

THERMOPLASTIC HOSES FOR THE OIL AND GAS INDUSTRY

Oil & Gas Catalogue 4465 –
Global Edition 2023



ENGINEERING YOUR SUCCESS.

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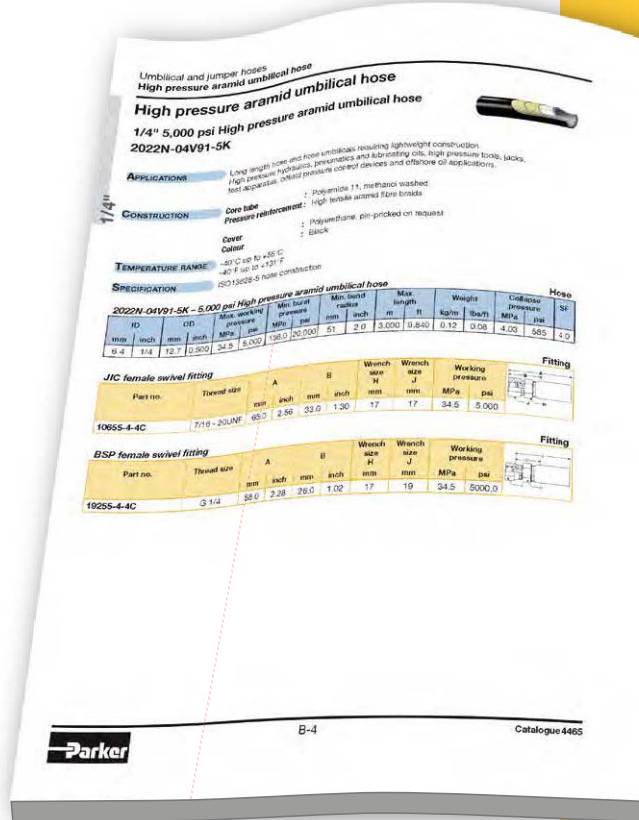
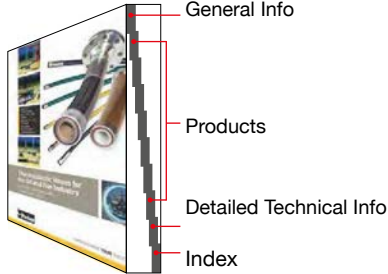
Safety note K – 8

The content contained in this catalogue has been compiled with the greatest care and corresponds to the information currently available to us.

However, we would like to point out that we reserve the right to make technical changes and we kindly request you to contact us should you have any special questions.

HOW TO USE THE CATALOGUE

OVERALL STRUCTURE OF THE CATALOGUE:



Hose data is always colored in blue

For general information please refer also to the overview pages at the beginning of the individual chapters



Chapter selector
if you know the chapter you are looking for – this is the quickest way to get there

B

Shows the current chapter

High pressure aramid umbilical hose
1/4" 10,000 psi High pressure aramid umbilical hose
2022N-04V91-10K

- APPLICATIONS:** Long length hose and hose umbilicals requiring lightweight construction. High pressure hydraulic, pneumatic and hydraulic oil, high pressure tools, packs, test separators, oilfield pressure control devices and offshore oil applications.
- CONSTRUCTION:** Core tube : Polyamide 11, methanol resistant.
Pressure reinforcement : High tensile aramid fibre strands.
- COVER:** : Polyurethane, pin-pricked on request.
Colour: : Black.
- TEMPERATURE RANGE:** -40°C up to +55°C
-40°F up to +131°F
- SPECIFICATION:** ISO13628-5 hose construction

2022N-04V91-10K – 10,000 psi High pressure aramid umbilical hose

ID	OD		Max working pressure	Min burst pressure	Min burst		Max length	Weight	Collapse		Hose SF				
	mm	inch			mm	inch			mm	inch		MPa	psi		
5.4	1.4	13.8	69.0	110,000	279.0	43,000	100	3.0	3,100	10,170	0.14	0.09	8.05	400	4.0

JIC female swivel fitting

Part no.	Thread size	A		B		Wheel size J	Working pressure	Fitting	
		mm	inch	mm	inch				
1068X-4-04C	7/16 - 20UNF	56.0	2.28	27.0	1.09	19	69.0	10,000	
1068X-6-04C	9/16 - 18UNF	56.0	2.17	24.0	0.94	19	69.0	15,000	

BSP female swivel fitting

Part no.	Thread size	A		B		Wheel size J	Working pressure	Fitting	
		mm	inch	mm	inch				
1928X-4-04C	G 1/4	56.0	2.20	25.0	0.99	19	69.0	10,000	

Type "M" female swivel fitting

Part no.	Thread size	A		B		Wheel size J	Working pressure	Fitting	
		mm	inch	mm	inch				
1818X-6-04C	9/16 - 18UNF	68.0	2.68	26.0	1.38	17	103.5	15,000	

Medium pressure tube nipple

Part no.	Thread size	A		B		Working pressure	Fitting	
		mm	inch	mm	inch			
1Y28X-6-04C	3/8 - 24 UNF-LH	108.2	4.29	65.4	2.57	158.0	20,000	



B-5

Catalogue 4465

Category selector
– superordinates chapters into product groups
or
– indicates hose sizes on data pages

Fitting data is always colored in yellow

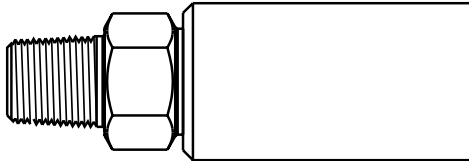
PART NUMBER SYSTEM



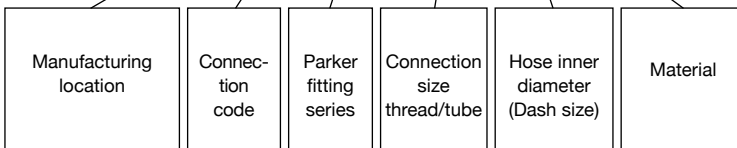
2440 N - 16 V91













FITTINGS



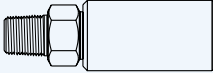
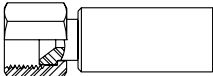
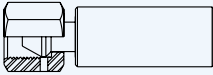
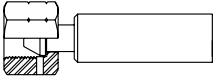
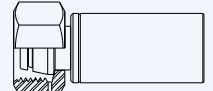
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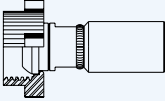
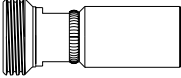
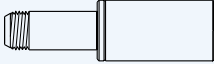
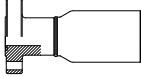
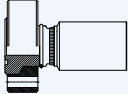
EXPLANATION OF SYMBOLS

SYMBOL	DESCRIPTION
#	Part number
	Nominal inner diameter
	Nominal outer diameter
	Working pressure
	Burst pressure
	Bend radius
	Weight
	Fittings
	Thread size
	Wrench size
	Thickness

HOSE FITTING CHART

Fitting	Fitting description	Fitting designation
	National Pipe Tapered (NPT) Male Fitting	01
	JIC Female Swivel Fitting	06
	Type "M" Female Swivel Fitting	AY
	BSP Female Swivel Fitting	92
	Metric Female Swivel Fitting with O-ring	C9

HOSE FITTING CHART

Fitting	Fitting description	Fitting designation
	Hammer Union (Male) Cone with Wing Nut End Fitting	HE
	Hammer Union (Female) Cone Threaded End with Seal	HN
	Medium Pressure Tube Nipple	Y2
	API Flange rigid	8K
	API Flange swivel	8K

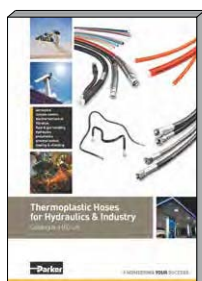
PARKER HANNIFIN - POLYFLEX DIVISION

Parker Hannifin offers an extensive programme of systems and components for fluid technology. Parker is structured by sales offices and manufacturing divisions to guarantee optimum focus on our customers' demands and market interests at any time.

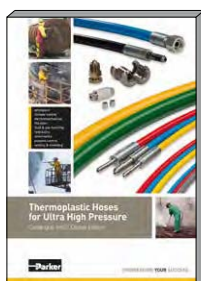
The Polyflex division, with headquarters located in Hüttenfeld, Germany, provides thermoplastic hoses and tubes. These are applied in a variety of different markets such as standard hydraulics, ultra high pressure applications, and oil & gas industry. As a market leader in many areas and with a unique product range we are pleased to assist you with all your queries.

This catalogue includes hoses and fittings for the Oil&Gas industry. The indicated fittings are always adapted to the correspondent hose and offer optimum performance.

OTHER CATALOGUES WITH THERMOPLASTIC HOSES



Catalogue 4460-UK



Catalogue 4462-UK



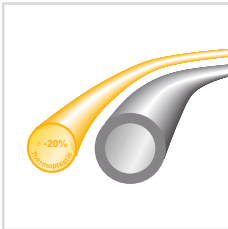
Catalogue 4466-UK

ADVANTAGES OF PARKER OIL & GAS HOSES

Parker thermoplastic hose is the right answer for many technical challenges. With unique features and performance characteristics thermoplastic hose outrivals even established alternatives. Whether the task requires extreme temperatures, pressures, robustness or special custom designs, these hoses will not disappoint you.

See below the features offered by our hose range – in comparison to other standard hose types:

COMPACT OD



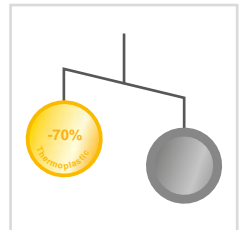
- Space saving due to very small diameters
- More hoses can be installed in the same situation
- Use hoses as small as you need them



LOW WEIGHT



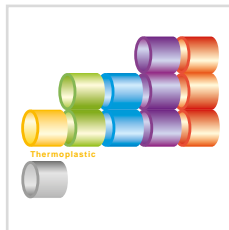
- Major weight savings
- Energy savings as less mass needs to be moved



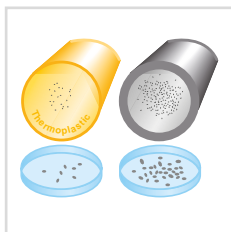
CUSTOMIZATION



- Multiple colors
- Multiple lines
- Bundles
- Customer specific designs



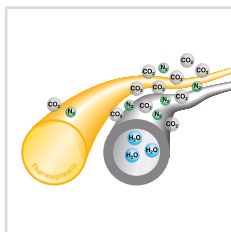
CLEANLINESS



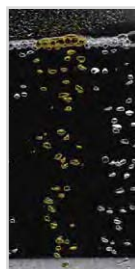
- Less abrasion and contamination inside the hose
- Reduced residue build up
- Extended lifetime for filters, valves and hydraulic systems



PERMEATION RESISTANCE



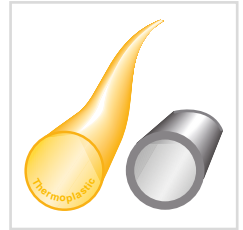
- Highly limited gas egression
- Reduced ingress reduced risk of media contamination



LONG LENGTH



- Up to 5,000 m and more continuous length
- Less joints & fittings needed
- Easy winching and handling offer fast deployment of long length



HIGHEST PRESSURE



- Up to 4,000 bar working pressure
- Highest technical standards and production controls assure safety



VALUE ADDED SERVICES

Parker Polyflex and the Parker Sales Companies offer value added services that compliment our production capabilities and product portfolio. These services are in place to meet the increasing customization and system criteria that our customers expect from a world-class supplier. The value added services detailed below are typical of the products and secondary services that we provide to our customers. If you have additional service needs that we have not detailed below please contact us. We are happy to discuss all potential solutions for your requirements.

PARKERSTORE™

At Parker Hannifin, we're continually looking for ways to deliver more products, more efficiently.

The Global ParkerStore™ network enables Parker to provide:

- Prompt, efficient, professional in-store services while you wait
- Expert local services and support
- A safe, friendly and convenient shopping environment
- A greater range of parts options so you get exactly what you're looking for.



Customers trust ParkerStores to provide OEM and MRO customers with direct access to:

- Custom-made hydraulic hose assemblies and complementary products to support their applications and decrease their downtime
- Expert technical support
- Professional, personalized services, including 24/7/365 support
- The convenience, comfort and amenities of a local service provider.

HOSEFINDER



Parker is committed to delivering customer service options to help you work smarter, faster, and better.

Need the latest? Go online. From complete product information on hose, to 3D-CAD models of our complete fitting line, you'll find everything you need at www.Parker.com/Polyflex.

And HoseFinder, our mobile app, makes it fast and convenient to search for hydraulic hose products and information on the go. The app features an abbreviated STAMP selection process to help you find what you need quickly and easily. Download yours today at www.hosefinder.com.

1 Browse it.

It's easy to use.

2 STAMP it.

Use the STAMP search or browse the catalog to find the product you are looking for.

3 Search it.

Results include all the details you need to make an informed decision.

4 Find it.

Choose the "Find It" link and you'll be directed to one of Parker's 12,000 worldwide distributor locations. HoseFinder is currently available for iPhone®, Blackberry® and Android™ mobile phones.

THE PARKER® TRACKING SYSTEM ENTERPRISE (PTS)

is designed to help customers reduce vehicle or asset down-time through increases in the speed, timing and accuracy of necessary repairs. PTS provides a unique 8 digit identification code and bar code printed on a durable label for each hose assembly. PTS labels are specifically engineered to withstand harsh chemicals, temperatures, UV exposure and other challenging conditions.



- PTS captures, records and recalls unique hose assembly information – on demand
- Provides fast and accurate product identification to speed up replacement regardless of where the original assembly was made.
- Assembly can be replaced with only the 8 digit PTS ID number/ bar code eliminating the need to remove hoses prior to replacement. This can provide critical machine uptime and enable more conveniently scheduled repair.
- PTS includes additional reporting tools to assist in continuous improvement programmes and preventative maintenance initiatives.

PARKER HOSE DOCTORS

are a network of independently-owned, mobile service technicians built around the commitment to identify and replace hose assemblies wherever their customers need them, with the fastest response times possible. HOSE DOCTORS® are an extension of the worldwide Parker distribution network, coupling their service commitment with Parker products – the highest quality hoses and fittings available in the market today.



PARKER STORE CONTAINER SERVICE

The ParkerStore container is a transportable workshop, providing on-site maintenance and product support for large construction projects such as roadworks, tunnels, railways, underground systems, etc. Provides an on-site product and hose replacement service. With this service on your site, you can reduce your downtime keeping your project on time and on budget!



TECH SERVICES



Optimises the performance of your hydraulic and pneumatic circuits

- With Parker Tech Services involved, your time to market is shorter, which saves on development costs
- The 3 year no-leak guarantee enhances your reputation and lowers your warranty costs
- More reliable operation lowers your customer's operating costs
- More efficient performance and no-leak guarantee is beneficial to the environment
- Parker worldwide coverage ensures you can use the service and save costs wherever you are

BREADMAN



Lean logistics and delivery of Parker products and kits directly to the customer's assembly line, work stations or warehouse

- 100 % parts availability minimises downtime, increases production and reduces costs
- Elimination of stock checking reduces manpower and maintains production levels
- Daily delivery reduces inventory and overheads
- Electronic order processing eliminates paperwork and reduces administration costs

KITTING



Multiple components are supplied under a single part number

- Reduced number of suppliers
- Reduced stocks and no obsolete items
- Optimized management (stock and supplies)
- Simplified and optimised order handling
- Reduced assembly costs
- Greater productivity

CHAPTER B

B

ARAMID HOSES

High pressure aramid hoses	B-4
HCR Hoses	B-10

HIGH PRESSURE ARAMID HOSES

B

polyflex high pressure aramid hoses are available in different designs and configurations for a wide range of applications.

- Hose series 575XN and 2022N, available in long continuous lengths are designed and qualified acc. ISO 13628-5 / API 17E. They are often used in umbilicals for hydraulic control or MEG / methanol injection
- Hose type HCRV is especially designed as HCR hose for applications where collapse resistance is required



APPLICATION

2022N and 575X are often used in umbilicals, Hydraulic Flying Leads (HFL) and Jumpers for hydraulic control lines or MEG / methanol injection lines. SeaWolf is used as BOP stack hose and in subsea applications where collapse pressure is a critical value.

- Hydraulic Control
- Chemical Injection
- Methanol Injection
- Lubrication
- BOP Control
- Subsea BOP hose



FEATURES

polyflex high pressure aramid hoses fulfill the design requirements of ISO 13628-5 / API 17E and combine the most required features to form unique products for the Oil&Gas market:

- Seamless Polyamide core tubes in different grades (PA11 and methanol washed PA11)
- Unique designs to increase collapse resistance
- High strength aramid fibers for high working pressures
- Long continuous lengths up to 3,300 m without splicing



BENEFITS

Customers worldwide benefit from the products in different ways:

- The compact designs helps to reduce OD of umbilicals, and therefore to reduce the size of equipment
- The increased service life of hoses supports the reduction of life cycle costs
- Developed for subsea and/or deep sea applications
- Enables increased umbilical lengths



HIGH PRESSURE ARAMID HOSES

1/4" 5,000 psi High pressure aramid hose 575XN-4



CONSTRUCTION

Core tubeMethanol washed PA11
Pressure reinforcementHigh tensile aramid fiber braids

CoverPA12
ColourBlack

TEMPERATURE RANGE

-40°C up to +55°C
 -40°F up to +131°F

MAX. LENGTH

3,000 m / 9,843 ft

SPECIFICATION

Fully compliant with ISO 13628-5 / API 17E

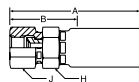
575XN-4

mm		inch		MPa		psi		mm		inch		kg/m		lbs/ft		Collapse pressure		DF
6.4	1/4	12.7	0.500	34.5	5,000	138.0	20,000	51	2.0	0.12	0.08	4.03	585	4.0				

JIC female swivel

Material: AISI 316 / 316Ti

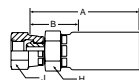
#	mm	A		B		H	J	MPa	psi
		mm	inch	mm	inch				
106AH-4-4C	7/16 - 20 UNF	60.0	2.36	31.0	1.22	9/16	5/8	34.5	5,000



BSP female swivel (60° cone)

Material: AISI 316 / 316Ti

#	mm	A		B		H	J	MPa	psi
		mm	inch	mm	inch				
192AH-4-4C	PF 1/4-19	55.9	2.2	27.0	1.06	17	19	34.5	5,000



1/4" 10,000 psi High pressure aramid hose 2022N-04V91

**CONSTRUCTION**

Core tubeMethanol washed PA11
Pressure reinforcementHigh tensile aramid fiber braids

CoverPA12
ColourBlack

TEMPERATURE RANGE

-40°C up to +55°C
-40°F up to +131°F

MAX. LENGTH

3,000 m / 9,843 ft

SPECIFICATION

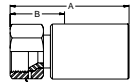
Fully compliant with ISO 13628-5 / API 17E

2022N-04V91

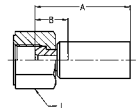
Ø		Ø		Ø		Ø		Ø		Ø		Collapse pressure		DF
mm	inch	mm	inch	MPa	psi	MPa	psi	mm	inch	kg/m	lbs/ft	MPa	psi	
6.4	1/4	13.8	0.543	69	10,000	276.0	40,000	100	3.9	0.128	0.087	9.6	1,392	4.0

JIC female swivel**Material: AISI 316 / 316Ti**

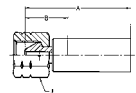
#	Ø	A		B		Ø	Ø	
		mm	inch	mm	inch		MPa	psi
1068X-4-04C	7/16 - 20 UNF	57.0	2.244	26.0	1.024	19	69.0	10,000
1068X-6-04C	9/16 - 18 UNF	55.0	2.165	24.0	0.945	19	103.5	15,000

**BSP female swivel (60° cone)****Material: AISI 316 / 316Ti**

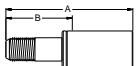
#	Ø	A		B		Ø	Ø	
		mm	inch	mm	inch		MPa	psi
1928X-4-04C	G 1/4	56.0	2.205	25.0	0.984	19	80.0	11,600

**Type M female swivel****Material: AISI 316 / 316Ti**

#	Ø	A		B		Ø	Ø	
		mm	inch	mm	inch		MPa	psi
1AY8X-6-04C	9/16 - 18 UNF	66.0	2.598	33.0	1.300	19	103.5	15,000

**Medium pressure tube nipple****Material: AISI 316 / 316Ti**

#	Ø	A		B		Ø	Ø	
		mm	inch	mm	inch		MPa	psi
1Y28X-6-04C	3/8 - 24 UNF - LH	120.0	4.724	87.0	3.425	19	138.0	20,000



HIGH PRESSURE ARAMID HOSES

3/8" 5,000 psi High pressure aramid hose



575XN-6

CONSTRUCTION

Core tubeMethanol washed PA11
 Pressure reinforcementHigh tensile aramid fiber braids
 CoverPA12
 ColourBlack

TEMPERATURE RANGE

-40°C up to +55°C
 -40°F up to +131°F

MAX. LENGTH

3,000 m / 9,843 ft

SPECIFICATION

Fully compliant with ISO 13628-5 / API 17E

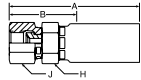
575XN-6

Ø		Ø		↻		↻		↻		[kg]		Collapse pressure		DF
mm	inch	mm	inch	MPa	psi	MPa	psi	mm	inch	kg/m	lbs/ft	MPa	psi	
9.7	3/8	16.1	0.634	34.5	5,000	138.0	20,000	76	3.0	0.137	0.092	3.4	493	4.0

JIC female swivel

Material: AISI 316 / 316Ti

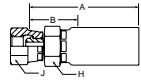
#	↻	A		B		H	J	↻	
		mm	inch	mm	inch	inch	inch	MPa	psi
106AH-6-6C	9/16 - 18 UNF	68.6	2.7	33.0	1.30	11/16	11/16	34.5	5,000



BSP female swivel (60° cone)

Material: AISI 316 / 316Ti

#	↻	A		B		H	J	↻	
		mm	inch	mm	inch	mm	mm	MPa	psi
192AH-6-6C	PF 3/8-19	62.0	2.44	27.0	1.06	19	22	34.5	5,000



**3/8" 10,000 psi High pressure aramid hose
2022N-06V91**



B

CONSTRUCTION	Core tubeMethanol washed PA11
	Pressure reinforcementHigh tensile aramid fiber braids
	CoverPA12
	ColourBlack

TEMPERATURE RANGE	-40°C up to +55°C
	-40°F up to +131°F

MAX. LENGTH	1,950 m / 6,398 ft
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SPECIFICATION	Fully compliant with ISO 13628-5 / API 17E
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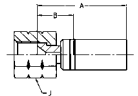
2022N-06V91

⊙		⊙		⊙		✎		↷		Ⓜ		Collapse pressure		DF
mm	inch	mm	inch	MPa	psi	MPa	psi	mm	inch	kg/m	lbs/ft	MPa	psi	
10	3/8	19	0.748	69	10,000	276.0	40,000	125	4.9	0.21	0.141	3.6	522	4.0

JIC female swivel

Material: AISI 316 / 316Ti

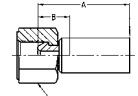
#	✎	A		B		Ⓜ	⊙
		mm	inch	mm	inch	MPa	psi
1063X-6-06C	9/16 - 18 UNF	69.0		33.0		69.0	10,000



BSP female swivel (60° cone)

Material: AISI 316 / 316Ti

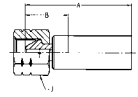
#	✎	A		B		Ⓜ	⊙
		mm	inch	mm	inch	MPa	psi
1923X-8-06C	G 1/2	66.0		22.0		69.0	10,000



Type M female swivel

Material: AISI 316 / 316Ti

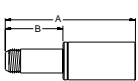
#	✎	A		B		Ⓜ	⊙
		mm	inch	mm	inch	MPa	psi
1AY3X-8-06C	3/4 - 16 UNF	71.0	2.8	25.5	1.00	24	103.5 / 15,000



Medium pressure tube nipple

Material: AISI 316 / 316Ti

#	✎	A		B		Ⓜ	⊙
		mm	inch	mm	inch	MPa	psi
1Y23X-9-06C	9/16 - 18 UNF - LH	137.0	5.4	85.0	3.35	138.0	20,000



HIGH PRESSURE ARAMID HOSES

1/2" 5,000 psi High pressure aramid hose



B 575XN-8

CONSTRUCTION
 Core tubeMethanol washed PA11
 Pressure reinforcementHigh tensile aramid fiber braids
 CoverPA12
 ColourBlack

TEMPERATURE RANGE
 -40°C up to +55°C
 -40°F up to +131°F

MAX. LENGTH
 1,450 m / 4,757 ft

SPECIFICATION
 Fully compliant with ISO 13628-5 / API 17E

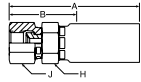
575XN-8

⊙		⊙		⊙		⊙		⊙		⊙		Collapse pressure		DF
mm	inch	mm	inch	MPa	psi	MPa	psi	mm	inch	kg/m	lbs/ft	MPa	psi	
12.9	1/2	20.8	0.819	34.5	5,000	138.0	20,000	102	4.0	0.22	0.148	2.1	305	4.0

JIC female swivel

Material: AISI 316 / 316Ti

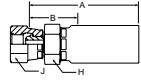
#	⊙	A		B		⊙	⊙	⊙	
		mm	inch	mm	inch	inch	inch	MPa	psi
106AH-8-8C	3/4 - 16 UNF	78.1	3.08	38.0	1.50	7/8	7/8	34.5	5,000



BSP female swivel (60° cone)

Material: AISI 316 / 316Ti

#	⊙	A		B		⊙	⊙	⊙	
		mm	inch	mm	inch	mm	mm	MPa	psi
192AH-8-8C	PF 1/2-14	70.6	2.78	31.0	1.22	24	27	34.5	5,000



1/2" 10,000 psi High pressure aramid hose 2022N-08V91



B

CONSTRUCTION

Core tubeMethanol washed PA11
Pressure reinforcementHigh tensile aramid fiber braids

CoverPA12
ColourBlack

TEMPERATURE RANGE

-40°C up to +55°C
-40°F up to +131°F

MAX. LENGTH

950 m / 3,117 ft

SPECIFICATION

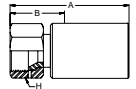
Fully compliant with ISO 13628-5 / API 17E

2022N-08V91

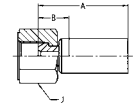
⊙		⊙		⊙		✂		↩		⊞		Collapse pressure		DF
mm	inch	mm	inch	MPa	psi	MPa	psi	mm	inch	kg/m	lbs/ft	MPa	psi	
12.8	1/2	23.2	0.914	69	10,000	276.0	40,000	100	3.9	0.34	0.225	1.61	233	4.0

JIC female swivel**Material: AISI 316 / 316Ti**

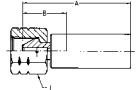
#	⚡	A		B		⊞	⊙	
		mm	inch	mm	inch		mm	MPa
106LX-8-08C	3/4 - 16 UNF	94.0	3.7	39.4	1.55	27	69.0	10,000

**BSP female swivel (60° cone)****Material: AISI 316 / 316Ti**

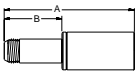
#	⚡	A	B	⊞	⊙	
		mm	mm		MPa	psi
192LX-8-08C	G 1/2	75.0	21.0	30	130.0	18,850

**Type M female swivel****Material: AISI 316 / 316Ti**

#	⚡	A	B	⊞	⊙	
		mm	mm		MPa	psi
1AYLX-11-08C	1 - 12 UNF	80.0	27.0	32	130.0	18,850

**Medium pressure tube nipple****Material: AISI 316 / 316Ti**

#	⚡	A		B		⊙	
		mm	inch	mm	inch	MPa	psi
1Y2LX-12-08C	3/4 - 16 UNF - LH	157.5	6.2	103.5	4.07	138.0	20,000



HCR HOSES

B

1/2" 5,000 psi High collapse resistant hose HCRV-8-xyz



CONSTRUCTION

Core tubeCarcass: 316L SS with Polyamide
Pressure reinforcementHigh tensile aramid fiber braids

CoverTPU, pin-pricked
Colours-BLU: blue, -YEL: yellow (standard colours)
-BLK: black, -GRE: green (non-standard colours, available on request)

TEMPERATURE RANGE

-40°C up to +55°C
 -40°F up to +131°F

MAX. LENGTH

Please contact Parker Hannifin

SPECIFICATION

Fully compliant with ISO 13628-5 / API 17E

CERTIFICATES

ABS Product Design Assessment (PDA) Certificate 13-HS1036876-PDA

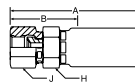
HCRV-8-xyz

⊙		⊙		↻		✂		↷		T		Collapse pressure		DF
mm	inch	mm	inch	MPa	psi	MPa	psi	mm	inch	kg/m	lbs/ft	MPa	psi	
12.7	1/2	26.4	1.040	34.5	5,000	138.0	20,000	102	4.0	0.67	0.45	45.6	6,600	4.0

JIC female swivel

Material: AISI 316 / 316Ti

#	⌚	A		B		⬡	⬡	↻	
		mm	inch	mm	inch	inch	inch	MPa	psi
106HV-8-8C	3/4 - 16 UNF	107.9	4.25	47.4	1.87	1 3/8"	15/16"	34.5	5,000



1" 5,000 psi High collapse resistant hose HCRV-16-xyz



CONSTRUCTION

Core tubeCarcass: 316L SS with Polyamide
Pressure reinforcementHigh tensile aramid fiber braids

CoverTPU, pin-pricked
Colours-BLU: blue, -YEL: yellow (standard colours)
-BLK: black, -GRE: green (non-standard colours, available on request)

TEMPERATURE RANGE

-40°C up to +55°C
 -40°F up to +131°F

MAX. LENGTH

Please contact Parker Hannifin

SPECIFICATION

Fully compliant with ISO 13628-5 / API 17E

CERTIFICATES

ABS Product Design Assessment (PDA) Certificate 13-HS1036876-PDA

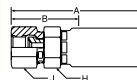
HCRV-16-xyz

⊙		⊙		⊙		⊙		⊙		⊙		⊙		⊙	
mm	inch	mm	inch	MPa	psi	MPa	psi	mm	inch	kg/m	lbs/ft	MPa	psi	DF	
25.4	1	46.5	1.830	34.5	5,000	138.0	20,000	300	11.8	2.15	1.44	45.6	6,600	4.0	

JIC female swivel

Material: AISI 316 / 316Ti

#	⊙	A		B		⊙		⊙	
		mm	inch	mm	inch	inch	inch	MPa	psi
106HV-16-16C	1 5/16 - 12 UN	166.2	6.55	67.8	2.67	2 3/8"	1 5/8"	34.5	5,000



CHAPTER C

WIRE HOSES

High pressure wire hoses with PA11 core tube	C-4
High pressure wire hoses ChemJec	C-24
20,000psi wire hose Nautilus20	C-40

C

HIGH PRESSURE WIRE HOSES

C **polyflex** High pressure wire hoses offer best characteristics for usage in offshore applications like umbilicals, hot lines or annulus lines. In accordance with ISO 13628-5 / API 17E the very compact design results in a minimal OD which helps to reduce the size of the complete equipment. The high collapse resistant hoses are available in long continuous lengths up to 5,000m, and in some cases even more.



APPLICATION

Typical applications are usage in umbilicals, HFL and jumpers, or as hot lines and annulus lines with additional sheath:

- Hydraulic Control
- Chemical Injection
- Methanol Injection
- Lubrication
- BOP Control



FEATURES

polyflex High pressure wire hoses combine the most required features to form unique products for the Oil&Gas market:

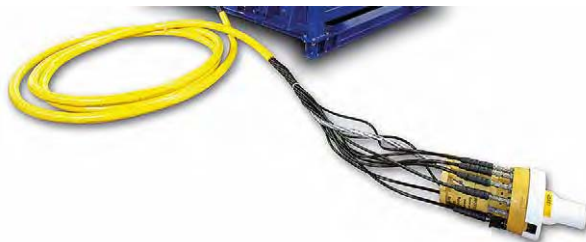
- Seamless methanol washed PA11 or fluoropolymer based core tubes
- High strength wire for high working pressures
- Long continuous lengths of more than 5,000 m without splicing
- High collapse resistance
- Meet and exceed the performance requirements of ISO 13628-5 / API 17E



BENEFITS

Customers worldwide benefit from the products in different ways:

- The compact designs helps to reduce OD of umbilicals, and therefore to reduce the size of equipment
- The increased service life of hoses supports the reduction of life cycle costs
- Developed for subsea and deep sea applications
- Enables increased umbilical lengths



HIGH PRESSURE WIRE HOSES WITH PA11 CORE TUBE

1/4" 6,250 psi High pressure wire hose

2240N-04V91



CONSTRUCTION

Core tubeMethanol washed PA11
 Pressure reinforcementHigh strength wire

CoverPA12
 ColourBlack

TEMPERATURE RANGE

-40°C up to +100°C, max. 70°C for water or methanol based fluids.
 -40°F up to +212°F, max. 158°F for water or methanol based fluids.

MAX. LENGTH

3,200 m / 10,499 ft
 (for longer length requirements please contact Parker Hannifin)

SPECIFICATION

Meets or exceeds performance requirements of ISO 13628-5 / API 17E

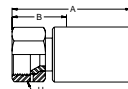
2240N-04V91

⊙		⊙		⊙		⊙		↷		⊙		Collapse pressure		DF
mm	inch	mm	inch	MPa	psi	MPa	psi	mm	inch	kg/m	lbs/ft	MPa	psi	
6.5	1/4	11.6	0.460	43	6,250	172.5	25,000	70	2.8	0.17	0.11	10	1,450	4.0

JIC female swivel

Material: AISI 316 / 316Ti

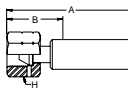
#	⌚	A		B		⊙	⊙	⊙
		mm	inch	mm	inch			
106RX-4-04C	7/16 - 20 UNF	52.0	2.05	23.0	0.91	17	43.0	6,250
106RX-6-04C	9/16 - 18 UNF	53.5	2.11	24.5	0.96	19	43.0	6,250



BSP female swivel (60° cone)

Material: AISI 316 / 316Ti

#	⌚	A		B		⊙	⊙	⊙
		mm	inch	mm	inch			
192RX-4-04C	G 1/4	50.5	1.99	22.0	0.87	17	43.0	6,250



HIGH PRESSURE WIRE HOSES WITH PA11 CORE TUBE

1/4" 10,000 psi High pressure wire hose

2340N-04V91



C

CONSTRUCTION

Core tubeMethanol washed PA11
 Pressure reinforcementHigh strength wire

CoverPA12
 ColourBlack

TEMPERATURE RANGE

-40°C up to +100°C, max. 70°C for water or methanol based fluids.
 -40°F up to +212°F, max. 158°F for water or methanol based fluids.

MAX. LENGTH

5,000 m / 16,404 ft
 (for longer length requirements please contact Parker Hannifin)

SPECIFICATION

Meets or exceeds performance requirements of ISO 13628-5 / API 17E

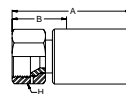
2340N-04V91

mm		inch		MPa		psi		mm		inch		kg/m		lbs/ft		Collapse pressure		DF
6.4	1/4	12.5	0.490	69	10,000	276.0	40,000	70	2.8	0.23	0.15	15.4	2,234	4.0				

JIC female swivel

Material: AISI 316 / 316Ti

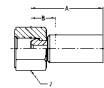
#		A		B		MPa		psi	
		mm	inch	mm	inch	mm	psi		
1068X-4-04C	7/16 - 20 UNF	57.0	2.6	26.0	1.0	69.0	10,000		
1068X-6-04C	9/16 - 18 UNF	55.0	2.4	24.0	1.0	103.5	15,000		



BSP female swivel (60° cone)

Material: AISI 316 / 316Ti

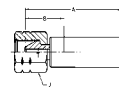
#		A		B		MPa		psi	
		mm	inch	mm	inch	mm	psi		
1928X-4-04C	G 1/4	56.0	2.5	25.0	1.0	80.0	11,600		



Type M female swivel

Material: AISI 316 / 316Ti

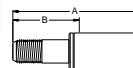
#		A		B		MPa		psi	
		mm	inch	mm	inch	mm	psi		
1AY8X-6-04C	9/16 - 18 UNF	66.0	2.6	33.0	1.30	19	103.5	15,000	



Medium pressure tube nipple

Material: AISI 316 / 316Ti

#		A		B		MPa		psi	
		mm	inch	mm	inch	mm	psi		
1Y28X-6-04C	3/8 - 24 UNF - LH	120.0	4.72	87.0	3.43	138.0	20,000		



HIGH PRESSURE WIRE HOSES WITH PA11 CORE TUBE

1/4" 10,000 psi High pressure wire hose 2380N-04V91



CONSTRUCTION

Core tubeMethanol washed PA11
Pressure reinforcementHigh strength wire

CoverPA12
ColourBlack

TEMPERATURE RANGE

-40°C up to +100°C, max. 70°C for water or methanol based fluids.
-40°F up to +212°F, max. 158°F for water or methanol based fluids.

MAX. LENGTH

3,000 m / 9,843 ft
(for longer length requirements please contact Parker Hannifin)

SPECIFICATION

Meets or exceeds performance requirements of ISO 13628-5 / API 17E

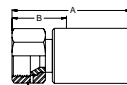
2380N-04V91

mm		inch		MPa		psi		mm		inch		MPa		psi		DF
6.4	1/4	13.4	0.530	69	10,000	276.0	40,000	70	2.8	0.27	0.18	23.9	3,465	4.0		

JIC female swivel

Material: AISI 316 / 316Ti

#	mm	inch	A		B		mm	MPa		psi
			mm	inch	mm	inch		MPa	psi	
1068X-4-04C	7/16 - 20 UNF		57.0	26.0	19		69.0	10,000		
1068X-6-04C	9/16 - 18 UNF		55.0	24.0	19		103.5	15,000		



BSP female swivel (60° cone)

Material: AISI 316 / 316Ti

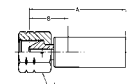
#	mm	inch	A		B		mm	MPa		psi
			mm	inch	mm	inch		MPa	psi	
1928X-4-04C	G 1/4		56.0	25.0	19		80.0	11,600		



Type M female swivel

Material: AISI 316 / 316Ti

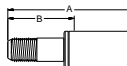
#	mm	inch	A		B		mm	MPa		psi
			mm	inch	mm	inch		MPa	psi	
1AY8X-6-04C	9/16 - 18 UNF		66.0	2.6	33.0	1.30	19	103.5	15,000	



Medium pressure tube nipple

Material: AISI 316 / 316Ti

#	mm	inch	A		B		mm	MPa		psi
			mm	inch	mm	inch		MPa	psi	
1Y28X-6-04C	3/8 - 24 UNF - LH		120.0	4.72	87.0	3.43	138.0	20,000		



HIGH PRESSURE WIRE HOSES WITH PA11 CORE TUBE

1/4" 12,500 psi High pressure wire hose

2440N-04V91

**CONSTRUCTION**

Core tubeMethanol washed PA11
 Pressure reinforcementHigh strength wire

CoverPA12
 ColourBlack

TEMPERATURE RANGE

-40°C up to +100°C, max. 70°C for water or methanol based fluids.
 -40°F up to +212°F, max. 158°F for water or methanol based fluids.

MAX. LENGTH

3,750 m / 12,303 ft
 (for longer length requirements please contact Parker Hannifin)

SPECIFICATION

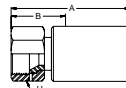
Meets or exceeds performance requirements of ISO 13628-5 / API 17E

2440N-04V91

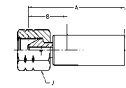
⊙		⊙		⊙		✂		↩		⊞		Collapse pressure		DF
mm	inch	mm	inch	MPa	psi	MPa	psi	mm	inch	kg/m	lbs/ft	MPa	psi	
6.4	1/4	13.1	0.520	86.5	12,500	345.0	50,000	150	5.9	0.31	0.21	24.7	3,582	4.0

JIC female swivel**Material: AISI 316 / 316Ti**

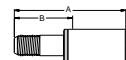
#	⌚	A		B		⊞	⊙	
		mm	inch	mm	inch		MPa	psi
1068X-6-04C	9/16 - 18 UNF	55.0		24.0		19	103.5	15,000

**Type M female swivel****Material: AISI 316 / 316Ti**

#	⌚	A		B		⊞	⊙	
		mm	inch	mm	inch		MPa	psi
1AY8X-6-04C	9/16 - 18 UNF	66.0	2.6	33.0	1.30	19	103.5	15,000

**Medium pressure tube nipple****Material: AISI 316 / 316Ti**

#	⌚	A		B		⊙	
		mm	inch	mm	inch	MPa	psi
1Y28X-6-04C	3/8 - 24 UNF - LH	120.0	4.72	87.0	3.43	138.0	20,000



HIGH PRESSURE WIRE HOSES WITH PA11 CORE TUBE

**1/4" 15,000 psi High pressure wire hose
2448N-04V91**



C

CONSTRUCTION

Core tubeMethanol washed PA11
Pressure reinforcementHigh strength wire

CoverPA12
ColourBlack

TEMPERATURE RANGE

-40°C up to +100°C, max. 70°C for water or methanol based fluids.
-40°F up to +212°F, max. 158°F for water or methanol based fluids.

MAX. LENGTH

2,750 m / 9,022 ft
(for longer length requirements please contact Parker Hannifin)

SPECIFICATION

Meets or exceeds performance requirements of ISO 13628-5 / API 17E

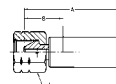
2448N-04V91

mm		inch		MPa		psi		mm		inch		kg/m		lbs/ft		Collapse pressure		DF
6.4	1/4	13.7	0.539	103.5	15,000	414.0	60,000	150	5.9	0.38	0.26	40.7	5,900	4.0				

Type M female swivel

Material: AISI 316 / 316Ti

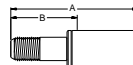
#	mm	inch	A		B		mm	MPa		psi
			mm	inch	mm	inch		MPa	psi	
1AY8X-6-04C	9/16 - 18 UNF		66.0	2.6	33.0	1.30	19	103.5	15,000	



Medium pressure tube nipple

Material: AISI 316 / 316Ti

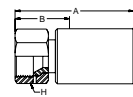
#	mm	inch	A		B		MPa	psi
			mm	inch	mm	inch		
1Y28X-6-04C	3/8 - 24 UNF - LH		120.0	4.72	87.0	3.43	138.0	20,000



JIC female swivel

Material: AISI 316 / 316Ti

#	mm	inch	A	B	mm	MPa		psi
			mm	mm		mm	MPa	
1068X-6-04C	9/16 - 18 UNF		55.0	24.0	19	103.5	15,000	



HIGH PRESSURE WIRE HOSES WITH PA11 CORE TUBE

3/8" 6,250 psi High pressure wire hose

2370N-06V91

**CONSTRUCTION**

Core tubeMethanol washed PA11
Pressure reinforcementHigh strength wire, synthetic fibre

CoverPA12
ColourBlack

TEMPERATURE RANGE

-40°C up to +100°C, max. 70°C for water or methanol based fluids.
 -40°F up to +212°F, max. 158°F for water or methanol based fluids.

MAX. LENGTH

2,200 m / 7,218 ft
 (for longer length requirements please contact Parker Hannifin)

SPECIFICATION

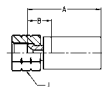
Meets or exceeds performance requirements of ISO 13628-5 / API 17E

2370N-06V91

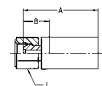
Ø		Ø		↗		✂		↩		⌓		Collapse pressure		DF
mm	inch	mm	inch	MPa	psi	MPa	psi	mm	inch	kg/m	lbs/ft	MPa	psi	
9.9	3/8	16.5	0.650	43	6,250	172.5	25,000	120	4.7	0.33	0.22	9.4	1,363	4.0

JIC female swivel**Material: AISI 316 / 316Ti**

#	⌚	A		B		⌓	↗		
		mm	inch	mm	inch			mm	MPa
106NX-6-06C	9/16 - 18 UNF	58.0	2.28	28.0	1.10	19	43.0	6,250	

**BSP female swivel (60° cone)****Material: AISI 316 / 316Ti**

#	⌚	A		B		⌓	↗		
		mm	inch	mm	inch			mm	MPa
192NX-6-06C	G 3/8	55.0	2.17	25.0	0.98	22	43.0	6,250	



HIGH PRESSURE WIRE HOSES WITH PA11 CORE TUBE

**3/8" 6,450 psi High pressure wire hose
2390N-06V91**



C

- CONSTRUCTION**
 - Core tubeMethanol washed PA11
 - Pressure reinforcementHigh strength wire
 - CoverPA12
 - ColourBlack
- TEMPERATURE RANGE**
 - 40°C up to +100°C, max. 70°C for water or methanol based fluids.
 - 40°F up to +212°F, max. 158°F for water or methanol based fluids.
- MAX. LENGTH**
 - 3,500 m / 11,483 ft
 - (for longer length requirements please contact Parker Hannifin)
- SPECIFICATION**
 - Meets or exceeds performance requirements of ISO 13628-5 / API 17E

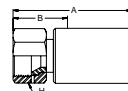
2390N-06V91

⊙		⊙		↻		↻		↻		[kg]		Collapse pressure		DF
mm	inch	mm	inch	MPa	psi	MPa	psi	mm	inch	kg/m	lbs/ft	MPa	psi	
9.8	3/8	18.1	0.710	44.5	6,450	178.0	25,800	120	4.7	0.41	0.28	15	2,175	4.0

JIC female swivel

Material: AISI 316 / 316Ti

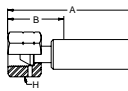
#	↻	A		B		H	↻	
		mm	inch	mm	inch		mm	MPa
1069X-8-06C	3/4 - 16 UNF	74.0	2.91	31.0	1.22	24	69.0	10,000



BSP female swivel (60° cone)

Material: AISI 316 / 316Ti

#	↻	A		B		H	↻	
		mm	inch	mm	inch		mm	MPa
1929X-6-06C	G 3/8	63.5	2.5	24.5	0.96	22	69.0	10,000



HIGH PRESSURE WIRE HOSES WITH PA11 CORE TUBE

3/8" 7,500 psi High pressure wire hose

2380N-06V91

**CONSTRUCTION**

Core tubeMethanol washed PA11
 Pressure reinforcementHigh strength wire

CoverPA12
 ColourBlack

TEMPERATURE RANGE

-40°C up to +100°C, max. 70°C for water or methanol based fluids.
 -40°F up to +212°F, max. 158°F for water or methanol based fluids.

MAX. LENGTH

2,000 m / 6,562 ft
 (for longer length requirements please contact Parker Hannifin)

SPECIFICATION

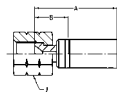
Meets or exceeds performance requirements of ISO 13628-5 / API 17E

2380N-06V91

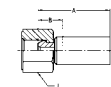
Ø		Ø		↻		✂		↷		[J]		Collapse pressure		DF
mm	inch	mm	inch	MPa	psi	MPa	psi	mm	inch	kg/m	lbs/ft	MPa	psi	
9.8	3/8	17.9	0.700	51.7	7,500	207.0	30,000	120	4.7	0.44	0.3	13.5	1,958	4.0

JIC female swivel**Material: AISI 316 / 316Ti**

#	✂	A		B		[J]	↻	
		mm	inch	mm	inch		mm	MPa
1066X-8-06C	3/4 - 16 UNF	69.5	2.74	30.5	1.20	24	69.0	10,000

**BSP female swivel (60° cone)****Material: AISI 316 / 316Ti**

#	✂	A	B	[J]	↻	
		mm	mm		mm	MPa
1928X-6-06C	G 3/8	59.0	19.0	22	69.0	10,000



HIGH PRESSURE WIRE HOSES WITH PA11 CORE TUBE

**3/8" 12,500 psi High pressure wire hose
2440N-06V91**



C

CONSTRUCTION	<p>Core tubeMethanol washed PA11</p> <p>Pressure reinforcementHigh strength wire</p> <p>CoverPA12</p> <p>ColourBlack</p>
TEMPERATURE RANGE	<p>-40°C up to +100°C, max. 70°C for water or methanol based fluids.</p> <p>-40°F up to +212°F, max. 158°F for water or methanol based fluids.</p>
MAX. LENGTH	<p>6,000 m / 19,685 ft</p> <p>(for longer length requirements please contact Parker Hannifin)</p>
SPECIFICATION	<p>Meets or exceeds performance requirements of ISO 13628-5 / API 17E</p>

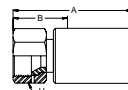
2440N-06V91

⊙		⊙		↻		↻		↻		Ⓜ		Collapse pressure		DF
mm	inch	mm	inch	MPa	psi	MPa	psi	mm	inch	kg/m	lbs/ft	MPa	psi	
9.8	3/8	19.5	0.770	86.5	12,500	345.0	50,000	190	7.5	0.73	0.49	32.2	4,670	4.0

JIC female swivel

Material: Special Stainless Steel Materials

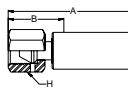
#	↻	A		B		Ⓜ	↻	
		mm	inch	mm	inch		mm	MPa
106LX-6-06C4462	9/16 - 18 UNF	74.5	2.93	29.0	1.14	22	69.0	10,000
106LX-8-06C4462	3/4 - 16 UNF	78.0	3.07	32.5	1.28	24	86.5	12,500



Type M female swivel

Material: Special Stainless Steel Materials

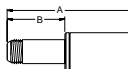
#	↻	A		B		Ⓜ	↻	
		mm	inch	mm	inch		mm	MPa
1AYLX-8-06C4462	3/4 - 16 UNF	78.0	3.07	32.5	1.28	27	103.5	15,000



Medium pressure tube nipple

Material: Special Stainless Steel Materials

#	↻	A		B		↻	
		mm	inch	mm	inch	MPa	psi
1Y2LX-6-06C4462	3/8 - 24 UNF - LH	128.5	5.06	76.5	3.01	138.0	20,000
1Y2LX-9-06C4462	9/16 - 18 UNF - LH	137.0	5.4	91.5	3.60	138.0	20,000



HIGH PRESSURE WIRE HOSES WITH PA11 CORE TUBE

1/2" 6,015 psi High pressure wire hose

2390N-08V91

**CONSTRUCTION**

Core tubeMethanol washed PA11
 Pressure reinforcementHigh strength wire

CoverPA12
 ColourBlack

TEMPERATURE RANGE

-40°C up to +100°C, max. 70°C for water or methanol based fluids.
 -40°F up to +212°F, max. 158°F for water or methanol based fluids.

MAX. LENGTH

5,600 m / 18,373 ft
 (for longer length requirements please contact Parker Hannifin)

SPECIFICATION

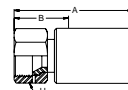
Meets or exceeds performance requirements of ISO 13628-5 / API 17E

2390N-08V91

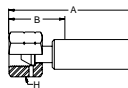
mm		inch		MPa		psi		mm		inch		kg/m		lbs/ft		Collapse pressure		DF
12.9	1/2	21.2	0.830	41.5	6,015	166.0	24,070	150	5.9	0.57	0.38	7.8	1,131	4.0				

JIC female swivel**Material: AISI 316 / 316Ti**

#	mm	inch	A		B		mm	MPa	psi
			mm	inch	mm	inch			
1069X-8-08C	3/4 - 16 UNF	81.0	3.19	38.0	1.50	27	69.0	10,000	

**BSP female swivel (60° cone)****Material: AISI 316 / 316Ti**

#	mm	inch	A		B		mm	MPa	psi
			mm	inch	mm	inch			
1929X-8-08C	G 1/2	70.0	2.76	27.0	1.06	27	69.0	10,000	



HIGH PRESSURE WIRE HOSES WITH PA11 CORE TUBE

**1/2" 7,500 psi High pressure wire hose
2380N-08V91**



C

CONSTRUCTION

Core tubeMethanol washed PA11
Pressure reinforcementHigh strength wire

CoverPA12
ColourBlack

TEMPERATURE RANGE

-40°C up to +100°C, max. 70°C for water or methanol based fluids.
-40°F up to +212°F, max. 158°F for water or methanol based fluids.

MAX. LENGTH

3,000 m / 9,843 ft
(for longer length requirements please contact Parker Hannifin)

SPECIFICATION

Meets or exceeds performance requirements of ISO 13628-5 / API 17E

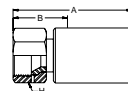
2380N-08V91

Ø		Ø		↻		✂		↷		Ⓜ		Collapse pressure		DF
mm	inch	mm	inch	MPa	psi	MPa	psi	mm	inch	kg/m	lbs/ft	MPa	psi	
12.9	1/2	22.9	0.900	51.7	7,500	207.0	30,000	150	5.9	0.68	0.46	16.4	2,378	4.0

JIC female swivel

Material: AISI 316 / 316Ti

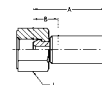
#	✂	A		B		H	↻		
		mm	inch	mm	inch			mm	MPa
106LX-8-08C	3/4 - 16 UNF	94.0	3.7	39.4	1.55	27	69.0	10,000	
106LX-12-08C	1 1/16 - 12 UNF	88.0	3.46	44.0	1.73	32	34.5	5,000	



BSP female swivel (60° cone)

Material: AISI 316 / 316Ti

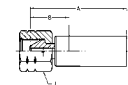
#	✂	A	B	J	↻			
		mm	mm		mm	MPa	psi	
192LX-8-08C	G 1/2	75.0	21.0	30	130.0	18,850		



Type M female swivel

Material: AISI 316 / 316Ti

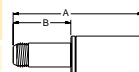
#	✂	A	B	J	↻			
		mm	mm		mm	MPa	psi	
1AYLX-11-08C	1 - 12 UNF	80.0	27.0	32	130.0	18,850		



Medium pressure tube nipple

Material: AISI 316 / 316Ti

#	✂	A		B		↻			
		mm	inch	mm	inch	MPa	psi		
1Y2LX-12-08C	3/4 - 16 UNF - LH	157.5	6.2	103.5	4.07	138.0	20,000		



HIGH PRESSURE WIRE HOSES WITH PA11 CORE TUBE

1/2" 10,000 psi High pressure wire hose

2440N-08V91-10K



CONSTRUCTION

Core tubeMethanol washed PA11
 Pressure reinforcementHigh strength wire

CoverPA12
 ColourBlack

TEMPERATURE RANGE

-40°C up to +100°C, max. 70°C for water or methanol based fluids.
 -40°F up to +212°F, max. 158°F for water or methanol based fluids.

MAX. LENGTH

6,000 m / 19,685 ft
 (for longer length requirements please contact Parker Hannifin)

SPECIFICATION

Meets or exceeds performance requirements of ISO 13628-5 / API 17E

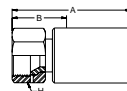
2440N-08V91-10K

⊙		⊙		⌚		📄		📐		📏		📏		DF
mm	inch	mm	inch	MPa	psi	MPa	psi	mm	inch	kg/m	lbs/ft	MPa	psi	
12.9	1/2	22.7	0.892	69	10,000	276.0	4,000	200	7.9	0,94	0.63	18	2,610	4.0

JIC female swivel

Material: AISI 316 / 316Ti

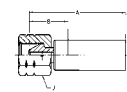
#	📄	A		B		⊙	⌚	
		mm	inch	mm	inch		mm	MPa
106LX-8-08C	3/4 - 16 UNF	94.0	3.7	39.4	1.55	27	69.0	10,000



Type M female swivel

Material: AISI 316 / 316Ti

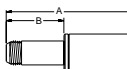
#	📄	A		B		⊙	⌚	
		mm	mm	mm	MPa		psi	
1AYLX-11-08C	1 - 12 UNF	80.0	27.0	32	130.0	18,850		



Medium pressure tube nipple

Material: AISI 316 / 316Ti

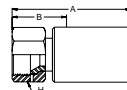
#	📄	A		B		⌚	⌚	
		mm	inch	mm	inch		MPa	psi
1Y2LX-12-08C	3/4 - 16 UNF - LH	157.5	6.2	103.5	4.07	138.0	20,000	



JIC female swivel

Material: AISI 316 / 316Ti

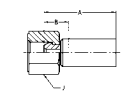
#	📄	A		B		⊙	⌚	
		mm	inch	mm	inch		mm	MPa
106LX-12-08C	1 1/16 - 12 UNF	88.0	3.46	44.0	1.73	32	34.5	5,000



BSP female swivel (60° cone)

Material: AISI 316 / 316Ti

#	📄	A		B		⊙	⌚	
		mm	mm	mm	MPa		psi	
192LX-8-08C	G 1/2	75.0	21.0	30	130.0	18,850		



HIGH PRESSURE WIRE HOSES WITH PA11 CORE TUBE

**1/2" 12,500 psi High pressure wire hose
2448N-08V91**



C

CONSTRUCTION	<p>Core tubeMethanol washed PA11</p> <p>Pressure reinforcementHigh strength wire</p> <p>CoverPA12</p> <p>ColourBlack</p>
TEMPERATURE RANGE	<p>-40°C up to +100°C, max. 70°C for water or methanol based fluids.</p> <p>-40°F up to +212°F, max. 158°F for water or methanol based fluids.</p>
MAX. LENGTH	<p>6,000 m / 19,685 ft</p> <p>(for longer length requirements please contact Parker Hannifin)</p>
SPECIFICATION	<p>Meets or exceeds performance requirements of ISO 13628-5 / API 17E</p>

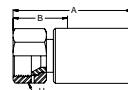
2448N-08V91

⊙		⊙		Max. working pressure				Min. bend radius				Collapse pressure		DF
mm	inch	mm	inch	MPa	psi	MPa	psi	mm	inch	kg/m	lbs/ft	MPa	psi	
12.9	1/2	22.7	0.890	86.5	12,500	350.0	50,750	200	7.9	0.94	0.63	22.9	3,320	4.0

JIC female swivel

Material: AISI 316 / 316Ti

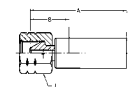
#		A		B				
		mm	inch	mm	inch		mm	MPa
106LX-8-08C	3/4 - 16 UNF	94.0	3.7	39.4	1.55	27	69.0	10,000



Type M female swivel

Material: AISI 316 / 316Ti

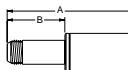
#		A	B			
		mm	mm		MPa	psi
1AYLX-11-08C	1 - 12 UNF	80.0	27.0	32	130.0	18,850



Medium pressure tube nipple

Material: AISI 316 / 316Ti

#		A		B			
		mm	inch	mm	inch	MPa	psi
1Y2LX-12-08C	3/4 - 16 UNF - LH	157.5	6.2	103.5	4.07	138.0	20,000



HIGH PRESSURE WIRE HOSES WITH PA11 CORE TUBE

1/2" 15,000 psi High pressure wire hose 2640N-08V91

**CONSTRUCTION**

Core tubeMethanol washed PA11
Pressure reinforcementHigh strength wire

CoverPA12
ColourBlack

TEMPERATURE RANGE

-40°C up to +100°C, max. 70°C for water or methanol based fluids.
-40°F up to +212°F, max. 158°F for water or methanol based fluids.

MAX. LENGTH

3,500 m / 11,500 ft
(for longer length requirements please contact Parker Hannifin)

SPECIFICATION

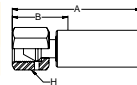
Meets or exceeds performance requirements of ISO 13628-5 / API 17E

2640N-08V91

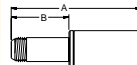
mm		inch		MPa		psi		mm		inch		kg/m		lbs/ft		Collapse pressure		DF
12.9	1/2	24.7	0.970	103.5	15,000	4140.0	60,000	290	11.4	1,34	0.9	25.6	3,712	4.0				

Type M female swivel**Material: Special Stainless Steel Materials**

#		A		B					
		mm	inch	mm	inch			MPa	psi
1AY5X-11-08C-M-Subsea	1 - 12 UNF	111.0	4.37	56.0	2.20	32	103.5	15,000	

**Medium pressure tube nipple****Material: Special Stainless Steel Materials**

#		A		B			
		mm	inch	mm	inch	MPa	psi
1Y25X-9-08C-M-Subsea	9/16 - 18 UNF - LH	164.2	6.46	72.0	2.83	138.0	20,000
1Y25X-12-08C-M-Subsea	3/4 - 16 UNF - LH	174.2	6.86	84.0	3.31	138.0	20,000



HIGH PRESSURE WIRE HOSES WITH PA11 CORE TUBE

**3/4" 5,075 psi High pressure wire hose
2390N-12V91**



C

- CONSTRUCTION**
 - Core tubeMethanol washed PA11
 - Pressure reinforcementHigh strength wire
 - CoverPA12
 - ColourBlack
- TEMPERATURE RANGE**
 - 40°C up to +100°C, max. 70°C for water or methanol based fluids.
 - 40°F up to +212°F, max. 158°F for water or methanol based fluids.
- MAX. LENGTH**
 - 3,200 m / 10,499 ft
 - (for longer length requirements please contact Parker Hannifin)
- SPECIFICATION**
 - Meets or exceeds performance requirements of ISO 13628-5 / API 17E

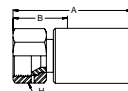
2390N-12V91

⊙		⊙		↻		↻		↻		[kg]		Collapse pressure		DF
mm	inch	mm	inch	MPa	psi	MPa	psi	mm	inch	kg/m	lbs/ft	MPa	psi	
19.6	3/4	29	1.140	35	5,075	140.0	20,300	250	9.8	0.9	0.6	6.4	928	4.0

JIC female swivel

Material: AISI 316 / 316Ti

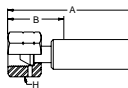
#	↻	A		B		H	↻	
		mm	inch	mm	inch		mm	MPa
1069X-12-12C	1 1/16 - 12 UNF	96.0	3.78	43.0	1.69	36	34.5	5,000



BSP female swivel (60° cone)

Material: AISI 316 / 316Ti

#	↻	A		B		H	↻	
		mm	inch	mm	inch		mm	MPa
1929X-12-12C	G 3/4	77.0	3.03	26.0	1.02	32	34.5	5,000



HIGH PRESSURE WIRE HOSES WITH PA11 CORE TUBE

3/4" 10,000 psi High pressure wire hose 2440N-12V91

**CONSTRUCTION**

Core tubeMethanol washed PA11
Pressure reinforcementHigh strength wire

CoverPA12
ColourBlack

TEMPERATURE RANGE

-40°C up to +100°C, max. 70°C for water or methanol based fluids.
-40°F up to +212°F, max. 158°F for water or methanol based fluids.

MAX. LENGTH

5,000 m / 16,404 ft
(for longer length requirements please contact Parker Hannifin)

SPECIFICATION

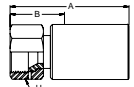
Meets or exceeds performance requirements of ISO 13628-5 / API 17E

2440N-12V91

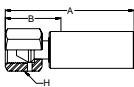
⊙		⊙		⊙		✂		↩		[]		Collapse pressure		DF
mm	inch	mm	inch	MPa	psi	MPa	psi	mm	inch	kg/m	lbs/ft	MPa	psi	36.0
19.9	3/4	30.2	1.190	69	10,000	250.0	36,250	250	9.8	1.46	0.98	10.6	1,537	36.0

JIC female swivel**Material: Special Stainless Steel Materials**

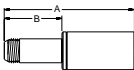
#	⚡	A		B		H	⊙	
		mm	inch	mm	inch		mm	MPa
106LX-12-12C4462	1 1/16 - 12 UNF	95.0	3.74	41.0	1.61	36	34.5	5,000
106LX-16-12C4462	1 5/16 - 12 UNF	99.0	3.9	43.0	1.69	41	69.0	10,000

**Type M female swivel****Material: Special Stainless Steel Materials**

#	⚡	A		B		H	⊙	
		mm	inch	mm	inch		mm	MPa
1AYLX-16-12C4462	1 5/16 - 12 UNF	92.0	3.62	38.0	1.49	41	103.5	15,000

**Medium pressure tube nipple****Material: Special Stainless Steel Materials**

#	⚡	A		B		⊙	
		mm	inch	mm	inch	MPa	psi
1Y2LX-12-12C4462	3/4 - 16 UNF - LH	160.0		100.0		137.9	20,000
1Y2LX-16-12C4462	1 - 14 UNS - LH	181.0	7.13	119.4	4.70	138.0	20,000



HIGH PRESSURE WIRE HOSES WITH PA11 CORE TUBE

**3/4" 12,500 psi High pressure wire hose
2640N-12V91**



C

- CONSTRUCTION**
 - Core tubeMethanol washed PA11
 - Pressure reinforcementHigh strength wire
 - CoverPA12
 - ColourBlack
- TEMPERATURE RANGE**
 - 40°C up to +100°C, max. 70°C for water or methanol based fluids.
 - 40°F up to +212°F, max. 158°F for water or methanol based fluids.
- MAX. LENGTH**
 - 3,800 m / 12,467 ft
 - (for longer length requirements please contact Parker Hannifin)
- SPECIFICATION**
 - Meets or exceeds performance requirements of ISO 13628-5 / API 17E

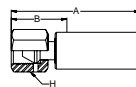
2640N-12V91

⊙		⊙		⊙		⊙		⊙		⊙		Collapse pressure		DF
mm	inch	mm	inch	MPa	psi	MPa	psi	mm	inch	kg/m	lbs/ft	MPa	psi	
19.8	3/4	33.2	1.310	86.5	12,500	345.0	50,000	350	13.8	2.16	1.45	12	1,740	4.0

Type M female swivel

Material: AISI 316 / 316Ti

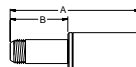
#	⊙	A		B		H	⊙	
		mm	inch	mm	inch		mm	MPa
1AYJX-16-12C	1 5/16 - 12 UNF	108.0	4.25	40.6	1.60	38	103.5	15,000



Medium pressure tube nipple

Material: AISI 316 / 316Ti

#	⊙	A		B		⊙	
		mm	inch	mm	inch	MPa	psi
1Y2JX-16-12C	1 - 14 UNS - LH	182.2	7.17	100.0	3.93	138.0	20,000



HIGH PRESSURE WIRE HOSES WITH PA11 CORE TUBE

1" 4,060 psi High pressure wire hose

2390N-16V91

**CONSTRUCTION**

Core tubeMethanol washed PA11
 Pressure reinforcementHigh strength wire

CoverPA12
 ColourBlack

TEMPERATURE RANGE

-40°C up to +100°C, max. 70°C for water or methanol based fluids.
 -40°F up to +212°F, max. 158°F for water or methanol based fluids.

MAX. LENGTH

5,000 m / 16,404 ft
 (for longer length requirements please contact Parker Hannifin)

SPECIFICATION

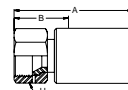
Meets or exceeds performance requirements of ISO 13628-5 / API 17E

2390N-16V91

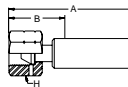
⊙		⊙		⊙		✂		↩		Ⓜ		Collapse pressure		DF
mm	inch	mm	inch	MPa	psi	MPa	psi	mm	inch	kg/m	lbs/ft	MPa	psi	
25.2	1	35	1.380	28	4,060	112.0	16,240	280	11.0	1.17	0.79	3.9	566	4.0

JIC female swivel**Material: AISI 316 / 316Ti**

#	⚡	A		B		Ⓜ	⊙	
		mm	inch	mm	inch		mm	MPa
1069X-16-16C	1 5/16 - 12 UNF	102.5	4.04	47.5	1.87	41	34.5	5,000

**BSP female swivel (60° cone)****Material: AISI 316 / 316Ti**

#	⚡	A		B		Ⓜ	⊙	
		mm	inch	mm	inch		mm	MPa
1929X-16-16C	G 1	93.5	3.68	40.5	1.59	41	34.5	5,000



HIGH PRESSURE WIRE HOSES WITH PA11 CORE TUBE

**1" 8,120 psi High pressure wire hose
2440N-16V91**



C

CONSTRUCTION

Core tubeMethanol washed PA11
Pressure reinforcementHigh strength wire

CoverPA12
ColourBlack

TEMPERATURE RANGE

-40°C up to +100°C, max. 70°C for water or methanol based fluids.
-40°F up to +212°F, max. 156°F for water or methanol based fluids.

MAX. LENGTH

4,000 m / 13,123 ft
(for longer length requirements please contact Parker Hannifin)

SPECIFICATION

Meets or exceeds performance requirements of ISO 13628-5 / API 17E

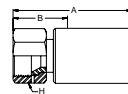
2440N-16V91

⊙		⊙		↻		↻		↻		Ⓜ		Collapse pressure		DF
mm	inch	mm	inch	MPa	psi	MPa	psi	mm	inch	kg/m	lbs/ft	MPa	psi	
25.2	1	37.2	1.460	56	8,120	225.0	32,625	300	11.8	2	1.33	6	870	4.0

JIC female swivel

Material: Special Stainless Steel Materials

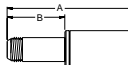
#	↻	A		B		H	↻	
		mm	inch	mm	inch		mm	MPa
106LX-16-16C4462	1 5/16 - 12 UNF	77.0	3.03	25.5	1.00	41	34.5	5,000



Medium pressure tube nipple

Material: Special Stainless Steel Materials

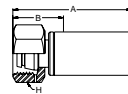
#	↻	A		B		↻	
		mm	inch	mm	inch	MPa	psi
1Y2LX-16-16C4462	1 - 14 UNS - LH	181.0	7.13	127.0	5.00	138.0	20,000



Metric female swivel heavy series with O-ring

Material: Special Stainless Steel Materials

#	↻	A		B		H	↻	
		mm	inch	mm	inch		mm	MPa
1C9LX-30-16C4462	M42x2	99.0	3.90	45.0	1.77	50	90.0	13,050



HIGH PRESSURE WIRE HOSES WITH PA11 CORE TUBE

1" 10,000 psi High pressure wire hose

2440N-16V91-10K

**CONSTRUCTION**

Core tubeMethanol washed PA12
 Pressure reinforcementHigh strength wire

CoverPA12
 ColourBlack

TEMPERATURE RANGE

-40°C up to +100°C, max. 70°C for water or methanol based fluids.
 -40°F up to +212°F, max. 158°F for water or methanol based fluids.

MAX. LENGTH

4,000 m / 13,123 ft
 (for longer length requirements please contact Parker Hannifin)

SPECIFICATION

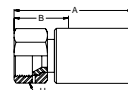
Meets or exceeds performance requirements of ISO 13628-5 / API 17E

2440N-16V91-10K

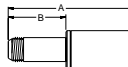
⊙		⊙		⊙		✂		↩		⊞		Collapse pressure		DF
mm	inch	mm	inch	MPa	psi	MPa	psi	mm	inch	kg/m	lbs/ft	MPa	psi	33.0
25.2	1	37.2	1.460	69	10,000	225.0	32,625	300	11.8	2	1.34	6	870	33.0

JIC female swivel**Material: Special Stainless Steel Materials**

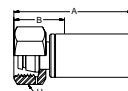
#	⌚	A		B		⊞	⊙	
		mm	inch	mm	inch		mm	MPa
106LX-16-16C4462	1 5/16 - 12 UNF	77.0	3.03	25.5	1.00	41	34.5	5,000

**Medium pressure tube nipple****Material: Special Stainless Steel Materials**

#	⌚	A		B		⊙	
		mm	inch	mm	inch	MPa	psi
1Y2LX-16-16C4462	1 - 14 UNS - LH	181.0	7.13	127.0	5.00	138.0	20,000

**Metric female swivel heavy series with O-ring****Material: Special Stainless Steel Materials**

#	⌚	A		B		⊞	⊙	
		mm	inch	mm	inch		mm	MPa
1C9LX-30-16C4462	M42x2	99.0	3.90	45.0	1.77	50	90.0	13,050



HIGH PRESSURE WIRE HOSES CHEMJEC

1/4" 6,250 psi High pressure **ChemJec** hose

2240M-04V38



CONSTRUCTION

Core tubeFluoropolymer based core tube
Pressure reinforcementHigh strength wire

CoverPA12
ColourGolden

TEMPERATURE RANGE

-40°C up to +125°C
 -40°F up to +257°F
 For higher temperature requirements please contact Polyflex Division

MAX. LENGTH

3,200 m / 10,499 ft
 (for longer length requirements please contact Parker Hannifin)

SPECIFICATION

Meets or exceeds performance requirements of ISO 13628-5 / API 17E

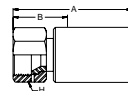
2240M-04V38

⊙		⊙		↻		✂		↷		⏚		Collapse pressure		DF
mm	inch	mm	inch	MPa	psi	MPa	psi	mm	inch	kg/m	lbs/ft	MPa	psi	
6.5	1/4	11.6	0.457	43	6,250	172.5	25,000	70	2.8	0.17	0.11	10.5	1,523	4.0

JIC female swivel

Material: AISI 316 / 316Ti

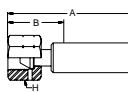
#	⌚	A		B		H	↻	
		mm	inch	mm	inch		mm	MPa
106RX-4-04C	7/16 - 20 UNF	52.0	2.05	23.0	0.91	17	43.0	6,250
106RX-6-04C	9/16 - 18 UNF	53.5	2.11	24.5	0.96	19	43.0	6,250



BSP female swivel (60° cone)

Material: AISI 316 / 316Ti

#	⌚	A		B		H	↻	
		mm	inch	mm	inch		mm	MPa
192RX-4-04C	G 1/4	50.5	1.99	22.0	0.87	17	43.0	6,250



1/4" 10,000 psi High pressure **ChemJec** hose 2340M-04V38



C

CONSTRUCTION

Core tube Fluoropolymer based core tube
Pressure reinforcement High strength wire

Cover PA12
Colour Golden

TEMPERATURE RANGE

-40°C up to +100°C
-40°F up to +212°F
For higher temperature requirements please contact Polyflex Division

MAX. LENGTH

5,000 m / 16,404 ft
(for longer length requirements please contact Parker Hannifin)

SPECIFICATION

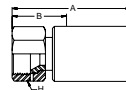
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2340M-04V38

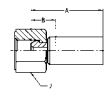
Ø		Ø		Ø		Ø		Ø		Ø		Collapse pressure		DF
mm	inch	mm	inch	MPa	psi	MPa	psi	mm	inch	kg/m	lbs/ft	MPa	psi	
6.4	1/4	12.5	0.490	69	10,000	276.0	40,000	70	2.8	0.23	0.15	20.5	2,973	4.0

JIC female swivel**Material: AISI 316 / 316Ti**

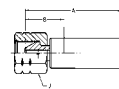
#	Ø	A	B	H	Ø
		mm	mm	mm	MPa / psi
1068X-4-04C	7/16 - 20 UNF	57.0	26.0	19	69.0 / 10,000
1068X-6-04C	9/16 - 18 UNF	55.0	24.0	19	103.5 / 15,000

**BSP female swivel (60° cone)****Material: AISI 316 / 316Ti**

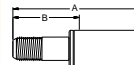
#	Ø	A	B	J	Ø
		mm	mm	mm	MPa / psi
1928X-4-04C	G 1/4	56.0	25.0	19	80.0 / 11,600

**Type M female swivel****Material: AISI 316 / 316Ti**

#	Ø	A		B		J	Ø
		mm	inch	mm	inch	mm	MPa / psi
1A98X-6-04C	9/16 - 18 UNF	66.0	2.6	33.0	1.30	19	103.5 / 15,000

**Medium pressure tube nipple****Material: AISI 316 / 316Ti**

#	Ø	A		B		Ø
		mm	inch	mm	inch	MPa / psi
1Y28X-6-04C	3/8 - 24 UNF - LH	120.0	4.72	87.0	3.43	138.0 / 20,000



HIGH PRESSURE WIRE HOSES CHEMJEC

**1/4" 10,000 psi High pressure *ChemJec* hose
2380M-04V38**



C

CONSTRUCTION

Core tubeFluoropolymer based core tube
Pressure reinforcementHigh strength wire

CoverPA12
ColourGolden

TEMPERATURE RANGE

-40°C up to +125°C
-40°F up to +257°F
For higher temperature requirements please contact Polyflex Division

MAX. LENGTH

3,000 m / 9,843 ft
(for longer length requirements please contact Parker Hannifin)

SPECIFICATION

Meets or exceeds performance requirements of ISO 13628-5 / API 17E

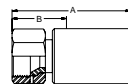
2380M-04V38

mm		inch		MPa		psi		mm		inch		MPa		psi	
6.4	1/4	13.4	0.530	69	10,000	276.0	40,000	230	9.1	0.27	0.18	40	5,800	4.0	

JIC female swivel

Material: AISI 316 / 316Ti

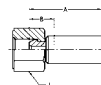
#		A		B			Collapse pressure	
		mm	inch	mm	inch		MPa	psi
1068X-4-04C	7/16 - 20 UNF	57.0	2.6	26.0	1.0	19	69.0	10,000
1068X-6-04C	9/16 - 18 UNF	55.0	2.4	24.0	1.0	19	103.5	15,000



BSP female swivel (60° cone)

Material: AISI 316 / 316Ti

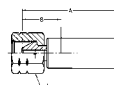
#		A		B			Collapse pressure	
		mm	inch	mm	inch		MPa	psi
1928X-4-04C	G 1/4	56.0	2.5	25.0	1.0	19	80.0	11,600



Type M female swivel

Material: AISI 316 / 316Ti

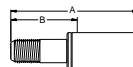
#		A		B			Collapse pressure	
		mm	inch	mm	inch		MPa	psi
1AY8X-6-04C	9/16 - 18 UNF	66.0	2.6	33.0	1.30	19	103.5	15,000



Medium pressure tube nipple

Material: AISI 316 / 316Ti

#		A		B		Collapse pressure	
		mm	inch	mm	inch	MPa	psi
1Y28X-6-04C	3/8 - 24 UNF - LH	120.0	4.72	87.0	3.43	138.0	20,000



1/4" 12,500 psi High pressure **ChemJec** hose 2440M-04V38

**CONSTRUCTION**

Core tube Fluoropolymer based core tube
Pressure reinforcement High strength wire

Cover PA12
Colour Golden

TEMPERATURE RANGE

-40°C up to +110°C
-40°F up to +230°F
For higher temperature requirements please contact Polyflex Division

MAX. LENGTH

3,750 m / 12,303 ft
(for longer length requirements please contact Parker Hannifin)

SPECIFICATION

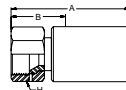
Meets or exceeds performance requirements of ISO 13628-5 / API 17E

2440M-04V38

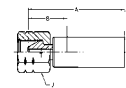
Ø		Ø		Ø		Ø		Ø		Ø		Collapse pressure		DF
mm	inch	mm	inch	MPa	psi	MPa	psi	mm	inch	kg/m	lbs/ft	MPa	psi	
6.5	1/4	13.1	0.520	86.5	12,500	345.0	50,000	150	5.9	0.31	0.21	31.8	4,495	4.0

JIC female swivel**Material: AISI 316 / 316Ti**

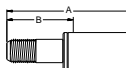
#	Ø	A		B		Ø	MPa	psi
		mm	inch	mm	inch	mm		
1068X-6-04C	9/16 - 18 UNF	55.0		24.0		19	103.5	15,000

**Type M female swivel****Material: AISI 316 / 316Ti**

#	Ø	A		B		Ø	MPa	psi
		mm	inch	mm	inch	mm		
1AY8X-6-04C	9/16 - 18 UNF	66.0	2.6	33.0	1.30	19	103.5	15,000

**Medium pressure tube nipple****Material: AISI 316 / 316Ti**

#	Ø	A		B		MPa	psi
		mm	inch	mm	inch		
1Y28X-6-04C	3/8 - 24 UNF - LH	120.0	4.72	87.0	3.43	138.0	20,000



HIGH PRESSURE WIRE HOSES CHEMJEC

**1/4" 15,000 psi High pressure *ChemJec* hose
2448M-04V38**



C	CONSTRUCTION	<p>Core tubeFluoropolymer based core tube</p> <p>Pressure reinforcementHigh strength wire</p> <p>CoverPA12</p> <p>ColourGolden</p>
	TEMPERATURE RANGE	<p>-40°C up to +125°C</p> <p>-40°F up to +257°F</p> <p>For higher temperature requirements please contact Polyflex Division</p>
	MAX. LENGTH	<p>2,750 m / 9,022 ft</p> <p>(for longer length requirements please contact Parker Hannifin)</p>
	SPECIFICATION	<p>Meets or exceeds performance requirements of ISO 13628-5 / API 17E</p>

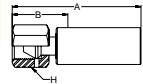
2448M-04V38

⊙		⊙		⊙		⊙		↶		⊙		Collapse pressure		DF
mm	inch	mm	inch	MPa	psi	MPa	psi	mm	inch	kg/m	lbs/ft	MPa	psi	
6.5	1/4	13.7	0.540	103.5	15,000	414.0	60,000	150	5.9	0.38	0.26	45.1	6,540	4.0

Type M female swivel

Material: Special Stainless Steel Materials

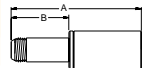
#	⊙	A		B		J	⊙	
		mm	inch	mm	inch		mm	MPa
1AYUX-6-04C	9/16 - 18 UNF	86.0	3.39	34.0	1.34	19	103.5	15,000



Medium pressure tube nipple

Material: Special Stainless Steel Materials

#	⊙	A		B		⊙	
		mm	inch	mm	inch	MPa	psi
1Y2UX-6-04C	3/8 - 24 UNF - LH	131.5	5.18	63.5	2.50	138.0	20,000



5/16" 8,700 psi High pressure **ChemJec** hose 2380M-05V38

**CONSTRUCTION**

Core tubeFluoropolymer based core tube
Pressure reinforcementHigh strength wire

CoverPA12
ColourGolden

TEMPERATURE RANGE

-40°C up to +125°C
-40°F up to +257°F
For higher temperature requirements please contact Polyflex Division

MAX. LENGTH

2,500 m / 8,202 ft
(for longer length requirements please contact Parker Hannifin)

SPECIFICATION

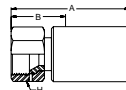
Meets or exceeds performance requirements of ISO 13628-5 / API 17E

2380M-05V38

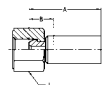
												Collapse pressure		DF
mm	inch	mm	inch	MPa	psi	MPa	psi	mm	inch	kg/m	lbs/ft	MPa	psi	
8.3	5/16	15.8	0.620	60	8,700	240.0	34,800	90	3.5	0.35	0.24	16.7	2,421	4.0

JIC female swivel**Material: AISI 316 / 316Ti**

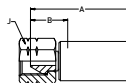
#		A		B				
		mm	inch	mm	inch		mm	MPa
106LX-6-05C	9/16 - 18 UNF	78.0	3.07	33.0	1.30	19	69.0	10,000

**BSP female swivel (60° cone)****Material: AISI 316 / 316Ti**

#		A	B			
		mm	mm		mm	MPa
192LX-6-05C	G 3/8	69.0	25.0	27	150.0	21,750

**Type M female swivel****Material: AISI 316 / 316Ti**

#		A	B			
		mm	mm		mm	MPa
1AYLX-8-05C	3/4 - 16 UNF	70.0	31.0	27	150.0	21,750



HIGH PRESSURE WIRE HOSES CHEMJEC

**5/16" 10,000 psi High pressure *ChemJec* hose
2440M-05V38**



C

CONSTRUCTION	<p>Core tubeFluoropolymer based core tube</p> <p>Pressure reinforcementHigh strength wire</p> <p>CoverPA12</p> <p>ColourGolden</p>
TEMPERATURE RANGE	<p>-40°C up to +125°C</p> <p>-40°F up to +257°F</p> <p>For higher temperature requirements please contact Polyflex Division</p>
MAX. LENGTH	<p>4,000 m / 13,123 ft</p> <p>(for longer length requirements please contact Parker Hannifin)</p>
SPECIFICATION	<p>Meets or exceeds performance requirements of ISO 13628-5 / API 17E</p>

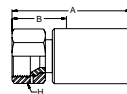
2440M-05V38

												Collapse pressure		DF
mm	inch	mm	inch	MPa	psi	MPa	psi	mm	inch	kg/m	lbs/ft	MPa	psi	
8.3	5/16	16.2	0.637	69	10,000	276.0	40,000	175	6.9	0.49	0.33	26	3,771	4.0

JIC female swivel

Material: AISI 316 / 316Ti

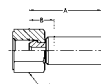
#		A		B				
		mm	inch	mm	inch		mm	MPa
106LX-6-05C	9/16 - 18 UNF	78.0	3.07	33.0	1.30		69.0	10,000



BSP female swivel (60° cone)

Material: AISI 316 / 316Ti

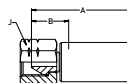
#		A	B			
		mm	mm		MPa	psi
192LX-6-05C	G 3/8	69.0	25.0	27	150.0	21,750



Type M female swivel

Material: AISI 316 / 316Ti

#		A	B			
		mm	mm		MPa	psi
1AYLX-8-05C	3/4 - 16 UNF	70.0	31.0	27	150.0	21,750



5/16" 15,000 psi High pressure **ChemJec** hose 2448M-05V38

**CONSTRUCTION**

Core tubeFluoropolymer based core tube
Pressure reinforcementHigh strength wire

CoverPA12
ColourGolden

TEMPERATURE RANGE

-40°C up to +100°C
 -40°F up to +212°F
 For higher temperature requirements please contact Polyflex Division

MAX. LENGTH

2,500 m / 8,202 ft
 (for longer length requirements please contact Parker Hannifin)

SPECIFICATION

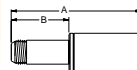
Meets or exceeds performance requirements of ISO 13628-5 / API 17E

2448M-05V38

Ø		Ø		Ø		Ø		Ø		Ø		Collapse pressure		DF
mm	inch	mm	inch	MPa	psi	MPa	psi	mm	inch	kg/m	lbs/ft	MPa	psi	
8.5	5/16	16.2	0.640	103.5	15,000	414.0	60,000	175	6.9	0.53	0.36	32.6	4,727	4.0

Medium pressure tube nipple**Material: Special Stainless Steel Materials**

#	Ø	A		B		Ø	
		mm	inch	mm	inch	MPa	psi
1Y2UX-6-05-INC625	3/8 - 24 UNF - LH	125.4	4.94	63.5	2.50	138.0	20,000



HIGH PRESSURE WIRE HOSES CHEMJEC

**3/8" 6,250 psi High pressure *ChemJec* hose
2370M-06V38**



C

CONSTRUCTION	<p>Core tubeFluoropolymer based core tube</p> <p>Pressure reinforcementHigh strength wire, synthetic fibre</p> <p>CoverPA12</p> <p>ColourGolden</p>
TEMPERATURE RANGE	<p>-40°C up to +125°C</p> <p>-40°F up to +257°F</p> <p>For higher temperature requirements please contact Polyflex Division</p>
MAX. LENGTH	<p>2,200 m / 7,218 ft</p> <p>(for longer length requirements please contact Parker Hannifin)</p>
SPECIFICATION	<p>Meets or exceeds performance requirements of ISO 13628-5 / API 17E</p>

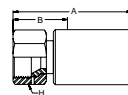
2370M-06V38

⊙		⊙		↻		✂		↷		Ⓜ		Collapse pressure		DF
mm	inch	mm	inch	MPa	psi	MPa	psi	mm	inch	kg/m	lbs/ft	MPa	psi	
9.9	3/8	16.5	0.650	43	6,250	172.5	25,000	120	4.7	0.33	0.22	15	2,175	4.0

JIC female swivel

Material: AISI 316 / 316Ti

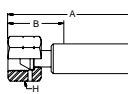
#	⚡	A		B		Ⓜ	↻		
		mm	inch	mm	inch			mm	MPa
106RX-6-06C	9/16 - 18 UNF	58.0	2.28	28.0	1.10	19	43.0	6,250	



BSP female swivel (60° cone)

Material: AISI 316 / 316Ti

#	⚡	A		B		Ⓜ	↻		
		mm	inch	mm	inch			mm	MPa
192RX-6-06C	G 3/8	55.0	2.17	25.0	0.98	22	43.0	6,250	



3/8" 10,000 psi High pressure **ChemJec** hose 2440M-06V38

**CONSTRUCTION**

Core tubeFluoropolymer based core tube
Pressure reinforcementHigh strength wire

CoverPA12
ColourGolden

TEMPERATURE RANGE

-40°C up to +110°C
 -40°F up to +230°F
 For higher temperature requirements please contact Polyflex Division

MAX. LENGTH

2,600 m / 8,530 ft
 (for longer length requirements please contact Parker Hannifin)

SPECIFICATION

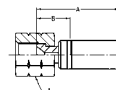
Meets or exceeds performance requirements of ISO 13628-5 / API 17E

2440M-06V38

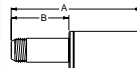
												Collapse pressure		DF
mm	inch	mm	inch	MPa	psi	MPa	psi	mm	inch	kg/m	lbs/ft	MPa	psi	
9.9	3/8	19.5	0.770	69	10,000	276.0	40,000	190	7.5	0.73	0.49	30	4,350	4.0

JIC female swivel**Material: Special Stainless Steel Materials**

#		A		B				
		mm	inch	mm	inch		mm	MPa
106LX-6-06C-M-Subsea	9/16 - 18 UNF	87.0	3.43	34.0	1.34	19	69.0	10,000
106LX-8-06C-M-Subsea	3/4 - 16 UNF	87.0	3.43	34.0	1.34	24	69.0	10,000

**Medium pressure tube nipple****Material: Special Stainless Steel Materials**

#		A		B			
		mm	inch	mm	inch	MPa	psi
1Y2LX-9-06C-M-SUBSEA	9/16 - 18 UNF - LH	158.0	6.22	105.0	4.13	138.0	20,000



HIGH PRESSURE WIRE HOSES CHEMJEC

**3/8" 15,000 psi High pressure *ChemJec* hose
2448M-06V38**



C

- CONSTRUCTION**
 - Core tubeFluoropolymer based core tube
 - Pressure reinforcementHigh strength wire
 - CoverPA12
 - ColourGolden
- TEMPERATURE RANGE**
 - 40°C up to +100°C
 - 40°F up to +212°F
 - For higher temperature requirements please contact Polyflex Division
- MAX. LENGTH**
 - 4,000 m / 13,123 ft
 - (for longer length requirements please contact Parker Hannifin)
- SPECIFICATION**
 - Meets or exceeds performance requirements of ISO 13628-5 / API 17E

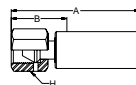
2448M-06V38

Ø		Ø		Ø		Ø		Ø		Ø		Collapse pressure		DF
mm	inch	mm	inch	MPa	psi	MPa	psi	mm	inch	kg/m	lbs/ft	MPa	psi	
10.2	3/8	20.1	0.800	103.5	15,000	414.0	60,000	200	7.9	0.83	0.56	35.3	5,119	4.0

Type M female swivel

Material: Special Stainless Steel Materials

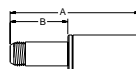
#	Ø	A		B		J	Ø	
		mm	inch	mm	inch		mm	MPa
1AYUX-8-06C	3/4 - 16 UNF	93.5	3.68	38.5	1.52	27	103.5	15,000



Medium pressure tube nipple

Material: Special Stainless Steel Materials

#	Ø	A		B		Ø	
		mm	inch	mm	inch	MPa	psi
1Y2UX-9-06C	9/16 - 18 UNF - LH	151.0	5.94	72.0	2.83	138.0	20,000



1/2" 10,000 psi High pressure **ChemJec** hose 2440M-08V38

**CONSTRUCTION**

Core tube Fluoropolymer based core tube
Pressure reinforcement High strength wire

Cover PA12
Colour Golden

TEMPERATURE RANGE

-40°C up to +100°C
 -40°F up to +212°F
 For higher temperature requirements please contact Polyflex Division

MAX. LENGTH

4,500 m / 14,764 ft
 (for longer length requirements please contact Parker Hannifin)

SPECIFICATION

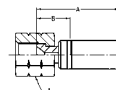
Meets or exceeds performance requirements of ISO 13628-5 / API 17E

2440M-08V38

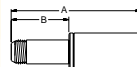
Ø		Ø		Ø		Ø		Ø		Ø		Collapse pressure		DF
mm	inch	mm	inch	MPa	psi	MPa	psi	mm	inch	kg/m	lbs/ft	MPa	psi	
12.9	1/2	22.7	0.890	69	10,000	276.0	40,000	200	7.9	0.94	0.63	25.2	3,654	4.0

JIC female swivel**Material: Special Stainless Steel Materials**

#	Ø	A		B		J	Ø	
		mm	inch	mm	inch			mm
106LX-8-08C-M-Subsea	3/4 - 16 UNF	100.0	3.94	35.0	1.38	24	69.0	10,000

**Medium pressure tube nipple****Material: Special Stainless Steel Materials**

#	Ø	A		B		MPa	psi
		mm	inch	mm	inch		
1Y2LX-12-08C-M-SUBSEA	3/4 - 16 UNF - LH	184.2	7.25	119.4	4.70	138.0	20,000



HIGH PRESSURE WIRE HOSES CHEMJEC

**3/4" 5,000 psi High pressure *ChemJec* hose
2390M-12V38**



C

- CONSTRUCTION**
 - Core tubeFluoropolymer based core tube
 - Pressure reinforcementHigh strength wire
 - CoverPA12
 - ColourGolden
- TEMPERATURE RANGE**
 - 40°C up to +125°C
 - 40°F up to +257°F
 - For higher temperature requirements please contact Polyflex Division
- MAX. LENGTH**
 - 2,300 m / 7,546 ft
 - (for longer length requirements please contact Parker Hannifin)
- SPECIFICATION**
 - Meets or exceeds performance requirements of ISO 13628-5 / API 17E

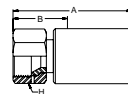
2390M-12V38

⊙		⊙		↻		✂		↷		Ⓜ		Collapse pressure		DF
mm	inch	mm	inch	MPa	psi	MPa	psi	mm	inch	kg/m	lbs/ft	MPa	psi	
20	3/4	29	1.140	34.5	5,000	138.0	20,000	250	9.8	0.9	0.6	7.5	1,088	4.0

JIC female swivel

Material: AISI 316 / 316Ti

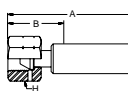
#	⚡	A		B		Ⓜ	↻				
		mm	inch	mm	inch			mm	MPa	psi	
1069X-12-12C	1 1/16 - 12 UNF	96.0	3.78	43.0	1.69	36	34.5	5,000			



BSP female swivel (60° cone)

Material: AISI 316 / 316Ti

#	⚡	A		B		Ⓜ	↻				
		mm	inch	mm	inch			mm	MPa	psi	
1929X-12-12C	G 3/4	77.0	3.03	26.0	1.02	32	34.5	5,000			



3/4" 10,000 psi High pressure **ChemJec** hose 2440M-12V38

**CONSTRUCTION**

Core tube Fluoropolymer based core tube
Pressure reinforcement High strength wire

Cover PA12
Colour Golden

TEMPERATURE RANGE

-40°C up to +110°C
 -40°F up to +230°F
 For higher temperature requirements please contact Polyflex Division

MAX. LENGTH

2,300 m / 7,546 ft
 (for longer length requirements please contact Parker Hannifin)

SPECIFICATION

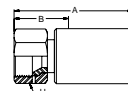
Meets or exceeds performance requirements of ISO 13628-5 / API 17E

2440M-12V38

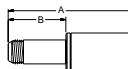
mm		inch		MPa		psi		mm		inch		kg/m		lbs/ft		Collapse pressure		DF
19.8	3/4	30.2	1.190	69	10,000	250.0	36,250	250	9.8	1.46	0.98	11	1,595	36.0				

JIC female swivel**Material: Special Stainless Steel Materials**

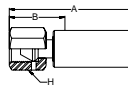
#	mm	inch	A		B		mm	MPa	
			mm	inch	mm	inch		MPa	psi
106LX-16-12C4462	1 5/16 - 12 UNF	99.0	3.9	43.0	1.69	41	69.0	10,000	

**Medium pressure tube nipple****Material: Special Stainless Steel Materials**

#	mm	inch	A		B		MPa	psi
			mm	inch	mm	inch		
1Y2LX-12-12C4462	3/4 - 16 UNF - LH	160.0		100.0		137.9	20,000	
1Y2LX-16-12C4462	1 - 14 UNS - LH	181.0	7.13	119.4	4.70	138.0	20,000	

**Type M female swivel****Material: Special Stainless Steel Materials**

#	mm	inch	A		B		mm	MPa	
			mm	inch	mm	inch		MPa	psi
1AYLX-16-12C4462	1 5/16 - 12 UNF	92.0	3.62	38.0	1.49	41	103.5	15,000	



HIGH PRESSURE WIRE HOSES CHEMJEC

**1" 4,060 psi High pressure *ChemJec* hose
2390M-16V38**



C

CONSTRUCTION	<p>Core tubeFluoropolymer based core tube</p> <p>Pressure reinforcementHigh strength wire</p> <p>CoverPA12</p> <p>ColourGolden</p>
TEMPERATURE RANGE	<p>-40°C up to +100°C</p> <p>-40°F up to +212°F</p> <p>For higher temperature requirements please contact Polyflex Division</p>
MAX. LENGTH	<p>1,500 m / 4,921 ft</p> <p>(for longer length requirements please contact Parker Hannifin)</p>
SPECIFICATION	<p>Meets or exceeds performance requirements of ISO 13628-5 / API 17E</p>

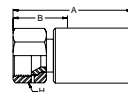
2390M-16V38

⊙		⊙		↻		✂		↷		Ⓜ		Collapse pressure		DF
mm	inch	mm	inch	MPa	psi	MPa	psi	mm	inch	kg/m	lbs/ft	MPa	psi	
25.3	1	35	1.380	28	4,000	112.0	16,000	280	11.0	1.19	0.79	3.5	505	4.0

JIC female swivel

Material: AISI 316 / 316Ti

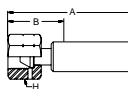
#	⚡	A		B		Ⓜ	↻		
		mm	inch	mm	inch			mm	MPa
1069X-16-16C	1 5/16 - 12 UNF	102.5	4.04	47.5	1.87	41	34.5	5,000	



BSP female swivel (60° cone)

Material: AISI 316 / 316Ti

#	⚡	A		B		Ⓜ	↻		
		mm	inch	mm	inch			mm	MPa
1929X-16-16C	G 1	93.5	3.68	40.5	1.59	41	34.5	5,000	



1" 5,000 psi High pressure **ChemJec** hose

2440M-16V38-5K

**CONSTRUCTION**

Core tube Fluoropolymer based core tube
Pressure reinforcement High strength wire

Cover PA12
Colour Golden

TEMPERATURE RANGE

-40°C up to +125°C
 -40°F up to +257°F
 For higher temperature requirements please contact Polyflex Division

MAX. LENGTH

2,000 m / 6,562 ft
 (for longer length requirements please contact Parker Hannifin)

SPECIFICATION

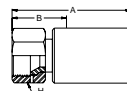
Meets or exceeds performance requirements of ISO 13628-5 / API 17E

2440M-16V38-5K

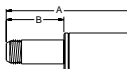
Ø		Ø		↗		↗		↗		↗		Collapse pressure		DF
mm	inch	mm	inch	MPa	psi	MPa	psi	mm	inch	kg/m	lbs/ft	MPa	psi	
25.2	1	37.2	1.460	34.5	5,000	225.0	32,625	300	11.8	2.05	1.36	6.5	943	65.0

JIC female swivel**Material: Special Stainless Steel Materials**

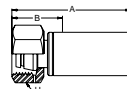
#	↗	A		B		H	↗	
		mm	inch	mm	inch		mm	MPa
106LX-16-16C4462	1 5/16 - 12 UNF	77.0	3.03	25.5	1.00	41	34.5	5,000

**Medium pressure tube nipple****Material: Special Stainless Steel Materials**

#	↗	A		B		↗	
		mm	inch	mm	inch	MPa	psi
1Y2LX-16-16C4462	1 - 14 UNS - LH	181.0	7.13	127.0	5.00	138.0	20,000

**Metric female swivel heavy series with O-ring****Material: Special Stainless Steel Materials**

#	↗	A		B		H	↗	
		mm	inch	mm	inch		mm	MPa
1C9LX-30-16C4462	M42x2	99.0	3.90	45.0	1.77	50	90.0	13,050



20,000PSI WIRE HOSE NAUTILUS20

1/4" 20k Subsea Umbilical Hose

C 2448P-04V30



CONSTRUCTION	Core tubeHigh performance polymer Pressure reinforcementHigh strength wire CoverPA12 ColourBlack
TEMPERATURE RANGE	-40°C up to +125°C -40°F up to +257°F
MAX. LENGTH	3,500 m / 11,500 ft (for longer length requirements please contact Parker Hannifin)
SPECIFICATION	Meets or exceeds performance requirements of ISO 13628-5 / API 17E

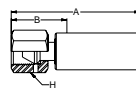
2448P-04V30

⊙		⊙		⊙		⊙		⊙		⊙		Collapse pressure		DF
mm	inch	mm	inch	MPa	psi	MPa	psi	mm	inch	kg/m	lbs/ft	MPa	psi	
6.4	1/4	13	0.512	138	20,000	414.0	60,000	150	5.2	0,33	0.22	60	8,700	3.0

Type M female swivel

Material: Special Stainless Steel Materials

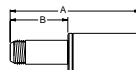
#	⊙	A		B		J	⊙		
		mm	inch	mm	inch			MPa	psi
1AYUX-6-04C	9/16 - 18 UNF	86.0	3.39	34.0	1.34	19	103.5	15,000	



Medium pressure tube nipple

Material: Special Stainless Steel Materials

#	⊙	A		B		⊙	
		mm	inch	mm	inch	MPa	psi
1Y2UX-6-04C	3/8 - 24 UNF - LH	131.5	5.18	63.5	2.50	138.0	20,000



1/2" 20k Subsea Umbilical Hose 2448P-08V30

**CONSTRUCTION**

Core tube High performance polymer
Pressure reinforcement High strength wire

Cover PA12
Colour Black

TEMPERATURE RANGE

-40°C up to +125°C
-40°F up to +257°F

MAX. LENGTH

3,500 m / 11,500 ft
(for longer length requirements please contact Parker Hannifin)

SPECIFICATION

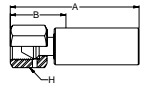
Meets or exceeds performance requirements of ISO 13628-5 / API 17E

2448P-08V30

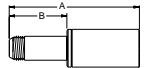
Ø		Ø		↗		↗		↘		⊞		Collapse pressure	
mm	inch	mm	inch	MPa	psi	MPa	psi	mm	inch	kg/m	lbs/ft	MPa	psi
13	1/2	23.2	0.911	138	20,000	414.0	60,000	300	11.8	1,15	0.77	50,5	7,320

Type M female swivel**Material: Special Stainless Steel Materials**

#	↗	A		B		⊞	↗		
		mm	inch	mm	inch			MPa	psi
1AY5X-11-08C-M-Subsea	1 - 12 UNF	111.0	4.37	56.0	2.20	32	103.5	15,000	

**Medium pressure tube nipple****Material: Special Stainless Steel Materials**

#	↗	A		B		↗		
		mm	inch	mm	inch		MPa	psi
1Y25X-9-08C-M-Subsea	9/16 - 18 UNF - LH	164.2	6.46	72.0	2.83	138.0	20,000	
1Y25X-12-08C-M-Subsea	3/4 - 16 UNF - LH	174.2	6.86	84.0	3.31	138.0	20,000	



CHAPTER D

SUBSEA BOP HOSES

High pressure subsea BOP hoses D-4

D

OVERVIEW

SUBSEA BOP HOSES

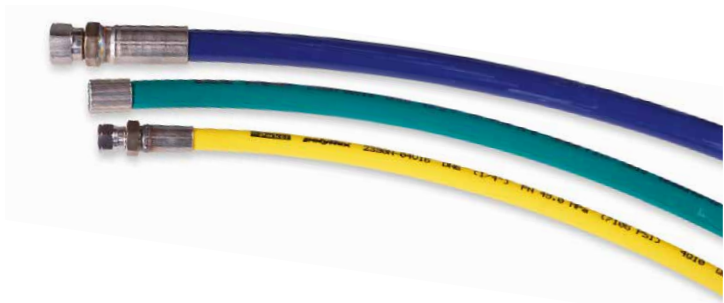
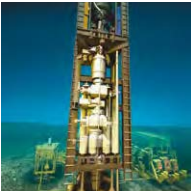
polyflex BOP hoses are in use since many years. Both on subsea BOPs for hydraulic applications and as hot-lines in long continuous lengths up to 4,200m for MUX system applications.

D Crimp your own assembly: BOP hose 2390N and suitable fittings are available as bulk hose and single components. Hose and E3 / E4 fitting serie can easily be crimped with the Parker ParKrimp system – also on site on rigs or vessels.



APPLICATION

- Hydraulic lines on Subsea BOPs
- Hot lines from vessel or rig to Subsea BOP
- General hydraulic applications



FEATURES

- Suitable for Parker ParKrimp System
- Very compact hose construction
- Long continuous lengths up to 4,200 m without splicing
- Seamless Polyamide core tube of high chemical resistance
- Seawater resistant cover material in various colors
- Improved collapse resistance



BENEFITS

- Fast and easy hose assembly manufacturing
- Saves space on drum and vessel
- Suitable for deep sea applications
- One continuous line down to sea bed without splices or other connections
- Suitable for most hydraulic fluids



HIGH PRESSURE SUBSEA BOP HOSES

1/4" 7,105 psi Subsea BOP hose 2390N-04Vxy



CONSTRUCTION

Core tube Polyamide
 Pressure reinforcement High strength wire

Cover Polyurethane
 Colour V10: black; V12: blue; V13: green; V16: yellow

TEMPERATURE RANGE

-40°C up to +100°C, max. 70°C for water or methanol based fluids.

MAX. LENGTH

3,200 m / 10,499 ft

CERTIFICATES

ABS Product Design Assessment (PDA) Certificate 22-2226082-PDA

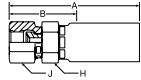
2390N-04Vxy

mm		inch		MPa		psi		mm		inch		MPa		psi	
6.4	1/4	13.4	0.530	49	7,105	196.0	28,420	70	2.8	0.25	0.17	13.9	2,015	4.0	

JIC female swivel

Material: AISI 316 / 316Ti

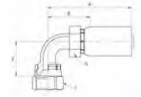
#	7/16 - 20 UNF	A		B		H	J	Collapse pressure	
		mm	inch	mm	inch			MPa	psi
106E3-4-4C	7/16 - 20 UNF	62.6	2.46	37.0	1.46	5/8"	5/8"	34.5	5,000
106E3-6-4C	9/16 - 18 UNF	64.8	2.55	39.0	1.54	5/8"	3/4"	34.5	5,000



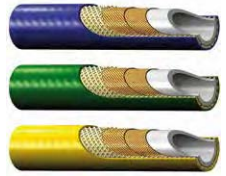
JIC female swivel 90°

Material: AISI 316 / 316Ti

#	7/16 - 20 UNF	A		B		J	Collapse pressure	
		mm	inch	mm	inch		MPa	psi
139E3-4-4C	7/16 - 20 UNF	61.2	2.41	35.0	1.38	5/8"	34.5	5,000
139E3-6-4C	9/16 - 18 UNF	61.2	2.41	35.0	1.38	3/4"	34.5	5,000



**3/8" 6,450 psi Subsea BOP hose
2390N-06Vxy**



CONSTRUCTION

Core tube Polyamide
Pressure reinforcement High strength wire

Cover Polyurethane
Colour V10: black; V12: blue; V13: green; V16: yellow

TEMPERATURE RANGE

-40°C up to +100°C, max. 70°C for water or methanol based fluids.

MAX. LENGTH

3,500 m / 11,483 ft

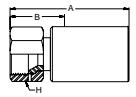
2390N-06Vxy

Ø		Ø		Ø		Ø		Ø		Ø		Collapse pressure		DF
mm	inch	mm	inch	MPa	psi	MPa	psi	mm	inch	kg/m	lbs/ft	MPa	psi	
9.8	3/8	18.1	0.710	44.5	6,450	178.0	25,800	120	4.7	0.41	0.28	15	2,175	4.0

JIC female swivel

Material: AISI 316 / 316Ti

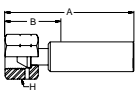
#	Ø	A		B		H	Ø	
		mm	inch	mm	inch		mm	psi
1069X-8-06C	3/4 - 16 UNF	74.0	2.91	31.0	1.22	24	69.0	10,000



BSP female swivel (60° cone)

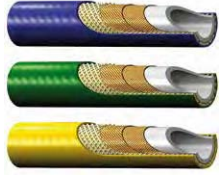
Material: AISI 316 / 316Ti

#	Ø	A		B		H	Ø	
		mm	inch	mm	inch		mm	psi
1929X-6-06C	G 3/8	63.5	2.5	24.5	0.96	22	69.0	10,000



HIGH PRESSURE SUBSEA BOP HOSES

**1/2" 6,020 psi Subsea BOP hose
2390N-08Vxy**



CONSTRUCTION

Core tube Polyamide
Pressure reinforcement High strength wire

Cover Polyurethane
Colour V10: black; V12: blue; V13: green; V16: yellow

TEMPERATURE RANGE

-40°C up to +100°C, max. 70°C for water or methanol based fluids.

MAX. LENGTH

5,600 m / 18,373 ft

CERTIFICATES

ABS Product Design Assessment (PDA) Certificate 22-2226082-PDA

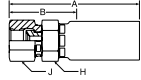
2390N-08Vxy

⊙		⊙		⊙		⊙		⊙		⊙		Collapse pressure		DF
mm	inch	mm	inch	MPa	psi	MPa	psi	mm	inch	kg/m	lbs/ft	MPa	psi	
12.9	1/2	21.1	0.833	41.5	6,020	166.0	24,080	150	5.9	0.57	0.38	7.8	1,131	4.0

JIC female swivel

Material: AISI 316 / 316Ti

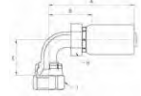
#	⊙	A		B		⊙	⊙	⊙	
		mm	inch	mm	inch	inch	inch	MPa	psi
106E3-8-8C	3/4 - 16 UNF	90.3	3.56	47.0	1.85	15/16"	15/16"	34.5	5,000



JIC female swivel 90°

Material: AISI 316 / 316Ti

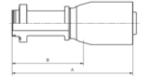
#	⊙	A		B		⊙	⊙	⊙	
		mm	inch	mm	inch	inch	MPa	psi	
139E3-8-8C	3/4 - 16 UNF	104.5	4.11	62.0	2.44	15/16"	34.5	5,000	



Dual Seal Straight

Material: AISI 316 / 316Ti

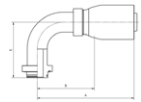
#	A		B		⊙	
	mm	inch	mm	inch	MPa	psi
19GE3-8-8C	82.9	3.26	40.0	1.57	34.5	5,000



Dual Seal 90°

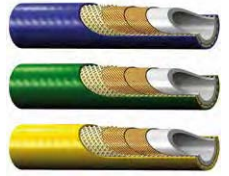
Material: AISI 316 / 316Ti

#	A		B		⊙	
	mm	inch	mm	inch	MPa	psi
19WE3-8-8C	104.5	4.11	62.0	2.44	34.5	5,000
19WE3-16-8C	104.5	4.11	62.0	2.44	34.5	5,000



HIGH PRESSURE SUBSEA BOP HOSES

**3/4" 5,075 psi Subsea BOP hose
2390N-12Vxy**



CONSTRUCTION

Core tube Polyamide
Pressure reinforcement High strength wire

Cover Polyurethane
Colour V10: black; V12: blue; V13: green; V16: yellow

TEMPERATURE RANGE

-40°C up to +100°C, max. 70°C for water or methanol based fluids.

MAX. LENGTH

3,200 m / 10,500 ft

CERTIFICATES

ABS Product Design Assessment (PDA) Certificate 22-2226082-PDA

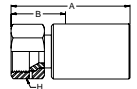
2390N-12Vxy

⊙		⊙		↻		📄		📐		📏		📏		DF
mm	inch	mm	inch	MPa	psi	MPa	psi	mm	inch	kg/m	lbs/ft	MPa	psi	
19.6	3/4	28.9	1.140	35	5,075	140.0	20,300	300	11.8	0.9	0.61	5.3	768	4.0

JIC female swivel

Material: AISI 316 / 316Ti

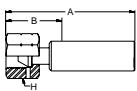
#	📄	A		B		⊙	↻	
		mm	inch	mm	inch			mm
1069X-12-12C	1 1/16 - 12 UNF	96.0	3.78	43.0	1.69	36	34.5	5,000



BSP female swivel (60° cone)

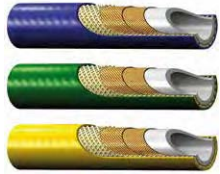
Material: AISI 316 / 316Ti

#	📄	A		B		⊙	↻	
		mm	inch	mm	inch			mm
1929X-12-12C	G 3/4	77.0	3.03	26.0	1.02	32	34.5	5,000



HIGH PRESSURE SUBSEA BOP HOSES

**1" 4,060 psi Subsea BOP hose
2390N-16Vxy**



CONSTRUCTION

Core tube Polyamide
Pressure reinforcement High strength wire

Cover Polyurethane
Colour V10: black; V12: blue; V13: green; V16: yellow

TEMPERATURE RANGE

-40°C up to +100°C, max. 70°C for water or methanol based fluids.

MAX. LENGTH

5,000 m / 16,404 ft

CERTIFICATES

ABS Product Design Assessment (PDA) Certificate 22-2226082-PDA

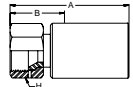
2390N-16Vxy

⊙		⊙		⊙		⊙		⊙		⊙		Collapse pressure		DF
mm	inch	mm	inch	MPa	psi	MPa	psi	mm	inch	kg/m	lbs/ft	MPa	psi	
25.2	1	34.9	1.374	28	4,060	112.0	16,240	280	11.0	1.17	0.78	3.9	565	4.0

JIC female swivel

Material: AISI 316 / 316Ti

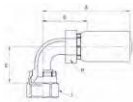
#	⊙	A		B		⊙	⊙	⊙	
		mm	inch	mm	inch	mm	mm	MPa	psi
106E4-16-16C	1 5/16 - 12 UN	121.0	4.76	60.0	2.36	1 1/2"	1 5/8"	34.5	5,000



JIC female swivel 90°

Material: AISI 316 / 316Ti

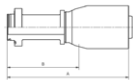
#	⊙	A		B		⊙	⊙	⊙	
		mm	inch	mm	inch	inch	MPa	psi	
139E4-16-16C-411	1 5/16 - 12 UN	144.6	5.69	84.0	3.31	1 5/8"	34.5	5,000	



Dual Seal straight

Material: AISI 316 / 316Ti

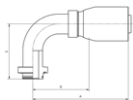
#	A		B		⊙	
	mm	inch	mm	inch	MPa	psi
19GE4-16-16C	110.6	4.35	50.8	2.00	34.5	5,000
19GE4-24-16C	113.8	4.48	54.0	2.13	34.5	5,000



Dual Seal 90°

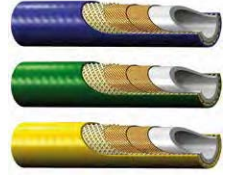
Material: AISI 316 / 316Ti

#	A		B		⊙	
	mm	inch	mm	inch	MPa	psi
19WE4-16-16C	144.5	5.69	84.0	3.31	34.5	5,000
19WE4-24-16C	144.5	5.69	84.0	3.31	34.5	5,000



HIGH PRESSURE SUBSEA BOP HOSES

**1" 5,510 psi Subsea BOP hose
2380N-16Vxy**



CONSTRUCTION

Core tube Polyamide
Pressure reinforcement High strength wire

Cover Polyurethane
Colour V10: black; V12: blue; V13: green; V16: yellow

TEMPERATURE RANGE

-40°C up to +100°C, max. 70°C for water or methanol based fluids.

MAX. LENGTH

4,000 m / 13,123 ft

CERTIFICATES

ABS Product Design Assessment (PDA) Certificate 22-2226082-PDA

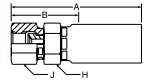
2380N-16Vxy

⊙		⊙		⌚		📄		↩		📏		📉		DF
mm	inch	mm	inch	MPa	psi	MPa	psi	mm	inch	kg/m	lbs/ft	MPa	psi	
25.2	1	36.8	1.450	34.5	5,000	138.0	20,000	290	11.4	1.49	1	4.8	696	4.0

JIC female swivel

Material: AISI 316 / 316Ti

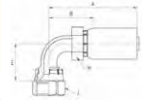
#	📄	A		B		⊙	⊙	⌚	
		mm	inch	mm	inch	inch	inch	MPa	psi
106E4-16-16C	1 5/16 - 12 UN	121.0	4.76	60.0	2.36	1 1/2"	1 5/8"	34.5	5,000



JIC female swivel 90°

Material: AISI 316 / 316Ti

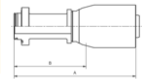
#	📄	A		B		⊙	⊙	⌚	
		mm	inch	mm	inch	inch	inch	MPa	psi
139E4-16-16C-411	1 5/16 - 12 UN	144.6	5.69	84.0	3.31	1 5/8"	1 5/8"	34.5	5,000



Dual Seal Straight

Material: AISI 316 / 316Ti

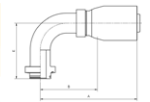
#	A		B		⌚	
	mm	inch	mm	inch	MPa	psi
19GE4-16-16C	110.6	4.35	50.8	2.00	34.5	5,000
19GE4-24-16C	113.8	4.48	54.0	2.13	34.5	5,000



Dual Seal 90°

Material: AISI 316 / 316Ti

#	A		B		⌚	
	mm	inch	mm	inch	MPa	psi
19WE4-16-16C	144.5	5.69	84.0	3.31	34.5	5,000
19WE4-24-16C	144.5	5.69	84.0	3.31	34.5	5,000



HIGH PRESSURE SUBSEA BOP HOSES

**1.5" 5,000 psi Subsea BOP hose
2340N-24V10**



CONSTRUCTION

Core tubePolyamide
 Pressure reinforcementHigh strength wire

CoverPolyurethane
 ColourV10: black; V12: blue; V13: green; V16: yellow

TEMPERATURE RANGE

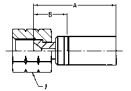
-40°C up to +100°C, max. 70°C for water or methanol based fluids.

2340N-24V10

⊙		⊙		⊙		⊙		⊙		⊙		Collapse pressure		DF
mm	inch	mm	inch	MPa	psi	MPa	psi	mm	inch	kg/m	lbs/ft	MPa	psi	
38	1.5	55.5	2.185	34.5	5,000	138.0	20,000	450	17.7	3.5	2.35	3.7	536	4.0

JIC female swivel

#	⊙	A		B		⊙	⊙	⊙	
		mm	inch	mm	inch	mm	mm	MPa	psi
1068X-24-24C	1 7/8-12 UN	173.0	6.817	89.2	3.51	65	55	345.0	5,000



CHAPTER E

HYDROSTATIC TESTING HOSE

Ultra high pressure hoses and fittings E-2

E

OVERVIEW

ULTRA HIGH PRESSURE HOSES AND FITTINGS

polyflex offers a large number of ultra high pressure hoses which are suitable for hydrostatic testing applications. With working pressures up to 60,000psi and a size range from 1/8" up to 1 1/4" we offer customers the option to test equipment or well installations in an extremely wide pressure range. Please refer to catalogue 4462 for further details.



CHAPTER F

THE **Black Eagle** HOSE FAMILY FOR WELL SERVICES

The Black Eagle hose family for well services	F-2
Construction	F-4
Hose overview	F-5
Hose specifications	F-6

F

OVERVIEW

THE BLACK EAGLE HOSE FAMILY FOR WELL SERVICES

The **Black Eagle** family is a range of multispiral, wire reinforced hoses specifically designed for the oil and gas market, covering applications in offshore projects and land operations.

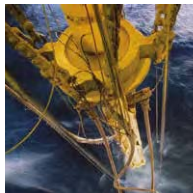
For many years this range of hoses has enabled our customers to optimize well production by performing operations like acidizing, cementing, methanol injection or gas injection.



APPLICATION

Subsea and land based well operations like:

- Cementing operations acc. to API 7K FSL 0
- Acidizing
- General Fluid and Gas Injection
- Mud Circulation



FEATURES

- ColorGard™, an extra thick dual color Polyurethane sheath
- Long continuous lengths up to 1,500 m without splicing (depending on hose type)
- Superior chemical resistant core tube – either seamless PA11 or fluoropolymer based
- Compact design – smaller OD than flexible pipe
- Up to 30% weight reduction in comparison to R13 rubber hoses – more than 70% in comparison to flexible pipe
- ID from 1 1/4" up to 3" – working pressure from 3,000 psi (207 bar) up to 15,000 psi (1035 bar) – temperature range from -40°C up to 100°C
- Lower bend radius compared to composite hose



F

BENEFITS

- Increased safety – superior abrasion resistance in combination with a visual indication for damaged cover
- Less connections – therefore less risk of leakage, less risk to workforce, and faster deployment
- Long service life and less maintenance
- Less effort for logistics due to increased hose capacity per reel
- Easier handling and faster installation
- Comprehensive range of hoses to cover most applications
- Easier handling and improved flexibility



CONSTRUCTION

CONSTRUCTION

Polyflex Black Eagle hoses are designed for oilfield applications. For each application different demands need to be considered regarding:

- Composition of fluids
- Temperatures and pressures
- Short term pressure fluctuations
- Static and dynamic loads
- Safety requirements and standards

F

THERMOPLASTIC CORE TUBE

To be able to cover these requirements the construction of Black Eagle hose has the following functionality: The essential requirement for a hose is to contain and transmit a fluid or gas. The core tube of a thermoplastic hose is therefore in direct contact with that medium. The selection of the core tube material depends on fluid compatibility, service temperature, and diffusion rate under operating conditions. The available materials are:

- Polyamide (PA11): It is used in high-performance applications for oil and gas, flexible pipes and control fluid umbilicals. It can operate within a wide range of working temperatures (-40°C up to +70°C), has a high dimensional stability and is low in density.
- Fluoropolymer designed for use in chemical injection systems at high temperature levels, the tubing shows low permeation rates and an excellent chemical resistance. Proven to handle methanol at 100°C and 15,000 psi working pressure.

Thermoplastic core tubes are manufactured with an extremely smooth and clean inner surface. This provides minimum flow resistance and minimum pressure drop in service.

SPIRALIZED WIRE REINFORCEMENT

Our reinforcement allows flexibility in service without compromising fluid transfer. Various layers of high tensile strength steel wires are used to achieve the best combination of pressure resistance, flexibility, and volumetric expansion.

The basic function of the cover is to protect the wire reinforcement from very demanding environment. This could be decompressive media like seawater or extreme abrasion of the cover.

COLORGARD™ COVER

ColorGard™ is an extra thick dual layer Polyurethane sheath: a red inner layer and a black or golden outer layer. It offers both an abrasion resistant extra thick cover for long service life and acts as an additional safety feature. This concept is a visual early warning system for detection of excessive abrasion. This feature avoids possible injuries and reduction of downtime by anticipating failure.

Black Eagle LIGHT

#	Size			Max. working pressure	Min. burst pressure	Min. bend radius	Max. length	Weight	Collapse pressure
	size	inch	inch						
	DN	mm	mm						
2240N-32V10	-32	2	2.70	3,000	12,000	19.7	3,281	2.96	-
	50	51	68.5	20.7	82.5	500	1000	4.40	-
2248N-32V10	-32	2	2.70	5,000	12,500	19.7	3,281	2.96	-
	50	51	68.5	34.5	86.2	500	1000	4.40	-
2449N-32V10	-32	2	2.89	8,000	20'000	25.6	3,281	5.14	-
	50	51	73.5	55.2	138	650	1000	7.65	-

Black Eagle

	size	inch	inch	psi	psi	inch	ft	lbs/ft	psi
	DN	mm	mm	MPa	MPa	mm	m	kg/m	MPa
2448N-20V80	-20	1 1/4	2.19	10,000	25,000	15.8	4,921	2.55	827
	32	32.2	55.5	69.0	172.5	400	1500	3.80	5.7
2640N-24V80	-24	1 1/2	2.78	10,000	33,350	19.7	3,281	4.84	950
	40	38.0	70.5	69.0	230.0	500	1000	7.20	6.5
2640N-24V80-15K	-24	1 1/2	2.60	15,000	33,750	19.7	3,281	4.37	957
	40	38.0	66.0	103.5	233.0	500	1000	6.50	6.6
2448N-32V80	-32	2	3.17	5,000	20,000	19.7	3,281	5.71	710
	50	50.5	80.5	34.5	138.0	500	1000	8.50	4.9
2580N-32V80	-32	2	3.33	10,000	25,000	31.5	3,281	6.32	826
	50	50.5	84.5	69.0	172.5	800	1000	9.40	5.7
2648N-32V80	-32	2	3.39	15,000	33,750	31.5	2,625	8.13	870
	50	50.5	86.0	103.5	233.0	800	800	12.10	6.0
2240N-48V80	-48	3	4.49	5,000	12,500	40.0	1,148	7.73	-
	78	75.0	114.0	34.5	86.2	1000	350	11.50	-
2440N-48V80	-48	3	4.80	10,000	20,000	43.3	984	12.57	957
	78	75.0	122.0	69.0	138.0	1100	300	18.70	6.6
2640N-48V80	-48	3	5.12	15,000	33,750	47.2	820	18.48	1,160
	78	75.0	130.0	103.5	233.0	1200	250	27.50	8.0

Golden Eagle

	size	inch	inch	psi	psi	inch	ft	lbs/ft	psi
	DN	mm	mm	MPa	MPa	mm	m	kg/m	MPa
2640M-24V88	-24	1 1/2	2.78	10,000*	33,350	19.7	1,970	4.84	950
	40	38.0	70.5	69.0*	230.0	500	600	7.20	6.5
2448M-32V88	-32	2	3.23	5,000	20,000	19.7	1,970	5.71	710
	50	51.0	82.0	34.5	138.0	500	600	8.50	4.9
2580M-32V88	-32	2	3.33	10,000*	25,000	31.5	1,970	6.32	825
	50	51.0	84.5	69.0*	172.5	800	600	9.40	5.7

HOSE OVERVIEW

HOSE SPECIFICATIONS

2" 3,000 psi **Black Eagle** Light 2240N-32V10



CONSTRUCTION

Core tube PA11 with inner ColorGard™
Pressure reinforcement 2 layers of high tensile steel wire

Cover Extra thick TPU sheath
Colour Black

TEMPERATURE RANGE

-40°C up to +100°C
-40°F up to +212°F

MAX. LENGTH

1,000 m / 3,281 ft

2240N-32V10

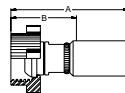
Ø		Ø		Max. working pressure		Test pressure		Min. bend radius		Weight		Collapse pressure			
mm	inch	mm	inch	MPa	psi	MPa	psi	mm	inch	kg/m	lbs/ft	MPa	psi		
51	2	68.5	2.700	20.7	3,000	31.1	4,500	82.7	12,000	500	19.7	4.4	2.96	3.8	550

AVAILABLE STEEL AND STAINLESS STEEL FITTINGS*

1502 Hammerlug union male

Material: Special Steel Materials

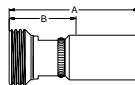
#	Ø	A		B		Pressure	
		mm	inch	mm	inch	MPa	psi
1HES6-32-32-FLAT	4 1/8" - 3 ACME	170.0	6.69	76.0	2.99	103.5	15,000



1502 Hammerlug union female

Material: Special Steel Materials

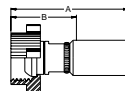
#	Ø	A		B		Pressure	
		mm	inch	mm	inch	MPa	psi
1HNS6-32-32	4 1/8" - 3 ACME	170.0	6.69	76.0	2.99	103.5	15,000



1502 Hammerlug union male

Material: Special Steel and Stainless Steel Materials

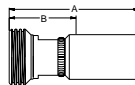
#	Ø	A		B		Pressure	
		mm	inch	mm	inch	MPa	psi
1HES6-32-32-FLAT-SC	4 1/8" - 3 ACME	170.0	6.69	76.0	2.99	103.5	15,000



1502 Hammerlug union female

Material: Special Steel and Stainless Steel Materials

#	Ø	A		B		Pressure	
		mm	inch	mm	inch	MPa	psi
1HNS6-32-32-SC	4 1/8" - 3 ACME	170.0	6.69	76.0	2.99	103.5	15,000



* Fittings must not be used subsea. For subsea applications please use the products page F-7 et sqq. in this chapter.

**2" 3,000 psi Black Eagle Light
2240N-32V10**




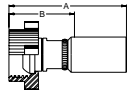
F

AVAILABLE SUBSEA FITTINGS

1502 Hammerlug union male


Material: Special Steel and Stainless Steel Materials

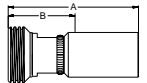
#		A		B		⌚	
		mm	inch	mm	inch	MPa	psi
1HES6-32-32-FLAT-SUBSEA	4 1/8" - 3 ACME	170.0	6.69	76.0	2.99	103.5	15,000



1502 Hammerlug union female

Material: Special Steel and Stainless Steel Materials

#		A		B		⌚	
		mm	inch	mm	inch	MPa	psi
1HNS6-32-32-SUBSEA	4 1/8" - 3 ACME	170.0	6.69	76.0	2.99	103.5	15,000



HOSE OVERVIEW

2" 5,000 psi **Black Eagle** Light 2248N-32V10



CONSTRUCTION

Core tubePA11 with inner ColorGard™
Pressure reinforcement2 layers of high tensile steel wire

CoverExtra thick TPU sheath
ColourBlack

TEMPERATURE RANGE

-40°C up to +100°C
-40°F up to +212°F

MAX. LENGTH

1,000 m / 3,281 ft

2248N-32V10

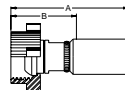
⊙		⊙		Max. working pressure		Test pressure				Min. bend radius				Collapse pressure	
mm	inch	mm	inch	MPa	psi	MPa	psi	MPa	psi	mm	inch	kg/m	lbs/ft	MPa	psi
51	2	68.5	2.700	34.5	5,000	51.8	7,500	86.2	12,500	500	19.7	4.4	2.96	3.8	550

AVAILABLE STEEL AND STAINLESS STEEL FITTING*

1502 Hammerlug union male

Material: Special Steel Materials

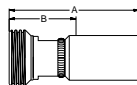
#		A		B			
		mm	inch	mm	inch	MPa	psi
1HES6-32-32-FLAT	4 1/8" - 3 ACME	170.0	6.69	76.0	2.99	103.5	15,000



1502 Hammerlug union female

Material: Special Steel Materials

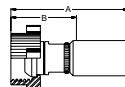
#		A		B			
		mm	inch	mm	inch	MPa	psi
1HNS6-32-32	4 1/8" - 3 ACME	170.0	6.69	76.0	2.99	103.5	15,000



1502 Hammerlug union male

Material: Special Steel and Stainless Steel Materials

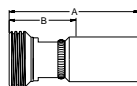
#		A		B			
		mm	inch	mm	inch	MPa	psi
1HES6-32-32-FLAT-SC	4 1/8" - 3 ACME	170.0	6.69	76.0	2.99	103.5	15,000



1502 Hammerlug union female

Material: Special Steel and Stainless Steel Materials

#		A		B			
		mm	inch	mm	inch	MPa	psi
1HNS6-32-32-SC	4 1/8" - 3 ACME	170.0	6.69	76.0	2.99	103.5	15,000



* Fittings must not be used subsea. For subsea applications please use the products page F-9 et sqq. in this chapter.


**2" 5,000 psi Black Eagle Light
2248N-32V10**

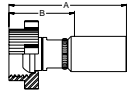


AVAILABLE SUBSEA FITTINGS

1502 Hammerlug union male

Material: Special Steel and Stainless Steel Materials


#		A		B		⌀	
		mm	inch	mm	inch	MPa	psi
1HES6-32-32-FLAT-SUBSEA	4 1/8" - 3 ACME	170.0	6.69	76.0	2.99	103.5	15,000

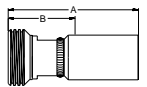


* Material Certificates available on request.

1502 Hammerlug union female

Material: Special Steel and Stainless Steel Materials

#		A		B		⌀	
		mm	inch	mm	inch	MPa	psi
1HNS6-32-32-SUBSEA	4 1/8" - 3 ACME	170.0	6.69	76.0	2.99	103.5	15,000



HOSE OVERVIEW

**2" 8,000 psi *Black Eagle* Light
2449N-32V10**



CONSTRUCTION	<p>Core tube PA11 with inner ColorGard™</p> <p>Pressure reinforcement 4 layers of high tensile steel wire</p> <p>Cover Extra thick TPU sheath</p> <p>Colour Black</p>
TEMPERATURE RANGE	<p>-40°C up to +100°C</p> <p>-40°F up to +212°F</p>
MAX. LENGTH	<p>1,000 m / 3,281 ft</p>

2449N-32V10

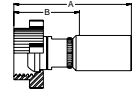
⊙		⊙		⊙		⊙		⊙		⊙		Collapse pressure	
mm	inch	mm	inch	MPa	psi	MPa	psi	mm	inch	kg/m	lbs/ft	MPa	psi
51	2	73.5	2.890	55.2	8,000	138.0	20,000	650	25.6	7.65	5.14	4.9	710

AVAILABLE STEEL AND STAINLESS STEEL FITTING*

1502 Hammerlug union male

Material: Special Steel and Stainless Steel Materials

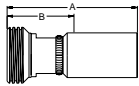
#	⊙	A		B		⊙	
		mm	inch	mm	inch	MPa	psi
1HES8-32-32-FLAT-SC	⊙	170.0	6.69	76.0	2.99	103.5	15,000



1502 Hammerlug union female

Material: Special Steel and Stainless Steel Materials

#	⊙	A		B		⊙	
		mm	inch	mm	inch	MPa	psi
1HNS8-32-32-SC	⊙	170.0	6.69	76.0	2.99	103.5	15,000



* Fittings must not be used subsea.

1 1/4" 10,000 psi *Black Eagle*
2440N-20V80



CONSTRUCTION

Core tubePA11
Pressure reinforcement4 layers of high tensile steel wire
CoverExtra thick dual layer TPU sheath
ColourColorGard™ – red inner sheath and black outer sheath

TEMPERATURE RANGE

-40°C up to +100°C
 -40°F up to +212°F

MAX. LENGTH

1,500 m / 4,921 ft

CERTIFICATES

DNVGL Type Approval TAD00000CA (see chapter 4)

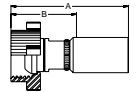
2440N-20V80

⊙		⊙		Max. working pressure		Test pressure				Min. bend radius				Collapse pressure	
mm	inch	mm	inch	MPa	psi	MPa	psi	MPa	psi	mm	inch	kg/m	lbs/ft	MPa	psi
32.2	1 1/4	55.5	2.190	69	10,000	103.5	15,000	172.5	25,000	400	15.8	3.8	2.55	6	870

1502 Hammerlug union male

Material: Special Steel and Stainless Steel Materials

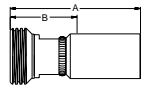
#		A		B			
		mm	inch	mm	inch	MPa	psi
1HELX-32-20C4462-FLAT	4 1/8" - 3 ACME	191.0	7.52	116.5	4.59	103.5	15,000



1502 Hammerlug union female

Material: Special Steel and Stainless Steel Materials

#		A		B			
		mm	inch	mm	inch	MPa	psi
1HNLX-32-20C4462	4 1/8" - 3 ACME	175.7	6.92	101.2	3.98	103.5	15,000



HOSE SPECIFICATIONS

**1 1/2" 10,000 psi *Black Eagle*
2640N-24V80**



CONSTRUCTION

Core tubePA11
Pressure reinforcement6 layers of high tensile steel wire

CoverExtra thick dual layer TPU sheath
ColourColorGard™ – red inner sheath and black outer sheath

TEMPERATURE RANGE

-40°C up to +70°C
 -40°F up to +158°F

MAX. LENGTH

1,000 m / 3,281 ft

CERTIFICATES

DNVGL Type Approval TAD00000CA (see chapter 4)

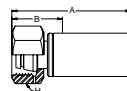
2640N-24V80

⊙		⊙		Max. working pressure		Test pressure				Min. bend radius				Collapse pressure	
mm	inch	mm	inch	MPa	psi	MPa	psi	MPa	psi	mm	inch	kg/m	lbs/ft	MPa	psi
38	1 1/2	70.5	2.780	69	10,000	103.5	15,000	230.0	33,350	500	19.7	7.2	4.84	6.5	950

Metric female swivel heavy series with O-ring

Material: Special Steel and Stainless Steel Materials

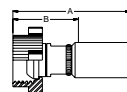
#		A		B				
		mm	inch	mm	inch			
1C95X-38-24COSK-TC	M52x2	143.0	5.63	50.0	1.97	65	103.5	15,000



1502 Hammerlug union male

Material: Special Steel and Stainless Steel Materials

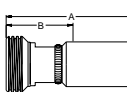
#		A		B			
		mm	inch	mm	inch		
1HE5X-32-24C4462-FLATTC	4 1/8" - 3 ACME	232.0	9.1	108.0	4.25	103.5	15,000



1502 Hammerlug union female

Material: Special Steel and Stainless Steel Materials

#		A		B			
		mm	inch	mm	inch		
1HN5X-32-24C4462-TC	4 1/8" - 3 ACME	245.1	9.65	108.0	4.25	103.5	15,000



1 1/2" 15,000 psi *Black Eagle*
2640N-24V80-15K



CONSTRUCTION

Core tubePA11
Pressure reinforcement6 layers of high tensile steel wire
CoverExtra thick dual layer TPU sheath
ColourColorGard™ – red inner sheath and black outer sheath

TEMPERATURE RANGE

-40°C up to +70°C
 -40°F up to +158°F

MAX. LENGTH

1,000 m / 3,281 ft

CERTIFICATES

DNVGL Type Approval TAD00000CA (see chapter 4)

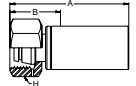
2640N-24V80-15K

⊙		⊙		Max. working pressure		Test pressure				Min. bend radius				Collapse pressure	
mm	inch	mm	inch	MPa	psi	MPa	psi	MPa	psi	mm	inch	kg/m	lbs/ft	MPa	psi
38	1 1/2		2.600	103.5	15,000	155.3	22,500	233.0	33,750	500	19.7	6.5	4.37	6.6	957

Metric female swivel heavy series with O-ring

Material: Special Steel and Stainless Steel Materials

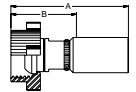
#		A		B				MPa	psi
		mm	inch	mm	inch				
1C95X-38-24COSK-KOP2	M52x2	143.0	5.63	50.0	1.97	65	103.5	15,000	



1502 Hammerlug union male

Material: Special Steel and Stainless Steel Materials

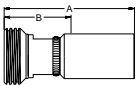
#		A		B		MPa	psi
		mm	inch	mm	inch		
1HE5X-32-24C4462-KOP2	4 1/8" - 3 ACME	232.0	9.13	108.0	4.25	103.5	15,000



1502 Hammerlug union female

Material: Special Steel and Stainless Steel Materials

#		A		B		MPa	psi
		mm	inch	mm	inch		
1HN5X-32-24C4462-KOP2	4 1/8" - 3 ACME	245.1	9.65	108.0	4.25	103.5	15,000



HOSE SPECIFICATIONS

**2" 5,000 psi *Black Eagle*
2448N-32V80**



CONSTRUCTION

Core tubePA11
Pressure reinforcement4 layers of high tensile steel wire
CoverExtra thick dual layer TPU sheath
ColourColorGard™ – red inner sheath and black outer sheath

TEMPERATURE RANGE

-40°C up to +70°C
 -40°F up to +158°F

MAX. LENGTH

1,400 m / 4,593 ft

CERTIFICATES

DNVGL Type Approval TAD00000CA (see chapter 4)

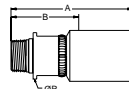
2448N-32V80

⊙		⊙		Max. working pressure		Test pressure				Min. bend radius				Collapse pressure	
mm	inch	mm	inch	MPa	psi	MPa	psi	MPa	psi	mm	inch	kg/m	lbs/ft	MPa	psi
50.5	2	80.5	3.170	34.5	5,000	51.8	7,500	138.0	20,000	500	19.7	8.5	5.71	4.9	710

National Pipe Tapered (NPT) male

Material: Special Steel and Stainless Steel Materials

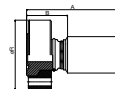
#		A		B		ØR			
		mm	inch	mm	inch	mm	inch	MPa	psi
101BL-32-32	2" NPT	275.0	10.8	129.0	5.08	83.0	3.27	34.5	5,000
6015X-32-32-TC	2" NPT	244.0	9.61	107.0	4.22	82.5	3.25	34.5	5,000



API Flange, swivel

Material: Special Steel and Stainless Steel Materials

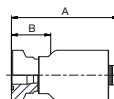
#	API size	A		B		ØR		Seal		
		mm	inch	mm	inch	mm	inch		MPa	psi
18KBL-33-32-API17DSV-10K	2 1/16" 10,000 psi	275.0	10.83	129.0	5.08	210.0	8.27	BX152	69.0	10,000
68K5X-29-32-API17DSV	1 13/16" 10,000 psi	250.0	9.84	113.2	4.46	185.0	7.28	BX151	69.0	10,000



API Hub

Material: Special Steel and Stainless Steel Materials

#	API size	A		B		Seal		
		mm	inch	mm	inch		MPa	psi
1HBBL-29-32-10K	1 13/16" 10,000 psi	275.0	10.8	129.0	5.08	BX151	69.0	10,000
1HBBL-33-32-10K-L *	2 1/16" 10,000 psi	280.0	11	134.0	5.28	BX152	69.0	10,000





* with Inconel inlay

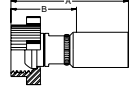
2" 5,000 psi *Black Eagle*
2448N-32V80



602 Hammerlug union male



Material: Special Steel and Stainless Steel Materials

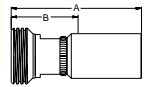
#		A		B			
		mm	inch	mm	inch		
6HE5X-32-32-602APITC	3 13/16" - 3 ACME	280.0	11	141.0	5.55	34.5	5,000



602 Hammerlug union female



Material: Special Steel and Stainless Steel Materials

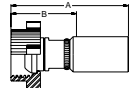
#		A		B			
		mm	inch	mm	inch		
6HN5X-32-32-602TC	3 13/16" - 3 ACME	245.1	9.65	106.0	4.17	34.5	5,000



1502 Hammerlug union male



Material: Special Steel and Stainless Steel Materials

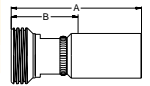
#		A		B			
		mm	inch	mm	inch		
1HEBL-32-32-FLAT	4 1/8" - 3 ACME	278.3	10.9	132.3	5.21	103.5	15,000
6HE5X-32-32-FLATTC	4 1/8" - 3 ACME	292.0	11.5	155.0	6.10	103.5	15,000



1502 Hammerlug union female



Material: Special Steel and Stainless Steel Materials

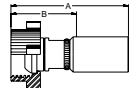
#		A		B			
		mm	inch	mm	inch		
1HNBL-32-32	4 1/8" - 3 ACME	263.0	10.4	117.0	4.61	103.5	15,000
6HN5X-32-32-TC	4 1/8" - 3 ACME	243.0	9.57	106.0	4.17	103.5	15,000



1501 Hammerlug union male, segmented



Material: Special Steel and Stainless Steel Materials

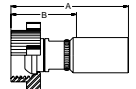
#		A		B			
		mm	inch	mm	inch		
1HEBL-32-32-SEG	4 1/8" - 3 ACME	278.3	10.9	132.3	5.21	103.5	15,000



2202 Hammerlug union male



Material: Special Steel and Stainless Steel Materials

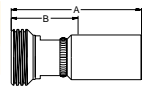
#		A		B			
		mm	inch	mm	inch		
1HEBL-32-32-FLAT-2202	3 5/8" - 5 ACME	290.0	11.42	144.0	5.67	103.5	15,000



2202 Hammerlug union female

Material: Special Steel and Stainless Steel Materials

#		A		B			
		mm	inch	mm	inch		
1HNBL-32-32-2202	3 5/8" - 5 ACME	265.0	10.43	119.0	4.68	103.5	15,000



HOSE SPECIFICATIONS

**2" 10,000 psi *Black Eagle*
2580N-32V80**



CONSTRUCTION

Core tubePA11
Pressure reinforcement6 layers of high tensile steel wire

CoverExtra thick dual layer TPU sheath
ColourColorGard™ – red inner sheath and black outer sheath

TEMPERATURE RANGE

-40°C up to +70°C
-40°F up to +158°F

MAX. LENGTH

1,400 m / 4,593 ft

CERTIFICATES

DNVGL Type Approval TAD00000CA (see chapter 4)
ABS Product Design Assessment (PDA) Certificate 18-HS1748809-PDA

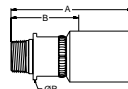
2580N-32V80

mm		inch		MPa		psi		MPa		psi		kg/m		lbs/ft		MPa		psi	
50.5	2	84.5	3.330	69	10,000	103.5	15,000	172.5	25,000	800	31.5	9.4	6.32	5.7	825				

National Pipe Tapered (NPT) male

Material: Special Steel and Stainless Steel Materials

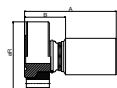
#	A	B		ØR		Seal		MPa		psi	
		mm	inch	mm	inch	mm	inch	MPa	psi		
101BL-32-32	2" NPT	275.0	10.8	129.0	5.08	83.0	3.27	BX152	69.0	10,000	5,000
6015X-32-32-TC	2" NPT	244.0	9.61	107.0	4.22	82.5	3.25	BX151	69.0	10,000	5,000



API Flange, swivel

Material: Special Steel and Stainless Steel Materials

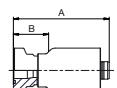
#	API size	A		B		ØR		Seal	MPa		psi	
		mm	inch	mm	inch	mm	inch		MPa	psi		
18KBL-33-32-API17DSV-10K	2 1/16" 10,000 psi	275.0	10.83	129.0	5.08	210.0	8.27	BX152	69.0	10,000	10,000	
68K5X-29-32-API17DSV	1 13/16" 10,000 psi	250.0	9.84	113.2	4.46	185.0	7.28	BX151	69.0	10,000	10,000	



API Hub

Material: Special Steel and Stainless Steel Materials

#	API size	A		B		Seal	MPa		psi	
		mm	inch	mm	inch		MPa	psi		
1HBBL-29-32-10K	1 13/16" 10,000 psi	275.0	10.8	129.0	5.08	BX151	69.0	10,000	10,000	
1HBBL-33-32-10K-L *	2 1/16" 10,000 psi	280.0	11	134.0	5.28	BX152	69.0	10,000	10,000	




* with Inconel inlay

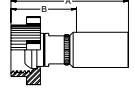
2" 10,000 psi *Black Eagle*
2580N-32V80



1502 Hammerlug union male


Material: Special Steel and Stainless Steel Materials

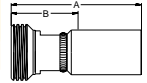
#		A		B		⌀	
		mm	inch	mm	inch	MPa	psi
1HEBL-32-32-FLAT	4 1/8" - 3 ACME	278.3	10.9	132.3	5.21	103.5	15,000
6HE5X-32-32-FLATTC	4 1/8" - 3 ACME	292.0	11.5	155.0	6.10	103.5	15,000



1502 Hammerlug union female


Material: Special Steel and Stainless Steel Materials

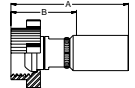
#		A		B		⌀	
		mm	inch	mm	inch	MPa	psi
1HNBL-32-32	4 1/8" - 3 ACME	263.0	10.4	117.0	4.61	103.5	15,000
6HN5X-32-32-TC	4 1/8" - 3 ACME	243.0	9.57	106.0	4.17	103.5	15,000



1501 Hammerlug union male, segmented


Material: Special Steel and Stainless Steel Materials

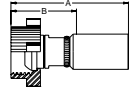
#		A		B		⌀	
		mm	inch	mm	inch	MPa	psi
1HEBL-32-32-SEG	4 1/8" - 3 ACME	278.3	10.9	132.3	5.21	103.5	15,000



2202 Hammerlug union male


Material: Special Steel and Stainless Steel Materials

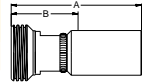
#		A		B		⌀	
		mm	inch	mm	inch	MPa	psi
1HEBL-32-32-FLAT-2202	3 5/8" - 5 ACME	290.0	11.42	144.0	5.67	103.5	15,000



2202 Hammerlug union female

Material: Special Steel and Stainless Steel Materials

#		A		B		⌀	
		mm	inch	mm	inch	MPa	psi
1HNBL-32-32-2202	3 5/8" - 5 ACME	265.0	10.43	119.0	4.68	103.5	15,000



HOSE SPECIFICATIONS

**2" 15,000 psi *Black Eagle*
2648N-32V80**



CONSTRUCTION

Core tubePA11
 Pressure reinforcement6 layers of high tensile steel wire
 CoverExtra thick dual layer TPU sheath
 ColourColorGard™ – red inner sheath and black outer sheath

TEMPERATURE RANGE

-40°C up to +70°C
 -40°F up to +158°F

MAX. LENGTH

300 m / 984 ft

CERTIFICATES

DNVGL Type Approval TAD00000CA (see chapter 4)

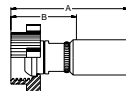
2648N-32V80

⊙		⊙		Max. working pressure		Test pressure				Min. bend radius				Collapse pressure	
mm	inch	mm	inch	MPa	psi	MPa	psi	MPa	psi	mm	inch	kg/m	lbs/ft	MPa	psi
50.5	2	86	3.390	103.5	15,000	155.3	22,500	233.0	33,750	800	31.0	12.1	8.13	6	870

1502 Hammerlug union male

Material: Special Steel and Stainless Steel Materials

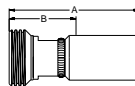
#		A		B			
		mm	inch	mm	inch	MPa	psi
1HECX-32-32-FLAT	4 1/8" - 3 ACME	298.0	11.7	132.0	5.20	103.5	15,000



1502 Hammerlug union female

Material: Special Steel and Stainless Steel Materials

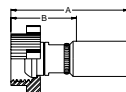
#		A		B			
		mm	inch	mm	inch	MPa	psi
1HNXC-32-32	4 1/8" - 3 ACME	284.0	11.2	118.0	4.65	103.5	15,000



2202 Hammerlug union male

Material: Special Steel and Stainless Steel Materials

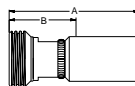
#		A		B			
		mm	inch	mm	inch	MPa	psi
1HECX-32-32-FLAT-2202	3 5/8" - 5 ACME	290.0	11.4	124.0	4.88	103.5	15,000



2202 Hammerlug union female

Material: Special Steel and Stainless Steel Materials

#		A		B			
		mm	inch	mm	inch	MPa	psi
1HNXC-32-32-2202	3 5/8" - 5 ACME	265.0	10.4	99.0	3.90	103.5	15,000



3" 5,000 psi *Black Eagle*
2240N-48V80



CONSTRUCTION

Core tubePA11
 Pressure reinforcement2 layers of high tensile steel wire
 CoverExtra thick dual layer TPU sheath
 ColourColorGard™ – red inner sheath and black outer sheath

TEMPERATURE RANGE

-40°C up to +70°C
 -40°F up to +158°F

MAX. LENGTH

400 m / 1,312 ft

CERTIFICATES

DNVGL Type Approval TAD00000CA (see chapter 4)

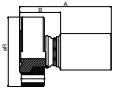
2240N-48V80

⊙		⊙		Max. working pressure		Test pressure				Min. bend radius				Collapse pressure	
mm	inch	mm	inch	MPa	psi	MPa	psi	MPa	psi	mm	inch	kg/m	lbs/ft	MPa	psi
75	3	114	4.490	34.5	5,000	51.8	7,500	86.2	12,500	1000	40.0	11.5	7.73	2	290

API Flange, swivel

Material: Special Steel and Stainless Steel Materials

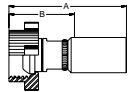
#	API size	A		B		ØR		Seal		
		mm	inch	mm	inch	mm	inch		MPa	psi
18KTX-65-48-API17DSV10KL	4 1/16" 10,000 psi	427.0	16.81	261.0	10.28	315.0	12.40	BX155	69.0	10,000



602 Hammerlug union male

Material: Special Steel and Stainless Steel Materials

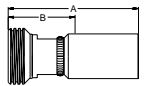
#		A		B			
		mm	inch	mm	inch	MPa	psi
1HETX-48-48-FLAT-602	5 3/8" - 3 ACME	372.0	14.6	206.0	8.11	34.5	5,000



602 Hammerlug union female

Material: Special Steel and Stainless Steel Materials

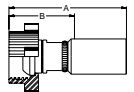
#		A		B			
		mm	inch	mm	inch	MPa	psi
1HNTX-48-48-602	5 3/8" - 3 ACME	350.0	13.78	184.0	7.25	34.5	5,000



1502 Hammerlug union male

Material: Special Steel and Stainless Steel Materials

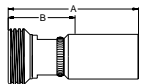
#		A		B			
		mm	inch	mm	inch	MPa	psi
1HETX-48-48-FLAT	5 3/8" - 3 1/2 ACME	378.0	14.88	212.0	8.35	103.5	15,000



1502 Hammerlug union female

Material: Special Steel and Stainless Steel Materials

#		A		B			
		mm	inch	mm	inch	MPa	psi
1HNTX-48-48	5 3/8" - 3 1/2 ACME	350.0	13.78	184.0	7.25	103.5	15,000



HOSE SPECIFICATIONS

3" 10,000 psi *Black Eagle*
2440N-48V80



CONSTRUCTION

Core tube PA11
 Pressure reinforcement 4 layers of high tensile steel wire
 Cover Extra thick dual layer TPU sheath
 Colour ColorGard™ – red inner sheath and black outer sheath

TEMPERATURE RANGE

-40°C up to +70°C
 -40°F up to +158°F

MAX. LENGTH

350 m / 1,148 ft

CERTIFICATES

DNVGL Type Approval TAD00000CA (see chapter 4)

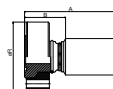
2440N-48V80

⊙		⊙		Max. working pressure		Test pressure				Min. bend radius				Collapse pressure	
mm	inch	mm	inch	MPa	psi	MPa	psi	MPa	psi	mm	inch	kg/m	lbs/ft	MPa	psi
75	3	122	4.800	69	10,000	103.5	15,000	138.0	20,000	1100	43.3	18.7	12.57	6.6	957

API Flange, swivel

Material: Special Steel and Stainless Steel Materials

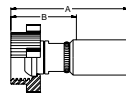
#	API size	A		B		ØR		Seal		
		mm	inch	mm	inch	mm	inch		MPa	psi
18KLX-49-48-API17DSV-10K	3 1/16" 10,000 psi	455.0	17.91	244.0	9.61	270.0	10.63	BX154	69.0	10,000
18KLX-65-48-API17DSV-10K	4 1/16" 10,000 psi	482.0	18.98	246.0	9.68	315.0	12.40	BX155	69.0	10,000



1502 Hammerlug union male

Material: Special Steel and Stainless Steel Materials

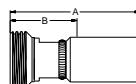
#		A		B			
		mm	inch	mm	inch	MPa	psi
1HELX-48-48-FLAT	5 3/8" - 3 1/2 ACME	395.0	15.55	184.0	7.24	103.5	15,000



1502 Hammerlug union female

Material: Special Steel and Stainless Steel Materials

#		A		B			
		mm	inch	mm	inch	MPa	psi
1HNLX-48-48	5 3/8" - 3 1/2 ACME	405.0	15.9	194.0	7.64	103.5	15,000



3" 15,000 psi *Black Eagle*
2640N-48V80



CONSTRUCTION	Core tube PA11
	Pressure reinforcement 6 layers of high tensile steel wire
TEMPERATURE RANGE	Cover Extra thick dual layer TPU sheath
	Colour ColorGard™ – red inner sheath and black outer sheath
MAX. LENGTH	300 m / 984 ft
CERTIFICATES	DNVGL Type Approval TAD00000CA (see chapter 4)

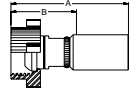
2640N-48V80

⊙		⊙		Max. working pressure		Test pressure				Min. bend radius				Collapse pressure	
mm	inch	mm	inch	MPa	psi	MPa	psi	MPa	psi	mm	inch	kg/m	lbs/ft	MPa	psi
75	3	130	5.120	103.5	15,000	155.3	22,500	233.0	33,750	1200	47.2	27.5	18.48	8	1,160

1502 Hammerlug union male

Material: Special Steel and Stainless Steel Materials

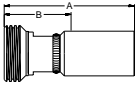
#		A		B			
		mm	inch	mm	inch	MPa	psi
1HE5X-48-48-FLAT	5 3/8" - 3 1/2 ACME	395.0	15.5	184.0	7.24	103.5	15,000



1502 Hammerlug union female

Material: Special Steel and Stainless Steel Materials

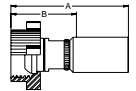
#		A		B			
		mm	inch	mm	inch	MPa	psi
1HN5X-48-48	5 3/8" - 3 1/2 ACME	405.0	15.9	194.0	7.64	103.5	15,000



2202 Hammerlug union male

Material: Special Steel and Stainless Steel Materials

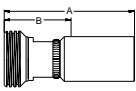
#		A		B			
		mm	inch	mm	inch	MPa	psi
1HE5X-48-48-FLAT-2202	6 11/16" - 5 ACME	470.0	18.5	250.0	9.84	103.5	15,000



2202 Hammerlug union female

Material: Special Steel and Stainless Steel Materials

#		A		B			
		mm	inch	mm	inch	MPa	psi
1HN5X-48-48-2202	6 11/16" - 5 ACME	430.0	16.9	210.0	8.27	103.5	15,000



HOSE SPECIFICATIONS

**1 1/2" 10,000 psi *Golden Eagle*
2640M-24V88**



CONSTRUCTION

Core tubeFluoropolymer based inner core
Pressure reinforcement6 layers of high tensile steel wire

CoverExtra thick dual layer TPU sheath
ColourColorGard™ – red inner sheath and golden outer sheath

TEMPERATURE RANGE

-40°C up to +70°C
 -40°F up to +158°F
 For higher temperature requirements please contact Polyflex Division

MAX. LENGTH

600 m / 1,969 ft

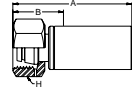
2640M-24V88

⊙		⊙		Max. working pressure		Test pressure				Min. bend radius				Collapse pressure	
mm	inch	mm	inch	MPa	psi	MPa	psi	MPa	psi	mm	inch	kg/m	lbs/ft	MPa	psi
38	1 1/2	70.5	2.780	69	10,000	103.5	15,000	230.0	33,350	500	19.7	7.2	4.84	6.5	950

Metric female swivel heavy series with O-ring

Material: Special Steel and Stainless Steel Materials

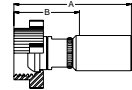
#		A		B					
		mm	inch	mm	inch			mm	MPa
1C95X-38-24COSK-TC	M52x2	143.0	5.63	50.0	1.97	65	103.5	15,000	



1502 Hammerlug union male

Material: Special Steel and Stainless Steel Materials

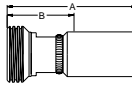
#		A		B				
		mm	inch	mm	inch		MPa	psi
1HE5X-32-24C4462-FLATTC	4 1/8" - 3 ACME	232.0	9.1	108.0	4.25	103.5	15,000	



1502 Hammerlug union female

Material: Special Steel and Stainless Steel Materials

#		A		B				
		mm	inch	mm	inch		MPa	psi
1HN5X-32-24C4462-TC	4 1/8" - 3 ACME	245.1	9.65	108.0	4.25	103.5	15,000	



2" 5,000 psi *Golden Eagle*
2448M-32V88



CONSTRUCTION

Core tube Fluoropolymer based inner core
Pressure reinforcement 4 layers of high tensile steel wire
Cover Extra thick dual layer TPU sheath
Colour ColorGard™ – red inner sheath and golden outer sheath

TEMPERATURE RANGE

-40°C up to +70°C
 -40°F up to +158°F
 For higher temperature requirements please contact Polyflex Division

MAX. LENGTH

400 m / 1,312 ft

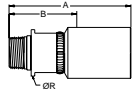
2448M-32V88

⊙		⊙		Max. working pressure		Test pressure				Min. bend radius				Collapse pressure	
mm	inch	mm	inch	MPa	psi	MPa	psi	MPa	psi	mm	inch	kg/m	lbs/ft	MPa	psi
50.5	2	82	3.230	34.5	5,000	51.8	7,500	138.0	20,000	500	19.7	8.5	5.71	4.9	710

National Pipe Tapered (NPT) male

Material: Special Steel and Stainless Steel Materials

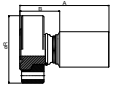
#		A		B		ØR		⊙	
		mm	inch	mm	inch	mm	inch	MPa	psi
101BL-32-32	2" NPT	275.0	10.8	129.0	5.08	83.0	3.27	34.5	5,000
6015X-32-32-TC	2" NPT	244.0	9.61	107.0	4.22	82.5	3.25	34.5	5,000



API Flange, swivel

Material: Special Steel and Stainless Steel Materials

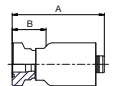
#		A		B		ØR		Seal	⊙	
		mm	inch	mm	inch	mm	inch		MPa	psi
68K5X-29-32-API17DSV	1 13/16" 10,000 psi	250.0	9.84	113.2	4.46	185.0	7.28	BX151	69.0	10,000
18KBL-33-32-API17DSV-10K	2 1/16" 10,000 psi	275.0	10.83	129.0	5.08	210.0	8.27	BX152	69.0	10,000



API Hub

Material: Special Steel and Stainless Steel Materials

#		A		B		Seal	⊙	
		mm	inch	mm	inch		MPa	psi
1HBBL-29-32-10K	1 13/16" 10,000 psi	275.0	10.8	129.0	5.08	BX151	69.0	10,000
1HBBL-33-32-10K-L	2 1/16" 10,000 psi	280.0	11	134.0	5.28	BX152	69.0	10,000



HOSE SPECIFICATIONS

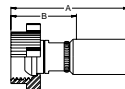
**2" 5,000 psi *Golden Eagle*
2448M-32V88**



602 Hammerlug union male

Material: Special Steel and Stainless Steel Materials

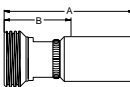
#		A		B		⌚	
		mm	inch	mm	inch	MPa	psi
6HE5X-32-32-602APITC	3 13/16" - 3 ACME	280.0	11	141.0	5.55	34.5	5,000



602 Hammerlug union female

Material: Special Steel and Stainless Steel Materials

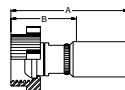
#		A		B		⌚	
		mm	inch	mm	inch	MPa	psi
6HN5X-32-32-602TC	3 13/16" - 3 ACME	245.1	9.65	106.0	4.17	34.5	5,000



1502 Hammerlug union male

Material: Special Steel and Stainless Steel Materials

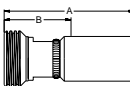
#		A		B		⌚	
		mm	inch	mm	inch	MPa	psi
1HEBL-32-32-FLAT	4 1/8" - 3 ACME	278.3	10.9	132.3	5.21	103.5	15,000
6HE5X-32-32-FLATTC	4 1/8" - 3 ACME	292.0	11.5	155.0	6.10	103.5	15,000



1502 Hammerlug union female

Material: Special Steel and Stainless Steel Materials

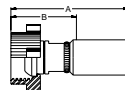
#		A		B		⌚	
		mm	inch	mm	inch	MPa	psi
1HNBL-32-32	4 1/8" - 3 ACME	263.0	10.4	117.0	4.61	103.5	15,000
6HN5X-32-32-TC	4 1/8" - 3 ACME	243.0	9.57	106.0	4.17	103.5	15,000



1501 Hammerlug union male, segmented

Material: Special Steel and Stainless Steel Materials

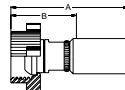
#		A		B		⌚	
		mm	inch	mm	inch	MPa	psi
1HEBL-32-32-SEG	4 1/8" - 3 ACME	278.3	10.9	132.3	5.21	103.5	15,000



2202 Hammerlug union male

Material: Special Steel and Stainless Steel Materials

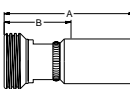
#		A		B		⌚	
		mm	inch	mm	inch	MPa	psi
1HEBL-32-32-FLAT-2202	3 5/8" - 5 ACME	290.0	11.42	144.0	5.67	103.5	15,000



2202 Hammerlug union female

Material: Special Steel and Stainless Steel Materials

#		A		B		⌚	
		mm	inch	mm	inch	MPa	psi
1HNBL-32-32-2202	3 5/8" - 5 ACME	265.0	10.43	119.0	4.68	103.5	15,000



2" 10,000 psi *Golden Eagle*
2580M-32V88



CONSTRUCTION

Core tubeFluoropolymer based inner core
Pressure reinforcement6 layers of high tensile steel wire

CoverExtra thick dual layer TPU sheath
ColourColorGard™ – red inner sheath and golden outer sheath

TEMPERATURE RANGE

-40°C up to +70°C
-40°F up to +158°F
For higher temperature requirements please contact Polyflex Division

MAX. LENGTH

350 m / 1,148 ft

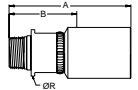
2580M-32V88

⊙		⊙		Max. working pressure		Test pressure				Min. bend radius				Collapse pressure	
mm	inch	mm	inch	MPa	psi	MPa	psi	MPa	psi	mm	inch	kg/m	lbs/ft	MPa	psi
50.5	2	84.5	3.330	69	10,000	107.5	15,000	172.5	25,000	800	31.5	9.4	6.32	5.7	825

National Pipe Tapered (NPT) male

Material: Special Steel and Stainless Steel Materials

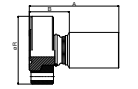
#		A		B		ØR			
		mm	inch	mm	inch	mm	inch	MPa	psi
101BL-32-32	2" NPT	275.0	10.8	129.0	5.08	83.0	3.27	34.5	5,000
6015X-32-32-TC	2" NPT	244.0	9.61	107.0	4.22	82.5	3.25	34.5	5,000



API Flange, swivel

Material: Special Steel and Stainless Steel Materials

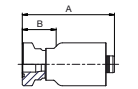
#		A		B		ØR		Seal		
		mm	inch	mm	inch	mm	inch		MPa	psi
68K5X-29-32-API17DSV	1 13/16" 10,000 psi	250.0	9.84	113.2	4.46	185.0	7.28	BX151	69.0	10,000
18KBL-33-32-API17DSV-10K	2 1/16" 10,000 psi	275.0	10.83	129.0	5.08	210.0	8.27	BX152	69.0	10,000



API Hub

Material: Special Steel and Stainless Steel Materials

#		A		B		Seal		
		mm	inch	mm	inch		MPa	psi
1HBL-29-32-10K	1 13/16" 10,000 psi	275.0	10.8	129.0	5.08	BX151	69.0	10,000
1HBL-33-32-10K-L *	2 1/16" 10,000 psi	280.0	11	134.0	5.28	BX152	69.0	10,000



* with Inconel inlay

HOSE SPECIFICATIONS

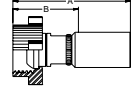
**2" 10,000 psi *Golden Eagle*
2580M-32V88**



1502 Hammerlug union male

Material: Special Steel and Stainless Steel Materials

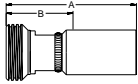
#		A		B		⌚	
		mm	inch	mm	inch	MPa	psi
1HEBL-32-32-FLAT	4 1/8" - 3 ACME	278.3	10.9	132.3	5.21	103.5	15,000
6HE5X-32-32-FLATTC	4 1/8" - 3 ACME	292.0	11.5	155.0	6.10	103.5	15,000



1502 Hammerlug union female

Material: Special Steel and Stainless Steel Materials

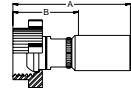
#		A		B		⌚	
		mm	inch	mm	inch	MPa	psi
1HNBL-32-32	4 1/8" - 3 ACME	263.0	10.4	117.0	4.61	103.5	15,000
6HN5X-32-32-TC	4 1/8" - 3 ACME	243.0	9.57	106.0	4.17	103.5	15,000



1501 Hammerlug union male, segmented

Material: Special Steel and Stainless Steel Materials

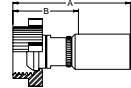
#		A		B		⌚	
		mm	inch	mm	inch	MPa	psi
1HEBL-32-32-SEG	4 1/8" - 3 ACME	278.3	10.9	132.3	5.21	103.5	15,000



2202 Hammerlug union male

Material: Special Steel and Stainless Steel Materials

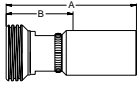
#		A		B		⌚	
		mm	inch	mm	inch	MPa	psi
1HEBL-32-32-FLAT-2202	3 5/8" - 5 ACME	290.0	11.42	144.0	5.67	103.5	15,000



2202 Hammerlug union female

Material: Special Steel and Stainless Steel Materials

#		A		B		⌚	
		mm	inch	mm	inch	MPa	psi
1HNBL-32-32-2202	3 5/8" - 5 ACME	265.0	10.43	119.0	4.68	103.5	15,000



CHAPTER G

HOSE UMBILICALS

Multitube Hoses	G-2
-----------------------	-----

G

MULTITUBE HOSES

BOP Bundles, Electro-Hydraulic Umbilicals and Hotlines

- Over 750,000 feet of bundles in service.
- Over 40 million feet of pilot hose produced.

FEATURES

- Dependability and Experience - Over 30 years of Oil & Gas thermoplastic hose design and engineering experience
- Field Tested - Over 750,000 feet of bundles and over 40 million feet of pilot hose produced for rigs
- Capabilities - BOP umbilical lengths up to 7,000+ ft and 90+ pilot hoses within one umbilical
- Extended Service Life - Compact pilot hose design allows for more spares to be installed in the bundle without increasing the O.D.

BOP UMBILICALS WITH VELOCITY HOSE

- BOP umbilicals are used on offshore drilling rigs to control the subsea BOP stack
- Parker's BOP have a smaller O.D. which means Parker can produce BOP umbilicals with more pilot lines without increasing the O.D. of the umbilical
- Parker umbilicals are built with Velocity Hose to allow for precise control and faster response times when activating subsea valves on the BOP pod

ELECTRO-HYDRAULIC UMBILICALS

- Parker is an industry leader in designing short length electro-hydraulic umbilicals for offshore applications
- Parker high-pressure subsea hoses, (1/4", 3/8" and 1/2" I.D.), are in compliance to API 17e and pressure ratings up to 15,000 psi. These hoses can be combined into an umbilical configuration with electrical power cables included

HOTLINE HOSE

- Subsea Hotline's are the primary emergency hydraulic control line providing critical service for various subsea functions
- Parker Hotline hoses are specially designed to provide fast response time and low volumetric expansion with length capability of 14,000 feet continuous

CHAPTER H

WORKSHOP EQUIPMENT

Parker Polyflex guidelines for hose assembly and workshop certification H-2

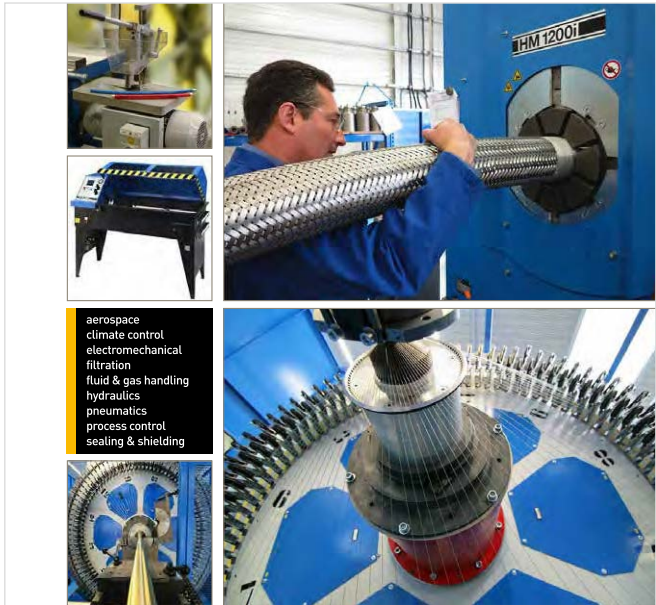
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PARKER POLYFLEX GUIDELINES FOR HOSE ASSEMBLY AND WORKSHOP CERTIFICATION

Information on workshop equipment, hose assembly, and workshop certification is contained in the following manual:

“Parker Polyflex Guidelines for Hose Assembly and Workshop Certification”.

Please ask your local Parker distributor.



aerospace
climate control
electromechanical
filtration
fluid & gas handling
hydraulics
pneumatics
process control
sealing & shielding

Parker Polyflex Guidelines for Hose Assembly and Workshop Certification

Guidelines for becoming a certified distributor for Parker Polyflex hose assemblies **above 690 bar** working pressure



ENGINEERING YOUR SUCCESS.

CHAPTER I

ACCESSORIES & TOOLING

Containment grips	I-2
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CONTAINMENT GRIPS

#	Description
HS-03	Containment grip DN05, 10-15
HS-05	Containment grip DN08, 15-20
HS-08	Containment grip DN12, 20-30
HS-12	Containment grip DN20, 30-40
HS-16	Containment grip DN25, 40-50
HS-20	Containment grip DN32, 50-60
HS-28	Containment grip DN46, 60-70
HS-32	Containment grip DN50, 90-110



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1 Scope

This engineering standard is focused mainly on larger bore (1"-3") long length Parker Polyflex multispiral wire reinforced hoses used in well service operations. It is also relevant for shorter length hose assembly applications such as chemical injection, stimulation, cementing, flexible and testing lines. It provides information on recommended practices for handling, maintenance, inspection, and repair of hose assemblies.

Deployed as single line hoses or used in bundles, Parker Polyflex multispiral wire reinforced hoses are available in sizes from 3/16" to 3" inside diameter and working pressures up to 1035 bar / 15000 psi and continuous lengths greater than 3000 m depending on size.

Hose can be self-supporting, clamped, supported by a guide wire or strengthened with an additional tensile reinforcement.

Parker Polyflex have certified several specialized testing facilities and their personnel to assemble, inspect, test and repair hose assemblies. Hose management is an essential part of the service they provide.

SAE J1273, ISO 17165-2, API RP 17B and ISO 13628 are excellent documents providing general guidelines for selection, routing, fabrication, installation, replacement, maintenance, and storage of hose and hose assemblies. Together with Parker Polyflex field experience, they provide the basis for the recommendations included in this engineering standard.

2 Hose Features

Parker Polyflex Oil & Gas multispiral wire reinforced hoses have been used for over 30 years in both onshore and offshore applications. They are proven to be tough, easy to handle, lightweight compared with alternatives and offer excellent chemical resistance, integral external collapse, ozone and microbiological resistance.

In extreme, abrasive applications, Polyflex offers an additional extra thick ColorGard™ sheath incorporating a dual colour "early warning" safety feature.

2.1 Design life

Parker Polyflex large bore hoses are designed for prolonged service life. The prerequisite for this design life is that the hoses are used within the operating limits, stated in the hose specification sheets. These limits include, but are not limited to working pressure, number of pressure cycles, temperature range and bending radius.

In order to ensure a long service life, Parker Polyflex incorporates a combination of raw material suppliers testing and data, fatigue testing, accelerated and specialized testing into the design of the hoses.

Obviously, due to many other factors, affecting the service life, it is not possible to predict or guarantee service life of each individual hose assembly.

These factors may include, but are not limited to mechanical loads (bending, torsion, tensile loads), frequent changes of temperature within the specified range, improper handling and storage, chemical attack, abrasive fluids, hose damage etc.

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3 Storage

Hoses and hose assemblies should be stored, wherever possible, empty and protected from the elements in a stress-free condition either straight, in a coil, or on a drum. The inside diameter of the coil or drum should not be less than two times the minimum bend radius. If a hose assembly has been used with chemicals, it shall be flushed with water before putting it to storage (see also P.5.4).

Example: hose with minimum bend radius 800 mm; minimum size of drum core/belly should be $2 \times 800 \text{ mm} = 1.6 \text{ m}$.

The fittings should be capped to prevent ingress of dirt or other contamination and any exposed threads protected from damage.

Storage of hoses and hose assemblies should take into account potential exposure to corrosive liquids, rodents, insects, UV light and high temperatures. Storage temperatures should be in the range of hose operating temperatures.

4 Handling

4.1 Personnel

Only trained personnel shall handle and connect hose assemblies.

Incorrect handling will seriously reduce the lifetime of the hose and could cause dramatic failure. The use of wire rope or chains directly against the outer cover should be avoided, and the routing of the assembly should ensure the hose is never bent below its minimum bend radius or twisted. Special attention should be paid to the area at the back of the fitting.

4.2 Spooling and reeling

When reeling long length hose onto a drum it is essential to minimize the tension on the hose. Proof testing of a “stretched” hose while on the drum can cause premature failure of the hose or damage to the drum.

When operating from a vessel it is recommended that the hose is pressurized during the subsea deployment and retrieving operation. This recommendation is based on the fact that during these operations the hose is always subjected to tensile force, at least due to its own weight. Tensile forces will result in hose elongation and possible deformation.

This is significantly reduced by pressurizing the hose, especially important if it is planned to proof test the hose assembly while coiled on a drum or winch. Deployment and retrieving pressures up to 200 bar had been found to be sufficient but this depends on the hose type and local safety regulations. For recommendations of pressure / load values see Appendix 2.

When re-spooling a long length assembly, the pay-off and take-up drums should be inline and a minimum of 10m apart. Depending on how the hose was delivered or re-spoiled, the hose shall be spooled from either the top of the pay-off drum onto the top of the take-up drum or from bottom to bottom. See Fig. 1 and Fig. 2. These recommendations minimize the possibility of inducing twist into the hose.

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When re-spooling a new hose that has a polyurethane cover, it is recommended to lubricate the hose cover with soapy water or other suitable lubricant so the hose will traverse more easily and position itself correctly onto the take-up drum/winch. See Fig. 1.

It is also recommended, when deploying the hose through a moon pool or over the side of a vessel, to align the hose routing in the same manner. See Fig. 2.

Note:

When first supplied, the layline printed on the hose is normally straight and visible. Twisting of the layline is an early indication of poor alignment or high tensile loading.

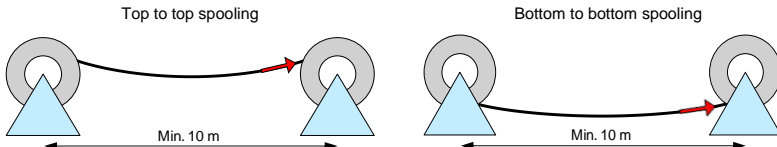


Fig. 1 Hose re-spooling

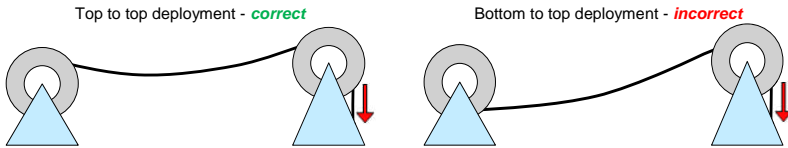


Fig. 2 Hose deployment

5 Possible causes of premature failure, and suggested preventative measures

5.1 Bending the hose below the minimum bend radius

This is most likely to occur if the end fitting is not supported during lifting, a support sling wrongly positioned, or the hose being pulled around a tight corner. It is important that hose should not be bent close to the end fittings. The straight section should be at least two times the outside diameter of the hose before it starts to bend.

Bend restrictors, lifting clamps and containment grips are useful accessories that help to reduce this type of handling problem.

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5.2 Damage of the hose cover

Polyflex ColorGard™ extra thick, dual colour cover significantly reduces the risk of exposing the reinforcing wires. If the outer black cover has been abraded to the point that the “early warning” red inner cover can be seen, but the wire reinforcement has not been exposed, the assembly is still fit for use but shall be scheduled for inspection. Alternatively, a repair according to section 7.1.1 may be considered.

If the hose cover is damaged to the extent that the reinforcing wires are exposed, localized corrosion of the wires could occur causing a progressive reduction in burst pressure, and ultimately failure.

If used subsea, a damaged cover will allow water to ingress into the carcass of the hose and could cause the corrosion of the wire reinforcement and/or collapse of the core tube.

It is strongly recommended to immediately remove from service any hose assembly with exposed wires. See also section 7.1.2 for details. A Parker Polyflex specialized testing facility should be contacted and the procedure described in section 6.5.1 shall be followed.

5.3 Kinked, crushed, or twisted hose

If a visible distortion of the hose occurred (kinked, crushed, twisted) it will have an impact on the function and lifetime of the hose. Reduction of burst pressure and external collapse pressure could result in a sudden failure of the hose assembly. This distortion can be caused by a high tensile load or other factors.

Maintaining pressure in the hose will significantly reduce the risk of such distortion occurring.

5.4 Chemical attack or ageing of the core tube

The use of chemicals at differing concentrations and/or temperatures can have a major effect on the life of a hose assembly and may cause dramatic hose failure. It is important to reference the chemical compatibility chart in the appendix of this document and keep the temperatures and concentrations within the specified limits.

Note:

It is critical that the hose is thoroughly flushed with water after each use.

If the hose is not flushed, the concentration of the fluid that is left in the assembly can increase and cause localised failure of the core tube.

5.5 Damage or corrosion of the end fitting

Incorrect handling or insufficient flushing after use could result in damage or corrosion of the end fitting. This will make connection difficult, probably cause leakage, and could result in sudden failure of the connection.

5.6 Flow rates

Depending on the abrasive properties of the fluid, high flow rates can result in erosion in the core tube or in the bore of the end fitting.

The maximum recommended flow rate is 15 m/sec, although much higher rates have been used short term with non-abrasive fluids. Note possible temperature increase because of high flow velocities.

Note:

The condition of the core tube and end fittings are checked as part of inspection (see 6.2).

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6 Inspection guidelines

6.1 General

Hoses and hose assemblies have a limited lifetime and if they are not properly maintained, they could fail in service, causing expensive damages of property, unnecessary downtimes, release of hazardous substances and personnel injuries.

Properly planned inspections, preventive actions and timely hose replacements are highly recommended to ensure safety and are less expensive than replacements or repairs of hose assemblies after a failure.

Parker is recommending inspection and re-testing of Black Eagle Hoses on a regular basis.

6.2 Frequencies and Levels of Inspection

The table below represents the general Parker recommendation. However, due to huge variances in operating conditions in various applications, the final responsibility to define proper inspection intervals and amount of inspection is within the hose assembly owner/user.

Some factors, which could be taken into account while defining inspection intervals and amount of inspection, are listed below:

- Operating pressures
- Operating temperatures
- Operating times
- Service fluid type, density & viscosity
- PH levels, Chloride content
- Concentration of acids (i.e. HCL, ...)
- Flow rates (fluids, gas)
- Sand content (erosion monitoring) or other abrasive materials
- Additional stress levels (i.e. tensile loads)

It is also recommended to review these operating parameters in order to best evaluate the condition of a used Black Eagle hose assembly.

The history of each assembly should be logged showing the results of previous inspections and any repairs.

Recommended Frequencies of Inspection		
Pre- and post-job	Every 6 months or during installation/ removal	Every 2 years
See 6.3.	Level 1, see 6.4	Level 2, see 6.5

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6.3 Routine in-field Pre Job and Post Job Maintenance, Inspection and testing

6.3.1 Routine in-field Pre Job Maintenance, Inspection and testing

The operator shall visually inspect the hose assembly before every job. If any of the following conditions are found the hose shall be removed from service and scheduled for Level 1 inspection.

- Damage to the outer cover which exposes the reinforcing wires.
- Kinked, crushed, or twisted hose.
- Reduction in the outside diameter of the hose.
- Blistered, soft, degraded, or loose outer cover.
- Cracked, damaged, or badly corroded fittings.

If in doubt, contact the original supplier or a Parker Polyflex specialized testing facility for advice.

Regular in-field pressure testing, (normally required after attaching connectors prior to hose deployment), should be restricted to a test pressure of 1.1× actual operating pressure, or the maximum stated working pressure of the hose assembly. Test duration should be 15 minutes. Preferably use water for pressure testing. The hose shall be monitored during the test and observed for signs of leakage in the hose and fittings, any bulging of the hose body, twisting or any abnormal distortion.

Prior to all pressure testing it must be ensured that all air is purged out of the hose. Failure to do so may result in core tube failure. To control that all air is removed it is sufficient to observe that the fluid flow leaving the hose is steady and constant for minimum of 5 minutes without any air bubbles or pulsations.

6.3.2 Routine in-field Post Job Maintenance, Inspection and testing

On completion of each operation both inside and outside hose surfaces should be flushed / cleaned with sufficient clean water to ensure that all chemicals or residues are fully removed from the hose assembly.

The operator shall visually inspect the hose assembly during every recovery. If any of the following conditions are found the assembly shall be removed from service and scheduled for Level 1 inspection.

- Damage to the outer cover which exposes the reinforcing wires.
- Kinked, crushed, or twisted hose.
- Reduction in the outside diameter of the hose.
- Blistered, soft, degraded, or loose outer cover.
- Cracked, damaged, or badly corroded fittings.

If in doubt, contact the original supplier or a Parker Polyflex specialised testing facility for advice.

6.4 Level 1 – On Site Inspection by User

The Black Eagle hose assembly shall be inspected on site by highly skilled users, who have experience and knowledge in using Black Eagle hoses. All observations should be noted and logged.

Recommended Inspection Amount

- Visual inspection
- Hose core tube inspection with borescope
- Hydrostatic pressure test

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6.4.1 Level 1 – Visual Inspection

For this purpose, the hose assembly should be cleaned inside and outside with water to remove oily traces, dirt, etc. for good viewing results.

The outer cover of the hose body shall be visually inspected for signs of leakage, excessive wear, looseness, kinks, bubbles, bulges, abrasion or cuts. The back side of a bend restrictor (if used) and the hose area behind the fitting should be checked for signs of over-bending/ kinking. The end fittings shall be checked for any signs of leakage, cracks and far advanced corrosion.

See 7.1 for possible hose repairs.

6.4.2 Level 1 – Hose core tube inspection with a borescope

A suitable video scope equipment is required to inspect the hose core tube and the inside surface of the fittings. Inspect the cleaned hose core tube for colour change, cracks, blisters or erosion. Hoses that have been exposed to pressurized gases should be inspected thoroughly to determine, if the integrity of the liner has been breached or the liner has collapsed. If bulges, blisters, punctures or any other damage of the core tube is detected, the hose shall be removed from service and be replaced.

Some Parker Polyflex hoses have a special feature of ColorGard™ core tube. With black inside layer and yellow outside one, damage to core tube becomes visible. If the hose core tube is damaged to the extent that yellow layer is exposed, hose shall be removed from service.

6.4.3 Level 1 – Hydrostatic pressure test

See 6.3.1 for details.

6.5 Level 2 – Inspection/Recertification by a Parker Certified Facility

To be able to perform “Level 2” inspections and re-certifications of Black Eagle hose assemblies, dedicated equipment, personnel and expertise is required. Parker Polyflex have trained and certified specialized facilities and their personnel to assemble, inspect, test, repair and recertify hose assemblies. Their equipment includes:

- Inspection equipment (i.e. videoscopic camera)
- Manufacturing equipment (i.e. a suitable crimper with enough crimping force, die sets, gauges)
- High volume filling pumps for preparing pressure tests
- Testing equipment/ pressure test unit with the possibility to record pressure test graphs
- Safe testing chamber

Hose management is an essential part of the service they provide.

If necessary, the Black Eagle hose assemblies shall be decommissioned from the installation and returned to Parker Polyflex or a certified facility.

Level 2 inspections shall be conducted, if possible, during a regular equipment shutdown.

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After completion of Level 2 inspection, customer will receive detailed report of the findings, including recommended actions:

- Repair (see 8.1)
- recertification (see 8.2)
- scrapping

6.5.1 Customer Pre-dispatch procedure before returning a hose assembly for Level 2 inspection

- The object is to make sure the hose assembly can be safely handled and the condition of the assembly will justify the transportation and inspection costs.
- The chosen inspection facility should be contacted if doubtful about any of the points below.
- Check and record assembly serial number (send information to test facility).
- Assembly must be free of chemical residues inside and outside.
(could result in refusal to handle returned assembly)
- Report on any findings out of section 6.3.1
- Method of transport, size and weight, (Long length hose assemblies on drums or reels may require special handling equipment such as drums and re-spooling machinery).
- Customer will receive a budget price for inspection based on the information given by the end user.

6.5.2 Level 2 - Recommended Inspection Amount

- Safety inspection, condition of assembly as received.
 - Check for chemical residue inside and outside (may require flushing or cleaning).
 - Assembly serial number (check assembly history including previous repairs).
- External inspection
- Internal inspection
- Inspection report

6.5.3 Level 2 - External inspection

- Damage to the outer cover (abrasion, incorrect routing)
- Exposed reinforcing wires. (damaged outer cover)
- Kinked, crushed, or twisted hose. (high tensile loading, incorrect routing)
- Reduction in the outside diameter of the hose (high tensile loading with no pressure)
- Blistered, soft, degraded, or loose outer cover. (chemical attack, leaking fitting, permeation or high temperature)
- Cracked, damaged, or badly corroded fittings (chemical attack, poor handling, old hose assembly)
- Damage or wear on fitting threads (poor handling, old hose assembly)
- Condition of containment grips / clamps. (abrasion, frayed wires, distortion)

6.5.4 Level 2 - Internal inspection

Internal inspection will be done with a borescope.

- Check for damage to bore of fittings, cracks, severe abrasion and corrosion.
- Check for damages, bulges, cracks and blisters of core tube at the back of fittings (critical area).
- Scope maximum length of the core tube possible. Recommended minimum is 10 m both sides.
- Hose assemblies shorter than 20 m should be scoped on the complete length.

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<ul style="list-style-type: none"> • Look for uneven surface (sign of wire fatigue, abrasion, chemical attack). <p>6.5.5 Level 2 - Inspection report</p> <p>The testing facility will advise on the overall condition of the hose and end connections. Customer will receive detailed report of the findings, including recommended actions:</p> <ul style="list-style-type: none"> • Repair (see 7.1) • recertification (see 7.2) • scrapping <p>7 Procedure for repair and recertification</p> <p>7.1 Repair</p> <p>It is recommended, that all repairs are done by certified specialized testing facilities. Some repairs (see examples below) could be done in field. Be sure to maintain safety requirements.</p> <p>7.1.1 Twisted hose, hose with the reduced OD, flattened hose</p> <p>A hose with signs of twisting or deformation will need to be unreeled, as straight as possible, from the winch/drum in a safe environment and pressurized to working pressure for at least 1 hour and then pressure released. The hose shall be re-inspected to see if the hose has returned to its "untwisted, undistorted" original shape. If so the hose should be again pressurized before rewinding back onto the winch/drum. Any sections of hose still misshapen should be cut out of the assembly.</p> <p>7.1.2 Hose with cover damage</p> <ul style="list-style-type: none"> • No reinforcement wires exposed. <p>Temporary solution, the damaged area can be cleaned and protected by wrapping with a strong adhesive "duct / riggers" tape. If abraded to the point where the red ColorGard is visible, the damaged area should be thoroughly cleaned with mild solvent, a thin plastic sheet wrapped around the hose to form a mould. A two pack polyurethane mixture can then be poured into the mould and allowed to set. Remove mould after the polyurethane is set. Also, a repair procedure acc. to Appendix 3 might be applied.</p> <ul style="list-style-type: none"> • Reinforcement wires exposed. <p>It is strongly recommended to remove the hose assembly from service immediately. Any ingress of water into hose carcass will initiate corrosion of the reinforcement wire. It is difficult to estimate the rate of corrosion. At best, the hose could function for months, at worst, possibly less than one week. It is also possible that the core tube could have collapsed if the external pressure acting within the carcass is greater than internal pressure within the hose.</p> <p>In any case, the lifetime of the hose assembly will be significantly reduced, and the hose assembly shall be immediately scheduled for inspection at certified specialized testing facility.</p> <p>Decision to further use a hose assembly with exposed wire shall be based on a proof pressure test for 1.1x maximum working pressure of the hose assembly. This test shall be conducted prior to every further job.</p> <p><small>THIS DOCUMENT AND THE INFORMATION IT CONTAINS IS CONFIDENTIAL AND PROPRIETARY TO PARKER-HANNIFIN CORPORATION AND ITS AFFILIATES ("PARKER"), MAY NOT BE COPIED OR DISCLOSED TO OTHERS OR USED FOR ANY PURPOSE OTHER THAN CONDUCTING BUSINESS WITH PARKER, AND MUST BE RETURNED OR DESTROYED AND ALL FURTHER USE DISCONTINUED AT PARKER'S REQUEST. THE RECIPIENT OF THIS DOCUMENT IS ADVISED THAT IMPROPER SELECTION OR IMPROPER USE OF PARKER SYSTEMS OR COMPONENTS CAN CAUSE DEATH, PERSONAL INJURY AND PROPERTY DAMAGE, AND IS SOLELY RESPONSIBLE THROUGH ITS OWN ANALYSIS AND TESTING FOR THE FINAL SELECTION OF PARKER SYSTEM AND COMPONENTS AND ASSURING THAT ALL PERFORMANCE, ENDURANCE, MAINTENANCE, SAFETY AND WARNING REQUIREMENTS OF THE INTENDED APPLICATION ARE MET. COPYRIGHT PARKER. YEAR OF COPYRIGHT IS THE YEAR(S) INDICATED ON THIS DOCUMENT. ALL RIGHTS RESERVED.</small></p>		

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<p>Repair of such a hose assembly is possible, but it will include cutting out the section of the hose, where the wires have been subjected to water. Obviously, this will require new fittings to be crimped and hose assembly to be proof pressure tested. Procedure for proof pressure testing in this case is specified in the assembly instructions for the appropriate hose type.</p> <p>After successfully passing pressure test, hose assembly shall be permanently marked with the new recertification date (see 7.2).</p> <p>The testing facility will recommend if the condition of the hose warrants the cost of assembling new fittings, joining the lengths together and proof testing.</p> <p>7.1.3 Fitting re-ending</p> <p>In case of fitting damage or hose damage near fitting (usually due to kinking) it is allowed to cut off the fitting and replace it by a new one. This can be done by Parker certified facilities only and will require pressure test at 1.5 x maximum working pressure of hose assembly. Recommended testing time = 15 minutes.</p> <p>7.2 Recertification</p> <p>Recertification shall include Level 2 inspection acc. to section 6.5.2 and a hydrostatic pressure test.</p> <p>Unless otherwise agreed between customer and test facility, test conditions are:</p> <p>Test pressure = 1.5x maximum working pressure of hose assembly. Allow for at least 30 minutes stabilization time before starting recording pressure decay.</p> <p>Pressure hold time = 1 hour</p> <p>Pressure decrease of maximum 5% is allowed.</p> <p>To avoid hose damage due to excessive pressurizations, it is recommended to limit the number of pressure tests to 1.5 x maximum working pressure to 20 for the lifetime of the hose assembly. This may include pressure testing during recertification as well as pressure testing after fitting re-ending.</p> <p>After successfully passing pressure test, hose assembly shall be permanently marked with the word RECERT plus the consecutive number of recertification, i.e. "RECERT- 3" and recertification date.</p> <p>It is recommended to keep the number of recertifications limited to 10 times.</p> <p>8 Parker Certified Distributors/ Service Addresses</p> <p>The below listed companies have been certified by Parker Polyflex to manufacture, inspect and re-certify Black Eagle hose assemblies:</p> <ul style="list-style-type: none"> • Abdex Industries WA, 49A Sustainable Avenue, Bibra Lake, WA 6163, Australia, +61 89418 3044 • Beattie Industrial Ltd., Div. of Newfoundland Offshore, 1345 Topsail Road, PO Box 8398, A1B 3N7 Paradise, NF, Canada, +1 (709) 782-2623 • Flexiflo Corp., PO Box 18532, Jebel Ali Free Zone, Dubai, United Arab Emirates, +971 4 8838131 • Fluid Control Service AS, Ljosheimsvegen 1, 4050 Sola, Norway, +47 51 64 49 50 • Active Service AS, Sjøkrigsskoleveien 15, 5165 Laksevåg, Norway, +47 55 94 22 50 • Hydraulit AS, Bleivassvegen 30F, 5347 Ågotnes, Norway, +47 56 12 67 00 <p><small>THIS DOCUMENT AND THE INFORMATION IT CONTAINS IS CONFIDENTIAL AND PROPRIETARY TO PARKER-HANNIFIN CORPORATION AND ITS AFFILIATES ("PARKER"), MAY NOT BE COPIED OR DISCLOSED TO OTHERS OR USED FOR ANY PURPOSE OTHER THAN CONDUCTING BUSINESS WITH PARKER, AND MUST BE RETURNED OR DESTROYED AND ALL FURTHER USE DISCONTINUED AT PARKER'S REQUEST. THE RECIPIENT OF THIS DOCUMENT IS ADVISED THAT IMPROPER SELECTION OR IMPROPER USE OF PARKER SYSTEMS OR COMPONENTS CAN CAUSE DEATH, PERSONAL INJURY AND PROPERTY DAMAGE, AND IS SOLELY RESPONSIBLE THROUGH ITS OWN ANALYSIS AND TESTING FOR THE FINAL SELECTION OF PARKER SYSTEM AND COMPONENTS AND ASSURING THAT ALL PERFORMANCE, ENDURANCE, MAINTENANCE, SAFETY AND WARNING REQUIREMENTS OF THE INTENDED APPLICATION ARE MET. COPYRIGHT PARKER. YEAR OF COPYRIGHT IS THE YEAR(S) INDICATED ON THIS DOCUMENT. ALL RIGHTS RESERVED.</small></p>		

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<ul style="list-style-type: none"> • *Hydrasun Group Ltd., Gateway Business Park, Moss Road, Aberdeen AB12 3GQ, United Kingdom, +44 1224 618618 (24 Hrs.) • Mento AS, P.O.Box 44, Kontinentalveien 22, 4098 Tananger, Norway, +47 51 64 86 00 • Norwesco Industries (1983) Ltd., 6908L - 6th Street S.E., Calgary AB, T2H 2K4, Canada, +1 403 258 3883 • *Parker Hannifin Manufacturing Germany GmbH & Co. KG - FLUID CONNECTORS GROUP - POLYMER HOSE DIVISION EUROPE - An der Tuchbleiche 4 - 68623 Lampertheim, Germany, + 49 (0) 6256 81-0 • Parker Hannifin Corporation, Parflex Division, 11151 Cash Road, Stafford, TX 77477, USA, +1 281 566 450 <p>Note: * only these facilities are currently certified to re-end 3" Black Eagle hoses. Level 2 inspection, pressure testing and recertification of all sizes can be done by all above listed facilities.</p>		
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<p>Appendix 1: Chemical resistance chart</p> <p>The below chart contains chemical resistance information for Polyamide 11 (Nylon 11), Fluoropolymer and Proprietary Material used on Nautilus 20 hose.</p> <p>These are the most common core tube materials used for Parker Polyflex oil & gas hoses</p> <p>Please refer to the hose datasheets for more detailed information.</p> <p>Rating codes</p> <table border="1"> <tr> <td>E</td> <td>Excellent</td> <td>Good to excellent. Little or no swelling, tensile or surface change. Preferred choice.</td> </tr> <tr> <td>A</td> <td>Good</td> <td>Good to excellent. Little or no swelling, tensile or surface change. Limitations with temperature and type of fluid.</td> </tr> <tr> <td>B</td> <td>Limited</td> <td>Marginal or conditional. Noticeable effects but not necessary indicating lack of serviceability. Further testing is suggested for specific application. Very long-term effects.</td> </tr> <tr> <td>X</td> <td>Unsatisfactory</td> <td>Poor or unsatisfactory. Not recommended without extensive and realistic testing.</td> </tr> <tr> <td>-</td> <td></td> <td>Indicates that this was not tested.</td> </tr> <tr> <td>*</td> <td>Swelling</td> <td>Increase of volume of material, due to absorption of a solvent.</td> </tr> </table> <p>Material code for hose core tube</p> <p>N: Polyamide</p> <p>M: Coextruded core tube with Fluoropolymer inner liner</p> <p>P: Proprietary Specification (Nautilus 20 hose)</p> <p>Notes on chemical resistance table</p> <p>The chemical resistance table is a simplified rating tabulation based on immersion tests. Higher temperatures tend to reduce ratings. Since final selection depends on pressure, fluid, ambient temperature and many other factors not known to Parker Hannifin, no performance guarantee is expressed or implied.</p> <p>The indications do not imply any compliance with standards and regulations and do not refer to possible changes of colour, taste or smell.</p> <p>Some hose applications must take into account legal and insurance regulations. The chemical resistance indicated does not express or imply approval by certain institutions.</p> <p>Chemical resistance does not imply low permeation rates. For gas applications, refer to Appendix 4. Note that hoses with coextruded core tube with Fluoropolymer inner liner are not recommended for gas applications.</p> <p>For fluids, not listed or for advice on particular applications, please contact Parker Hannifin, POLYMER HOSE DIVISION EUROPE in Lampertheim, Germany.</p> <p><small>THIS DOCUMENT AND THE INFORMATION IT CONTAINS IS CONFIDENTIAL AND PROPRIETARY TO PARKER-HANNIFIN CORPORATION AND ITS AFFILIATES ("PARKER"), MAY NOT BE COPIED OR DISCLOSED TO OTHERS OR USED FOR ANY PURPOSE OTHER THAN CONDUCTING BUSINESS WITH PARKER, AND MUST BE RETURNED OR DESTROYED AND ALL FURTHER USE DISCONTINUED AT PARKER'S REQUEST. THE RECIPIENT OF THIS DOCUMENT IS ADVISED THAT IMPROPER SELECTION OR IMPROPER USE OF PARKER SYSTEMS OR COMPONENTS CAN CAUSE DEATH, PERSONAL INJURY AND PROPERTY DAMAGE, AND IS SOLELY RESPONSIBLE THROUGH ITS OWN ANALYSIS AND TESTING FOR THE FINAL SELECTION OF PARKER SYSTEM AND COMPONENTS AND ASSURING THAT ALL PERFORMANCE, ENDURANCE, MAINTENANCE, SAFETY AND WARNING REQUIREMENTS OF THE INTENDED APPLICATION ARE MET. COPYRIGHT PARKER. YEAR OF COPYRIGHT IS THE YEAR(S) INDICATED ON THIS DOCUMENT. ALL RIGHTS RESERVED.</small></p>				E	Excellent	Good to excellent. Little or no swelling, tensile or surface change. Preferred choice.	A	Good	Good to excellent. Little or no swelling, tensile or surface change. Limitations with temperature and type of fluid.	B	Limited	Marginal or conditional. Noticeable effects but not necessary indicating lack of serviceability. Further testing is suggested for specific application. Very long-term effects.	X	Unsatisfactory	Poor or unsatisfactory. Not recommended without extensive and realistic testing.	-		Indicates that this was not tested.	*	Swelling	Increase of volume of material, due to absorption of a solvent.
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Chemical	Concentration	N				M	P		
		20°C (68°F)	40°C (104°F)	60°C (140°F)	90°C (194°F)	125°C (257°F)	23°C (73°F)	100°C (212°F)	150°C (302°F)
Acetaldehyde		A	B	X	X	A	A	A	-
Acetic Acid	5%	A	A	A	B	E	A	A	-
Acetic Acid	10%	A	A	B	X	E	A	A	-
Acetic Acid	50%	B	X	X	X	E	A	A (75°C)	-
Acetic Anhydride		B	X	X	X	E	-	-	-
Acetone	Pure	A	A	B	X	A	A	A	-
Acetylene		A	A	A	-	A	A	A	-
Air		A	A	A	A	A	A	A	A
Aluminium Sulphate	Saturated Solution	A	A	A	A	A	A	-	-
Ammonia	Liquid or Gas	A	A	A	X	A	A	A	A
Ammonium Chloride		A	A	A	-	A	A	A	-
Ammonium Hydroxide	Concentrated	A	A	A	A	A	A	A (80°C)	-
Ammonium Nitrate		A	A	A	A	A	A	A	-
Ammonium Sulphate	Saturated Solution	A	A	B	-	E	A	-	-
Amyl Acetate		A	A	A	B	A	A	A	-
Aniline		B*	X	X	X	E	A	B	-
Asphalt		A	A	A	A	A	-	-	-
Barium Chloride	Saturated Solution	A	A	A	A	A	A	-	-
Barium Formate	Saturated Solution	A	B	X	X	-	A	-	-
Benzaldehyde		A	B	X	X	E	A	A (60°C)	-
Benzene		A	A*	B	X	E	A	A	-
Benzyl Alcohol		B	X	X	X	E	A	A (80°C)	-
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Bleach		B	X	X	X	E	A	A	-	
Bromine		X	X	X	X	B	X	X	X	
Butane		A	A	A	A	A	A	-	-	
Butyl Acetate		A	A	A	B	A	A	A	-	
Butyl Alcohol (Butanol)		A*	B	X	X	E	A	A	-	
Calcium Arsenate		A	A	A	-	A	-	-	-	
Calcium Bromide		A	A	A	B	-	-	-	-	
Calcium Chloride	Saturated Solution	A	A	A	A	A	A	A	-	
Calcium Nitrate		A	A	A	-	A	A	-	-	
Camphor		A	-	-	-	A	A	-	-	
Carbonated Water		A	A	A	A	A	-	-	-	
Carbon Dioxide		A	A	A	A	A	A	-	-	
Carbon Disulphide		A*	B*	B	X	A	A	A	-	
Carbon Monoxide		A	A	A	A	A	A	A	A	
Carbon Tetrachloride		X	X	X	X	A	A	A	-	
Cement Slurries		A	A	A	-	A	-	-	-	
Chlorinated Solvents		B	X	X	X	E	A	A/B	-	
Chlorine		X	X	X	X	E	X	X	X	
Chloroform		B	X	X	X	E	A	A	-	
Chromic Acid	40%	X	X	X	X	E	A	B (80°C)	-	
Citric Acid	Saturated Solution	A	A	B	X	E	A	A	-	
Copper Sulphate		A	A	A	A	A	A	A	-	
Crude Oil		A	A	A	B	A	A	-	-	
Cyclohexane		A	A	A	B	A	A	A	-	
Cyclohexanol		A	B	X	X	E	A	A	-	
Cyclohexanone		A	B	X	X	E	A	A	-	
Decalin		A	A	A	B	A	A	-	-	
Diacetone Alcohol		A	A	B	X	E	-	-	-	
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Diammonium Phosphate		A	A	B	-	E	-	-	-
Dichloroethylene		B	X	X	X	E	-	-	-
Diesel		A	A	A	A	A	A	A	-
Diester Oils		A	A	A	B	A	-	-	-
Diethanolamine	20%	A	A*	A*	B	A	-	-	-
Diethyl Ether		A	-	-	-	E	A	A	-
Diocetyl Phosphate		A	A	A	B	-	-	-	-
Diocetyl Phthalate		A	A	A	B	A	A	-	-
Ethanol	Pure	A*	B	B	X	E	A	A	-
Ethyl Acetate		A	A	A	-	A	A	A (50°C)	-
Ethylene Chlorhydrin		X	X	X	X	E	A	-	-
Ethylene Oxide		A	A	X	X	E	A	A (80°C)	-
Fatty Acid Esters		A	A	A	A	A	-	-	-
Fluorine		X	X	X	X	X	X	X	X
Formaldehyde	Technical	A	B	X	X	E	A	A	-
Formic Acid	10%	X	X	X	X	E	B	B	-
Freon		A	-	-	-	A	A	-	-
Furfuryl Alcohol		A	A*	B	X	E	A	A	-
Gas (Coal)		A	A	-	-	A	A	-	-
Gasoline (High Octane)		A	A	A*	-	A	A	A	-
Glucose		A	A	A	A	A	A	-	-
Glycerine	Pure	A	A	B	X	E	A	A	-
Heptane		A	A	A*	-	A	A	A	-
Hexane		A	A	A	A	A	A	A (60°C)	-
Hydraulic Fluid (petroleum base)		A	A	A	A	A	A	A	-
Hydraulic Fluid (phosphate ester base)		A	A	A	B	A	A	-	-
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Hydraulic Fluid (water base)		A	A	A	A	A	-	-	-	
Hydrochloric Acid	15%	A	B	X	X	E	A	A	-	
Hydrochloric Acid	28%	X	X	X	X	E	A	A	-	
Hydrochloric Acid	37%	X	X	X	X	A	A	-	-	
Hydrofluoric Acid	3%	A	B	X	X	E	B	-	-	
Hydrogen		A	A	A	A	A	A	-	-	
Hydrogen Peroxide	20%	A	B	-	-	E	A	A	-	
Iron Trichloride	Saturated Solution	A	A	A	-	A	A	B	-	
Isocyanates		B	X	X	X	E	-	-	-	
Isooctane		A	A	A	A	A	A	-	-	
Isopropyl Alcohol		A	B	X	X	E	A	A	-	
Kerosene		A	A	A*	B	A	A	A (85°C)	-	
Lactic Acid		A	A	A	B	E	A	A	-	
LP Gas		A	A	A	A	E	-	-	-	
Magnesium Chloride	50%	A	A	A	A	A	A	A	-	
Mercury		A	A	A	A	A	A	A	-	
Methane		A	A	A	A	E	A	A	A	
Methanol	Pure	A	B	B*	X	E	A	A	-	
Methyl Acetate		A	A	A	-	A	A	-	-	
Methyl Bromide		A	X	X	X	E	A	-	-	
Methyl Cellosolve		A	A	A	X	A	-	-	-	
Methyl Chloride		A	X	X	X	E	A	-	-	
Methylene Chloride		X	X	X	X	A	A	-	-	
Methyl Ethyl Ketone (MEK)		A	A	B	X	-	A	A (80°C)	X (200°C)	
Methyl Isobutyl Ketone		A	A	B	X	E	A	-	-	
Methyl Sulphate		A	B	-	-	E	-	-	-	
Monochlorobenzene		B	X	X	X	A	A	A (75°C)	-	
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Monoethylene Glycol (MEG) Ethane-1,2-diol		A	A	A*	X	E	A	A	B (200°C)	
Naphtha		A	A	A	-	A	A	A	-	
Naphthalene		A	A	A	B	A	A	A	-	
Natural Gas		A	A	A	A	E	A	-	-	
Nitric Acid		X	X	X	X	X	X	X	X	
Nitrobenzene		B	X	X	X	A	A	B (80°C)	-	
Nitrogen Gas		A	A	A	A	E	A	-	-	
Oils Refined		A	A	A	B	A	A	A	-	
Oleic Acid		A	A	A	B	A	A	A	-	
Oxalic Acid		A	A	B	X	E	A	A	-	
Oxygen Gas		A	A	B	X	A	A	-	-	
Ozone		B	X	X	X	E	A	B	-	
Perchloric Acid		B	X	X	X	B	A	A	-	
Perchloroethylene		B	X	X	X	E	A	A	-	
Petroleum Ether		A	A	A	B	E	A	A (80°C)	-	
Phenols		X	X	X	X	E	B	X	X	
Phosphoric Acid	50%	A	B	X	X	E	A	A	A	
Picric Acid		B	X	X	X	E	A	A	-	
Potassium Carbonate		A	A	B	X	E	A	-	-	
Potassium Chloride		A	A	B	X	E	A	A	-	
Potassium Hydroxide	50%	A	B	X	X	E	A	A (80°C)	-	
Potassium Nitrate		A*	B*	X	X	E	A	A	-	
Potassium Permanganate	5%	X	X	X	X	E	A	A (60°C)	-	
Potassium Sulphate		A	A	A	A	A	A	A	-	
Propane		A	A	A	A	A	A	-	-	
Propylene Glycol		A	B	X	X	A	A	-	-	

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Pyridine	Pure	B	X	X	X	E	A	A (80°C)	-
Sea Water		A	A	A	A	A	A	A	-
Sodium Acetate	Saturated Solution	A	B	X	X	E	A	A	-
Sodium Borate		A	A	A	-	A	A	-	-
Sodium Carbonate	Saturated Solution	A	A	B	X	E	A	A (80°C)	-
Sodium Chloride	Saturated Solution	A	A	A	A	A	A	A	-
Sodium Hydroxide	50%	A	B	X	X	E	A	A	A
Sodium Hypochlorite	Concentrated	B	X	X	X	E	A	-	-
Sodium Hypochlorite	Dilute Commercial	A	B	X	X	E	A	A	-
Sodium Sulphide		A	A	B	-	E	A	A	-
Stearic Acid		A	A	A	B	A	A	-	-
Stearin		A	B	B	-	E	-	-	-
Styrene Monomer		A	A*	-	-	E	A	-	-
Sulphur		A	A	-	-	A	A	A	-
Sulphur Dioxide		B	X	X	X	A	A	A	A
Sulphur Hexafluoride Gas		A	A	A	A	A	A	-	-
Sulphuric Acid	1%	A	B	B	X	E	A	-	-
Sulphuric Acid	10%	A	B	X	X	E	A	B (80°C)	-
Sulphuric Anhydride		B	X	X	X	E	A	-	-
Tartaric Acid		A	A	A	B	A	A	A	-
Tetrahydrofuran (THF)		A	A	B	X	E	A	B	-
Toluene		A	A*	B	B	E	A	A	-
Tributyl Phosphate		A	A	A	B	A	A	-	-
Trichloroethane		B	X	X	X	E	A	A (75°C)	-
Trichloroethylene		B	X	X	X	E	A	A (80°C)	-
Tricresyl Phosphate		A	A	A	B	A	B	-	-
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Triphenyl Phosphate		A	A	B	-	A	-	-	-
Trisodium Phosphate		A	A	A	A	A	-	-	-
Turpentine		A	A	B	-	A	A	-	-
Urea		A	A	B	B	E	A	A	-
Uric Acid		A	A	A	B	A	A	-	-
Water		A	A	A	A	A	A	A	-
Water Glycols, e.g. Oceanic HW fluids ^{a)} Transaqua HT/HTZ ^{b)} Brayco Micronic SV fluids ^{b)} <small>a) registered trademark of MacDermid Group b) registered trademark of Castrol</small>		A	A	A	B	A	A	A	-
Xylene		A	A*	B	B	E	A	B/X	-
Zinc Bromide		A	A	A	-	-	-	-	-
Zinc Chloride	Saturated Solution	A	A	B	X	E	A	A (80°C)	-
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Appendix 2: Data for tensile loading and weights of Polyflex hoses

Note that all below values of tensile forces include the own weight of the hoses.

The values below have been established based on lab testing (tensile test followed by impulse testing) of short hose assemblies. At the tensile forces stated below the hoses will not elongate more than 30% at the area of highest load (topside). Pressurized hose can take higher tensile load, it will elongate less.

2448N-32V80	Pressure [bar]	0	100	300 and above	
	Max. tensile force [kN]	30	50	100	
2580N-32V80	Pressure [bar]	0	100	300 and above	
	Max. tensile force [kN]	30	50	100	
2648N-32V80	Pressure [bar]	0	100	300 and above	
	Max. tensile force [kN]	30	50	100	
2240N-48V80	Pressure [bar]	0	100 and above		
	Max. tensile force [kN]	30	50		
2440N-48V80	Pressure [bar]	0	100	300 and above	
	Max. tensile force [kN]	60	100	200	
2640N-48V80	Pressure [bar]	0	100	300 and above	
	Max. tensile force [kN]	60	100	200	

In the table below some figures are put together for information

	Hose ID [mm]	Hose OD [mm]	Hose weight in air empty [kg/m]	Hose weight in air, full of water [kg/m]	Hose weight in water empty [kg/m]	Hose weight in water full of water [kg/m]
2448N-32V80	50,5	80,5	8,5	10,5	3,3	5,3
2580N-32V80	50,5	84,5	9,4	11,5	3,7	5,7
2648N-32V80	50,0	86,0	12,1	14,1	6,2	8,1
2240N-48V80	75,0	114,0	11,5	16,0	1,1	5,6
2440N-48V80	75,0	122,0	18,7	23,2	6,7	11,3

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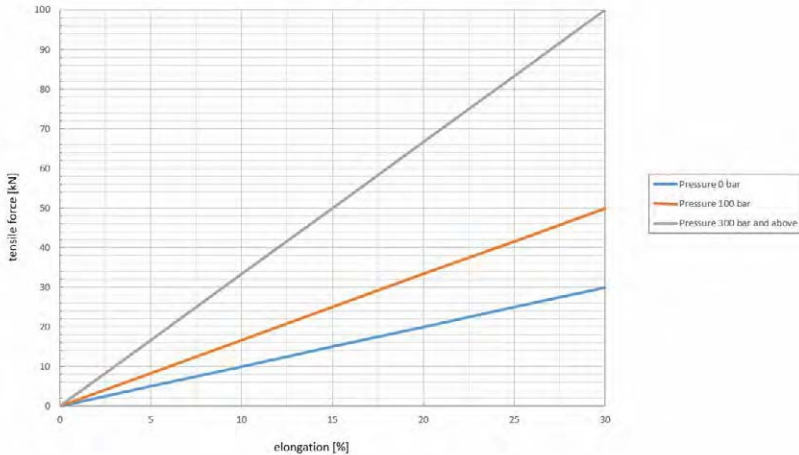
2640N-48V80	75,0	130,0	27,5	32,0	14,0	18,4
--------------------	------	-------	------	------	------	------

1st Example: No pressure. 1000 m length of 2580N-32V80 shall be deployed. Hose weight in water, full of water, 5,7 kg/m × 1000 m = 5700 kg. Max tensile force is 30 kN, therefore a 1000m length is too heavy to deploy in these conditions.

2nd Example: Pressure 300 bar. 1500 m length of 2580N-32V80 shall be deployed. Hose weight in water, full of water, 5,7 kg/m × 1500 m = 8550 kg. Max. tensile force is 100 kN, so a 1500 m length of 2580N-32V80 is OK to deploy when pressurized at 300 bar, and an additional weight of 10000-8550=1450 kg may be added.

The following maximum tensile force over elongation plots indicate which maximum elongation will locally occur at a specific maximum tensile force.

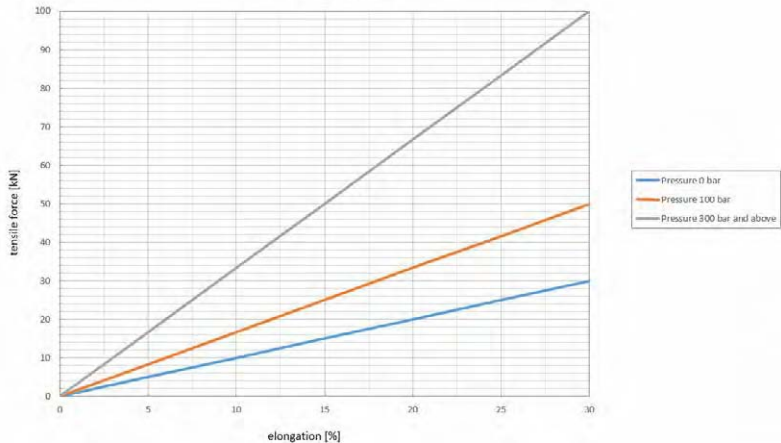
2448N-32V80



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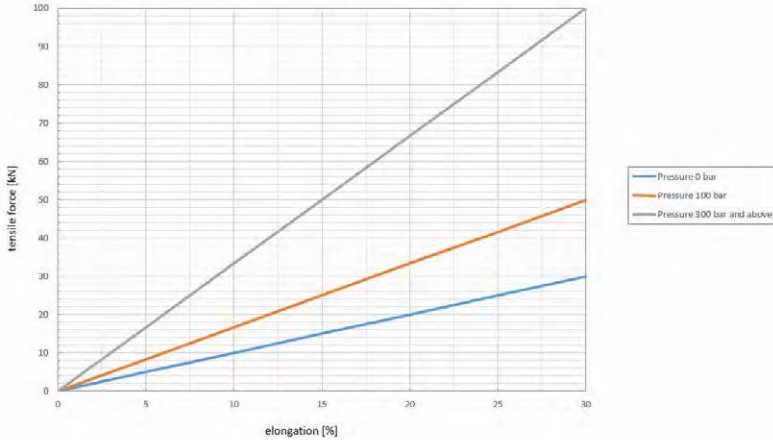
2580N-32V80



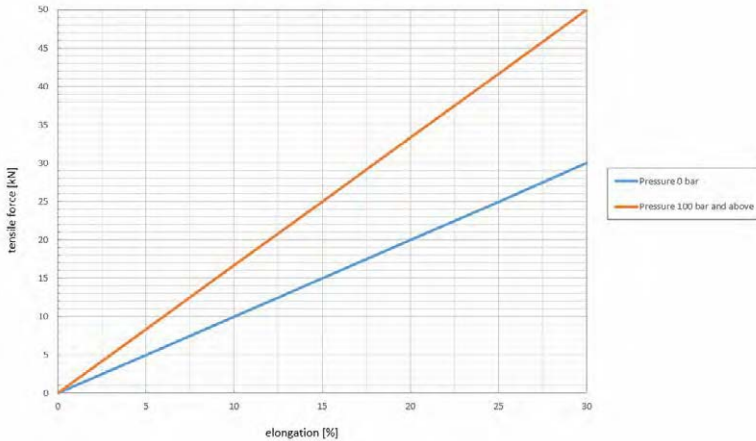
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2648N-32V80



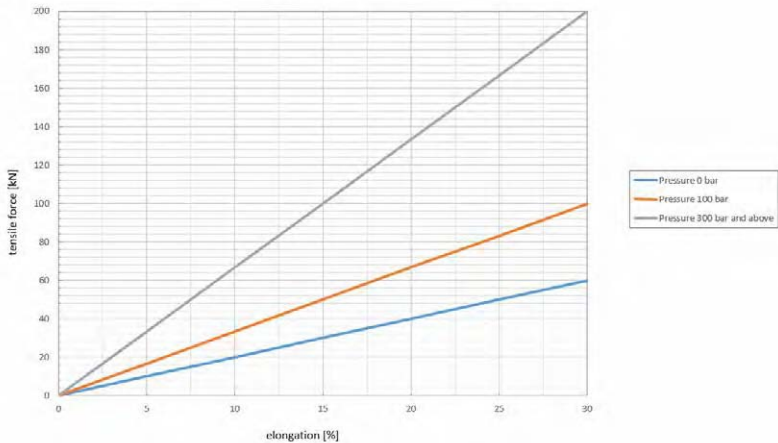
2240N-48V80



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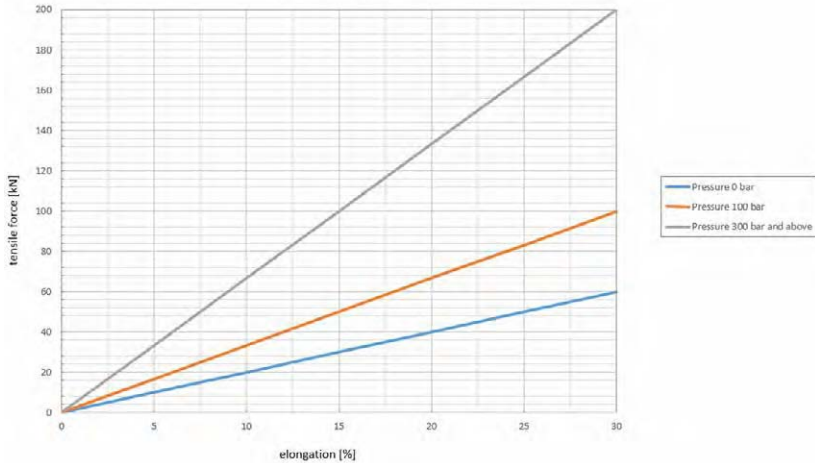
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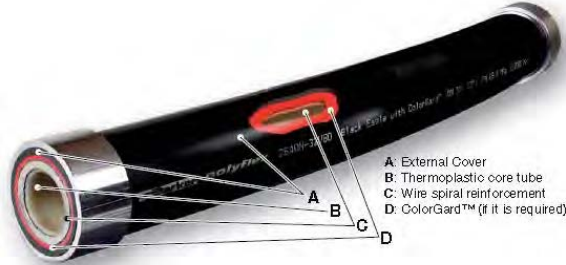
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Appendix 3: Procedure for a repair of a local damage in the outer cover

1. Purpose

This engineering standard provides a recommended practice for repair of local outer cover damage on a Polyflex large bore hose. This instruction is valid for hose sizes 1 1/2" (DN 38) up to size 3" (DN 75) with ColorGard™.

Polyflex large bore hoses are being increasingly used subsea, deployed as single line hoses. These hoses are therefore protected by a dual colour outer cover, the extra thick ColorGard™ sheath (see picture):



2. Important Safety Notices

Before repairing a Polyflex hose, carefully read and fully understand the below instructions. Refer to section 7.2.1 to determine whether the repair is allowed.

Follow your local safety regulations and ensure that operators are equipped with appropriate protection. The repair of Polyflex hoses requires a safe use of a hot-air gun.

Incorrect handling may significantly reduce the lifetime of the hose and could cause dramatic failures.

3. Preparation

Recommended equipment and materials:

- Original Polyflex thermoplastic filling material to enable a permanent and proper compound to the original outer cover of the hose
- Industrial hot-air gun (Temperature min. 650 °C) with a small and removable front nozzle to locally melt the filling material and the damaged area of the outer cover.

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- A spoon, knife or a putty knife to locally press/ fill the melted material into the damaged area
- Enough cold water to cool down the heated hose immediately
- Grinding tool and sand paper (grain 60 – 80) to smoothen the repaired spot
- Optional: Anti splatter spray/ silicone spray for final polish after the finished repair






4. Repair Procedure

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<p>4.1 Clean the defective spot with a lint-free cloth or with compressed air. Do not use any cleaning detergent! For the repair, the area must be dry and free of dirt and dust.</p>		
<p>4.2 Melt the damaged area with the hot-air gun at approx. 600°C locally. Immediately when the material is melting, use a spoon or putty knife to press the melted material into the damaged area.</p> <p>Cool the heated area immediately with cold water.</p>		
<p>4.3 Visually check the melted area for any holes or remaining gaps.</p>		
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<p>4.4 Fill open gaps with melted filling material.</p>		
<p>4.5 Spackle the melted material into the gaps by using a putty knife or similar. Make sure that enough melted material is used for the repair.</p> <p>ATTENTION: DO NOT OVERHEAT THE HOSE. STOP HEATING IMMEDIATELY AFTER MATERIAL IS STARTING TO MELT!</p>		
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<p>4.6 Cool down the area with cold water in order to avoid any heat damages of the hose.</p>		
<p>4.7 Remove excessive filling material by using a grinding tool. The grain of the tool / grinding paper should be approx. 60 - 80</p>		
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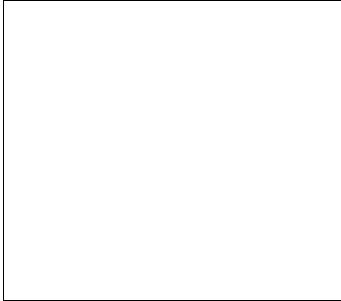
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<p>4.8 By grinding the repaired area, unfilled gaps might become visible. These gaps shall be filled by following step 4.4 to 4.7</p>		
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4.9 Remove excessive melted filling material with a grinding tool (see 4.7)		
4.10 Final grinding by hand with sand paper (Grain = 60 - 80)		
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<p>4.11 Final finish by locally heating up the repaired area.</p> <p>ATTENTION:</p> <p>DO NOT OVERHEAT THE HOSE.</p> <p>STOP HEATING IMMEDIATELY AFTER MATERIAL IS STARTING TO SHINE!</p> <p>Cool down immediately with cold water to avoid any overheating.</p>		
<p>4.12 Polish repaired outer cover by using Silicone spray or similar (optional)</p>		
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Appendix 4: Recommendations for use of Parker Polyflex Black Eagle hoses with gas and sour gas.

4.1. Use of Black Eagle hoses with gas.

Please refer to Appendix 1 “Chemical compatibility table” for chemical compatibility of core tube materials with gases. However, good chemical compatibility is not the only parameter to consider for gas use. The other key parameter is permeability. Permeation could lead to different potential failure modes. One is hose cover blistering and another is core tube collapse due to rapid gas decompression and/or gas trapped under pressure between hose layers.

Permeability is defined as the ability of a substance to allow another substance to pass through it. For a circular tube, it is calculated per the below formula:

$$V = PW * A * T * P / S$$

V - volume of gas, in cm³, which diffuses through

PW - permeability coefficient, cm³*mm/m²*day*bar, see table below

A - is the area across which the gas diffuses, in m²

S - thickness of tube, in mm

T - diffusion time, in days

P - pressure difference across the tube, in bar

PW values for various gases, cm ³ *mm/m ² *d*bar	N2	Air	O2	CO2	H2	He	CH4
PA11, methanol washed	5	7	21	60	130		6
PA12	9	13	43	105	900	500	14
POM	2	3	4	20	80		

These guidance values are taken from literature. They are based on room temperature.

Higher temperatures significantly increase permeation rates.

Actual behavior may vary considerably because of variations in processing.

The below simplified estimation formula is a result of recalculations based on the typical core tube thickness and area of Polyflex hoses.

$$V = K * PW * P$$

V - volume of gas, in cm³ per core tube meter per day, which diffuses through

K – recalculation coefficient for area and thickness, see table below

PW - permeability coefficient, cm³*mm/m²*d*bar, see table above

P - pressure difference across the tube, in bar

K coefficients for hose sizes

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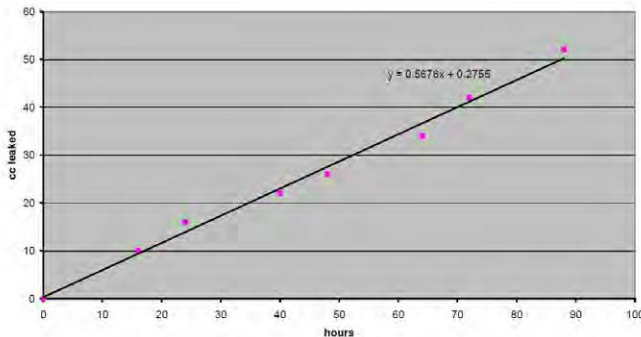
-04	-05	-06	-08	-12	-16	-20	-24	-32	-48
0,017	0,019	0,021	0,027	0,035	0,040	0,044	0,048	0,053	0,048

Example: how much CH4 would permeate through core tube of a 2" hose at 10000 psi.

V=0,053*6*690=219,42 cm³ per core tube meter per day

As previously mentioned, all the calculated values can be used for estimation only. Permeation coefficients are just literature values for lab conditions, permeation through hose cover is not considered.

As an example, permeation of CH4 at 1 meter sample of 2" hose has been measured at 170 bar and ambient temperature and the result is represented on the below graph. The above calculation would result in a value of V=0,053*6*170=54,06 cm³ per core tube meter per day, which would mean 2,25 cm³ per hour, and only approx. 0,57 cm³ per hour have been measured.



Note that in all previous discussions gas which permeates through the core tube was mentioned. Obviously, there is one more barrier – hose cover. If cover is pin-pricked, gas will easily go through it and no issues will occur. But pin-pricking is not acceptable for subsea service as the reinforcement wires will corrode. In addition, collapse resistance of hose would be compromised. For land based operations, all Parker Polyflex hoses may be pin-pricked.

Pin-pricking is not required on hoses with Colorgard. Performance of those hoses with gas has been confirmed by several tests. Test summary is provided below.

Without pin-pricking, gas will also have to permeate through the hose cover. The formula for calculation is the same as for core tube, only other permeability coefficients shall be used. Parker hoses are designed in the way that cover material has higher permeability coefficient compared to core tube, so more gas can permeate through the cover. In addition, area of permeation is larger. Thick cover is rigid enough to withstand any possible pressure build up in the hose annulus without building blisters.

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Hose type	Test description	Test gas	Test pressure and temperature	Test results	
2640N-24V80	Pre-conditioning of hose: 24 hours soak in methanol at room temperature and atmospheric pressure. Pressurize with test gas mixture for 12 hours. Decompress at 20 bar/min. Leave for 1 hour. Repeat this pressure cycle two more times.	Gas mixture 97/3 CH4/CO2	740 bar (10730 psi) at 25°C	No signs of blistering or slitting and no decompression damage have been found on hose core tube at a magnification of X20.	
2640N-24V80	Pressurize with test gas at 345 bar for 24 hours. Decompress at 70 bar/min. Leave for at least 12 hours. Repeat this pressure cycle two more times.	N2	345 bar (5000 psi) at ambient temperature	No signs of blistering or slitting and no decompression damage have been found on hose cover at a magnification of X20.	
2640N-32V80, also valid for 2580N-32V80	Pressurize with test gas at 690 bar for 30 days and slowly decompress (decompression rate not noted). Pressure test with water 20 times at 1035 bar for 60 sec. Pressure test with water at 1035 bar for 1 hour. Pressurize with test gas at 690 bar for 47 days and slowly decompress (decompression rate not noted). Pressure test with water 20 times at 1035 bar for 60 sec. Pressure test with water at 1035 bar for 1 hour. Perform burst test.	Gas mixture 97/3/2 CH4/CO2/ H2S, water added to adjust system pH to 3,5-3,8	690 bar (10000 psi) at 25°C	No deterioration on cover have been found. After all testing, hose passed minimum burst pressure requirements.	
2440N-32V80, also valid for 2448N-32V80	Pressurize with Nitrogen at 170 bar for 7 days. Then pressurize with Methane at 170 bar for 45 days.	N2 and CH4	170 bar (2465 psi) at ambient temperature	No leakages at connections and no ballooning of the cover. The bore inspection at about 910 hours revealed that the core tube was perfectly smooth and circular. Hose expands by about 0.6 to 0.8 mm upon inflation to 175 bar, but there is no creep in diameter thereafter. After decompression at the end of testing, it took around 6 hours to return to its original outside diameter.	
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REVISED / CHECKED M. Levin 20. Apr. 2021		REVISION U
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The situation changes, however, if the hose is in subsea service. With external pressure applied, pressure difference across the cover becomes the limiting factor.

Gas permeating through core tube could stay in the hose annulus between core tube and cover and some pressure will build up there. Due to undefined volume of hose annulus of Polyflex hoses (this is related to hose design and manufacturing), it is not possible to calculate this pressure. And in case of quick hose depressurization this built-up pressure could lead to core tube collapse.

With a hose deployed down from a vessel, the situation becomes even more complicated. External pressure varies over the hose length. Lower part of the hose may have no gas permeation through cover, all gas which has passed through the core tube is creeping up annulus and starts leaving the hose at the pressure balance point. In this case gas permeates through core tube on the whole length of hose but it permeates through cover only on the part length. Obviously, the volume of gas which needs to locally penetrate through cover is higher. This could lead to blisters on the cover. Quick retrieving of hose (which means external pressure change) could lead to the same phenomena.

Parker Polyflex Black Eagle hoses have been used in gas applications for many years. Based on the lab testing and field experience, multiple number of parameters shall be considered. Therefore, design factor of min. 4:1 should be applied (max. operating pressure should not exceed 25% of minimum burst pressure of the hose). This is also required by ISO 7751. If possible, guards of hose whip restrictors shall be used. Please also refer to Parker Safety Guide 4400-B.1

4.2 Use of Parker Polyflex hoses with sour gas.

Core tube of most of Parker Polyflex Black Eagle hoses is made from Polyamide 11. This material is perfectly resistant to Hydrogen sulfide. Only aqueous solutions which are acidic can lead to an acceleration of polymer degradation. Due to the low acidity and generally low partial pressures of Hydrogen sulfide in crude oil or natural gas this effect can be neglected.

Reinforcement wires are made of very high strength steel. Processing of these wires results in very small grain sizes which reduce the susceptibility of the material to cracking that can be caused by H₂S. In addition, contact of wires with H₂S is limited to the amount of gas which has permeated through the core tube. This amount is also very low due to low partial pressures. In addition, testing has been conducted: totally 77 days of exposure to 2% of wet H₂S at 690 bar (resulting in partial pressure of 13,8 bar (200 psi)) and subsequent burst pressure test and SEM analysis of wires. Minimum burst pressure was achieved and in all the wire samples examined, there was no evidence of microcracks or intergranular fracture, nor was there any evidence of embrittlement.

More attention shall be put to hose fittings. They are in direct contact to fluids and can be subjected to H₂S. Some limitations and requirements are listed in ISO 15156 parts 1 to 3 (former NACE MR0175). The usual question "are the fittings NACE compliant?" cannot always be answered with yes or no.

The original and subsequent editions of NACE Standard MR0175/ISO 15156 established limits of H₂S partial pressure above which precautions against sulfide stress cracking (SSC) were always considered necessary. They also provided guidance for the selection and specification of SSC-resistant materials when the H₂S thresholds were exceeded. In more recent editions, NACE MR0175 has also provided application limits for some corrosion-resistant alloys, in terms of environmental composition and pH, temperature and H₂S partial pressures. In addition, requirements for different equipment may be also different.

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The two important statements out of **NACE MRO1175**/ISO 15156 shall be considered.

The behavior of metallic materials in H2S-containing environments is affected by complex interactions of parameters, including the following:

- a) chemical composition, method of manufacture, product form, strength, hardness of the material and its local variations, amount of cold work, heat-treatment condition, microstructure, microstructural uniformity, grain size and cleanliness of the material;
- b) H2S partial pressure or equivalent concentration in the water phase;
- c) chloride ion concentration in the water phase;
- d) acidity (pH) of the water phase;
- e) presence of sulfur or other oxidants;
- f) exposure to non-production fluids;
- g) exposure temperature;
- h) total tensile stress (applied plus residual);
- i) exposure time.

WARNING — CRAs (corrosion-resistant alloys) and other alloys selected using ISO 15156 are resistant to cracking in defined H2S-containing environments in oil and gas production, but not necessarily immune to cracking under all service conditions. **It is the equipment user's responsibility to select the CRAs and other alloys suitable for the intended service.** Below there is the list of Parker Polyflex hose fittings for some Black Eagle hoses and the information about use with H2S based on ISO 15156 requirements for "any equipment or component". Hose fittings are not explicitly listed in ISO 15156.

Note that several fitting types with various materials may exist for the same hose.

Hose type	Fitting series	Nipple material	Shell material	Max. Temp. °C (°F)	Max. partial pressure pH2S, kPa (psi)	Remarks
2440N-20V80	1xxLX-	Duplex 2205	316 or 316Ti	232 (450)	10 (1,5)	Any combination of chloride concentration and in situ pH occurring in production environments is acceptable. If chloride concentration is less than 50 mg/l, no restrictions on pH2S and pH are set.
2640N-24V80	1xx5X-	Duplex 2205	Duplex 2205	232 (450)	10 (1,5)	Any combination of chloride concentration and in situ pH occurring in production environments is acceptable. If chloride concentration is less than 50 mg/l, no restrictions on pH2S and pH are set.
	6xx5X-	4340 Q&T	316 or 316Ti		0,3 (0,05)	Normally, no special precautions are required for the selection of steels for use under these conditions, nevertheless, highly susceptible steels can crack.

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SUBJECT: Instructions for handling, maintenance, inspection and repair of Parker Polyflex BLACK EAGLE hoses and assemblies					PAGE: 42 of 43	
Hose type	Fitting series	Nipple material	Shell material	Max. Temp. °C (°F)	Max. partial pressure pH ₂ S, kPa (psi)	Remarks
2640N-24V80	6xx5X-	Nitronic 50 (S20910)	316 or 316Ti	66 (150)	100 (15)	Any combination of chloride concentration and in situ pH occurring in production environments is acceptable.
2240N-32V10 and 2248N-32V10	1xxS6	4340 Q&T	316 or 316Ti		0,3 (0,05)	Normally, no special precautions are required for the selection of steels for use under these conditions, nevertheless, highly susceptible steels can crack.
2449N-32V10	1xxS8	4340 Q&T	316 or 316Ti		0,3 (0,05)	Normally, no special precautions are required for the selection of steels for use under these conditions, nevertheless, highly susceptible steels can crack.
2448N-32V80 and 2580N-32V80	1xxBL-	4340 Q&T	316 or 316Ti		0,3 (0,05)	Normally, no special precautions are required for the selection of steels for use under these conditions, nevertheless, highly susceptible steels can crack.
		Super Duplex S32750 or S32760	316 or 316Ti		10 (1,5) to 20 (3)*	Any combination of chloride concentration and in situ pH occurring in production environments is acceptable. If chloride concentration is less than 50 mg/l, no restrictions on pH ₂ S and pH are set. * depending on chemical composition of individual material batch
	6XX5X-	4340 Q&T	316 or 316Ti		0,3 (0,05)	Normally, no special precautions are required for the selection of steels for use under these conditions, nevertheless, highly susceptible steels can crack.
		Nitronic 50 (S20910)	316 or 316Ti	66 (150)	100 (15)	Any combination of chloride concentration and in situ pH occurring in production environments is acceptable.
2648N-32V80	1xxCX-	4340 Q&T	316 or 316Ti		0,3 (0,05)	Normally, no special precautions are required for the selection of steels for use under these conditions, nevertheless, highly susceptible steels can crack.
		Inconel 718 (N07718)	316 or 316Ti	135 (275)		Any combination of hydrogen sulfide, chloride concentration, and in situ pH in production environments is acceptable.
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SUBJECT: Instructions for handling, maintenance, inspection and repair of Parker Polyflex BLACK EAGLE hoses and assemblies					PAGE: 43 of 43	
Hose type	Fitting series	Nipple material	Shell material	Max. Temp. °C (°F)	Max. partial pressure pH2S, kPa (psi)	Remarks
2240N-48V80	1XXTX-1XXLX-1XX5X-	4340 Q&T*	316 or 316Ti		0,3 (0,05)	Normally, no special precautions are required for the selection of steels for use under these conditions, nevertheless, highly susceptible steels can crack.
2440N-48V80	1XXTX-1XXLX-1XX5X-	4140 Q&T, max. HRC22	316 or 316Ti			Normally, no special precautions are required.
2640N-48V80	1XXLX-	Inconel 625 (N06625)	316 or 316Ti			These materials have been used without restriction on temperature, pH2S, chloride concentration, or in situ pH in production environments. No limits on individual parameters are set, but some combinations of the values of these parameters might not be acceptable.
<p>*fittings out of this material has been manufactured till April 2021, they are still in field and some stock is available. Contact Parker for clarification if required.</p>						
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PRESSURE DROP TABLES FOR DIFFERENT HOSE SIZES

REMARKS

Figures shown in the table are for 1 m of hose without fittings.

Figures derived from calculation, not from testing.

Medium is water at room temperature. For this conditions, recommended max. fluid velocity is 15 m/sec

The recommended max fluid velocity depends on allowable pressure drop. Hoses have been used at higher fluid velocities. These flow figures are marked with a grey background.

FLOWRATES 5 UP TO 150 L/MIN. SIZES 5 MM (-03) UP TO 13 MM (-08)

Flowrate			Pressure drop in bar/m				
l/min	US Gal/min	Oilfield BBL/min	nominal IDs				
			5 mm -03	6 mm -04	8 mm -05	10 mm -06	13 mm -08
5	1.32		0.48	0.16	0.05		
10	2.64		1.68	0.55	0.17	0.07	
15	3.96		3.53	1.14	0.36	0.14	
20	5.28		6.00	1.93	0.60	0.23	0.07
25	6.60			2.91	0.90	0.34	0.10
30	7.93			4.01	1.26	0.47	0.13
35	9.25			6.94	1.67	0.62	0.18
40	10.57				2.14	0.79	0.23
45	11.89				2.66	0.98	0.28
50	13.21				3.23	1.19	0.34
60	15.85	0.38			4.54	1.67	0.47
70	18.49	0.44				2.22	0.62
80	21.13	0.50				2.85	0.80
100	26.42	0.63					1.20
120	31.70	0.75					1.69
150	39.63	0.94					2.55

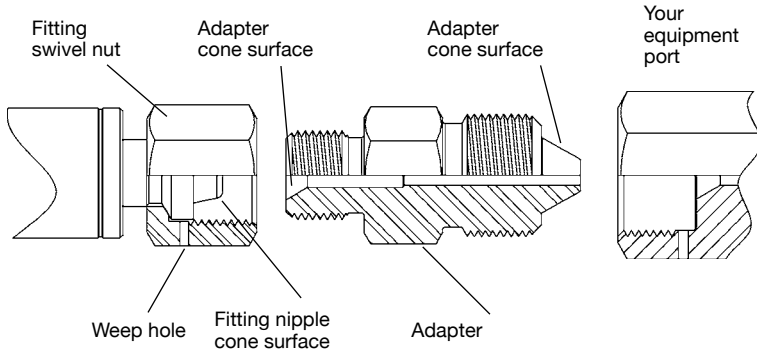
FLOWRATES 60 UP TO 5000 L/MIN. SIZES 20 MM (-12) UP TO 75 MM (-48)

Flowrate			Pressure drop in bar/m						
l/min	US Gal/min	Oilfield BBL/min	nominal IDs						
			20 mm -12	25 mm -16	32 mm -20	38 mm -24	50 mm -32	75 mm -48	
60	15.85	0.38	0.07						
70	18.49	0.44	0.09						
80	21.13	0.50	0.11						
100	26.42	0.63	0.17						
120	31.70	0.75	0.24	0.06					
150	39.63	0.94	0.35	0.09					
200	52.83	1.26	0.60	0.15					
250	66.04	1.57	0.91	0.22	0.07				
300	79.25	1.89	1.28	0.31	0.10				
400	105.67	2.52	2.18	0.52	0.17	0.07			
500	132.09	3.14		0.79	0.26	0.12			
700	184.92	4.40		1.48	0.49	0.21	0.05		
1000	264.17	6.29			0.95	0.40	0.09		
1500	396.26	9.43			2.05	0.85	0.20		
2000	528.35	12.58				1.46	0.34	0.05	
2500	660.43	15.72					0.52	0.08	
3000	792.52	18.87					0.73	0.11	
3500	924.61	22.01							0.15
4000	1056.69	25.16							0.19
4500	1188.78	28.30							0.23
5000	1320.86	31.45							0.28

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RECOMMENDED TIGHTENING PROCEDURES

Connection	Thread sizes	Tightening torque	
		ft-lb	N·m
High Pressure			
1/4"	9/16" - 18UNF	25	34
3/8"	3/4" - 16UNF	50	69
9/16"	1-1/8" - 12UNF	75	103
Medium Pressure			
1/4"	7/16" - 20UNF	20	28
3/8"	9/16" - 18UNF	30	41
9/16"	13/16" - 16UNF	85	117
3/4"	3/4" NPSM	90	124
1"	1-3/8" - 12UNF	125	173
Type "M" Swivel			
A9	9/16" - 18UNF	25-30	34-41
A12	3/4" - 16UNF	40-50	55-69
A14	7/8" - 14UNF	50-60	69-83
A16	1" - 12UNF	75-85	103-117
A21	1-5/16" - 12UNF	100-120	138-166



LEAKAGE AT SWIVEL NUT-TO-ADAPTER JOINT

(Seen by leak at weep hole in swivel nut)

1. Reduce system pressure to zero
2. Unscrew swivel nut and check cone surfaces of adapter and hose insert.
3. If hose insert is damaged, return hose to **polyflex** for repair and retest.
4. If cone surfaces look good after cleaning, re-tighten swivel nut. Do not exceed 150% of recommended torque.

LEAKAGE AT TYPE "M" ADAPTER-TO-PORT

(Seen by leak at weep hole in pressure port, or leak at threads for NPT adapters.)

1. Reduce system pressure to zero.
2. Slacken hose swivel nut.
3. Tighten adaptor into port.
4. Re-tighten swivel nut.

Never use the swivel nut to tighten the adapter into the port.

TEST EQUIPMENT FOR QUALIFICATION TESTING AND PRODUCTION CONTROL

PRELIMINARY NOTE

Before our hoses and fittings enter the market, they are subjected to a rigorous test program. With the specialised test equipment we test our hoses and fittings according to recognized international standards.

Below you will find a short overview of our test equipment. We also offer a testing service. All testing can be witnessed by an authority of your choice.

All test equipment is calibrated by accredited companies.

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1. STATIC PRESSURE TEST RIGS AND CLIMATE CHAMBER

Parker Polyflex is able to conduct all kinds of static pressure tests.

Type of test: leakage, burst, proof pressure, change in length, volumetric expansion

Maximum test pressure: 1,000 MPa (145,000 psi). For volumetric expansion: 400 MPa (58,000 psi).

Test medium: water or glycol.

Applicable standards: ISO 13628-5, ISO 1402, SAE J343

The fully computerized system allows free adjustment of the pressure rating and full documentation.

With another test rig static pressure testing including pressure decay tests on finished hose lengths including large bore hoses, umbilicals, and/or very long lengths can be done. Pressure graphs can be supplied on request.

More static pressure test rigs are installed in the production area. They are used for final pressure testing of ultra high pressure hose assemblies.

The climate chamber can be programmed for cyclic testing at temperatures between -70 °C and +170 °C.



2. IMPULSE TEST RIGS

An impulse test is considered to be the most demanding test, which gives the best indication of the quality of the hose assembly. Parker Polyflex is equipped with the most advanced impulse test rigs, which are used for hose and fitting qualification and periodical quality control testing. With the unique impulse test rig, Parker Polyflex is the only company worldwide, which is able to conduct impulse testing fully complying with ISO 13628-5, EN 1829-2 and ISO 6803 (square pressure curve) at pressures up to 500 MPa (72,500 psi).

Maximum test pressure: 500 MPa (72,500 psi)

Maximum medium temperature: 140°C

Test medium: mineral oil

Applicable standards: ISO 13628-5, EN 1829-2, ISO 6803, SAE J343

Pressure curve: free adjustable to meet national or international standards or specific customer requirements.



3. COLLAPSE PRESSURE TEST RIG

This rig allows testing at external pressures up to 60 MPa (87,000 psi). The dimensions of the pressure chamber and a special arrangement of the hose allows testing of up to 4" hoses. The testing can be conducted at elevated temperatures up to 93 °C. Test medium is water.



PARKER SAFETY GUIDE

! Parker Safety Guide for Selecting and Using Hose, Tubing, Fittings and Related Accessories
 Publication No. 4400-B.1
 Revised: November 2007

WARNING: Failure or improper selection or improper use of hose, tubing, fittings, assemblies or related accessories (“Products”) can cause death, personal injury and property damage. Possible consequences of failure or improper selection or improper use of these Products include but are not limited to:

- Fittings thrown off at high speed.
- High velocity fluid discharge.
- Explosion or burning of the conveyed fluid.
- Electrocutation from high voltage electric powerlines.
- Contact with suddenly moving or falling objects that are controlled by the conveyed fluid.

- Injections by high-pressure fluid discharge.
- Dangerously whipping Hose.
- Contact with conveyed fluids that may be hot, cold, toxic or otherwise injurious.
- Sparking or explosion caused by static electricity buildup or other sources of electricity.
- Sparking or explosion while spraying paint or flammable liquids.
- Injuries resulting from inhalation, ingestion or exposure to fluids. Before selecting or using any of these Products, it is important that you read and follow the instructions below. Only Hose from Parker’s Stratoflex Products Division is approved for in flight aerospace applications.

1.0 GENERAL INSTRUCTIONS

1.1 Scope: This safety guide provides instructions for selecting and using (including assembling, installing, and maintaining) these Products. For convenience, all rubber and/or thermoplastic products commonly called “hose” or “tubing” are called “Hose” in this safety guide. All assemblies made with Hose are called “Hose Assemblies”. All products commonly called “fittings”, “couplings” or “adapters” are called “Fittings”. All related accessories (including crimping and swaging machines and tooling) are called “Related Accessories”. This safety guide is a supplement to and is to be used with the specific Parker publications for the specific Hose, Fittings and Related Accessories that are being considered for use. Parker publications are available at www.parker.com. SAE J1273 (www.sae.org) and ISO 171652 (www.ansi.org) also provide recommended practices for hydraulic Hose Assemblies.

1.2 Fail-Safe: Hose, Hose Assemblies and Fittings can and do fail without warning for many reasons. Design all systems and equipment in a fail safe mode, so that failure of the Hose, Hose Assembly or Fitting will not endanger persons or property.

1.3 Distribution: Provide a copy of this safety guide to each person responsible for selecting or using Hose and Fitting products. Do not select or use Parker Hose or Fittings without thoroughly reading and understanding this safety guide as well as the specific Parker publications for the Products.

1.4 User Responsibility: Due to the wide variety of operating conditions and applications for Hose and Fittings, Parker does not represent or warrant that any particular Hose or Fitting is suitable for any specific end use system. This safety guide does not analyze all technical parameters that must be considered in selecting a product. The user, through

PARKER SAFETY GUIDE

its own analysis and testing, is solely responsible for:

- Making the final selection of the Products.
- Assuring that the user's requirements are met and that the application presents no health or safety hazards.
- Providing all appropriate health and safety warnings on the equipment on which the Products are used.
- Assuring compliance with all applicable government and industry standards.

1.5 Additional Questions: Call the appropriate Parker technical service department if you have any questions or require any additional information. See the Parker publication for the Products being considered or used, or call 1 800 CPARKER, or go to www.parker.com, for telephone numbers of the appropriate technical service department.

2.0 HOSE AND FITTING SELECTION INSTRUCTIONS

2.1 Electrical Conductivity: Certain applications require that the Hose be nonconductive to prevent electrical current flow. Other applications require the Hose and the Fittings and the Hose/Fitting interface to be sufficiently conductive to drain off static electricity. Extreme care must be exercised when selecting Hose and Fittings for these or any other applications in which electrical conductivity or nonconductivity is a factor. The electrical conductivity or nonconductivity of Hose and Fittings is dependent upon many factors and may be susceptible to change. These factors include but are not limited to the various materials used to make the Hose and the Fittings, Fitting finish (some Fitting finishes are electrically conductive while others are nonconductive), manufacturing methods (including moisture control), how the Fittings

contact the Hose, age and amount of deterioration or damage or other changes, moisture content of the Hose at any particular time, and other factors. The following are considerations for electrically nonconductive and conductive Hose. For other applications consult the individual catalog pages and the appropriate industry or regulatory standards for proper selection.

2.1.1 Electrically Nonconductive Hose:

Certain applications require that the Hose be nonconductive to prevent electrical current flow or to maintain electrical isolation. For applications that require Hose to be electrically nonconductive, including but not limited to applications near high voltage electric lines, only special nonconductive Hose can be used. The manufacturer of the equipment in which the nonconductive Hose is to be used must be consulted to be certain that the Hose and Fittings that are selected are proper for the application. Do not use any Parker Hose or Fittings for any such application requiring nonconductive Hose, including but not limited to applications near high voltage electric lines, unless (i) the application is expressly approved in the Parker technical publication for the product, (ii) the Hose is marked "nonconductive", and (iii) the manufacturer of the equipment on which the Hose is to be used specifically approves the particular Parker Hose and Fittings for such use.

2.1.2 Electrically Conductive Hose: Parker manufactures special Hose for certain applications that require electrically conductive Hose. Parker manufactures special Hose for conveying paint in airless paint spraying applications. This Hose is labeled "Electrically Conductive Airless Paint Spray Hose" on its layline and packaging. This Hose must be properly connected to the appropriate Parker

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Fittings and properly grounded in order to dissipate dangerous static charge buildup, which occurs in all airless paint spraying applications. Do not use any other Hose for airless paint spraying, even if electrically conductive. Use of any other Hose or failure to properly connect the Hose can cause a fire or an explosion resulting in death, personal injury, and property damage. Parker manufactures a special Hose for certain compressed natural gas (“CNG”) applications where static electricity buildup may occur. Parker CNG Hose assemblies comply with the requirements of ANSI/IAS NGV 4.2-1999; CSA 12.52-M99, “Hoses for Natural Gas Vehicles and Dispensing Systems” (www.ansi.org). This Hose is labeled “Electrically Conductive for CNG Use” on its layline and packaging. This Hose must be properly connected to the appropriate Parker Fittings and properly grounded in order to dissipate

2.2 Pressure: Hose selection must be made so that the published maximum working pressure of the Hose and Fittings are equal to or greater than the maximum system pressure. The maximum working pressure of a Hose Assembly is the lower of the respective published maximum working pressures of the Hose and the Fittings used. Surge pressures or peak transient pressures in the system must be below the published maximum working pressure for the Hose. Surge pressures and peak pressures can usually only be determined by sensitive electrical instrumentation that measures and indicates pressures at millisecond intervals. Mechanical pressure gauges indicate only average pressures and cannot be used to determine surge pressures or peak transient pressures. Published burst pressure ratings for Hose is for manufacturing test purposes only and is no indication that the Product can be used in applications at the burst pressure or otherwise above the published maximum recommended working pressure.

2.3 Suction: Hoses used for suction applications must be selected to insure that the Hose will withstand the vacuum and pressure of the system. Improperly selected Hose may collapse in suction application.

2.4 Temperature: Be certain that fluid and ambient temperatures, both steady and transient, do not exceed the limitations of the Hose. Temperatures below and above the recommended limit can degrade Hose to a point where a failure may occur and release fluid. Properly insulate and protect the Hose Assembly when routing near hot objects (e.g. manifolds). Do not use any Hose in any application where failure of the Hose could result in the conveyed fluids (or vapors or mist from the conveyed fluids) contacting any open flame, molten metal, or other potential fire ignition source that could cause burning or explosion of the conveyed fluids or vapors.

2.5 Fluid Compatibility: Hose Assembly selection must assure compatibility of the Hose tube, cover, reinforcement, and Fittings with the fluid media used. See the fluid compatibility chart in the Parker publication for the product being considered or used. This information is offered only as a guide. Actual service life can only be determined by the end user by testing under all extreme conditions and other analysis. Hose that is chemically compatible with a particular fluid must be assembled using Fittings and adapters containing likewise compatible seals.

2.6 Permeation: Permeation (that is, seepage through the Hose) will occur from inside the Hose to outside when Hose is used with gases, liquid and gas fuels, and refrigerants (including but not limited to such materials as helium, diesel fuel, gasoline, natural gas, or LPG). This permeation may result in

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high concentrations of vapors which are potentially flammable, explosive, or toxic, and in loss of fluid. Dangerous explosions, fires, and other hazards can result when using the wrong Hose for such applications. The system designer must take into account the fact that this permeation will take place and must not use Hose if this permeation could be hazardous. The system designer must take into account all legal, government, insurance, or any other special regulations which govern the use of fuels and refrigerants. Never use a Hose even though the fluid compatibility is acceptable without considering the potential hazardous effects that can result from permeation through the Hose Assembly. Permeation of moisture from outside the Hose to inside the Hose will also occur in Hose assemblies, regardless of internal pressure. If this moisture permeation would have detrimental effects (particularly, but not limited to refrigeration and air conditioning systems), incorporation of sufficient drying capacity in the system or other appropriate system safeguards should be selected and used.

2.7 Size: Transmission of power by means of pressurized fluid varies with pressure and rate of flow. The size of the components must be adequate to keep pressure losses to a minimum and avoid damage due to heat generation or excessive fluid velocity.

2.8 Routing: Attention must be given to optimum routing to minimize inherent problems (kinking or flow restriction due to Hose collapse, twisting of the Hose, proximity to hot objects or heat sources). For additional routing recommendations see SAE J1273 and ISO 17165-2. Hose Assemblies have a finite life and if possible, should be installed in a manner that allows

for ease of inspection and future replacement. Rubber Hose because of its relative short life, should not be used in residential and commercial buildings for HVAC (heating, ventilating and air conditioning) applications.

2.9 Environment: Care must be taken to insure that the Hose and Fittings are either compatible with or protected from the environment (that is, surrounding conditions) to which they are exposed. Environmental conditions including but not limited to ultraviolet radiation, sunlight, heat, ozone, moisture, water, salt water, chemicals and air pollutants can cause degradation and premature failure.

2.10 Mechanical Loads: External forces can significantly reduce Hose life or cause failure. Mechanical loads which must be considered include excessive flexing, twist, kinking, tensile or side loads, bend radius, and vibration. Use of swivel type Fittings or adapters may be required to insure no twist is put into the Hose. Unusual applications may require special testing prior to Hose selection.

2.11 Physical Damage: Care must be taken to protect Hose from wear, snagging, kinking, bending smaller than minimum bend radius and cutting, any of which can cause premature Hose failure. Any Hose that has been kinked or bent to a radius smaller than the minimum bend radius, and any Hose that has been cut or is cracked or is otherwise damaged should be removed and discarded.

2.12 Proper End Fitting: See instructions 3.2 through 3.5. These recommendations may be substantiated by testing to industry standards

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such as SAE J517 for hydraulic applications, or MIL-A-5070, AS1339, or AS3517 for Hoses from Parker's Stratoflex Products Division for aerospace applications.

2.13 Length: When establishing a proper Hose length, motion absorption, Hose length changes due to pressure, and Hose and machine tolerances and movement must be considered.

2.14 Specifications and Standards: When selecting Hose and Fittings, government, industry, and Parker specifications and recommendations must be reviewed and followed as applicable.

J 2.15 Hose Cleanliness: Hose components may vary in cleanliness levels. Care must be taken to insure that the Hose Assembly selected has an adequate level of cleanliness for the application.

2.16 Fire Resistant Fluids: Some fire resistant fluids that are to be conveyed by Hose require use of the same type of Hose as used with petroleum base fluids. Some such fluids require a special Hose, while a few fluids will not work with any Hose at all. See instructions 2.5 and 1.5. The wrong Hose may fail after a very short service. In addition, all liquids but pure water may burn fiercely under certain conditions, and even pure water leakage may be hazardous.

2.17 Radiant Heat: Hose can be heated to destruction without contact by such nearby items as hot manifolds or molten metal. The same heat source may then initiate a fire. This can occur despite the presence of cool air around the Hose.

2.18 Welding or Brazing: When using a torch or arc welder in close proximity to hydraulic lines, the hydraulic lines should be removed or shielded with

appropriate fire resistant materials. Flame or weld spatter could burn through the Hose and possibly ignite escaping fluid resulting in a catastrophic failure. Heating of plated parts, including Hose Fittings and adapters, above 450°F (232°C) such as during welding, brazing or soldering may emit deadly gases.

2.19 Atomic Radiation: Atomic radiation affects all materials used in Hose assemblies. Since the long-term effects may be unknown, do not expose Hose assemblies to atomic radiation.

2.20 Aerospace Applications: The only Hose and Fittings that may be used for in flight aerospace applications are those available from Parker's Stratoflex Products Division. Do not use any other Hose or Fittings for in flight applications. Do not use any Hose or Fittings from Parker's Stratoflex Products Division with any other Hose or Fittings, unless expressly approved in writing by the engineering manager or chief engineer of Stratoflex Products Division and verified by the user's own testing and inspection to aerospace industry standards.

2.21 Unlocking Couplings: Ball locking couplings or other Fittings with quick disconnect ability can unintentionally disconnect if they are dragged over obstructions, or if the sleeve or other disconnect member, is bumped or moved enough to cause disconnect. Threaded Fittings should

3.0 HOSE AND FITTING ASSEMBLY AND INSTALLATION INSTRUCTIONS

3.1 Component Inspection: Prior to assembly, a careful examination of the Hose and Fittings must be performed. All components must be checked for correct style, size, catalog number, and length. The Hose must be examined for cleanliness,

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obstructions, blisters, cover looseness, kinks, cracks, cuts or any other visible defects. Inspect the Fitting and sealing surfaces for burrs, nicks, corrosion or other imperfections. Do NOT use any component that displays any signs of nonconformance.

3.2 Hose and Fitting Assembly: Do not assemble a Parker Fitting on a Parker Hose that is not specifically listed by Parker for that Fitting, unless authorized in writing by the engineering manager or chief engineer of the appropriate Parker division. Do not assemble a Parker Fitting on another manufacturer's Hose or a Parker Hose on another manufacturer's Fitting unless (i) the engineering manager or chief engineer of the appropriate Parker division approves the Assembly in writing or that combination is expressly approved in the appropriate Parker literature for the specific Parker product, and (ii) the user verifies the Assembly and the application through analysis and testing. For Parker Hose that does not specify a Parker Fitting, the user is solely responsible for the selection of the proper Fitting and Hose Assembly procedures. See instruction 1.4. To prevent the possibility of problems such as leakage at the Fitting or system contamination, it is important to completely remove all debris from the cutting operation before installation of the Fittings. The Parker published instructions must be followed for assembling the Fittings on the Hose. These instructions are provided in the Parker Fitting catalog for the specific Parker Fitting being used, or by calling 1 800 CPARKER, or at www.parker.com. **3.3 Related Accessories:** Do not crimp or swage any Parker Hose or Fitting with anything but the listed swage or crimp machine and dies in accordance with Parker published instructions. Do not crimp or swage another manufacturer's

Fitting with a Parker crimp or swage die unless authorized in writing by the engineering manager or chief engineer of the appropriate Parker division.

3.4 Parts: Do not use any Parker Fitting part (including but not limited to socket, shell, nipple, or insert) except with the correct Parker mating parts, in accordance with Parker published instructions, unless authorized in writing by the engineering manager or chief engineer of the appropriate Parker division.

3.5 Field Attachable/Permanent: Do not reuse any field attachable Hose Fitting that has blown or pulled off a Hose. Do not reuse a Parker permanent Hose Fitting (crimped or swaged) or any part thereof. Complete Hose Assemblies may only be reused after proper inspection under section 4.0. Do not assemble Fittings to any previously used hydraulic Hose that was in service, for use in a fluid power application.

3.6 Pre-Installation Inspection: Prior to installation, a careful examination of the Hose Assembly must be performed. Inspect the Hose Assembly for any damage or defects. DO NOT use any Hose Assembly that displays any signs of nonconformance.

3.7 Minimum Bend Radius: Installation of a Hose at less than the minimum listed bend radius may significantly reduce the Hose life. Particular attention must be given to preclude sharp bending at the Hose to Fitting juncture. Any bending during installation at less than the minimum bend radius must be avoided. If any Hose is kinked during installation, the Hose must be discarded.

3.8 Twist Angle and Orientation: Hose Assembly

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installation must be such that relative motion of machine components does not produce twisting.

3.9 Securement: In many applications, it may be necessary to restrain, protect, or guide the Hose to protect it from damage by unnecessary flexing, pressure surges, and contact with other mechanical components. Care must be taken to insure such restraints do not introduce additional stress or wear points.

3.10 Proper Connection of Ports: Proper physical installation of the Hose Assembly requires a correctly installed port connection insuring that no twist or torque is transferred to the Hose when the Fittings are being tightened or otherwise during use..

3.11 External Damage: Proper installation is not complete without insuring that tensile loads, side loads, kinking, flattening, potential abrasion, thread damage or damage to sealing surfaces are corrected or eliminated. See instruction 2.10.

3.12 System Checkout: All air entrapment must be eliminated and the system pressurized to the maximum system pressure (at or below the Hose maximum working pressure) and checked for proper function and freedom from leaks. Personnel must stay out of potential hazardous areas while testing and using.

3.13 Routing: The Hose Assembly should be routed in such a manner so if a failure does occur, the escaping media will not cause personal injury or property damage. In addition, if fluid media comes in contact with hot surfaces, open flame or sparks, a fire or explosion may occur. See section 2.4.

3.14 Ground Fault Equipment Protection Devices

(GFEPDs): **WARNING!** Fire and Shock Hazard: To minimize the danger of fire if the heating cable of a Multitube bundle is damaged or improperly installed, use a Ground Fault Equipment Protection Device. Electrical fault currents may be insufficient to trip a conventional circuit breaker. For ground fault protection, the IEEE 515:1989 (www.ansi.org) standard for heating cables recommends the use of GFEPDs with a nominal 30 milliampere trip level for “piping systems in classified areas, those areas requiring a high degree of maintenance, or which may be exposed to physical abuse or corrosive atmospheres”.

4.0 HOSE AND FITTING MAINTENANCE AND REPLACEMENT INSTRUCTIONS

4.1 Even with proper selection and installation, Hose life may be significantly reduced without a continuing maintenance program. The severity of the application, risk potential from a possible Hose failure, and experience with any Hose failures in the application or in similar applications should determine the frequency of the inspection and the replacement for the Products so that Products are replaced before any failure occurs. A maintenance program must be established and followed by the user and, at minimum, must include instructions 4.2 through 4.7.

4.2 Visual Inspection Hose/Fitting: Any of the following conditions require immediate shut down and replacement of the Hose Assembly:

- Fitting slippage on Hose;
- Damaged, cracked, cut or abraded cover (any reinforcement exposed);
- Hard, stiff, heat cracked, or charred Hose;
- Cracked, damaged, or badly corroded Fittings;
- Leaks at Fitting or in Hose;
- Kinked, crushed, flattened or twisted Hose; and
- Blistered, soft, degraded, or loose cover.

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4.3 Visual Inspection All Other: The following items must be tightened,

repaired, corrected or replaced as required:

- Leaking port conditions;
- Excess dirt buildup;
- Worn clamps, guards or shields; and
- System fluid level, fluid type, and any air entrapment.

4.4 Functional Test: Operate the system at maximum operating pressure and check for possible malfunctions and leaks. Personnel must avoid potential hazardous areas while testing and using the system. See section 2.2.

4.5 Replacement Intervals: Hose assemblies and elastomeric seals used on Hose Fittings and adapters will eventually age, harden, wear and deteriorate under thermal cycling and compression set. Hose Assemblies and elastomeric seals should be inspected and replaced at specific replacement intervals, based on previous service life, government or industry recommendations, or when failures could result in unacceptable downtime, damage, or injury risk. See section 1.2. Hose and Fittings may be subjected to internal mechanical and/or chemical wear from the conveying fluid and may fail without warning. The user must determine the product life under such circumstances by testing.

4.6 Hose Inspection and Failure: Hydraulic power is accomplished by utilizing high pressure fluids to transfer energy and do work. Hoses, Fittings and Hose Assemblies all contribute to this by transmitting fluids at high pressures. Fluids under pressure can be dangerous and potentially lethal and, therefore, extreme caution must be exercised when working with fluids under pressure and

handling the Hoses transporting the fluids. From time to time, Hose Assemblies will fail if they are not replaced at proper time intervals. Usually these failures are the result of some form of misapplication, abuse, wear or failure to perform proper maintenance. When Hoses fail, generally the high pressure fluids inside escape in a stream which may or may not be visible to the user. Under no circumstances should the user attempt to locate the leak by “feeling” with their hands or any other part of their body. High pressure fluids can and will penetrate the skin and cause severe tissue damage and possibly loss of limb. Even seemingly minor hydraulic fluid injection injuries must be treated immediately by a physician with knowledge of the tissue damaging properties of hydraulic fluid.

If a Hose failure occurs, immediately shut down the equipment and leave the area until pressure has been completely released from the Hose Assembly. Simply shutting down the hydraulic pump may or may not eliminate the pressure in the Hose Assembly. Many times check valves, etc., are employed in a system and can cause pressure to remain in a Hose Assembly even when pumps or equipment are not operating. Tiny holes in the Hose, commonly known as pinholes, can eject small, dangerously powerful but hard to see streams of hydraulic fluid. It may take several minutes or even hours for the pressure to be relieved so that the Hose Assembly may be examined safely. Once the pressure has been reduced to zero, the Hose Assembly may be taken off the equipment and examined. It must always be replaced if a failure has occurred. Never attempt to patch or repair a Hose Assembly that has failed. Consult the nearest Parker distributor or the appropriate Parker division for Hose Assembly replacement information. Never touch or examine a failed Hose Assembly unless it is obvious that the

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Hose no longer contains fluid under pressure. The high pressure fluid is extremely dangerous and can cause serious and potentially fatal injury.

4.7 Elastomeric seals: Elastomeric seals will eventually age, harden, wear and deteriorate under thermal cycling and compression set. Elastomeric seals should be inspected and replaced.

4.8 Refrigerant gases: Special care should be taken when working with refrigeration systems. Sudden escape of refrigerant gases can cause blindness if the escaping gases contact the eye and can cause freezing or other severe injuries if it contacts any other portion of the body.

4.9 Compressed natural gas (CNG): Parker CNG Hose Assemblies should be tested after installation and before use, and at least on a monthly basis per ANSI/IAS NGV 4.2-1999; CSA 12.52-M99 Section 4.2 "Visual Inspection Hose/Fitting". The recommended procedure is to pressurize the Hose and check for leaks and to visually inspect the Hose for damage. Caution: Matches, candles, open flame or other sources of ignition shall not be used for Hose inspection. Leak check solutions should be rinsed off after use.

5.0 HOSE STORAGE

5.1 Age Control: Hose and Hose Assemblies must be stored in a manner that facilitates age control and first-in and first-out usage based on manufacturing date of the Hose and Hose Assemblies. The shelf life of rubber Hose or Hose Assemblies that have passed visual inspection and a proof test is 10 years (40 quarters) from the date of manufacture. The shelf life of thermoplastic and polytetrafluoroethylene Hose or Hose Assemblies is considered to be unlimited.

5.2 Storage: Stored Hose and Hose Assemblies must not be subjected to damage that could reduce their expected service life and must be placed in a cool, dark and dry area with the ends capped. Stored Hose and Hose Assemblies must not be exposed to temperature extremes, ozone, oils, corrosive liquids or fumes, solvents, high humidity, rodents, insects, ultraviolet light, electromagnetic fields or radioactive materials.

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GLOSSARY

Abrasion

Abrasion occurs in numerous forms; two of the more common are the typical rubbing or chafing, with the second being very high frequency, low amplitude friction. This type of abrasion results from pump pressure pulses otherwise known as pump ripple. It can also be caused by equipment vibration or resonance. Abrasion may occur when two hose lines cross or when a hose line rubs or bears against a fixed point. Abrasion resistance is also a function of temperature and attack of the cover material by aggressive chemicals.

Spring guards or other protective sleeving can also ward off premature hose failure resulting from abrasion. Spring guards also distribute bending force often associated with excessive side loading or even kinking at the skirt of the coupling.

Ambient temperature

Exceedingly high or low ambient temperatures will affect the materials from which the hose is constructed and will negatively influence hose life. When at all possible, the hose should be routed in such a manner as to protect it from heat sources. In extreme cold applications, the equipment should be designed with remote relief valves to allow circulation and warming of the oil before hose articulation is attempted. The hose liner (core tube) of choice for extremely high or low temperature is Teflon®. Teflon® is serviceable at temperatures as low as -100°F and as high as +450°. Consult the specific hose operating parameters for more information.

Bend radius

The minimum bend radii listed in this catalog are valid at rated working pressures and indicated service temperatures. Service life of a hose may be shortened if the minimum radius is exceeded or if the hose is flexed continuously in use.

Burst pressure and working pressure

The specified burst pressure for each hose style and dash size are for un-aged hoses tested at normal laboratory temperature in accordance with SAE J343 specification for normal service and technically ideal installations. The maximum recommended working pressure is 1/4 of the minimum rated burst pressure, except as otherwise specifically stated in those product specifications. For more severe service, a higher rated working pressure hose may have to be selected.

Hose installation tips

Establish hose size (I. D.) and style based upon flow rate (GPM), pressure drop, and chemical compatibility with fluid medium. Other significant factors to be considered in hose selection and installation are discussed briefly as follows:

Operating temperature

The temperature range for satisfactory service (maximum hose life) depends to a great extent upon the fluid being conveyed. Use of a hose above maximum specified temperature ratings will shorten hose life due, but not limited, to oxidation, chemical degradation and loss of compression within the coupling.

Pressure effects

Pressure surges and system shocks (spikes) are common in hydraulic systems. The normal 4:1 design factor should reflect these transient pressures. Where these surges and shocks are considered severe or hazardous, the design factor should be increased.

When hose is under pressure, it may change in length by as much as $\pm 3\%$. Installation should compensate for shortening by providing an appropriate amount of slack and for lengthening by allowing space for this growth to be absorbed.

Routing and clamping

Whenever possible, and maximum efforts should be made to do so, hose should be routed to flex in a single plane. Routing hoses in flexure through compound bends results in torsions. When this is unavoidable, the torsion should be distributed over the maximum hose length possible. Wire reinforced hoses suffer the most rapid and severe loss of service life when applied in torsion. Extremely tight and improperly located clamps focus this torsion over short distances.

Analysis of the hose function is required before the proper clamping techniques can be selected. In some applications, hoses must be contained to stay out of harm's way and at the same time be free to rise and fall with equipment articulation. Other applications may require restrictive clamping, in which case a protective material should be used around the hose to provide the grasp without deformation of the hose by the clamp. These techniques also apply to the use of the popular method of clamping and clustering hoses with plastic tie straps.

Parker swivel adaptors feature 360° swiveling action that especially suits them for use in applications where the hose moves, bends or twists. Swivel adapters connected to hose assemblies relieve twisting, prevent excessive flexing of the hose, eliminate need for long radius bends, and cushion intraline shock caused by peak system pressure pulses.

High pressure adapters

It is critical that the adapter material be properly suited to the fluid media. Widely varying conditions frequently necessitate high pressure adapters constructed of materials other than conventional 316 stainless steel. Since many variables affect the corrosion resistance of metallic materials, it is Parker Hannifin's policy not to recommend materials based on corrosion resistance for specific fluid applications. The published recommended working pressure represent the capability of the subject fitting. Nevertheless, in some instances, the hose, hose fitting or other connector assembled to the adapter may dictate the maximum working pressure. The end-user should read and understand the Parker Safety Guide (Bulletin 4400-B.1) and follow its suggested practices and warnings.

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UNIT CONVERSION TABLE

Physical value	Unit	Abbreviation	Conversion Unit	Factor
Length	1 inch	in	mm	25.4
	1 millimetre	mm	in	0.03934
	1 foot	ft	m	0.3048
	1 metre	m	ft	3.28084
Surface	1 square inch	sq in	cm ²	6.4516
	1 square centimetre	cm ²	sq in	0.1550
Cubic content	1 gallon (UK)	gal	l	4.54596
	1 litre	l	gal (UK)	0.219976
	1 gallon (US)	gal	l	3.78533
	1 litre	l	gal (US)	0.264177
Weight	1 pound	lb	kg	0.453592
	1 kilogramme	kg	lb	2.204622
Pressure	1 pound per square inch	psi	bar	0.06895
	1 bar	bar	psi	14.5035
	1 pound per square inch	psi	MPa	0.006895
	1 mega pascal	MPa	psi	145.035
	1 kilo pascal	kPa	bar	0.01
	1 bar	bar	kPa	100
	1 mega pascal	MPa	bar	10
	1 bar	bar	MPa	0.1
Velocity	1 foot per second	ft/s	m/s	0.3048
	1 metre per second	m/s	ft/s	3.28084
Flow rate	1 gallon per minute (UK)	gal/min.	l/min.	4.54596
	1 litre per minute	l/min.	gal/min. (UK)	0.219976
	1 gallon per minute (US)	gal/min.	l/min.	3.78533
	1 litre per minute	l/min.	gal/min. (US)	0.264178
Temperature	Fahrenheit	F	°C	$\frac{5}{9} (F-32)$
	Celsius	°C	F	$\frac{9}{5} °C + 32$

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FOR YOUR SAFETY

The hose assemblies listed in this catalogue are all special constructions with the hose having up to eight spiral layers of steel wire. Due to this construction, pressures are achieved which far exceed German and international standards. These hose types are manufactured and tested according to the Polyflex standards which have proved to be effective over many years.

Polyflex hose assemblies are used at considerable working pressures. The critical area of a hose assembly is the connection between flexible hose and rigid fitting (crimping area). Only the use of original Polyflex components (hose, fittings and tooling) and full compliance with the Polyflex assembly instructions can guarantee safety and conformity with standards. It is essential that training be given to customers in the hose assembly process in order to make high quality Polyflex maximum pressure hose assemblies.

For the production and testing of the hose assemblies relevant to the applications, the guidelines and technical regulations as well as the protection and hazard prevention rulings must be adhered to.

The manufacturers of Polyflex hose assemblies are obliged to mark these hose assemblies according to the regulations and to verify their safety by a final pressure test.

Non-compliance with these rules can lead to the premature failure of the hose assembly and the loss of warranty.



Parker's Motion & Control Technologies

At Parker, we're guided by a relentless drive to help our customers become more productive and achieve higher levels of profitability by engineering the best systems for their requirements. It means looking at customer applications from many angles to find new ways to create value. Whatever the motion and control technology need, Parker has the experience, breadth of product and global reach to consistently deliver. No company knows more about motion and control technology than Parker. For further info call 00800 27 27 5374



Aerospace Key Markets

Aftermarket services
Commercial transports
Engines
General & business aviation
Helicopters
Launch vehicles
Military aircraft
Missiles
Power generation
Regional transports
Unmanned aerial vehicles

Key Products

Control systems & actuation products
Engine systems & components
Fluid conveyance systems & components
Fluid metering, delivery & atomization devices
Fuel systems & components
Fuel tank inerting systems
Hydraulic systems & components
Thermal management
Wheels & brakes



Climate Control Key Markets

Agriculture
Air conditioning
Construction Machinery
Food & beverage
Industrial machinery
Life sciences
Oil & gas
Precision cooling
Process
Refrigeration
Transportation

Key Products

Accumulators
Advanced actuators
CO₂ controls
Electronic controllers
Filter driers
Hand shut off valves
Heat exchangers
Hose & fittings
Pressure regulating valves
Refrigerant distributors
Safety relief valves
Smart pumps
Solenoid valves
Thermostatic expansion valves



Electromechanical Key Markets

Aerospace
Factory automation
Life science & medical
Machine tools
Packaging machinery
Paper machinery
Plastics machinery & converting
Primary metals
Semiconductor & electronics
Textile
Wire & cable

Key Products

AC/DC drives & systems
Electric actuators, gantry robots & slides
Electrohydraulic actuation systems
Electromechanical actuation systems
Human machine interface
Linear motors
Stepper motors, servo motors, drives & controls
Structural extrusions



Filteration Key Markets

Aerospace
Food & beverage
Industrial plant & equipment
Life sciences
Marine
Mobile equipment
Oil & gas
Power generation & renewable energy
Process
Transportation
Water Purification

Key Products

Analytical gas generators
Compressed air filters & dryers
Engine air, coolant, fuel & oil filtration systems
Fluid condition monitoring systems
Hydraulic & lubrication filters
Hydrogen, nitrogen & zero air generators
Instrumentation filters
Membrane & fiber filters
Microfiltration
Sterile air filtration
Water desalination & purification filters & systems



Fluid & Gas Handling

Key Markets

Aerial lift
Agriculture
Bulk chemical handling
Construction machinery
Food & beverage
Fuel & gas delivery
Industrial machinery
Life sciences
Marine
Mining
Mobile
Oil & gas
Renewable energy
Transportation

Key Products

Check valves
Connectors for low pressure fluid conveyance
Deep sea umbilicals
Diagnostic equipment
Hose couplings
Industrial hose
Mooring systems & power cables
PTFE hose & tubing
Quick couplings
Rubber & thermoplastic hose
Tube fittings & adapters
Tubing & plastic fittings



Hydraulics

Key Markets

Aerial lift
Agriculture
Alternative energy
Construction machinery
Forestry
Industrial machinery
Machine tools
Marine
Material handling
Mining
Oil & gas
Power generation
Refuse vehicles
Renewable energy
Truck hydraulics
Turf equipment

Key Products

Accumulators
Cartridge valves
Electrohydraulic actuators
Human machine interfaces
Hybrid drives
Hydraulic cylinders
Hydraulic motors & pumps
Hydraulic systems
Hydraulic valves & controls
Hydrostatic steering
Integrated hydraulic circuits
Power take-offs
Power units
Rotary actuators
Sensors



Pneumatics

Key Markets

Aerospace
Conveyor & material handling
Factory automation
Life science & medical
Machine tools
Packaging machinery
Transportation & automotive

Key Products

Air preparation
Brass fittings & valves
Manifolds
Pneumatic accessories
Pneumatic actuators & grippers
Pneumatic valves & controls
Quick disconnects
Rotary actuators
Rubber & thermoplastic hose & couplings
Structural extrusions
Thermoplastic tubing & fittings
Vacuum generators, cups & sensors



Process Control

Key Markets

Alternative fuels
Biopharmaceuticals
Chemical & refining
Food & beverage
Marine & shipbuilding
Medical & dental
Microelectronics
Nuclear Power
Offshore oil exploration
Oil & gas
Pharmaceuticals
Power generation
Pulp & paper
Steel
Water/wastewater

Key Products

Analytical Instruments
Analytical sample conditioning products & systems
Chemical injection fittings & valves
Fluoropolymer chemical delivery fittings, valves & pumps
High purity gas delivery fittings, valves, regulators & digital flow controllers
Industrial mass flow meters/controllers
Permanent no-weld tube fittings & flow controllers
Precision industrial regulators
Process control double block & bleed
Process control fittings, valves, regulators & manifold valves



Sealing & Shielding

Key Markets

Aerospace
Chemical processing
Consumer
Fluid power
General industrial
Information technology
Life sciences
Military
Microelectronics
Oil & gas
Power generation
Renewable energy
Telecommunications
Transportation

Key Products

Dynamic seals
Elastomeric o-rings
Electro-medical instrument design & assembly
EMI shielding
Extruded & precision-cut, fabricated elastomeric seals
High temperature metal seals
Homogeneous & inserted elastomeric shapes
Medical device fabrication & assembly
Metal & plastic retained composite seals
Shielded optical windows
Silicone tubing & extrusions
Thermal management
Vibration dampening

ENGINEERING YOUR SUCCESS.



Parker Hannifin Manufacturing Germany GmbH & Co. KG

***polyflex* Division**

An der Tuchbleiche 4
68623 Lampertheim (Hüttenfeld)

Tel.: +49 (0)6256 81-0
www.parker.com/polyflex
polyflex@parker.com