	93
16TCFG-JI	1	25	PTFE/FKM Env.	-40	-40	200	93
20TCFG-JI	1 1/4	32	PTFE/FKM Env.	-40	-40	200	93
24TCFG-JI	1 1/2	38	PTFE/FKM Env.	-40	-40	200	93
32TCFG-JI	2	51	PTFE/FKM Env.	-40	-40	200	93
40TCFG-JI	2 1/2	64	PTFE/FKM Env.	-40	-40	200	93
48TCFG-JI	3	76	PTFE/FKM Env.	-40	-40	200	93
64TCFG-JI	4	102	PTFE/FKM Env.	-40	-40	200	93
96TCFG-JI	6	152	PTFE/FKM Env.	-40	-40	200	93

Thorburn Camlock Quick Couplings

What is a Thorburn Camlock Quick Coupling?

A Thorburn camlock coupling, also called a cam and groove coupling, is used to connect two hoses and / or pipes together in a variety of industries, so that a commodity from one can be transferred to the other. They're easy to use, requiring no tools to connect and disconnect the two halves of the couplings and they replace the traditional time-consuming methods of some other types of hose or pipe connections. This, together with their cost effectiveness makes them the most popular coupling in the world.

Typically, Thorburn camlocks are used in every industry, such as manufacturing, agriculture, oil, gas, chemical, pharmaceutical and within military applications. They are an extremely versatile product, and because there are no threads when connecting the coupling halves together, there are no issues with them becoming damaged or dirty. Therefore, Thorburn camlock couplings are very suitable for dirty environments. The system is especially well suited to a situation where frequent changes of hoses are required, such as for petroleum, and industrial chemical trucks.

How does a Thorburn camlock quick coupling work?

The assembly consists of a male groove adapter and a female coupler. To connect and disconnect:

1. Extend the handles on the coupler outwards and place the correct size male adapter into the female coupler.
2. Close both handles at the same time until the two halves are firmly fixed together.
3. Closing both handles at the same time ensures that the grooved adapter is pulled down consistently onto the seal making a leak proof assembly for the safe transfer of liquids
4. Reverse the process to disconnect the fitting first making sure that the hose assembly has been de-pressurized.

How to measure the dimension of camlocks?

Measuring a metallic camlock fitting is reasonably easy. For instance, if the hose tail, male or female thread is 2", then the camlock coupling would be known as a 2" (DN50) camlock coupling.

Polypropylene is slightly different. There is no international standard and different manufacturers have different head sizes. For Thorburn's ½" size, the body is actually ¾" but it's the thread (or hose tail) that is ½". There are also some anomalies in the 1 ¼" sized systems.

With Thorburn most cam couplings, measure the Outside Diameter (OD) of the adapter head or the Inside Diameter (ID) of the coupler. This will identify the fitting size, as depicted in the images below.

To what standard are camlocks manufactured?

The standard for cam & groove couplings is based on the US military specification Mil-C-27487 now superseded by A-A-59326D. The original specification was replaced by the new standard, but still guaranteed the interchangeability of couplings designed to the same specification. The Mil-C-27487 specified the casting methods, materials, dimensions, tolerances, pressure ratings, and inspection procedures.

European standard

The European standard EN 14420-7 was approved by CEN in September 2004 and was applied to cam and groove couplings manufactured to the American military standard, as outlined above. This American standard does not apply to the hose connection side, but only to the coupling side.

Camlock fittings produced to EN 14420-7 are interchangeable with those produced to the original MIL-C-27487 standard, but differ in terms of hose tail design, thread, and part number. A flat thread seal has been added to the female threaded parts and a smooth hose shank complying with EN 14420-7/DIN 2828 has been added for assembly with safety clamps complying with EN 14420-3/DIN 2817.

Are camlocks interchangeable?

Between manufacturers, cam and groove couplings are interchangeable with the exception of ½" (12.5mm), 5" and 8". The A-A-59326A Mil Specification does not apply to 5" and 8" cam and groove couplings due to the presence of two versions of cam and groove couplings in today's market.



Measuring ID of coupler



Measuring OD of adapter

How do I choose the right camlock coupling?

When specifying a fitting, there are seven fields of information required. The acronym for this is STAMPED, which stands for:

- S** = Size
- T** = Temperature
- A** = Application
- M** = Material (or media being used)
- P** = Pressure rating required
- E** = End fittings & connections (thread type)
- D** = Delivery (any extras, such as material certs)

Thorburn Series 733-HD - High Pressure Camlock Couplings

Design Specifications

Materials: Stainless Steel (SA351 CF8M/SA479 T316) - Carbon Steel and Brass (Available upon request)

Pressure: 1/2" ID to 1 1/4" ID - 400 psi (28 bar), 1 1/2" ID to 2 1/2" ID - 300 psi (21 bar), 3" ID - 275 psi (19 bar), 4" & 6" ID - 250 psi (17 bar) - 4:1 safety factor

Gasket: Buna-N (Standard). Also available in EPDM, FKM & PTFE Encapsulated Rubber (ER)

Temperature: Buna-N, EPDM 121°C (250°F), FKM, PTFE (ER) 99°C (210°F)

Warning: Thorburn's Camlock Couplings are designed for liquid transfer only (not to be used for air, gas or steam transfer systems)

733C-HD



Hose Shank to Female Coupler

733D-HD



Female NPT to Female Coupler

633A-HD



Female NPT to Male Adapter

633ASW-HD



Socket Weld to Male Adapter

633FBW-HD



Butt Weld to Male Adapter

Thorburn Camlock Part #					Hose ID	
Female Shank to Female Coupler	Female NPT to Female Coupler	Female NPT to Male Adapter	Socket Weld to Male Adapter	Butt Weld to Male Adapter	in	mm
733C-HD12-S6*	733D-HD12-S6	633A-HD12-S6	633ASW-HD12-S6	633FBW-HD12-S6	3/4	20
733C-HD16-S6*	733D-HD16-S6	633A-HD16-S6	633ASW-HD16-S6	633FBW-HD16-S6	1	25
733C-HD20-S6*	733D-HD20-S6	633A-HD20-S6	663ASW-HD20-S6	633FBW-HD20-S6	1 1/4	32
733C-HD24-S6*	733D-HD24-S6	633A-HD24-S6	633ASW-HD24-S6	633FBW-HD24-S6	1 1/2	38
733C-HD32-S6*	733D-HD32-S6	633A-HD32-S6	633ASW-HD32-S6	633FBW-HD32-S6	2	50
733C-HD40-S6*	733D-HD40-S6	633A-HD40-S6	633ASW-HD40-S6	633FBW-HD40-S6	2 1/2	64
733C-HD48-S6*	733D-HD48-S6	633A-HD48-S6	633ASW-HD48-S6	633FBW-HD48-S6	3	76
733C-HD64-S6*	733D-HD64-S6	633A-HD64-S6	633ASW-HD64-S6	633FBW-HD64-S6	4	102
733C-HD96-S6*	733D-HD96-S6	633A-HD96-S6	633ASW-HD96-S6	633FBW-HD96-S6	6	152

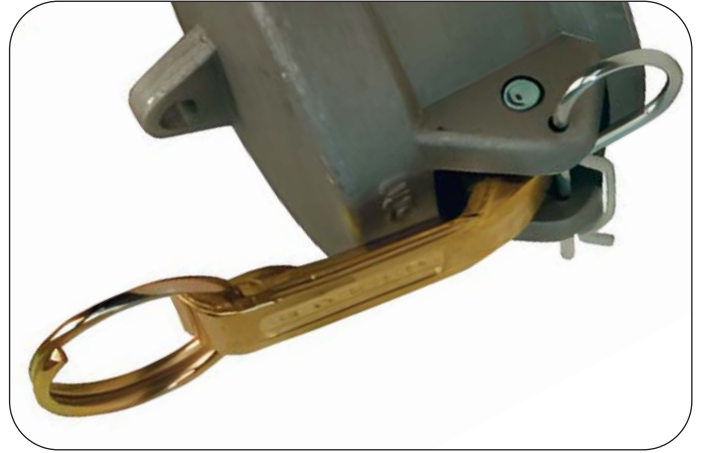
*Note: Requires a clamp or ferrule to secure Thorburn Style 733-HD fittings to a hose (See Pages 110 to 119)

Thorburn Camlock Quick Couplings



Thorburn Style 733 with Guard-Lok™

Thorburn's Camlock high pressure coupling series 733 have a mechanism built into the levers to prevent accidental disconnection during operation.



Thorburn Style 633 with Cotter Pin

Thorburn's Camlock series 633 couplings use a cotter pin in the levers to prevent accidental disconnection during operation.

Design Specifications

Materials: Stainless Steel (SA351 CF8M/SA479 T316) - Carbon Steel (Available upon request)

Pressure: 3" ID - 275 psi (19 bar), 4" & 6" ID - 250 psi (17 bar) 4 to 1 safety factor

Gasket: Buna-N (Standard). Also available in EPDM, FKM & PTFE Encapsulated Rubber (ER)

Temperature: Buna-N, EPDM 121°C (250°F), FKM, PTFE (ER) 99°C (210°F)

Warning: Thorburn's Camlock Couplings are designed for liquid transfer only (not to be used for air, gas or steam transfer systems)



Female Camlock Coupler Hose End 733C-HD/633C

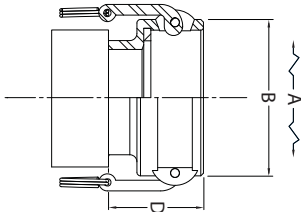
(Use prefix "N" only for ASME Code Applications)

Material: SA351 CF8M/SA479 T316 | Code: XX = S6 (316SS)

Pressure 733C-HD: 1/2" ID to 1 1/4" ID - 400 psi (28 bar), 1 1/2" ID to 2 1/2" ID - 300 psi (21 bar), 3" ID - 275 psi (19 bar), 4" & 6" ID - 250 psi (17 bar) - 4:1 safety factor **Pressure 633C:** 150 psi (2.5" ID or less), 75 psi (3" - 6" ID)

Gasket Material: Buna-N (Standard) Options: EPDM, FKM & PTFE Encapsulated Rubber (ER)

Temperature: Buna-N, EPDM (250°F), FKM, PTFE (ER) (210°F)



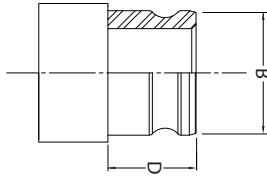
Part Number	Adapter/Coupler Size		Hose Shank Size		(A) O.D. Extended Cam Arms		(B) Outside Diameter		(D) Exposed Length	
	in	mm	in	mm	in	mm	in	mm	in	mm
(N)733C-HD(633C)-XX-Y-12	0.75	20	0.75	20	4.51	115	2.11	54	2.40	61
(N)733C-HD(633C)-XX-Y-16	1.0	25	1.0	25	5.10	130	2.44	62	2.80	71
(N)733C-HD(633C)-XX-Y-20	1.25	32	1.25	32	6.86	174	3.26	83	3.14	80
(N)733C-HD(633C)-XX-Y-24	1.5	38	1.5	38	7.16	182	3.56	90	3.35	85
(N)733C-HD(633C)-XX-Y-32	2.0	50	2.0	50	7.54	192	3.94	100	3.75	95
(N)733C-HD(633C)-XX-Y-40	2.5	64	2.5	64	8.03	204	4.43	113	4.00	102
(N)733C-HD(633C)-XX-Y-48	3.0	76	3.0	76	9.56	243	5.46	139	4.30	109
(N)733C-HD(633C)-XX-Y-64	4.0	102	4.0	102	10.56	271	6.56	167	4.50	114
(N)733C-HD(633C)-XX-Y-96	6.0	152	6.0	152	16.26	413	10.16	258	6.00	152

Note: Part Number Material Codes: XX = S6 (316SS)

Part Number Gasket Codes: Y = D (Nitrile), H (EPDM), I (FKM), PTFE Encapsulated Rubber Codes: JD (Nitrile), JH (EPDM), JI (FKM).

Requires a clamp or ferrule to secure Thorburn Style 633-C fittings to a hose (See Pages 110 to 119)

Thorburn Camlock Quick Couplings



Male Camlock Hose End 633E-HD/633E

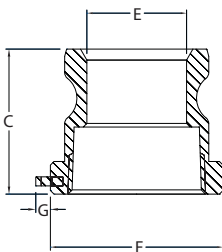
(Use prefix "N" only for ASME Code Applications)

Material: SA351 CF8M/SA479 T316 | Code: XX = S6 (316SS)

Pressure 633E-HD: 1/2" ID to 1 1/4" ID - 400 psi (28 bar), 1 1/2" ID to 2 1/2" ID - 300 psi (21 bar), 3" ID - 275 psi (19 bar), 4" & 6" ID - 250 psi (17 bar) - 4:1 safety factor **Pressure 633E:** 150 psi (2.5" ID or less), 75 psi (3" - 6" ID)

Part Number	Adapter/Coupler Size		Hose Shank Size		(B) Outside Diameter		(D) Exposed Length	
	in	mm	in	mm	in	mm	in	mm
(N)633E-HD(633E)-XX-12	0.75	20	0.75	20	1.26	32	2.6	67
(N)633E-HD(633E)-XX-16	1.0	25	1.0	25	1.63	41	3.0	76
(N)633E-HD(633E)-XX-20	1.25	32	1.25	32	2	51	3.5	89
(N)633E-HD(633E)-XX-24	1.5	38	1.5	38	2.14	54	3.6	91
(N)633E-HD(633E)-XX-32	2.0	50	2.0	50	2.64	67	4.0	102
(N)633E-HD(633E)-XX-40	2.5	64	2.5	64	3.07	78	4.5	114
(N)633E-HD(633E)-XX-48	3.0	76	3.0	76	3.70	94	4.75	121
(N)633E-HD(633E)-XX-64	4.0	102	4.0	102	4.71	120	5.0	127
(N)633E-HD(633E)-XX-96	6.0	152	6.0	152	7.10	180	6.7	170

Code: XX = S6 (316SS) **Note:** Requires a clamp or ferrule to secure Thorburn Style 633-E fittings to a hose (See Pages 110 to 119)



Female Camlock Adapter 633A-HD/633A

(Use prefix "N" only for ASME Code Applications)

Material: SA351 CF8M/SA479 T316 | Code: XX = S6 (316SS), AL (Aluminum)

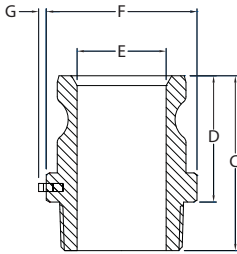
Pressure 633A-HD: 1/2" ID to 1 1/4" ID - 400 psi (28 bar), 1 1/2" ID to 2 1/2" ID - 300 psi (21 bar), 3" ID - 275 psi (19 bar), 4" & 6" ID - 250 psi (17 bar) - 4:1 safety factor **Pressure 633A:** 150 psi (2.5" ID or less), 75 psi (3" - 6" ID)

Thread Size: Standard NPT Optional: Use Code ZZ & Specify (BSP, BSPT, DIN, JIS)

Part Number	Adapter Size		Thread Size		(C) Overall Length		(E) Inside Diameter		(F) Across Corners		(G) Chain Lug Extension	
	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm
(N)633A-HD(633A)-XX-12	0.75	20	0.75	20	1.62	41	0.75	20	1.49	38		
(N)633A-HD(633A)-XX-16	1.0	25	1.0	25	1.91	49	0.88	22	1.76	45	0.34	9
(N)633A-HD(633A)-XX-20	1.25	32	1.25	32	2.16	55	1.04	26	2.19	56	0.34	9
(N)633A-HD(633A)-XX-24	1.5	38	1.5	38	2.29	58	1.35	34	2.44	62	0.33	8
(N)633A-HD(633A)-XX-32	2.0	50	2.0	50	2.54	65	1.72	44	2.92	74	0.31	8
(N)633A-HD(633A)-XX-40	2.5	64	2.5	64	2.75	79	2.14	54	3.49	89	0.27	7
(N)633A-HD(633A)-XX-48	3.0	76	3.0	76	2.84	72	2.8	71	4.22	107	0.44	11
(N)633A-HD(633A)-XX-64	4.0	102	4.0	102	3.16	80	3.78	96	5.41	137	0.39	10
(N)633A-HD(633A)-XX-96	6.0	152	6.0	152	3.35	85	5.90	150	7.70	196	0.60	15

Code: XX = S6 (316SS), AL (Aluminum)

Thorburn Camlock Quick Couplings



Male Camlock Adapter 633F-HD/633F

(Use prefix "N" only for ASME Code Applications)

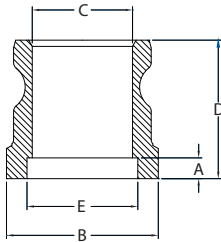
Material: SA351 CF8M/SA479 T316 | Code: XX = S6 (316SS), AL (Aluminum)

Pressure 633F-HD: 1/2" ID to 1 1/4" ID - 400 psi (28 bar), 1 1/2" ID to 2 1/2" ID - 300 psi (21 bar), 3" ID - 275 psi (19 bar), 4" & 6" ID - 250 psi (17 bar) - 4:1 safety factor **Pressure 633F:** 150 psi (2.5" ID or less), 75 psi (3" - 6" ID)

Thread Size: Standard NPT Optional: Use Code ZZ & Specify (BSP, BSPT, DIN, JIS)

Part Number	Adapter Size		Thread Size		(C) Overall Length		(D) Exposed Length		(E) Inside Diameter		(F) Across Corners		(G) Chain Lug Extension	
	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm
(N)633F-HD(633F)-XX-12	0.75	20	0.75	20	2.47	63	1.67	42	0.75	19	1.42	36		
(N)633F-HD(633F)-XX-16	1.0	25	1.0	25	2.89	73	1.99	51	0.85	22	1.75	45	0.34	9
(N)633F-HD(633F)-XX-20	1.25	32	1.25	32	3.23	82	2.23	57	1.04	26	2.16	55	0.34	9
(N)633F-HD(633F)-XX-24	1.5	38	1.5	38	3.29	84	2.31	59	1.34	34	2.44	62	0.30	8
(N)633F-HD(633F)-XX-32	2.0	50	2.0	50	3.57	91	2.57	65	1.72	44	2.84	72	0.28	7
(N)633F-HD(633F)-XX-40	2.5	64	2.5	64	4.18	106	2.78	71	2.14	54	3.45	88	0.29	7
(N)633F-HD(633F)-XX-48	3.0	76	3.0	76	4.37	111	2.87	73	2.80	71	4.07	103	0.44	11
(N)633F-HD(633F)-XX-64	4.0	102	4.0	102	4.79	122	3.19	81	3.78	96	5.27	134	0.40	10
(N)633F-HD(633F)-XX-96	6.0	152	6.0	152	5.20	132	3.40	86	5.84	148	7.70	196	0.60	15

Code: XX = S6 (316SS), AL (Aluminum)



Socket Weld Camlock Adapter 633ASW-HD/633ASW

(Use prefix "N" only for ASME Code Applications)

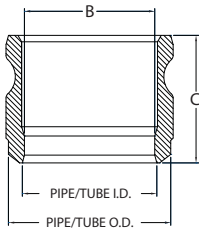
Material: SA351 CF8M/SA479 T316 | Code: XX = S6 (316SS), AL (Aluminum)

Pressure 633ASW-HD: 1/2" ID to 1 1/4" ID - 400 psi (28 bar), 1 1/2" ID to 2 1/2" ID - 300 psi (21 bar), 3" ID - 275 psi (19 bar), 4" & 6" ID - 250 psi (17 bar) - 4:1 safety factor **Pressure 633ASW:** 150 psi (2.5" ID or less), 75 psi (3" - 6" ID)

Part Number	Adapter Size		(A) Socket Depth		(B) Outside Diameter		(C) Inside Diameter		(D) Overall Length		(F) Socket Diameter			
	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm
(N)633ASW-HD(633ASW)-XX-12	0.75	20	0.30	8	1.25	32	0.75	20	1.13	29	1.10	28	0.77	20
(N)633ASW-HD(633ASW)-XX-16	1.0	25	0.30	8	1.45	37	0.88	22	1.44	37	1.36	35	1.02	26
(N)633ASW-HD(633ASW)-XX-20	1.25	32	0.30	8	2.00	50	1.06	27	2.00	50	1.71	43	1.27	32
(N)633ASW-HD(633ASW)-XX-24	1.5	38	0.40	10	2.25	64	1.35	34	2.13	54	1.95	49	1.52	39
(N)633ASW-HD(633ASW)-XX-32	2.0	50	0.40	10	2.74	70	1.81	46	2.50	64	2.44	62	2.02	51
(N)633ASW-HD(633ASW)-XX-40	2.5	64	0.40	10	3.25	83	2.14	54	2.56	65	2.94	74	2.52	64
(N)633ASW-HD(633ASW)-XX-48	3.0	76	0.40	10	3.75	95	2.81	71	2.75	70	3.57	91	3.02	77
(N)633ASW-HD(633ASW)-XX-64	4.0	102	0.50	13	5.01	127	3.00	76	2.97	75	4.58	116	4.03	102
(N)633ASW-HD(633ASW)-XX-96	6.0	152	0.60	15	7.00	178	5.84	148	2.90	74	6.72	171	6.03	153

Code: XX = S6 (316SS), AL (Aluminum)

Thorburn Camlock Quick Couplings



Butt Weld Camlock Adapter 633FBW-HD/633FBW

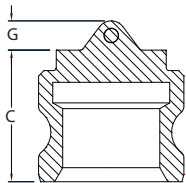
(Use prefix "N" only for ASME Code Applications)

Material: SA351 CF8M/SA479 T316 | Code: XX = S6 (316SS)

Pressure 633SBW-HD: 1/2" ID to 1 1/4" ID - 400 psi (28 bar), 1 1/2" ID to 2 1/2" ID - 300 psi (21 bar), 3" ID - 275 psi (19 bar), 4" & 6" ID - 250 psi (17 bar) - 4:1 safety factor **Pressure 633SBW:** 150 psi (2.5" ID or less), 75 psi (3" - 6" ID)

Part Number	Adapter/Coupler Size		(C) Overall Length		(B) Inside Diameter	
	in	mm	in	mm	in	mm
(N)633FBW-HD(633FBW)-XX-12	0.75	20	1.40	35	0.75	19
(N)633FBW-HD(633FBW)-XX-16	1.0	25	1.74	44	0.88	22
(N)633FBW-HD(633FBW)-XX-20	1.25	32	1.99	51	1.06	27
(N)633FBW-HD(633FBW)-XX-24	1.5	38	2.06	52	1.25	32
(N)633FBW-HD(633FBW)-XX-32	2.0	50	2.50	64	1.75	44
(N)633FBW-HD(633FBW)-XX-40	2.5	64	2.44	62	2.14	54
(N)633FBW-HD(633FBW)-XX-48	3.0	76	2.75	70	2.81	71
(N)633FBW-HD(633FBW)-XX-64	4.0	102	2.88	73	3.75	95
(N)633FBW-HD(633FBW)-XX-96	6.0	152	3.00	76	5.84	148

Code: XX = S6 (316SS)



Camlock Plug Adapter 633DP

(Use prefix "N" only for ASME Code Applications)

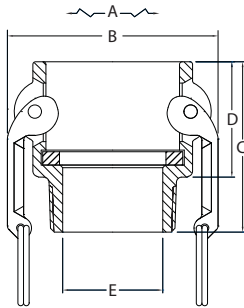
Material: SA351 CF8M/SA479 T316 | Code: XX = S6 (316SS), AL (Aluminum)

Pressure: 150 psi (2.5" ID or less), 75 psi (3" - 6" ID)

Part Number	Adapter/Coupler Size		(C) Overall Length		(G) Chain Lug Extension	
	in	mm	in	mm	in	mm
(N)633DP-XX-12	0.75	20	1.41	36	0.59	15
(N)633DP-XX-16	1.0	25	1.35	34	0.96	24
(N)633DP-XX-20	1.25	32	1.94	49	0.62	16
(N)633DP-XX-24	1.5	38	2.06	52	0.50	13
(N)633DP-XX-32	2.0	50	1.90	48	0.70	18
(N)633DP-XX-40	2.5	64	2.44	62	0.81	21
(N)633DP-XX-48	3.0	76	2.03	52	1.0	25
(N)633DP-XX-64	4.0	102	2.10	53	1.0	25
(N)633DP-XX-96	6.0	152	2.28	58	1.0	25

Code: XX = S6 (316SS), AL (Aluminum)

Thorburn Camlock Quick Couplings



Male Camlock Adapter Coupler 733B-HD/633B

Material: SA351 CF8M/SA479 T316 | Code: XX = S6 (316SS), AL (Aluminum)

Pressure 733B-HD: 1/2" ID to 1 1/4" ID - 400 psi (28 bar), 1 1/2" ID to 2 1/2" ID - 300 psi (21 bar), 3" ID - 275 psi (19 bar), 4" & 6" ID - 250 psi (17 bar) - 4:1 safety factor **Pressure 633B:** 150 psi (2.5" ID or less), 75 psi (3"- 6" ID)

Gasket Material: Buna-N (Standard) Options: EPDM, FKM & PTFE Encapsulated Rubber (ER)

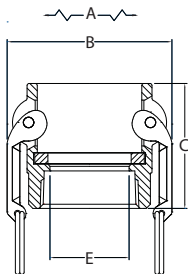
Temperature: Buna-N 100°C (210°F), EPDM, FKM, PTFE (ER) 120°C (250°F)

Thread Size: Standard NPT Optional: Use Code ZZ & Specify (BSP, BSPT, DIN, JIS)

Part Number	Adapter Size		Thread Size		(A) O.D. Extended Cam Arms		(B) Outside Diameter		(C) Overall Length		(D) Exposed Length		(E) Inside Diameter	
	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm
(N)733B-HD(633B)-XX-Y-12	0.75	20	0.75	20	4.51	115	2.11	54	2.10	53	1.25	32	0.78	20
(N)733B-HD(633B)-XX-Y-16	1.0	25	1.0	25	5.10	130	2.44	62	2.50	64	1.56	40	0.97	25
(N)733B-HD(633B)-XX-Y-20	1.25	32	1.25	32	6.86	174	3.26	83	2.89	73	1.84	47	1.25	32
(N)733B-HD(633B)-XX-Y-24	1.5	38	1.5	38	7.16	182	3.56	90	2.93	74	1.88	48	1.50	38
(N)733B-HD(633B)-XX-Y-32	2.0	50	2.0	50	7.54	192	3.94	100	3.20	81	2.15	55	1.88	48
(N)733B-HD(633B)-XX-Y-40	2.5	64	2.5	64	8.03	204	4.43	113	3.63	92	2.18	55	2.38	60
(N)733B-HD(633B)-XX-Y-48	3.0	76	3.0	76	9.56	243	5.46	139	3.82	97	2.27	58	2.88	73
(N)733B-HD(633B)-XX-Y-64	4.0	102	4.0	102	10.66	271	6.56	167	4.00	102	2.34	59	3.60	91
(N)733B-HD(633B)-XX-Y-96	6.0	152	6.0	152	16.26	413	10.16	258	4.52	115	2.62	67	5.60	142

Note: Part Number Material Codes: XX = S6 (316SS)

Part Number Gasket Codes: Y = D (Nitrile), H (EPDM), I (FKM), PTFE Encapsulated Rubber Codes: JD (Nitrile), JH (EPDM), JI (FKM)



Female Camlock Adapter Coupler 733D-HD/633D

Material: SA351 CF8M/SA479 T316 | Code: XX = S6 (316SS), AL (Aluminum)

Pressure 733D-HD: 1/2" ID to 1 1/4" ID - 400 psi (28 bar), 1 1/2" ID to 2 1/2" ID - 300 psi (21 bar), 3" ID - 275 psi (19 bar), 4" & 6" ID - 250 psi (17 bar) - 4:1 safety factor **Pressure 633D:** 150 psi (2.5" ID or less), 75 psi (3"- 6" ID)

Gasket Material: Buna-N (Standard) Options: EPDM, FKM & PTFE Encapsulated Rubber (ER)

Temperature: Buna-N 100°C (210°F), EPDM, FKM, PTFE (ER) 120°C (250°F)

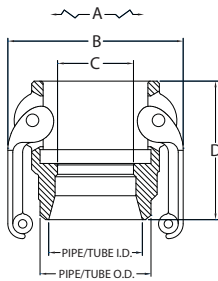
Thread Size: Standard NPT Optional: Use Code ZZ & Specify (BSP, BSPT, DIN, JIS)

Part Number	Adapter Size		Thread Size		(A) O.D. Extended Cam Arms		(B) Outside Diameter		(C) Overall Length		(E) Inside Diameter	
	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm
(N)733D-HD(633D)-XX-Y-12	0.75	20	0.75	20	4.51	115	2.11	54	2.10	53	0.88	22
(N)733D-HD(633D)-XX-Y-16	1.0	25	1.0	25	5.10	130	2.44	62	2.50	64	0.97	25
(N)733D-HD(633D)-XX-Y-20	1.25	32	1.25	32	6.86	174	3.26	83	2.70	69	1.25	32
(N)733D-HD(633D)-XX-Y-24	1.5	38	1.5	38	7.16	182	3.56	90	2.80	71	1.50	38
(N)733D-HD(633D)-XX-Y-32	2.0	50	2.0	50	7.54	192	3.94	100	3.10	79	1.88	48
(N)733D-HD(633D)-XX-Y-40	2.5	64	2.5	64	8.03	204	4.43	113	3.40	86	2.38	60
(N)733D-HD(633D)-XX-Y-48	3.0	76	3.0	76	9.56	243	5.46	139	3.50	89	2.88	73
(N)733D-HD(633D)-XX-Y-64	4.0	102	4.0	102	10.66	271	6.56	167	3.90	99	3.60	91
(N)733D-HD(633D)-XX-Y-96	6.0	152	6.0	152	16.26	413	10.16	258	4.40	112	5.50	140

Note: Part Number Material Codes: XX = S6 (316SS)

Part Number Gasket Codes: Y = D (Nitrile), H (EPDM), I (FKM), PTFE Encapsulated Rubber Codes: JD (Nitrile), JH (EPDM), JI (FKM)

Thorburn Camlock Quick Couplings



Butt Weld Camlock Adapter Coupler 733BBW-HD/633BBW

Material: SA351 CF8M/SA479 T316 | Code: XX = S6 (316SS)

Pressure 733BBW-HD: 1/2" ID to 1 1/4" ID - 400 psi (28 bar), 1 1/2" ID to 2 1/2" ID - 300 psi (21 bar), 3" ID - 275 psi (19 bar), 4" & 6" ID - 250 psi (17 bar) - 4:1 safety factor **Pressure 633BBW:** 150 psi (2.5" ID or less), 75 psi (3" - 6" ID)

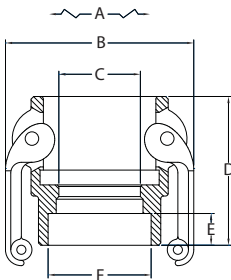
Gasket Material: Buna-N (Standard) Options: EPDM, FKM & PTFE Encapsulated Rubber (ER)

Temperature: Buna-N 100°C (210°F), EPDM, FKM, PTFE (ER) 120°C (250°F)

Part Number	Adapter Size		(A) O.D. Extended Cam Arms		(B) Outside Diameter		(C) Inside Diameter		(D) Overall Length	
	in	mm	in	mm	in	mm	in	mm	in	mm
(N)733BBW-HD(633BBW)-XX-Y-12	0.75	20	4.51	115	2.11	54	0.78	20	2.0	50
(N)733BBW-HD(633BBW)-XX-Y-16	1.0	25	5.10	130	2.44	62	0.97	25	2.51	64
(N)733BBW-HD(633BBW)-XX-Y-20	1.25	32	6.86	174	3.26	83	1.25	32	2.89	73
(N)733BBW-HD(633BBW)-XX-Y-24	1.5	38	7.16	182	3.56	90	1.54	39	2.81	71
(N)733BBW-HD(633BBW)-XX-Y-32	2.0	50	7.54	192	3.94	100	1.88	48	3.20	81
(N)733BBW-HD(633BBW)-XX-Y-40	2.5	64	8.03	204	4.43	113	2.38	61	3.63	92
(N)733BBW-HD(633BBW)-XX-Y-48	3.0	76	9.56	243	5.46	139	2.88	73	3.82	97
(N)733BBW-HD(633BBW)-XX-Y-64	4.0	102	10.66	271	6.56	167	3.5	89	4.00	102
(N)733BBW-HD(633BBW)-XX-Y-96	6.0	152	16.26	413	10.16	258	5.5	140	4.54	115

Note: Part Number Material Codes: XX = S6 (316SS)

Part Number Gasket Codes: Y = D (Nitrile), H (EPDM), I (FKM), PTFE Encapsulated Rubber Codes: JD (Nitrile), JH (EPDM), JI (FKM)



Socket Weld Camlock Adapter Coupler 733DSW-HD/633DSW

Material: SA351 CF8M/SA479 T316 | Code: XX = S6 (316SS)

Pressure 733DSW-HD: 1/2" ID to 1 1/4" ID - 400 psi (28 bar), 1 1/2" ID to 2 1/2" ID - 300 psi (21 bar), 3" ID - 275 psi (19 bar), 4" & 6" ID - 250 psi (17 bar) - 4:1 safety factor **Pressure 633DSW:** 150 psi (2.5" ID or less), 75 psi (3" - 6" ID)

Gasket Material: Buna-N (Standard) Options: EPDM, FKM & PTFE Encapsulated Rubber (ER)

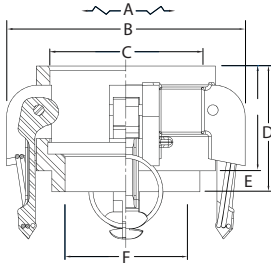
Temperature: Buna-N 100°C (210°F), EPDM, FKM, PTFE (ER) 120°C (250°F)

Part Number	Adapter Size		(A) O.D. Ext. Cam Arms		(B) Outside Diameter		(C) Inside Diameter		(D) Overall Length		(E) Socket Depth		(F) Socket Diameter			
	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm
(N)733DSW-HD(633DSW)-XX-Y-12	0.75	20	4.51	115	2.11	54	0.88	22	2.06	52	0.50	13	1.10	28	0.77	20
(N)733DSW-HD(633DSW)-XX-Y-16	1.0	25	5.10	130	2.44	62	0.97	24	2.50	64	0.50	13	1.36	35	1.02	26
(N)733DSW-HD(633DSW)-XX-Y-20	1.25	32	6.86	174	3.26	83	1.25	32	2.70	69	0.50	13	1.71	43	1.27	32
(N)733DSW-HD(633DSW)-XX-Y-24	1.5	38	7.16	182	3.56	90	1.50	38	2.81	71	0.50	13	1.95	49	1.52	39
(N)733DSW-HD(633DSW)-XX-Y-32	2.0	50	7.54	192	3.94	100	1.88	48	3.10	79	0.70	18	2.44	62	2.02	51
(N)733DSW-HD(633DSW)-XX-Y-40	2.5	64	8.03	204	4.43	113	2.38	60	3.40	86	0.70	18	2.94	75	3.02	77
(N)733DSW-HD(633DSW)-XX-Y-48	3.0	76	9.56	243	5.46	139	2.88	73	3.50	89	0.70	18	3.57	91	4.03	102
(N)733DSW-HD(633DSW)-XX-Y-64	4.0	102	10.66	271	6.56	167	3.60	91	3.90	99	0.70	18	4.58	116	5.03	128
(N)733DSW-HD(633DSW)-XX-Y-96	6.0	152	16.26	413	10.16	258	5.50	140	4.54	115	0.90	23	6.72	171	6.03	153

Note: Part Number Material Codes: XX = S6 (316SS)

Part Number Gasket Codes: Y = D (Nitrile), H (EPDM), I (FKM), PTFE Encapsulated Rubber Codes: JD (Nitrile), JH (EPDM), JI (FKM)

Thorburn Camlock Quick Couplings



Socket Weld Heavy Duty Camlock Adapter Coupler 733DSW4-HD

Material: SA351 CF8M/SA479 T316 | Code: XX = S6 (316SS)

Pressure 733DSW4-HD: 1/2"ID to 1 1/4"ID - 400 psi (28 bar), 1 1/2"ID to 2 1/2"ID - 300 psi (21 bar), 3"ID - 275 psi (19 bar), 4" & 6"ID - 250 psi (17 bar) - 4:1 safety factor

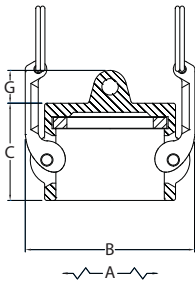
Gasket Material: Buna-N (Standard) Options: EPDM, FKM & PTFE Encapsulated Rubber (ER)

Temperature: Buna-N 100°C (210°F), EPDM, FKM, PTFE (ER) 120°C (250°F)

Part Number	Adapter Size		(A) O.D. Ext. Cam Arms		(B) Outside Diameter		(C) Inside Diameter		(D) Overall Length		(E) Socket Depth		(F) Socket Diameter Pipe			
	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm
(N)733DSW4-HD-XX-Y-12	0.75	20	4.51	115	2.11	54	.88	22	2.06	52	0.50	13	1.10	28	0.77	20
(N)733DSW4-HD-XX-Y-16	1.0	25	5.10	130	2.44	62	.97	24	2.50	64	0.50	13	1.36	35	1.02	26
(N)733DSW4-HD-XX-Y-20	1.25	32	6.86	174	3.26	83	1.25	32	2.70	69	0.50	13	1.71	43	1.27	32
(N)733DSW4-HD-XX-Y-24	1.5	38	7.16	182	3.56	90	1.50	38	2.81	71	0.50	13	1.95	49	1.52	39
(N)733DSW4-HD-XX-Y-32	2.0	50	7.54	192	3.94	100	1.88	48	3.10	79	0.70	18	2.44	62	2.02	51
(N)733DSW4-HD-XX-Y-40	2.5	64	8.03	204	4.43	113	2.38	60	3.40	86	0.70	18	2.94	75	3.02	77
(N)733DSW4-HD-XX-Y-48	3.0	76	9.56	243	5.46	139	2.88	73	3.50	89	0.70	18	3.57	91	4.03	102
(N)733DSW4-HD-XX-Y-64	4.0	102	10.66	271	6.56	167	3.60	91	3.90	99	0.70	18	4.58	116	5.03	128
(N)733DSW4-HD-XX-Y-96	6.0	152	16.26	413	10.16	258	5.50	140	4.54	115	0.90	23	6.72	171	6.03	153

Note: Part Number Material Codes: XX = S6 (316SS)

Part Number Gasket Codes: Y = D (Nitrile), H (EPDM), I (FKM), PTFE Encapsulated Rubber Codes: JD (Nitrile), JH (EPDM), JI (FKM)



Camlock Dust Cap 633DC

Material: SA351 CF8M/SA479 T316 | Code: XX = S6 (316SS), AL (Aluminum)

Pressure: 150 psi (2.5" ID or less), 75 psi (3"- 6" ID)

Gasket Material: Buna-N (Standard) Options: EPDM, FKM & PTFE Encapsulated Rubber (ER)

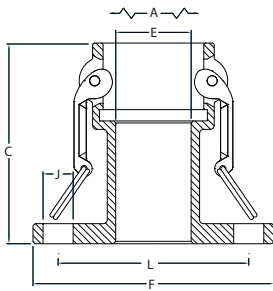
Temperature: Buna-N 100°C (210°F), EPDM, FKM, PTFE (ER) 120°C (250°F)

Part Number	Adapter Size		(A) O.D. Ext. Cam Arms		(B) Outside Diameter		(C) Overall Length		(G) Chain Lug Extension	
	in	mm	in	mm	in	mm	in	mm	in	mm
(N)633DC-XX-Y-12	0.75	20	4.51	115	2.11	54	1.35	34	0.5	13
(N)633DC-XX-Y-16	1.0	25	5.10	130	2.44	62	1.60	41	0.62	16
(N)633DC-XX-Y-20	1.25	32	6.86	174	3.26	83	1.89	48	0.60	15
(N)633DC-XX-Y-24	1.5	38	7.16	182	3.56	90	1.96	50	0.86	22
(N)633DC-XX-Y-32	2.0	50	7.54	192	3.94	100	2.25	57	0.76	19
(N)633DC-XX-Y-40	2.5	64	8.03	204	4.43	113	2.28	58	0.90	23
(N)633DC-XX-Y-48	3.0	76	9.56	243	5.46	139	2.27	58	1.03	26
(N)633DC-XX-Y-64	4.0	102	10.66	271	6.56	167	2.34	59	0.99	25
(N)633DC-XX-Y-96	6.0	152	16.26	413	10.16	258	2.76	70	1.14	29

Note: Part Number Material Codes: XX = S6 (316SS)

Part Number Gasket Codes: Y = D (Nitrile), H (EPDM), I (FKM), PTFE Encapsulated Rubber Codes: JD (Nitrile), JH (EPDM), JI (FKM)

Thorburn Camlock Quick Couplings



Camlock Flanged Adapter Coupler 733PFC-HD/633PFC 150# PN10

Material: SA351 CF8M/SA479 T316 | Code: XX = S6 (316SS)

Pressure 733PFC-HD: 1/2" ID to 1 1/4" ID - 400 psi (28 bar), 1 1/2" ID to 2 1/2" ID - 300 psi (21 bar), 3" ID - 275 psi (19 bar), 4" & 6" ID - 250 psi (17 bar) - 4:1 safety factor **Pressure 633PFC:** 150 psi (2.5" ID or less), 75 psi (3"- 6" ID)

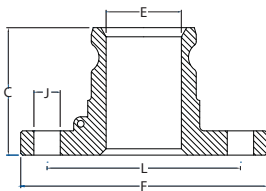
Gasket Material: Buna-N (Standard) Options: EPDM, FKM & PTFE Encapsulated Rubber (ER)

Temperature: Buna-N 100°C (210°F), EPDM, FKM, PTFE (ER) 120°C (250°F)

Part Number	Adapter/ Flange Size		(A) O.D. Ext. Cam Arms		(C) Overall Length		(E) Inside Diameter.		(F) Outside Diameter		(J) Bolt Hole Diameter		Number of Holes #	(L) Bolt Circle Diameter	
	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm		in	mm
(N)733PFC-HD (633PFC)-XX-Y-16	1.0	1	5.04	128	3.48	88	0.69	18	4.25	108	0.63	16	4	3.13	80
(N)733PFC-HD (633PFC)-XX-Y-24	1.5	2	7.16	182	5.25	133	1.15	34	5.0	127	0.63	16	4	3.88	99
(N)733PFC-HD (633PFC)-XX-Y-32	2.0	3	7.54	192	5.82	148	1.63	41	6.0	152	0.75	19	4	4.75	121
(N)733PFC-HD (633PFC)-XX-Y-40	2.5	4	8.03	204	5.09	129	2.38	60	7.0	178	0.75	19	4	5.5	140
(N)733PFC-HD (633PFC)-XX-Y-48	3.0	5	9.56	243	5.82	148	2.90	74	7.5	191	0.75	19	4	6.0	152
(N)733PFC-HD (633PFC)-XX-Y-64	4.0	6	10.66	271	5.39	137	3.60	91	9.0	229	0.75	19	8	7.5	191
(N)733PFC-HD (633PFC)-XX-Y-96	6.0	7	16.76	426	7.75	197	5.60	142	11.0	279	0.88	22	8	9.5	241

Note: Part Number Material Codes: XX = S6 (316SS)

Part Number Gasket Codes: Y = D (Nitrile), H (EPDM), I (FKM), PTFE Encapsulated Rubber Codes: JD (Nitrile), JH (EPDM), JI (FKM)



Camlock Flanged Adapter 633PFE-HD/633PFE 150# PN10

(Use prefix "N" only for ASME Code Applications)

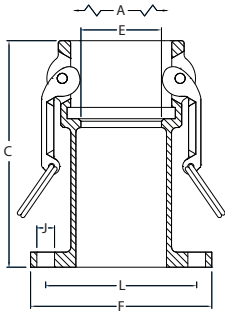
Material: SA351 CF8M/SA479 T316 | Code: XX = S6 (316SS), AL (Aluminum)

Pressure 633PFE-HD: 1/2" ID to 1 1/4" ID - 400 psi (28 bar), 1 1/2" ID to 2 1/2" ID - 300 psi (21 bar), 3" ID - 275 psi (19 bar), 4" & 6" ID - 250 psi (17 bar) - 4:1 safety factor **Pressure 633PFE:** 150 psi (2.5" ID or less), 75 psi (3"- 6" ID)

Part Number	Adapter/ Flange Size		(C) Overall Length		(E) Inside Diameter.		(F) Outside Diameter		(J) Bolt Hole Diameter		Number of Holes #	(L) Bolt Circle Diameter	
	in	mm	in	mm	in	mm	in	mm	in	mm		in	mm
(N)633PFE-HD(633PFE)-XX-16	1.0	25	2.32	59	0.88	22	4.25	108	0.63	16	4	3.13	80
(N)633PFE-HD(633PFE)-XX-24	1.5	38	3.56	90	1.34	34	5.0	127	0.63	16	4	3.88	99
(N)633PFE-HD(633PFE)-XX-32	2.0	50	3.50	89	1.72	44	6.0	152	0.75	19	4	4.75	121
(N)633PFE-HD(633PFE)-XX-40	2.5	64	3.63	92	2.14	54	7.0	178	0.75	19	4	5.5	140
(N)633PFE-HD(633PFE)-XX-48	3.0	76	3.69	94	2.78	71	7.5	191	0.75	19	4	6.0	152
(N)633PFE-HD(633PFE)-XX-64	4.0	102	4.0	102	3.78	96	9.0	229	0.75	19	8	7.5	191
(N)633PFE-HD(633PFE)-XX-96	6.0	152	4.5	114	5.56	141	11.0	279	0.88	22	8	9.5	241

Code: XX = S6 (316SS), AL (Aluminum)

Thorburn Camlock Quick Couplings



Camlock 733TTC-HD/633TTC Tank & Truck Adapter Coupler

Material: SA351 CF8M/SA479 T316 | Code: XX = S6 (316SS)

Pressure 733TTC-HD: 1/2" ID to 1 1/4" ID - 400 psi (28 bar), 1 1/2" ID to 2 1/2" ID - 300 psi (21 bar), 3" ID - 275 psi (19 bar), 4" & 6" ID - 250 psi (17 bar) - 4:1 safety factor **Pressure 633TTC:** 150 psi (2.5" ID or less), 75 psi (3" - 6" ID)

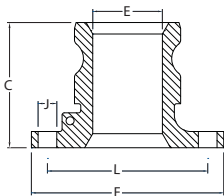
Gasket Material: Buna-N (Standard) Options: EPDM, FKM & PTFE Encapsulated Rubber (ER)

Temperature: Buna-N 100°C (210°F), EPDM, FKM, PTFE (ER) 120°C (250°F)

Part Number	Adapter/ Flange Size		(A) O.D. Ext. Cam Arms		(C) Overall Length		(E) Inside Diameter		(F) Outside Diameter		(J) Bolt Hole Diameter		Number of Holes #	(L) Bolt Circle Diameter	
	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm		in	mm
(N)733TTC-HD(633TTC)-XX-Y-32	2.0	50	7.54	192	5.63	143	2.0	51	4.5	114	0.44	11	6	3.75	95
(N)733TTC-HD(633TTC)-XX-Y-48	3.0	76	9.56	243	5.66	144	2.9	74	5.63	143	0.44	11	8	4.88	124
(N)733TTC-HD(633TTC)-XX-Y-64	4.0	102	10.66	271	5.68	144	3.6	91	6.63	158	0.44	11	8	5.88	149
(N)733TTC-HD(633TTC)-XX-Y-96	6.0	152	16.26	413	7.25	184	5.6	142	8.88	226	0.44	11	12	8.13	207

Note: Part Number Material Codes: XX = S6 (316SS)

Part Number Gasket Codes: Y = D (Nitrile), H (EPDM), I (FKM), PTFE Encapsulated Rubber Codes: JD (Nitrile), JH (EPDM), JI (FKM)



Camlock 633TTE-HD/633TTE Tank & Truck Adapter

(Use prefix "N" only for ASME Code Applications)

Material: SA351 CF8M/SA479 T316 | Code: XX = S6 (316SS), AL (Aluminum)

Pressure 633TTE-HD: 1/2" ID to 1 1/4" ID - 400 psi (28 bar), 1 1/2" ID to 2 1/2" ID - 300 psi (21 bar), 3" ID - 275 psi (19 bar), 4" & 6" ID - 250 psi (17 bar) - 4:1 safety factor **Pressure 633TTE:** 150 psi (2.5" ID or less), 75 psi (3" - 6" ID)

Part Number	Adapter/ Flange Size		(C) Overall Length		(E) Inside Diameter		(F) Outside Diameter		(J) Bolt Hole Diameter		Number of Holes #	(L) Bolt Circle Diameter	
	in	mm	in	mm	in	mm	in	mm	in	mm		in	mm
(N)633TTE-HD(633TTE)-XX-32	2.0	50	2.93	74	1.63	41	4.5	114	0.44	11	6	3.75	95
(N)633TTE-HD(633TTE)-XX-48	3.0	76	3.38	86	2.8	71	5.63	143	0.44	11	8	4.88	124
(N)633TTE-HD(633TTE)-XX-64	4.0	102	3.35	85	3.78	96	6.63	168	0.44	11	8	5.88	149
(N)633TTE-HD(633TTE)-XX-96	6.0	152	4.88	124	5.84	148	8.88	226	0.44	11	12	8.13	207

Code: XX = S6 (316SS), AL (Aluminum)

Camlock Elbow Quick Couplings



Camlock 733-90CC-HD/633-90CC 90° X 90° Coupler

Material: SA351 CF8M/SA479 T316 | **Code:** XX = S6 (316SS), AL = Aluminum

Pressure 733-90CC-HD: 1/2" ID to 1 1/4" ID - 400 psi (28 bar), 1 1/2" ID to 2 1/2" ID - 300 psi (21 bar), 3" ID - 275 psi (19 bar), 4" & 6" ID - 250 psi (17 bar) - 4:1 safety factor

Pressure 633-90CC: 150 psi (2.5" ID or less), 75 psi (3" - 6" ID)

Gasket Material: Buna-N (Standard) Options: EPDM, FKM & PTFE Encapsulated Rubber (ER)

Temperature: Buna-N 100°C (210°F), EPDM, FKM, PTFE (ER) 120°C (250°F)

Part Number	Adapter / Flange Size	
	in	mm
(N)733-90CC (633-90CC)-XX-Y-32	2.0	50
(N)733-90CC (633-90CC)-XX-Y-48	3.0	76
(N)733-90CC (633-90CC)-XX-Y-64	4.0	102
(N)733-90CC (633-90CC)-XX-Y-96	6.0	152

Part Number Material Codes: XX = S6 (316SS)

Part Number Gasket Codes: Y = D (Nitrile), H (EPDM), I (FKM),

PTFE Encapsulated Rubber Codes: JD (Nitrile), JH (EPDM), JI (FKM)



Camlock 733-90EC-HD/633-90EC 90° Coupler X Male Adapter

Material: SA351 CF8M/SA479 T316 | **Code:** XX = S6 (316SS), AL = Aluminum

Pressure 733-90EC-HD: 1/2" ID to 1 1/4" ID - 400 psi (28 bar), 1 1/2" ID to 2 1/2" ID - 300 psi (21 bar), 3" ID - 275 psi (19 bar), 4" & 6" ID - 250 psi (17 bar) - 4:1 safety factor

Pressure 633-90EC: 150 psi (2.5" ID or less), 75 psi (3" - 6" ID)

Gasket Material: Buna-N (Standard) Options: EPDM, FKM & PTFE Encapsulated Rubber (ER)

Temperature: Buna-N 100°C (210°F), EPDM, FKM, PTFE (ER) 120°C (250°F)

Part Number	Adapter / Flange Size	
	in	mm
(N)733-90EC (633-90EC)-XX-Y-32	2.0	50
(N)733-90EC (633-90EC)-XX-Y-48	3.0	76
(N)733-90EC (633-90EC)-XX-Y-64	4.0	102
(N)733-90EC (633-90EC)-XX-Y-96	6.0	152

Part Number Material Codes: XX = S6 (316SS)

Part Number Gasket Codes: Y = D (Nitrile), H (EPDM), I (FKM),

PTFE Encapsulated Rubber Codes: JD (Nitrile), JH (EPDM), JI (FKM)



Camlock 733-90FPC-HD/633-90FPC 90° Coupler X Female NPT

Material: SA351 CF8M/SA479 T316 | **Code:** XX = S6 (316SS), AL = Aluminum

Pressure 733-90FPC-HD: 1/2" ID to 1 1/4" ID - 400 psi (28 bar), 1 1/2" ID to 2 1/2" ID - 300 psi (21 bar), 3" ID - 275 psi (19 bar), 4" & 6" ID - 250 psi (17 bar) - 4:1 safety factor

Pressure 633-90FPC: 150 psi (2.5" ID or less), 75 psi (3" - 6" ID)

Gasket Material: Buna-N (Standard) Options: EPDM, FKM & PTFE Encapsulated Rubber (ER)

Temperature: Buna-N 100°C (210°F), EPDM, FKM, PTFE (ER) 120°C (250°F)

Part Number	Adapter/Flange Size	
	in	mm
(N)733-90FPC (633-90FPC)-XX-Y-32	2.0	50
(N)733-90FPC (633-90FPC)-XX-Y-48	3.0	76
(N)733-90FPC (633-90FPC)-XX-Y-64	4.0	102
(N)733-90FPC (633-90FPC)-XX-Y-96	6.0	152

Part Number Material Codes: XX = S6 (316SS)

Part Number Gasket Codes: Y = D (Nitrile), H (EPDM), I (FKM),

PTFE Encapsulated Rubber Codes: JD (Nitrile), JH (EPDM), JI (FKM)

Thorburn Camlock Quick Couplings

Style TQ | Standard Safety Pin - Zinc Plated for 633 Style Couplers



Thorburn Part #
Zinc Plated
TQ36

Style TCH | Standard “S” Hook Security Chain For 633 Style Couplers



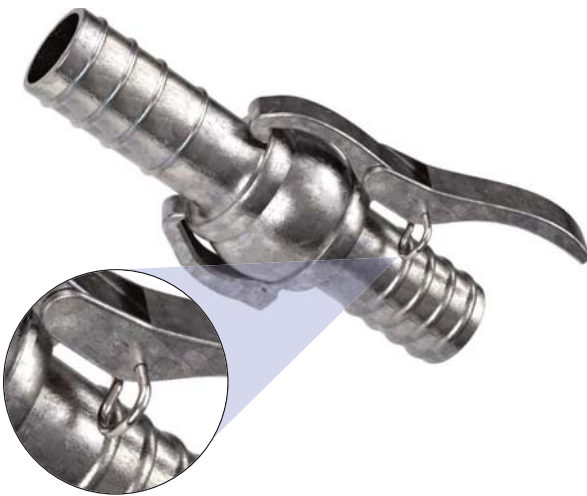
Thorburn Part #		Description
Brass	316SS	
TCHB-06	-	6 inch Brass “S” Hook Chain
TCHB-12	-	12 inch Brass “S” Hook Chain
-	TCHS6-06	6 inch 316 Stainless Steel “S” Hook Chain
-	TCHS6-12	12 inch 316 Stainless Steel “S” Hook Chain
-	TCHS6-24	24 inch 316 Stainless Steel “S” Hook Chain

Style TCHCS | Standard Sash Type Security Chain For 633 Style Couplers



Thorburn Part #	Description
Plated Steel	
TCHCS-12	12 inch Plated Steel Sash Type Chain

Thorburn Series TB Bauer Type B Style Lever Couplings



Thorburn Series TB - Male end with Closure Lever and Locking Pin

Thorburn Series TB lever couplings are an asymmetric coupling lever system where the male fitting has a double pin closure lever for smoother closing action. It is inserted into the female fitting and the joint closes by latching lever over the head of the female fitting. The couplings are designed to be bent in all directions by up to 30° and is still completely airtight and pressure-tight and can be coupled quickly and easily without special tools. Manufactured with high-strength quality steel with a hot-dip, abrasion-resistant, galvanizing process according to DIN EN ISO 1461. Pressure-tight up to 20 bar (300 PSI) for sizes up to 80mm, 10 bar (145 PSI) for sizes 100mm and above. Not interchangeable with Thorburn TP Series lever couplings.

Applications

- Mining, road and tunnel construction, exhaust gas systems
- Water, potable water and waste water, Sewage (loading/unloading)
- Agriculture (irrigation, sprinkling systems)
- Onshore and offshore drilling
- Food (grains, flour, seeds)
- Chemical Industry

Style TB309 | Male Hose Shank - Bauer Type B Compatible



Thorburn Part #	Nominal Hose ID		Material
	in	DN	
TB309-32-CP	2	50	Galvanized
TB309-48-CP	3	80	Galvanized
TB309-64-CP	4	100	Galvanized
TB309-96-CP	6	150	Galvanized
TB309-128-CP	8	200	Galvanized
TB309-192-CP	12	300	Galvanized

Note: Requires a clamp or ferrule to secure Thorburn Style TB309 fittings to a hose (See Pages 110 to 119)

Thorburn Series TB Bauer Type B Style Lever Couplings

Style TB310 | Female Hose Shank - Bauer Type B Compatible



Thorburn Part #	Nominal Hose ID		Material
	in	DN	
TB310-32-CP	2	50	Galvanized
TB310-48-CP	3	80	Galvanized
TB310-64-CP	4	100	Galvanized
TB310-96-CP	6	150	Galvanized
TB310-128-CP	8	200	Galvanized
TB310-192-CP	12	300	Galvanized

Note: Requires a clamp or ferrule to secure Thorburn Style TB310 fittings to a hose (See Pages 110 to 119)

Style TB311 | Male Socket with Male NPT - Bauer Type B Compatible



Thorburn Part #	Nominal Hose ID		NPT Thread Size	Material
	in	DN	in	
TB311-32-CP	2	50	2 - 11 1/2	Galvanized
TB311-48-CP	3	80	3 - 8	Galvanized
TB311-64-CP	4	100	4 - 8	Galvanized
TB311-96-CP	6	150	6 - 8	Galvanized
TB311-128-CP	8	200	8 - 8	Galvanized

Style TB312 | Female Plug with Male NPT - Bauer Type B Compatible



Thorburn Part #	Nominal Hose ID		NPT Thread Size	Material
	in	DN	in	
TB312-32-CP	2	50	2 - 11 1/2	Galvanized
TB312-48-CP	3	80	3 - 8	Galvanized
TB312-64-CP	4	100	4 - 8	Galvanized
TB312-96-CP	6	150	6 - 8	Galvanized
TB312-128-CP	8	200	8 - 8	Galvanized

Thorburn Series TB Bauer Type B Style Lever Couplings

Style TB313 | Male Socket with 150 ASA Flange - Bauer Type B Compatible



Thorburn Part #	Nominal Hose ID		Material
	in	DN	
TB313-64-CP	4	100	Galvanized
TB313-96-CP	6	150	Galvanized
TB313-128-CP	8	200	Galvanized
TB313-192-CP	12	300	Galvanized

Style TB314 | Female Socket with 150 ASA Flange - Bauer Type B Compatible



Thorburn Part #	Hose ID		Material
	in	mm	
TB314-64-CP	4	102	Galvanized
TB314-96-CP	6	152	Galvanized
TB314-128-CP	8	203	Galvanized
TB314-192-CP	12	305	Galvanized

Style TB308 | Female Plug with Gasket - Bauer Type B Compatible



Thorburn Part #	Hose ID		Material
	in	mm	
TB308-32-CP	2	50	Galvanized
TB308-48-CP	3	76	Galvanized
TB308-64-CP	4	102	Galvanized
TB308-96-CP	6	152	Galvanized
TB308-128-CP	8	203	Galvanized
TB308-192-CP	12	305	Galvanized

Thorburn Series TB Bauer Type B Style Lever Couplings

Style TB304 | Lever Ring - Bauer Type B Compatible



Thorburn Part #	Hose ID		Material
	in	mm	
TB304-32-CP	2	50	Galvanized
TB304-48-CP	3	76	Galvanized
TB304-64-CP	4	102	Galvanized
TB304-96-CP	6	152	Galvanized
TB304-128-CP	8	203	Galvanized
TB304-192-CP	12	305	Galvanized

Style TB306 | Gaskets - Bauer Type B Compatible



Thorburn Part #	Hose ID		Material
	in	mm	
TB306-32	2	50	EPDM
TB306-48	3	76	EPDM
TB306-64	4	102	EPDM
TB306-96	6	152	EPDM
TB306-128	8	203	EPDM
TB306-192	12	305	EPDM

Style TBLP | Locking Pins - Bauer Type B Compatible



Thorburn Part #	Hose ID		Material
	in	mm	
TBLP-32-CP	2	50	Galvanized
TBLP-48-CP	3	76	Galvanized
TBLP-64-CP	4	102	Galvanized
TBLP-96-CP	6	152	Galvanized
TBLP-128-CP	8	203	Galvanized
TBLP-192-CP	12	305	Galvanized

Thorburn Series TP Perrot Type C Style Lever Couplings



Thorburn Series TP - Female end with Closure Lever and Locking Pin

Thorburn Series TP Perrot type C style lever couplings consist of a male and a female part. The Female fitting incorporates a thick O-Ring seal and a closure lever with two claws. The male fitting is inserted into the female fitting and the joint is closed by latching the lever over the conical head of the male fitting. Pivoting of the levers is 15° on both sides. Couplings are made of galvanized steel with a working pressure of 10 bar (150 PSI), 8 bar (116 PSI) for sizes 200mm and 300mm, and a working temperature of -30°C (-22°F) to 80°C (176°F). Not interchangeable with Thorburn TB Series lever couplings.

Applications

- Agriculture, irrigation, sprinkling systems
- Ground water drainage, potable water, waste water
- Sewage loading, unloading
- On shore and off shore drilling
- Road and tunnel construction
- Environmental engineering
- Bulk Food (grains, flour, seeds)

Style TPKMS | Female Socket with Hose Stem - Perrot Type C Compatible



Note: Requires a clamp or ferrule to secure Thorburn Style TPKMS fittings to a hose (See Pages 110 to 119)

Thorburn Part #	Nominal Hose ID		Material
	in	DN	
TPKMS-32-CP	2	50	Galvanized
TPKMS-48-CP	3	80	Galvanized
TPKMS-64-CP	4	100	Galvanized
TPKMS-96-CP	6	150	Galvanized
TPKMS-128-CP	8	200	Galvanized
TPKMS-192-CP	12	300	Galvanized

Thorburn Series TP Perrot Type C Style Lever Couplings

Style TPKVS | Male Plug with Hose Stem - Perrot Type C Compatible



Thorburn Part #	Nominal Hose ID		Material
	in	DN	
TPKVS-32-CP	2	50	Galvanized
TPKVS-48-CP	3	80	Galvanized
TPKVS-64-CP	4	100	Galvanized
TPKVS-96-CP	6	150	Galvanized
TPKVS-128-CP	8	200	Galvanized
TPKVS-192-CP	12	300	Galvanized

Note: Requires a clamp or ferrule to secure Thorburn Style TPKVS fittings to a hose (See Pages 110 to 119)

Style TPKMG | Female Socket with Male NPT - Perrot Type C Compatible



Thorburn Part #	Nominal Hose ID		NPT Thread Size	Material
	in	DN	in	
TPKMG-32-CP	2	50	2 - 11 1/2	Galvanized
TPKMG-48-CP	3	80	3 - 8	Galvanized
TPKMG-64-CP	4	100	4 - 8	Galvanized
TPKMG-96-CP	6	150	6 - 8	Galvanized
TPKMG-128-CP	8	200	8 - 8	Galvanized
TPKMG-192-CP	12	300	12 - 8	Galvanized

Style TPKVG | Male Plug with Male NPT - Perrot Type C Compatible



Thorburn Part #	Nominal Hose ID		NPT Thread Size	Material
	in	DN	in	
TPKVG-32-CP	2	50	2 - 11 1/2	Galvanized
TPKVG-48-CP	3	80	3 - 8	Galvanized
TPKVG-64-CP	4	100	4 - 8	Galvanized
TPKVG-96-CP	6	150	6 - 8	Galvanized
TPKVG-128-CP	8	200	8 - 8	Galvanized
TPKVG-192-CP	12	300	12 - 8	Galvanized

Thorburn Series TP Perrot Type C Style Lever Couplings

Style TPKMF | Female Socket with 150 ASA Flange - Perrot Type C Compatible



Thorburn Part #	Nominal Hose ID		Material
	in	DN	
TPKMF-32-CP	2	50	Galvanized
TPKMF-48-CP	3	80	Galvanized
TPKMF-64-CP	4	100	Galvanized
TPKMF-96-CP	6	150	Galvanized
TPKMF-128-CP	8	200	Galvanized
TPKMF-192-CP	12	300	Galvanized

Style TPKVF | Male Plug with 150 ASA Flange - Perrot Type C Compatible



Thorburn Part #	Hose ID		Material
	in	mm	
TPKVF-32-CP	2	50	Galvanized
TPKVF-48-CP	3	76	Galvanized
TPKVF-64-CP	4	102	Galvanized
TPKVF-96-CP	6	152	Galvanized
TPKVF-128-CP	8	203	Galvanized
TPKVF-192-CP	12	305	Galvanized

Style TPKMR | Female End Cap - Perrot Type C Compatible



Thorburn Part #	Hose ID		Material
	in	mm	
TPKMR-32-CP	2	50	Galvanized
TPKMR-48-CP	3	76	Galvanized
TPKMR-64-CP	4	102	Galvanized
TPKMR-96-CP	6	152	Galvanized
TPKMR-128-CP	8	203	Galvanized
TPKMR-192-CP	12	305	Galvanized

Thorburn Series TP Perrot Type C Style Lever Couplings

Style TPKVX | Male End Cap - Perrot Type C Compatible



Thorburn Part #	Hose ID		Material
	in	mm	
TPKVX-32-CP	2	50	Galvanized
TPKVX-48-CP	3	76	Galvanized
TPKVX-64-CP	4	102	Galvanized
TPKVX-96-CP	6	152	Galvanized
TPKVX-128-CP	8	203	Galvanized
TPKVX-192-CP	12	305	Galvanized

Style TPKLR | Lever Ring - Perrot Type C Compatible



Thorburn Part #	Hose ID		Material
	in	mm	
TPKLR-32-CP	2	50	Galvanized
TPKLR-48-CP	3	76	Galvanized
TB304-64-CP	4	102	Galvanized
TPKLR-96-CP	6	152	Galvanized
TPKLR-128-CP	8	203	Galvanized
TPKLR-192-CP	12	305	Galvanized

Style TPG | Gaskets - Perrot Type C Compatible



Thorburn Part #	Hose ID		Material
	in	mm	
TPG-32	.2	50	EPDM
TPG-48	3	76	EPDM
TPG-64	4	102	EPDM
TPG-96	6	152	EPDM
TPG-128	8	203	EPDM
TPG-192	12	305	EPDM

Style TPLP | Locking Pins - Perrot Type C Compatible



Thorburn Part #	Hose ID		Material
	in	mm	
TPLP-32	2	50	Galvanized
TPLP-48	3	76	Galvanized
TPLP-64	4	102	Galvanized
TPLP-96	6	152	Galvanized
TPLP-128	8	203	Galvanized
TPLP-192	12	305	Galvanized

Thorburn Series 70 Hose Couplings for Bolt-On Safety Clamps



Thorburn Series 70 EN 14420-5 Hose Couplings and EN14420-4 Flanges are designed for use with Thorburn Style 80BSC EN14420-3/DIN 2817 Bolt-On Safety Clamps (Pg 105)

Thorburn Series 70 EN 14420-5 hose couplings are used to connect hoses with male or female BSP, BSPT or NPT threaded couplings. The coupling is designed to be used with Thorburn Style 70BSC Bolt-On Safety Clamp (EN14420-3/DIN 2817). Hose, coupling, assembly method and seal must be chosen in relation with the desired application and temperature range. Thorburn EN 14420-5 hose couplings are not interchangeable with Thorburn EN 14423 hose couplings, due to differences in application and overall dimensions.

Application

To connect rubber and thermoplastic hoses.

Working Pressure

25 bar (363 psi)

Temperature Range:

-30°C (-22°F) up to 300°C (572°F)

Material:

Coupling: SS316 or Brass

Seal Material:

316SS Coupling: PTFE

Brass Coupling: Polyurethane (PU)



Style 71FBSP | Female BSPP Fitting - Smooth Stem EN 14420-5/DIN 2817



Part Number		Nominal Hose I.D.		Thread
316SS	Brass	DN	in	Inch
71FBSP08-S6	71FBSP08-BB	15	1/2	1/2
71FBSP12-S6	71FBSP12-BB	20	3/4	3/4
71FBSP16-S6	71FBSP16-BB	25	1	1
71FBSP20-S6	71FBSP20-BB	32	1 1/4	1 1/4
71FBSP24-S6	71FBSP24-BB	40	1 1/2	1 1/2
71FBSP32-S6	71FBSP32-BB	50	2	2
71FBSP40-S6	71FBSP40-BB	65	2 1/2	2 1/2
71FBSP48-S6	71FBSP48-BB	80	3	3
71FBSP64-S6	71FBSP64-BB	100	4	4

To assemble the insert, use Thorburn Style 70BSC (EN 14420-3/DIN 2817) Bolt-On Safety Clamps

Thorburn Series 70 Hose Couplings for Bolt-On Safety Clamps

Style 72FBSP | Female BSPP Fitting - Serrated Stem EN 14420-5/DIN 2817



Part Number		Nominal Hose I.D.		Thread
316SS	Brass	DN	in	Inch
72FBSP08-S6	72FBSP08-BB	15	1/2	1/2
72FBSP12-S6	72FBSP12-BB	20	3/4	3/4
72FBSP16-S6	72FBSP16-BB	25	1	1
72FBSP20-S6	72FBSP20-BB	32	1 1/4	1 1/4
72FBSP24-S6	72FBSP24-BB	40	1 1/2	1 1/2
72FBSP32-S6	72FBSP32-BB	50	2	2
72FBSP40-S6	72FBSP40-BB	65	2 1/2	2 1/2
72FBSP48-S6	72FBSP48-BB	80	3	3
72FBSP64-S6	72FBSP64-BB	100	4	4

To assemble the insert, use Thorburn Style 70BSC (EN 14420-3/DIN 2817) Bolt-On Safety Clamps

Style 73MBSPT | Male BSPT Fitting - Smooth Stem EN 14420-5/DIN 2817



Part Number		Nominal Hose I.D.		Thread
316SS	Brass	DN	in	Inch
73MBSPT08-S6	73MBSPT08-BB	15	1/2	1/2
73MBSPT12-S6	73MBSPT12-BB	20	3/4	3/4
73MBSPT16-S6	73MBSPT16-BB	25	1	1
73MBSPT20-S6	73MBSPT20-BB	32	1 1/4	1 1/4
73MBSPT24-S6	73MBSPT24-BB	40	1 1/2	1 1/2
73MBSPT32-S6	73MBSPT32-BB	50	2	2
73MBSPT40-S6	73MBSPT40-BB	65	2 1/2	2 1/2
73MBSPT48-S6	73MBSPT48-BB	80	3	3
73MBSPT64-S6	73MBSPT64-BB	100	4	4

To assemble the insert, use Thorburn Style 70BSC (EN 14420-3/DIN 2817) Bolt-On Safety Clamps

Style 74MBSPT | Male BSPT Fitting - Serrated Stem EN 14420-5/DIN 2817



Part Number		Nominal Hose I.D.		Thread
316SS	Brass	DN	in	Inch
74MBSPT08-S6	74MBSPT08-BB	15	1/2	1/2
74MBSPT12-S6	74MBSPT12-BB	20	3/4	3/4
74MBSPT16-S6	74MBSPT16-BB	25	1	1
74MBSPT20-S6	74MBSPT20-BB	32	1 1/4	1 1/4
74MBSPT24-S6	74MBSPT24-BB	40	1 1/2	1 1/2
74MBSPT32-S6	74MBSPT32-BB	50	2	2
74MBSPT40-S6	74MBSPT40-BB	65	2 1/2	2 1/2
74MBSPT48-S6	74MBSPT48-BB	80	3	3
74MBSPT64-S6	74MBSPT64-BB	100	4	4

To assemble the insert, use Thorburn Style 70BSC (EN 14420-3/DIN 2817) Bolt-On Safety Clamps

Thorburn Series 70 Hose Couplings for Bolt-On Safety Clamps

Style 75FLX | Fixed Flange - Smooth Stem EN 14420-4/DIN 2817



Part Number		Nominal Hose I.D.	
316SS	Brass	DN	in
75FLX16XX-S6	75FLX16XX-BB	25	1
75FLX20XX-S6	75FLX20XX-BB	32	1 1/4
75FLX24XX-S6	75FLX24XX-BB	40	1 1/2
75FLX32XX-S6	75FLX32XX-BB	50	2
75FLX40XX-S6	75FLX40XX-BB	65	2 1/2
75FLX48XX-S6	75FLX48XX-BB	80	3
75FLX64XX-S6	75FLX64XX-BB	100	4
75FLX16XX-S6	75FLX16XX-BB	125	5
75FLX96XX-S6	75FLX96XX-BB	150	6
75FLX128XX-S6	75FLX128XX-BB	200	8

XX = Specify Flange Type:

FL1 = CL150 ANSI, **FL2** = CL300 ANSI, **FL3** = PN10, **FL4** = PN16 **FL5** = PN25, **FL6** = PN40

To assemble the insert, use Thorburn Style 70BSC (EN 14420-3/DIN 2817) Bolt-On Safety Clamps

Style 76FLX | Fixed Flange - Serrated Stem EN 14420-4/DIN 2817



Part Number		Nominal Hose I.D.	
316SS	Brass	DN	in
76FLX16XX-S6	76FLX16XX-BB	25	1
76FLX20XX-S6	76FLX20XX-BB	32	1 1/4
76FLX24XX-S6	76FLX24XX-BB	40	1 1/2
76FLX32XX-S6	76FLX32XX-BB	50	2
76FLX40XX-S6	76FLX40XX-BB	65	2 1/2
76FLX48XX-S6	76FLX48XX-BB	80	3
76FLX64XX-S6	76FLX64XX-BB	100	4
76FLX16XX-S6	76FLX16XX-BB	125	5
76FLX96XX-S6	76FLX96XX-BB	150	6
76FLX128XX-S6	76FLX128XX-BB	200	8

XX = Specify Flange Type:

FL1 = CL150 ANSI, **FL2** = CL300 ANSI, **FL3** = PN10, **FL4** = PN16 **FL5** = PN25, **FL6** = PN40

To assemble the insert, use Thorburn Style 70BSC (EN 14420-3/DIN 2817) Bolt-On Safety Clamps

Thorburn Series 70 Hose Couplings for Bolt-On Safety Clamps

Style 77FLXS | Swivel Flange - Smooth Stem EN 14420-4/DIN 2817



Part Number		Nominal Hose I.D.	
316SS	Brass	DN	in
77FLXS16XX-S6	77FLXS16XX-BB	25	1
77FLXS20XX-S6	77FLXS20XX-BB	32	1 1/4
77FLXS24XX-S6	77FLXS24XX-BB	40	1 1/2
77FLXS32XX-S6	77FLXS32XX-BB	50	2
77FLXS40XX-S6	77FLXS40XX-BB	65	2 1/2
77FLXS48XX-S6	77FLXS48XX-BB	80	3
77FLXS64XX-S6	77FLXS64XX-BB	100	4
77FLXS16XX-S6	77FLXS16XX-BB	125	5
77FLXS96XX-S6	77FLXS96XX-BB	150	6
77FLXS128XX-S6	77FLXS128XX-BB	200	8

XX = Specify Flange Type:

FL1 = CL150 ANSI, **FL2** = CL300 ANSI, **FL3** = PN10, **FL4** = PN16 **FL5** = PN25, **FL6** = PN40

To assemble the insert, use Thorburn Style 70BSC (EN 14420-3/DIN 2817) Bolt-On Safety Clamps

Style 78FLXS | Swivel Flange - Serrated Stem EN 14420-4/DIN 2817



Part Number		Nominal Hose I.D.	
316SS	Brass	DN	in
78FLXS16XX-S6	78FLXS16XX-BB	25	1
78FLXS20XX-S6	78FLXS20XX-BB	32	1 1/4
78FLXS24XX-S6	78FLXS24XX-BB	40	1 1/2
78FLXS32XX-S6	78FLXS32XX-BB	50	2
78FLXS40XX-S6	78FLXS40XX-BB	65	2 1/2
78FLXS48XX-S6	78FLXS48XX-BB	80	3
78FLXS64XX-S6	78FLXS64XX-BB	100	4
78FLXS16XX-S6	78FLXS16XX-BB	125	5
78FLXS96XX-S6	78FLXS96XX-BB	150	6
78FLXS128XX-S6	78FLXS128XX-BB	200	8

XX = Specify Flange Type:

FL1 = CL150 ANSI, **FL2** = CL300 ANSI, **FL3** = PN10, **FL4** = PN16 **FL5** = PN25, **FL6** = PN40

To assemble the insert, use Thorburn Style 70BSC (EN 14420-3/DIN 2817) Bolt-On Safety Clamps

Thorburn Series 80 Hose Couplings for Bolt-On Safety Clamps



Thorburn EN 14423 hose couplings are used to connect hoses with male or female BSP, BSPT or NPT threaded couplings. The coupling is designed to be used with Thorburn Style 80BSC Bolt-On Safety Clamp (EN14423 / DIN 2826) For steam service applications. The Hose, coupling, assembly method and seal must be chosen in relation with the desired application and temperature range. Thorburn EN 14423 hose couplings are not interchangeable with Thorburn EN 14420 couplings, due to differences in application and overall dimensions.

Application

To connect rubber and thermoplastic hoses.

Working Pressure

25 bar (363 psi)

Temperature Range:

-30°C (-22°F) up to 300°C (572°F)

Material:

Coupling: SS316 or Brass

Seal Material:

Brass Coupling: PU

316SS Coupling: PTFE



Thorburn Series 80 EN 14423 Hose Couplings are designed for use with Thorburn Style 80BSC EN14423/DIN 2826 Bolt-On Safety Clamps (Pg 106)

Style 81FBSP | Female BSPP Fitting - EN 14423/DIN 2826



Part Number		Nominal Hose I.D.		Thread
316SS	Brass	DN	in	Inch
81FBSP08-S6	81FBSP08-BB	15	1/2	1/2
81FBSP12-S6	81FBSP12-BB	20	3/4	3/4
81FBSP16-S6	81FBSP16-BB	25	1	1
81FBSP20-S6	81FBSP20-BB	32	1 1/4	1 1/4
81FBSP24-S6	81FBSP24-BB	40	1 1/2	1 1/2
81FBSP32-S6	81FBSP32-BB	50	2	2

To assemble the insert, use Thorburn Style 80BSC (EN 14423/DIN 2826) Bolt-On Safety Clamps

Thorburn Series 80 Hose Couplings for Bolt-On Safety Clamps

Style 82MBSPT | Male BSPT Fitting - EN 14423/DIN 2826



Part Number		Nominal Hose I.D.		Thread
316SS	Brass	DN	in	Inch
82FBSPP08-S6	82FBSPP08-BB	15	1/2	1/2
82FBSPP12-S6	82FBSPP12-BB	20	3/4	3/4
82FBSPP16-S6	82FBSPP16-BB	25	1	1
82FBSPP20-S6	82FBSPP20-BB	32	1 1/4	1 1/4
82FBSPP24-S6	82FBSPP24-BB	40	1 1/2	1 1/2
82FBSPP32-S6	82FBSPP32-BB	50	2	2

To assemble the insert, use Thorburn Style 80BSC (EN 14423/DIN 2826) Bolt-On Safety Clamps

Style 83FLX | Fixed Flange - EN 14423/DIN 2826



Part Number		Nominal Hose I.D.	
316SS	Brass	DN	in
83FLXS08XX-S6	83FLXS08XX-BB	15	1/2
83FLXS12XX-S6	83FLXS12XX-BB	20	3/4
83FLXS16XX-S6	83FLXS16XX-BB	25	1
83FLXS20XX-S6	83FLXS20XX-BB	32	1 1/4
83FLXS24XX-S6	83FLXS24XX-BB	40	1 1/2
83FLXS32XX-S6	83FLXS32XX-BB	50	2

XX = Specify Flange Type:

FL1 = CL150 ANSI, **FL2** = CL300 ANSI, **FL3** = PN10, **FL4** = PN16 **FL5** = PN25, **FL6** = PN40

To assemble the insert, use Thorburn Style 80BSC (EN 14423/DIN 2826) Bolt-On Safety Clamps

Style 84FLXS | Swivel Flange - EN 14423/DIN 2826



Part Number		Nominal Hose I.D.	
316SS	Brass	DN	in
84FLXS08XX-S6	84FLXS08XX-BB	15	1/2
84FLXS12XX-S6	84FLXS12XX-BB	20	3/4
84FLXS16XX-S6	84FLXS16XX-BB	25	1
84FLXS20XX-S6	84FLXS20XX-BB	32	1 1/4
84FLXS24XX-S6	84FLXS24XX-BB	40	1 1/2
84FLXS32XX-S6	84FLXS32XX-BB	50	2

XX = Specify Flange Type:

FL1 = CL150 ANSI, **FL2** = CL300 ANSI, **FL3** = PN10, **FL4** = PN16 **FL5** = PN25, **FL6** = PN40

To assemble the insert, use Thorburn Style 80BSC (EN 14423/DIN 2826) Bolt-On Safety Clamps

Coupling Clamps



Sanitary Flange Clamp Fittings



What is a sanitary flange clamp fitting?

The food, beverage, and biopharmaceutical industries depend on a number of components to transport products during their manufacturing processes. Items such as unprocessed milk, wort for beer, wine and even medicines need to move from point A to point B during the manufacturing process.

Ordinary flanges cannot be used in this process because stainless steel allows for small pockets and can easily suffer nicks and scratches. These flaws may often be microscopic, but they are still large enough to collect and breed impurities.

Sanitary flange clamp fittings do not carry the same kind of risk as they are polished to an almost flawless finish, reducing the likelihood of these flaws ever developing.

Sanitary flange clamp fittings are extremely versatile to make connections between a large variety of endpoints with different types of adapters such as, Male/Female NPT (National Pipe Thread), end caps, and butt welds. Sanitary flange fittings can also be assembled in different ways to connect different sections of process lines with varying sizes and numerous piping layout configurations.



Sanitary flange clamp fitting installed

Dimensions and Sizing

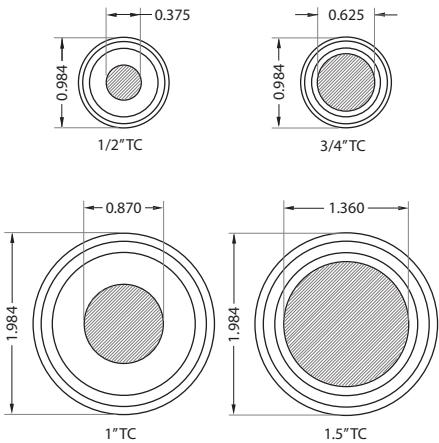
- Size is determined by the OD of the tubing and NOT the diameter of the ferrule flange.
- For smaller OD tubing (1/2" & 3/4") and (1" & 1 1/2"), ferrule sizes are combined for each pair.
- Compatible sizes can be joined directly, but different OD tubes will affect flow (always use the larger gasket size).

Tube OD	Flange OD	Clamp Size
in	in	in
1/2	0.98	3/4
3/4	0.98	3/4
1	1.98	1/2
1 1/2	1.98	1/2
2	2.52	2
2 1/2	3.05	2 1/2
3	3.58	3
4	4.68	4

Determining the Correct Clamp Size

Clamp size is determined by the outside diameter (OD) of the tubing. This is important because the sanitary flange, which follows a standard, is approximately 1/2" larger than the tubing. A 1.5" Clamp fitting, will have a flange that is 1.984" (almost 2" on a tape measure). If the flange measurement is used and a 2" clamp is ordered, the newly arrived fitting will be a 1/2" too large.

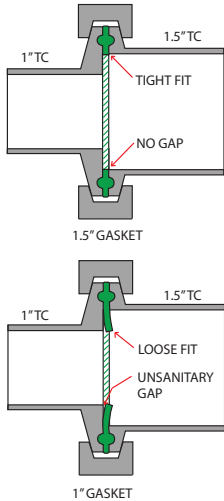
Smaller OD tubing has a similar point of confusion. The 1/2" and 3/4" tubes both share the 3/4" clamp ferrule (0.984" flange), and the same for the 1" and 1.5" tubes which share the 1.5" clamp ferrule (1.984" flange). Two clamp sizes for 4 different fittings and as a result, two pairs of different sized tubing are compatible and can be connected together.



Sanitary Flange Clamp Fittings

Guide to the Joining and Gasket Selection for Compatible Sizes

Since directly joining each pair of smaller compatible sizes is possible, it will have an effect on the material flowing through the tubing. The different sized tubing will behave just like an end cap reducer, but without the need for a reducer. On larger tubing (2"+) a reducer to transition sizes is required. An end cap reducer, or a concentric/eccentric reducer would suffice, given that both reducers are tapered to allow a more gradual transition between sizes. The smaller compatible sizes also have concentric/eccentric reducers that avoid the abrupt size change.



Gaskets are an important consideration. On larger tubing (2"+), using appropriately sized gaskets when clamped, have minimal intrusion into the flow of material. However, this is not the case when joining a larger tube OD directly to a smaller tube OD of a compatible clamp size. The correct gasket will be sized to the larger of the two tubes. For example, when joining a 1.5" tube to a 1" tube, if a 1" gasket is used, there is a risk of unsanitary conditions around the unclamped section of a 1" gasket loosely held against the face of the 1.5" tube flange. The correct gasket choice is a 1.5" gasket. Similarly when combining 1/2" and 3/4" tubing, it should be joined by a 3/4" gasket. The only time a 1/2" or a 1" gasket are used is when you are combining two 1/2" or two 1" OD tubes, respectively.

Clamp Style Selection

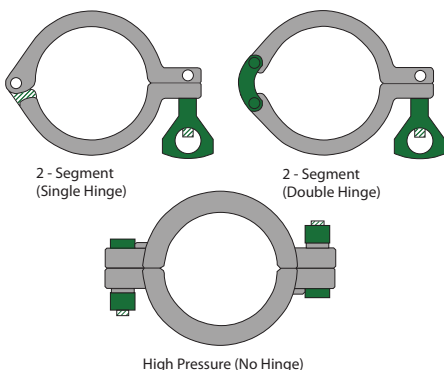
Thorburn's Sanitary Clamp Fitting has three main types: 1) 2-segment (single hinge). 2) 2-segment (double hinge). 3) High pressure bolted no hinge version.

The single hinge design is the most popular, and is considered the most cost-effective for most applications. The double hinge design is much more flexible and is easier to install in tight spaces than the single hinge which may not be able to be installed.

The high pressure bolted version is not hinged, but a bolted design. The bolts are kept from rotating during installation by a shoulder that is part of the clamp casting. They are held together using a lock washer and brass nut; brass is chosen because it is naturally resistant to galling and seizing on stainless steel bolts. These are more suited to a permanent or semi-permanent application where frequent service is not needed or high pressure safety supersedes ease of service.

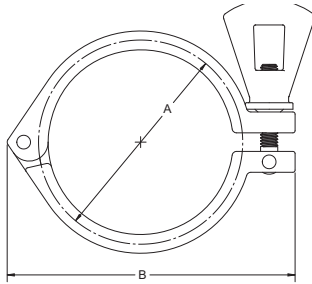
Clamp Pressure Ratings (PSI)

Size	Single Hinge (13MHHM)		Double Hinge (13MHMH-DP)		High Pressure (13MHP)		
	70°F	250°F	70°F	250°F	70°F	250°F	Max Torque
3/4	1500	1200	1500	1200	1500	1200	130 in LBf
1 1/2	500	250	500	250	1500	1200	130 in LBf
2	450	250	450	250	1000	800	130 in LBf
2 1/2	400	200	400	200	1000	800	130 in LBf
3	350	150	350	150	1000	800	130 in LBf
4	200	125	200	125	800	600	200 in LBf
6	150	75	-	-	300	200	200 in LBf
8	100	50	-	-	250	150	200 in LBf
10	40	30	-	-	200	125	200 in LBf
12	30	25	-	-	150	100	200 in LBf



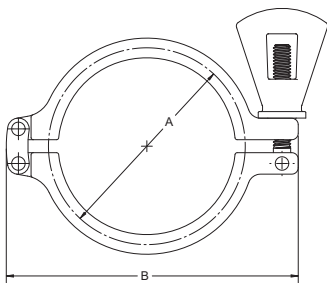
Sanitary Flange Clamp Fittings

Single Hinge Pin Heavy Duty Sanitary Clamp



Part Number	Tube OD Size		A		B	
	in	DIN	in	mm	in	mm
S12SHC-S6	3/4	20	1.1	28	2.3	59
S24SHC-S6	1 1/2	40	2.1	54	3.3	83
S32SHC-S6	2	50	2.6	67	3.8	96
S40SHC-S6	2 1/2	65	3.2	81	4.3	109
S48SHC-S6	3	80	3.7	94	4.8	122
S56SHC-S6	3 1/2	90	4.3	109	5.7	144
S64SHC-S6	4	100	4.8	122	5.9	151
S72SHC-S6	4 1/2	115	5.2	133	7.0	178
S80SHC-S6	5	125	5.8	148	7.1	180
S96SHC-S6	6	150	6.7	170	8.5	217
S128SHC-S6	8	200	8.7	221	11.5	291
S160SHC-S6	10	250	10.7	271	12.7	322
S192SHC-S6	12	300	12.7	323	15.8	402

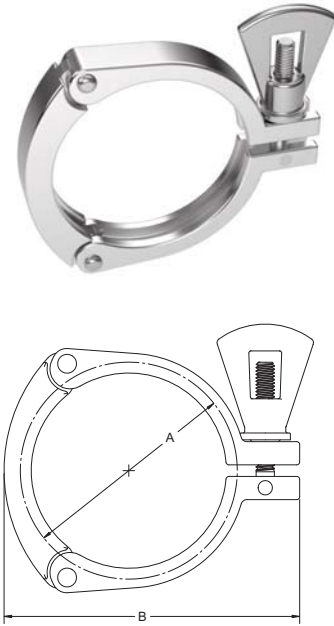
Double Hinge Pin Heavy Duty Sanitary Clamp



Part Number	Tube OD Size		A		B	
	in	DIN	in	mm	in	mm
S24DHC-S6	1 1/2	40	2.1	54	3.3	85
S32DHC-S6	2	50	2.6	67	3.8	97
S40DHC-S6	2 1/2	65	3.2	81	4.4	113
S48DHC-S6	3	80	3.7	94	5.1	130
S56DHC-S6	3 1/2	90	4.3	109	5.7	144
S64DHC-S6	4	100	4.8	122	6.2	158
S72DHC-S6	4 1/2	115	5.2	133	7.0	178
S96DHC-S6	6	150	6.7	170	8.0	204
S128DHC-S6	8	200	8.7	221	10.2	260

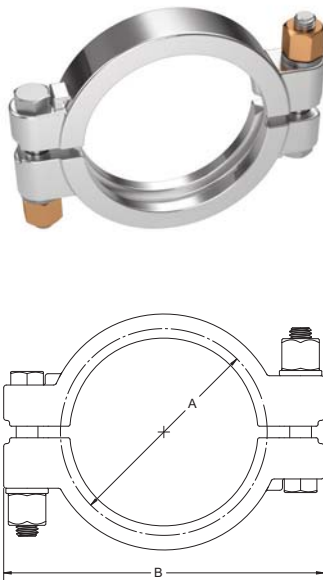
Sanitary Flange Clamp Fittings

3-Piece Segmented Sanitary Clamp



Part Number	Tube OD Size		A		B	
	in	DIN	in	mm	in	mm
S24P3C-S6	1 1/2	40	2.1	54	3.2	80
S32P3C-S6	2	50	2.7	68	3.7	94
S40P3C-S6	2 1/2	65	3.2	81	4.3	109
S48P3C-S6	3	80	3.7	94	5.0	126
S64P3C-S6	4	100	4.8	122	6.1	154

High Pressure Double Bolted Sanitary Clamp



Part Number	Tube OD Size		A		B	
	in	DIN	in	mm	in	mm
S24BC-S6	1 1/2	40	2.0	52	4.0	102
S32BC-S6	2	50	2.6	66	4.5	114
S40BC-S6	2 1/2	65	3.1	79	5.0	127
S48BC-S6	3	80	3.7	93	5.5	140
S64BC-S6	4	100	4.8	121	6.5	165
S96BC-S6	6	150	6.7	170	8.5	216

Thorburn Series 70BSC - Bolt-On Safety Clamps



Standard Service EN 14420-3 / DIN 2817 Bolt-On Safety Clamps

Thorburn Series 70BSC Bolt-On Safety Clamps are constructed as a two piece shell type EN 14420-3/DIN 2817 clamp, and are specifically designed for use with EN 14420-5 hose couplings and EN 14420-4 flange hose couplings with smooth or serrated stems with a safety collar. Thorburn Bolt-On Safety Clamps are designed with a rim on the inside, which fits over the hose tail collar when the bolts are tightened. When the safety clamps are assembled correctly, the coupling cannot be pulled out of the hose and will stay secure up to and including the burst pressure of the hose assembly. Thorburn Series 70BSC Bolt-On Safety Clamps are commonly used in industries such as chemical processing, oil and gas, food and beverage, and pharmaceuticals and is suitable for connecting hoses or pipes carrying fluids such as water, chemicals, gases, and powders.

Style 70BSC | Bolt-On Safety Clamp



Construction

Normative Regulation:

EN 14420-3/DIN 2817

Sizes: From DN 15 up to DN 250

Coupling Material:

Aluminum, Stainless Steel, Brass

Operating Temperature:

-20°C/-4 °F to + 65°C/149°F

Working Pressure:

-0.8 bar / -11 psi up to 25 bar/360 psi

Connection Mechanism:

Assembly into EN 14420-5 hose couplings (Pg 94) or EN 14420-4 hose flange couplings (Pg 96)

Thorburn Part #			Hose OD		Bolt Thread
Aluminum	Brass	316SS	Min	Max	mm
70BSC22X24-AL	70BSC22X24-BB	70BSC22X24-S6	22	24	M6*20
70BSC30X33-AL	70BSC30X33-BB	70BSC30X33-S6	30	33	M6*20
70BSC28X30-AL	70BSC28X30-BB	70BSC28X30-S6	28	30	M6*20
70BSC34X36-AL	70BSC34X36-BB	70BSC34X36-S6	34	36	M6*20
70BSC36X39-AL	70BSC36X39-BB	70BSC36X39-S6	36	39	M6*20
70BSC40X43-AL	70BSC40X43-BB	70BSC40X43-S6	40	43	M6*20
70BSC41X44-AL	70BSC41X44-BB	70BSC41X44-S6	41	44	M6*20
70BSC43X46-AL	70BSC43X46-BB	70BSC43X46-S6	43	46	M6*20
70BSC47X50-AL	70BSC47X50-BB	70BSC47X50-S6	47	50	M6*20
70BSC50X52-AL	70BSC50X52-BB	70BSC50X52-S6	50	52	M6*20
70BSC53X56-AL	70BSC53X56-BB	70BSC53X56-S6	53	56	M6*20
70BSC57X60-AL	70BSC57X60-BB	70BSC57X60-S6	57	60	M6*20
70BSC58X61-AL	70BSC58X61-BB	70BSC58X61-S6	58	61	M6*20
70BSC59X62-AL	70BSC59X62-BB	70BSC59X62-S6	59	62	M8*25
70BSC60X64-AL	70BSC60X64-BB	70BSC60X64-S6	60	64	M8*25
70BSC61X65-AL	70BSC61X65-BB	70BSC61X65-S6	61	65	M8*25
70BSC63X67-AL	70BSC63X67-BB	70BSC63X67-S6	63	67	M8*25
70BSC69X71-AL	70BSC69X71-BB	70BSC69X71-S6	69	71	M8*25
70BSC74X77-AL	70BSC74X77-BB	70BSC74X77-S6	74	77	M8*25
70BSC84X87-AL	70BSC84X87-BB	70BSC84X87-S6	84	87	M8*25
70BSC87X90-AL	70BSC87X90-BB	70BSC87X90-S6	87	90	M8*25
70BSC89X92-AL	70BSC89X92-BB	70BSC89X92-S6	89	92	M8*25
70BSC89X93-AL	70BSC89X93-BB	70BSC89X93-S6	89	93	M8*25
70BSC94X97-AL	70BSC94X97-BB	70BSC94X97-S6	94	97	M8*25
70BSC114X119-AL	70BSC114X119-BB	70BSC114X119-S6	114	119	M10*40
70BSC118X122-AL	70BSC118X122-BB	70BSC118X122-S6	118	122	M10*40
70BSC122X126-AL	70BSC122X126-BB	70BSC122X126-S6	122	126	M10*40
70BSC143X148-AL	70BSC143X148-BB	70BSC143X148-S6	143	148	M10*40
70BSC168X174-AL	70BSC168X174-BB	70BSC168X174-S6	168	174	M12*50
70BSC174X180-AL	70BSC174X180-BB	70BSC174X180-S6	174	180	M12*50
70BSC187X193-AL	70BSC187X193-BB	70BSC187X193-S6	187	193	M12*51
70BSC222X229-AL	70BSC222X229-BB	70BSC222X229-S6	222	229	M12*60
70BSC274X278-AL	70BSC274X278-BB	70BSC274X278-S6	274	278	M12*60

Thorburn Series 80BSC - Bolt-On Safety Clamps



Steam Service EN 14423 / DIN 2826 Bolt-On Safety Clamps

Thorburn Series 80BSC Bolt-On Safety Clamps are constructed as a two piece shell type EN 14423/DIN 2826 clamp, and are specifically designed for use with EN 14423 hose couplings for steam service. Thorburn 80BSC Bolt-On Safety Clamps have a rim on the inside, which fits the hose shank collar when the bolts are tightened stopping the coupling from being pulled out of the hose.

Application

- Steam and hot water use
- Food
- Pharmaceutical Industry
- Transport Industry

Style 80BSC | Bolt-On Safety Clamp



Thorburn Part #		Hose OD	
316SS	Brass	Min	Max
80BSC24X26-S6	80BSC24X26-BB	24	26
80BSC32X34-S6	80BSC32X34-BB	32	34
80BSC39X41-S6	80BSC39X41-BB	39	41
80BSC47X50-S6	80BSC47X50-BB	47	50
80BSC53X56-S6	80BSC53X56-BB	53	56
80BSC67X69-S6	80BSC67X69-BB	67	69

WARNING: Steam is dangerous. Never use quick-release couplings for steam applications. Extra care and attention should be taken when choosing the correct hose, fitting and clamping solution

Construction

Normative Regulation:

EN 14423 previous DIN 2826

Sizes: From DN 13 up to DN 50

Coupling Material: Stainless Steel, Brass

Operating Temperature:

Steam: 210°C (410°F)

Hot Water: 120°C (248°F)

Working Pressure:

18 bar (261 psi)

Connection Mechanism:

Assembly into EN 14423 hose couplings (Pg 98)



Thorburn Series TBRC Pipe Repair Clamps



Stainless steel band repair clamp/pipe leak repair clamp

Thorburn Series TBRC Pipe Repair Clamps are the connecting agents during any pipe repair fiasco. Pipe repair is of the utmost importance, since the production process needs to resume as soon as possible. Power plants, waste water treatment plants, material processing plants and oil and gas production plants need an expedient pipe repair system in order to function smoothly and efficiently. Thorburn Series TBRC Pipe Repair Clamps stabilize the operation of damaged, corrosive, cracked or ruptured pipes and fill pipe gaps and openings. They are a highly cost effective solution since they cut down on time, expenditure and energy.

Features

- Clamp is light and easy to carry, and can be used in narrow spaces.
- Simple to set up and requires no downtime
- Guarantees a tight, leak-proof sealing
- Fixes pipeline damage, leaks, and cracks
- Offers a fast and efficient way to restore pipe integrity
- Suitable for plastic/metal pipe leakage repair
- Pressures up to 20Bar (300PSI)
- Temperature range of -12°C (10°F) to 93°C (200°F)

Thorburn Series TBRC Components and Materials



Materials (Standard)

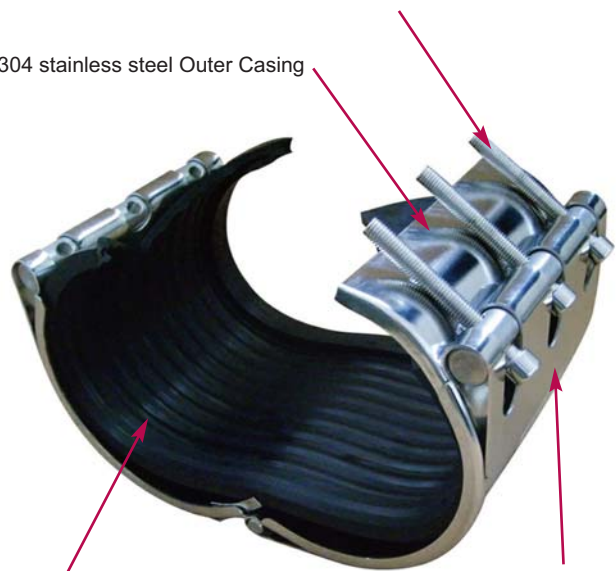
Rubber Sealing Sleeve: NBR

Outer Clamp Casing: SS304

(Other Materials available on special order - Minimum Quantities may apply)

Low alloy bolts and heavy hex nuts
Nuts are fluorocarbon coated

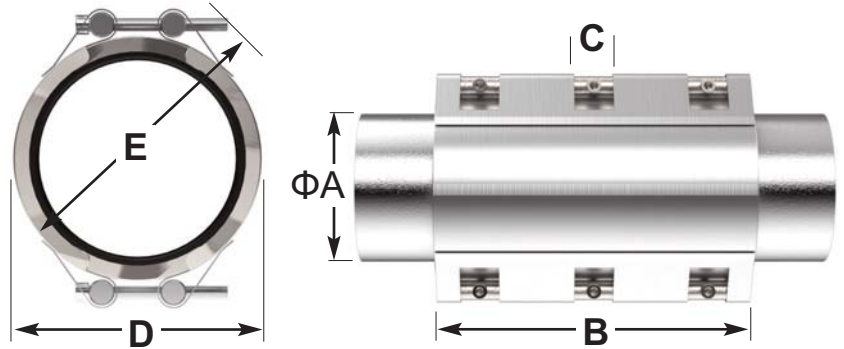
Type 304 stainless steel Outer Casing



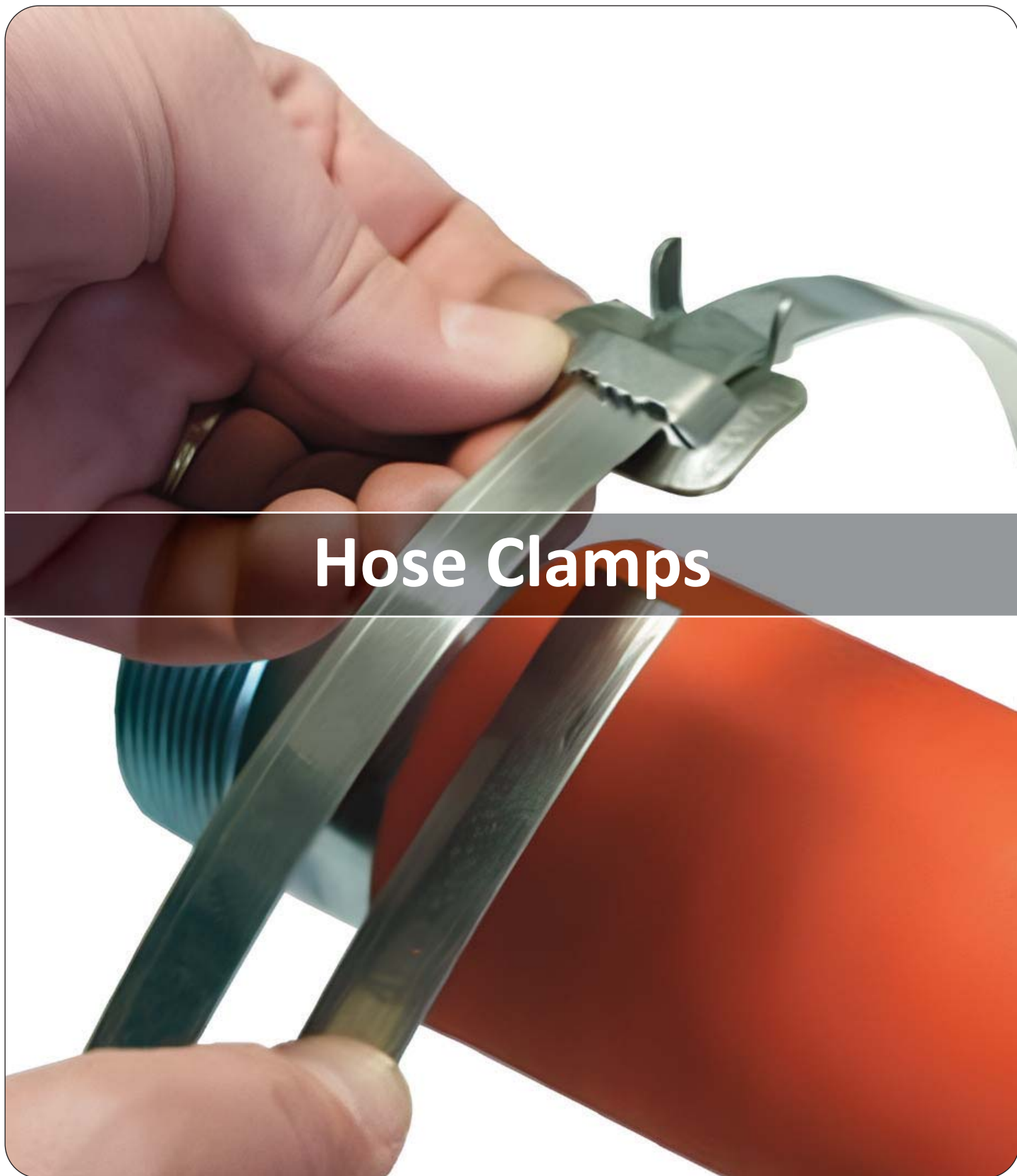
NBR Rubber Sealing Sleeve

1/4 Hard heavy gauge
304 stainless steel armor

Thorburn Series TBRC Pipe Repair Clamp Specifications



Thorburn Part #	Clamping Range	Tube Diameter	Pressure	C Max		C Max			Bolt	Install Torque
	ΦA (mm)	mm	bar	mm	mm	B (mm)	D (mm)	E (mm)	(M)	(N m)
TBRC-27-D-S4	26.4-27.4	26.9	25	5	5	62	43	70	8	10
TBRC-30-D-S4	29.5-30.5	30.0	25	5	5	62	47	75	8	10
TBRC-34-D-S4	33.2-34.2	33.7	25	5	5	62	51	75	8	10
TBRC-38-D-S4	37.5-38.5	38.0	25	5	10	62	57	90	8	15
TBRC-42-D-S4	41.9-42.9	42.4	25	5	10	62	62	95	8	15
TBRC-45-D-S4	44.0-45.0	44.5	25	5	10	62	64	95	8	15
TBRC-48-D-S4	47.8-48.8	48.3	25	5	10	62	67	100	8	15
TBRC-54-D-S4	53.5-54.5	54.0	25	8	15	75	76	105	8	15
TBRC-57-D-S4	56.4-57.8	57.0	25	8	15	75	76	105	8	15
TBRC-60-D-S4	59.7-60.9	60.3	25	8	15	75	79	110	8	15
TBRC-67-D-S4	64.9-67.3	66.6	20	8	15	105	87	126	8	15
TBRC-70-D-S4	68.9-70.7	70.0	20	10	25	105	92	131	8	20
TBRC-73-D-S4	72.3-73.7	73.0	20	10	25	105	96	142	8	20
TBRC-76-D-S4	75.3-76.9	76.1	20	10	25	105	98	142	8	20
TBRC-84-D-S4	83.2-84.8	84.0	20	10	25	105	112	152	8	20
TBRC-89-D-S4	88.0-89.8	88.9	20	10	25	105	113	157	8	20
TBRC-102-D-S4	100.6-102.6	101.6	20	10	25	120	130	172	10	25
TBRC-105-D-S4	103.8-105.8	104.8	20	10	25	120	132	172	10	25
TBRC-108-D-S4	106.9-109.1	108.0	20	10	25	120	135	172	10	25
TBRC-114-D-S4	113.2-115.4	114.3	20	10	25	120	136	177	10	25
TBRC-127-D-S4	125.7-128.3	127.0	16	10	25	120	151	195	10	40
TBRC-129-D-S4	127.7-130.3	129.0	16	10	25	120	153	195	10	40
TBRC-133-D-S4	131.7-134.3	133.0	16	10	30	120	157	200	10	40
TBRC-140-D-S4	138.3-141.1	139.7	16	10	30	120	164	210	10	40
TBRC-141-D-S4	139.9-142.7	141.3	16	10	30	120	166	210	10	40
TBRC-154-D-S4	152.5-155.5	154.0	16	10	30	120	184	225	10	40
TBRC-159-D-S4	157.4-160.6	159.0	16	10	30	120	186	225	10	40
TBRC-168-D-S4	166.6-170.0	168.3	16	10	30	120	192	230	10	40
TBRC-219-D-S4	216.9-221.3	219.1	12	10	35	152	250	295	12	50
TBRC-273-D-S4	270.5-275.5	273.0	12	10	35	152	303	345	12	50
TBRC-324-D-S4	320.5-327.0	323.9	12	10	35	152	354	395	12	70



Hose Clamps

Thorburn Clamps

Style 65C | Preformed "Fast Lock" Clamps



Type "CK" clamp is a preformed clamp with a special buckle which permits this clamp to be tightened and locked with not only Thorburn's 68CF1 tool, but with other makes as well.

Materials: Plated Steel and 316SS

Plated Steel	Stainless Steel	Size ID		Standard Pack
Part #	Part #	mm	in	QTY
65CK04-CP	65CKS604-S6	25	1	100
65CK05-CP	65CKS605-S6	32	1 1/4	100
65CK06-CP	65CKS606-S6	38	1 1/2	100
65CK07-CP	65CKS607-S6	45	1 3/4	100
65CK08-CP	65CKS608-S6	51	2	100
65CK09-CP	65CKS609-S6	57	2 1/4	100
65CK10-CP	65CKS610-S6	64	2 1/2	50
65CK11-CP	65CKS611-S6	70	2 3/4	50
65CK12-CP	65CKS612-S6	76	3	50
65CK14-CP	65CKS614-S6	89	3 1/2	50
65CK16-CP	65CKS616-S6	102	4	25
65CK18-CP	65CKS618-S6	114	4 1/2	25
65CK20-CP	65CKS620-S6	127	5	25
65CK24-CP	65CKS624-S6	152	6	25
65CK32-CP	65CKS632-S6	203	8	25

Style 66C | Field Installation Clamping - Bulk Strapping



Bulk strapping provides separate stainless steel or galvanized steel strapping in 4 widths and in 100 ft. rolls with clamp buckles of corresponding widths in 50 through 300 piece quantities and a special Jack-type clamping tool Thorburn number **68C2** for use on all widths with adjustable tensioning.

Materials: 316SS, 201SS and Plated Steel

Part #	Width		Thickness		Material
	mm	in	mm	in	
66C06-S6	10	3/8	0.64	0.025	316SS
66C08-S6	12	1/2	0.76	0.030	316SS
66C10-S6	16	5/8	0.76	0.030	316SS
66C12-S6	20	3/4	0.76	0.030	316SS
66C06-S2	10	3/8	0.64	0.025	201SS
66C08-S2	12	1/2	0.76	0.030	201SS
66C10-S2	16	5/8	0.76	0.030	201SS
66C12-S2	20	3/4	0.76	0.030	201SS
66C06-CP	10	3/8	0.64	0.025	Plated Steel
66C08-CP	12	1/2	0.76	0.030	Plated Steel
66C10-CP	16	5/8	0.76	0.030	Plated Steel
66C12-CP	20	3/4	0.76	0.030	Plated Steel

Thorburn Clamps

Style 67C | Field Installation Clamping - Buckles



Provides separate stainless steel or galvanized steel strapping in 4 widths and in 100 ft. rolls with clamp buckles of corresponding widths in 50 through 300 piece quantities and a special Jack-type clamping tool Thorburn number 68C2 for use on all widths with adjustable tensioning.

Material: 316SS, 201SS, Galvanized

Part #	Width		Thickness		Material	Box QTY
	mm	in	mm	in		
67C06-S6	10	3/8	0.64	0.025	316SS	300
67C08-S6	12	1/2	0.76	0.030	316SS	150
67C10-S6	16	5/8	0.76	0.030	316SS	100
67C12-S6	20	3/4	0.76	0.030	316SS	75
67C06-S2	10	3/8	0.64	0.025	201SS	300
67C08-S2	12	1/2	0.76	0.030	201SS	150
67C10-S2	16	5/8	0.76	0.030	201SS	100
67C12-S2	20	3/4	0.76	0.030	201SS	75
67C06-CP	10	3/8	0.64	0.025	Galvanized	300
67C08-CP	12	1/2	0.76	0.030	Galvanized	150
67C10-CP	16	5/8	0.76	0.030	Galvanized	100
67C12-CP	20	3/4	0.76	0.030	Galvanized	75

Style 68C | Fast Lock Tools & Accessories



68CF1

(For 5/8" Fast-Lok Clamps)

68CF2

(For 3/4" Fast-Lok Clamps)



68CF550

Fast-Lok Strap Cutter



68C2

Clamp-It Buckle Clamping Tool

Thorburn Clamps

Style 71C | Stainless Bolt Clamp



APPLICATION

May be used on low or medium pressure hose with such couplings as long shank, short shank, combination nipples or scored nipples.

Bolt Material: 316SS

Stainless Steel		Size	Hose Diameter Range OD				Width	
			Minimum		Maximum			
316SS	304SS	mm	mm	in	mm	in	mm	in
71C-32-S6	71C-32-S4	32-35	32	1.26	36	1.41	20	0.79
71C-36-S6	71C-36-S4	36-39	36	1.42	40	1.56	20	0.79
71C-40-S6	71C-40-S4	40-43	40	1.57	44	1.72	22	0.87
71C-44-S6	71C-44-S4	44-47	44	1.73	48	1.88	22	0.87
71C-48-S6	71C-48-S4	48-51	48	1.89	52	2.04	22	0.87
71C-52-S6	71C-52-S4	52-55	52	2.05	55	2.17	22	0.87
71C-56-S6	71C-56-S4	56-59	56	2.20	60	2.35	22	0.87
71C-60-S6	71C-60-S4	60-63	60	2.36	64	2.51	22	0.87
71C-64-S6	71C-64-S4	64-67	64	2.52	68	2.67	24	0.94
71C-68-S6	71C-68-S4	68-73	68	2.68	74	2.90	24	0.94
71C-74-S6	71C-74-S4	74-79	74	2.91	80	3.14	24	0.94
71C-80-S6	71C-80-S4	80-85	80	3.15	86	3.38	24	0.94
71C-86-S6	71C-86-S4	86-91	86	3.39	92	3.61	24	0.94
71C-92-S6	71C-92-S4	92-97	92	3.62	98	3.85	24	0.94
71C-98-S6	71C-98-S4	98-103	98	3.86	104	4.08	24	0.94
71C-104-S6	71C-104-S4	104-112	104	4.09	113	4.44	24	0.94
71C-113-S6	71C-113-S4	113-121	113	4.45	122	4.79	24	0.94
71C-122-S6	71C-122-S4	122-130	122	4.80	131	5.15	24	0.94
71C-131-S6	71C-131-S4	131-139	131	5.16	140	5.50	26	1.02
71C-140-S6	71C-140-S4	140-148	140	5.51	149	5.86	26	1.02
71C-149-S6	71C-149-S4	149-161	149	5.87	162	6.37	26	1.02
71C-162-S6	71C-162-S4	162-174	162	6.38	175	6.88	26	1.02

Style 72C | Stainless Constant Tension Clamp



APPLICATION

Provides excellent 360° seal and has a spring that automatically adjusts the clamp diameter to compensate for hose expansion and contraction.

Material: Stainless Steel

Stainless Steel 316SS	Size	Hose Diameter Range OD				Width	
		Minimum		Maximum			
	mm	mm	in	mm	in	mm	in
72C-65-S6	58-65	58	2.28	65	2.56	19	0.75
72C-68-S6	60-68	60	2.36	68	2.68	19	0.75
72C-75-S6	67-75	67	2.63	75	2.95	19	0.75
72C-81-S6	73-81	73	2.87	81	3.19	19	0.75
72C-87-S6	79-87	79	3.11	87	3.43	19	0.75
72C-100-S6	92-100	92	3.62	100	3.94	19	0.75
72C-113-S6	105-113	105	4.13	113	4.45	19	0.75
72C-119-S6	111-119	111	4.37	118	4.66	19	0.75
72C-125-S6	117-125	117	4.61	125	4.92	19	0.75
72C-138-S6	130-138	130	5.12	138	5.43	19	0.75
72C-151-S6	143-151	143	5.63	151	5.94	19	0.75
72C-167-S6	159-167	160	6.26	167	6.57	19	0.75

Thorburn Clamps

Style 777C | Perma-Clamp



FEATURES

- 100% stainless steel construction
- 3/4" wide band
- Double banded for durability
- Easily installed without removing hoses
- 2 ply band for even distribution of torque
- Full range of sizes– 1.5" to 10"
- Larger sizes available upon request
- Ideal for hoses, filter bags and marine engine installations

Material: Plated Steel

Plated Steel	Size	Hose Diameter Range OD				Width	
		Minimum		Maximum			
	mm	mm	in	mm	in	mm	in
777C-19-CP	17-19	17	0.67	19	0.75	26	1.02
777C-22-CP	20-22	20	0.79	22	0.87	26	1.02
777C-25-CP	23-25	23	0.87	25	0.98	26	1.02
777C-28-CP	26-28	26	1.02	28	1.10	26	1.02
777C-31-CP	29-31	29	1.14	31	1.22	26	1.02
777C-35-CP	32-35	32	1.26	35	1.38	26	1.02
777C-39-CP	36-39	36	1.42	39	1.54	26	1.02
777C-43-CP	40-43	40	1.57	43	1.69	22	0.87
777C-47-CP	44-47	44	1.73	47	1.85	22	0.87
777C-51-CP	48-51	48	1.89	51	2.01	22	0.87
777C-55-CP	52-55	52	2.05	55	2.17	22	0.87
777C-59-CP	56-59	56	2.20	59	2.32	22	0.87
777C-63-CP	60-63	60	2.36	63	2.48	22	0.87
777C-67-CP	64-67	64	2.52	67	2.64	24	0.94
777C-73-CP	68-73	68	2.68	73	2.87	24	0.94
777C-79-CP	74-79	74	2.91	79	3.11	24	0.94
777C-85-CP	80-85	80	3.15	85	3.35	24	0.94
777C-91-CP	86-91	86	3.39	91	3.58	24	0.94
777C-97-CP	92-97	92	3.62	97	3.62	24	0.94
777C-103-CP	98-103	98	3.86	103	4.06	24	0.94
777C-112-CP	104-112	104	4.09	112	4.41	24	0.94
777C-121-CP	113-121	113	4.45	121	4.76	24	0.94
777C-130-CP	122-130	122	4.80	130	5.12	24	0.94
777C-139-CP	131-139	131	5.16	139	5.47	26	1.02
777C-148-CP	140-148	140	5.51	148	5.83	26	1.02
777C-161-CP	149-161	149	5.87	161	6.34	26	1.02

Thorburn Spiral Clamps



Thorburn Spiral Clamps are used on convoluted hoses. To determine which type of spiral clamp is required you must examine the end of the hose to view the spiral helix reinforcement. If the helix spirals in a clockwise direction away from you, a clockwise spiral clamp is needed. If the helix spirals in a counterclockwise direction away from you, a counterclockwise spiral clamp is needed.

Style 770CX | Spiral Clamps - Clockwise Wound



Plated Steel	Size	Hose Diameter Range OD			
		Minimum		Maximum	
	in	mm	in	mm	in
770CX32-CP	2	58	2 - 18/64	64	2 - 32/64
770CX40-CP	2 1/2	69	2 - 46/64	79	3 - 8/64
770CX48-CP	3	76	3	89	3 - 32/64
770CX64-CP	4	102	4	114	4 - 32/64
770CX80-CP	5	129	5 - 6/64	140	5 - 32/64
770CX96-CP	6	159	6 - 16/64	178	7
770CX128-CP	8	216	8 - 32/64	235	9 - 16/64
770CX160-CP	10	270	10 - 40/64	286	11 - 16/64

Material: Plated carbon steel

Style 771CX | Spiral Clamps - Counter Clockwise Wound



Plated Steel	Size	Hose Diameter Range OD			
		Minimum		Maximum	
	in	mm	in	mm	in
771CX32-CP	2	58	2 - 18/64	64	2 - 32/64
771CX40-CP	2 1/2	69	2 - 46/64	79	3 - 8/64
771CX48-CP	3	76	3	89	3 - 32/64
771CX64-CP	4	102	4	114	4 - 32/64
771CX80-CP	5	129	5 - 6/64	140	5 - 32/64
771CX96-CP	6	159	6 - 16/64	178	7
771CX128-CP	8	216	8 - 32/64	235	9 - 16/64
771CX160-CP	10	270	10 - 40/64	286	11 - 16/64

Material: Plated carbon steel

Crimp Ferrules



Crimp Ferrules



Thorburn permanent crimp sleeves are used in applications where a safe and reliable clamping method is preferred over band clamps or strapping. The sleeve provides a 360° uninterrupted compression around the hose and results in a durable attachment with no protrusions. The sleeves have smooth, beveled edges and are available in stainless steel or plated steel. Sleeves are chosen based on the length of the coupling barb and the actual hose outside diameter. As a general rule, the sleeve should be about 1/4" shorter than the hose barb.

Temperature Range: -54°C (-65°F) to 150°C (300°F)

Style TF | Crimp Ferrules (Notched) Plated Steel - Sold with assembly only



Plated Steel	Nominal Hose Size		Sleeve ID		Sleeve Length	
Part #	mm	in	mm	in	mm	in
TF-150-CP	25	1	38	1.50	58	2.29
TF-163-CP	25	1	41	1.63	58	2.29
TF-206-CP	38	1 1/2	52	2.06	60	2.36
TF-213-CP	38	1 1/2	54	2.13	60	2.36
TF-263-CP	52	2	67	2.63	71	2.79
TF-275-CP	52	2	70	2.75	71	2.79
TF-363-CP	75	3	92	3.63	100	3.94
TF-375-CP	75	3	95	3.75	100	3.94
TF-388-CP	75	3	99	3.88	100	3.94
TF-463-CP	100	4	118	4.63	106	4.19
TF-475-CP	100	4	121	4.75	106	4.19
TF-481-CP	100	4	122	4.81	106	4.19
TF-494-CP	100	4	125	4.94	106	4.19
TF-663-CP	150	6	168	6.63	144	5.67
TF-688-CP	150	6	175	6.88	144	5.67
TF-713-CP	150	6	181	7.13	144	5.67

Style TFS | Crimp Ferrules (Notched) 316 Stainless Steel - Sold with assembly only



Stainless Steel	Nominal Hose Size		Sleeve ID		Sleeve Length	
	Part #	mm	in	mm	in	mm
TFS-206-S6	38	1 1/2	52	2.06	60	2.36
TFS-213-S6	38	1 1/2	54	2.13	60	2.36
TFS-263-S6	52	2	67	2.63	71	2.79
TFS-275-S6	52	2	70	2.75	71	2.79
TFS-363-S6	75	3	92	3.63	100	3.94
TFS-375-S6	75	3	95	3.75	100	3.94
TFS-463-S6	100	4	118	4.63	106	4.19
TFS-481-S6	100	4	122	4.81	106	4.19

Crimp Ferrules

Style TSS | Crimp Short Ferrules Plated Steel (No notch & no ring insert) - Sold with assembly only



Plated Steel Part #	Nominal Hose Size		Sleeve ID		Sleeve Length	
	mm	in	mm	in	mm	in
TSS-113-CP	20	3/4	29	1.13	30	1.19
TSS-138-CP	25	1	35	1.38	30	1.19
TSS-163-CP	25	1	41	1.63	30	1.19
TSS-175-CP	32	1 1/4	44	1.75	38	1.50
TSS-188-CP	32	1 1/4	48	1.88	38	1.50
TSS-200-CP	38	1 1/2	51	2.00	38	1.50
TSS-213-CP	51	2	54	2.13	51	2.00
TSS-263-CP	51	2	67	2.63	51	2.00
TSS-275-CP	52	2	70	2.75	51	2.00
TSS-363-CP	75	3	92	3.63	67	2.63
TSS-375-CP	75	3	95	3.75	67	2.63
TSS-388-CP	75	3	99	3.88	67	2.63
TSS-463-CP	100	4	118	4.63	87	3.44
TSS-475-CP	100	4	121	4.75	87	3.44
TSS-483-CP	100	4	123	4.83	87	3.44

Style TSSS | Crimp Short Ferrules 316 Stainless Steel (No notch & no ring insert) - Sold with assembly only



Plated Steel Part #	Nominal Hose Size		Sleeve ID		Sleeve Length	
	mm	in	mm	in	mm	in
TSSS-113-S6	20	3/4	29	1.13	30	1.19
TSSS-138-S6	25	1	35	1.38	30	1.19
TSSS-163-S6	25	1	41	1.63	30	1.19
TSSS-175-S6	32	1 1/4	44	1.75	38	1.50
TSSS-188-S6	32	1 1/4	48	1.88	38	1.50
TSSS-200-S6	38	1 1/2	51	2.00	38	1.50
TSSS-213-S6	51	2	54	2.13	51	2.00
TSSS-263-S6	51	2	67	2.63	51	2.00
TSSS-275-S6	52	2	70	2.75	51	2.00
TSSS-363-S6	75	3	92	3.63	67	2.63
TSSS-375-S6	75	3	95	3.75	67	2.63
TSSS-388-S6	75	3	99	3.88	67	2.63
TSSS-463-S6	100	4	118	4.63	87	3.44
TSSS-475-S6	100	4	121	4.75	87	3.44
TSSS-483-S6	100	4	123	4.83	87	3.44

Crimp Ferrules

Style TSL | Crimp Long Ferrules Plated Steel (No notch & no ring insert) - Sold with assembly only



Crimp Ferrule Sizes:

1/4" (6 mm), 3/8" (10 mm), 1/2" (12 mm), also available.

Plated Steel	Nominal Hose Size		Sleeve ID		Sleeve Length	
	mm	in	mm	in	mm	in
Part #						
TSL-113-CP	20	3/4	29	1.13	54	2.13
TSL-138-CP	20	3/4	35	1.38	54	2.13
TSL-150-CP	25	1	38	1.50	57	2.31
TSL-163-CP	25	1	41	1.63	57	2.31
TSL-175-CP	25	1	44	1.75	57	2.31
TSL-213-CP	38	1 1/2	54	2.13	60	2.38
TSL-263-CP	52	2	67	2.63	70	2.75
TSL-275-CP	52	2	70	2.75	70	2.75
TSL-288-CP	52	2	73	2.88	70	2.75
TSL-313-CP	65	2 1/2	80	3.13	80	3.13
TSL-338-CP	65	2 1/2	86	3.38	80	3.13
TSL-363-CP	75	3	92	3.63	100	3.94
TSL-369-CP	75	3	91	3.61	100	3.94
TSL-375-CP	75	3	95	3.75	100	3.94
TSL-388-CP	75	3	99	3.88	100	3.94
TSL-400-CP	75	3	102	4.00	100	3.94
TSL-438-CP	100	4	111	4.38	106	4.19
TSL-463-CP	100	4	118	4.63	106	4.19
TSL-475-CP	100	4	121	4.75	106	4.19
TSL-483-CP	100	4	123	4.83	106	4.19
TSL-494-CP	100	4	125	4.94	106	4.19
TSL-650-CP	150	6	165	6.50	144	5.67
TSL-675-CP	150	6	171	6.75	144	5.67
TSL-688-CP	150	6	175	6.88	144	5.67
TSL-713-CP	150	6	181	7.13	144	5.67
TSL-850-CP	200	8	216	8.50	165	6.50
TSL-900-CP	200	8	229	9.00	165	6.50
TSL-1075-CP	250	10	273	10.75	165	6.50
TSL-1100-CP	250	10	279	11.00	165	6.50
TSL-1125-CP	250	10	286	11.25	165	6.50
TSL-1300-CP	300	12	330	13.00	229	9.00
TSL-1325-CP	300	12	337	13.25	229	9.00
TSL-1350-CP	300	12	343	13.50	229	9.00
TSL-1375-CP	300	12	349	13.75	229	9.00

Style TSLS | Crimp Long Ferrules 316 Stainless Steel (No notch & no ring insert) - Sold with assembly only



Crimp Ferrule Sizes:

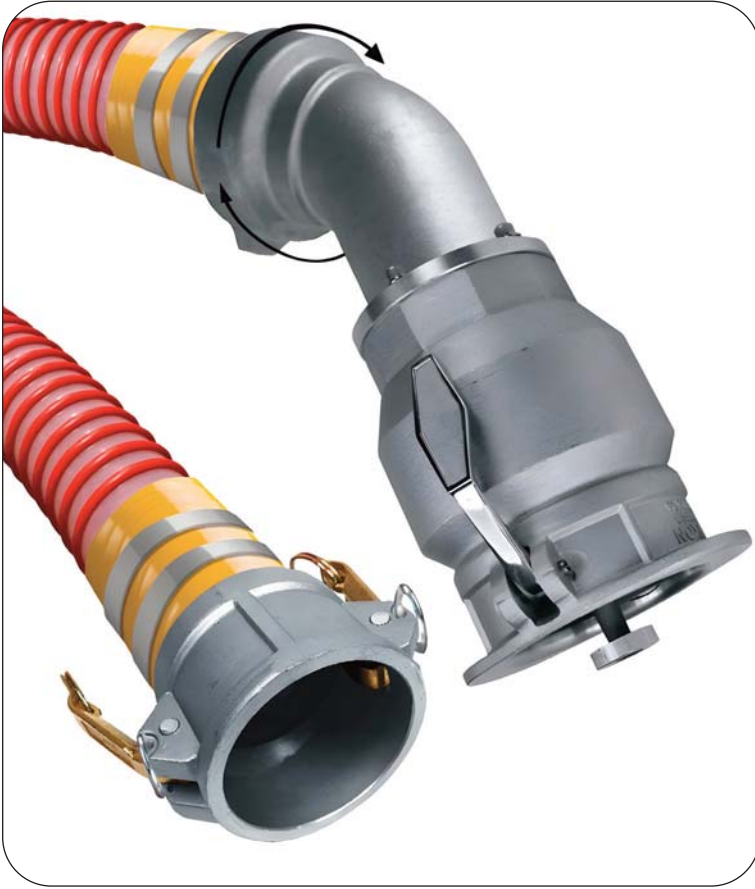
1/4" (6 mm), 3/8" (10 mm), 1/2" (12 mm), also available.

Stainless Steel	Nominal Hose Size		Sleeve ID		Sleeve Length	
	mm	in	mm	in	mm	in
Part #						
TSLS-138-S6	25	1	35	1.38	54	2.13
TSLS-150-S6	25	1	38	1.50	54	2.31
TSLS-163-S6	25	1	41	1.63	54	2.31
TSLS-175-S6	25	1	44	1.75	54	2.31
TSLS-188-S6	32	1 1/4	48	1.88	60	2.38
TSLS-213-S6	38	1 1/2	54	2.13	60	2.38
TSLS-225-S6	38	1 1/2	57	2.25	59	2.36
TSLS-263-S6	52	2	67	2.63	70	2.75
TSLS-275-S6	52	2	70	2.75	70	2.75
TSLS-313-S6	65	2 1/2	80	3.13	80	3.13
TSLS-369-S6	75	3	94	3.69	100	3.94
TSLS-375-S6	75	3	95	3.75	100	3.94
TSLS-388-S6	75	3	99	3.88	100	3.94
TSLS-483-S6	100	4	123	4.83	106	4.19
TSLS-494-S6	100	4	125	4.94	106	4.19



Accessories

Thorburn PVC Banding Sleeves

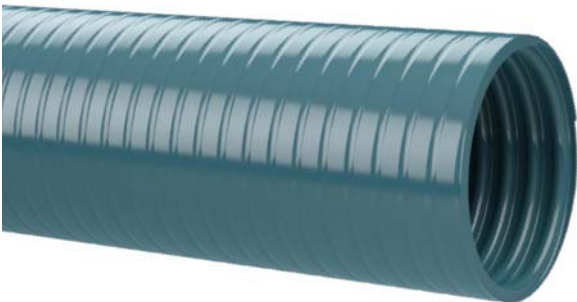


Thorburn Series TBSL PVC Banding Sleeves

Thorburn Banding Sleeves fill the voids between the PVC rod spirals of thorburn drop and transfer hoses, enabling the clamps to apply an even pressure for superior coupling holding power. In addition, Thorburn Banding Sleeves are cut into approximately 12-inch lengths and to help prevent kinking behind the fitting.

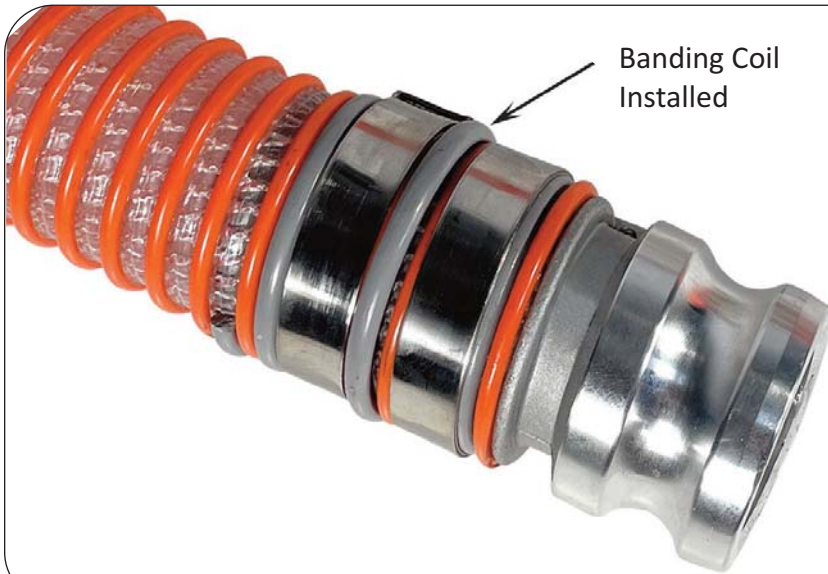
Construction:

Gray, non-food grade flexible PVC.



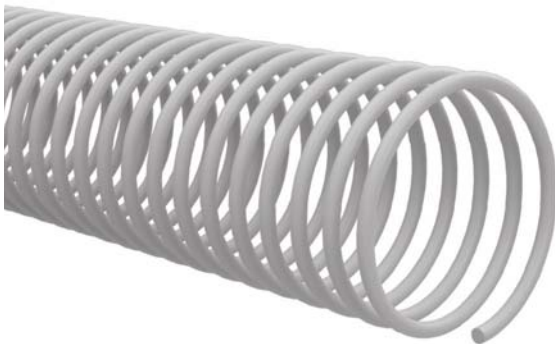
Thorburn Part #	Sleeve ID	Fits Hose ID	Weight
	in	in	lbs
TBSL-32	2.02	2	1.83
TBSL-48	3.03	3	3.06
TBSL-64	4.04	4	4.29

Thorburn PVC Banding Coils



Thorburn PVC Banding Coils are designed to fit and fill the area between the helix providing a smooth service for installation of tension bands and prevent over-flexing at couplings, particularly when attaching couplings to the hose ends. The banding coil is threaded (Clockwise or Counter Clockwise) onto the hose helix before the coupling is installed. Clamps are then applied over the coil and helix. In addition to providing a smooth surface, the coil can also add rigidity to the hose, especially at the coupling, which helps prevent excessive flexing and potential damage to the hose or coupling.

Thorburn Series TBCC | Counter Clockwise Banding Coils



Thorburn Part # Clear Color	Weight	Thorburn Part # White Color	Weight	Fits Hose ID in
	lbs		lbs	
TBCC-24-CL	0.20	-	-	1 1/2
TBCC-32-CL	0.30	TBCC-32-WT	0.25	2
TBCC-48-CL	0.60	TBCC-48-WT	0.45	3
TBCC-64-CL	0.90	-	-	4
TBCC-96-CL	1.30	-	-	6
TBCC-128-CL	1.40	-	-	8

Colors: Clear - For hoses with a high profile counterclockwise helix
White - For hoses with a low profile counterclockwise helix

Thorburn Series TBCW | Clockwise Banding Coils



Thorburn Part # Grey Color	Weight	Thorburn Part # Yellow Color	Weight	Fits Hose ID in
	lbs		lbs	
TBCW-24-GR	0.20	-	-	1 1/2
TBCW-32-GR	0.30	TBCW-32-YL	0.25	2
TBCW-48-GR	0.60	TBCW-48-YL	0.45	3
TBCW-64-GR	0.90	TBCW-64-YL	0.75	4
TBCW-96-GR	1.30	-	-	6
TBCW-128-GR	1.40	-	-	8

Colors: Grey - For hoses with a high profile clockwise helix
Yellow - For vapor recovery hoses

Thorburn Series TSHP Hose Support Saddles



Thorburn Series TSHP™ “Hose Support Saddles” protects the hose assembly from surpassing its minimum bend radius when being lifted, moved or supported. Thorburn Series TSHP™ “Hose Support Saddles” are designed to protect the hose assembly from kinking when suspended in a temporary or permanent position. Even wide body slings cannot effectively protect the hose from exceeding its bend radius.

Construction

Saddle Material: Abrasion resistant polyurethane

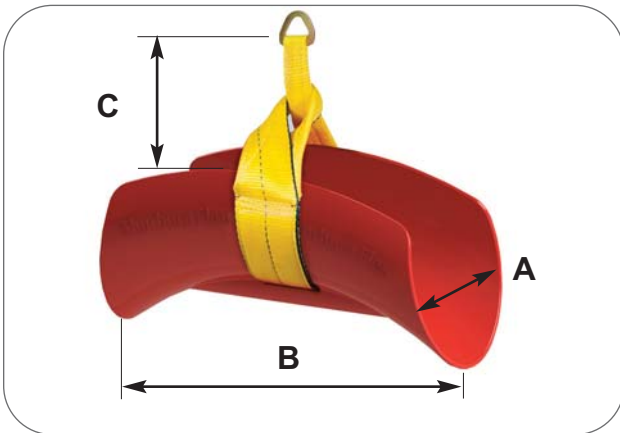
Maximum Temperature: 93°C (200°F)

Safety Factor over rated capacity: 5:1

Sling Material: UV resistant high tensile polyester

Applications

- Petrochemical industry truck loading/unloading stations
- Oil & gas drilling installations
- Ship to shore loading/unloading stations
- Aircraft refueling depots
- Industrial and nuclear power plant installations that require temporary or permanent re-routing of piping during maintenance and emergency service.



Part Number	Nominal Hose I.D.		(A) Max. Hose O.D.	(B) Saddle Length	Sling Rated Capacity	(C) Sling Length
	inch	DN	mm	mm	kg	mm
THSP-16	1.00	25	25	406	612	203
THSP-20	1.25	32	57	445	612	140
THSP-24	1.50	38	64	495	612	165
THSP-32	2.00	50	80	510	612	184
THSP-48	3.00	80	105	550	907	203
THSP-64	4.00	100	130	570	907	203
THSP-96	6.00	150	205	646	3629	572
THSP-128	8.00	200	250	775	5443	457
THSP-160	10.0	250	360	1035	6803	489
THSP-192	12.0	300	500	1035	6803	591

Thorburn Series TH-20/TH-40 ThorCart Hose Taxi

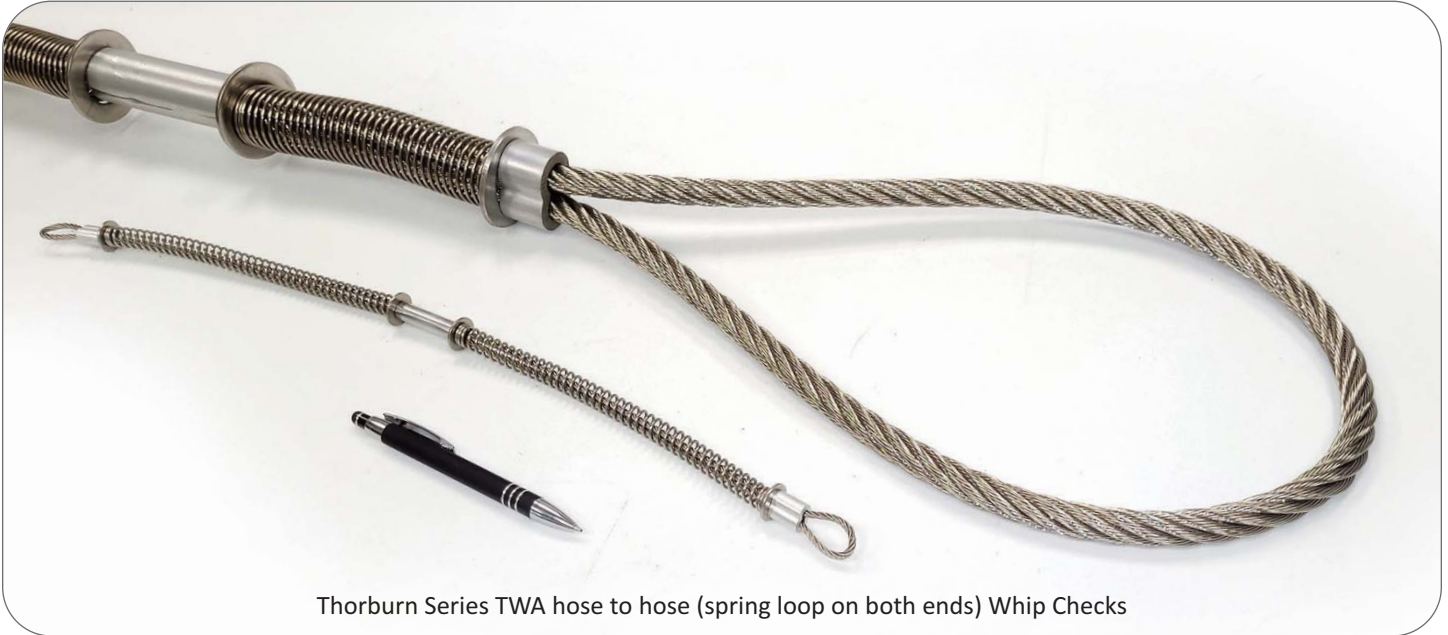


Thorburn ThorCart TH-20

Thorburn ThorCart Hose Taxis provide safe on-site transportation of long hose assemblies to installation or storage areas. They are available in two main models: the TH-20 (Light Duty) for composite hose assemblies and the TH-40 (Heavy Duty) for large-diameter material-handling hoses. Each ThorCart is custom designed to fit site requirements and prevent abrasion damage caused by dragging hoses on the ground. The system also reduces risks of mishandling, such as over-bending or kinking during transport. The TH-40 features a low center of gravity for stability and can be used in tandem via a hitch system to carry longer hoses. All models are built to handle uneven surfaces and include straps for securing hoses. Standard 360° pivot wheels allow smooth movement in any direction.

Ordering Codes: TH-20 (Light Duty Hose Taxi) | TH-40 (Heavy Duty Hose Taxi)

Thorburn Hose Assembly Whip Checks



Thorburn Series TWA hose to hose (spring loop on both ends) Whip Checks



Thorburn Series TWA hose to hose whip check

Warning: Replace and discard if a blowout event occurs. Always install fully extended with no slack, with the cable centered on the hose connection when possible.

Thorburn Whip Checks are designed to give protection from hose whipping if a hose disconnects under high pressure. Thorburn Whip Checks are an easy to use safety product to prevent injury and are highly resistant to rust and corrosion. Thorburn Whip Checks do not require any tools to install having spring-loaded loops in the cable ends to easily pass over the couplings, for a firm grip on the hose. Highly recommended for high pressure applications.

Features:

- Sizes for a range from 1/2" through 10" hose diameters
- 200 PSI air service rating
- 5X safety ratio (1000 PSI burst)
- Galvanized Steel or 304 Stainless Steel
- Available as hose-to-hose or hose-to-tool styles



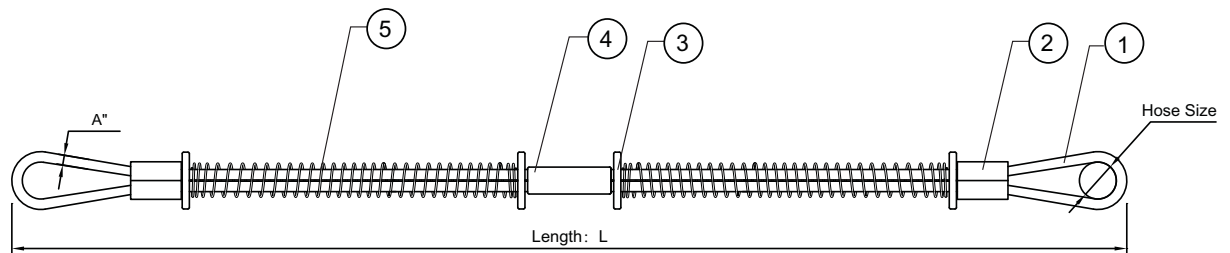
Thorburn's Series TWSR is designed for one side of the whip check to loop over a pneumatic tool such as the neck of a jackhammer and the other spring end to loop around the hose.

Thorburn Hose Assembly Whip Check Specifications

Thorburn Series TWB/TWA Hose To Hose Whip Check

Thorburn Part Number		Hose Size	Length (L)		Cable OD (A)		Approximate Break Strength	Weight
SS304	Galvanized	in	in	mm	in	mm	KN	kg/pc
TWB1-S4	TWB1-CP	1/2" - 1 1/4"	20.25	514.3	1/8"	3.0	6.5	0.11
TWA2-S4	TWA2-CP	1 1/2" - 3"	38	965.2	1/4"	6.0	27.5	0.45
TWA4-S4	TWA4-CP	4"	44	1117.6	3/8"	9.5	38.2	1.15
TWA6-S4	TWA6-CP	6"	43.5	1100	3/8"	9.5	85.5	1.20
TWA8-S4	TWA8-CP	8"	55	1400	9/16"	14.0	150	2.86

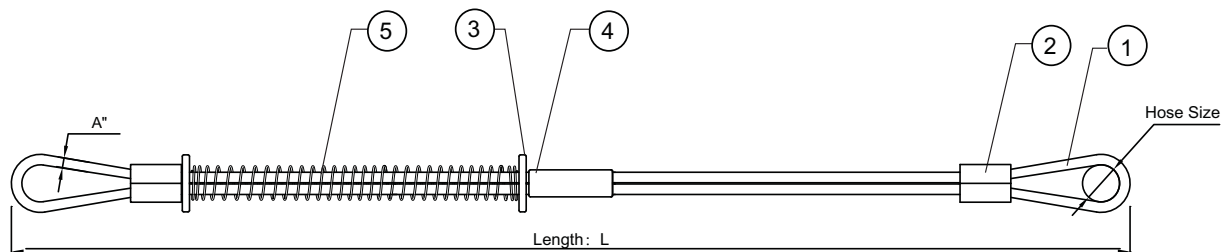
1. Wire Rope
2. Slider
3. Flat Washer
4. Ferrules
5. Spring



Thorburn Series TWSR Hose To Tool Whip Check

Thorburn Part Number		Hose Size	Length (L)		Cable OD (A)		Approximate Break Strength	Weight
SS304	Galvanized	in	in	mm	in	mm	KN	kg/pc
TWSR1-S4	TWSR1-CP	1/2" - 1 1/4"	20.25	514.3	1/8"	3.0	6.5	0.07
TWSR2-S4	TWSR2-CP	1 1/2" - 3"	38	965.2	1/4"	6.0	27.5	0.37
TWSR4-S4	TWSR4-CP	4"	44	1117.6	3/8"	9.5	37.2	1.00
TWSR6-S4	TWSR6-CP	6"	43.5	1100	3/8"	9.5	85.5	1.05
TWSR8-S4	TWSR8-CP	8"	55	1400	9/16"	14.0	150	2.68

1. Wire Rope
2. Slider
3. Flat Washer
4. Ferrules
5. Spring



Thorburn Series TWS Hose Assembly Whip Socks



Thorburn's Whip Sock high pressure hose restraints are designed to significantly reduce the risk of injury caused by a high pressure hose blow-out failure. The magnitude of force caused by a large-diameter pressurized hose can cause fatal injury and be difficult to quickly restrain. Thorburn Whip Socks also provide a grip on a hose over the larger area so to securing the hose and prevent it from whipping if a high-pressure accident causes the hose to release from its place. The double leg loop ends will also prevent the hose from side to side whipping under pressure. Whip Socks are Ideal for use in hydraulic systems or to restrain high pressure hoses dispensing water, air, sand, steam, concrete and slurry. Thorburn Whip Sock systems are capable of significantly higher pressure ratings than the standard Whip Check or nylon hose safety restraints and can also be connected directly to one another without a clamp where two hoses are being joined. Each restraint features thimble eyes that are used as shackle points when fitted over the hose.

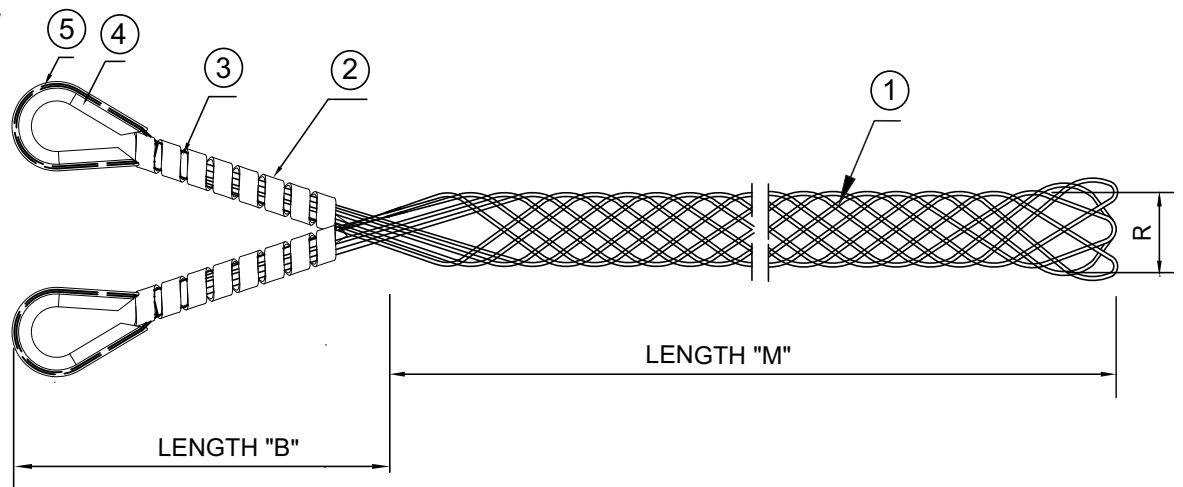
Features:

- Sizes for a range from 1/2" through 6" hose diameters
- Keeps personnel and equipment safe
- Minimizes the high-pressure hose whipping
- Protects hoses from abrasion and wear
- 15" long leads for easier and more flexible installation
- Galvanized or 304 stainless steel

Thorburn Series TWS Hose Assembly Whip Sock Specifications

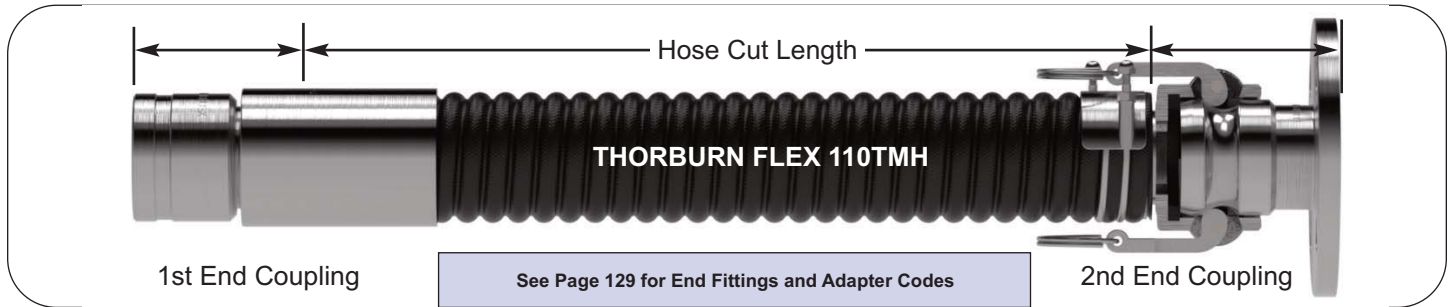
Thorburn Part Number		Hose Size	Dimension (B)		Dimension (R)				Dimension (M)		Approx. Break Strength
					Min		Max				
SS304	Galvanized Steel	in	in	mm	in	mm	in	mm	in	mm	KN
TWS08-S4	TWS08-CP	1/2"	5.9	150	0.75	19	1.10	28	19.69	500	38
TWS12-S4	TWS12-CP	3/4"	7.1	180	1.10	28	1.57	40	23.62	600	57
TWS16-S4	TWS16-CP	1"	7.1	180	1.57	40	1.97	50	31.50	800	57
TWS24-S4	TWS24-CP	1 1/2"	9.8	250	1.97	50	2.36	60	35.43	900	100
TWS32-S4	TWS32-CP	2"	10.0	254	2.36	60	2.76	70	35.43	900	100
TWS40-S4	TWS40-CP	2 1/2"	10.6	270	2.76	70	3.35	85	39.37	1000	100
TWS48-S4	TWS48-CP	3"	15.0	381	3.35	85	3.94	100	39.37	1000	158
TWS56-S4	TWS56-CP	3 1/2"	16.5	420	3.94	100	4.72	120	47.24	1200	158
TWS64-S4	TWS64-CP	4"	23.6	600	4.72	120	5.91	150	55.12	1400	195
TWS96-S4	TWS96-CP	6"	23.6	600	5.91	150	7.48	190	63.00	1600	195
TWS128-S4	TWS128-CP	8"	23.6	600	7.51	191	8.66	220	63.00	1600	195

1. Wire Mesh Assembly
2. Shoulder Protector
3. Aluminum Sleeve
4. Capel
5. Wire Rope



Warning: When installing a Whip Stop Safety Restraint, ensure proper fit by verifying if the diamond-pattern of the braiding is equally proportioned. If the diamonds are longer than they are wide, then the restraint is too big and the hose is at risk of slipping. After installing on the hose, pull on the loop ends to ensure there is no movement or rotation of the hose. Inspect Whip Sock restraints regularly, and replace if there is any sign of rust or broken cable strands.

How to Order Thorburn Material Handling Hose Assemblies



Hose Type	Hose Size	1st End* Coupling/Adapter	1st End* Material	1st End Clamp/Crimp & Material	2nd End* Coupling/Adapter	2nd End* Material	2nd End Clamp/Crimp QTY & Material	OAL	Accessories
65TMH	32	07	S6	CRS6	28-64	S6-S6	J2S6	120	TQ
RUBBER HOSE 62TMH (8) 662TMH (9) 68TMH (10) 168TMH (11) 63TMH (12) 663TMH (13) 64TMH (14) 65TMH (15) 990TMH (16) 991TMH (17) 992TMH (18) 993TMH (19)	SIZES CODES in (DN) 06 = 3/8" (10) 08 = 1/2" (15) 12 = 3/4" (20) 16 = 1" (25) 20 = 1 1/4" (32) 24 = 1 1/2" (40) 32 = 2" (50) 40 = 2 1/2" (65) 48 = 3" (80) 64 = 4" (100) 96 = 6" (150) 126 = 8" (200) 160 = 10" (250) 192 = 12" (300) For sizes not shown, refer to the specific hose part number or calculate the size code using multiples of 1/16".	COUPLING MATERIAL CODES S1 = 301 Stainless Steel S2 = 201 Stainless Steel S3 = 303 Stainless Steel S4 = 304 Stainless Steel S6 = 316 Stainless Steel CS = Carbon Steel CP = Carbon Steel Plated BB = Brass NB = Brass Naval BR = Bronze AL = Aluminum AB = Aluminum Brass AM = Alum. Maleable Iron AH = Aluminum Hard Coat MI = Maleable Iron MP = Maleable Iron Plated MM = Monel NN = Nylon PP = Polypropylene X = Specify						Overall Length (Inches) Tolerances on length: +\ - 1% For metric length, put mm after number	
See Page 129 for End Fittings and Adapter Codes * Place Adapter Code after Coupling Code separated with a hyphan and place material code separated with a hyphan. If no adapter, leave blank									
HYBRID HOSE 110TMH (21) 111YMH (22) 120TMH (23) 140TMH (24)		CLAMP CODES D = 65C Preformed Fast Lock** (111) G = 71C - Stainless Bolt Clamp (113) H = 72C - SS Tension Clamp (103) K = 777C - Perma-Clamp (114) I = 770CX - Spiral Clamp (CW) (115) J = 771CX - Spiral Clamp (CCW) (115) Quantity of Clamps (If 1 leave blank) 2, 3, 4 (Specify # after clamp code) Bolt On Safety Clamps Q = 70BSC** for Series 70 Couplings (105) R = 80BSC** for Series 80 Couplings (106) Crimp Ferrules (Notched) S = TF Plated Steel (117) T = TFS6 316SS (117) Crimp Ferrules (No Notch) U = TSS Short, Plated Steel (118) V = TSSS Short, 316SS (118) W = TSL Long, Plated Steel (119) X = TSLS Long, 316SS (119) Other Y = Specify							
PVC HOSE 160PMH (26) 162PMH (27) 164PMH (28) 141PMH (29) 137PMH (30)								ACCESSORY CODES Leave blank for none Camlock Adapters TQ Safety Pin (85) TCH-X "S" Hook Chain (85) (X=Specify Material BB or S6) TCHCS Sash Type Chain (85) Hose Assembly Accessories TWA Whip Check (125) TWB Whip Check (125) TWSR Whip Check (125) TWS Whip Sock (126)	
PU HOSE 1664PMH (32) 1665PMH (33) 1670PMH (34) 1668PMH (35) 1669PMH (36) 1671PMH (37)									
CEMENT HOSE 166TPM (39) 167TPM (40) 168TPM (41) 169TPM (42) 170TPM (43)									
MARINE HOSE 138PMH (45) 57TPS (46) 57TPH (47)									
SEWER HOSE 47TSP (49)									
CONDUIT HOSE 70TMH (51) 770TMH (52) 771PMH (53)									
** Choose Material: (Place after Code) S6 = 316SS, CP = Plated Steel, BB = Brass, MI = Maleable Iron									

** Choose Material: (Place after Code)

S6 = 316SS, CP = Plated Steel, BB = Brass, MI = Maleable Iron

How to Order Thorburn Material Handling Hose Assemblies

END FITTINGS CODES

Thorburn Standard Crimp Hose Couplings

01-Series MP Male Pipe NPT Rigid	(55)
02-Series FJX Female JIC 37° Swivel	(56)
03-Series BWT Butt Weld Tube	(56)
04-Series BWP Butt Weld Pipe	(57)
05-Series LF Swivel Flange 150 lbs	(57)
06-Series LFPN Swivel Flange PN10/PN16	(58)
07-Series VC Victaulic Coupling	(58)
08-Series TC Tri-Clamp Sanitary Flange	(59)

Thorburn Combination Shank Couplings

09-Series 11IC Male NPT	(60)
10-Series 11FS Stub End for Floating Flange	(60)
11-Series 11IV Victaulic Groove	(61)
12-Series 11IW Welded End	(61)
13-Series 25I Hose Mender	(61)

Thorburn Shank Couplings - Water Suction & Discharge

14-Style 14I Complete Set	(62)
15-Style 15I Female Half	(63)
16-Style 16I Male Half	(63)

Thorburn Split Flange Couplings

17-Style FAS150 Smooth Cover	(64)
18-Style FAC150 Corrugated Cover	(64)

Thorburn Concrete Placement Couplings

19-Style TSIO Raised End One Piece California Type	(65)
20-Style TSIH Heavy Duty Raised End California Type	(66)
21-Style TSIV Grooved Insert	(66)
22-Style TSIO Male NPT Insert	(66)

Thorburn Gunit Shotcrete Couplings

23-Style TSGN Complete Set	(67)
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Thorburn Sandblast Couplings

24-Style TSBN Nozzle Holder	(68)
25-Style TSBQ Sandblast Coupling	(69)
26-Style TSBFA Female NPT Adapter	(69)

Thorburn Series 733 Guard Lok™ Camlock Couplings

27-Style 733C-HD Female Hose Shank Coupler	(75)
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Thorburn Series 633 Camlock Couplings

28-Style 633C Female Camlock Shank Coupler	(75)
29-Style 633E Male Camlock Shank	(76)
30-Style 633E-HD Male Camlock Shank	(76)

ADAPTER CODES

Thorburn Series 733 Camlock Adapters

31-Style 733B Male Camlock Adapter	(79)
32-Style 733B-HD Male Camlock Adapter	(79)
33-Style 733D Female Camlock Adapter	(79)
34-Style 733D-HD Female NPT Coupler	(79)
35-Style 733BBW-HD Butt Weld Camlock Adapter	(80)
36-Style 733DSW-HD Socket Weld Camlock Adapter	(80)
37-Style 733DSW4-HD Socket Weld Camlock Adapter	(81)
38-Style 733PFC-HD Camlock Flanged Adapter 150#	(82)
39-Style 733PFC-HD Camlock Flanged Adapter PN10	(82)
40-Style 733TTC-HD Flanged Tank & Truck Adapter	(83)
41-Style 733-90CC-HD 90° X 90° Coupler	(84)
42-Style 733-90EC-HD Coupler X Male Adapter	(84)
43-Style 733-90FPC-HD Coupler X Female NPT	(84)

Thorburn Series 633 Pin Lock Camlock Adapters

44-Style 633A Female NPT to Male Adapter	(76)
45-Style 633A-HD-Female NPT to Male Adapter	(76)
46-Style 633F Adapter Male NPT	(77)
47-Style 633F-HD Adapter Male NPT	(77)
48-Style 633ASW Socket Weld Camlock Adapter	(77)
49-Style 633ASW Socket Weld Camlock Adapter	(77)

50-Style 633FBW Butt Weld to Male Adapter	(78)
51-Style 633FBW-HD Butt Weld to Male Adapter	(78)
52-Style 633-DP Camlock Plug Adapter	(78)
53-Style 633B Male Camlock Adapter	(79)
54-Style 633B-HD Male Camlock Adapter	(79)
55-Style 633D Female Camlock Adapter	(79)
56-Style 633D-HD Female Camlock Adapter	(79)
57-Style 633BBW Butt Weld Camlock Adapter	(80)
58-Style 633BBW-HD Butt Weld Camlock Adapter	(80)
59-Style 633DSW Socket Weld Camlock Adapter	(80)
60-Style 633DSW-HD Socket Weld Camlock Adapter	(80)
61-Style 633DSW4 Socket Weld Camlock Adapter	(81)
62-Style 633DSW4-HD Socket Weld Camlock Adapter	(81)
63-Style 633DC Camlock Dust Cap	(81)
64-Style 633PFC Camlock Flanged Adapter 150#	(82)
65-Style 633PFC-HD Camlock Flanged Adapter 150#	(82)
66-Style 633PFC Camlock Flanged Adapter PN10	(82)
67-Style 633PFC-HD Camlock Flanged Adapter PN10	(82)
68-Style 633PFE Camlock Flanged Adapter 150#	(82)
69-Style 633PFE-HD Camlock Flanged Adapter 150#	(82)
70-Style 633PFE Camlock Flanged Adapter PN10	(82)
71-Style 633PFE-HD Camlock Flanged Adapter PN10	(82)
72-Style 633TTC Flanged Tank & Truck Adapter	(83)
73-Style 633TTC-HD Flanged Tank & Truck Adapter	(83)
74-Style 633TTE Flanged Tank & Truck Adapter	(83)
75-Style 633TTE-HD Flanged Tank & Truck Adapter	(83)
76-Style 633-90CC 90° X 90° Coupler	(84)
77-Style 633-90CC-HD 90° X 90° Coupler	(84)
78-Style 633-90EC Coupler X Male Adapter	(84)
79-Style 633-90EC-HD Coupler X Male Adapter	(84)
80-Style 633-90FPC Coupler X Female NPT	(84)
81-Style 633-90FPC-HD Coupler X Female NPT	(84)

Thorburn TB Bauer Type B Style Lever Couplings

82-Male Hose Shank	(86)
83-Female Hose Shank	(86)

Thorburn TB Bauer Type B Style Lever Adapters

84-Male Socket with Male NPT	(87)
85-Female Plug with Male NPT	(87)
86-Male Socket with 150 ASA Flange	(87)
87-Female Socket with 150 ASA Flange	(88)
88-Female Plug with Gasket	(88)

Thorburn TP Perrot Type C Style Lever Couplings

89-Female Socket with Hose Stem	(90)
90-Male Plug with Hose Stem	(91)

Thorburn TP Perrot Type C Style Lever Adapters

91-Female Socket with Male NPT	(91)
92-Male Plug with Male NPT	(91)
93-Female Socket with 150 ASA Flange	(92)
94-Male Plug with 150 ASA Flange	(92)
95-Female End Cap	(92)
96-Male End Cap	(93)

Thorburn Series 70 Hose Couplings for Bolt-On Safety Clamps

97-Style 71FBSP Female BSPP-Smooth Stem	(94)
98-Style 72FBSP Female BSPP-Serrated Stem	(95)
99-Style 73MBSPT Male BSPT-Smooth Stem	(95)
100-Style 74MBSPT Male BSPT-Serrated Stem	(95)
101-Style 75FLX Fixed Flange-Smooth Stem	(96)
102-Style 76FLX Fixed Flange-Serrated Stem	(96)
103-Style 77FLXS Swivel Flange-Smooth Stem	(97)
104-Style 78FLXS Swivel Flange-Serrated Stem	(97)

Thorburn Series 80 Hose Couplings for Bolt-On Safety Clamps

105-Style 81FBSP Female BSPP Fitting	(98)
106-Style 82MBSPT Male BSPT Fitting	(99)
107-Style 83FLX Fixed Flange	(99)
108-Style 84FLXS Swivel Flange	(99)



60TMH/61TMH Flex-Pipe

Thorburn Series (N)60TMH/61TMH

Custom Engineered Suction & Discharge Flexpipe



60TMHSC smooth tube & corrugated cover for smooth flow and an MBR as low as 3 X ID depending on pressure



60TMHCC corrugated tube & corrugated cover with integral annular rings to reduce the MBR as low as 2 X ID depending on pressure



Available with factory assembled permanently attached crimped ends

Sizes: 12 mm to 1200 mm I.D. | **Pressure Range:** Full Vacuum to 70 bar (1000 psi)

Thorburn Series 60TMH and 61TMH Flexpipe assemblies are custom-built multi-purpose hoses designed to replace rigid metal piping where flexibility, durability, and performance are critical. These flexible connectors are engineered to absorb vibration, noise, thermal movement, misalignment, and lateral deflection in demanding industrial environments. Ideal for systems requiring resistance to corrosion, electrolysis, abrasion, or water hammer, Thorburn Flexpipe solutions ensure long-term reliability under high mechanical and thermal stress.

Construction

Tube: Available in a range of elastomeric compounds to match media and operating conditions. Smooth or corrugated interior and wall thickness are specified based on pressure, flexibility, and chemical compatibility. *Please call Thorburn for details.*

Reinforcement: Multi-layered, cross-woven high-tensile calendared fabric.

60TMH: Reinforced with heavy-duty helix wire or annular rings to maintain structural integrity across pressure ranges, from full vacuum to 70 bar. Engineered to maintain rigidity over long runs or achieve tight bend radii (as low as 2× I.D.).

61TMH: Collapsible discharge design with the same high-strength construction for flexible deployment and efficient storage.

Cover: Various elastomeric compounds available with smooth or corrugated finishes to suit environmental conditions, abrasion, and handling requirements.

Sizes: 1/2" (12mm) to 48" (1200mm) I.D. up to 100ft (30m) long.

Longer lengths available on special order only.

Engineering Notes:

1. All assemblies are custom-designed based on application requirements—media, pressure, and bend radius.
2. Standard minimum bend radius is approximately 6× the hose I.D.
3. Corrugated construction enhances flexibility at lower pressures.
4. Smooth configurations with annular rings optimize performance at high pressures.
5. Bending resistance increases with internal pressure—consult Thorburn Engineering for optimal design.
6. Optional arches can be incorporated to accommodate axial movement.
7. Special end connections and configurations available upon request.

Engineered to Perform, built to Last!

Contact Thorburn for application-specific recommendations and engineered hose system solutions.

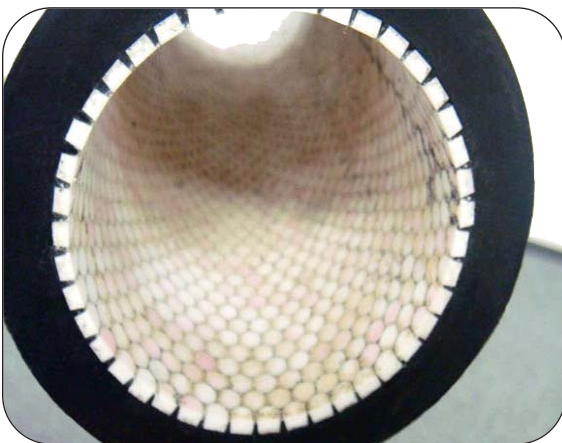
Thorburn Series (N)60TMH/61TMH

Ceramic Lined Custom Multi-Purpose Suction & Discharge Hose



Ceramic lined for extreme abrasion

Thorburn Series 60TMH/61TMH ceramic lined custom hose assemblies are engineered for the most demanding abrasion and high-temperature applications. Custom-built in a wide range of sizes and available in continuous lengths up to 15 meters, these hoses feature an advanced ceramic lining that provides exceptional resistance to wear, impact, and heat — ideal for the transfer of highly abrasive materials such as alumina and zirconia. The ceramic lining is vulcanized into the hose body using a high-temperature inorganic adhesive, enabling reliable operation at temperatures up to 350°C (lining only). A proprietary convex/concave ceramic bead design allows the hose to maintain an impressive 6:1 bend radius without sacrificing structural integrity or flexibility. Thorburn's 60TMH/61TMH ceramic lined hose system is the optimal solution where flexibility, durability, and extreme wear resistance are critical.



Thorburn 60TMH rubber hose lined with ceramic balls composed of a minimum of 96% silica

Features

Extreme Wear Resistance: Vulcanized ceramic ball lining offers superior abrasion and impact resistance, significantly extending service life in aggressive material handling environments.

High-Temperature Capability: Ceramic lining withstands continuous temperatures up to 350°C, making it ideal for hot material transfer.

Flexible Yet Tough: Unique bead configuration delivers a flexible hose design without compromising on durability or internal protection.

Full Ceramic Protection: All wetted surfaces are ceramic lined to prevent erosion and chemical degradation at the point of flow.

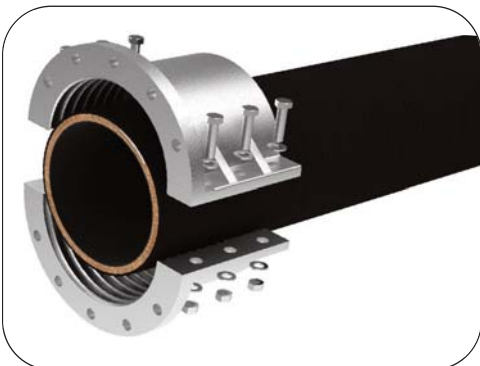
Rugged Outer Cover: Available in smooth or corrugated elastomeric construction with abrasion- and UV-resistant properties, supported by high-tensile fabric and steel wire helix reinforcement.

Minimum bend radius of 6 X ID: To get into very tight location

Safety Factor: is four times the working pressure designed for ASME B31.1 and B31.3

Thorburn Series FAS/FAC 150

Field Attachable Fitting-to -End Joints for 60TMHSC and 60TMHCC Hoses



Thorburn FAS150 Smooth Cover Coupling



Thorburn FAC150 Corrugated Cover Coupling

Thorburn offers a unique field-attachable solution. Hoses are supplied in bulk lengths and can be easily cut and assembled on-site using Thorburn's reusable aluminum split cast couplings — a no-weld, bolt-on solution that simplifies installation and reduces downtime.

No Process Contact: Couplings are isolated from internal flow, extending fitting life and enabling safe reuse.

On-Site Assembly: Cut-to-length design supports fast field installation without special tools.

Inventory Efficiency: Stock bulk hose lengths and reusable fittings instead of pre-fabricated assemblies — reducing lead times and storage costs.

Versatile Connections: Accommodates a wide range of flange specifications.

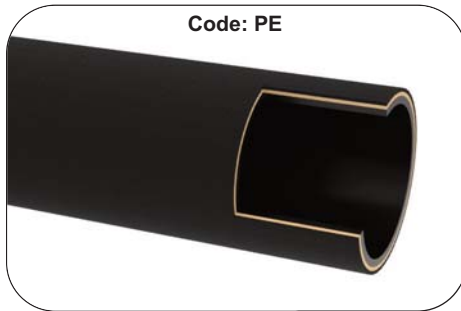
Temperature Range: -40°C to +100°C (hose body), up to 350°C (ceramic lining only)

Reinforcement: High-tensile fabric with steel wire helix

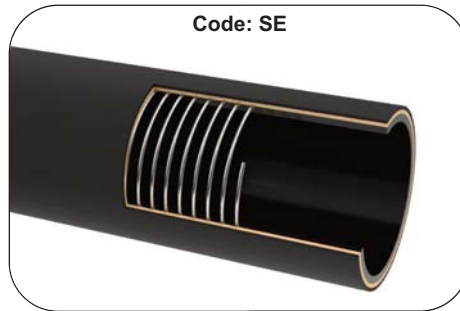
Applications

- Mineral processing plants
- Sand and gravel industries
- Cement and coal industries
- Petrochemical plants
- Ship to Ship Transfer
- Ship to Shore Transfer

Thorburn (N)60TMH/61TMH Integrated Ends



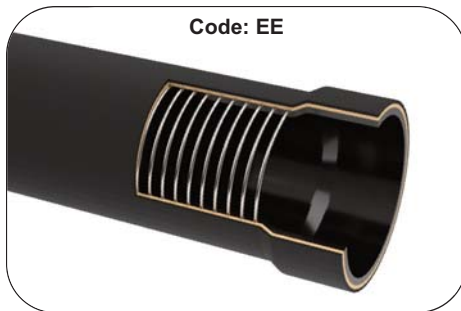
Plain End



Soft End



Rubber & Duck Flanges



Enlarged End



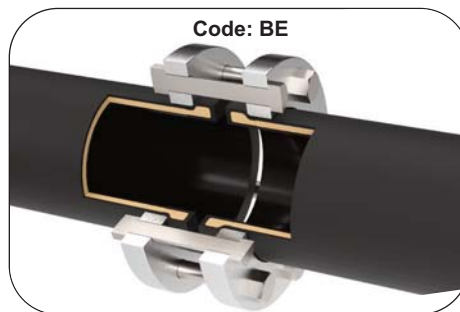
Wire To End



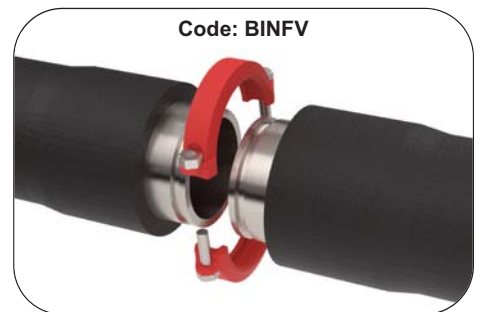
Integral Flange End



Integral Tapered Nozzle Ends



Beaded Ends With Split Flanges



Built-In Victaulic Nipple



Built-In Nipple Rubber Lined Flanged 150lbs & 300lbs



Built-In Nipple Flanged 150lbs & 300lbs



Built-In Nipple Threaded

Thorburn (N)60TMH/61TMH Standard Crimp End Fittings



Fixed Flange - ANSI, PN



Swivel Flange - ANSI, PN



Male NPT/BSPT



Female NPT



Female Cam Coupling Type C



Male Cam Adapter Type E



Victaulic Grooved



Butt Weld End



Sanitary Flange



Thorburn Series (N)60TMH/61TMH Ordering Codes

Hose Models

(N)60TMH - Smooth tube & smooth cover Suction & Discharge Hose
(N)60TMHSC - Smooth tube & corrugated cover Suction & Discharge Hose
(N)60TMHCC - Corrugated tube & corrugated cover Suction & Discharge Hose
(N)61TMH - Discharge Hose

Tube & Cover Compounds

Our Flexpipe hoses are manufactured to the latest RMA standards.

Code A Black natural rubber up to 180°F (82°C).
Code B Pure gum up to 180°F (82°C).
Code C* Neoprene up to 212°F (100°C) - CF = FDA Compliant - White Neoprene
Code D* Nitrile up to 225°F (107°C) - DF = FDA Compliant & ND = NSF-61 Compliant - White Nitrile
Code E H₃ (Butyl) up to 300°F (148°C).
Code F Hypalon up to 250°F (121°C).
Code H* EPDM up to 300°F (148°C) - HF = FDA Compliant & NH = NSF-61 Compliant - White EPDM
Code I FKM up to 350°F (176°C).
Code J PTFE Lined up to 400°F (204°C).
Code K PFA Lined up to 400°F (204°C).
Code L Silicone up to 500°F (260°C).
Code M HNBR up to 300°F (148°C).
Code N** Nitrile NSF-61 Compliant tube (Only for potable water service).
Code O Ceramic Lined up to 400°F (204°C).
Code U UHMW up to 180°F (82°C).
Code X Specify.

*Thorburn offers FDA compliant white Neoprene, white Nitrile and white EPDM. Add suffix "F" after Tube code.

**Thorburn offers NSF-61 Compliant tube for white nitrile & white EPDM. Add suffix "N" before tube code.

Tube & Cover Thickness

Code 01 1/16" (1.5mm)
Code 02 1/8" (3mm)
Code 04 1/4" (6mm)
Code 06 3/8" (10mm)
Code 08 1/2" (13mm)

Note: PTFE lining is typically less than 1/8" (3mm)

End Materials

Code CS Carbon steel
Code S4 304 Stainless steel
Code S6 316 Stainless steel
Code AL Aluminum (Field Attachable Fittings Only)
Code X Specify

Working Pressure Codes

Code 25 25 psi (2 bar)
Code 75 75 psi (5 bar)
Code 100 100 psi (7 bar)
Code 150 150 psi (10 bar)
Code 250 250 psi (17 bar)
Code 500 500 psi (34 bar)
Code 1000 1000 psi (69 bar)

Note: Minimum burst pressure is 4X working pressure

Flexpipe Integrated Ends

Code PE - Plain End
Code SE - Soft End
Code RDF - Rubber Duck Flange with Split Rings
Code EE - Enlarged End
Code WTE - Wire To End
Code IFE - Integral Flange End
Code ITN - Integral Rubber Tapered Nozzle End
Code BE - Beaded Ends with Split Flange
Code BINFV*** - Built In Victaulic Nipple
Code NLS150 - Built In Nipple Rubber Lined Flange 150lb
Code NLS300 - Built In Nipple Rubber Lined Flange 300lb
Code BINF150*** - Built In Nipple with Flange 150lbs drill size
Code BINF300*** - Built In Nipple with Flange 300lbs drill size
*** Built In Nipple Threaded

Flexpipe Crimped Ends

Code 01 - Female NPT
Code 02 - Male NPT
Code 03 - Fixed Flange 150 Lb. RF
Code 04 - Fixed Flange 300 LB. RF
Code 05 - Fixed Flange PN10
Code 06 - Fixed Flange PN16
Code 07 - Fixed Flange PN25
Code 08 - Fixed Flange PN40
Code 09 - Swivel Flange 150 Lb. RF
Code 10 - Swivel Flange 300 LB. RF
Code 11 - Swivel Flange PN10
Code 12 - Swivel Flange PN16
Code 13 - Swivel Flange PN25
Code 14 - Swivel Flange PN40
Code 15 - Female Cam Coupler
Code 16 - Male Cam Adapter
Code 17 - Butt Weld End
Code 18 - Victaulic Grooved
Code 19 - Sanitary Flange

Field Attachable Fitting-to-End Joints

Code FAS150 - Smooth Cover Split Cast 150lbs
Code FAS300 - Smooth Cover Split Cast 300lbs
Code FAC150 - Corrugated Cover Split Cast 150lbs
Code FAC300 - Corrugated Cover Split Cast 300lbs

Crimp / Clamp

CRS6 - Crimp 316SS
CRCS - Crimp Plated Steel
CLS6 - Clamp 316SS
CLCS - Clamp Plated Steel
Integrated or Field Attachable - Leave Blank

How To Order Thorburn Series (N)60TMH/61TMH Integrated & Crimp End Hose Assemblies

Hose Type	Hose Size	Cover & Tube Compound	Cover & Tube Thickness	1st End	1st End Material	Crimp/ Clamp	2nd End	2nd End Material	Crimp/ Clamp	Working Pressure	OAL
(N)60TMH	48	H	04	10	S6	CRS6	10	S6	CRS6	150	120
(N)60TMH (N)60TMHSC (N)60TMHCC (N)61TMH	08 = 1/2" (DN15) 12 = 3/4" (DN20) 16 = 1" (DN25) 32 = 2" (DN50) 40 = 2 1/2" (DN65) 48 = 3" (DN80)	64 = 4" (DN100) 80 = 5" (DN125) 96 = 6" (DN150) 128 = 8" (DN200) 160 = 10" (DN250) 192 = 12" (DN300)	Note: Insert Suffix "X" at the end of the part number to specify special construction options such as, corrugated tube, corrugated cover & annular rings to meet specific design requirements.								Overall Length (Inches) Add suffix mm for millimeters



Technical Data

Understanding Flanges



What is a flange?

A flange is a method of connecting pipes, valves, pumps and other equipment to form a piping system. It also provides easy access for cleaning, inspection or modification. Flanges are usually welded or screwed. Flanged joints are made by bolting together two flanges with a gasket between them to provide a seal. When fastened to the pipe, a flange may also be a plate or ring to shape a rim at the end of a pipe.

How are flanges classified?

A lot of common flange standards are to be found around the globe. These are designed to have standardized dimensions to allow easy interchangeability and functionality. ASA / ASME (USA), PN / DIN (EU), BS10 (British / Australian), and JIS / KS (Japanese / Korean) are general world standards. For this catalogue we will focus on ASME and PN type flanges only.

ASME flanges

ASME flanges are classified as per ASME B16.5 standard. The pressure rating of flanges range from 150# to 2500#. The term "lb", "class" and "#" are used interchangeably to designate the pressure rating of the flange. The fact is that 150 lb has no relation to 150 psi and neither does the 300 or 600 lb correlate to 300 or 600 psi pressure ratings. For example, the maximum pressure for a Class 150 flange is 285 psi. Pressure rating of the flange depends on the material (A105, stainless, nickel alloy etc.), the heat treating condition and pressure "class".

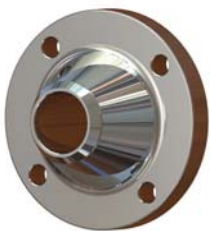
The standard includes flanges with rating class designations 150, 300, 400, 600, 900, 1500, and 2500 in sizes NPS 1/2 through NPS 24, with requirements given in both metric and US units. The Standard is limited to flanges and flanged fittings made from cast or forged materials, and blind flanges and certain reducing flanges made from cast, forged, or plate materials. Also included in this Standard are requirements and recommendations regarding flange bolting, flange gaskets, and flange joints.

PN flanges

PN is an acronym for "Pressure Nominale". The PN is used as a prefix to the pressure rating of the Flanges. For instance, a Flat Flange PN16 is designed to operate in pressures up to 16 bar. Following international flange standards such as ISO 7005-1 or DIN 2501, PN10, PN16, PN25, and PN40 specify both pressure class in pressure bars and metric flange dimensions that use the metric measuring system. Flanges developed to ANSI, AWWA, ASA or old British specifications measured in inches will not necessarily fit with the specification of flanges.

PN ratings do not provide a proportional relationship between different PN numbers, whereas class numbers do. Class numbers are therefore recommended before PN ratings.

Types of flanges



Weld-Neck



Slip-On



Socket Weld



Lap-Joint



Threaded



Blind

Chemical Resistance Guide

Interpretation of Chemical Resistance

The Chemical Resistance Chart that follows is a general guide only. Since many factors can affect the chemical resistance of a given product, you should test under your own conditions.

Chemical resistance is a measure of:

Permeation: the process by which a chemical agent migrates through a material at the molecular level

Penetration: the bulk flow of a chemical agent through porous materials, closures, seams, or imperfections in a material

Degradation: a damaging change in one or more physical property of a material after it's been exposed to a chemical agent

Elastomeric Chemical Resistance

Variables that affect the resistance of a compound to a chemical attack are:

Temperature of the Media Transmitted: Ratings given are based at 70°F (21°C). Higher temperatures increase the affect of chemicals on compounds. The amount of increase depends upon the polymer and the chemical. A compound quite suitable at room temperature might fail very quickly at higher temperatures. It is not recommended to operate outside hose temperature limits.

Service Conditions: A rubber compound usually swells when exposed to a chemical. Within a given percent of swell, a hose tube may function well if the hose is in a static condition, but may fail quickly if the hose is subject to flexing.

The Grade or Blend of the Rubber Compound: Basic polymers are sometimes mixed or blended to enhance a particular property for a specific service and the reaction to a particular chemical may therefore be somewhat different. When in doubt, a sample of the compound should always be tested with the particular chemical it is going to handle.

Thermoplastic Chemical Resistance

Thermoplastics have outstanding resistance to a wide range of chemical reagents. The chemical resistance of plastic piping is basically a function of the thermoplastic material and the compounding components. In general, the less compounding components used the better the chemical resistance. Thermoplastic pipes with significant filler percentages may be susceptible to chemical attack where an unfilled material may be affected to a lesser degree or not at all. Thermoplastic hose and tubing achieve their optimum physical properties at room temperature 68°F (20°C). As Thermoplastic materials are exposed to increased ambient temperatures, they soften and their physical properties change. It is advised to test the product in a controlled environment and consider all operating conditions prior to use. Types of thermoplastic material are: **PVC** (Polyvinyl Chloride) , **TPR** (Thermoplastic Rubber), **TPE** (Thermoplastic Elastomer), **TPU** (Thermoplastic Polyurethane), **UHMW** (Ultra High Molecular Weight Polyethylene).

Coupling Material Chemical Resistance

The tables provide an initial guide to the selection of materials and are intended to facilitate understanding of the different types of corrosion damage that can arise due to poor material selection. The chemical resistance of a material does not necessarily indicate the suitability of a fitting in a given application due to variables such as improper clamp and coupling application, special hose construction and gasket material. Ratings given are based at 70°F (21°C). Chemical compatibility varies greatly with temperature.

Material Compatibility Key

(A) Excellent

(B) Good

(C) Fair (Conditional)

(D) Unsatisfactory

(E) Contact Thorburn

(Y) Acceptable (Coupling Material Only)

(-) No Information

Elastomeric Chemical Resistance

Material (All ratings are based on 70°F)	Natural Rubber	SBR	Butyl	Nitrile	Neoprene	Hypalon	EPDM	Viton	XLPE	PTFE/TFE/FEP	Silicone
Acetal	C	C	B	D	C	C	B	D	A	A	-
Acetaldehyde	C	D	A	D	C	C	A	D	A	A	-
Acetamide	C	C	A	B	B	B	A	B	A	A	-
Acetate Solvents	C	D	C	D	D	D	C	D	A	A	-
Acetic Acid (10%)	B	B	B	C	C	C	B	C	A	A	B
Acetic Acid (30%)	D	D	B	D	C	B	A	C	A	A	-
Acetic Acid (50%)	D	D	B	C	C	D	A	D	A	A	-
Acetic Acid (Glacial)	D	D	B	D	C	D	B	D	A	A	C
Acetic Anhydride	D	D	B	D	D	D	B	D	A	A	-
Acetic Ester (Ethyl Acetate)	D	D	B	D	D	D	B	D	A	A	-
Acetic Ether (Ethyl Acetate)	D	D	B	D	D	C	B	D	A	A	-
Acetic Oxide (Acetic Anhydride)	D	D	B	D	D	D	B	D	A	A	-
Acetone	B	C	A	D	C	C	A	D	A	A	D
Acetophenone	C	D	A	D	D	D	A	D	A	A	-
Acetyl Acetone	B	D	B	D	D	D	B	D	A	A	-
Acetyl Chloride	D	D	C	D	D	D	C	B	B	A	-
Acetylene	D	D	A	A	B	B	B	A	A	A	C
Acrylonitrile	C	D	D	D	C	C	D	D	A	A	-
Air	A	A	A	A	A	A	A	A	A	A	A
Alcohols Aliphatic	A	B	A	A	A	A	A	C	A	A	-
Alcohols, Aromatic	C	D	D	C	C	D	D	A	A	A	-
Alk-Tri (Trichlorethylene)	D	D	D	D	D	D	D	A	A	A	-
Allyl Alcohol	A	B	A	A	A	A	A	B	A	A	-
Allyl Bromide	D	D	D	D	D	D	D	B	B	A	-
Allyl Chloride	D	D	D	D	D	D	D	B	B	A	-
Alum (Aluminum Potassium Sulfate)	A	A	A	A	A	A	A	A	A	A	-
Aluminum Acetate	C	C	A	C	C	B	A	A	A	A	-
Aluminum Chloride	A	A	A	A	A	A	A	A	A	A	A
Aluminum Fluoride	A	A	A	A	A	A	A	A	A	A	B
Aluminum Hydroxide	A	A	A	A	A	A	A	A	A	A	-
Aluminum Nitrate	A	A	A	A	A	A	A	A	A	A	-
Aluminum Phosphate	A	A	A	A	A	A	A	A	A	A	-
Aluminum Sulfate	A	A	A	A	A	A	A	A	A	A	A
Ammonia Anhydrous	A	C	A	A	A	B	A	D	A	A	-
Ammonia Gas (150°F)	Anhydrous Ammonia Hose Only										
Ammonia in Water	B	B	B	B	B	B	A	B	A	A	A
Ammonia Liquid	B	B	A	A	A	A	A	A	A	A	-
Ammonia, Gas (Cold)	Anhydrous Ammonia Hose Only										
Ammonium Carbonate	A	A	A	C	A	A	A	A	A	A	-
Ammonium Chloride	A	A	A	A	A	A	A	A	A	A	C
Ammonium Hydroxide	B	B	B	B	A	B	B	A	A	A	C
Ammonium Metaphosphate	A	A	A	A	A	A	A	A	A	A	-
Ammonium Nitrate	B	A	A	A	A	A	A	A	A	A	-
Ammonium Nitrite	A	A	A	A	A	A	A	A	A	A	A
Ammonium Persulfate	A	D	A	D	A	A	A	A	A	A	-
Ammonium Phosphate	A	A	A	A	A	A	A	A	A	A	A
Ammonium Sulfate	A	A	A	A	A	A	A	A	A	A	A
Ammonium Sulfide	A	A	A	A	A	A	A	A	A	A	-
Ammonium Sulfite	A	A	A	A	A	A	A	A	A	A	-
Ammonium Thiocyanate	A	A	A	A	A	A	A	A	A	A	-
Ammonium Thiosulfate	A	A	A	A	A	A	A	A	A	A	-
Amyl Acetate	C	D	B	D	D	D	B	D	A	A	D
Amyl Acetone	D	D	B	D	D	D	B	D	A	A	-
Amyl Alcohol	A	A	A	A	A	A	A	A	A	A	D

Material (All ratings are based on 70°F)	Natural Rubber	SBR	Butyl	Nitrile	Neoprene	Hypalon	EPDM	Viton	XLPE	PTFE/TFE/FEP	Silicone
Amyl Borate	D	D	D	A	A	C	D	A	A	A	-
Amyl Chloride	D	D	D	D	D	D	D	A	A	A	-
Amyl Chloronaphthalene	D	D	D	D	D	D	D	A	A	A	-
Amyl Naphthalene	D	D	D	D	D	D	D	A	A	A	-
Amyl Oleate	D	D	B	D	D	D	B	C	A	A	-
Amyl Phenol	D	D	D	D	D	D	D	A	A	A	-
Amylamine	See Ammonia										
Anethole	D	D	D	D	D	D	D	B	B	A	-
Aniline	D	D	B	D	C	C	D	B	A	A	D
Aniline Dyes	B	B	B	C	B	B	B	B	A	A	D
Aniline Hydrochloride	B	C	B	B	D	D	B	B	A	A	-
Animal Fats	D	D	B	A	B	D	B	A	A	A	-
Animal Grease	D	D	D	B	B	D	C	A	A	A	-
Animal Oils	D	D	B	A	D	D	C	A	A	A	-
Ansul Ether	D	D	C	C	D	D	C	D	A	A	-
Antifreeze (Ethylene Glycol)	A	A	A	A	A	A	A	A	A	A	-
Antimony Pentachloride	D	D	C	D	D	D	C	A	B	A	-
Antimony Trichloride	D	D	A	B	B	B	B	A	A	A	-
Aqua Regia	D	D	D	D	D	C	C	B	D	A	-
Aromatic Hydrocarbons	D	D	D	C	D	D	D	A	A	A	-
Arquad	A	A	A	A	A	A	A	A	A	A	-
Arsenic Acid	A	A	A	A	A	A	A	A	A	A	-
Arsenic Chloride	D	D	B	D	B	D	B	D	D	A	-
Arsenic Trichloride	D	D	B	D	B	D	B	D	D	A	-
Asphalt	D	D	D	A	B	D	D	A	B	A	-
Astm #1 Oil	D	D	D	A	A	B	D	A	A	A	-
Astm #2 Oil	D	D	D	A	B	C	D	A	A	A	-
Astm #3 Oil	D	D	D	A	B	C	D	A	A	A	-
Aviation Gasoline	D	D	D	A	C	D	D	A	A	A	-
Barium Carbonate	A	A	A	A	A	A	A	A	A	A	-
Barium Chloride	A	A	A	A	A	A	A	A	A	A	A
Barium Hydroxide	A	A	A	A	A	A	A	A	A	A	A
Barium Sulfate	A	A	A	A	A	A	A	A	A	A	-
Barium Sulfide	A	A	A	A	A	A	A	A	A	A	A
Beer	F.D.A. Tube Required										
Beet Sugar Liquors	A	A	A	A	A	A	A	A	A	A	A
Benzaldehyde	D	D	B	D	D	D	B	D	A	A	-
Benzene (Benzol)	D	D	D	C	C	D	D	A	A	A	D
Benzene Sulfonic Acid	D	D	D	B	A	A	C	A	A	A	-
Benzine Solvent (Ligroin)	D	D	D	A	A	C	D	A	A	A	-
Benzoic Acid	D	D	B	D	B	B	B	A	A	A	-
Benzoic Aldehyde	D	D	D	D	D	D	D	D	A	A	-
Benzotrichloride	D	D	D	D	D	D	D	B	B	A	-
Benzoyl Chloride	D	D	D	D	D	D	D	B	B	A	-
Benzyl Acetate	D	D	B	D	D	B	B	D	A	A	-
Benzyl Alcohol	B	B	B	D	B	B	B	A	A	A	-
Benzyl Chloride	D	D	C	D	D	D	D	A	A	A	-
Bichromate of Soda (Sodium Dichromate)	D	D	A	D	B	B	C	A	A	B	-
Bichromate of Soda (Sodium Bichromate)	D	D	A	D	B	B	C	A	A	A	-
Black Sulfate Liquor	B	B	A	B	A	B	A	A	A	A	A
Blast Furnace Gas	D	D	C	C	B	B	C	A	A	B	A
Bleach Solutions	D	D	B	D	D	C	B	B	B	A	-
Borax	B	B	A	B	A	A	A	A	A	A	B
Bordeaux Mixture	B	B	A	A	A	A	A	A	A	A	-

Rating Codes: **A** = Excellent, **B** = Good, **C** = Fair Conditional, **D** = Unsatisfactory, **(-)** = No Data Available

Elastomeric Chemical Resistance

Material (All ratings are based on 70°F)	Natural Rubber	SBR	Butyl	Nitrile	Neoprene	Hypalon	EPDM	Viton	XLPE	PTFE/TFE/FEP	Silicone
Brandy	F.D.A. Tube Required										
Brine	A	A	A	A	A	A	A	A	A	A	-
Bromine	D	D	D	D	D	C	D	C	D	A	D
Bromine Water	D	D	B	C	B	A	B	A	A	A	-
Bromobenzene	D	D	D	D	D	D	D	B	C	A	-
Bunker Oil	D	D	D	A	B	D	D	A	A	A	-
Butane	Use Butane-Propane Hose Only										
Butanol (Butyl Alcohol)	A	A	A	A	A	A	A	A	A	A	C
Butter (Non-F.D.A.)	C	C	B	A	A	A	B	A	A	A	-
Butyl Acetate	D	D	B	D	D	D	C	D	A	A	D
Butyl Acrylate	D	D	D	D	D	D	D	D	B	A	-
Butyl Benzene	D	D	D	D	D	D	D	A	A	A	-
Butyl Bromide	D	D	D	D	D	D	D	B	B	A	-
Butyl Butyrate	D	D	C	D	D	D	B	C	B	A	-
Butyl Carbitol	D	D	A	B	B	B	A	A	A	A	-
Butyl Cellosolve	D	D	A	B	B	B	A	D	A	A	-
Butyl Chloride	D	D	C	D	D	D	D	A	B	A	-
Butyl Ether	D	D	C	B	B	B	C	D	A	A	-
Butyl Ethyl Acetaldehyde	D	D	C	D	D	D	D	D	A	A	-
Butyl Ethyl Ether	D	D	C	D	D	B	C	C	A	A	-
Butyl Oleate	D	D	B	D	D	D	B	A	A	A	-
Butyl Phthalate	D	D	C	D	D	D	C	C	A	A	-
Butyl Stearate	D	D	C	B	D	D	C	A	A	A	-
Butylamine	See Ammonia										
Butyric Acid	C	D	C	C	C	B	C	C	A	A	-
Butyric Anhydride	C	D	C	C	C	B	C	C	A	A	-
Butyraldehyde	C	D	C	C	D	B	C	C	A	A	-
Calcium Acetate	C	D	D	D	D	D	D	D	A	A	-
Calcium Bisulfate	C	D	A	D	D	D	A	D	A	A	C
Calcium Bisulfite	A	A	A	A	A	A	A	A	A	A	-
Calcium Carbonate	A	A	A	A	A	A	A	A	A	A	-
Calcium Chloride	A	A	A	A	A	A	A	A	A	A	A
Calcium Hydroxide	A	A	A	A	A	A	A	A	A	A	A
Calcium Hypochlorite	A	B	A	B	A	B	A	C	A	A	C
Calcium Nitrate	D	D	B	D	D	C	B	A	B	A	-
Calcium Sulfate	A	A	A	A	A	A	A	A	A	A	-
Calcium Sulfide	A	A	A	A	A	A	A	A	A	A	-
Calcium Sulfite	A	A	A	A	A	A	A	A	A	A	-
Caliche Liquor (Crude Sodium Nitrate)	A	A	A	A	A	A	A	A	A	A	B
Cane Sugar Liquors (Non F.D.A.)	A	A	A	A	A	A	A	A	A	A	A
Carbitol	D	D	A	D	A	B	B	B	A	A	-
Carbitol Acetate	D	D	A	D	A	B	B	B	A	A	-
Carbolic Acid (Phenol)	D	D	B	D	D	D	B	D	A	A	D
Carbon Bisulfide	D	D	B	C	C	C	B	A	A	A	-
Carbon Dioxide	See Carbon Disulfide										
Carbon Disulfide	A	A	A	A	A	A	A	A	A	A	D
Carbon Monoxide	D	D	D	D	D	D	D	A	A	A	A
Carbon Tetrachloride	A	A	A	A	A	A	A	A	A	A	D
Carbon Tetrafluoride	D	D	D	C	D	D	D	A	C	A	-
Carbonic Acid	D	D	D	C	D	D	D	A	C	A	-
Castor Oil	A	A	A	A	A	A	A	A	A	A	A
Caustic Potash (Potassium Hydroxide)	C	D	B	A	B	C	B	A	A	A	-
Caustic Soda (Sodium Hydroxide)	A	B	A	A	B	A	A	C	A	A	-

Material (All ratings are based on 70°F)	Natural Rubber	SBR	Butyl	Nitrile	Neoprene	Hypalon	EPDM	Viton	XLPE	PTFE/TFE/FEP	Silicone
Cellosolve	D	D	B	B	A	B	B	C	A	A	-
Cellulose Acetate	C	D	B	D	C	C	B	D	B	A	D
Cellulube	C	D	B	D	D	D	A	C	A	A	-
China Wood Oil (Tung Oil)	D	D	B	A	B	B	B	A	A	A	D
Chlorinated Hydrocarbons	D	D	D	D	D	D	D	A	B	A	-
Chlorine Dioxide	D	D	D	D	D	C	D	A	B	A	-
Chlorine Gas (Dry)	C	C	C	C	D	B	C	B	B	A	D
Chlorine Water Solutions	C	D	C	D	D	B	C	A	A	A	-
Chloroacetic Acid	B	D	C	D	D	D	C	C	A	A	-
Chloroacetone	D	D	B	D	D	D	C	D	A	A	-
Chlorobenzene	D	D	D	D	D	D	D	A	B	A	-
Chlorobutadiene	D	D	D	D	D	D	D	A	B	A	-
Chlorobutane	D	D	D	D	D	D	D	A	B	A	-
Chloroform	D	D	D	D	D	D	D	A	B	A	-
Chloropentane	D	D	D	D	C	D	D	A	A	A	-
Chlorophenol	D	D	D	D	D	D	D	B	B	A	-
Chloropropanone	D	D	C	D	D	D	C	D	A	A	-
Chlorosulfonic Acid	D	D	D	D	D	C	D	D	B	A	D
Chlorothene (Trichloroethane)	D	D	D	D	D	D	D	A	B	A	-
Chlorotoluene	D	D	D	D	D	D	D	A	B	A	-
Chromic Acid	D	D	D	D	D	A	C	C	A	A	C
Citric Acid	A	A	A	B	B	A	A	A	A	A	A
Coal Oil	D	D	D	A	B	D	D	A	A	A	-
Coal Tar	D	D	D	A	B	B	B	A	A	A	-
Coal Tar Naptha	D	D	D	C	C	D	D	A	A	A	-
Cobalt Chloride	A	A	A	A	A	A	A	A	A	A	-
Coconut Oil	D	D	B	A	B	B	A	A	A	A	-
Cod Liver Oil	D	D	A	A	B	B	A	A	A	A	-
Coke Oven Gas	D	D	C	D	D	B	D	A	A	A	-
Copper Arsenate	A	A	A	A	A	A	A	A	A	A	-
Copper Chloride	A	A	A	A	A	A	A	A	A	A	A
Copper Cyanide	A	A	A	A	A	A	A	A	A	A	-
Copper Nitrate	A	A	A	A	A	A	A	A	A	A	-
Copper Nitrite	A	A	A	A	A	A	A	A	A	A	-
Copper Sulfate	C	A	A	A	A	A	A	A	A	A	A
Copper Sulfide	C	A	A	A	A	A	A	A	A	A	-
Corn Oil	D	D	B	A	B	B	B	A	A	A	A
Cottonseed Oil	D	D	A	A	B	A	A	A	A	A	A
Creosols	D	D	D	C	C	C	D	A	A	A	-
Creosote (Coal Tar)	D	D	D	B	C	C	D	A	A	A	C
Creosote (Wood)	D	D	D	B	C	C	D	A	A	A	D
Cresylic Acid	D	D	D	C	C	C	D	A	A	A	-
Crude Oil	D	D	D	C	C	C	D	A	A	A	-
Cumene	D	D	D	A	B	D	D	A	A	A	-
Cupric Carbonate	D	D	D	C	C	D	D	A	A	A	-
Cupric Chloride	C	C	A	B	B	B	A	A	A	A	-
Cupric Nitrate	C	C	A	A	B	A	A	A	A	A	-
Cupric Nitrite	C	C	A	A	B	A	A	A	A	A	-
Cupric Sulfate	C	C	A	A	B	A	A	A	A	A	-
Cyclohexane	C	B	A	A	B	B	A	A	A	A	-
Cyclohexanol	D	D	D	D	D	D	D	C	A	A	-
Cyclohexanone	D	D	D	B	D	D	D	A	A	A	-
Cyclopentane	D	D	D	B	B	D	D	B	A	A	-
D.M.P. (Dimethyl Phenols)	B	D	D	D	D	D	D	D	C	A	-

Rating Codes: **A** = Excellent, **B** = Good, **C** = Fair Conditional, **D** = Unsatisfactory, **(-)** = No Data Available

Elastomeric Chemical Resistance

Material (All ratings are based on 70°F)	Natural Rubber	SBR	Butyl	Nitrile	Neoprene	Hypalon	EPDM	Viton	XLPE	PTFE/TFE/FEP	Silicone
DDT in Kerosene	D	D	D	C	D	D	D	A	A	A	-
Decaline (Deklin)	D	D	D	A	B	C	D	A	A	A	-
Decane	D	D	D	D	D	D	D	A	A	A	-
Detergent Solutions	D	D	D	D	D	D	D	A	A	A	-
Diacetone Alcohol	B	B	A	A	A	A	A	A	A	A	-
Diethylamine	See Ammonia										
Dibenzyl Ether	D	D	D	D	D	D	D	C	A	A	-
Dibenzyl Sebacate	D	D	D	D	D	D	D	C	A	A	-
Dibromobenzene	C	D	B	D	D	C	B	B	A	A	-
Dibutyl Sebacate	D	D	B	D	D	D	B	D	B	A	-
Dibutylamine	See Ammonia										
Dibutylether	B	C	C	B	A	C	B	D	A	A	-
Dibutylphthalate	D	D	B	D	D	D	A	D	A	A	-
Dicalcium Phosphate	A	A	A	A	A	A	A	A	A	A	-
Dichloroacetic Acid	D	D	C	D	D	D	C	C	A	A	-
Dichlorobutane	D	D	D	D	D	D	D	A	A	A	-
Dichlorodifluoromethane (Freon 12)	D	D	D	B	D	D	D	B	A	A	-
Dichloroethane	D	D	D	D	D	D	D	A	A	A	-
Dichloroethyl Ether	D	D	D	D	D	D	D	C	A	A	-
Dichloroethylene	D	D	D	D	D	D	D	A	A	A	D
Dichlorohexane	D	D	D	D	D	D	D	A	A	A	-
Dichloroisopropyl Ether	D	D	C	D	D	D	C	C	A	A	-
Dichloromethane	D	D	D	D	D	D	D	A	A	A	-
Dichloropentane	D	D	D	D	D	D	D	A	A	A	-
Dicyclohexylamine	See Ammonia										
Dieldrin in Xylene	D	D	D	D	D	D	D	A	A	A	-
Dieldrin in Xylene and Water Spray	D	D	D	B	B	D	D	A	A	A	-
Diesel Oil	D	D	D	A	B	C	D	A	A	A	D
Diethanolamine	See Ammonia										
Diethyl Benzene	D	D	D	D	D	D	D	A	A	A	-
Diethyl Ether	D	D	D	B	C	C	C	D	A	A	-
Diethyl Oxalate	A	A	A	D	D	D	A	C	A	A	-
Diethyl Phthalate	D	D	A	D	D	D	B	C	A	A	-
Diethyl Sebacate	D	D	A	D	D	D	B	C	A	A	-
Diethyl Sulfate	D	D	B	D	D	D	B	D	A	A	-
Diethyl Triamine	B	C	A	B	B	C	B	C	A	A	-
Diethylamine	See Ammonia										
Diethylene Dioxide	D	D	B	D	D	D	B	D	A	A	-
Diethylenetriamine	See Ammonia										
Dihydroxyethyl Amine	See Ammonia										
Dihydroxyethyl Ether	A	A	A	A	B	A	B	A	A	A	-
Diisobutyl Ketone	D	D	B	D	D	D	B	D	A	A	-
Diisobutylene	D	D	D	A	B	D	D	A	A	A	-
Diisodecyl Adipate	D	D	A	D	D	C	A	C	A	A	-
Diisodecyl Phthalate	D	D	A	D	D	C	A	C	A	A	-
Diisooctyl Adipate	D	D	A	D	D	C	A	C	A	A	-
Diisooctyl Phthalate	B	C	A	B	B	C	A	C	A	A	-
Diisopropanol Amine	D	D	D	C	D	D	D	A	A	A	-
Diisopropyl Benzene	D	D	D	B	C	D	D	B	A	A	-
Diisopropyl Ether	D	D	A	D	D	D	A	D	A	A	-
Diisopropyl Ketone	D	D	D	D	D	D	D	C	A	A	-
Dilauryl Ether	D	D	D	D	D	D	D	A	A	A	-
Dimethyl Benzene	B	C	A	D	C	C	A	D	A	A	-
Dimethyl Ketone (Acetone)	D	D	A	D	D	D	B	C	A	A	-

Material (All ratings are based on 70°F)	Natural Rubber	SBR	Butyl	Nitrile	Neoprene	Hypalon	EPDM	Viton	XLPE	PTFE/TFE/FEP	Silicone
Dimethyl Phthalate	D	D	A	D	D	D	B	C	A	A	-
Dimethyl Sulfate	D	D	D	D	D	D	D	D	A	A	-
Dimethyl Sulfide	D	D	D	D	D	D	D	C	B	A	-
Dimethylamine	See Ammonia										
Dimethylaniline	D	D	D	D	D	D	D	D	B	A	-
Dimethylformamide (DMF)	C	C	C	D	C	C	C	D	A	A	-
Dinitrobenzene	D	D	C	D	C	D	C	A	A	A	-
Dinitrotoluene	D	D	D	D	D	D	D	C	A	A	-
Diocetyl Adipate (DOA)	D	D	B	D	D	D	B	C	A	A	-
Diocetyl Phthalate (DOP)	D	D	B	D	D	D	B	A	A	A	D
Diocetyl Sebacate (DOS)	D	D	B	D	D	D	B	B	A	A	-
Diopropylamine	See Ammonia										
Dioxane	D	D	B	D	D	D	B	D	A	A	-
Dioxolane	D	D	C	D	D	D	B	C	A	A	-
Dipentene (Limonene)	D	D	D	C	D	D	D	A	A	A	-
Diphenyl (Biphenyl)	D	D	D	D	D	D	D	A	A	A	-
Diphenyl Oxide (Phenylether)	D	D	D	D	D	C	D	A	A	A	-
Dipropyl Ketone	D	D	B	D	D	D	B	D	A	A	-
Dipropylamine	See Ammonia										
Dipropylene Glycol	A	A	A	A	A	A	A	A	A	A	-
Disodium Phosphate	A	A	A	A	A	A	A	A	A	A	-
Divinyl Benzene	D	D	D	D	D	D	D	D	A	A	-
Dodecyl Benzene	D	D	D	D	D	D	D	A	A	A	-
Dodecyl Toluene	D	D	D	D	D	D	D	A	A	A	-
Dow-Per (Perchloroethylene)	D	D	D	C	D	D	D	A	A	A	-
Dowfume W 40, 100%	D	D	D	D	C	C	C	C	B	A	-
Dowtherm Oil, A & E	D	D	D	D	D	C	D	A	A	A	-
Dowtherm S.R.-1	A	A	A	A	A	A	A	A	A	A	-
Dry Cleaning Fluids	D	D	D	C	D	D	D	A	B	A	-
Epichlorohydrin	D	D	B	D	D	C	B	D	B	A	-
Ethanol (Ethyl Alcohol)	A	A	A	A	A	A	A	A	A	A	-
Ethanolamine	See Ammonia										
Ethers	D	D	C	D	D	C	D	C	A	A	D
Ethyl Acetate	D	D	B	D	D	D	B	D	A	A	B
Ethyl Acetoacetate	D	D	B	D	D	D	B	D	A	A	-
Ethyl Acrylate	D	D	C	D	D	D	D	D	B	A	-
Ethyl Benzene	D	D	D	C	D	D	D	A	B	A	-
Ethyl Benzoate	D	D	B	B	C	C	B	C	A	A	-
Ethyl Butyl Alcohol	A	A	A	A	A	A	A	A	A	A	-
Ethyl Butyl Amine	See Ammonia										
Ethyl Butyl Ketone	D	D	B	D	D	D	B	D	A	A	-
Ethyl Cellulose	B	B	B	B	B	B	B	D	A	A	C
Ethyl Chloride	C	C	D	C	C	D	D	A	A	A	C
Ethyl Dichloride	D	D	D	D	D	D	D	B	B	A	-
Ethyl Ether	D	D	D	C	D	D	D	D	A	A	-
Ethyl Formate	D	D	B	D	D	D	C	D	A	A	-
Ethyl Hexanol	A	A	A	A	A	A	A	B	A	A	-
Ethyl Methyl Ketone	C	D	B	D	D	D	B	D	A	A	-
Ethyl Oxalate	A	A	A	D	D	D	B	C	A	A	-
Ethyl Phthalate	D	D	A	D	D	D	B	C	A	A	-
Ethyl Propyl Ether	D	D	D	C	D	D	D	C	A	A	-
Ethyl Propyl Ketone	D	D	B	D	D	D	B	D	A	A	-
Ethyl Silicate	C	C	A	A	A	A	A	A	A	A	-
Ethyl Sulfate	D	D	B	D	D	D	B	D	A	A	-

Rating Codes: **A** = Excellent, **B** = Good, **C** = Fair Conditional, **D** = Unsatisfactory, **(-)** = No Data Available

Elastomeric Chemical Resistance

Material (All ratings are based on 70°F)	Natural Rubber	SBR	Butyl	Nitrile	Neoprene	Hypalon	EPDM	Viton	XLPE	PTFE/TFE/FEP	Silicone
Ethylene	D	D	D	A	B	C	D	A	A	A	-
Ethylene Bromide	D	D	D	C	D	D	D	A	B	A	-
Ethylene Chloride	D	D	D	C	D	D	D	A	B	A	-
Ethylene Diamine	See Ammonia										
Ethylene Dibromide	D	D	D	C	D	D	D	B	B	A	-
Ethylene Dichloride	D	D	D	C	D	D	D	B	B	A	-
Ethylene Glycol	A	A	A	A	A	A	A	A	A	A	-
Ethylene Oxide	D	D	C	D	D	D	C	D	C	A	-
Ethylene Trichloride (Trichloroethylene)	D	D	D	C	D	D	D	A	B	A	-
EX TRI (Trichloroethylene)	D	D	D	C	D	D	D	A	B	A	-
Fatty Acids	D	D	D	B	B	B	C	A	A	A	-
Ferric Bromide	A	A	A	A	A	A	A	A	A	A	-
Ferric Chloride	A	A	A	A	A	A	A	A	A	A	A
Ferric Nitrate	A	A	A	A	A	A	A	A	A	A	-
Ferric Sulfate	A	A	A	A	A	A	A	A	A	A	B
Ferrous Acetate	D	D	A	D	D	D	B	D	A	A	-
Ferrous Ammonium Sulfate	A	A	A	A	A	A	A	A	A	A	-
Ferrous Chloride	A	A	A	A	A	A	A	A	A	A	-
Ferrous Hydroxide	B	C	A	B	A	B	A	C	A	A	-
Ferrous Sulfate	A	A	A	A	A	A	A	A	A	A	-
Fish Oil	D	D	A	A	A	A	A	A	A	A	-
Fluorine	D	D	D	D	D	D	D	D	D	A	-
Fluoroboric Acid	A	C	A	A	B	A	A	C	A	A	-
Fluosilicic Acid	B	B	A	B	B	A	B	A	A	A	-
Formaldehyde (Formalin)	C	C	A	B	B	B	B	A	A	A	B
Formamide	A	A	A	A	A	A	A	D	A	A	-
Formic Acid	B	B	A	C	C	C	C	D	B	A	C
Freon 11	D	D	D	A	B	A	D	A	A	A	-
Freon 12	D	D	D	B	C	D	C	B	B	A	-
Freon 13	A	A	A	A	A	A	A	A	A	A	-
Freon 13B1	A	A	A	A	A	A	A	A	A	A	-
Freon 21	D	D	D	D	B	D	D	D	A	A	-
Freon 22	D	D	A	D	A	D	A	D	A	A	-
Freon 31	B	B	A	D	A	B	A	D	A	A	-
Freon 32	A	A	A	A	A	A	A	D	A	A	-
Freon 112	D	D	D	B	B	B	D	A	A	A	-
Freon 113	C	B	D	A	A	A	D	B	A	A	-
Freon 114	A	A	A	A	A	A	A	B	A	A	-
Freon 114B2	D	C	D	B	A	A	D	B	A	A	-
Freon 115	A	A	A	A	A	A	A	B	A	A	-
Freon 142B	A	A	A	A	A	A	A	D	A	A	-
Freon 152A	A	A	A	A	A	C	A	D	A	A	-
Freon 218	A	A	A	A	A	A	A	A	A	A	-
Freon 502	A	A	A	B	A	A	A	B	A	A	-
Freon BF	D	D	D	B	B	B	D	A	A	A	-
Freon C316	A	A	A	A	A	A	A	A	A	A	-
Freon C318	A	A	A	A	A	A	A	A	A	A	-
Freon MF	D	B	D	A	C	B	D	A	A	A	-
Freon T-P35	A	A	A	A	A	A	A	A	A	A	-
Freon T-WD 602	C	B	A	A	B	B	B	A	A	A	-
Freon TA	A	A	A	A	A	A	A	C	A	A	-
Freon TC	D	B	A	A	A	A	B	A	A	A	-
Freon TF	C	B	A	A	A	A	A	A	A	A	-
Freon TMC	B	C	B	B	B	B	B	A	A	A	-

Material (All ratings are based on 70°F)	Natural Rubber	SBR	Butyl	Nitrile	Neoprene	Hypalon	EPDM	Viton	XLPE	PTFE/TFE/FEP	Silicone
Fuel Oil	D	D	D	A	B	C	D	A	A	A	D
Fuel, ASTM - A	D	D	D	A	A	C	D	A	A	A	-
Fuel, ASTM - B	D	D	D	A	B	C	D	A	A	A	-
Fuel, ASTM - C	D	D	D	B	C	D	D	A	B	A	-
Fumaric Acid	A	A	D	A	B	D	D	A	A	A	-
Furan	D	D	C	D	D	D	C	D	A	A	-
Furfural	D	D	B	D	C	B	B	D	A	A	D
Furfuryl Alcohol	D	D	C	D	C	C	C	D	A	A	-
Gallic Acid	A	A	B	B	B	B	B	B	A	A	-
Gasoline (Hi-Test)	D	D	D	A	B	D	D	A	A	A	D
Gasoline (Lead Free)	D	D	D	B	B	D	D	A	A	A	D
Gasoline (Regular)	D	D	D	A	A	C	D	A	A	A	D
Gelatin	A	A	A	A	A	A	A	A	A	A	A
Gluconic Acid	D	D	C	C	C	B	C	A	A	A	-
Glucose	A	A	A	A	A	A	A	A	A	A	A
Glue	A	A	A	A	A	A	A	A	A	A	A
Glycerine (Glycerol)	A	A	A	A	A	A	A	A	A	A	A
Glycols	A	A	A	A	A	A	A	A	A	A	-
Grease	D	D	D	A	B	C	D	A	A	A	-
Green Sulfate Liquor	A	A	A	A	B	A	A	B	A	A	A
Halowax Oil	D	D	D	D	D	D	D	A	A	A	-
Heptachlor (in Petroleum Solvents)	D	D	D	B	B	D	D	A	A	A	-
Heptachlor (in Petroleum Solvents, Water Spray)	D	D	D	B	B	D	D	A	A	A	-
Heptanal (Heptaldehyde)	D	D	D	D	D	D	B	D	A	A	-
Heptane Carboxylic Acid	D	D	C	C	B	B	C	A	A	A	-
Heptane	D	D	D	A	A	B	D	A	A	A	-
Hexaldehyde (n-Hexaldehyde)	D	D	B	D	B	C	B	D	A	A	-
Hexane	D	D	D	A	A	C	D	A	A	A	-
Hexanol (Hexyl Alcohol)	A	A	A	A	A	A	A	A	A	A	-
Hexene	D	D	D	B	B	C	D	A	A	A	-
Hexyl Methyl Ketone	D	D	B	D	D	D	B	D	A	A	-
Hexylamine	See Ammonia										
Hexylene	D	D	D	A	B	D	C	A	B	A	-
Hexylene Glycol	A	A	A	A	A	A	A	A	A	A	-
Hi-Tri (Trichloroethylene)	D	D	D	C	D	D	D	A	B	A	-
Hydraulic Fluid (Petroleum)	D	D	D	A	B	D	D	A	A	A	C
Hydraulic Fluid (Phosphate Ester Base)	D	D	A	D	D	D	A	D	A	A	D
Hydraulic Fluid (Poly Alkylene Glycol Base)	B	B	A	A	A	A	A	A	A	A	D
Hydrobromic Acid	A	D	A	D	C	A	B	A	A	A	D
Hydrochloric Acid, 5%	A	B	A	C	C	A	B	A	A	A	D
Hydrochloric Acid, 15%	A	D	B	D	D	A	C	A	A	A	D
Hydrochloric Acid, 37%	B	D	C	D	D	B	C	C	A	A	D
Hydrocyanic Acid	B	C	A	B	C	A	B	B	A	A	B
Hydrofluoric Acid	B	D	B	D	C	A	B	B	A	A	D
Hydrofluosilicic Acid	A	D	A	D	C	A	B	B	A	A	-
Hydrogen Gas	B	B	A	A	A	A	B	A	A	A	C
Hydrogen Peroxide, 3%	A	B	A	B	C	A	B	A	A	A	A
Hydrogen Peroxide, 10%	D	D	C	D	C	C	C	A	A	A	A
Hydrogen Peroxide, 30%	D	D	D	D	D	D	C	A	A	A	A
Hydrogen Peroxide, 90%	D	D	D	D	D	D	C	B	B	A	A
Hydrogen Sulfide	D	D	A	D	A	B	A	A	A	A	D
Hydroquinone	B	B	B	D	D	C	B	D	A	A	-
Hypochlorous Acid	B	B	B	D	B	A	B	A	A	A	-

Rating Codes: **A** = Excellent, **B** = Good, **C** = Fair Conditional, **D** = Unsatisfactory, **(-)** = No Data Available

Elastomeric Chemical Resistance

Material (All ratings are based on 70°F)	Natural Rubber	SBR	Butyl	Nitrile	Neoprene	Hypalon	EPDM	Viton	XLPE	PTFE/TFE/FEP	Silicone
Ink Oil (Linseed Oil Base)	D	D	B	B	B	B	B	A	A	-	-
Insulating Oil	D	D	D	A	B	D	D	A	A	-	-
Iodine	D	D	D	D	D	C	D	C	A	A	-
Iron Acetate	D	D	A	D	D	D	B	D	A	A	-
Iron Hydroxide	C	C	A	B	A	B	B	C	A	A	-
Iron Salts	A	A	A	A	A	A	A	A	A	A	-
Iron Sulfate	A	A	A	A	A	A	A	A	A	A	-
Iron Sulfide	A	A	A	A	A	A	A	A	A	A	-
Isoamyl Acetate	D	D	A	D	D	D	B	D	A	A	-
Isoamyl Alcohol	A	A	A	A	A	A	A	A	A	A	-
Isoamyl Bromide	D	D	D	D	D	D	D	B	B	A	-
Isoamyl Butyrate	D	D	C	D	D	D	C	D	B	A	-
Isoamyl Chloride	D	D	C	D	D	D	D	B	B	A	-
Isoamyl Ether	D	D	D	D	D	D	D	D	A	A	-
Isoamyl Phthalate	D	D	A	D	D	D	B	C	A	A	-
Isobutane	D	D	D	A	A	D	D	A	A	A	-
Isobutanol (Isobutyl Alcohol)	A	A	A	A	A	A	A	A	A	A	A
Isobutyl Acetate	D	D	A	D	D	D	B	D	A	A	-
Isobutyl Aldehyde	C	D	B	D	D	D	B	D	A	A	-
Isobutyl Amine	B	C	B	D	D	C	B	D	A	A	-
Isobutyl Bromide	D	D	D	D	D	D	D	B	B	-	-
Isobutyl Carbinol	A	A	A	A	B	A	A	B	A	A	-
Isobutyl Chloride	D	D	D	D	D	D	D	B	B	A	-
Isobutyl Ether	D	D	D	D	D	D	D	D	A	A	-
Isobutylene	D	D	D	C	C	D	D	A	A	A	-
Isoctane	D	D	D	A	A	B	D	A	A	A	D
Isocyanates	C	D	B	D	D	C	B	C	B	-	-
Isopentane	D	D	D	A	A	D	D	A	B	A	-
Isopropyl Acetate	D	D	A	D	D	C	B	D	A	A	-
Isopropyl Alcohol (Iso-propanol)	A	A	A	A	A	A	B	B	B	A	A
Isopropyl Amine	D	D	B	C	A	C	B	D	A	A	-
Isopropyl Benzene	D	D	D	D	D	D	D	A	A	A	-
Isopropyl Chloride	D	D	D	D	D	D	D	B	B	A	-
Isopropyl Ether	D	D	D	C	D	C	D	D	A	A	-
Isopropyl Toluene	D	D	D	D	D	D	D	A	A	A	-
Jet Fuels (JP1-JP6)	D	D	D	A	B	C	D	A	A	A	-
Ketones	B	B	B	D	D	D	B	D	A	A	-
Kerosene	D	D	D	A	B	C	D	A	A	A	D
Lacquer Solvents	D	D	D	D	D	D	D	D	A	A	D
Lacquers	D	D	D	D	D	D	D	D	A	A	D
Lactic Acid	B	B	B	A	A	A	B	A	A	A	A
Lard	D	D	D	A	B	D	C	A	A	A	-
Lauryl Alcohol	A	A	A	A	A	A	A	B	A	A	-
Lead Acetate	D	D	A	C	C	D	B	C	A	A	-
Lead Nitrate	A	A	A	A	A	A	A	A	A	A	-
Lead Sulfamate	B	B	A	B	A	B	A	A	A	A	-
Lead Sulfate	A	A	A	A	A	A	A	A	A	A	-
Ligroin	D	D	D	A	A	D	D	A	A	A	-
Lime Water	D	D	A	C	A	A	A	A	A	A	-
Lindol (Tricresyl Phosphate)	D	D	A	D	D	D	A	A	A	A	-
Linseed Oil	D	D	A	A	B	B	B	A	A	A	A
Liquid Petroleum Gas	D	D	D	A	B	D	D	A	A	A	-
Liquid Soap	A	A	A	A	A	A	A	A	A	A	-
Lubricating Oils	D	D	D	A	B	C	D	A	A	A	C

Material (All ratings are based on 70°F)	Natural Rubber	SBR	Butyl	Nitrile	Neoprene	Hypalon	EPDM	Viton	XLPE	PTFE/TFE/FEP	Silicone
Lye (Sodium Hydroxide)	A	B	A	B	A	A	A	D	A	A	-
Magnesium Acetate	D	D	A	D	D	D	B	D	A	A	-
Magnesium Carbonate	A	A	A	A	A	A	A	A	A	A	-
Magnesium Chloride	A	A	A	A	A	A	A	A	A	A	A
Magnesium Hydrate	A	B	A	B	A	B	A	B	A	A	-
Magnesium Hydroxide	A	A	A	A	A	A	B	A	A	A	B
Magnesium Nitrate	A	A	A	A	A	A	A	A	A	A	-
Magnesium Sulfate	A	A	A	A	A	A	A	A	A	A	A
Malathion 50 (in Aromatic Solvents)	D	D	D	C	C	D	D	A	A	A	-
Malathion 50 (in Aromatic Solvents Water Spray)	D	D	D	A	A	D	D	A	A	A	-
Maleic Acid	D	D	C	D	C	D	C	A	B	A	-
Maleic Anhydride	D	D	C	D	C	D	C	A	A	A	-
Malic Acid	A	B	D	B	C	B	D	A	A	A	-
Manganese Sulfate	A	A	A	A	A	A	A	A	A	A	-
Manganese Sulfide	C	A	A	A	B	A	B	A	A	A	-
Manganese Sulfite	C	A	A	A	B	A	B	A	A	A	-
Mercuric Chloride	B	B	B	C	C	B	C	A	A	A	A
Mercury	B	B	A	A	B	A	A	A	A	A	-
Methacrylic Acid	B	D	D	B	D	B	C	B	A	A	-
Methane	D	D	D	A	B	B	D	A	A	A	-
Methyl Acetate	C	D	B	D	D	D	B	D	A	A	-
Methyl Acrylate	C	D	B	D	C	D	B	D	A	A	-
Methyl Alcohol (Methanol)	A	A	A	A	A	A	C	A	A	A	A
Methyl Benzene (Toluene)	D	D	D	D	D	D	D	D	D	A	-
Methyl Bromide	D	D	B	B	D	D	B	A	A	A	-
Methyl Butyl Ketone	D	D	B	D	D	D	B	D	A	A	-
Methyl Cellosolve	D	D	B	C	B	C	B	D	A	A	-
Methyl Chloride	D	D	B	C	B	C	B	D	A	A	D
Methyl Cyclohexane	D	D	D	C	D	D	C	B	C	A	-
Methyl Ethyl Ketone (MEK)	B	D	B	D	D	D	B	D	A	A	D
Methyl Formate	C	C	B	D	B	C	B	C	B	A	-
Methyl Hexanol	A	A	A	A	A	A	A	B	A	A	-
Methyl Hexyl Ketone	D	D	B	D	D	D	B	D	A	A	-
Methyl Isobutyl Carbinol	B	C	A	B	B	B	A	B	A	A	-
Methyl Isobutyl Ketone (MIBK)	D	D	B	D	D	D	B	D	A	A	-
Methyl Isopropyl Ketone	D	D	B	D	D	D	B	D	A	A	-
Methyl Methacrylate	D	D	D	D	D	B	D	D	B	A	-
Methyl Propyl Ether	D	D	D	D	D	D	D	D	A	A	-
Methyl Propyl Ketone	D	D	B	D	D	D	B	D	A	A	C
Methyl Salicylate	D	D	B	D	D	D	B	C	B	A	-
Methylene Bromide	D	D	D	D	D	D	D	B	B	A	-
Methylene Chloride	D	D	D	D	D	D	B	A	A	A	-
Mineral Oil	D	D	D	A	B	B	D	A	A	A	A
Mineral Spirits	D	D	D	A	B	D	D	A	A	A	-
Monochloro difluoromethane (Freon 22)	D	D	A	D	A	D	A	D	A	A	-
Monochlorobenzene	D	D	D	D	D	D	D	A	A	A	-
Monethanolamine	See Ammonia										
Monomethylether	B	B	A	A	A	C	A	C	A	A	-
Monovinyl Acetate	D	D	B	D	D	C	C	A	A	A	-
Motor Oil	D	D	D	A	A	D	D	A	A	A	-
Muriatic Acid	See Hcl 37%										
Naphtha	D	D	D	A	B	D	D	A	A	A	-
Napthalene	D	D	D	D	D	D	D	A	B	A	-

Rating Codes: **A** = Excellent, **B** = Good, **C** = Fair Conditional, **D** = Unsatisfactory, **(-)** = No Data Available

Elastomeric Chemical Resistance

Material (All ratings are based on 70°F)	Natural Rubber	SBR	Butyl	Nitrile	Neoprene	Hypalon	EPDM	Viton	XLPE	PTFE/TFE/FEP	Silicone
Napthenic Acid	D	D	C	D	D	D	D	A	B	A	-
Natural Gas Contact Titan Tech	See Ammonia										
Neatsfoot Oil	D	D	B	A	B	B	B	A	A	A	-
Neu-Tri (Trichloroethylene)	D	D	D	C	D	D	D	A	B	A	-
Nickel Acetate	D	D	A	D	D	D	B	D	A	A	-
Nickel Chloride	A	A	A	A	A	A	A	A	A	A	A
Nickel Nitrate	A	A	A	A	A	A	A	A	A	A	-
Nickel Plating Solution	A	D	B	B	C	B	B	A	A	A	-
Nickel Sulfate	A	A	A	A	A	A	A	A	A	A	A
Niter Cake	A	A	A	A	A	A	A	A	A	A	-
Nitric Acid, 10%	D	D	B	D	C	B	B	A	A	A	C
Nitric Acid, 20%	D	D	B	D	D	B	C	A	A	A	C
Nitric Acid, 30%	D	D	B	D	D	C	C	A	B	A	C
Nitric Acid, 30-70%	D	D	C	D	D	D	D	C	C	A	D
Nitric Acid, Red Fuming	D	D	D	D	D	D	D	D	D	A	-
Nitrobenzene	D	D	D	D	D	D	D	B	A	A	C
Nitrogen Gas	A	A	A	A	A	A	A	A	A	A	-
Nitrogen Tetroxide	D	D	D	D	D	D	D	D	D	A	-
Nitromethane	B	B	B	D	C	C	B	D	A	A	-
Nitropropane	C	C	A	D	C	C	B	D	A	A	-
Nitrous Oxide	A	A	A	A	A	A	A	A	A	A	-
Octadecanoic Acid	D	D	B	A	B	D	C	C	A	A	-
Octane	D	D	D	A	B	D	D	A	B	A	-
Octanol (Octyl Alcohol)	B	B	B	B	A	B	B	A	A	A	-
Octyl Acetate	D	D	A	D	D	D	B	D	A	A	-
Octyl Amine	See Ammonia										
Octyl Carbinol	A	A	A	A	A	A	A	B	A	A	-
Octylene Glycol	A	A	A	A	A	A	A	A	A	A	-
Oil, Astm #1	D	D	D	A	A	B	D	A	A	A	-
Oil, Astm #2	D	D	D	A	A	C	D	A	A	A	-
Oil, Astm #3	D	D	D	A	B	C	D	A	A	A	-
Oil, Petroleum	D	D	D	A	A	C	D	A	A	A	-
Oleic Acid	D	D	B	B	C	C	B	C	A	A	D
Oleum (Fuming Sulfuric Acid)	D	D	D	D	D	D	D	D	D	A	-
Olive Oil (Non F.D.A.)	D	D	B	A	B	B	B	A	A	A	-
Orthodichlorobenzene	D	D	D	D	D	D	D	A	B	A	-
Oxalic Acid	C	C	A	B	C	B	A	C	A	A	B
Oxygen, Cold	B	B	A	B	B	B	B	A	A	A	D
Oxygen, Hot	D	D	D	D	D	D	D	B	A	A	-
Ozone	D	C	B	D	B	A	A	A	A	A	-
P-Cymene	D	D	D	C	D	D	D	A	A	A	-
P-Dichlorobenzene	D	D	D	D	D	D	D	A	A	A	-
Paint Thinner (Duco)	D	D	D	D	D	D	D	C	A	A	-
Palm Oil	D	D	A	A	B	B	B	A	A	A	-
Palmitic Acid	D	D	B	A	B	B	B	A	B	A	D
Papermaker's Alum	A	A	A	A	A	A	A	A	A	A	-
Paradichlorobenzene	D	D	D	D	D	D	D	A	B	A	-
Paraffin	D	D	D	A	A	D	D	A	D	A	-
Paraformaldehyde	D	D	B	B	B	B	B	C	A	A	-
Peanut Oil	D	D	C	A	B	B	B	D	A	B	-
Pentane	D	D	A	A	B	D	A	A	B	A	-
Perchloric Acid	B	B	B	D	A	A	B	A	A	A	-
Perchloroethylene	D	D	D	C	D	D	D	A	B	A	C
Petrolatum	D	D	D	A	A	C	D	A	A	A	-

Material (All ratings are based on 70°F)	Natural Rubber	SBR	Butyl	Nitrile	Neoprene	Hypalon	EPDM	Viton	XLPE	PTFE/TFE/FEP	Silicone
Petroleum Ether (Naphtha)	D	D	D	A	A	D	D	A	A	A	-
Petroleum Oils	D	D	D	A	A	C	D	A	A	A	D
Petroleum, Crude	D	D	D	A	A	C	D	A	A	A	D
Phenol	C	C	B	D	C	C	C	A	A	A	-
Phenol Sulfonic Acid	D	D	C	D	C	D	C	A	B	A	-
Phenyl Chloride	D	D	D	D	D	D	D	A	A	A	-
Phenylhydrazine	C	D	B	D	D	C	C	A	A	A	-
Phorone	D	D	A	D	D	D	B	C	A	A	-
Phosphate Esters	D	D	A	D	D	D	A	C	A	A	-
Phosphoric Acid, 10%	A	A	A	A	A	A	A	A	A	A	C
Phosphoric Acid: 10-85%	C	C	A	C	B	A	A	A	A	A	C
Phosphorous Trichloride	D	D	A	D	D	D	A	A	A	A	-
Pickling Solution	C	C	C	C	C	C	C	B	A	A	-
Picric Acid, Molten	C	C	C	C	C	B	C	C	D	A	D
Picric Acid, Water Solution	A	C	A	B	B	A	B	C	A	A	-
Pine Oil	D	D	D	C	C	D	D	B	A	A	-
Pinene	D	D	D	A	D	D	D	A	A	A	-
Piperidine	D	D	D	D	D	D	D	D	B	A	-
Pitch	D	D	D	B	B	C	D	C	A	A	-
Plating Solution, Chrome	D	D	A	B	B	C	A	A	A	A	-
Plating Solutions, Others	A	A	A	B	B	C	A	B	A	A	-
Polyethylene Glycol	A	A	A	A	A	A	A	A	A	A	-
Polypropylene Glycol	A	A	A	A	A	A	A	A	A	A	-
Polyvinyl Acetate Emulsion (PVA)	C	C	A	C	B	B	A	C	A	A	-
Potassium Bicarbonate	A	A	A	A	A	A	A	A	A	A	-
Potassium Bisulfate	A	A	A	A	A	A	A	A	A	A	-
Potassium Bisulfite	A	A	A	A	A	A	A	A	A	A	-
Potassium Carbonate	A	A	A	A	A	A	A	A	A	A	-
Potassium Chloride	A	A	A	A	A	A	A	A	A	A	-
Potassium Chromate	D	D	A	D	C	C	B	A	B	A	-
Potassium Cyanide	A	A	A	A	A	A	A	A	A	A	A
Potassium Dichromate	D	D	A	D	B	C	B	A	A	A	-
Potassium Hydrate	A	B	A	B	B	B	A	C	A	A	-
Potassium Hydroxide	A	A	A	A	B	A	A	D	A	A	C
Potassium Nitrate	A	A	A	A	A	A	A	A	A	A	-
Potassium Permanganate	D	D	A	D	D	D	A	A	A	A	-
Potassium Silicate	A	A	A	A	A	A	A	A	A	A	-
Potassium Sulfate	A	A	A	A	A	A	A	A	A	A	A
Potassium Sulfide	A	A	A	A	A	A	A	A	A	A	-
Potassium Sulfite	A	A	A	A	A	A	A	A	A	A	-
Producer Gas	D	D	D	A	B	B	D	A	A	A	-
Propane Gas	Use Butane Propane Hose Only										
Propanediol	A	A	A	A	B	A	A	A	A	A	-
Propyl Acetate	D	D	B	D	D	D	B	D	A	A	-
Propyl Alcohol (Propanol)	A	A	A	A	A	A	A	A	A	A	-
Propyl Aldehyde	C	D	B	D	D	D	B	D	A	A	-
Propyl Chloride	D	D	C	D	C	D	C	B	B	A	-
Propylene Diamine	See Ammonia										
Propylene Dichloride	D	D	D	D	D	D	D	B	B	A	-
Propylene Glycol	A	A	A	A	A	A	A	A	A	A	-
Pydraut Hydraulic Fluids	D	D	B	D	D	D	B	A	B	A	-
Pyranol	D	D	D	C	D	D	D	A	A	A	-
Pyridine	D	D	B	D	D	D	B	D	A	A	-
Pyroligneous Acid	C	C	B	C	B	B	B	A	A	A	-

Rating Codes: **A** = Excellent, **B** = Good, **C** = Fair Conditional, **D** = Unsatisfactory, **(-)** = No Data Available

Elastomeric Chemical Resistance

Material (All ratings are based on 70°F)	Natural Rubber	SBR	Butyl	Nitrile	Neoprene	Hypalon	EPDM	Viton	XLPE	PTFE/TFE/FEP	Silicone
Pyrrole	C	B	B	D	D	D	C	C	A	A	-
Rape Seed Oil	D	D	A	B	B	B	B	A	B	A	-
Red Oil (Crude Oleic Acid)	D	D	B	B	B	B	B	A	A	A	-
Richfield A Weed Killer, 100%	D	D	D	D	D	D	D	C	B	A	-
Richfield B Weed Killer, 33%	D	D	B	B	B	C	D	C	B	A	-
Rosin Oil	D	D	D	A	A	B	D	A	A	A	-
Rotenone and Water	A	A	A	A	A	A	A	A	A	A	-
Rum	F.D.A. Tube Required										
Sal Ammoniac (Ammonium Chloride)	A	A	A	A	A	A	A	A	A	A	-
Salicylic Acid	A	B	A	D	D	A	A	A	A	A	-
Salt Water (Sea Water)	A	A	A	A	A	A	A	A	A	A	-
Sewage	C	C	C	A	B	A	B	A	A	A	B
Silicate Esters	D	D	D	B	A	A	D	A	A	A	-
Silicate of Soda (Sodium Silicate)	A	A	A	A	A	A	A	A	A	A	-
Silicone Greases	A	A	A	A	A	A	A	A	A	A	-
Silicone Oils	A	A	A	A	A	A	A	A	A	A	-
Silver Nitrate	A	A	A	A	A	A	A	A	A	A	-
Skelly Solvent	D	D	D	A	B	C	D	A	A	A	-
Skydrol Hydraulic Fluids	D	D	A	D	D	D	A	D	A	A	-
Soap Solutions	A	A	A	A	A	A	A	A	A	A	A
Soda Ash (Sodium Carbonate)	A	A	A	A	A	A	A	A	A	A	A
Soda Niter (Sodium Nitrate)	A	A	A	A	A	A	A	A	A	A	-
Soda, Caustic (Sodium Hydroxide)	A	B	A	B	A	A	A	D	A	A	-
Soda, Lime	A	B	A	B	B	B	A	C	A	A	-
Sodium Acetate	D	A	D	D	D	B	D	A	A	A	-
Sodium Aluminate	A	A	A	A	A	A	A	A	A	A	-
Sodium Bicarbonate	A	A	A	A	A	A	A	A	A	A	A
Sodium Bisulfate	A	A	A	A	A	A	A	A	A	A	A
Sodium Bisulfite	A	A	A	A	A	A	A	A	A	A	-
Sodium Borate	A	A	A	A	A	A	A	A	A	A	-
Sodium Carbonate	A	A	A	A	A	A	A	A	A	A	-
Sodium Chloride	A	A	A	A	A	A	A	A	A	A	A
Sodium Chromate	D	D	A	D	C	C	B	C	B	A	-
Sodium Cyanide	A	A	A	A	A	A	A	A	A	A	A
Sodium Dichromate	D	D	A	D	C	C	B	C	A	A	-
Sodium Fluoride	A	A	A	A	A	A	A	A	A	A	-
Sodium Hydroxide	A	B	A	B	A	A	A	D	A	A	A
Sodium Hypochlorite	C	D	B	D	D	C	B	A	B	A	B
Sodium Metaphosphate	A	A	A	A	B	B	A	A	A	A	A
Sodium Nitrate	A	A	A	A	A	A	A	A	A	A	D
Sodium Nitrite	A	A	A	A	A	A	A	A	A	A	-
Sodium Perborate	C	D	A	D	D	D	B	A	A	A	B
Sodium Peroxide	B	B	A	B	B	B	A	A	B	A	C
Sodium Phosphate	A	A	A	A	A	A	A	A	A	A	D
Sodium Silicate	A	A	A	A	A	A	A	A	A	A	A
Sodium Sulfate	A	A	A	A	A	A	A	A	A	A	A
Sodium Sulfide	A	A	A	A	A	A	A	A	A	A	A
Sodium Sulfite	A	A	A	A	A	A	A	A	A	A	-
Sodium Thiosulfate	A	A	A	A	A	A	A	A	A	A	-
Soybean Oil	D	D	B	B	B	B	B	A	A	A	A
Stannic Chloride	A	A	B	A	A	A	A	A	A	A	B
Stannic Sulfide	A	A	A	A	A	A	A	A	A	A	-
Stannous Chloride	A	A	A	A	A	A	A	A	A	A	B
Stannous Sulfide	A	A	A	A	A	A	A	A	A	A	-

Material (All ratings are based on 70°F)	Natural Rubber	SBR	Butyl	Nitrile	Neoprene	Hypalon	EPDM	Viton	XLPE	PTFE/TFE/FEP	Silicone
Steam, over 300°F	Steam Hose Only										
Steam, under 300°F	Steam Hose Only										
Stearic Acid	D	D	B	A	B	B	C	A	A	B	A
Stoddard's Solvent	D	D	D	A	C	D	D	A	A	B	-
Styrene	D	D	D	D	D	D	D	B	A	B	-
Sugar Sols. (Sucrose, Non F.D.A.)	A	A	A	A	A	A	A	A	A	A	-
Sulfamic Acid	C	C	A	B	B	B	A	A	A	A	-
Sulfite Liquors	B	B	A	B	B	A	B	A	A	A	-
Sulfonic Acid	D	D	D	D	C	C	D	D	B	C	-
Sulfur (Molten)	D	D	B	C	C	C	C	A	D	D	B
Sulfur Chloride	D	D	D	D	D	B	D	A	B	C	C
Sulfur Dioxide	C	C	B	D	B	B	C	A	A	B	B
Sulfur Hexafluoride	A	A	A	A	A	A	A	A	A	A	-
Sulfur Trioxide	D	D	B	D	D	D	C	A	B	B	-
Sulfuric Acid, 25%	D	D	D	D	B	A	A	A	A	A	D
Sulfuric Acid, 25-50%	B	D	A	D	C	B	B	A	A	A	D
Sulfuric Acid, Fuming	D	D	D	D	D	D	D	D	D	D	D
Sulfurous Acid	B	C	B	C	B	A	D	B	A	A	D
Tall Oil	D	D	D	C	D	D	D	A	A	B	-
Tallow	D	D	D	A	A	D	D	A	A	B	-
Tannic Acid	A	B	A	C	B	B	A	A	A	A	B
Tar	D	D	D	B	B	D	D	A	D	A	B
Tartaric Acid	A	A	A	A	B	A	A	A	A	A	A
Terpineol	D	D	C	D	D	D	C	A	B	A	-
Tertiary Butyl Alcohol	A	A	A	A	A	A	A	A	A	A	-
Tetrachlorobenzene	D	D	D	D	D	D	D	B	B	A	-
Tetrachloroethane	D	D	D	D	D	D	D	A	B	A	-
Tetrachloroethylene	D	D	D	D	D	D	D	A	B	A	-
Tetrachloromethane	D	D	D	C	D	D	D	A	B	A	-
Tetrachloronaphthalene	D	D	D	D	D	D	D	A	B	A	-
Tetraethyl Lead	D	D	D	B	C	D	D	A	A	A	-
Tetraethylene Glycol	A	A	A	A	A	A	A	A	A	A	-
Tetrahydrofuran (THF)	D	D	D	D	D	D	D	D	A	A	-
Thionyl Chloride	D	D	D	D	D	D	D	B	A	A	-
Tin Chloride	A	A	A	A	A	A	A	A	A	A	-
Tin Tetrachloride	A	A	A	A	A	A	A	A	A	A	-
Titanium Tetrachloride	D	D	D	B	C	C	C	A	A	A	-
Toluene (Toluol)	D	D	D	D	D	D	D	A	A	A	D
Toluene Diisocyanate (TDI)	C	C	A	C	D	D	A	B	A	A	-
Toxaphene	D	D	D	B	B	D	D	A	A	A	-
Transformer Oils (Chlorinated Phenyl Base Askerels)	D	D	D	D	D	D	A	A	B	A	-
Transformer Oils (Petroleum Base)	D	D	D	A	B	B	D	A	A	A	-
Transmission Fluids-A	D	D	D	B	C	D	D	A	A	A	-
Transmission Fluids-B	D	D	D	C	D	D	D	A	A	A	-
Tributyl Amine	See Ammonia										
Tributyl Phosphate	D	D	B	D	D	D	B	B	A	A	-
Tricetin	A	B	A	B	B	B	A	D	A	A	-
Trichlorobenzene	D	D	D	D	D	D	D	B	B	A	-
Trichloroethane	D	D	D	D	D	D	D	A	A	A	-
Trichloroethylene	D	D	D	C	D	D	D	A	B	A	D
Trichloropropane	D	D	D	D	D	D	D	A	A	A	-
Tricresyl Phosphate (TCP)	D	D	A	D	D	D	B	B	A	A	-
Triethanolamine (TEA)	See Ammonia										

Rating Codes: **A** = Excellent, **B** = Good, **C** = Fair Conditional, **D** = Unsatisfactory, **(-)** = No Data Available

Elastomeric Chemical Resistance

Material (All ratings are based on 70°F)	Natural Rubber	SBR	Butyl	Nitrile	Neoprene	Hypalon	EPDM	Viton	XLPE	PTFE/TFE/PEP	Silicone
Trichloroethylene	D	D	D	C	D	D	D	A	B	A	-
Trichloropropane	D	D	D	D	D	D	D	A	A	A	-
Tricresyl Phosphate (TCP)	D	D	A	D	D	D	B	B	A	A	-
Triethanolamine (TEA)	See Ammonia										
Triethylamine	See Ammonia										
Triethylene Glycol	A	A	A	A	A	A	A	A	A	A	-
Trinitrotoluene (TNT)	D	D	D	D	B	B	D	B	D	A	-
Triphenyl Phosphate	D	D	A	D	C	C	B	C	A	A	-
Trisodium Phosphate	A	A	A	A	A	A	A	A	A	A	-
Tung Oil	D	D	C	A	B	B	D	A	A	A	-
Turbine Oil	D	D	D	B	B	B	D	A	A	A	-
Turpentine	D	D	D	B	B	D	D	A	A	A	D
2,4D With 10% Fuel Oil	D	D	D	A	A	D	D	A	A	A	-
Ucon Hydrolube Oils	D	D	A	A	B	D	A	A	A	A	-
Undecanol	A	A	A	A	A	A	A	B	A	A	-
Unsymmetrical Dimethyl											
Hydrazine (UDMH)	D	D	A	D	D	A	A	D	A	A	-
Uran	B	C	B	B	B	A	B	C	A	A	-
Urea	See Ammonia										
V.M. & P. Naptha	D	D	D	A	A	D	D	A	A	A	-
Varnish	D	D	D	B	B	C	D	A	A	A	-
Vegetable Oils	D	D	A	A	B	B	A	A	A	A	-
Versilube	A	A	A	A	A	A	A	A	A	A	-

Material (All ratings are based on 70°F)	Natural Rubber	SBR	Butyl	Nitrile	Neoprene	Hypalon	EPDM	Viton	XLPE	PTFE/TFE/PEP	Silicone
Vinegar	A	C	A	C	A	A	B	B	A	A	A
Vinyl Acetate	D	D	A	D	D	C	C	D	B	A	D
Vinyl Benzene	D	D	D	D	D	D	D	A	B	A	-
Vinyl Chloride (Monomer)	C	D	D	D	D	D	D	A	A	A	-
Vinyl Ether	D	D	D	D	D	C	C	D	A	A	-
Vinyl Toluene	D	D	D	D	D	D	D	A	B	A	-
Vinyl Trichloride	D	D	D	D	D	D	D	A	A	A	-
Water Spray	D	D	D	B	B	D	D	A	A	A	-
Water, Fresh (Non F.D.A.)	A	A	A	A	A	A	A	A	A	A	A
Water, Salt	A	A	A	B	A	A	A	A	A	A	-
Whiskey, Wines											
White Liquor	D	A	B	A	A	A	C	A	A	A	-
White Oil	D	D	D	A	B	D	D	A	A	A	-
Wood Alcohol (Methanol)	A	A	A	A	A	A	A	D	A	A	-
Xylene (Xy101)	D	D	D	D	D	D	D	A	A	A	D
Xylidine	D	D	D	D	D	D	D	C	B	A	-
Zeolites	A	A	A	A	A	A	A	A	A	A	-
Zinc Acetate	C	D	A	C	C	C	B	D	A	A	-
Zinc Carbonate	A	A	A	A	A	A	A	A	A	A	-
Zinc Chloride	A	A	A	A	A	A	B	A	A	A	A
Zinc Chromate	A	C	A	A	A	C	A	A	B	A	-
Zinc Sulfate	A	A	A	A	A	A	A	A	A	A	A

Elastomeric Temperature and Shelf Life

Elastomers & Fluoroplastics	Min. Material Temperature	Continuous Material Temperature	Intermittent Operating Temperature / Accumulative Time (hrs)**	Shelf Life (yrs)	Resistant To	Generally Attacked By
Chloroprene (CR)	-40°C (-40°F)	107°C (225°F)	121°C (250°F) / 168	36	Moderate Acids & Chemicals, Ozone, Oils, Fats & many Solvents	Oxidizing Acids, Esters & Ketones, Aromatic Chlorinated & Nitro Hydrocarbons
Chlorosulfated Polyethylene (CSM)	-40°C (-40°F)	121°C (250°F)	177°C (350°F) / 70	60	Strong Acids, Freons, Hydroxides, Ozone, Alcohols, Alkalines & Hydrochlorite Solutions	Ketones, Esters, Some Chlorinated Oxidizing Acids, Chlorinated Nitro & Aromatic Hydrocarbons
Ethylene Propylene Diene Monomer (EPDM)	-54°C (-65°F)	149°C (300°F)***	163°C (325°F) / 300 177°C (350°F) / 200 177°C (350°F) / 150 191°C (375°F) / 70	60	Vegetable & Animal Fats, Oils, Ozone, Ketones, Alcohols, Many Strong & Oxidizing Chemicals	Mineral Oils, Solvents & Aromatic Hydrocarbons
Chlorobutyl (CIIR)	-40°C (-40°F)	149°C (300°F)	177°C (350°F) / 150	32	Vegetable & Animal Oils, Fats, Greases, Air, Gas, Water & Many Oxidizing Chemicals	Oils, Solvents & Aromatic Hydrocarbons
Fluoroelastomer (FKM)	-34°C (-30°F)	204°C (400°F)	288°C (550°F) / 240 316°C (600°F) / 48 343°C (650°F) / 16 371°C (700°F) / 4* 399°C (750°F) / 2*	49	All Aromatic Aliphatic & Halogenated Hydrocarbons, Vegetable & Animal Oils, Many Acids	Ketones, Esters & Nitro Containing Compounds
Silicone (SL)	-51°C (-60°F)	249°C (480°F)	315°C (600°F) / 168	60	Oxidizing Chemicals, Ozone, Concentrated Sodium Hydroxide	Many Solvents, Oils, Concentrated Acids, Sulfurs
Polytetra Fluoroethylene (PTFE)	-79°C (-110°F)	315°C (600°F)	371°C (700°F) / 75	Unlimited	Most Known Fluid Chemicals	Molten Alkali Metals, Fluorine & Related Compounds
Nitrile-Buna Rubber (NBR)	-40°C (-40°F)	107°C (225°F)	121°C (250°F) / 168	15	Most Hydrocarbons, Fats, Oils, Greases, Hydraulic Fluids, Chemicals & Solvents	Ozone, Ketones, Esters, Aldehydes, Nitro & Chlorinated Hydrocarbons, Polar Solvents MEK.
Hydrogenated Nitrile Butadiene Rubber (HNBR)	-54°C (-65°F)	149°C (300°F)	163°C (325°F) / 300	36	Mineral Oil Based Hydraulic Fluids, Animal & Vegetable Fats, Diesel Fuel, Ozone, Sour Gas, Dilute Acids	Aromatic Oils, Polar Solvents, Some Oxygenated Solvents & Aromatic Hydrocarbons

*Fluoroelastomers when reinforced with non-reactive materials have an intermittent temperature capacity of 4 hours at 371°C (700°F) and 2 hours at 399°C (750°F) | ** Excursions at high temperature will have a detrimental effect on useful life of the product | *** Using a Peroxide cure, continuous material temperature is 165°C (329°F)

Elastomeric Comparative Properties

ANSI/ASTM D1418-77	NR/IR	AU/EU	CR	NBR	CIIR	CSM	EPDM	FKM	AFMU	SI
Elastomer	Gum/Natural	Urethane	Neoprene	Nitrile/Buna-N	Chlorobutyl	Hypalon®	EPDM/EPT	Viton®/Fluorel®	PTFE	Silicone
ASTM D-2000, SAE J-200	AA	BG	BC-BE	BF-BG-BK-CH	AA-BA	CE	BA-CA-DA	HK	-	FC-FE-GE
Military: MIL STD 417	RN	SB	SC	SB	RS	SC	RS	-	-	TA
Chemical Name Definition	Polyisoprene	Polyester/ Polyether Urethane	Poly- Chloroprene	Butadiene Acrylic-Nitrile	Chloro- Isobutylene Isoprene	Chloro- Sulfonated Polyethylene	Ethylene Propylene Polymer	Fluorinated Hydrocarbon	Tetrafluoro- Ethylene Resin	Poly-Siloxane
Abrasion	A	A	A	B	B	A	A	B	B	D
Absorption, Water	A	B	B	B	A	A	A	A	-	A
Acid-Concentrated	B	D	B	B	B	A	A	A	A	C
Acid-Diluted	B	C	A	B	A	A	A	A	A	A
Adhesion To Fabrics	A	A	A	B	B	B	B	A	B	A
Adhesion To Metals	A	A	A	A	B	A	A	B	B	A
Chemicals	B	C	B	B	A	A	A	A	A	A
Cold	A	A	B	B	B	B	A	B	A	A
Dielectric Strength	A	A	B	D	A	A	A	B	-	B
Dynamic Properties	A	A	C	A	C	C	A	A	-	D
Electrical Insulation	A	C	B	D	B	B	A	B	-	A
Flame	D	C	B	D	D	B	D	A	A	B
Heat	B	B	A	B	A	A	A	A	A	A
Heat Aging	C	B	B	B	A	A	A	A	A	A
Hydrocarbons-Aliphatic	D	A	B	A	D	B	D	A	A	D
Hydrocarbons-Aromatic	D	B	C	B	D	C	D	A	A	D
Hydrocarbons-Oxygenated	B	D	D	D	B	D	A	D	A	C
Impermeability	D	D	D	D	D	D	D	D	-	D
Oil-Animal & Vegetable	D	A	B	A	A	B	B	A	A	A
Oil & Gasoline	D	A	B	A	D	B	D	A	A	C
Oxydation	B	A	A	B	A	A	A	A	A	A
Ozone	C	A	A	C	A	A	A	A	A	A
Radiation	A	A	A	A	B	A	A	A	B	A
Rebound-Cold	A	B	A	B	D	B	A	B	-	A
Rebound-Hot	A	B	A	B	A	B	A	B	-	A
Set-Compression	B	C	B	B	C	C	B	B	-	C
Solvents, Lacquer	D	D	D	C	B	D	D	D	A	D
Steam	C	D	C	B	B	C	A	B	-	C
Sunlight Aging	D	B	A	D	A	A	A	A	A	A
Swelling In Oil	D	A	B	A	D	A	D	A	-	C
Tear	A	A	B	C	B	C	B	C	-	D
Tensile Strength	A	A	B	A	B	C	A	A	-	D
Water	B	D	C	B	B	C	A	B	A	C
Weather	C	A	A	C	A	A	A	A	A	A
Generally Resistant To:	Water, air and average concentration acids, bases, alcohols, salts, ketones, best abrasion resistance	moderate chemicals, oils, fats, greases and many hydrocarbons	moderate acids and chemicals, ozone, oils, fats and many solvents. Oily abrasive applications	Most hydrocarbons, fats, oils, greases, hydraulic fluids, chemicals and solvents	animal and vegetable oils, fats, greases, air, gas, water, many oxidizing chemicals and ozone	strong acids, and bases, freons, hydroxides, ozone, alcohols, etching, alkaline and hypochlorite solutions	Vegetable and animal fats, oils, ozone, many strong and oxidizing chemicals, keytones and alcohols	All aromatic aliphatic and halogenated hydrocarbons, many acids, animal and vegetable oils	Most known fluid chemicals	Moderate or oxidizing chemicals, ozone, concentrated sodium hydroxide
Generally Affected Or Attacked By:	Not for ozone, strong acids, bases, oils, solvents, most hydrocarbons	Not for concentrated acids, ketones, esters, chlorinated and nitro hydrocarbons	Not for oxidizing acids, esters and ketones, aromatic, chlorinated and nitro hydrocarbons	Not for ozone, ketones, esters, aldehydes, nitro and chlorinated hydrocarbons, polar solvents, MEK	Not for oils, solvents, aromatic hydrocarbons	Not for ketones, esters, certain chlorinated oxidizing acids, chlorinated, nitro and aromatic hydrocarbons	Not for mineral oils, solvents, aromatic hydrocarbons	Not for ketones, esters, and nitro containing compounds	Not for molten alkali metals, fluorine and related compounds	Not for many solvents, oils, concentrated acids, sulfurs

Rating Codes: **A** = Excellent, **B** = Good, **C** = Fair Conditional, **D** = Unsatisfactory, **(-)** = No Data Available

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Thermoplastic Chemical Resistance

Material	Hose Construction							
	PVC		TPR		TPE		TPU	
	68°F	104°F	68°F	104°F	68°F	104°F	68°F	104°F
Acetaldehyde	D	D	D	D	D	D	D	D
Acetaldehyde (40%)	D	D	D	D	D	D	D	D
Acetate Solvents, crude	D	D	C	D	C	D	C	D
Acetate Solvents, pure	D	D	C	D	C	D	C	D
Acetate Solvents, pure	A	B	A	B	C	D	D	D
Acetic Acid (20-30%)	A	B	A	B	C	D	D	D
Acetic Acid (80%)	B	B	A	B	D	D	D	D
Acetic Acid Vapors	A	B	A	B	C	C	D	D
Acetic Acid Glacial	B	C	B	C	D	D	D	D
Acetic Anhydride	D	D	-	-	-	-	D	D
Acetone	B	C	A	A	C	D	C	D
Acetylene	A	A	-	-	-	-	A	A
Acrylonitrile	A	B	-	-	-	-	-	-
Adipic Acid	B	C	-	-	-	-	D	D
Allyl Alcohol (96%)	D	D	-	-	-	-	D	D
Allyl Chloride	C	C	-	-	-	-	D	D
Alum	A	A	A	A	A	A	A	A
Aluminum Acetate	B	C	-	-	-	-	-	A
Aluminum Alkyl	D	D	-	-	-	-	-	-
Aluminum Chloride	A	A	A	A	A	A	C	C
Aluminum Fluoride	A	A	A	A	A	A	A	A
Aluminum Hydroxide	A	-	A	A	B	B	B	C
Aluminum Nitrate	A	B	-	-	-	-	A	A
Aluminum Oxychloride	A	A	-	-	-	-	-	-
Aluminum Phosphate Solution	D	D	-	-	-	-	-	-
Aluminum Salts	A	A	-	-	-	-	-	-
Aluminum Sulphate	A	A	A	A	A	A	A	A
Aminoethanol	B	-	-	-	-	-	-	-
Ammonia - aqueous	A	-	A	-	C	-	C	D
Ammonia - dry gas	C	D	B	-	C	-	C	D
Ammonia - liquid	D	D	C	-	C	-	C	D
Ammoniated Latex	A	C	-	-	-	-	-	-
Ammonium Acetate	A	A	-	-	-	-	-	-
Ammonium Bicarbonate	A	A	-	-	-	-	-	-
Ammonium Carbonate	A	A	-	-	-	-	A	A
Ammonium Chloride Solution	A	A	-	-	-	-	B	C
Ammonium Fluoride (25%)	D	D	-	-	-	-	C	D
Ammonium Hydroxide (30% NH)	A	A	-	-	-	-	B	B
Ammonium Metaphosphate	A	A	-	-	-	-	B	B
Ammonium Persulfate	A	A	-	-	-	-	B	B
Ammonium Nitrate	A	A	-	-	-	-	-	A
Ammonium Phosphate Solutions	A	A	-	-	-	-	A	A
Ammonium Sulfate	A	A	A	A	A	A	A	A
Ammonium Sulfide	A	A	A	A	B	B	B	B
Ammonium Thiocyanate	D	D	-	-	-	-	-	-
Amyl Acetate	A	B	A	B	D	D	D	D
Amyl Alcohol	D	D	D	D	D	D	-	A
Amyl Chloride	B	C	A	B	-	-	D	D
Aniline	D	D	-	-	-	-	D	D
Aniline Chlorohydrate	D	D	-	-	-	-	D	D
Aniline Hydrochloride	A	-	-	-	-	-	-	-
Animal Gelatin	A	A	A	A	-	-	-	-
Animal Oils	D	D	-	-	-	-	-	-
Ant Oil	A	A	-	-	-	-	-	-
Anthraquinone	A	A	-	-	-	-	-	-

Material	Hose Construction							
	PVC		TPR		TPE		TPU	
	68°F	104°F	68°F	104°F	68°F	104°F	68°F	104°F
Anthraquinonesulfonic Acid	A	A	-	-	-	-	D	D
Antifreeze	A	A	-	-	-	-	-	-
Antimony Chloride	A	-	-	-	-	-	-	-
Antimony Salts	A	-	-	-	-	-	-	-
Antimony Trichloride	A	A	-	-	-	-	A	A
Apple Sauce/Juice	A	A	-	-	-	-	-	-
Aqua Ammonia	D	D	-	-	-	-	-	-
Aqua Regia	C	D	B	C	-	-	D	D
Argon, Compressed	D	D	-	-	-	-	-	A
Aromatic Hydrocarbons	C	C	A	A	-	-	-	-
Arsenic Acid 80%	A	B	A	A	D	D	D	D
Arsenic Trichloride	A	A	-	-	-	-	A	A
Arsenic Trioxide	A	-	-	-	-	-	-	-
Arylsulfonic Acid	C	D	-	-	-	-	D	D
Askarel (Transformer Oil)	D	D	-	-	-	-	-	-
Asphalt	D	D	-	-	-	-	-	D
ASTM Fuel Oil # 1	A	A	A	A	B	B	A	A
ASTM Oil # 2	D	D	-	-	-	-	-	A
ASTM Fuel Oil # 3	B	C	A	A	B	B	A	A
ASTM Fuel A	B	B	A	A	B	B	A	B
ASTM Fuel B	D	D	A	A	B	C	B	C
ASTM Fuel C	D	D	-	-	-	-	B	C
Baby Food	A	A	-	-	-	-	-	-
Baltic (Types 100, 150, 200, 300, 500)	B	-	-	-	-	-	-	-
Barium Carbonate	A	A	A	A	A	A	A	A
Barium Chloride	A	A	A	A	A	A	A	A
Barium Hydroxide	A	A	-	-	-	-	B	C
Barium Sulfate	A	A	A	A	A	A	A	A
Barium Sulfide	A	A	A	A	A	A	A	A
Barley	A	D	-	-	-	-	-	-
Basic Copper Arsenate	A	-	-	-	-	-	-	-
Beer	A	A	-	-	-	-	-	A
Beet Sugar - liquor	A	A	-	-	-	-	-	B
Bellows 80-20 Hydraulic Oil	B	-	-	-	-	-	-	-
Benzaldehyde	D	D	-	-	-	-	-	-
Benzene	D	D	-	-	-	-	-	B
Benzidine	D	D	-	-	-	-	-	-
Benzoic Acid	B	C	A	B	D	D	D	D
Benzoic Aldehyde	D	D	-	-	-	-	-	-
Benzol	D	D	B	C	C	D	C	D
Benzotrithloride	D	D	-	-	-	-	-	B
Benzyl Alcohol	A	-	-	-	-	-	-	A
Benzyl Chloride	D	D	-	-	-	-	-	A
Berries	A	A	-	-	-	-	-	-
Bismuth Carbonate	A	A	-	-	-	-	A	A
Black Liquor	A	A	A	A	-	-	-	-
Blast Furnace Gas	D	D	-	-	-	-	-	-
Bleach (12.5% Active CL)	B	C	A	B	C	D	C	D
Borax	A	B	A	A	-	-	A	A
Bordeaux Mixture	A	A	A	A	-	-	-	-
Boric Acid	A	A	A	A	-	-	D	D
Boric Oxide	A	-	-	-	-	-	-	-
Boron Trifluoride	A	A	-	-	-	-	A	A
Brake Fluid (Petroleum Base)	B	-	-	-	-	-	-	-
Brake Fluid (Synthetic Base)	B	-	-	-	-	-	-	-

Rating Codes: **A** = Excellent, **B** = Good, **C** = Fair Conditional, **D** = Unsatisfactory, (-) = No Data Available

Thermoplastic Chemical Resistance

Material	Hose Construction								
	PVC		TPR		TPE		TPU		UHMW
	68°F	104°F	68°F	104°F	68°F	104°F	68°F	104°F	
Brine	A	A	A	A	C	D	B	C	A
Bromic Acid	A	B	A	B	C	D	D	D	-
Bromine - Liquid	D	D	C	D	D	D	D	D	-
Bromine - Water	D	D	C	D	D	D	D	D	-
Bromobenzene	D	D	-	-	-	-	-	-	C
Bromochloromethane	D	D	-	-	-	-	-	-	-
Bromotoluene	D	D	-	-	-	-	-	-	-
Bunker Oil	D	D	-	-	-	-	-	-	-
Butadiene	C	D	-	-	-	-	-	-	-
Butane	A	A	A	A	A	A	A	A	A
Butanol - Primary	D	D	-	-	-	-	C	D	A
Butanol - Secondary	D	D	-	-	-	-	C	D	A
Butter	B	C	-	-	-	-	-	-	-
Butyl Acetate	A	-	-	-	-	-	-	-	A
Butyl Alcohol	A	B	A	B	A	B	C	D	A
Butyl Cellosolve	D	D	C	D	-	-	-	-	A
Butyl Mercaptan	D	D	-	-	-	-	-	-	-
Butyl Phenol	C	D	B	C	-	-	-	-	-
Butyl Stearate	A	-	-	-	-	-	-	-	A
Butylene	A	B	A	A	A	A	A	A	-
Butyric Acid 20%	C	D	B	C	C	D	C	D	A
Butynedial	D	D	-	-	-	-	D	D	-
Cake Alum Solution	A	-	-	-	-	-	-	-	-
Calcium Arsenate	A	-	-	-	-	-	-	-	-
Calcium Bisulfate	A	A	A	A	A	A	-	-	-
Calcium Bisulfide	B	-	-	-	-	-	-	-	-
Calcium Bisulfite	A	A	-	-	-	-	A	A	-
Calcium Carbonate	A	A	A	A	A	A	A	A	-
Calcium Chlorate	A	A	A	A	B	C	B	C	-
Calcium Chloride	A	A	A	A	C	D	C	D	A
Calcium Hydrosulfide	B	-	-	-	-	-	-	-	-
Calcium Hydroxide	A	A	A	A	B	C	B	C	A
Calcium Hypochlorite	A	A	A	A	D	D	D	D	C
Calcium Metasilicate	A	-	-	-	-	-	-	-	-
Calcium Nitrate	A	A	A	A	A	A	A	A	A
Calcium Silicate	A	-	-	-	-	-	-	-	-
Calcium Sulfate	A	A	A	A	A	A	A	A	-
Calcium Sulfide	B	-	-	-	-	-	-	-	A
Cane Sugar Liquors	-	-	-	-	-	-	-	-	-
Carbolic Acid	D	D	-	-	-	-	-	-	A
Carbon Bisulfide	A	A	-	-	-	-	-	-	-
Carbon Dioxide	A	A	-	-	-	-	-	-	A
Carbon Disulfide	D	D	-	-	-	-	-	-	A
Carbon Monoxide	A	A	A	A	A	A	A	A	A
Carbon Tetrachloride	D	D	B	C	C	D	C	D	B
Carbolic Acid	D	D	-	-	-	-	-	-	-
Carbonic Acid	A	A	A	A	D	D	D	D	-
Carrots	A	A	A	A	D	D	-	-	-
Casein	A	B	-	-	-	-	A	A	-
Castor Oil	A	A	A	A	A	A	A	A	A
Catsup	A	B	-	-	-	-	-	-	-
Caustic Potash	A	A	A	A	C	D	C	D	-
Caustic Soda	A	A	A	A	C	D	C	D	-
Cellosolve	C	D	B	C	B	C	B	C	A
Cellulose Acetate	A	-	-	-	-	-	-	-	-

Material	Hose Construction								
	PVC		TPR		TPE		TPU		UHMW
	68°F	104°F	68°F	104°F	68°F	104°F	68°F	104°F	
Cellulose Buty	A	-	-	-	-	-	-	-	-
Cheese	A	B	-	-	-	-	-	-	-
Cherries	A	A	-	-	-	-	-	-	-
China-Wood Oil	B	-	-	-	-	-	-	-	-
Chlorodane	B	-	-	-	-	-	-	-	-
Chloroacetic Acid	A	D	-	-	-	-	D	D	A
Chloral Hydrate	A	A	-	-	-	-	B	C	-
Chloric Acid 20%	A	A	-	-	-	-	D	D	-
Chlorinated Hydrocarbons	A	A	-	-	-	-	D	D	-
Chlorinated Solvents	D	D	-	-	-	-	-	-	-
Chlorine Gas - dry	A	A	A	A	D	D	D	D	-
Chlorine Gas - moist	C	D	B	C	C	D	D	D	-
Chlorine Trifluoride	D	D	-	-	-	-	-	-	-
Chloroacetyl Chloride	A	-	-	-	-	-	-	-	-
Chlorobenzene	D	D	-	-	-	-	-	-	-
Chlorobromomethane	D	D	-	-	-	-	-	-	-
Chloroethane	D	D	-	-	-	-	-	-	-
Chloroform	D	D	-	-	-	-	-	-	A
Chloropentane	D	D	-	-	-	-	-	-	A
Chloropicrin Mixture	D	D	-	-	-	-	-	-	-
Chlorotoluene	D	D	-	-	-	-	-	-	B
Chlorox	A	-	-	-	-	-	-	-	B
Chlorsulfonic Acid	C	D	-	-	-	-	D	D	D
Chocolate	B	C	-	-	-	-	-	-	-
Chocolate Syrup	A	-	-	-	-	-	-	-	-
Chromic Chloride	A	-	-	-	-	-	-	-	-
Chrome Alum	A	A	A	A	A	A	A	A	-
Chromic Acid 25%	B	C	A	B	D	D	D	D	A
Chromic Acid 50%	B	C	A	B	D	D	D	D	A
Chromium Trioxide	D	D	-	-	-	-	-	-	-
Cider	B	-	-	-	-	-	-	-	-
Citgo FR Fuels	B	-	-	-	-	-	-	-	-
Coal Gas	A	-	-	-	-	-	-	-	-
Coal Tar	D	D	C	C	-	-	D	D	A
Coconut Oil	C	D	A	A	A	A	A	A	A
Cola Beverage	A	A	-	-	-	-	-	-	-
Copper Chloride	A	B	A	A	A	A	A	A	A
Copper Cyanide	A	A	-	-	-	-	-	-	A
Copper Fluoride 2%	A	A	-	-	-	-	A	A	-
Copper Nitrate	A	B	A	A	A	A	A	A	-
Copper Sulphate	A	B	-	-	-	-	A	A	A
Core Oils	A	A	-	-	-	-	A	A	-
Corn Oils	A	B	-	-	-	-	-	-	A
Cottonseed Oil	B	C	-	-	-	-	A	A	A
Creosole	D	D	C	D	C	D	-	-	A
Creosote	D	D	C	D	-	-	-	-	A
Cresylic Acid 50%	D	D	-	-	-	-	D	D	A
Crude Oil Sour	A	A	A	A	A	A	A	A	A
Crude Oil Sweet	A	A	A	A	A	A	A	A	A
Crude Wax	A	-	-	-	-	-	-	-	-
Cupric Chloride	A	-	-	-	-	-	-	-	-
Cupric Cyanide	A	-	-	-	-	-	-	-	-
Cupric Nitrate	A	-	-	-	-	-	-	-	A
Cupric Sulfate	A	-	-	-	-	-	-	-	A
Cyanide, Copper	A	-	-	-	-	-	-	-	-

Rating Codes: **A** = Excellent, **B** = Good, **C** = Fair Conditional, **D** = Unsatisfactory, **(-)** = No Data Available

Thermoplastic Chemical Resistance

Material	Hose Construction								
	PVC		TPR		TPE		TPU		UHMW
	68°F	104°F	68°F	104°F	68°F	104°F	68°F	104°F	
Cyanide, Silver	A	-	-	-	-	-	-	-	-
Cyanide Sodium	A	-	-	-	-	-	-	-	-
Cyclohexane	D	D	-	-	-	-	-	-	A
Cyclohexanol	D	D	-	-	-	-	C	D	A
Cyclohexanone	D	D	-	-	-	-	D	D	-
Cymene	D	D	-	-	-	-	-	-	-
Decanol	D	D	-	-	-	-	-	-	-
Deicing Fluid	A	A	-	-	-	-	-	-	-
Demineralized Water	A	A	A	A	C	D	B	D	-
Denatured Alcohol	A	-	-	-	-	-	-	-	-
Detergents, synthetic	A	B	A	A	-	-	-	-	-
Developers, photographic	A	A	A	A	-	-	-	-	-
Dextrin	A	-	-	-	-	-	-	-	-
Dextron	B	-	-	-	-	-	-	-	-
Dextrose	A	B	A	A	A	A	A	A	-
Diacetone	D	D	-	-	-	-	-	-	-
Diacetone Alcohol	D	D	-	-	-	-	-	-	A
Diammonium Phosphate	A	-	-	-	-	-	-	-	-
Diazinon	B	-	-	-	-	-	-	-	-
Diazo Salts	A	A	-	-	-	-	-	-	-
Dibutyl Phthalate	A	-	-	-	-	-	-	-	A
Dibutylamine	D	D	-	-	-	-	-	-	A
Dichlorobenzene	D	D	-	-	-	-	-	-	A
Dichlorobenzyl Chloride	D	D	-	-	-	-	-	-	-
Dichloroethane	D	D	-	-	-	-	-	-	-
Dichloroethylene	D	D	-	-	-	-	-	-	-
Dichloromethane	D	D	-	-	-	-	-	-	-
Diesel Oils	C	D	A	B	-	-	-	-	A
Diethanolamine	B	-	-	-	-	-	-	-	A
Diethyl Ether	B	-	-	-	-	-	-	-	-
Diethyl Ketone	D	D	-	-	-	-	-	-	-
Diethyl Oxalate	D	D	-	-	-	-	-	-	-
Diethylene Dioxide	B	-	-	-	-	-	-	-	-
Diethylene Ether	D	D	-	-	-	-	-	-	-
Diethylene Glycol	A	-	-	-	-	-	-	-	A
Diglycolic Acid	A	B	-	-	-	-	-	-	-
Dihydroxyethyl Ether	A	-	-	-	-	-	-	-	-
Dimethylamine	D	D	-	-	-	-	D	D	A
Dimethylbenzene	D	D	-	-	-	-	-	-	-
Dimethylcarbamal	B	-	-	-	-	-	-	-	A
Dimethylketone	D	D	-	-	-	-	-	-	A
Diocetyl Phthalate	D	D	-	-	-	-	-	-	A
Diocetyl Phosphite	D	D	-	-	-	-	-	-	A
Dioxane	D	D	-	-	-	-	-	-	A
Disodium Phosphate	A	A	A	A	A	A	A	A	A
Distilled Water	A	A	A	A	C	D	B	D	-
DMB (Dimethylbenzene)	D	D	-	-	-	-	-	-	-
Duro Oils	B	-	-	-	-	-	-	-	-
EDB (Ethylene Dibromide)	D	D	-	-	-	-	-	-	-
Eggs	A	A	-	-	-	-	-	-	-
Emulsions, photographic	A	A	-	-	-	-	-	-	-
Enamels	B	-	-	-	-	-	-	-	-
Essential Oils	B	-	-	-	-	-	-	-	-
Ethanolamine	B	-	-	-	-	-	-	-	A
Ethers	D	D	-	-	-	-	B	C	-

Material	Hose Construction								
	PVC		TPR		TPE		TPU		UHMW
	68°F	104°F	68°F	104°F	68°F	104°F	68°F	104°F	
Ethyl Acetate	D	D	-	-	-	-	-	-	A
Ethyl Acrylate	D	D	-	-	-	-	-	-	A
Ethyl Alcohol	B	C	-	-	-	-	-	-	A
Ethyl Alcohol 50-98%	C	D	-	-	-	-	-	-	A
Ethyl Bromide	D	D	-	-	-	-	-	-	-
Ethyl Chloride	D	D	D	D	D	D	D	D	B
Ethyl Ether	D	D	-	-	-	-	B	C	A
Ethyl Ether Acetate	A	-	-	-	-	-	-	-	-
Ethyl Mercaptan	D	D	-	-	-	-	-	-	-
Ethyl Methyl Ketone	D	D	-	-	-	-	-	-	-
Ethylbutanol	A	-	-	-	-	-	-	-	-
Ethylbutyl Alcohol	A	-	-	-	-	-	-	-	-
Ethylene Bromide	A	D	A	C	D	D	D	D	-
Ethylene Chlorohydrin	D	D	-	-	-	-	-	-	-
Ethylene Dibromide	D	D	-	-	-	-	-	-	B
Ethylene Dichloride	D	D	-	-	-	-	D	D	B
Ethylene Glycol	A	A	A	A	B	C	B	C	A
Ethylene Oxide	D	D	-	-	-	-	D	D	-
Ethylhexanol	A	-	-	-	-	-	-	-	-
Ethylhexyl Acrylate	D	D	-	-	-	-	-	-	-
Ethylhexyl Alcohol	A	-	-	-	-	-	-	-	-
Fatty Acid	B	-	-	-	-	-	-	-	A
Fatty Alcohol, Blend	A	-	-	-	-	-	-	-	-
Ferric Chloride	A	A	A	A	B	C	B	C	A
Ferric Nitrate	A	A	A	A	A	A	A	A	A
Ferric Sulphate	A	A	A	A	A	A	A	A	A
Ferrous Chloride	A	A	-	-	-	-	A	A	A
Ferrous Nitrate	B	-	-	-	-	-	-	-	-
Ferrous Sulfate Solution	A	-	-	-	-	-	-	-	A
Fertilizer	B	-	-	-	-	-	-	-	-
Figs	A	A	-	-	-	-	-	-	-
Fish Solubles	A	A	-	-	-	-	-	-	-
Fixing Solutions, photographic	A	B	-	-	-	-	-	-	-
Flour	A	D	-	-	-	-	-	-	-
Fluorobac Acid	A	A	A	A	A	A	-	-	C
Fluorine	D	D	-	-	-	-	D	D	D
Fluosilic Acid	D	D	-	-	-	-	-	-	C
Foric Acid	A	C	-	-	-	-	D	D	-
Formaldehyde Solution (to 50%)	A	-	-	-	-	-	-	-	A
Formalin	A	-	-	-	-	-	-	-	-
Formic Acid 3%	A	B	-	-	-	-	-	-	A
Formic Acid 10%	A	B	-	-	-	-	D	D	A
Formic Acid 25%	A	B	-	-	-	-	D	D	A
Formic Acid 50%	C	D	-	-	-	-	D	D	A
Freon-12	A	B	A	A	A	A	A	A	-
Fructose	A	A	A	A	A	A	A	A	-
Fruit Pulp and Juices	A	A	-	-	-	-	A	A	-
Fuel Oil	B	C	A	A	A	B	A	A	A
Fumaric Acid	D	D	-	-	-	-	-	-	-
Furan	D	D	-	-	-	-	-	-	-
Furfural	D	D	-	-	-	-	D	D	A
Furfuryl Alcohol	A	C	-	-	-	-	-	-	A
Fusel Oil	A	-	-	-	-	-	-	-	-
Gallic Acid Solution	D	D	-	-	-	-	-	-	A
Gasohol	D	D	-	-	-	-	-	-	-

Rating Codes: **A** = Excellent, **B** = Good, **C** = Fair Conditional, **D** = Unsatisfactory, **(-)** = No Data Available

Thermoplastic Chemical Resistance

Material	Hose Construction								
	PVC		TPR		TPE		TPU		UHMW
	68°F	104°F	68°F	104°F	68°F	104°F	68°F	104°F	
Gas - cook oven	B	B	A	B	B	B	B	B	
Gas - natural (dry)	A	A	A	A	A	A	A	A	
Gas - natural (wet)	A	A	A	A	A	A	A	A	
Gasoline	D	D	-	-	-	-	-	-	A
Gasoline - refined	C	D	A	A	B	C	-	-	
Gasoline, Unleaded	D	D	-	-	-	-	-	-	
Gasoline, White	D	D	-	-	-	-	-	-	
Gelatin	A	A	A	A	A	A	A	A	
Gin	A	B	-	-	-	-	-	-	
Ginger Ale	A	A	-	-	-	-	-	-	
Glacial Acetic Acid	D	D	-	-	-	-	-	-	
Glucose	A	A	A	A	A	A	A	A	A
Glue	A	-	-	-	-	-	-	-	
Glycerine	A	A	A	A	A	A	-	-	
Glycerol	A	A	-	-	-	-	-	-	
Glycol	A	A	A	A	B	B	A	A	A
Glycolic Acid 30%	A	A	-	-	-	-	D	D	
Grape Juice	A	A	-	-	-	-	-	-	
Grapefruit Juice	A	A	-	-	-	-	-	-	
Grease	A	-	-	-	-	-	-	-	A
Green Liquor (paper)	A	A	-	-	-	-	-	-	A
Heptachlor	D	D	-	-	-	-	-	-	
Heptane	C	D	A	B	A	-	A	-	A
Heptanol	A	-	-	-	-	-	-	-	A
Hexane	C	D	-	-	-	-	-	-	B
Honey	A	A	-	-	-	-	-	-	
HPO (Sodium Thiosulfate)	A	-	-	-	-	-	-	-	
Hydraulic Fluid	A	-	-	-	-	-	-	-	A
Hydraulic Fluid HF-18, HF-20	B	-	-	-	-	-	-	-	
Hydrazine	D	D	-	-	-	-	-	-	
Hydro-Drive Oil (houghton)	B	-	-	-	-	-	-	-	
Hydrobromic Acid	D	D	-	-	-	-	-	-	B
Hydrochloric Acid 10%	A	A	A	A	D	D	D	D	A
Hydrochloric Acid 48%	C	D	-	-	-	-	D	D	A
Hydrocyanic Acid	D	D	-	-	-	-	-	-	A
Hydrofluoric Acid 4%	B	C	-	-	-	-	D	D	A
Hydrofluoric Acid 10%	C	C	-	-	-	-	D	D	A
Hydrofluoric Acid 48%	C	D	-	-	-	-	D	D	A
Hydrofluoric Acid 60%	C	D	-	-	-	-	D	D	A
Hydrofluosilicic Acid	D	D	-	-	-	-	D	D	B
Hydrogen	A	B	A	A	A	A	A	A	A
Hydrogen Bromide (Dry) (liquid)	-	-	-	-	-	-	D	D	
Hydrogen Cyanide	A	A	-	-	-	-	D	D	
Hydrogen Peroxide	D	D	-	-	-	-	-	-	A
Hydrogen Peroxide 12%	A	B	A	A	B	C	-	-	A
Hydrogen Peroxide 50%	A	C	A	B	C	D	B	C	A
Hydrogen Peroxide 90%	D	D	C	D	D	D	D	D	A
Hydrogen Phosphide	A	C	-	-	-	-	-	-	
Hydrogen Sulfide - Aqueous Sol.	A	A	-	-	-	-	-	-	A
Hydrogen Sulfide - Dry	A	A	-	-	-	-	-	-	
Hydrolube (water glycol)	A	A	-	-	-	-	-	-	
Hydrolubric Oil	B	-	-	-	-	-	-	-	
Hydroquinone Solution	B	-	-	-	-	-	-	-	
Hydroxylamine Sulfate	A	A	-	-	-	-	-	-	
Hypochlorous Acid	A	A	-	-	-	-	C	D	

Material	Hose Construction								
	PVC		TPR		TPE		TPU		UHMW
	68°F	104°F	68°F	104°F	68°F	104°F	68°F	104°F	
Iodine	D	D	-	-	-	-	-	-	B
Iron Acetate Liquor	A	-	-	-	-	-	-	-	
Iron Salts	A	-	-	-	-	-	-	-	
Iron Sulfate Solution	A	-	-	-	-	-	-	-	
Isobutanol	B	-	-	-	-	-	-	-	
Isobutyl Alcohol	B	-	-	-	-	-	-	-	
Isooctane	D	D	-	-	-	-	-	-	A
Isopropanol	B	-	-	-	-	-	-	-	
Isopropyl Acetate	D	D	-	-	-	-	-	-	A
Isopropyl Alcohol	A	B	A	A	C	D	-	-	A
Isopropyl Ether	D	D	-	-	-	-	-	-	A
JP 3, 4, 5	D	D	B	C	C	C	B	C	
Jelly	A	A	-	-	-	-	-	-	
Jet Fuel - All Types	D	D	-	-	-	-	-	-	A
Karo Syrup	A	A	-	-	-	-	-	-	
Kerosene	D	D	A	A	A	A	A	B	A
Ketones	D	D	-	-	-	-	-	-	A
Kraft Liquor (paper)	A	A	-	-	-	-	-	-	
Lacquer Thinner	C	D	B	B	C	C	B	-	B
Lactic Acid 28%	A	A	-	-	-	-	D	D	
Lard	B	C	-	-	-	-	-	-	B
Lard Oil	A	B	-	-	-	-	A	B	
Latex Paint	A	-	-	-	-	-	-	-	
Lauric Acid	A	A	A	A	C	D	C	D	
Lauryl Chlorite	A	A	-	-	-	-	A	B	
Lauryl Sulfate	A	A	-	-	-	-	-	-	
Lead Acetate	A	A	A	A	A	A	A	A	A
Lead Nitrate Solution	A	-	-	-	-	-	-	-	
Lead, Tetraethyl	A	-	-	-	-	-	-	-	
Lemon Juice	A	B	-	-	-	-	-	-	
Ligroin	D	D	-	-	-	-	-	-	
Lime, Chlorinated	B	-	-	-	-	-	-	-	
Lime, sulfur	A	A	-	-	-	-	-	-	A
Linoleic Acid	A	-	-	-	-	-	-	-	
Linseed Oil	A	A	A	A	A	A	A	A	A
Liquid Soap	B	-	-	-	-	-	-	-	
Liquors	A	B	-	-	-	-	-	-	
Lubricating Oils	D	D	A	A	A	A	A	A	
Machine Oil under 135°F	B	-	-	-	-	-	-	-	
Magnesium Carbonate	A	A	A	A	A	A	A	A	
Magnesium Hydroxide	A	A	A	A	C	D	B	C	A
Magnesium Nitrate	A	A	-	-	-	-	A	A	
Magnesium Sulfate Solution	A	-	-	-	-	-	-	-	A
Malathion	A	-	-	-	-	-	-	-	
Maleic Acid Solution	D	D	-	-	-	-	-	-	A
Manganese Salts	A	-	-	-	-	-	-	-	
Manganese Sulfate Solution	A	-	-	-	-	-	-	-	
Mayonnaise	A	A	-	-	-	-	-	-	
MBK (Methyl Butyl Ketone)	D	D	-	-	-	-	-	-	
MEA (Ethanolamine)	B	-	-	-	-	-	-	-	
MEK (Ethyl Methyl Ketone)	D	D	-	-	-	-	-	-	
Mercuric Chloride	B	B	A	A	B	C	B	C	
Mercuric Chloride Solution	B	-	-	-	-	-	-	-	
Mercuric Cyanide	B	B	-	-	-	-	-	-	
Mercuric Nitrate	B	B	-	-	-	-	B	B	

Rating Codes: **A** = Excellent, **B** = Good, **C** = Fair Conditional, **D** = Unsatisfactory, (-) = No Data Available

Thermoplastic Chemical Resistance

Material	Hose Construction								
	PVC		TPR		TPE		TPU		UHMW
	68°F	104°F	68°F	104°F	68°F	104°F	68°F	104°F	
Mercury	B	B	-	-	-	-	-	-	A
Mesitylene	D	D	-	-	-	-	-	-	-
Mesityl Oxide	D	D	-	-	-	-	-	-	A
Mesitylene	D	D	-	-	-	-	-	-	-
Methanol	D	D	D	D	D	D	D	D	-
Methyl Acetate	D	D	-	-	-	-	-	-	A
Methyl Acetone	A	-	-	-	-	-	-	-	A
Methyl Alcohol	C	D	B	C	C	D	D	D	A
Methyl Bromide	D	D	-	-	-	-	-	-	B
Methyl Butanathiol	D	D	-	-	-	-	-	-	-
Methyl Butanol	A	-	-	-	-	-	-	-	-
Methyl Chloride	D	D	-	-	-	-	D	D	-
Methyl Chloroform	D	D	-	-	-	-	-	-	-
Methyl Cyanide	A	-	-	-	-	-	-	-	-
Methyl Ethyl Ketone	D	D	B	C	C	D	-	-	A
Methyl Isobutenyl Ketone	D	D	-	-	-	-	-	-	-
Methyl Isobutyl Ketone	D	D	-	-	-	-	-	-	-
Methyl Isopropyl Ketone	D	D	-	-	-	-	-	-	-
Methyl Methacrylate	A	-	-	-	-	-	-	-	B
Methyl Methacrylate Monomer	D	D	-	-	-	-	-	-	-
Methyl Propyl Ketone	D	D	-	-	-	-	-	-	-
Methyl Silacylate	A	-	-	-	-	-	-	-	-
Methyl Sulfate	A	-	-	-	-	-	-	-	-
Methylamine	D	D	-	-	-	-	-	-	-
Methylaniline	D	D	-	-	-	-	-	-	-
Methylene Bromide	D	D	-	-	-	-	-	-	-
Methylene Chloride	D	D	-	-	-	-	-	-	B
Methylene Dichloride	D	D	-	-	-	-	-	-	-
Milk	A	A	-	-	-	-	A	A	-
Mineral Oils	A	B	A	A	A	A	A	A	A
Molasses	A	A	A	A	A	A	A	A	-
Monochlorobenzene	D	D	-	-	-	-	-	-	B
Monomethylamine	D	D	-	-	-	-	-	-	-
Monosodium Phosphate	A	-	-	-	-	-	-	-	-
Motor Oil	C	-	-	-	-	-	-	-	-
Muriatic Acid	D	D	-	-	-	-	-	-	A
N-Octane	D	D	-	-	-	-	-	-	-
Naphthenic Acid	A	-	-	-	-	-	-	-	-
Naptha	D	D	A	A	-	-	-	-	A
Napthalene	C	D	A	A	-	-	-	-	A
Nickel Chloride Solution	A	A	-	-	-	-	A	A	A
Nickel Nitrate Solution	B	-	-	-	-	-	A	A	A
Nickel Plating Solution	D	D	-	-	-	-	-	-	-
Nickel Salts	B	-	-	-	-	-	-	-	-
Nickel Sulfate Solution	A	-	-	-	-	-	-	-	A
Nicotine	A	A	-	-	-	-	A	A	-
Nicotine Acids	A	B	A	A	C	D	C	D	-
Nicotine Salts	A	-	-	-	-	-	-	-	-
Niter Cake	A	-	-	-	-	-	-	-	-
Nitric Acid 10%	A	B	-	A	D	D	D	D	A
Nitric Acid 40%	B	C	A	A	D	D	D	D	A
Nitric Acid 60%	C	D	B	C	D	D	D	D	A
Nitric Acid 68%	C	D	B	C	D	D	D	D	A
Nitric Acid 70%	D	D	C	C	D	D	D	D	A
Nitrobenzene	D	D	-	-	-	-	D	D	A

Rating Codes: **A** = Excellent, **B** = Good, **C** = Fair Conditional, **D** = Unsatisfactory, (-) = No Data Available

Material	Hose Construction								
	PVC		TPR		TPE		TPU		UHMW
	68°F	104°F	68°F	104°F	68°F	104°F	68°F	104°F	
Nitrogen	A	-	-	-	-	-	-	-	A
Nitrogen Oxide	D	D	-	-	-	-	-	-	A
Nitromethane	D	D	-	-	-	-	-	-	-
Nitrous Acid (up to 10%)	A	-	-	-	-	-	-	-	-
Nitrous Oxide	A	A	-	-	-	-	A	A	-
Oats	A	D	-	-	-	-	-	-	-
Octadecanoic Acid	A	-	-	-	-	-	-	-	-
Octanol	B	-	-	-	-	-	-	-	A
Octyl Alcohol	B	-	-	-	-	-	-	-	A
Oil of Turpentine	A	-	-	-	-	-	-	-	-
Oils, Animal	B	-	-	-	-	-	-	-	-
Oils, Mineral	D	D	-	-	-	-	-	-	-
Oils, Petroleum	A	B	A	A	A	A	A	A	A
Oleic Acid	B	C	A	A	D	D	D	D	A
Oleum	D	D	D	D	D	D	D	D	D
Olive Oil	B	B	-	-	-	-	-	-	B
Ortho-Dichlorobenzene	D	D	-	-	-	-	-	-	-
Ortho-xylene	D	D	-	-	-	-	-	-	-
Oxalic Acid	D	D	-	-	-	-	-	-	A
Oxygen	A	A	-	-	-	-	A	A	-
Ozone	C	D	-	-	-	-	-	-	C
Paint	A	-	-	-	-	-	-	-	-
Para formaldehyde	A	B	-	-	-	-	-	-	-
Paraffin	A	B	-	-	-	-	-	-	A
Palmitic Acid 10%	A	B	-	-	-	-	D	D	A
Palmitic Acid 70%	C	D	-	-	-	-	D	D	A
Peaches	A	A	-	-	-	-	-	-	-
Peanut Butter	A	B	-	-	-	-	-	-	-
Peanut Oil	B	-	-	-	-	-	-	-	-
Peas	A	A	-	-	-	-	-	-	-
Pentachlorophenol in Oil	D	D	-	-	-	-	-	-	-
Pentane	C	D	-	-	-	-	-	-	B
Pentanone	D	D	-	-	-	-	-	-	-
Pentanol	B	-	-	-	-	-	-	-	-
Perchloric acid	D	D	-	-	-	-	-	-	-
Perchloroethylene	D	D	-	-	-	-	-	-	-
Petrol	D	D	-	-	-	-	-	-	-
Petroleum Ether	C	C	A	A	-	-	-	-	-
Petroleum Naptha	D	D	-	-	-	-	-	-	-
Petroleum Oils (Refined)	A	-	-	-	-	-	-	-	-
Petroleum Oils (Sour)	B	-	-	-	-	-	-	-	-
Phenol	D	D	-	-	-	-	-	-	A
Phenol Acid	D	D	-	-	-	-	-	-	-
Phenyl Chloride	D	D	-	-	-	-	-	-	-
Phenolhydrazine	D	D	-	-	-	-	-	-	-
Phenolhydrazine Hydrochloride	C	D	-	-	-	-	-	-	-
Phosgene (gas)	A	B	-	-	-	-	-	-	-
Phosgene (liquid)	D	D	-	-	-	-	-	-	-
Phosphorous (yellow)	B	C	-	-	-	-	-	-	-
Phosphorous Pentoxide	D	D	-	-	-	-	-	-	-
Phosphorous Trichloride	A	A	-	-	-	-	A	A	-
Phosphorous Trichloride	A	A	-	-	-	-	A	A	-
Photographic Chemicals	A	A	-	-	-	-	A	B	-
Photographic Fixing Solutions	A	-	-	-	-	-	-	-	-
Picric Acid	D	D	D	D	D	D	D	D	-

Thermoplastic Chemical Resistance

Material	Hose Construction							
	PVC		TPR		TPE		PTU	
	68°F	104°F	68°F	104°F	68°F	104°F	68°F	104°F
Pinene	D	D	-	-	-	-	-	A
Pitch	B	C	A	A	-	-	-	-
Plating Solutions	A	B	-	-	-	-	A	A
Polyethylene Glycol	B	-	-	-	-	-	-	-
Potash	A	-	-	-	-	-	-	A
Potassium Acetate	A	-	-	-	-	-	-	-
Potassium Acid Sulfate	A	A	-	-	-	-	A	A
Potassium Antimonate	A	A	-	-	-	-	A	A
Potassium Bicarbonate	A	A	A	A	A	A	A	A
Potassium Bichromate	A	A	-	-	-	-	A	A
Potassium Bisulfate	A	-	-	-	-	-	-	A
Potassium Bisulfite	A	A	-	-	-	-	A	A
Potassium Borate 1%	A	A	-	-	-	-	A	A
Potassium Bisulfate	A	-	-	-	-	-	-	-
Potassium Bromate 10%	A	A	A	A	A	A	A	A
Potassium Bromide	A	A	A	A	A	A	A	A
Potassium Carbonate	A	-	-	-	-	-	-	A
Potassium Chlorate	A	-	-	-	-	-	-	-
Potassium Chloride	A	A	A	A	A	B	A	B
Potassium Chromate	A	-	-	-	-	-	B	B
Potassium Cuprocyanide	A	-	-	-	-	-	-	-
Potassium Cyanide	A	A	A	A	A	A	A	A
Potassium Dichromate	A	A	-	-	-	-	B	B
Potassium Ferrocyanide	A	A	-	-	-	-	A	A
Potassium Fluoride	A	A	A	A	A	B	-	-
Potassium Hydrate	B	-	-	-	-	-	-	-
Potassium Hydroxide	A	A	-	-	-	-	-	B
Potassium Hypochlorite	B	C	-	-	-	-	D	D
Potassium Iodide	A	-	-	-	-	-	-	-
Potassium Nitrate	A	A	A	A	A	A	A	A
Potassium Perborate	A	A	A	A	A	A	A	A
Potassium Perchlorite	A	A	-	-	-	-	B	C
Potassium Permanganate	D	D	-	-	-	-	-	A
Potassium Persulfate	A	-	-	-	-	-	-	-
Potassium Sulfate	A	-	-	-	-	-	-	A
Potassium Sulfide	A	A	A	A	A	A	A	A
Potassium Sulfite	B	-	-	-	-	-	-	-
Potassium Thiosulfate	A	-	-	-	-	-	-	-
Potatoes	A	A	-	-	-	-	-	-
Propane	A	A	A	A	A	A	A	A
Propargyl Alcohol	A	A	-	-	-	-	-	-
Propyl Alcohol	A	B	A	A	B	C	B	C
Propylene Dichloride	D	D	-	-	-	-	D	D
Propylene Glycol	A	-	-	-	-	-	D	D
Prune Juice	A	A	-	-	-	-	-	-
Puopale RX Oils	B	-	-	-	-	-	-	-
Pyrene	D	D	-	-	-	-	-	-
Pyrethrum	B	-	-	-	-	-	-	-
Pyridine	D	D	-	-	-	-	-	-
Pyrogard C, D	B	-	-	-	-	-	-	-
Red Oil	B	-	-	-	-	-	-	-
Regal Oils R&O	B	-	-	-	-	-	-	-
Richfield A Weed Killer	A	B	-	-	-	-	-	-
Rubilene Oils	B	-	-	-	-	-	-	-
Salicylic Acid	A	-	-	-	-	-	-	-

Material	Hose Construction							
	PVC		TPR		TPE		TPU	
	68°F	104°F	68°F	104°F	68°F	104°F	68°F	104°F
Salt Water	A	A	A	A	B	C	B	D
Sauerkraut	B	-	-	-	-	-	-	-
Selenic Acid	A	B	-	-	-	-	D	D
Sewage	B	-	-	-	-	-	-	A
Shortening	B	C	-	-	-	-	-	-
Silicic Acid	A	A	-	-	-	-	D	D
Silicone Greases	B	-	-	-	-	-	-	-
Silicone Oils	B	-	-	-	-	-	-	A
Silver Cyanide	A	A	-	-	-	-	A	A
Silver Nitrate	A	A	A	A	A	A	-	A
Silver Plating Solution	A	B	A	A	A	A	A	A
Skydrol 500A & 7000	D	D	-	-	-	-	-	-
Soap	A	A	A	A	B	C	B	D
Soda Ash	A	-	-	-	-	-	-	A
Soda Water	A	A	-	-	-	-	-	-
Sodium Acetate	A	A	-	-	-	-	A	A
Sodium Aluminate Solution	B	-	-	-	-	-	-	A
Sodium Arsenite	A	A	-	-	-	-	A	A
Sodium Benzoate	A	B	A	A	A	A	A	A
Sodium Bicarbonate	A	A	A	A	A	A	A	A
Sodium Bichromate Solution	B	-	-	-	-	-	-	-
Sodium Bisulfite	A	-	-	-	-	-	-	A
Sodium Borate	A	-	-	-	-	-	-	A
Sodium Bromide	A	A	A	A	A	B	A	B
Sodium Carbonate (soda ash)	A	A	A	A	A	A	A	A
Sodium Chlorate	B	C	A	B	C	C	B	B
Sodium Chloride	A	A	A	A	A	B	A	B
Sodium Chlorite Solution	B	-	-	-	-	-	-	-
Sodium Chromate	B	-	-	-	-	-	-	-
Sodium Cyanide	A	A	A	A	A	A	A	A
Sodium Dichromate	A	B	A	B	A	B	A	B
Sodium Ferricyanide	A	A	-	-	-	-	A	A
Sodium Ferrocyanide	A	A	-	-	-	-	A	A
Sodium Fluoride (70%)	A	A	-	-	-	-	A	B
Sodium Hydrate	B	-	-	-	-	-	-	-
Sodium Hydrochlorite	B	-	-	-	-	-	-	-
Sodium Hydrosulfide	A	-	-	-	-	-	-	-
Sodium Hydrosulfite	B	-	-	-	-	-	-	-
Sodium Hydroxide 10%	A	A	A	A	C	D	C	D
Sodium Hydroxide 35%	A	B	A	A	D	D	D	A
Sodium Hydroxide 50%	A	C	A	B	-	-	-	A
Sodium Hypochlorite (20%)	A	A	-	-	-	-	D	D
Sodium Hyposulfate	A	-	-	-	-	-	-	-
Sodium Metaphosphate	A	-	-	-	-	-	-	A
Sodium Nitrate	A	A	-	-	-	-	A	A
Sodium Nitrite	A	A	-	-	-	-	A	A
Sodium Peroxide	A	-	-	-	-	-	-	A
Sodium Phosphate	A	-	-	-	-	-	-	A
Sodium Phosphate Acid	B	B	A	B	D	D	-	-
Sodium Silicate	A	-	-	-	-	-	-	A
Sodium Sulfate	A	-	-	-	-	-	-	A
Sodium Sulfhydrate	B	-	-	-	-	-	-	-
Sodium Sulfide	A	A	-	-	-	-	A	A
Sodium Sulfite	A	A	-	-	-	-	A	A
Sodium Sulphrydate	B	-	-	-	-	-	-	-

Rating Codes: **A** = Excellent, **B** = Good, **C** = Fair Conditional, **D** = Unsatisfactory, (-) = No Data Available

Thermoplastic Chemical Resistance

Material	Hose Construction							
	PVC		TPR		TPE		TPU	
	68°F	104°F	68°F	104°F	68°F	104°F	68°F	104°F
Sodium Thiosulfat	A	A	-	-	-	-	A	B
Solnus Oils	A	-	-	-	-	-	-	-
Sour Crude Oil	D	D	-	-	-	-	-	-
Soya Beans	A	D	-	-	-	-	-	-
Soya Oil	A	C	-	-	-	-	-	-
Soybean Oil	A	A	-	-	-	-	-	A
Spent Acid	D	D	-	-	-	-	-	-
Spinach	A	A	-	-	-	-	-	-
Squash	A	A	-	-	-	-	-	-
Stannic Chloride	B	-	-	-	-	-	-	A
Stannis Chloride	A	A	A	A	A	B	A	B
Starch	A	-	-	-	-	-	-	-
Starch Gum	A	-	-	-	-	-	-	-
Stearic Acid	A	-	-	-	-	-	-	A
Stoddard Solvent	B	-	-	-	-	-	-	-
Straight Synthetic Oils	B	-	-	-	-	-	-	-
Styrene	D	D	-	-	-	-	-	B
Sugar - all forms	A	A	-	-	-	-	-	-
Sulfamic Acid	D	D	-	-	-	-	-	-
Sulfate Liquors under 150°F	A	-	-	-	-	-	-	-
Sulfur	B	B	-	-	-	-	-	A
Sulfur Chloride	B	-	-	-	-	-	-	A
Sulfur Dioxide (dry)	A	-	-	-	-	-	-	B
Sulfur Dioxide (liquid)	D	D	-	-	-	-	-	B
Sulfur Hexafluoride (Gas)	B	-	-	-	-	-	-	-
Sulfur Trioxide	A	-	-	-	-	-	-	D
Sulfuric Acid 10%	A	B	A	A	C	D	C	D
Sulfuric Acid 70%	A	B	A	A	D	D	D	D
Sulfuric Acid 95%	C	C	A	B	D	D	D	D
Sulfurous Acid	B	C	A	B	D	D	D	D
Sulfur Dioxide Gas - dry	A	A	-	-	-	-	-	B
Sulfur Dioxide Gas - wet	D	D	-	-	-	-	-	B
Sulfur Dioxide - Liquid	C	D	-	-	-	-	-	B
Sun R&O Oils	B	-	-	-	-	-	-	-
Suntac HP Oils	B	-	-	-	-	-	-	-
Suntac WR Oils	B	-	-	-	-	-	-	-
Sunvis Oils 700, 800, 900	B	-	-	-	-	-	-	-
Synthetic Oil (Citgo)	B	-	-	-	-	-	-	-
Tall Oil	D	D	-	-	-	-	-	A
Tallow	B	-	-	-	-	-	-	A
Tannic Acid	A	A	A	A	C	D	C	D
Tanning Liquors	A	A	-	-	-	-	-	-
Tar Oil	B	-	-	-	-	-	-	-
Tartaric Acid	A	B	A	A	B	C	C	D
TEA (Triethanolamine)	B	C	-	-	-	-	-	-
Tellus Oils	B	-	-	-	-	-	-	-
Tenol Oils	B	-	-	-	-	-	-	-
Terpineol	B	-	-	-	-	-	-	-
Tetrachloroethane	D	D	-	-	-	-	-	-
Tetraethyl Lead	C	D	-	-	-	-	-	-
Tetrahydrofuran	D	D	-	-	-	-	-	-
Tetrahydroxydicyclopentadiene	D	D	-	-	-	-	-	-
THF (Tetrahydrofuran)	D	D	-	-	-	-	-	-
Thionyl Chloride	D	D	-	-	-	-	D	D
Tin Chloride	A	A	A	A	A	A	-	-

Rating Codes: **A** = Excellent, **B** = Good, **C** = Fair Conditional, **D** = Unsatisfactory, (-) = No Data Available

Material	Hose Construction							
	PVC		TPR		TPE		TPU	
	68°F	104°F	68°F	104°F	68°F	104°F	68°F	104°F
Titanium Tetrachloride	A	D	-	-	-	-	C	D
Toluene	D	D	B	B	C	D	-	-
Toluol	D	D	-	-	-	-	-	-
Tomatoes	A	A	-	-	-	-	-	-
Tributyl Phosphate	D	D	-	-	-	-	-	A
Trichloroethylene	D	D	-	-	-	-	C	D
Trichloroethane	D	D	-	-	-	-	-	-
Tricresyl Phosphate	D	D	-	-	-	-	D	D
Triethanolamine	C	D	-	-	-	-	-	A
Triethylamine	B	C	-	-	-	-	-	A
Trihydroxybenzoic Acid	D	D	-	-	-	-	-	-
Trimethylbenzene	D	D	-	-	-	-	-	-
Trimethyl Propane	C	D	-	-	-	-	-	-
Trinitrophenol	A	-	-	-	-	-	-	-
Trisodium Phosphate	A	A	A	A	A	A	A	A
Tung Oil	B	-	-	-	-	-	-	A
Turpentine	C	D	A	A	B	C	A	B
Ucon Hydrolube 150CP, 200CP	B	-	-	-	-	-	-	-
Ucon Hydrolube 275CP, 300CP, 550CP	B	-	-	-	-	-	-	-
Ucon M1	B	-	-	-	-	-	-	-
Union Hydraulic Tractor Fluid	B	-	-	-	-	-	-	-
Urea	A	B	A	A	A	A	A	A
Urine	A	A	A	A	A	A	A	A
Varnish	D	D	A	A	A	B	A	B
Vegetable Oils	B	C	-	-	-	-	-	A
Versilube F-50, F-44	B	-	-	-	-	-	-	-
Vinegar	A	B	-	-	-	-	B	C
Vinyl Acetate	D	D	-	-	-	-	D	D
Vinyl Chloride	D	D	-	-	-	-	-	A
Vinyl Trichloride	D	D	-	-	-	-	-	A
Vitrea Oils	B	-	-	-	-	-	-	-
Vodka	A	B	-	-	-	-	-	-
Water Acid - mine water	A	A	A	A	C	D	B	D
Water in Oil Emulsions	A	-	-	-	-	-	-	-
Water - distilled	A	A	A	A	C	D	B	D
Water - fresh	A	A	A	A	C	D	B	D
Water - salt	A	A	A	A	C	D	B	D
Whiskey	A	B	-	-	-	-	-	D
White Gasoline	A	A	A	A	A	B	A	B
White Liquor (paper)	A	A	-	-	-	-	-	-
Wines	A	B	-	-	-	-	-	D
Wood Oil	A	-	-	-	-	-	-	A
Xenon	-	-	-	-	-	-	-	-
Xylene	D	D	A	A	B	C	B	C
Xylol	D	D	A	A	B	C	B	C
Yeast	A	B	-	-	-	-	-	-
Yogurt	A	B	-	-	-	-	-	-
Zeric	B	-	-	-	-	-	-	-
Zinc Acetate	A	-	-	-	-	-	-	-
Zinc Chloride Solutions	A	-	-	-	-	-	-	A
Zinc Chromate	A	A	A	A	A	A	A	A
Zinc Cyanide	A	A	A	A	A	A	A	A
Zinc Hydrate	A	-	-	-	-	-	-	-
Zinc Nitrate	A	A	A	A	A	-	A	A
Zinc Sulfate	A	A	A	A	A	A	A	A

Coupling Material Chemical Resistance

Material (All ratings are based on 70°F)	Aluminum	Brass	Carbon Steel	304SS	316SS	Nylon	Poly-Propylene
Absorption Oil	-	A	-	-	-	-	-
Acetal	-	A	-	-	-	-	-
Acetaldehyde	A	A	A	A	A	-	A
Acetamide	A	D	-	B	-	-	-
Acetate Solvents (Crude)	A	D	B	A	A	Y	D
Acetate Solvents (Pure)	A	A	D	A	A	Y	D
Acetic Acid (80%)	C	D	D	A	A	D	D
Acetic Acid (50%)	B	D	D	B	A	D	D
Acetic Acid (20%)	B	D	D	B	A	D	D
Acetic Acid (10%)	B	D	D	A	A	D	D
Acetic Anhydride	B	D	B	B	B	D	D
Acetic Ether	A	A	A	A	A	-	B
Acetic Oxide	B	D	D	B	B	-	D
Acetone	A	B	B	A	A	Y	D
Acetophenone	-	-	-	-	-	-	B
Acetylene	A	D	B	A	A	D	D
Acetyl Oxide	B	D	D	B	B	-	D
Acetylene Dichloride	-	-	-	-	-	-	D
Aeroshell 7A, 17 Grease	A	-	A	A	A	-	-
Air 212°F	A	A	A	A	A	-	-
Air, Ambient	A	A	A	A	A	-	A
Aircraft Hydraulic Oil AA	A	A	A	A	A	-	-
Alachlor (Lasso)	-	-	-	A	A	-	-
Alcohol - Amyl	B	B	B	B	B	A	D
Alcohol - Benzyl	B	B	B	A	A	Y	D
Alcohol - Butyl	A	B	B	A	A	D	D
Alcohol - Diacetone	A	A	B	B	B	D	D
Alcohol - Ethyl	A	B	B	B	B	D	D
Alcohol - Hexyl	E	E	E	E	E	D	D
Alcohol - Isobutyl	E	E	E	E	E	D	D
Alcohol - Isopropyl	B	B	B	B	B	D	D
Alcohol - Methyl	B	B	B	B	B	D	D
Alcohol - Octyl	E	E	E	E	E	Y	D
Alcohol - Propyl	B	B	B	A	A	D	D
Alkylaryl Sulfonate	-	-	A	A	-	-	-
Allomaleic Acid Solution	-	-	A	A	-	-	-
Allyl Chloride	-	-	A	A	-	-	-
Aluminum Acetate	-	D	-	A	A	-	-
Aluminum Bromide	-	D	D	B	B	-	-
Aluminum Chloride	D	D	D	D	D	Y	Y
Aluminum Fluoride	B	E	D	D	B	D	Y
Aluminum Nitrate	C	D	D	B	B	Y	Y
Aluminum Potassium Sulfate	B	B	D	D	B	D	Y
Aluminum Salts	B	-	-	B	B	-	A
Aluminum Sulfate	D	D	D	E	B	Y	Y
Amines (Mixed)	D	D	-	A	-	-	-
Aminoethanol	-	A	A	A	A	-	-
Ammonia Anhydrous	A	D	A	B	A	Y	D
Ammonia Gas	D	D	A	A	A	Y	D
Ammonia Nitrate	E	E	E	E	E	D	E
Ammonium Acetate	-	D	-	A	A	-	A
Ammonium Bifluoride	E	D	D	E	E	D	Y
Ammonium Carbonate	B	D	B	B	B	Y	Y

Material (All ratings are based on 70°F)	Aluminum	Brass	Carbon Steel	304SS	316SS	Nylon	Poly-Propylene
Ammonium Casenate	E	E	E	E	E	Y	E
Ammonium Chloride	D	D	D	D	D	Y	Y
Ammonium Hydroxide	B	D	A	B	B	Y	Y
Ammonium Metaphosphate	D	-	A	A	A	-	A
Ammonium Nitrate	B	D	D	E	E	Y	Y
Ammonium Nitrite	-	-	-	A	A	-	A
Ammonium Persulfate	-	D	-	A	A	-	D
Ammonium Phosphate	D	D	D	A	B	Y	Y
Ammonium Sulfate	D	D	D	D	B	Y	Y
Ammonium Sulfide	D	D	A	A	A	-	A
Ammonium Thiocyanate	-	-	A	A	A	-	A
Amyl Acetate	D	A	D	A	A	-	D
Amyl Alcohol	A	A	A	A	-	-	-
Amyl Chloride	-	-	-	A	A	-	D
Amy Chloronaphthalene	-	-	-	A	A	-	-
Amyl Naphthalene	-	-	-	A	A	-	-
Amyl Phenol	-	-	-	A	A	-	-
Anethole	B	D	B	A	A	-	A
Aniline	E	D	D	A	A	D	D
Aniline Hydrochloride	-	D	-	D	D	-	B
Aniline Oil	B	D	B	A	A	-	A
Animal Fat (Lard)	A	D	A	A	A	-	-
Animal Gelatin	-	-	-	A	A	-	-
Animal Oils	A	-	A	A	A	-	-
Ant Oil	A	A	B	A	A	-	B
Antifreeze	A	A	A	A	A	-	A
Aqua Ammonia	-	D	B	A	A	-	A
Aqua Regia	-	-	-	D	D	-	D
Aromatic Hydrocarbons	B	B	A	A	A	-	-
Arsenic Acid	B	-	B	-	A	-	B
Askarel (Transformer Oil)	-	A	A	A	A	-	B
Asphalt	E	E	B	E	B	D	D
Asphalt (Cut Back)	-	A	A	A	A	-	-
ASTM Oil No. 1	A	A	A	A	A	-	B
ASTM Oil No. 2	A	A	A	A	A	-	D
ASTM Oil No. 3	A	A	A	A	A	-	D
ASTM Reference Fuel A	A	A	A	A	A	-	D
ASTM Reference Fuel B	A	A	A	A	A	-	D
ASTM Reference Fuel C	A	A	A	A	A	-	D
Baltic Types (100, 150, 200, 300, 500)	-	-	-	-	-	-	B
Banvel	-	-	-	-	A	-	-
Bardol B	-	-	A	A	A	-	-
Barite	-	B	A	A	A	-	-
Barium Carbonate	D	B	B	B	B	Y	Y
Barium Chloride	E	B	E	D	E	Y	Y
Barium Hydroxide	D	B	B	B	B	Y	Y
Barium Sulfate	B	B	D	B	B	Y	Y
Barium Sulfide	D	D	B	B	B	Y	Y
Beer	A	B	B	A	A	Y	Y
Beet Sugar Liquors	D	-	D	D	D	-	D
Bellows 80-20 Hydraulic Oil	-	-	-	-	-	-	D
Benzaldehyde	B	B	D	B	B	D	D
Benzene, Benzol	A	B	B	B	B	Y	D

Rating Codes: **A** = Excellent, **B** = Good, **C** = Fair Conditional, **D** = Unsatisfactory, **E** = Contact Thorburn, **Y** = Acceptable, **(-)** = No Data Available

Coupling Material Chemical Resistance

Material (All ratings are based on 70°F)	Aluminum	Brass	Carbon Steel	304SS	316SS	Nylon	Poly-Propylene
Benzenesulfonic Acid	D	-	D	-	B	-	A
Benzene	A	B	B	B	B	Y	D
Benzoic Acid	B	B	D	B	B	D	D
Benzoic Aldehyde	-	-	A	-	A	-	A
Benzol	A	A	A	A	A	-	D
Benzyl Alcohol (Photo Inhibited)	-	-	A	A	A	-	A
Benzyl Benzoate	-	-	A	A	A	-	-
Bismuth Carbonate	-	-	A	A	A	-	A
Bitumastic	-	A	A	A	A	-	-
Black Liquor	-	-	A	A	A	-	A
Black Sulfate	-	-	A	A	A	-	A
Blast Furnace Gas	-	A	A	A	A	-	-
Bleach (12.5% Active Chlorine)	D	E	D	E	D	D	Y
Borax	D	B	B	A	A	D	Y
Bordeaux Mixture	-	-	-	A	A	-	-
Boric Acid	A	D	D	E	E	X	Y
Brake Fluid (Petroleum Based)	-	A	A	A	A	-	D
Brake Fluid (Synthetic Based)	-	A	A	A	A	-	-
Brine Acid	A	D	D	E	E	D	Y
Bromic Acid	D	D	E	E	E	D	Y
Bromine	-	A	A	A	A	-	D
Bromine Liquid	B	E	E	D	D	D	D
Bromochloromethane	-	A	A	A	A	-	D
Bunker Oil	A	A	A	A	A	-	-
Butadiene, Butylene	B	B	B	B	B	D	D
Butanal	-	A	-	-	-	-	-
Butane	B	B	A	B	B	D	D
Butter Oil (Use FDA Hose)	A	A	A	A	A	-	-
Butyl Acetate	A	B	B	B	B	Y	D
Butyl Alcohol	A	A	A	A	A	-	A
Butyl Carbitol	A	A	A	A	A	-	-
Butyl Ether	A	A	A	A	A	-	-
Butyl Mercaptan	-	-	-	A	A	-	-
Butyl Stearate	A	A	A	A	A	-	-
Butylamine	A	A	A	A	A	-	D
Butyric Acid	B	B	D	B	B	Y	Y
Cake Alum	D	D	D	D	B	-	A
Calcine Liquor	B	-	A	A	A	-	-
Calcium Acetate	A	A	A	A	A	-	-
Calcium Bisulfate	D	E	D	D	B	D	Y
Calcium Bisulfide	E	E	E	E	B	Y	Y
Calcium Bisulfite	D	D	D	E	B	D	Y
Calcium Bromide	D	B	D	D	D	D	D
Calcium Carbonate	D	B	B	A	B	Y	Y
Calcium Chlorate	-	-	-	B	A	-	A
Calcium Chloride	E	B	B	E	E	Y	Y
Calcium Hydrogen Sulfite	-	-	-	A	A	-	A
Calcium Hydrosulfide	-	D	-	B	A	-	A
Calcium Hydroxide	D	B	B	B	B	Y	Y
Calcium Hypochlorite	D	D	D	D	B	D	Y
Calcium Metasilicate	A	A	A	A	A	-	A
Calcium Nitrate Solutions	A	A	A	A	A	-	A
Calcium Oxide	-	-	-	-	B	-	-

Material (All ratings are based on 70°F)	Aluminum	Brass	Carbon Steel	304SS	316SS	Nylon	Poly-Propylene
Calcium Silicate	A	A	A	A	A	-	-
Calcium Sulfate	-	A	A	A	A	-	A
Calcium Sulfide	B	-	A	A	A	-	-
Caliche Liquors	B	-	A	A	A	-	-
Cane Sugar Liquors	A	B	A	A	A	-	A
Carbolic Acid	B	D	D	A	A	-	-
Carbolic Acid (Phenol)	B	D	D	A	A	-	-
Carbolic Acid (Phenol, 82-95% in Creosols)	B	D	D	A	A	-	-
Carbon Bisulfide	A	D	B	B	B	Y	D
Carbon Dioxide - Dry	A	A	B	B	B	Y	Y
Carbon Dioxide - Wet	A	D	C	B	B	D	Y
Carbon Disulfide	A	D	B	B	B	Y	D
Carbon Monoxide	A	A	B	A	A	Y	Y
Carbon Tetrachloride	D	E	B	A	E	Y	D
Carbonic Acid	A	B	B	B	B	D	Y
Castor Oil	B	B	B	B	B	D	Y
Caustic Potash	D	E	D	E	B	Y	Y
Caustic Soda (see Sodium Hydroxide)	D	B	B	E	E	D	Y
Cellosolves	B	B	B	B	B	D	Y
Cellosolve Acetate	-	-	A	A	A	-	A
Cellosolve Butyl	-	-	A	A	A	-	A
China Wood Oil	A	A	A	A	A	-	-
Chlorine - Liquid	E	E	B	E	C	D	D
Chlorine - Water	-	-	-	D	D	-	A
Chloroacetic Acid Solution	-	B	D	D	D	-	A
Chlorobenzene	A	A	A	A	A	-	D
Chlorobromomethane	-	A	A	A	A	-	D
Chloroform	E	E	D	E	E	D	D
Chloropentane	-	-	-	A	A	-	D
Chloropropylene Oxide	-	-	A	-	-	-	A
Chlorosulfonic Acid	E	D	B	D	D	D	D
Chlorothene	-	A	-	A	A	-	-
Chlorotoluene	A	A	A	A	A	-	-
Clorox (5.5% bleach)	D	E	D	E	B	D	E
Chromic Acid (50%)	B	D	D	C	E	D	D
Chromium Trioxide	D	D	D	D	B	-	A
Citric Acid	C	D	D	C	E	D	D
Coal Tar	A	A	A	A	A	-	-
Cobalt Nickel Plating Solution	-	-	-	-	B	-	-
Cocoa Butter	-	-	A	A	A	-	-
Cod Liver Oil	A	A	A	A	A	-	-
Coke Oven Gas	B	C	B	B	B	D	D
Copper Arsenate	-	-	A	A	A	-	-
Copper Chloride	D	D	D	D	D	Y	Y
Copper Cyanide	D	D	E	B	B	D	E
Copper Nitrate	-	D	D	A	A	-	A
Copper Sulfate	D	D	D	E	B	Y	Y
Corn Oil	A	A	A	A	A	-	D
Corn Syrup	A	-	A	A	A	-	-
Cottonseed Oil	A	A	A	A	A	-	A
Creosote	A	D	B	A	A	-	B
Cresol	A	-	B	A	A	-	B
Crotonic Acid	-	-	A	D	-	-	-

Rating Codes: **A** = Excellent, **B** = Good, **C** = Fair Conditional, **D** = Unsatisfactory, **E** = Contact Thorburn, **Y** = Acceptable, **(-)** = No Data Available

Coupling Material Chemical Resistance

Material (All ratings are based on 70°F)	Aluminum	Brass	Carbon Steel	304SS	316SS	Nylon	Poly-Propylene
Crude Oil	A	A	A	A	A	-	A
Crude Wax	-	A	A	A	A	-	A
Cryolite	-	A	A	A	A	-	D
Crylic Acid	B	B	B	B	B	D	D
Cupric Arsenate	-	-	A	A	A	-	-
Cupric Nitrate	-	D	D	A	A	-	A
Cutting Oil (Mineral Oil Base)	-	A	A	A	A	-	D
Cutting Oil, Sulfur Base	-	A	A	A	A	-	A
Cutting Oil, Water Soluble	-	A	A	A	A	-	A
Cyanide, Copper	-	D	-	A	A	-	A
Cyanide, Mercuric	D	-	-	-	-	-	A
Cyanide, Silver	D	D	B	A	A	-	A
Cyanide, Sodium	D	D	B	A	A	-	-
Cyclohexane	B	B	B	B	B	Y	D
Cyclohexanol	-	-	-	-	-	-	A
Cyclohexanone	B	-	-	A	A	-	D
Cymene	A	A	A	A	A	-	-
Decalin	-	A	-	-	-	-	A
Deicing Fluid	A	A	B	A	A	-	A
Denatured Alcohol	A	A	A	A	A	-	-
Detergents	B	B	B	A	B	Y	Y
Developing Solutions	-	-	-	A	A	-	-
Dextrin	-	-	-	A	A	-	-
Dextrose	B	E	E	E	E	Y	Y
Dextrose							
Diacetone	-	A	A	A	A	-	A
Diacetone Alcohol	A	A	A	A	A	-	A
Diammonium Phosphate	D	-	D	B	A	-	A
Diazinon	-	-	-	-	-	-	B
Dibenzyl Ether	A	A	A	A	A	-	-
Dibutyl Phthalate	A	A	A	A	A	-	B
Dibutylsebacate	-	A	-	-	-	-	-
Dichlorobenzene (ortho)	-	A	-	A	A	-	-
Dichlorobenzene (para)	-	A	-	A	A	-	-
Dichloroethylene	-	-	-	-	-	-	D
Dichloromethane	-	A	A	A	A	-	-
Diesel Fuels	A	A	B	A	A	Y	D
Diethanolamine	A	D	A	A	A	-	-
Diethanolamine (20%)	A	D	A	A	A	-	-
Diethyl Ether	A	A	B	A	A	-	A
Diethyl Phthalate	-	A	-	A	A	-	-
Diethyl Sebacate	-	A	-	A	A	-	-
Diethylamine	B	E	D	B	B	D	Y
Diethylene Dioxide	A	A	A	A	A	-	A
Diethylene ether	A	A	A	A	A	-	A
Diethylene Glyco	A	A	A	A	A	-	A
Dihydroxyethyl Ether	A	A	A	A	A	-	A
Diisobutyl Ketone	-	A	A	A	A	-	A
Diisobutylene	-	A	-	A	A	-	-
Diisopropyl Ketone	-	A	-	A	A	-	-
Diisopropylidene Acetone	-	A	A	A	A	-	-
Dimethyl Aniline	-	A	-	-	-	-	-
Dimethyl Ether	A	A	A	A	A	-	-

Material (All ratings are based on 70°F)	Aluminum	Brass	Carbon Steel	304SS	316SS	Nylon	Poly-Propylene
Dimethyl Formamide	-	-	A	A	A	-	A
Dimethyl Phthalate	-	A	-	-	-	-	-
Dimethylcarbinol	A	B	A	A	A	-	A
Dimethylformamide	-	-	A	A	A	-	A
Dimethylketone	A	A	A	A	A	-	B
Diocetyl Phthalate	A	A	A	A	A	-	D
Dioxane	A	A	A	A	A	-	A
Dioxolane	A	A	A	A	A	-	-
Dipentene	A	A	A	A	A	-	-
Dirco Oils	A	A	A	A	A	-	-
Disodium Phosphate	E	E	A	E	A	Y	Y
DMF (Dimethylformamide)	-	-	A	A	A	-	A
Dowtherm A	A	A	A	A	A	-	-
Dowtherm SR-1	A	A	B	A	A	-	A
Duro Oils	A	A	A	A	A	-	-
Ethylene Chloride	E	E	B	E	E	Y	D
Ethylene Dichloride	E	B	B	B	B	Y	D
Ethylene Glycol	A	B	B	B	B	Y	D
Ethylene Oxide	A	D	B	B	B	D	D
Enamels	-	A	-	-	-	-	-
Epichlorohydrin	-	-	A	-	-	-	A
Essential Oils	A	A	A	A	A	-	-
Ethano	A	B	A	A	A	-	A
Ethanolamine	-	A	A	A	A	-	-
Ethers	B	B	B	A	A	Y	D
Ethers	A	A	A	A	A	-	B
Ethyl Acetate	E	E	B	B	B	Y	D
Ethyl Acetoacetate	A	A	A	A	A	-	D
Ethyl Alcohol	A	B	A	A	A	-	A
Ethyl Bromide	-	A	-	A	A	-	-
Ethyl Butyrate	A	-	-	A	A	-	-
Ethyl Chloride	E	E	B	E	A	Y	D
Ethyl Ether	A	A	B	A	A	-	A
Ethyl Mercaptan	-	-	B	-	-	-	-
Ethyl Pentachlorobenzene	-	A	B	A	A	-	-
Ethyl Phthalate	-	A	-	A	A	-	-
Ethyl Silicate	A	A	A	A	A	-	-
Ethylamine	-	A	-	A	A	-	-
Ethylbenzene	-	A	A	A	A	-	-
Ethylcellulose	-	A	A	A	A	-	-
Fatty Acids	A	C	D	E	A	Y	Y
Ferric Chloride	D	D	D	D	D	D	Y
Ferric Hydroxide	E	E	E	A	A	Y	E
Ferric Nitrate (10 - 50%)	D	D	D	B	B	D	Y
Ferric Sulfate	D	D	D	E	E	D	Y
Ferrous Chloride	D	D	E	D	D	D	Y
Ferrous Nitrate	-	-	-	A	A	-	A
Ferrous Sulfate	B	B	D	B	E	D	Y
Fertilizer	A	A	A	A	A	-	A
Fire-Resistant Hydra-Fluid	A	A	A	A	A	-	-
Fixing Solution (Photo)	-	-	-	A	A	-	A
Fluoboric Acid	D	E	A	E	E	D	Y
Fluosilicic Acid	A	-	-	-	-	-	A

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Coupling Material Chemical Resistance

Material (All ratings are based on 70°F)	Aluminum	Brass	Carbon Steel	304SS	316SS	Nylon	Poly-Propylene
E Formaldehyde (50%)	E	B	D	A	A	D	Y
Formic Acid (Anhydrous)	A	D	D	E	E	D	Y
Freon 11	B	B	D	B	B	D	D
Freon 12	B	B	D	B	B	D	D
Freon 22	B	B	D	B	B	D	D
Fruit Juices	B	B	D	B	B	Y	Y
Fuel Oil	B	B	B	B	B	Y	D
Fumaric Acid	-	-	-	A	A	-	-
Furan	A	A	A	A	A	-	-
Furfural	B	B	B	B	B	Y	D
Furfuran	A	A	A	A	A	-	-
Fusel Oil	A	A	A	A	A	-	-
Fyrguard 150, 200	A	A	A	A	A	-	-
Fyrquel (15R&O, 220R&O, 550R&O)	A	-	A	-	-	-	-
Fyrquel (90, 150, 220, 300, 550, 1000)	A	-	A	-	-	-	-
Gallic Acid	-	-	D	A	A	-	A
Gasohol	A	A	B	A	A	-	D
Gasoline - Refined	B	B	B	B	B	Y	D
Gasoline - Sour	D	B	B	B	B	Y	D
Gasoline (Oxygenated- Blended with MTBE)	A	A	B	A	A	-	D
Gelatin	B	B	D	B	B	Y	Y
Glucose	A	A	A	A	A	-	-
Glue	B	B	B	E	B	E	Y
Glycerine	A	A	B	A	A	Y	Y
Glycerol	A	A	B	A	A	-	-
Glycols	B	B	B	B	B	Y	Y
Grease	A	A	A	A	A	-	-
Grease, Silicone Base	A	A	A	A	A	-	-
Green Liquor	E	E	B	E	E	E	Y
Green Sulfate Liquor	-	-	A	A	A	-	-
Heptane	B	B	B	B	B	Y	D
Hexaldehyde	E	E	E	E	E	-	-
Hexane	B	B	B	A	A	Y	D
Hexanol	A	B	A	A	A	-	-
Hexene	-	A	A	A	A	-	-
Hexyl Alcohol	A	B	A	A	A	-	-
Hexylene	-	A	A	A	A	-	-
Houghto-Safe (1055, 1110, 1115, 1120, 1130)	A	A	A	A	A	-	-
Houghto-Safe (271, 416, 520, & 616, 620)	A	A	A	A	A	-	-
Houghto-Safe (5048)	A	A	A	A	A	-	-
Houghto-Safe (625, 640 & 525 under 100°F)	A	A	A	A	A	-	-
HPO (Sodium Thiosulfate)	B	D	D	A	A	-	-
Hy-Chock Oil	-	-	A	A	A	-	-
Hydrafluid 760	A	A	A	A	A	-	-
Hydrafluid (AZR&O, A, B, AA, C)	A	-	A	A	A	-	-
Hydrasol A	A	-	A	A	A	-	-
Hydraulic Fluid (Phosphate Ester Base)	-	-	A	A	A	-	-
Hydraulic Fluid (Polyalphaolefin)	A	A	A	A	A	-	-
Hydraulic Fluid (Std. Petroleum Oils)	A	A	A	A	A	-	-
Hydraulic Fluid (Water Glycol Based)	A	A	A	A	A	-	-
Hydraulic Fluid (HF-18, HF-20)	A	A	A	A	A	-	-
Hydraulic Fluid (HF-31)	A	A	A	A	A	-	-
Hydrobromic Acid (20%)	D	D	D	D	D	D	Y

Material (All ratings are based on 70°F)	Aluminum	Brass	Carbon Steel	304SS	316SS	Nylon	Poly-Propylene
Hydrobromic Acid (50%)	D	D	D	D	D	D	Y
Hydrochloric Acid (20%)	D	D	D	D	D	D	Y
Hydrochloric Acid (38%)	D	D	D	D	D	D	Y
Hydrocyanic Acid	B	D	B	B	B	D	Y
Hydrofluosilicic Acid (10 -50%)	D	B	D	D	B	D	E
Hydrogen Chloride (Dry Gas)	D	B	B	E	E	D	Y
Hydrogen Chloride	-	-	A	A	A	-	-
Hydrogen Gas	A	A	E	A	A	D	Y
Hydrogen Peroxide (50%)	E	D	D	E	E	D	Y
Hydrogen Peroxide (35% or less)	A	D	D	B	A	-	-
Hydrogen Peroxide (50% or less)	A	D	D	B	A	-	-
Hydrogen Peroxide (70% or less)	A	D	D	B	A	-	-
Hydrogen Peroxide (90% or less)	A	D	D	B	A	-	-
Hydrogen Sulfide	E	E	E	D	B	D	Y
Hydroquinine	-	-	-	A	A	-	-
Hydroquinine Solution	-	-	-	A	A	-	-
Hypo Chlorous Acid	D	D	D	D	D	D	D
Ink (Printers)	-	B	B	B	A	-	-
Ink Oil	-	A	A	A	A	-	-
Insulating Oil	-	A	A	A	A	-	-
Iodine	A	D	D	D	D	D	Y
Iron Acetate Liquor	-	-	A	A	A	-	A
Iron Sulfate Solution	D	D	D	A	A	-	A
Isobutanol	A	B	A	A	A	-	-
Isobutyl Alcohol	A	B	A	A	A	-	-
Isocyanate	-	-	A	A	A	-	-
Isocetane	B	A	A	A	A	-	-
Isopropanol	A	B	A	A	A	-	A
Isopropyl Acetate	A	A	A	A	A	-	-
Isopropyl Alcohol	A	B	A	A	A	-	A
Isopropyl Ether	E	B	E	A	B	Y	D
Isopropyltoluene	A	A	A	A	A	-	-
Jet Fuel (JP4, JP5)	B	A	B	B	B	D	D
Karo Syrup	-	-	-	A	A	-	-
Kerosene	B	B	B	B	B	D	D
Ketchup	-	-	-	A	A	-	-
Ketones	B	B	B	B	B	Y	D
Lacquer (Alcohol or Acetate as Solvent)	A	A	D	D	A	-	-
Lacquer (Toluene or Xylene as Solvent)	A	A	D	D	A	-	-
Lactic Acid (25%)	C	B	D	E	E	Y	Y
Lactic Acid (80%)	B	B	D	E	E	Y	Y
Lactol	-	A	A	A	A	-	-
Lard Oil	B	E	C	B	B	Y	Y
Lasso	-	-	-	A	A	-	-
Latex Paint	A	A	A	A	A	-	-
Lead Acetate	D	D	D	B	B	D	Y
Lead Chloride	D	E	E	B	B	D	E
Lead Nitrate Solution	-	-	A	A	A	-	-
Lead Sulfate	D	E	D	B	B	D	E
Lecithin	-	-	-	A	A	-	-
Ligroin	-	-	B	A	A	-	-
Lime	-	-	-	-	B	-	-
Lime (Chlorinated - normal 35-37% Chlorine)	-	-	-	-	B	-	-

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Coupling Material Chemical Resistance

Material (All ratings are based on 70°F)	Aluminum	Brass	Carbon Steel	304SS	316SS	Nylon	Poly-Propylene
Lime Sulfur Solution	D	D	B	A	A	-	-
Lime Sulphur	D	D	D	B	B	D	Y
Lime (Chlorinated)	-	-	D	B	A	-	-
Limone	A	A	A	A	A	-	-
Lindane	-	-	-	A	A	-	-
Linseed Oil	B	B	B	B	B	Y	Y
Liquid Soap	A	A	A	A	A	-	-
Lonoleic Acid	B	D	D	B	B	D	Y
Lubricants (oil)	B	A	B	B	B	Y	D
Machine Oil (Under 135°F)	A	A	A	A	A	-	-
Magnesium Chloride	D	D	E	E	E	D	Y
Magnesium Hydroxide	B	B	B	A	A	D	Y
Magnesium Nitrate	B	B	B	B	B	D	Y
Magnesium Oxide	E	E	E	E	E	D	E
Magnesium Sulfate	B	E	E	B	B	D	Y
Magnesium Carbonate	B	E	E	B	B	D	Y
Malathion	-	A	A	A	A	-	-
Maleic Acid	E	B	D	E	B	D	Y
Maxmul	-	-	A	-	A	-	-
MBK (Methyl Butyl Ketone)	A	A	A	A	A	-	-
Mecurious Nitrate Solution	D	-	A	A	A	-	-
MEK (Ethyl Methyl Ketone)	A	A	A	A	A	-	-
Mercuric Chloride	D	D	D	D	E	D	Y
Mercuric Cyanide	D	D	D	B	B	D	Y
Mercury	D	D	B	A	A	Y	Y
Mesityl Oxide	A	A	A	A	A	-	-
Metallic Soaps	A	A	A	A	A	-	-
Methane	A	A	B	A	A	Y	D
Methanol	B	B	B	B	B	Y	Y
Methoxychlor Solution	-	-	A	A	A	-	-
Methyamine	-	-	A	A	A	-	-
Methyl Acetate	A	A	A	A	A	-	-
Methyl Acrylate	A	A	A	A	A	-	-
Methyl Alcohol	A	A	A	A	A	-	-
Methyl Bromide	D	E	B	B	B	D	D
Methyl Butyl Ketone	A	A	A	A	A	-	-
Methyl Cyanide	-	-	A	A	A	-	-
Methyl Ethyl Ketone	B	B	B	B	B	Y	D
Methyl Formate	A	A	A	A	A	-	-
Methyl Isobutyl Ketone	B	B	B	B	B	Y	D
Methyl Methacrylate	B	E	D	B	B	D	Y
Methyl Nutanathiol	-	-	-	A	A	-	-
Methyl Phenol	A	-	B	A	A	-	B
Methyl Salicylate	A	A	A	A	A	-	-
Methylene Chloride	E	B	B	E	E	Y	D
Methylene Dichloride	D	A	A	A	A	-	-
Milk	A	D	C	A	A	Y	Y
Mineral oil	B	A	B	A	B	Y	Y
Mobile Therm 603	A	A	A	A	A	-	-
Molasses	B	D	B	A	A	-	-
Monochloroacetic Acid Solution	-	B	D	D	D	-	-
Monochlorobenzene	-	A	A	A	A	-	-
Monoethanolamine	-	A	A	A	A	-	-

Material (All ratings are based on 70°F)	Aluminum	Brass	Carbon Steel	304SS	316SS	Nylon	Poly-Propylene
Monomethylamine	-	-	A	A	A	-	-
Monosodium Phosphate	D	D	A	A	A	-	-
Motor Oil	A	A	A	A	A	-	-
Mould Oil	-	-	A	A	A	-	-
Mouth Wash	A	A	A	A	A	-	-
Muriatic Acid	D	E	E	D	D	D	Y
Mustard	-	-	D	A	A	-	-
Naptha	-	A	B	A	A	-	-
Napthalene	B	B	B	A	A	Y	Y
Napthalene	B	B	B	B	B	Y	D
Neutral Oil	-	A	A	A	A	-	-
Nickel Acetate	A	A	A	A	A	-	-
Nickel Chloride	D	D	D	E	E	D	Y
Nickel Nitrate	D	-	-	-	B	-	-
Nickel Plating Solution	-	-	-	A	A	-	-
Nickel Sulfate	D	D	E	B	B	D	Y
Nicotine Salts	-	-	A	D	B	-	-
Niter Cake	D	D	D	A	A	-	-
Nitrogen, Liquid	A	A	A	A	A	-	-
Nitric Acid (100%)	A	D	D	B	E	D	D
Nitric Acid (30%)	D	D	D	A	E	D	D
Nitric Acid (50%)	D	D	D	B	E	D	D
Nitrobenzene	A	B	B	B	B	Y	Y
Nitroethane	-	A	-	A	A	-	-
Nitrogen Gas	A	A	A	A	A	-	-
Nitrogen Oxide	-	D	A	A	A	-	-
Nitromethane	-	A	-	A	A	-	-
Nitropropane	-	A	-	A	A	-	-
Nitrosyl Chloride	-	-	-	A	A	-	-
Nitrous Acid (Up to 10%)	D	D	D	A	A	-	-
Nitrous Oxide	-	D	A	A	A	-	-
Octadecanoic Acid	D	D	D	B	A	-	-
Octanol	A	B	A	A	A	-	-
Octyl Alcohol	A	B	A	A	A	-	-
Oil - Castor	B	B	B	B	B	Y	Y
Oil - Coconut	B	E	C	B	B	Y	Y
Oil - Corn	B	B	B	E	B	Y	Y
Oil - Cotton Seed	B	B	B	B	B	Y	Y
Oil - Fuel	B	B	B	B	B	Y	D
Oil - Linseed	B	B	B	B	B	Y	Y
Oil - Mineral	B	A	B	A	B	Y	Y
Oil - Silicon	B	A	B	B	B	Y	Y
Oil - Vegetable	B	B	B	A	A	Y	D
Oils, Animal	A	A	A	A	A	-	-
Oleic Acid	B	C	B	E	A	Y	D
Oleum	B	D	B	B	B	D	D
Olive Oil	A	B	B	A	A	-	A
Ortho-Dichlorobenzene	-	A	-	A	A	-	-
Oxalic Acid	B	E	D	D	D	D	Y
Oxygen	B	B	B	B	B	D	D
Ozone	A	A	A	A	A	-	A
Paint (inorganic)	A	A	-	A	A	-	-
Palm Oil	A	A	A	A	A	-	-

Rating Codes: **A** = Excellent, **B** = Good, **C** = Fair Conditional, **D** = Unsatisfactory, **E** = Contact Thorburn, **Y** = Acceptable, **(-)** = No Data Available

Coupling Material Chemical Resistance

Material (All ratings are based on 70°F)	Aluminum	Brass	Carbon Steel	304SS	316SS	Nylon	Poly-Propylene
Palmitic Acid	B	C	C	B	B	D	Y
Paraffin	B	B	B	B	B	Y	Y
Paraformaldehyde	A	-	-	A	A	-	-
Peanut Oil	A	A	A	A	A	-	A
Pentanol	A	A	A	A	A	-	-
Perchloric Acid	-	-	C	B	A	-	A
Perchloroethylene	B	B	B	E	E	D	D
Petrolatum	B	E	C	B	B	Y	E
Petroleum Ether	-	A	B	A	A	-	-
Phenol (Carbonic Acid)	A	A	C	E	A	D	D
Phenyl Chloride	A	A	A	A	A	-	D
Phorone	-	A	A	A	A	-	-
Phosphoric Acid (25-50%)	D	D	D	E	E	D	Y
Phosphoric Acid (50-85%)	D	D	D	E	E	D	Y
Photographic Solutions	E	E	D	A	A	D	D
Phthalic Anhydride	E	B	B	A	A	D	D
Picric Acid	A	D	D	B	B	D	E
Plating Solutions - Brass	E	E	E	E	B	D	Y
Plating Solutions - Cadmium	E	B	E	E	B	D	Y
Plating Solutions - Chrome (40%)	D	E	D	B	B	D	Y
Plating Solutions - Copper Cyanide	E	E	E	E	E	D	Y
Plating Solutions - Gold	E	E	E	E	A	D	Y
Plating Solutions - Iron	E	E	E	E	E	D	Y
Plating Solutions - Lead	E	E	E	A	A	D	Y
Plating Solutions - Nickel	E	E	E	A	A	D	Y
Plating Solutions - Silver	E	E	E	A	A	D	Y
Plating Solutions - Tin	E	E	E	E	C	D	Y
Plating Solutions - Zinc	E	E	E	E	E	D	Y
Potash	-	D	B	A	A	-	A
Potassium Acetate	D	D	B	E	E	Y	Y
Potassium Bicarbonate (30%)	D	B	B	A	A	Y	Y
Potassium Carbonate (50%)	D	B	B	A	A	Y	Y
Potassium Chlorate (30%)	B	D	B	B	A	D	Y
Potassium Chloride (30%)	D	D	B	E	E	Y	Y
Potassium Chromate (30%)	B	B	E	B	B	D	Y
Potassium Cyanide (30%)	D	D	B	B	B	D	Y
Potassium Dichromate (30%)	A	B	B	A	A	D	Y
Potassium Hydroxide (90%)	D	D	E	D	E	D	Y
Potassium Nitrate (80%)	A	B	B	B	B	D	Y
Potassium Permanganate (20%)	B	B	B	B	B	D	Y
Potassium Sulfate (10%)	A	B	B	A	A	Y	Y
Propane	A	A	B	B	B	D	D
Propionic Acid	-	-	A	A	-	-	-
Propylene Glycol	B	B	B	B	B	Y	Y
Propylene Oxide (90%)	E	E	E	A	A	D	D
Purina Insecticide	A	B	A	A	A	-	-
Purolite RX Oils	A	A	A	A	A	-	-
Pydraul (10E, 29E-LT, 30E, 60, 65E, 115SE)	A	A	A	A	A	-	-
Pyrene	D	B	D	B	B	Y	D
Pyridine	B	B	B	B	B	-	D
Pyrogallol Acid	B	B	B	B	B	D	D
Pyroguard (160, 230, 630)	-	-	A	A	A	-	-
Pyroguard (51, 53, 55)	-	-	A	A	A	-	-

Material (All ratings are based on 70°F)	Aluminum	Brass	Carbon Steel	304SS	316SS	Nylon	Poly-Propylene
Pyroguard C, D	A	A	A	A	A	-	-
Quenching Oil	A	-	-	A	A	-	-
Quintolubric 822	A	A	A	A	A	-	-
Ramrod (Ag Spray)	A	A	A	A	A	-	-
Rando Oils	A	A	A	A	A	-	-
Rapeseed Oil	A	A	A	A	A	-	-
Red Oil (MIL-5606)	A	B	B	B	A	-	A
Refined Wax (Petroleum)	-	A	A	A	A	-	-
Regal Oils R&O	A	A	A	A	A	-	-
Salicylic Acid	B	-	-	A	A	-	-
Salt Water	-	B	B	A	A	-	-
Sewage	B	A	D	A	A	-	-
Silicone Greases	-	A	A	A	A	-	-
Silicone Oils	-	A	A	A	A	-	-
Silver Nitrate	D	D	D	B	A	D	Y
Skydrol (500A & 7000)	A	-	A	A	A	-	-
Soap Solutions	B	B	B	B	B	Y	Y
Soda Ash	D	B	A	A	A	-	A
Sodium Acetate	A	B	D	B	B	Y	Y
Sodium Bicarbonate (20%)	B	B	C	A	A	Y	Y
Sodium Bisulfate	D	E	B	E	E	Y	Y
Sodium Bisulfite	D	B	D	E	E	Y	Y
Sodium Borate	B	B	C	B	B	Y	Y
Sodium Carbonate	D	B	B	E	B	Y	Y
Sodium Chlorate (50%)	B	B	D	B	B	D	Y
Sodium Chloride	D	D	B	B	A	-	-
Sodium Chromate	D	D	B	A	A	-	-
Sodium Cyanide	D	D	B	E	E	Y	Y
Sodium Dichromate	B	D	B	B	B	D	Y
Sodium Fluoride (70%)	-	-	-	-	B	-	-
Sodium Hydrochloride (30%)	D	B	B	E	E	D	Y
Sodium Hydroxide (30%)	D	B	B	A	A	D	Y
Sodium Hydroxide (50%)	D	D	C	A	E	D	Y
Sodium Hydroxide (70%)	D	D	C	B	B	D	Y
Sodium Hydroxide (40%)	D	D	B	A	A	-	-
Sodium Hypochlorite	D	D	D	E	E	D	Y
Sodium Metaphosphate	D	D	D	B	B	D	D
Sodium Nitrate (40%)	A	B	B	A	A	Y	Y
Sodium Perborate (10%)	B	D	B	B	B	D	Y
Sodium Perborate (10%)	B	D	B	B	B	D	Y
Sodium Peroxide (10%)	B	D	B	B	B	D	Y
Sodium Phosphate	D	D	-	A	A	-	-
Sodium Silicate	A	B	B	B	B	Y	Y
Sodium Sulfate	E	B	B	E	A	Y	Y
Sodium Sulfide (50%)	D	D	B	E	B	D	Y
Sodium Thiosulfate	B	D	D	B	B	Y	Y
Solnux Oils	A	A	A	A	A	-	-
Soybean Oil	-	-	A	A	A	-	-
Spent Acid	-	-	-	A	A	-	-
Stannic Chloride	D	D	D	D	D	D	Y
Stannous Chloride	D	D	D	D	E	D	D
Starch Gum	-	-	-	A	A	-	A
Stauffer Jet 1	A	A	A	A	A	-	-

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Coupling Material Chemical Resistance

Material (All ratings are based on 70°F)	Aluminum	Brass	Carbon Steel	304SS	316SS	Nylon	Poly-Propylene
Stauffer Jet 2	A	A	A	A	A	-	-
Steam	E	E	E	E	E	D	E
Stearic Acid	B	C	C	B	A	Y	Y
Stoddard's Solvent	B	B	B	B	B	D	Y
STPP (Sodium Tripolyphosphate)	D	D	-	A	A	-	-
Styrene	D	B	B	D	B	-	-
Sucrose Solutions	-	-	A	A	A	-	-
Sugar Liquors (Beet)	A	B	B	A	A	Y	Y
Sugar Liquors (Cane)	A	B	B	B	B	Y	Y
Sulfate Liquors	B	D	C	E	B	D	Y
Sulfite Liquors	D	D	D	B	B	D	D
Sulfur Chloride	D	E	D	E	E	D	D
Sulfur Dioxide (Dry)	B	B	A	E	B	D	Y
Sulfur Trioxide	B	B	B	E	B	D	D
Sulfuric Acid (100%)	D	D	B	E	E	D	D
Sulfuric Acid (to 10%)	D	B	D	D	D	D	Y
Sulfurous Acid	B	B	D	D	E	D	Y
Sun R&O Oils	A	-	A	A	A	-	-
Suntac HP Oils	A	-	A	A	A	-	-
Suntac WR Oils	A	-	A	-	A	-	-
Sunvis Oils (700, 800, 900)	-	-	A	A	A	-	-
Synthetic Oil (Citgo)	-	-	A	A	A	-	-
Syrup	-	-	A	A	A	-	-
Tall Oil	-	-	-	D	B	-	-
Tall Oil (Under 150°F)	-	-	-	D	B	-	-
Tallow	A	B	B	B	B	-	-
Tannic Acid	D	E	D	B	B	D	Y
Tanning Liquors	A	E	E	A	A	D	Y
Tar (Under 100°F)	A	B	A	A	A	-	-
Tartaric Acid	E	E	E	A	A	Y	Y
Tellus Oils	A	A	A	A	A	-	-
Tenol Oils	-	-	A	A	A	-	-
Tergitol	-	B	B	A	A	-	-
Tetrahydrofuran	D	C	A	-	B	Y	D
Tetrahydrofuran (THF)	-	-	B	-	-	-	D
Theobromo Oil	-	-	A	A	A	-	-
Titanium Tetrachloride	D	D	B	E	B	D	D
Toluene	A	A	A	A	A	Y	D
Toluene Diisocyanate	-	-	A	A	A	-	-
Tomato Juice	B	E	C	B	B	D	Y
Transformer Oil (Askarel Types)	-	A	A	A	A	-	B
Transformer Oil (Petroleum Types)	A	A	A	A	A	-	-
Transmission Fluid	-	A	A	A	A	-	-
Tributoxyethyl Phosphate	D	-	A	-	-	-	-
Tributyl Phosphate	D	-	A	-	-	-	-
Trichloroethylene	A	E	B	E	E	Y	D
Trichloroethylene	D	A	D	-	A	-	-
Tricresyl Phosphate	D	-	A	-	B	-	-
Triethanolamine	B	D	B	B	B	Y	D
Triethylamine	E	E	E	B	B	Y	D
Trihydroxybenzoic Acid	-	-	D	A	A	-	A
Trinitriphenol	D	D	D	A	A	-	-
Trisodium Phosphate	D	B	B	A	A	Y	Y

Material (All ratings are based on 70°F)	Aluminum	Brass	Carbon Steel	304SS	316SS	Nylon	Poly-Propylene
Tung Oil	A	A	A	A	A	-	-
Turpentine	B	D	B	A	A	D	D
Ucon (Hydrolube Types 150CP, 200CP)	A	A	A	A	A	-	-
Ucon (M1)	A	A	A	A	A	-	-
Union Hydraulic Tractor Fluid	A	A	A	A	A	-	-
Urea (50%)	B	E	B	B	B	Y	Y
Urine	E	E	B	A	A	D	Y
Varnish	-	B	B	A	A	-	-
Vegetable Oils	A	-	A	A	A	-	-
Versilube (F-50, F-44)	A	A	A	A	A	-	-
Vinegar	B	D	B	B	B	D	Y
Vinyl Acetate	A	B	-	A	B	-	-
Vinyl Chloride	A	D	B	A	A	-	-
Vitrea Oils	-	-	A	A	A	-	-
VM&P Naptha	B	A	A	A	A	-	-
Water (Distilled)	D	B	D	B	B	Y	Y
Water (Sea)	B	B	D	B	B	Y	Y
Water Acid (Mine)	D	D	D	E	E	D	Y
Whiskey	D	B	B	A	A	D	Y
White Liquor	B	E	D	B	B	D	Y
Wine	D	B	D	A	A	D	Y
Xylene	B	B	B	B	B	Y	D
Zeric	-	-	-	A	A	-	-
Zinc Chloride	D	D	D	D	B	Y	Y
Zinc Nitrate	E	E	E	B	B	D	Y
Zinc Sulfate (50%)	D	B	D	A	A	D	Y

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Temperature Conversion Chart

Celsius	Fahrenheit
-400	-688
-300	-508
-250	-418
-200	-328
-150	-238
-100	-148
-95	-139
-90	-130
-85	-121
-80	-112
-75	-103
-70	-94
-65	-85
-60	-76
-55	-67
-50	-58
-49	-56
-48	-54
-47	-53
-46	-51
-45	-49
-44	-47
-43	-45
-42	-43
-41	-42
-40	-40
-39	-38
-38	-36
-37	-35
-36	-33
-35	-31
-34	-29
-33	-27
-32	-26
-31	-24
-30	-22
-29	-20
-28	-18
-27	-17
-26	-15
-25	-13
-24	-11
-23	-9

Celsius	Fahrenheit
-22	-8
-21	-6
-20	-4
-19	-2
-18	-0.4
-17	1
-16	3
-15	5
-14	7
-13	9
-12	10
-11	12
-10	14
-9	16
-8	18
-7	19
-6	21
-5	23
-4	25
-3	27
-2	28
-1	30
0	32
1	34
2	36
3	37
4	39
5	41
6	43
7	45
8	46
9	48
10	50
11	52
12	54
13	55
14	57
15	59
16	61
17	63
18	64
19	66
20	68

Celsius	Fahrenheit
21	70
22	72
23	73
24	75
25	77
26	79
27	81
28	82
29	84
30	86
31	88
32	90
33	91
34	93
35	95
36	97
37	99
38	100
39	102
40	104
41	106
42	108
43	109
44	111
45	113
46	115
47	117
48	118
49	120
50	122
75	167
100	212
150	302
200	392
250	482
300	572
400	752
500	932
600	1112
700	1292
800	1472
900	1652
1000	1832

Celsius to Fahrenheit ($^{\circ}\text{C} \times (9/5) + 32 = ^{\circ}\text{F}$) | Fahrenheit to Celsius: $((^{\circ}\text{F} - 32) \times (5/9)) = ^{\circ}\text{C}$

Pressure Conversion Chart

psi	in/H2O	in/Hg	mm/H2O	mm/Hg	kg/cm2	bar	mbar	Pa	mPa	kPa
1.0	27.71	2.036	703.1	51.75	0.0703	0.0689	68.95	6895	0.006895	6.895
1.2	33.22	2.443	843.7	62.06	0.0844	0.0827	82.74	8274	0.008274	8.274
1.4	38.75	2.850	984.3	72.40	0.0984	0.0965	96.52	9652	0.009652	9.652
1.6	44.29	3.258	1125	82.74	0.1125	0.1103	110.0	11030	0.01103	11.03
1.8	49.82	3.665	1266	93.09	0.1266	0.1241	124.1	12410	0.01241	12.41
2.0	55.36	4.072	1406	103.4	0.1406	0.1379	137.9	13790	0.01379	13.79
2.2	60.90	4.479	1547	113.8	0.1547	0.1517	151.7	15170	0.01517	15.17
2.4	66.43	4.886	1687	124.1	0.1687	0.1655	165.5	16550	0.01655	16.55
2.6	71.97	5.294	1828	134.5	0.1828	0.1793	179.3	17930	0.01793	17.93
2.8	77.51	5.701	1969	144.8	0.1968	0.1930	193.0	19300	0.01930	19.30
3.0	83.04	6.108	2109	155.1	0.2109	0.2068	203.8	20680	0.02068	20.68
3.2	88.58	6.515	2250	165.5	0.2250	0.2206	220.6	22060	0.02206	22.06
3.4	94.11	6.922	2390	175.8	0.2390	0.2344	234.4	23440	0.02344	23.44
3.6	99.65	7.330	2531	186.2	0.2531	0.2482	248.2	24820	0.02482	24.82
3.8	105.2	7.737	2672	196.5	0.2672	0.2620	262.0	26200	0.02620	26.20
4.0	110.7	8.144	2812	206.9	0.2812	0.2758	275.8	27580	0.02758	27.58
4.2	116.3	8.551	2953	217.2	0.2953	0.2896	289.6	28960	0.02896	28.96
4.4	121.8	8.958	3094	227.5	0.3094	0.3034	303.4	30338	0.03034	30.34
4.6	127.3	9.366	3234	237.9	0.3234	0.3172	317.2	31720	0.03172	31.72
4.8	132.9	9.773	3375	248.2	0.3375	0.3310	331.0	33100	0.03310	33.10
5.0	138.4	10.18	3515	258.6	0.3515	0.3447	344.7	34470	0.03447	34.47
5.2	143.9	10.59	3656	268.9	0.3656	0.3585	358.5	35850	0.03585	35.85
5.4	149.5	10.99	3797	279.3	0.3797	0.3723	372.3	37230	0.03723	37.23
5.6	155.0	11.40	3937	289.6	0.3937	0.3861	386.1	38610	0.03861	38.61
5.8	160.5	11.81	4078	299.9	0.4078	0.3999	399.9	39990	0.03999	39.99
6.0	166.1	12.22	4218	310.3	0.4218	0.4137	413.7	41370	0.04137	41.37
6.2	171.6	12.62	4359	320.6	0.4359	0.4275	427.5	42750	0.04275	42.75
6.4	177.2	13.03	4500	331.0	0.4500	0.4413	441.3	44130	0.04413	44.13
6.6	182.7	13.44	4640	341.3	0.4640	0.4550	455.0	45500	0.04550	45.50
6.8	188.2	13.84	4781	351.7	0.4781	0.4688	468.8	46880	0.04688	46.88
7.0	193.8	14.25	4922	362.0	0.4921	0.4826	482.6	48260	0.04826	48.26
7.2	199.3	14.66	5062	372.3	0.5062	0.4964	496.4	49640	0.04964	49.64
7.4	204.8	15.07	5203	382.7	0.5203	0.5102	510.2	51020	0.05102	51.02
7.6	210.4	15.47	5343	393.0	0.5343	0.5240	524.0	52400	0.05240	52.40
7.8	215.9	15.88	5484	403.4	0.5484	0.5378	537.8	53780	0.05378	53.78
8.0	221.4	16.29	5625	413.7	0.5625	0.5516	551.6	55160	0.05516	55.16
8.2	227.0	16.70	5765	424.1	0.5765	0.5654	565.4	56540	0.05654	56.54
8.4	232.5	17.10	5906	434.4	0.5906	0.5792	579.2	57920	0.05792	57.92
8.6	238.0	17.51	6047	444.7	0.6046	0.5929	592.9	59290	0.05929	59.29
8.8	243.6	17.92	6187	455.1	0.6187	0.6067	606.7	60670	0.06067	60.67
9.0	249.1	18.32	6328	465.4	0.6328	0.6205	620.5	62050	0.06205	62.05
10.0	276.8	20.36	7031	517.1	0.7031	0.6895	689.5	68950	0.06895	68.95
11.0	304.5	22.40	7734	568.9	0.7734	0.7584	758.4	75840	0.07584	75.84
12.0	332.2	24.43	8437	620.6	0.8437	0.8274	827.4	82740	0.08274	82.74
13.0	359.8	26.47	9140	672.3	0.9140	0.8963	896.3	89630	0.08963	89.63
14.0	387.5	28.50	9843	724.0	0.9843	0.9652	965.2	96520	0.09652	96.52
15.0	415.2	30.54	10550	775.7	1.0550	1.0340	1034.0	103400	0.10340	103.40
16.0	442.9	32.58	11250	827.4	1.1250	1.1030	1103.0	110300	0.11030	110.30
17.0	470.6	34.61	11950	879.1	1.1950	1.1720	1172.0	117200	0.11720	117.20
18.0	498.2	36.65	12660	930.6	1.2650	1.2410	1241.0	124100	0.12410	124.10
19.0	525.9	36.68	13360	982.6	1.3360	1.3100	1310.0	131000	0.13100	131.00
20.0	553.6	40.72	14060	1034.0	1.4060	1.3790	1379.0	137900	0.13790	137.90
21.0	581.3	42.76	14770	1086.0	1.4760	1.4480	1448.0	144800	0.14480	144.80
22.0	609.0	44.79	15470	1138.0	1.5470	1.5170	1517.0	151700	0.15170	151.70
23.0	636.7	46.83	16170	1189.0	1.6170	1.5860	1586.0	158600	0.15860	158.60
24.0	664.3	48.86	16870	1241.0	1.6870	1.6550	1655.0	165500	0.16550	165.50
25.0	692.0	50.90	17580	1293.0	1.7580	1.7240	1724.0	172400	0.17240	172.40

Pressure Conversion Calculations

From	To	Multiply By	Example
atm (Atmosphere)	bar	1.01325	1.1 atm x 1.01325 = 1.115 bar
	MPa	0.10132	1.1 atm x 0.10132 = 0.111 MPa
	PSI	14.696	1.1 atm x 14.696 = 16.166 PSI
bar	atm	0.98692	10 bar x 0.98692 = 9.8692 atm
	MPa	0.1	10 bar x 0.1 = 1.0 MPa
	PSI	14.504	10 bar x 14.504 = 145 PSI
MPa (Megapascal)	atm	9.8692	10 MPa x 9.8692 = 98.692 atm
	bar	10	10 MPa x 10 = 100 bar
	PSI	145.0	10 MPa x 145.0 = 1450 PSI
PSI (Pounds / Square Inch)	atm	0.068	100 PSI x 0.068 = 6.80 atm
	bar	0.0689	100 PSI x 0.0689 = 6.89 bar
	MPa	0.00689	100 PSI x 0.00689 = 0.689 MPa

Flow Conversion Calculations

From	To	Multiply By	Example
CFM (Cubic Feet / Minute)	l/min	28.32	100 CFM x 28.32 = 2832 l/min
	l/s	0.472	100 CFM x 0.472 = 47.2 l/s
	m³/h	1.699	100 CFM x 1.699 = 169.9 m³/h
l/min (Liter / Minute)	CFM	0.0353	100 l/min x 0.0353 = 3.5 CFM
	l/s	0.0167	100 l/min x 0.0167 = 1.7 l/s
	m³/h	0.06	100 l/min x 0.06 = 6 m³/h
l/s (Liter / Second)	CFM	2.119	10 l/s x 2.119 = 21.2 CFM
	l/min	60	10 l/s x 60 = 600 l/min
	m³/h	3.6	10 l/s x 3.6 = 36 m³/h
m³/h (Cubic Meter / Hour)	CFM	0.5885	10 m³/h x 0.5885 = 5.885 CFM
	l/min	16.667	10 m³/h x 16.667 = 166.7 l/min
	l/s	0.2777	10 m³/h x 0.2777 = 2.777 l/s
GPM us (Gallon / Minute)	l/min	3.7854	10 GPM us x 3.7854 = 37.85 l/min
GPM uk (Gallon / Minute)	l/min	4.5461	10 GPM uk x 4.5461 = 45.46 l/min

Force Conversion Calculations

From	To	Multiply By	Example
lbf (Pound Force)	kp	0.454	10 lbf x 0.454 = 4.54 kp
	N	4.448	10 lbf x 4.448 = 44.48 N
kp (Kilogram Force)	lbf	2.205	10kp x 2.205 = 22.05 lbf
	N	9.806	10 kp x 9.806 = 98.06 N
N (Newton)	lbf	0.2248	10 N x 0.2248 = 2.25 lbf
	kp	0.1020	10 n x 0.1020 = 1.02 kp

Volume Conversion Calculations

From	To	Multiply By	Example
ft³ (Cubic Foot)	gl UK	6.228	10 ft³ x 6.228 = 62.28 gl UK
	gl US	7.48	10 ft³ x 7.48 = 74.8 gl US
	l	28.32	10 ft³ x 28.32 = 283.2 l
	m³	0.0283	10 ft³ x 0.0283 = 0.283 m³
gl UK (Gallon UK)	ft³	0.1605	10 gl UK x 0.1605 = 1.605 ft³
	gl US	1.2009	10 gl UK x 1.2009 = 12.009 gl US
	l	4.546	10 gl UK x 4.546 = 45.46 l
	m³	0.0045	10 gl UK x 0.0045 = 0.045 m³
gl US (Gallon US)	ft³	0.1336	10 gl US x 0.1336 = 1.336 ft³
	gl UK	0.8326	10 gl US x 0.8326 = 8.326 gl UK
	l	3.785	10 gl US x 3.785 = 37.85 l
	m³	0.0037	10 gl US x 0.0037 = 0.037 m³
l (Liter)	ft³	0.0353	100 l x 0.0353 = 3.53 ft³
	gl UK	0.220	100 l x 0.220 = 22.0 gl UK
	gl US	0.264	100 l x 0.264 = 26.4 gl US
	m³	0.001	100 l x 0.001 = 0.1 m³
m³ (Cubic meter)	ft³	35.3	10 m³ x 35.3 = 353 ft³
	gl UK	219.96	10 m³ x 219.96 = 2199.6 gl UK
	gl US	264.17	10 m³ x 264.17 = 2641 gl US
	l	1000	10 m³ x 1000 = 10,000 l

Mass Conversion Calculations

From	To	Multiply By	Example
g (Gram)	kg	0.001	10 g x 0.001 = 0.01 kg
	lb	0.0022	10 g x 0.0022 = 0.022 lb
	oz	0.0352	10 g x 0.0352 = 0.352 oz
kg (Kilogram)	g	1000	10 kg x 1000 = 10,000 g
	lb	2.205	10 kg x 2.205 = 22.05 lb
	oz	35.273	10 kg x 35.273 = 352.73 oz
lb (Pound)	g	453.9	10 lb x 453.9 = 4535 g
	kg	0.4539	10 lb x 0.4539 = 4.535 kg
	oz	16	10 lb x 16 = 160 oz
oz (Ounce)	g	28.349	10 oz x 28.349 = 283.49 g
	kg	0.0283	10 oz x 0.0283 = 0.283 kg
	lb	0.0625	10 oz x 0.0625 = 0.625 lb

Length Conversion Calculations

From	To	Multiply By	Example
ft (Foot)	in	12	10 ft x 12
	m	0.3048	10 ft x 0.3048
	mm	304.8	10 ft x 304.8
in (Inch)	ft	0.0833	10 in x 0.0833
	m	0.0254	10 in x 0.0254
	mm	25.4	10 in x 25.4
m (Meter)	ft	3.28083	10 m x 3.28083
	in	39.3699	10 m x 39.3699
	mm	1000	10 m x 1000
mm (Millimeter)	ft	0.00328	10 mm x 0.00328
	in	0.0393	10 mm x 0.0393
	m	0.001	10 mm x 0.001

Weight Per Length Conversion Calculations

From	To	Multiply By	Example
lb/ft (Pounds per foot)	kg/m	1.48816	10 lb/ft x 1.48816 = 14.8816 kg/m
kg/m (Kilograms per meter)	lb/ft	0.67197	10 kg/m x 0.67197 = 6.7197 lb/ft

Temperature Conversion Calculations

From	To	Conversion	Example
°C (Celsius)	°F	$^{\circ}\text{F} = (^{\circ}\text{C} \times (9/5)) + 32$	$(10^{\circ}\text{C} \times (9/5)) + 32 = 50^{\circ}\text{F}$
	K	$\text{K} = ^{\circ}\text{C} + 273.15$	$10^{\circ}\text{C} + 273.15 = 283.15 \text{ K}$
	°R	$^{\circ}\text{R} = (^{\circ}\text{C} \times (9/5)) + 491.67$	$(10^{\circ}\text{C} \times (9/5)) + 491.67 = 509.67^{\circ}\text{R}$
°F (Fahrenheit)	°C	$^{\circ}\text{C} = (^{\circ}\text{F} - 32) \times (5/9)$	$(10^{\circ}\text{F} - 32) \times (5/9) = -12.22^{\circ}\text{C}$
	K	$\text{K} = (^{\circ}\text{F} + 459.67) \times (5/9)$	$(10^{\circ}\text{F} + 459.67) \times (5/9) = 260.93 \text{ K}$
	°R	$^{\circ}\text{R} = ^{\circ}\text{F} + 459.67$	$10^{\circ}\text{F} + 459.67 = 469.67^{\circ}\text{R}$
°K (Kelvin)	°C	$^{\circ}\text{C} = \text{K} - 273.15$	$10\text{K} - 273.15 = -263.15^{\circ}\text{C}$
	°F	$^{\circ}\text{F} = (\text{K} \times (9/5)) - 459.67$	$(10\text{K} \times (9/5)) - 459.67 = -441.67^{\circ}\text{F}$
	°R	$^{\circ}\text{R} = \text{K} \times (9/5)$	$10\text{K} \times (9/5) = 18^{\circ}\text{R}$
°R (Rankine)	°C	$^{\circ}\text{C} = (^{\circ}\text{R} - 491.67) \times (5/9)$	$(10^{\circ}\text{R} - 491.67) \times (5/9) = -267.59^{\circ}\text{C}$
	°F	$^{\circ}\text{F} = ^{\circ}\text{R} - 459.67$	$10^{\circ}\text{R} - 459.67 = -449.67^{\circ}\text{F}$
	K	$\text{K} = ^{\circ}\text{R} \times (5/9)$	$10^{\circ}\text{R} \times (5/9) = 5.6 \text{ K}$

Velocity of Fluid Flow Through Hose

V	GPM	d	Calculation
Velocity	Gallons per Minute	Inside Diameter of Hose	$V = 0.408 \times \text{GPM} / d^2$

Flow of Water Through 100 ft Length Hose

Straight Smooth Bore (US Gallons per Minute)

PSI @ Hose Inlet	Hose ID											
	1/2	5/8	3/4	1	1 1/4	1 1/2	2	2 1/2	3	4	6	8
20	4	8	12	26	47	76	161	290	468	997	2895	6169
30	5	9	15	32	58	94	200	360	582	1240	3603	7679
40	6	11	18	38	68	110	234	421	680	1449	4209	8970
50	7	12	20	43	77	124	264	475	767	1635	4748	10118
60	8	14	22	47	85	137	291	524	846	1804	5239	11165
75	9	15	25	53	95	154	329	591	955	2035	5910	12595
100	10	18	29	62	112	180	384	690	1115	2377	6904	14712
125	11	20	33	70	126	203	433	779	1258	2681	7788	15595
150	12	22	36	77	139	224	478	859	1388	2958	8593	18313
200	15	26	42	90	162	262	558	1004	1621	3455	10038	21390

Air Hose Friction Loss

Approximate pressure loss expressed in pounds per square inch (psi) through 100 foot hose assembly lengths (with coupling installed).

Hose ID	Pressure (PSI)	Cubic Feet of Air Per Minute (SCFM)											
		40	50	60	70	80	90	100	110	120	130	140	150
1/2	50	20.2	36.2										
	60	16.8	29.6	46.8									
	70	14.0	24.8	40.0	56.8								
	80	12.0	21.6	34.8	50.4	69.2							
	90	10.8	19.0	29.6	44.0	61.0	82.0						
	100	9.6	16.8	26.6	38.6	54.4	73.3						
	110	8.6	15.2	24.0	35.2	49.2	66.6	89.0					
3/4	50	3.0	4.8	7.0	8.8	13.0	17.0	22.8	28.4				
	60	2.4	3.8	5.5	4.6	10.4	13.6	17.2	22.4	28.2			
	70	1.8	3.0	4.6	6.4	8.4	11.0	14.0	17.6	22.0			
	80	1.6	2.6	3.8	5.5	7.2	9.4	11.6	14.4	17.6	21.2		
	90	1.4	2.2	3.2	4.5	6.2	8.0	10.0	12.4	15.0	18.0	21.6	
	100	1.2	2.0	2.8	4.0	5.4	7.0	8.8	10.8	13.2	15.8	18.8	22.2
	110	1.0	1.8	2.6	3.6	4.8	6.2	7.8	9.8	11.8	14.2	16.8	19.8
1	50	0.6	1.0	1.6	2.2	3.0	4.0	5.2	7.0	9.6	14.0		
	60	0.6	0.8	1.2	1.6	2.4	3.0	4.0	5.2	6.6	8.2	11.0	14.4
	70	0.4	0.8	1.0	1.4	2.0	2.6	3.2	4.0	5.0	6.2	7.6	9.4
	80	0.4	0.6	1.0	1.4	1.6	2.2	2.8	3.4	4.0	4.8	5.4	7.0
	90	0.4	0.6	0.8	1.2	1.4	1.8	2.4	2.8	3.4	4.0	4.8	5.6
	100	0.4	0.4	0.8	1.0	1.2	1.6	2.0	2.4	3.0	3.5	4.2	4.8
	110	0.4	0.4	0.6	0.8	1.2	1.4	1.8	2.2	2.6	3.0	3.6	4.2
1 1/4	50		0.4	0.4	0.6	0.8	1.0	1.4	2.0				
	60		0.2	0.4	0.6	0.6	1.0	1.2	1.5	2.0	2.4	3.0	
	70			0.4	0.4	0.6	0.8	0.8	1.2	1.4	1.6	2.0	2.6
	80			0.2	0.4	0.4	0.6	0.8	1.0	1.2	1.4	1.6	2.0
	90				0.4	0.4	0.6	0.6	0.8	1.0	1.2	1.4	1.6
	100				0.2	0.4	0.4	0.6	0.8	0.8	1.0	1.2	1.4
	110				0.2	0.4	0.4	0.6	0.6	0.8	1.0	1.0	1.2
1 1/2	50					0.4	0.4	0.4	0.6	0.8	0.8	1.0	1.2
	60					0.2	0.4	0.4	0.4	0.6	0.6	0.8	1.0
	70						0.2	0.4	0.4	0.6	0.6	0.6	0.8
	80							0.2	0.4	0.4	0.4	0.6	0.8
	90								0.2	0.4	0.4	0.4	0.6
	100									0.4	0.4	0.4	0.4
	110									0.4	0.4	0.4	0.4

Pressure loss in PSI



Water Hose Friction Loss

Approximate pressure loss expressed in pounds per square inch (psi) through 100 foot Lengths of straight, smooth bore hose.

Water Flow USGPM	Hose ID														
	1/2	5/8	3/4	1	1 1/4	1 1/2	2	2 1/2	3	4	5	6	8	10	12
1	1.41														
2	5.09	1.72	0.71												
5	27.7	9.36	3.85	0.95	0.32	0.13									
10	100	33.7	13.9	3.42	1.15	0.47	0.12								
15		71.4	29.4	7.24	2.44	1.00	0.25	0.08							
20		122	50.0	12.3	4.16	1.71	0.42	0.14							
25			75.6	18.6	6.28	2.59	0.64	0.21							
30			106	26.1	8.80	3.62	0.89	0.30	0.12						
35			141	34.7	11.7	4.82	1.19	0.40	0.16						
40				44.4	15.0	6.17	1.52	0.51	0.21						
45				55.3	18.6	7.67	1.89	0.64	0.26						
50				67.1	22.7	9.32	2.30	0.77	0.32						
60				94.1	31.7	13.1	3.22	1.09	0.45						
70				125	42.2	17.4	4.28	1.44	0.59						
80					54.0	22.2	5.48	1.85	0.76						
90					67.2	27.7	6.81	2.30	0.95	0.23					
100					81.7	33.6	8.28	2.79	1.15	0.28					
125					123	50.38	12.5	4.22	1.74	0.43					
150						71.1	17.5	5.91	2.43	0.60	0.20				
175						94.6	23.3	7.86	3.24	0.80	0.27				
200						121	29.8	10.1	4.14	1.02	0.34				
225							37.1	12.5	5.15	1.27	0.43				
250							45.1	15.2	6.26	1.54	0.52				
275							53.8	18.1	7.47	1.84	0.62				
300							63.2	21.3	8.77	2.16	0.73	0.30			
350							84.0	28.3	11.7	2.87	0.97	0.40			
400							108	36.3	14.9	3.68	1.24	0.51			
450								45.1	18.6	4.57	1.54	0.64			
500								54.8	22.6	5.56	1.88	0.77	0.19		
600								76.8	31.6	7.79	2.63	1.08	0.27		
700								102	42.1	10.4	3.49	1.44	0.35	0.12	
800								131	53.8	13.3	4.47	1.84	0.45	0.15	
1000									81.4	20.0	6.76	2.78	0.69	0.23	0.10
1200									114	28.1	9.47	3.90	0.96	0.32	0.13
1400									152	37.3	12.6	5.18	1.28	0.43	0.18
1600										47.8	16.1	6.64	1.64	0.55	0.23
1800										59.5	20.0	8.25	2.03	0.69	0.28
2000										72.2	24.4	10.0	2.47	0.83	0.34
2500											36.8	15.2	3.73	1.26	0.52
3000											51.6	21.2	5.23	1.76	0.73

Recommended Air Flow

The table below lists the recommended air flow in standard cubic feet per minute (SCFM) as a guide in sizing hose in compressed air systems.

System Pressure (PSI)	Nominal Hose ID										
	1/8	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3
5	0.5	1.2	2.7	4.9	6.6	13	27	40	80	135	240
10	0.8	1.7	3.9	7.7	11	21	44	64	125	200	370
20	1.3	3.0	6.6	13	18	35	75	110	215	350	600
40	2.5	5.5	12	23	34	62	135	200	385	640	1100
60	3.5	8.0	18	34	50	93	195	290	560	900	1600
80	4.7	10	23	44	65	120	255	380	720	1200	2100
100	5.8	13	29	54	80	150	315	470	900	1450	2600
150	8.6	20	41	80	115	220	460	680	1350	2200	3900
200	11	26	58	108	155	290	620	910	1750	2800	5000
250	14	33	73	135	200	370	770	1150	2200	3500	6100

Recommended Water Flow

The table below lists the maximum recommended flow rates based on a maximum acceptable pressure drop of 15% per 100 feet of straight , smooth bore hose. Where pressure drop must be reduced, hose size (I.D.) must be increased. Flow rates based on 100 U.S. gallons per minute.

Pressure at Hose Inlet (PSI)	Nominal Hose ID											
	1/2	5/8	3/4	1	1 1/4	1 1/2	2	2 1/2	3	4	6	8
20	4	8	12	26	47	76	161	290	468	997	2895	6169
30	5	9	15	32	58	94	200	360	582	1240	3603	7679
40	6	11	18	38	68	110	234	421	680	1449	4209	8970
50	7	12	20	43	77	124	264	475	767	1635	4748	10118
60	8	14	22	47	85	137	291	524	846	1804	5239	11165
75	9	15	25	53	95	154	329	591	955	2035	5910	12595
100	10	18	29	62	112	180	384	690	1115	2377	6904	14712
125	11	20	33	70	126	203	433	779	1258	2681	7788	16595
150	12	22	36	77	139	224	478	859	1388	2958	8593	18313
200	15	26	42	90	162	262	558	1004	1621	3455	10038	21390

Weight Of Water In One Foot of Hose

The figures in the table below is useful when considering support requirements for hose assemblies during operation. As an example, a 10 inch I.D., 30 ft length of hose can contain 1021 lbs of water when filled.

Hose ID	lb	kg
1/4	0.021	0.010
3/8	0.048	0.022
1/2	0.085	0.039
5/8	0.133	0.060
3/4	0.191	0.087
1	0.340	0.154
1 1/4	0.532	0.241
1 1/2	0.766	0.347
2	1.361	0.618

Hose ID	lb	kg
2 1/2	2.127	0.965
3	3.063	1.389
4	5.445	2.470
5	8.509	3.859
6	12.252	5.558
8	21.782	9.880
10	34.034	15.438
12	49.009	22.230
14	66.733	30.270

Force Acting On End Fittings

The figures in the table below demonstrate the importance of good fitting selection and installation. As an example, a 4" I.D. water discharge hose rated for 150 psi has 1885 lbs of force acting on the end fitting when operated at full design pressure.

Hose ID	50 psi	100 psi	150 psi	300 psi	500 psi	1000 psi
1/4	2	2	7	15	25	49
3/8	6	11	17	33	55	110
1/2	10	20	29	59	98	196
3/4	22	44	66	133	221	442
1	39	79	118	236	393	785
1 1/4	61	123	184	368	614	1227
1 1/2	88	177	265	530	884	1767
2	157	314	471	942	1571	3142
2 1/2	245	491	726	1473	2454	4909
3	353	707	1060	2121	3534	7070
4	628	1257	1885	3770	6283	12566
5	982	1964	2945	5891	9818	19635
6	1414	2827	4241	8482	14137	28274
8	2513	5027	7540	15080	25133	50274
10	3927	7854	11781	23562	39270	78540
12	5655	11310	16965	33929	56549	113100

Minimum Bend Radius



The Bend Radius is the radius to which the hose can be bent in service without damage or shortening its life. Textile reinforced hoses have a tendency to kink as the bend radius is reduced. A helical wire is used when a hose must withstand severe bends without flattening or kinking. The minimum bend radius of a Thorburn hose is established at 72°F. Temperature changes, either lower or higher, will effect the minimum bend radius. Caution should be taken to assure proper hose selection for the actual application temperature of both the material handled and the ambient temperature surrounding the application. During storage of hose, ambient temperature should also be considered to prevent hose damage. When possible, minimum bending radius of the hose should be as large as possible to avoid damage to the hose and early hose failure.

Bend Radius Calculations

General Formula to Determine the Bend Length:

Angle of bend x $2\pi r$ = minimum length of hose

360° to make bend

$\pi = 3.14$

r = given radius of hose

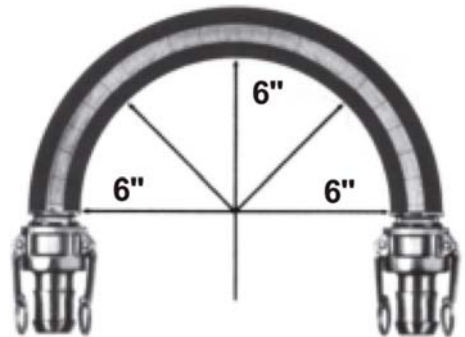
Example: to make a 180° bend with Thorburn hose which has a 2" I.D.

Given $r = 6$ "

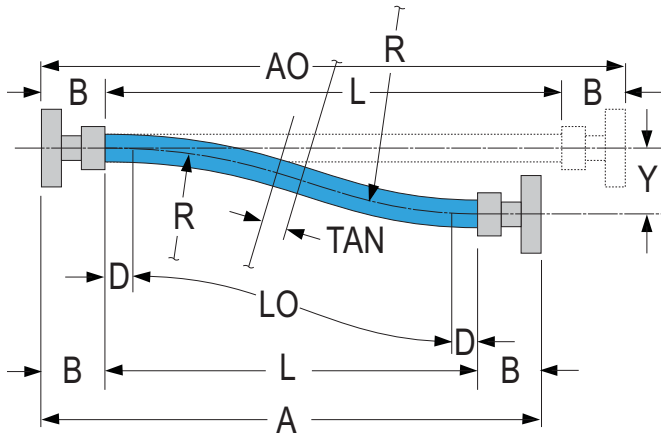
$$\frac{180^\circ}{360^\circ} [2 \times 3.14 \times 6] = .5 \times 2 \times 3.14 \times 6 = 18.84"$$

Remember that the bend should take place over the entire minimum length and not a portion of it.

NOTE: This formula does not mean 18.84" will be long enough to meet application need. It only means that if the 180° bend takes place in less than 18.84" the flow of fluid or material could be restricted or the hose could be damaged.



Hose Assembly Offset



$$A = L + 2 \cdot B$$

$$L = LO + 2 \cdot D$$

$$LO = 2 \cdot R_s \cdot \arccos \left(\frac{R_s - Y}{2 \cdot R_s} \right)$$

See table below for sample calculated value of LO

Offset Installation

Hose is installed S-shaped to accommodate offset (Y) between two mating flanges or connecting ends of the piping. To be used for static offset installation not for dynamic movement due to piping thermal expansion or vibration, maximum offset (Y) to be 50% of hose minimum static bend radius (Rs):

$$Y = 0.5 \cdot R_s$$

AO = Face to Face dimension for straight (as built) hose assembly

A = Face to Face for installation

B = Length of end connector

D = Outside diameter of the hose

L = Total live length of the hose

LO = Minimum live length for offset installation

R = Bend radius of the offset installation ($R \geq R_s$)

Rs = Minimum static bend radius for hose

Y = Lateral offset of the installation

Min. Bend Radius (in)	Y= Offset Installation (in)															
	1/8	1/4	3/8	1/2	3/4	1	1 1/2	2	3	4	5	6	8	10	20	30
	LO= Calculated Minimum Length for Offset Bending (in)															
2	1.00	1.42	1.75	2.02	2.49	2.89	3.58									
4	1.42	2.01	2.46	2.84	3.49	4.04	4.98	5.78								
6	1.73	2.45	3.01	3.48	4.27	4.93	6.06	7.03	8.67							
8	2.00	2.83	3.47	4.01	4.92	5.69	6.98	8.09	9.96	11.56						
10	2.24	3.17	3.88	4.48	5.49	6.35	7.80	9.02	11.10	12.87	14.45					
12	2.45	3.47	4.25	4.91	6.02	6.95	8.53	9.87	12.13	14.06	15.77	17.35				
14	2.65	3.74	4.59	5.30	6.50	7.51	9.21	10.65	13.08	15.15	16.99	18.67				
16	2.83	4.00	4.90	5.66	6.94	8.02	9.84	11.37	13.97	16.17	18.13	19.92	23.13			
18	3.00	4.25	5.20	6.01	7.36	8.51	10.43	12.06	14.80	17.13	19.20	21.08	24.47			
20	3.16	4.47	5.48	6.33	7.76	8.96	10.99	12.70	15.59	18.04	20.21	22.19	25.74	28.91		
25	3.54	5.00	6.13	7.08	8.07	10.02	12.28	14.19	17.41	21.14	22.55	24.75	28.68	32.18		
30	3.87	5.48	6.71	7.75	9.50	10.97	13.44	15.54	19.05	22.03	24.67	27.06	31.34	35.14		
35	4.18	5.92	7.25	8.37	10.26	11.85	14.52	16.77	20.57	23.78	26.62	29.19	33.79	37.88	54.26	
40	4.47	6.33	7.75	8.95	10.96	12.66	15.52	17.93	21.98	25.40	28.43	31.18	36.08	40.43	57.82	
45	4.74	6.71	8.22	9.49	11.63	13.43	16.45	19.01	23.30	26.93	30.14	33.05	38.23	42.83	61.17	
50	5.00	7.07	8.66	10.00	12.26	14.15	17.34	20.03	24.56	28.38	31.76	34.82	40.27	45.10	64.35	79.54
60	5.48	7.75	9.49	10.96	13.42	15.50	18.99	21.94	26.89	31.07	34.76	38.11	44.06	49.34	70.28	86.73
70	5.92	8.37	10.25	11.84	14.50	16.74	20.51	23.69	29.03	33.55	37.53	41.14	47.56	53.24	75.75	93.37
80	6.32	8.95	10.96	12.65	15.50	17.90	21.93	25.32	31.03	35.85	40.10	43.96	50.81	56.87	80.86	99.58
90	6.71	9.49	11.62	13.42	16.44	18.98	23.25	26.86	32.91	38.02	42.53	46.61	53.87	60.28	85.66	105.42
100	7.07	10.00	12.25	14.15	17.33	20.01	24.51	28.31	34.68	40.07	44.82	49.11	56.76	63.51	90.21	110.96
110	7.42	10.49	12.85	14.84	18.17	20.98	25.71	29.69	36.37	42.02	46.99	51.50	59.51	66.59	94.53	115.24
120	7.75	10.96	13.42	15.49	18.98	21.92	26.85	31.01	37.99	43.88	49.08	53.78	62.14	69.52	98.67	121.29

Note: Applicable for static bend only

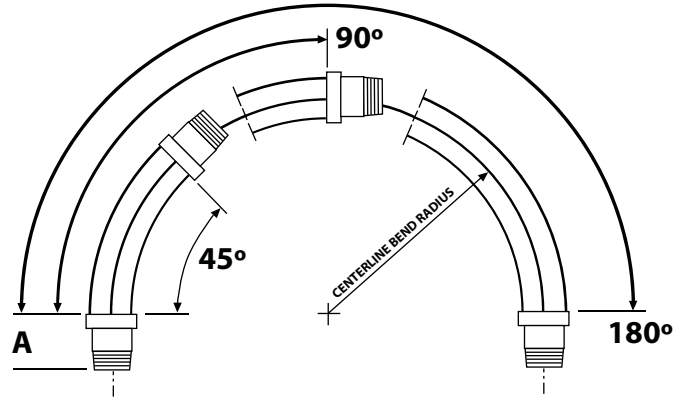
Hose Assembly Minimum Length

Calculating Minimum Lengths for 45°, 90°, and 180° Bends of Thorburn Hose Assemblies

Determine the centerline bend radius required for your application. Under the column headed "Centerline bend radius in inches", find your radius and read horizontally to the desired degree of bend (45°, 90° or 180°).

The number in that column will be the minimum live length required to make that degree of bend, along the desired centerline radius.

Note: Add fitting length dimension "A", plus the minimum live length to calculate OAL.

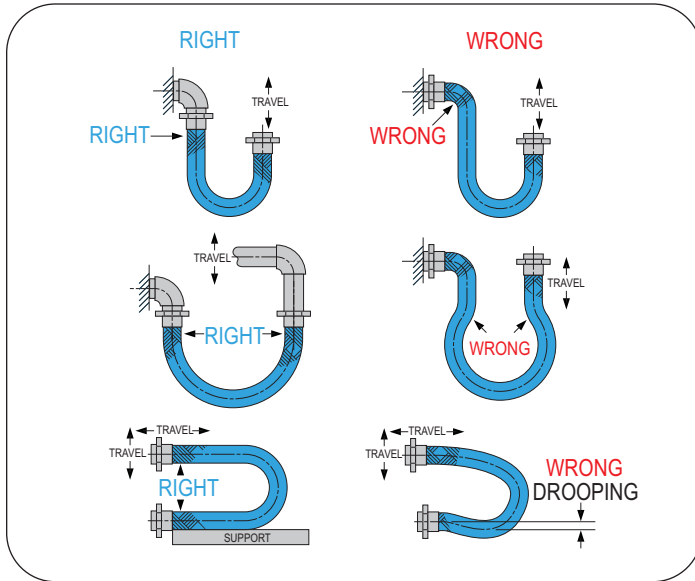


Centerline Bend Radius (in)	Minimum Live Length (in)		
	45°	90°	180°
1	1	2	4
2	2	3 1/2	7
3	2 1/2	5	10
4	3 1/2	6 1/2	13
5	4	8	16
6	5	10	20
7	5 1/2	11	22
8	6 1/2	13	26
9	7 1/2	14 1/2	29
10	8	16	32
11	9	18	36
12	10	19 1/2	39
13	10 1/2	21	42
14	11 1/2	22 1/2	45
15	12	24	48
16	13	26	52
17	13 1/2	27	54
18	14 1/2	29	58
19	15 1/2	30 1/2	61
20	16	32	64
21	17	33 1/2	67
22	17 1/2	35	70
23	18 1/2	36 1/2	73
24	19	38	76
25	20	40	80

Centerline Bend Radius (in)	Minimum Live Length (in)		
	45°	90°	180°
26	21	42	83
27	21 1/2	43	86
28	22 1/2	44 1/2	89
29	23	46	92
30	24	48	95
31	24 1/2	49	98
32	25 1/2	51	101
34	27	54	108
36	28 1/2	57	114
38	30	60	120
40	32	63	126
45	36	72	144
50	40	80	160
55	45	90	180
60	49	97	194
65	53	105	210
70	56	112	224
80	65	130	260
90	73	145	290
100	80	160	320
120	95	190	380
140	112	225	450
160	128	255	510
180	148	285	570
200	160	320	640

Installing Thorburn Hose Assemblies

Thorburn flexible hose assemblies are manufactured to the highest quality levels to assure maximum service life. The following precautions should be adhered to when installing a flexible hose assembly.

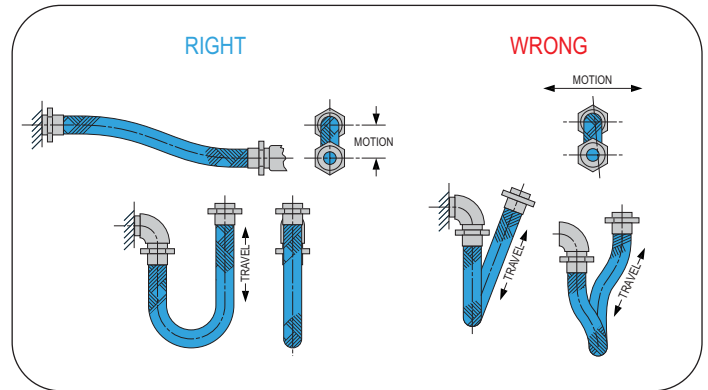


Avoid Overbending

Overbending a Thorburn hose can result in premature failure. This often occurs at the end connections and may be avoided by installing an elbow or interlock guard.

Avoid Improper Handling

Thorburn hoses can be damaged by dragging or when subjected to external abrasive or corrosive conditions. Avoid installing hose in areas where they may be subjected to corrosive sprays, spills, etc.



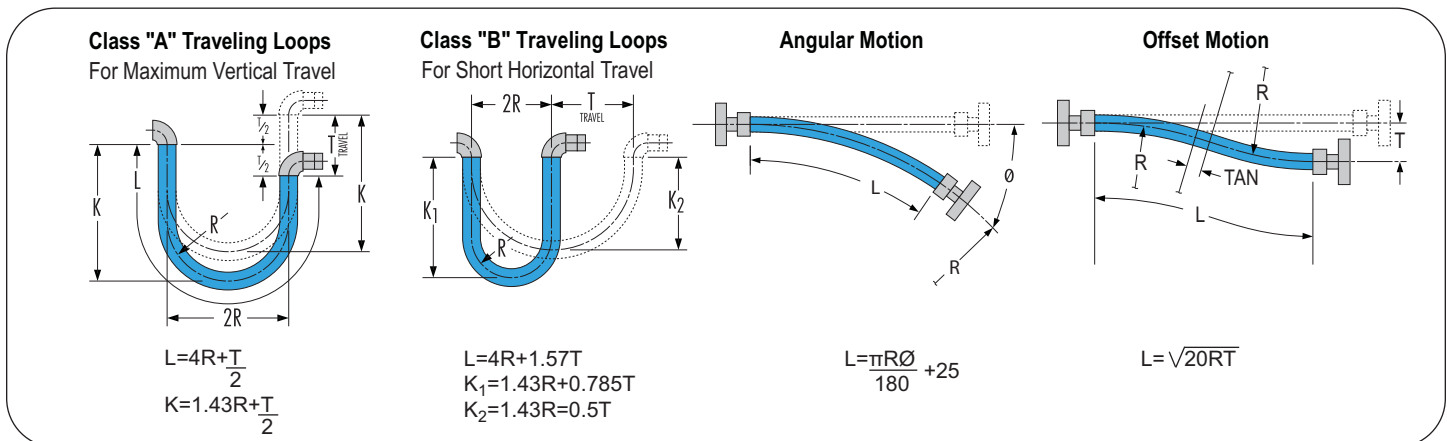
Avoid Torque

Torquing or twisting a Thorburn hose reduces service life substantially. When installing a hose, it is important that all movement originates in the same plane as the center line. Another precaution against torque is the use of a floating flange or union on one end of the assembly.

Calculations for minimum live length excluding end fittings

Thorburn flexible hose assemblies are usually flexed in accordance with one or a combination of the modes of motion shown below. To obtain maximum reliability it is essential to calculate the length of an assembly that will not be flexed beyond the minimum bend radius. The following formulas give a guide in determining the length of tube required. They are based on standard applications using our current product range. Variations should be discussed with Thorburn's technical department.

L = Minimum Live Length excluding end fitting
R = Minimum Bend Radius
T = Total Travel
K = Loop Length
 π = 3.142

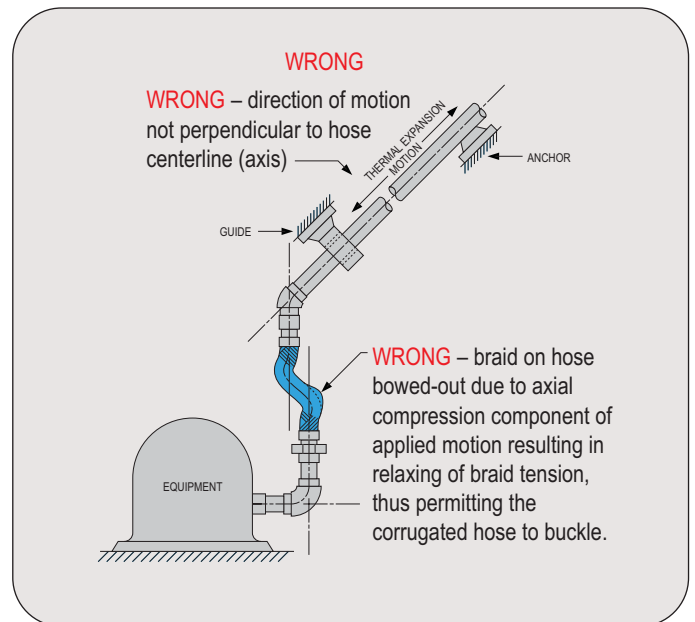
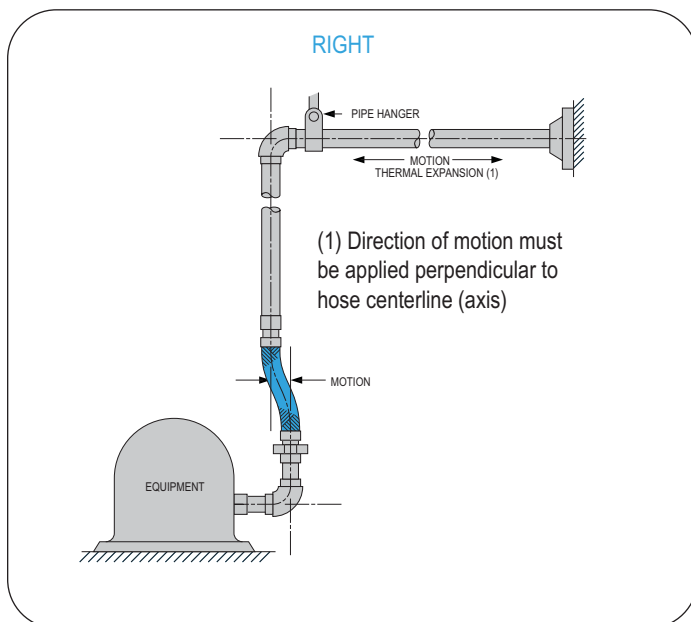
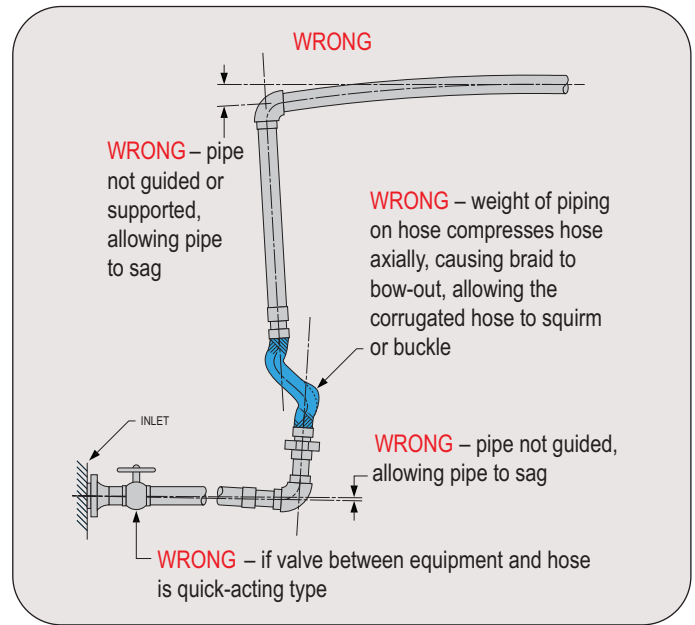
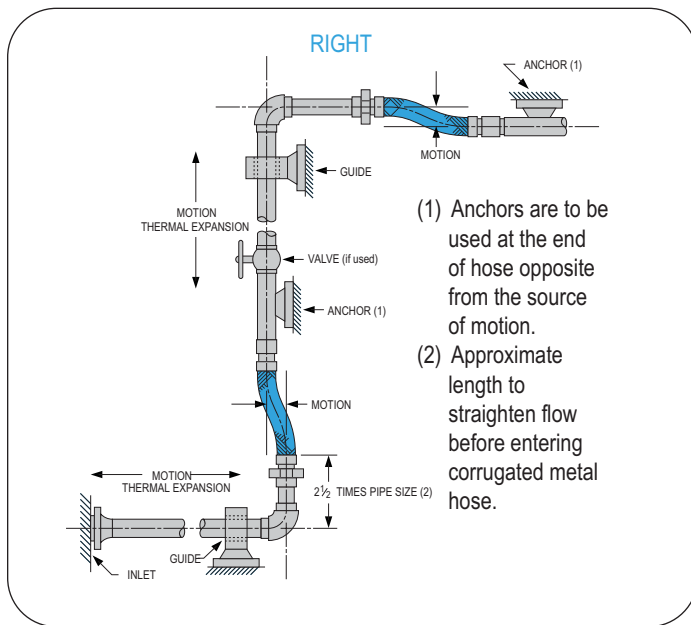


Pipe Anchoring Guide

A piping system which utilizes Thorburn flexible hose assemblies to absorb pipe movement must be properly anchored and guided to assure correct functioning and maximum service life of the hose. The basic principles to be observed are:

- 1) The direction of pipe motion must be perpendicular to the center line (axis) of the hose.
- 2) The pipe must be anchored at each change of direction where a flexible hose is employed to prevent torsional stress.

Typical examples of **RIGHT** and **WRONG** guiding are shown below.



General Maintenance, Testing and Inspection of Hose



Special Procedure

Hose assemblies shall be inspected and tested immediately after the hose is subjected to abnormal abuse such as, severe end pull, flattening or crushing or sharp kinking. As you inspect a hose assembly, remember that most hose failures occur between the coupling and the first three feet along the hose length. Pay close attention to this area. Any hose that has been recoupled shall be proof-tested and inspected before being placed in service.

Hydrostatic Pressure Test

For large bore hose being used in dock service, an inspection card which describes the hose manufacturer, date received, purchase order number and date of installation should be maintained for each hose. The inspection card should be used to record the test results and condition of the hose. Thorburn recommends that new hose assemblies be hydrostatically tested before being placed in service. Hydrostatic testing should be done at periodic intervals to determine if a hose is suitable for continued service. The hydrostatic test and examination shall be conducted in the following manner. Hose to be pressure tested must be restrained by placing steel rods or straps close to each end and at approximate 10 foot (3m) intervals along its length to keep the hose from “whipping” if failure occurs; the steel rods or straps may be anchored firmly to the test structure but in such a manner that they do not contact the hose which must be free to move.

- Hose shall lie in a straight and horizontal position supported on rollers to permit easy movement when under the test pressure.
- Water should be used as the test liquid. Never pressure test with solvents, corrosive liquids, or with compressed gases.
- Fill the hose with water with the outlet end raised and the outlet valve open to insure the complete removal of air. When all the air has been exposed, close the outlet valve and lower the raised end.
- For new hose, raise the pressure to 1 1/2 times the rated working pressure of the hose and hold for 5 minutes. During this hold period, the hose shall be examined for leaks at the couplings, fitting slippage, or for any indication of weakness in the hose structure.
- For used hose, test with a pressure of 1 1/2 times the rated working pressure of the hose and examine as above.

- Completely relieve test pressure from the system prior to releasing hose from test equipment.
- Thoroughly drain the water from the hose after completion of the hydrostatic test.

Electrical Continuity

When required by the user, electrical continuity between the fittings shall be tested using an ohm meter. The hose must be clean and dry for this test.

Hose Assemblies

Hose has a limited life based on the severity and type of chemical contact, environment or exposure to heat and petroleum products. Thorburn recommends the following maintenance procedure to determine when hose should be replaced.

Visual Inspection of Hose

Any cuts, gouges or tears in the cover which do not expose the reinforcement should be repaired before the hose is returned to service. If the reinforcement is exposed, retire the hose from service. Covers may show surface cracking or crazing due to prolonged exposure to sunlight, ozone, or high temperature during soak tank cleaning. Such deterioration, which does not expose reinforcing material, is not cause for retirement. Look for any indication of kinking or broken reinforcement as evidenced by any permanent distortion, longitudinal ridges, or bulges. According to RMA IP-11-7 Chemical Hose Bulletin, crushed or kinked spots where the hose O.D. is reduced by 20% or more of the normal O.D. indicate the hose probably has internal damage. The hose assembly must be removed from service to ensure the safety of people in the work area. Hose containing crushed or kinked spots where the outside diameter is reduced less than 20% may be used if the hose passes the hydrostatic test.



Visual Inspection of Couplings

All metals are subject to attack by various chemicals. Check with Thorburn to make sure that suitable end fittings, appropriate to both the hose and the chemical being handled, are being used. Exposed surfaces of couplings, flanges and nipples shall be examined for cracks or excessive corrosion. Either condition shall cause the hose to be retired from service. Any evidence of coupling or nipple slippage on the hose is cause for removing the hose from service. The Rubber Manufacturers Association has published a series of technical bulletins which detail maintenance, testing and inspection recommendations.

Hose Assembly Maintenance and Storage



Because the life expectancy of the hose is limited, the user must be alert to signs of impending failure, particularly when the conditions of service include high working pressures and/or the conveyance or containment of hazardous materials. The periodic inspection and testing procedures described here provide a schedule of specific measures which constitute a minimum level of user action to detect signs indicating hose deterioration or loss of performance before conditions leading to malfunction or failure are reached.

General instructions are also described for the proper storage of hose to minimize deterioration from exposure to elements or environments which are known to be harmful to rubber products. Proper storage conditions can enhance and extend substantially the ultimate life of hose products.

Safety Warning: Failure to follow properly the manufacturer's recommended procedures for the care, maintenance and storage of a particular hose might result in its failure to perform in the manner intended and might result in possible damage to property and serious bodily injury.

General Care and Maintenance of Hose Assemblies

Hose should not be subjected to any form of abuse in service. It should be handled with reasonable care. Hose should not be dragged over sharp or abrasive surfaces unless specifically designed for such service. Care should be taken to protect hose from severe end loads for which the hose or hose assembly were not designed.

Hose should be used at or below its rated working pressure; any changes in pressure should be made gradually so as to not subject the hose to excessive surge pressures. Hose should not be kinked or be run over by equipment. In handling large size hose, dollies should be used whenever possible; slings or handling rigs, properly placed, should be used to support heavy hose in oil suction and discharge service.

General Test and Inspection Procedures

An inspection and hydrostatic test should be made at periodic intervals to determine if a hose is suitable for continued service. A visual inspection of the hose should be made for loose covers, kinks, bulges, or soft spots which might indicate broken or displaced reinforcement. The couplings or fittings should be closely examined and, if there is any sign of movement of the hose from the couplings, the hose should be removed from service. The periodic inspection of the hose should include a hydrostatic test for one minute at 150% of the recommended working pressure of the hose.

An exception to this would be woven jacketed fire hose.* During the hydrostatic test, the hose should be straight, not coiled or in a kinked position. Water is the usual test medium, and following the test, the hose should be flushed with alcohol to remove traces of moisture. A regular schedule should be followed and inspection records maintained.

*Woven jacketed fire hose should be tested in accordance with the service test provisions contained in the current edition of National Fire Protection Association Bulletin No. 1962— Standard for the Care, Use and Service Testing of Fire Hose, Chapter 5.

Hose Assembly Maintenance and Storage

- Air or any other compressible gas must never be used as the test medium because of the explosive action of the hose should a failure occur. Such a failure might result in possible damage to property and serious bodily injury.
- Air should be removed from the hose by bleeding it through an outlet valve while the hose is being filled with the test medium.
- Hose to be pressure tested must be restrained by placing steel rods or straps close to each end and at approximate 10 foot (3m) intervals along its length to keep the hose from “whipping” if failure occurs; the steel rods or straps are to be anchored firmly to the test structure but in such a manner that they do not contact the hose which must be free to move.
- The outlet end of hose is to be bulwarked so that a blown-out fitting will be stopped.
- Provisions must be made to protect testing personnel from the forces of the pressure media if a failure occurs.
- Testing personnel must never stand in front of in back of the ends of the hose being pressure tested.
- If liquids such as gasoline, oil, solvent, or other hazardous fluids are used as the test fluid, precautions must be taken to protect against fire or other damage should a hose fail and the test liquid be sprayed over the surrounding area.

Safety Warning: Before conducting any pressure test on hose, provision should be made to ensure the safety of the personnel performing the tests and to prevent any possible damage to property. Only trained personnel using proper tools and procedures should conduct any pressure tests.

Storage

Rubber hose products in storage can be affected adversely by temperature, humidity, ozone, sunlight, oils, solvents, corrosive liquids and fumes, insects, rodents and radioactive materials. The appropriate method for storing hose depends to a great extent on its size (diameter and length), the quantity to be stored, and the way in which it is packaged. Hose should not be piled or stacked to such an extent that the weight of the stack creates distortions on the lengths stored at the bottom. Since hose products vary considerably in size, weight and length, it is not practical to establish definite recommendations on this point. Hose having a very light wall will not support as much load as could a hose having a heavier wall or hose having a wire reinforcement. Hose which is shipped in coils or bales should be stored so that the coils are in a horizontal plane.

Storage As Stock

Whenever possible rubber hose products should be stored in their original shipping containers, especially when such containers are wooden crates or cardboard cartons which provide some protection against the deteriorating effects of oils, solvents and corrosive liquids; shipping containers also afford some protection against ozone and sunlight. Certain rodents and insects will damage rubber hose products, and adequate protection from them should be provided. Cotton jacketed hose should be protected against fungal growths if the hose is to be stored for prolonged periods in humidity conditions in excess of 70%. The ideal temperature for the storage of rubber hose products ranges from 50°F to 70°F (10°C - 21°C) with a maximum limit of 100°F (38°C.). If stored below 32°F (0°C), some rubber products become stiff and would require warming before being placed in service. Rubber products should not be stored near sources of heat, such as radiators, base heaters, etc. Nor should they be stored under conditions of high or low humidity.

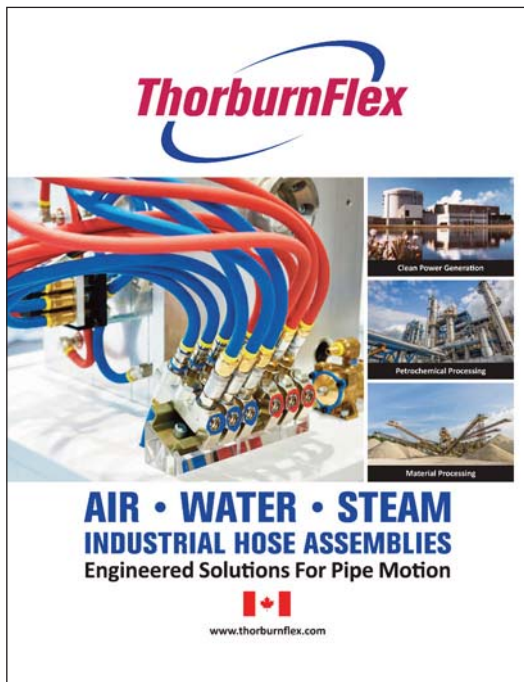
To avoid the effects of high ozone concentration, rubber hose products should not be stored near electrical equipment that may generate ozone or be stored for any lengthy period in geographical areas of known high ozone concentration. Exposure to direct or reflected sunlight — even through windows — should also be avoided. Uncovered hose should not be stored under fluorescent or mercury lamps which generate light waves harmful to rubber. Storage areas should be relatively cool and dark, and free of dampness and mildew. Items should be stored on a first-in first-out basis, since even under the best of conditions, an unusually long shelf life could deteriorate certain rubber products.

Storage After Use

After use of a hose assembly, wash thoroughly in cold water to remove any residue. Store the hose on a hose rack with good ventilation away from sunlight in a cool, dry location (Low humidity, 50-70°F). The ends of the hose assemblies should be capped.

Storage Life

It is necessary to perform a complete inspection of a hose assembly before using if it has been stored for a prolonged period as per ISO 8331. To avoid long term storage of hoses, it is recommended to use a scheduled rotation program and keep hose storage to a minimum. The maximum storage life for a hose assembly is two years.



ThorburnFlex

AIR • WATER • STEAM
INDUSTRIAL HOSE ASSEMBLIES
 Engineered Solutions For Pipe Motion


 www.thorburnflex.com

Industrial Assemblies Catalog

Air - Water - Steam

Thorburn Flex supplies a complete range of elastomeric hose assemblies for Air, Water, and Steam (AWS) applications, in sizes from 3 mm to over 600 mm. Engineered for reliability in demanding environments—from construction, food processing, and marine, to steel mills, mining, and pulp and paper—our AWS hoses cover everything from basic utility service to high-performance applications like hydro-demolition, potable water transfer, industrial firefighting, and superheated steam. The catalogue includes a wide selection of end connections, including threaded, flanged, and quick-acting fittings, ensuring the right solution for every need.

Applicable Standards:

- ASTM D380 / D412 / D2240 – Physical properties of rubber hoses
- ISO 1403 / 6134 / 4649 – Steam and air hose performance
- EN 12115 / EN ISO 8330 – Hose assemblies for chemical and industrial use
- FDA CFR 21 (food-grade options) – For potable water and food applications
- NFPA 1961 – Fire hose construction (where applicable)

Applications



Clean Power
Generation



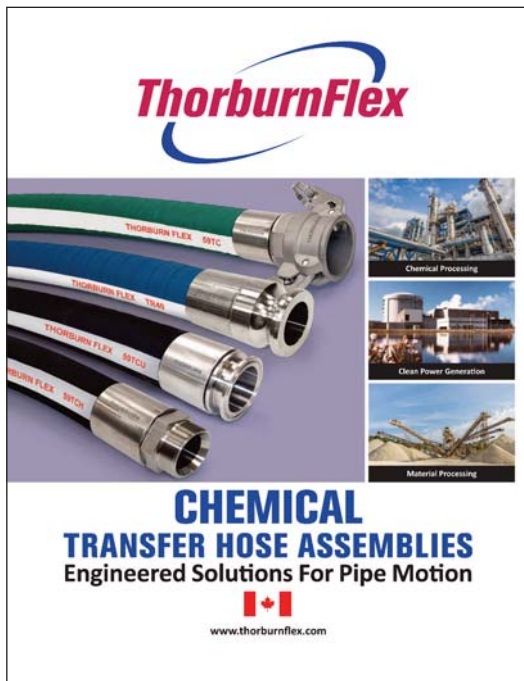
LNG
Transfer



Petro-Chemical
Processing



Pulp & Paper
Processing



ThorburnFlex

CHEMICAL
TRANSFER HOSE ASSEMBLIES
 Engineered Solutions For Pipe Motion


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Chemical Hose Assemblies Catalog

Thorburn's premium rubber chemical suction and discharge hose assemblies are purpose-built for full vacuum and high-pressure transfer service for the most demanding chemical, petrochemical, and industrial environments. Lightweight yet exceptionally durable and flexible, each hose assembly features advanced liner technologies — UHMWPE, XLPE, PTFE, FEP, EPDM, CSM, and FKM — delivering outstanding resistance to hundreds of aggressive chemicals and solvents, including acids, alkalis, aromatic and chlorinated hydrocarbons. Our chemical hose assemblies are equipped with Thorburn's proprietary Thor-Crimp™ 360° crimped fitting system for a secure, leak-free connection.

Applicable Standards:

- ASME B31.1, B31.3
- EN 12115
- BS 5842
- CSA B51
- ISO 10380
- ASTM D380
- NAHAD 400/2020
- CRN Registered (upon request)

Applications



Mining, Quarries
& Dewatering



Material
Processing



Chemical
Processing



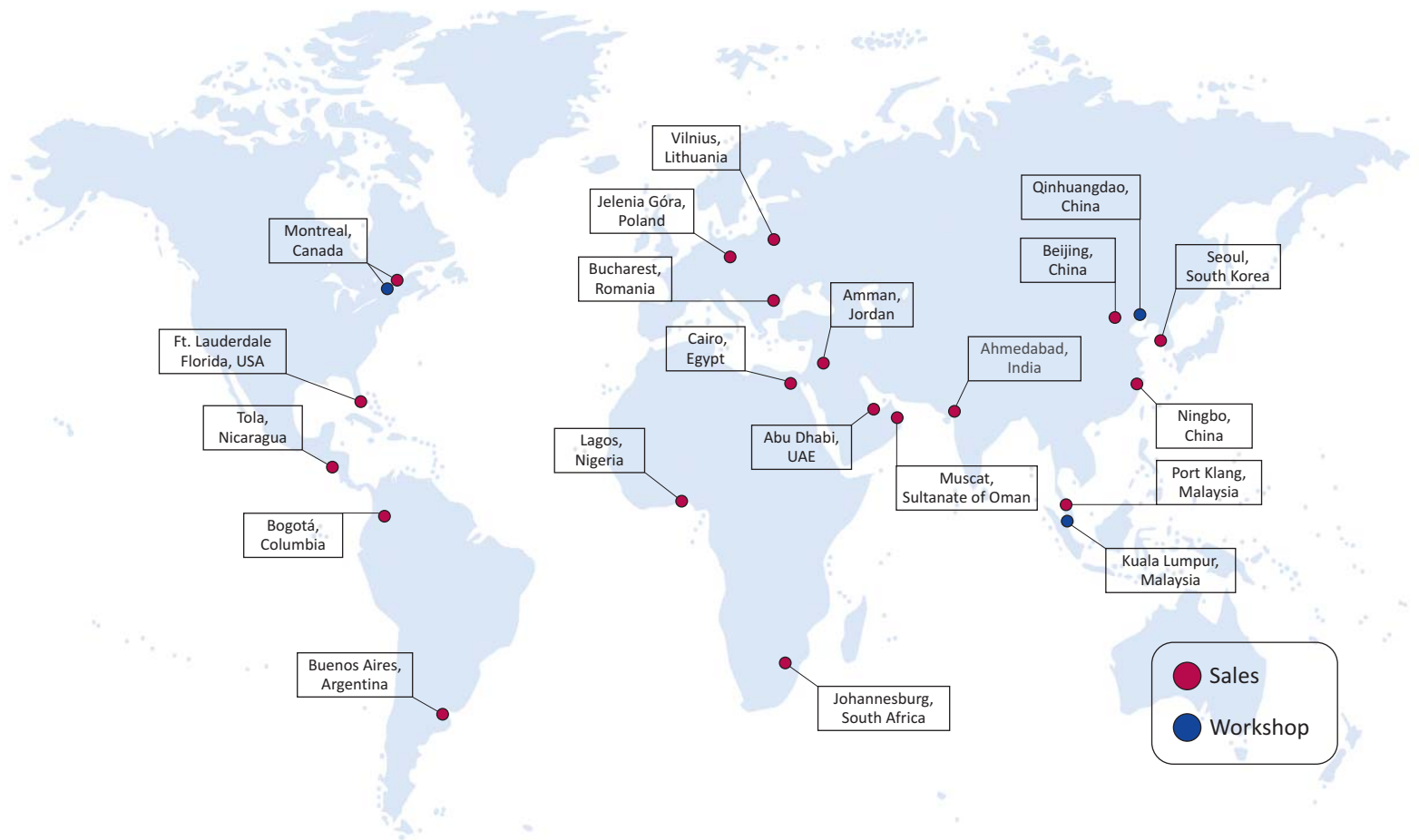
Clean Power
Generation

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