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

Hose Catalog - 2017

Fluid Connectors, India.

HoseFinder 1.0
Hose Selection Mobile App
India Version

Parker

ENGINEERING YOUR SUCCESS.

Parker Hannifin – the global leader and your partner

With annual sales exceeding $13 billion, Parker Hannifin is the world's leading diversified manufacturer of motion and control technologies and systems, providing precision-engineered solutions for a wide variety of mobile, industrial and aerospace markets. Our products are vital to virtually everything that moves or requires control, including the manufacture and processing of raw materials, durable goods, infrastructure development and all forms of transport.

Within Parker's seven operating groups, the company's engineering expertise spans the core motion technologies – electromechanical, hydraulic and pneumatic – with a full complement of fluid handling, filtration, sealing and shielding, climate control, process control and aerospace technologies.

The leader in "dry technology" for the fluid power industry, Parker's Fluid Connectors Group is your single source for high-quality tube fittings, hose and hose fittings, thermoplastic tubing, brass fittings and valves, quick-disconnect couplings and assembly tools. The Fluid Connectors Group serves customers in a broad range of markets, including Aerial Lift, Agriculture, Bulk Chemical Handling, Construction Machinery, Food & Beverage, Fuel & Gas Delivery, Industrial Machinery, Medical, Mining, Mobile, Oil & Gas and Transportation. Products are available for shipment 24 hours a day, supported by 49 manufacturing facilities throughout the world, a global distribution network and 25 company-owned stocking service centers. Our commitment to you is impeccable customer service. To meet your specific requirements, we offer a broad range of programs designed to reduce your overall operating costs, streamline manufacturing, improve productivity, manage inventory, enhance delivery and address safety and environmental issues. For value-added services that generate value-added solutions, team up with Parker!

India HQ (Navi Mumbai)

Hose & Fittings Plant, Hyderabad

Hose Plant, Nagpur

Parker Hannifin India Pvt. Ltd. is India's leading hose and end fittings solutions provider catering to a wide range of industries. Offering an extensive spread of regular and customizable braided and multi-spiral hoses besides end-fittings, Parker is playing a vital role in enhancing productivity and growth of diverse industries including mining, construction, transportation, on-shore and off-shore oil exploration & drilling, cement manufacturing, machine tools, aviation and agricultural machinery.

Backed by two state-of-the-art ATEX certified manufacturing facilities at Hyderabad and Nagpur, Parker Hannifin India Pvt. Ltd. is delivering products that conform to DIN, EN, SAE, ISO, IS & BS specifications. And the type approvals for our products from globally acclaimed agencies like MSHA-USA, Directorate General Mines Safety DGMS-India & Pressure Equipment Directorate (ATEX) testify Parker's unflinching commitment to quality while ISO 9001: 2008 certification to Parker's Quality Management Systems reinforces the claim.

Apart from the above, Parker Hannifin India Pvt. Ltd. lays unrivaled emphasis on customer service. We constantly innovate to present a host of service solutions that reduce our customers' overall operating costs, streamline manufacturing, improve productivity, manage inventory, enhance delivery and address safety and environmental issues. Presently, the gamut of such path-breaking services encompasses Parker Tracking System (PTS), Parker Onsite and Complete Piping Solutions (CPS) among others.

So, team up with Parker to enjoy peerless products and seamless services. And together we can, usher newer paradigms of performance, productivity and profitability!

Low, Medium, High and Ultra Pressure Hose

Parkrimp® Permanent Hose Fittings

Parkrimp® Assembly Equipment

Field Attachable Fittings

Hose Products Division

HoseFinder
Hose Selection Mobile App
India Version

Mobile Phone Application

Parker Tracking System

Parker Onsite Container Program

CPS Complete Piping Solutions

Complete Piping Solutions (CPS)

Accessories

PARKER SAFETY GUIDE FOR SELECTING AND USING HOSE, TUBING, FITTINGS AND RELATED ACCESSORIES

⚠ 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.
- Electrocution from highvoltage 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, toxicor otherwise injurious.
- Sparking or explosion caused by static electricity buildup or other sources of electricity.
- Sparking or explosion while spraying paint or flammable liquids.

Before selecting or using any of these products, it is important that you read and follow the instructions below. Only hose from Parker's Stratofex Products Division is approved for in fight aerospace applications, and no other hose can be used for such in fight applications.

DO NOT MIX & MATCH

Components from different manufacturers should not be combined to create hose assemblies (apart from rare instances when both manufacturers have approved the exception). To mix and match components is to increase the risk of hose failure – a dangerous situation regardless of setting or application. Possible consequences of hose failure resulting from the use of incompatible components include:

- **Fittings thrown off at high speed**
- **High velocity fluid discharge**
- **Fluid injection injury**
- **Violently "whipping" hose**
- **Sparking or explosion from sprayed flammable fluids**
- **Suddenly moving / falling objects otherwise held static by fluid pressure**
- **Only assemble hoses and fittings of the same make**
- **Always use a crimper approved by the manufacturer of the hose and fittings**
- **Crimp only to the manufacturer's specification**

The individual is solely responsible for the hose assemblies he or she fabricates. Fluid power professionals should abide by three basic tenets when fabricating hose assemblies:

Parker's recommendations are consistent with SAE standard J1273: Industry Consensus on Best Practices for Using Hydraulic Hose. The complete technical paper, which includes SAE-recommended practices for hose assembly fabrication, can be purchased from **www.SAE.org.**

Table of contents

If you have questions about the products contained in this catalog, or their applications, please contact:

fcindia@parker.com

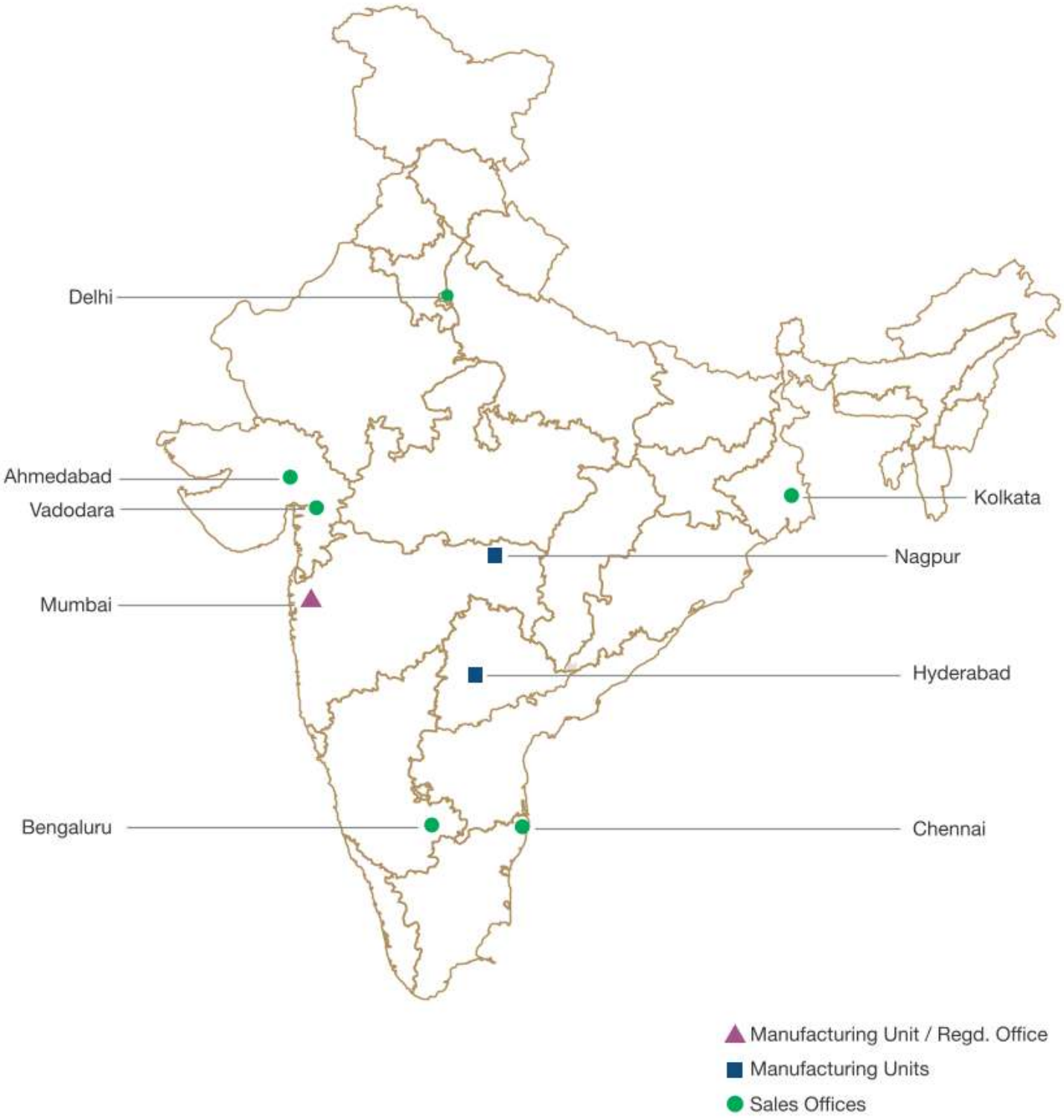
Extra care is taken in the preparation of this literature, but Parker is not responsible for any inadvertent typographical errors or omissions. Information is subject to change without notice. The information in this catalog is only accurate as of the date publication.

Offer of Sale

The items described in this document are hereby offered for sale by Parker Hannifin Corporation, its subsidiaries or its authorized distributors. This offer and its acceptance are governed by the provisions in the "Offer of Sale."

www.parker.com/offerofsale

Making our presence felt in India.



*Map not to scale

Global Services

End-to-end excellence!

PARKER TRACKING SYSTEM (PTS)

PTS helps customers reduce equipment and machinery downtime by increasing the speed, timing and accuracy of acquiring replacements. Using our web-based application, PTS generates a unique identification code for each hose assembly which is printed on a durable barcode or RFID label.

PTS can eliminate costly hours of equipment downtime, helping customers achieve greater productivity and profitability.

www.parker.com/pts

PARKER ONSITE

Parker OnSite brings our solutions to fabricate hose and tube assemblies to your worksite, even in the most remote locations. Parker OnSite containers are built to order and are an ideal maintenance and repair solution for Oil Fields, Mining, Forestry, Construction and any other industry that can't afford to have extended downtime.

www.parker.com/onsite

COMPLETE PIPING SOLUTIONS (CPS)

Combining the best non-welded piping system with a complete engineered piping services package, CPS offers your project incomparable assurance, efficiency and value.

CPS centers feature our Parflange F37 technology supported with engineering consultation, design, state-of-the art piping fabrication and installation.

www.completepipingsolutions.com

MOBILE PHONE APP

Need a hose or fitting? We'll help you find it. Configure your selection by using Parker's STAMP process, or browse by category for a range of hoses, fittings and accessories. It's like a catalog in your pocket, only better. How can something so powerful, be so small?

The Parker Tracking System (PTS)

Global asset tagging and identifcation system.

The Parker Tracking System is a unique and valuable service available exclusively for Parker customers.

The Parker Tracking System (PTS) is a unique and valuable service available exclusively for Parker customers. PTS is an advanced global tagging and tracking solution that reduces vehicle or asset downtime by increasing the speed, timing and accuracy of necessary hose assembly replacements.

Powered by the best of mobility technologies, PTS just requires a simple scan and send effort from clients to get them a perfect replacement of their product or to resolve maintenance issues in a very short time.

Using a secure Web-based application, PTS generates a unique identification code for each hose assembly which is printed on an ultra-durable barcode or RFID label. PTS labels are specifically engineered to withstand harsh chemicals, temperatures, UV exposure and other challenging conditions.

PTS can eliminate hours of costly equipment downtime, helping customers achieve greater productivity and profitability.

Tag it, Track it, Replace it!

Unique ID enables accurate traceability back to specific location or asset

Assembly date provides time-based inspection or replacement triggers

Customer part numbers & barcodes enable link to back office systems

Custom label data can display a variety of instructions or contact information

A host of advantages

- Inspection and Maintenance Planning
- Intuitive reporting tools facilitating product engineering, quality & sales analysis
- Enhanced operational efficiency
- Access to replacement details and history
- Storage of customer information
- Generation of customized instructions for MRO activities
- Creating file attachment for prints, certifications and photos
- Generation of custom reports with PDF and Excel extracts.
- Creating custom user profiles to set required security

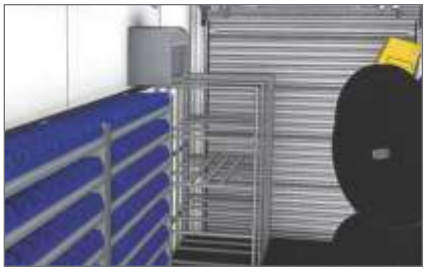
Parker Onsite Mobile Work Containers

To provide expert service even in the most remote job site locations, the Parker Onsite Program delivers a fully customized mobile workspace directly to your job site. These highly efficient and mobile container-based work sites provide all the technology, equipment and inventory needed for remote fabrication of hose and tube assemblies, and much more.

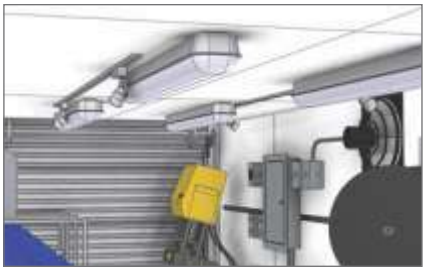
The Parker Onsite container solution will significantly reduce the time it takes to obtain critical spares or fabricate replacement hose assemblies. Equipment and labor downtime are greatly reduced, keeping your operations up and running longer. And your Parker Onsite container can be personalized to meet your specific site or project needs.

Find out more at **www.parker.com/onsite**

Cargo Doors



Storage Racks and Cabinets



Equipped with Crimping & Cutting Machines etc.

Interior View of Container

Heating/Cooling Service

Ambient Lighting & Ventilation

Ensuring seamless flow of productivity.

CPS Complete Piping Solutions
www.completepipingsolutions.com

Parker's Complete Piping Solutions (CPS) combines the innovative Parflange F37 non-welded piping system with a broad array of piping services.

By using cold drawn seamless tubes, the non-welded Parflange F37 system is inherently cleaner than welded piping systems, providing the benefit of reduced system flushing time.

Parker CPS delivers improved hydraulic piping systems to industries ranging from energy and mining to metal processing on a turn-key basis including design and development, fabrication through to installation and everything in between.

A comparison of two approaches to a 2" – 4" piping system:

Welded System

- Welds : 6
- Elbow Fittings : 2
- Welding FabricationTime : High
- System Flushing Time : High
- Flow Characteristics : Abrupt

CPS Cold Bent Parflange F37 System

- Welds : 0
- Elbow Fittings : 0
- Cold Bends : 2
- Welding Fabrication Time : N/A
- System Flushing Time : Low
- Flow Characteristics : Best
- Installation Time : Low

Seamless processes, state-of-the-art products.

Development and design:
- Modern CAD systems process all common 3D and 2D data formats and simulate installation situations.

Cold bending:
- The available bending machines process tubes with diameters from 6 x 1 mm to 190 x 20 mm (thin-walled Ø 220x6mm) accurately on the basis of the data fed to them.

Tube end processing:
- Modern CNC controlled machines for processing pipe ends. Tube end processing is carried out based on internal standards.

Tube cleaning:
- Tube cleaning using the ISO 4406 / NAS 1638 standard.

Pressure test:
- Pressure test to customer specifications possible and documentation provided at the customer's request.

Installation / support:
- Includes delivery of pre-configured tube systems to the customer's desired location or on-site installation by Parker or end customer training conducted by Parker.

Fabrication Capabilities: 1-1/4" (42 mm) to 10" (273 mm) bending at 2D to 3D bend radius

Parflange F37 non-welded flange system

- Flare Flange

- Compliant with SAE/ISO 6162-1/2 and ISO 6164 dimensions and flange patterns
- DNV and ABS type approved system

Advantages that pay off.

- Reduced pipe repair downtime
- Leak proof dry technology (NDT, X-Ray not required)
- No post weld finishing (grinding etc. not required)
- No Hot-work permit required (Defence)
- Faster on-site assembly
- Eliminates weld induced corrosion
- More vibration tolerant

The benefits of working with Parker Hose

The power of Parker in your hand.

HoseFinder 1.0
Hose Selection Mobile App
India Version

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

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.

So, download the HoseFinder pp to experience power of Parker.

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.parkerhose.com.**

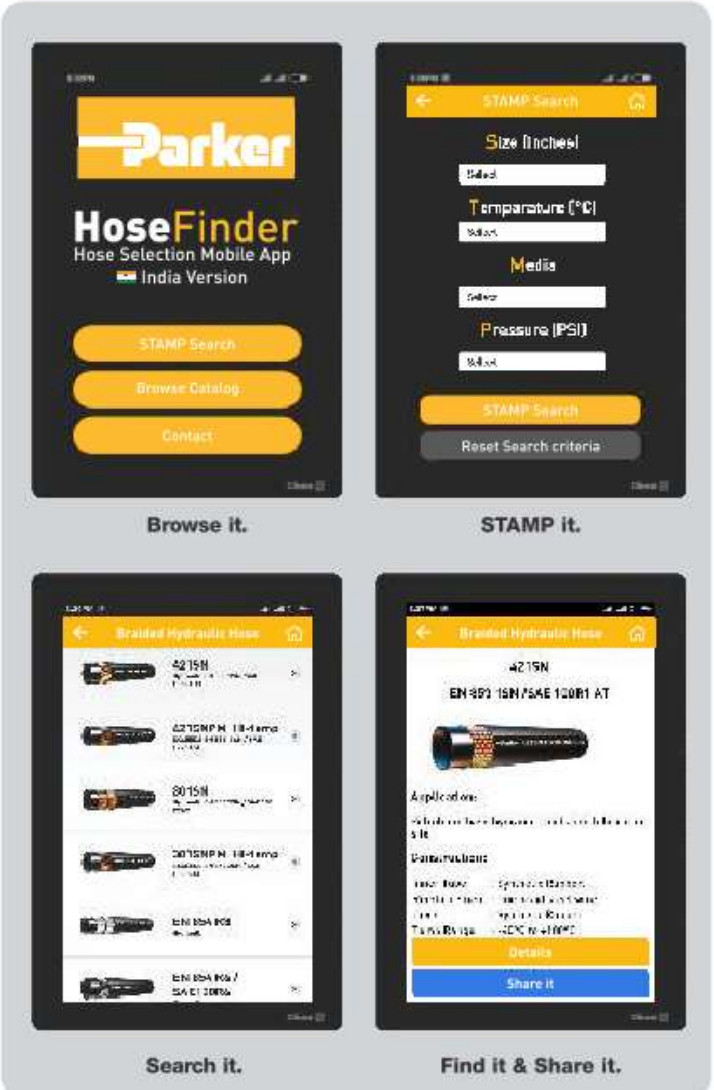
Whatever you do, visit our site often. It's the fastest and easiest way to keep up with changing technology and our ever expanding product offering.

GET IT ON Google Play

Download on the App Store

Configure your selection by using Parker's STAMP process, or browse by category for thousands of hoses, fittings and accessories.

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. **Share it.** Send an e-mail of product snapshot along with the details to your peers instantly.



Browse it. STAMP it.

Search it. Find it & Share it.

Before you spec it, STAMP it.

S SIZE

T TEMPERATURE

A APPLICATION

M MEDIA

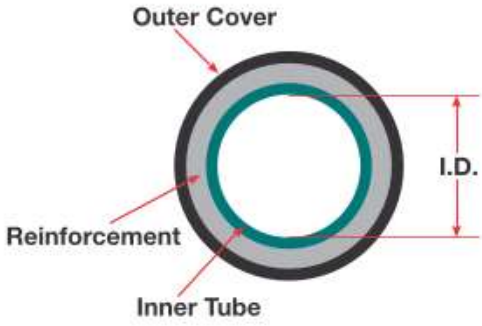
P PRESSURE

Size

Parker uses a system of measurement called Dash Numbers to indicate hose and fitting size. The dash number, or dash size, is the measure of a hose's Inner Diameter (I.D.) in sixteenths of an inch. (The exception to this is SAE 100R5 hose. See the chart below for complete details.)

This measuring system of the inside diameter of the hose is universally used by the fluid power industry today.

Hose I.D. (Inches)				
All Except R5 Series Hose			R5	
Dash No.	Inches	Millimeters	Inches	Millimeters
-3	3/16	4.8	–	–
-4	1/4	6.3	3/16	4.8
-5	5/16	7.9	1/4	6.3
-6	3/8	9.5	5/16	7.9
-8	1/2	12.7	13/32	10.3
-10	5/8	15.9	1/2	12.7
-12	3/4	19.0	5/8	15.9
-16	1	25.4	7/8	22.2
-20	1-1/4	31.8	1-1/8	28.7
-24	1-1/2	38.1	1-3/8	34.9
-32	2	50.8	1-13/16	46.0
-40	2-1/2	63.5	2-3/8	60.3
-48	3	76.2	-	-
-56	3-1/2	88.9	-	-
-64	4	101.6	-	-



The hose size is determined by the inside diameter which can be measured or found on the layline.

Temperature

When specifying hose, there are two temperatures you need to identify. One is the ambient temperature, which is the temperature that exists outside the hose where it is being used; the other is the media temperature, which is the temperature of the media conveyed through the hose.

Very high or low ambient temperatures can have adverse affects on the hose cover and reinforcement materials, resulting in reduced service life.

Media temperatures can have a much greater impact on hose life. For example, rubber loses flexibility if operated at high temperatures for extended periods.

Parker hoses carry different temperature ratings for different fluids. For example, a hose has a temperature range of **-40°C to +125°C (-40°F to + 257°F)** for petroleum-based hydraulic fluids. However for water, water/glycol and water/oil emulsion hydraulic fluids, the range drops to a rating of up to **+85°C (+185°F)**. Air is rated even lower up to **+70°C (+158°F)**

Some media can increase or decrease the effects of temperature on the hose. The maximum rated temperature of a hose is specific to the media.

Application

Before selecting a hose, it is important to consider how the hose assembly will be used. Answering the following questions may help:

- **What type of equipment is involved?**
- **What are the environmental factors?**
- **Are mechanical loads applied to the assembly?**
- **Will the routing be confined?**
- **What about hose fittings – permanent or field attachable?**
- **Will the assembly be subjected to abrasion?**

Sometimes specific applications require specific hoses. For example, applications where hoses will encounter rubbing or abrasive surfaces, would be best handled by our family of abrasion-resistant hose with both Tough and Super Tough covers.

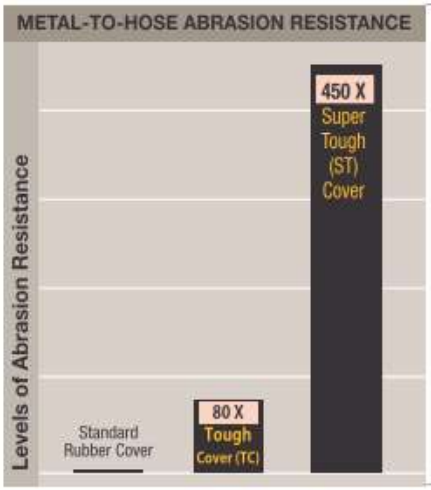
When application space is tight, bend radius is another important consideration. Parker offers a full line of hoses designed for one-half SAE bend radius at full SAE-rated pressures. We offer hoses with increased flexibility and smaller outer diameters enabling faster, easier routing in small spaces, reducing both hose length and inventory requirements.

Industry standards set specific requirements concerning construction type, size, tolerances, burst pressure, and impulse cycles of hoses. Parker hydraulic hoses meet or exceed standards such as:

- **SAE (Society of Automotive Engineers)**
- **EN (European Norm)**
- **DIN (Deutsches Institut für Normung)**
- **ISO (International Organization for Standardization)**

SUPER TOUGH ST

TOUGH COVER TC



Results from the ISO 6945 metal-to-hose abrasion test show that Tough Cover and Super Tough cover hoses offer significantly greater abrasion resistance than standard rubber cover hose.

Hose Hint
When considering the bend radius of a hose assembly, a minimum straight length of twice the hose's outside diameter should be allowed between the hose fitting and the point at which the bend starts.

Media

What will the hose convey? Some applications require the use of specialized oils or chemicals. The hose you order must be compatible with the medium being conveyed.

Compatibility must cover the inner tube, the cover, hose fittings, and O-rings as well. Use the Chemical Resistance Chart found in Section D to select the correct components of the hose assembly that will be compatible with your system's media. The chart contains the chemical resistance rating of a variety of fluids.


CHEMICAL RESISTANCE TABLE

Hose Hint
For long service life and leak-free functionality, it is vital that the hose assembly be chemically compatible with both the fluid being conveyed through the hose as well as the environment of the hose.

Pressure

When considering hose pressure, it's important to know both the system working pressure and any surge pressures and spikes.

Hose selection must be made so that the published maximum working pressure of the hose is equal to or greater than the maximum system pressure.

Surge pressures or peak transient pressures in the system must be below the published maximum working pressure for the hose.

Each Parker hose has a pressure rating which can be found on the Hose Overview Chart on page 17 to 20.

All Parker hydraulic hoses have passed the industry rated specifications for burst pressure and carry a 4:1 design factor unless otherwise noted. Burst pressure ratings for hose are for manufacturing test purposes only. They are not an indication that the product can be used above the published maximum working pressure. It is for this reason that the burst pressure ratings have been removed from the hose charts within the catalog.

Care must also be taken when looking at the "weakest link" of the hose assembly. A hose assembly is rated at the maximum working pressure of the hose and the fitting component. Therefore the maximum working pressure of the hose assembly is the lesser of the rated working pressure of the hose and the end connections used.

To mix and match components is to increase the risk of hose failure – a dangerous situation regardless of setting or application.

Hose Overview page 17 to 19

Senso control diagnostic systems

Pressure spikes can occur during machine operation in an instant.They can occur so quickly in fact, that standard glycerin filled gages will never detect them. Using a pressure diagnostic system like Parker's Senso Control can help detect how often and how drastic these pressure spikes are. Contact your Parker representative today.

Hose Hint

A hose assembly should be routed so that the hose is not stretched, compressed, or kinked to assure maximum service life and safety.

Hose Visual Index

Hose Visual Index

Section-B	**Imported**	Push - Lok® B-1  801 – Push-Lok Plus®	201 B-2  Transportation SAE 100R5 SAE J140 All / D.O.T. FMVSS 106 All-Brake
213 B-2  Transportation SAE J140 AI / D.O.T. FMVSS 106 AI - Air Brake	387 B-3  Hydraulic – Constant Working Pressure ISO 18752 - AC/BC/CC	487 B-3  Hydraulic – Constant Working Pressure ISO 18752 - AC/BC/CC	451TC/ST B-4  SAE 100R17, J1942 / ISO 11237 – 1 TYPE R17 – Constant Working Pressure / USCG HF / ABS
351TC/ST B-4  SAE 100R19, J517 – Constant Working Pressure	787 B-5  Hydraulic – Constant Working Pressure ISO 18752 - BC/DC	797 B-5  Hydraulic – Constant Working Pressure ISO 18752 - BC/CC/DC	

Markets

Hose Overview Chart

Hose Size	Hose Reinforcement	-4	-5	-6	-8	-10	-12	-14	-16	-18	-20	-24	-32	-38	-40	-48	-56	-64	Standard Temp. Range °C	SAE	EN	ISO	Page
Braided Hydraulic - Industry Standard																							
421SN EN 853 1SN / SAE 100R1 AT		3250	3125	2600	2325	1875	1525		1275		900	725	575	362	362	290	220	145	-40/+100	100R1AT	853 1SN		A-1
421SN - HIGH TEMP EXCEEDS EN 853 1SN / SAE 100R1AT		3250	3125	2600	2325	1875	1525		1275		900	725	575						-40/+135	100R1AT	853 1SN		A-1
SLIMLINE 1SC EN 857 1SC		3265	3120	2610	2325	1885	1525		1275										-40/+100		857 1SC		A-2
301SN EN 853 2SN / SAE 100R2AT		5800	5000	4775	4000	3600	3100		2400		1800	1300	1150	1015	1000	650	400	365	-40/+100	100R2AT	853 2SN		A-2
301SN - High Temp. EXCEEDS EN 853 2SN / SAE 100R2AT		5800	5000	4775	4000	3600	3100		2400		1800	1300	1150						-40/+135	100R2AT	853 2SN		A-3
462PM / SLIMLINE 2SC EN 857 2SC		5800	5000	4785	4000	3625	3120		2395										-40/+100		857 2SC		A-3
471/ 471TC Hydraulic - Tough Cover EN 857 2SC		5800		5000	4250	3625	3125		2500										-40/+100		857 2SC		A-4
436 Hydraulic - Compact High Temperature SAE 100R16		5000		4000	3500	2750	2250		2000		1625	1250	1125						-48/+150	100R16			A-4
451PM / TRI-K-FLEX Hydraulic SAE 100R17		3000	3000	3000	3000	3000	3000		3000										-40/+100	100R17			A-5
MH-174™ BCS 174-1992 Underground Mining		6525		5510	5250	4060	4000		3120		2495	2120	1625						-40/+100				A-5
SAE 100R5R Hydraulic		3000	3000	2250	2000	1750	1500		800		625	500	350	350					-40/+100	100R5R			A-6
SAE 100R5C Hydraulic			3000	2250	2000	1750	1500		800		625	500	350		350				-40/+100	100R5			A-6
SAE 100 R5C Hi-temp Hydraulic			3000	2250	2000	1750	1500		800		625	500							-40/+150				A-7
601PM / EN 854 R3 Hydraulic		1250	1200	1125	1000	875	750		565		375	250	215						-40/+100	100R3	854		A-7
881PM / SAE 100R4 Hydraulic Suction and Return line							305		250		205	145	145		145	145			-40/+100	100R4			A-8
EN 854 R6/ SAE 100R6 Hydraulic		400	400	400	400	350	300		190										-40/+100	100R6	854		A-8

Hose Overview Chart

Hose Size	Hose Reinforcement	-4	-5	-6	-8	-10	-12	-14	-16	-18	-20	-24	-32	-38	-40	-48	-56	-64	Standard Temp. Range °C	SAE	EN	ISO	Page
Braided Hydraulic - Proprietary																							
POWERFLEX™ Hydraulic High Flexibility Hose		5800	5100	4800	4000	4000	4000		3600										-40/+100				A-9
PERPETUITY High Impulse Hose		6520	5800	5290	5070	4350	4350		3260										-40/+120				A-9
HITECH HOSE Hot Oil / Air Return Line					1000		1000		1000				500		500				-40/+150				A-10
401 / PILOT HOSE Return Line Hose		2170		1450	1450														-40/+120				A-10
SUPERJACK Hydraulic Jack Hose		10000		10000															-40/+100				A-11
Spiral Hydraulic - Industry Standard																							
701 Hydraulic EN 856 4SP				6500	6000	5000	5000		4000										-40/+100		856 4SP		A-11
731 Hydraulic EN 856 4SH							6000		5500		4700	4200	3600						-40/+100		856 4SH		A-12
721 Hydraulic EN 856 R12				4000	4000	4000	4000		4000		3000	2500	2500						-40/+125		856 R12		A-12
781 Hydraulic EN 856 R13							5000		5000		5000	5000	5000						-40/+125		856 R13		A-13
792PM / SPIRAFLEX Hydraulic SAE 100 R15							6000		6000		6000	6000							-40/+100	100R15			A-13

Hose Overview Chart

Hose Size / Hose Reinforcement		-4	-5	-6	-8	-10	-12	-14	-16	-18	-20	-24	-32	-38	-40	-48	-56	-64	Standard Temp. Range °C	SAE	EN	ISO	Page
Imported																							
Push - Lok® 801 – Push-Lok Plus®		350		350	300	300	300		200										-40/+100				B-1
201 Transportation SAE 100R5 SAE J140 All / D.O.T. FMVSS 106 All-Brake		3000	3000	2250	2000	1750	1500		800		625	500	350		350	200			-40/+150	100R5 / J1402 All			B-2
213 Transportation SAE J140 AI / D.O.T. FMVSS 106 AI - Air Brake		2000	1500	1500	1250	1000	750		400		300	300	200		175				-45/+150	J1402 AI			B-2
387 Hydraulic - Constant Working Pressure ISO 18752 - AC/BC/CC		3000		3000	3000	3000	3000		3000		3000	3000	3000						Standard Cover -40/+100 TC & ST -40/+125			18752	B-3
487 Hydraulic – Constant Working Pressure ISO 18752 – AC/BC/CC		4000		4000	4000	4000	4000		4000		4000	4000	4000						Standard Cover -40/+100 TC & ST -40/+125			18752	B-3
451TC/ST SAE 100R17, J1942 / ISO 11237 – 1 TYPE R1T – Constant Working Pressure / USCG HF / ABS		3000		3000	3000	3000	3000		3000		3000								-45/+100	100R17			B-4
351TC/ST SAE 100R19, J517 – Constant Working Pressure		4000		4000	4000	4000	4000												-45/+100	100R19			B-4
787 ISO 18752 - BC/DC Hydraulic - Constant Working Pressure					5000	5000	5000		5000		5000	5000	5000						Standard Cover -40/+100 TC & ST -40/+125			18752	B-5
797 ISO 18752 - BC/CC/DC Hydraulic - Constant Working Pressure					6000	6000	6000		6000		6000	6000	6000						Standard Cover -40/+100 TC & ST -40/+125			18752	B-5

- Braided Hydraulic - Industry Standard
- Braided Hydraulic - Proprietary
- Spiral Hydraulic - Industry Standard

Hydraulic Hose

A

Parker

ENGINEERING YOUR SUCCESS.

Certifications

ABS

CERTIFICATE NUMBER: 16-BY2212291

PORT OFFICE: MUMBAI, INDIA

Certificate of

MANUFACTURING ASSESSMENT

This is to certify that: The Undersigned did evaluate the relevant manufacturing quality procedures for the type of products of the manufacturer:

Parker Hannifin India Pvt. Ltd.

Plant at:

KHASARA NO. 145, 146, 153/1, 153/3, 157
AMRAVATI ROAD, BAZARGAON
NAGPUR, MAHARASHTRA, INDIA

The methods of assuring and controlling quality during production as required by the ABS Rules or Guides for the product and the associated specifications or standard were verified to reflect the specific surveys, required by the Rules and Standards for the manufacture of:

Hose, Non-metallic Flexible Hydraulic

711, 721TC, 731, 781/P35, 881

722TC & 722ST

221FR, 451TC, 471TC, 471ST, 772TC, 782TC,792TC

The manufacturer presented a sample or specimen of the product, representative of the "type" approved, to the undersigned, for the purpose of verifying that the "type" has been manufactured in conformance with the Manufacturer's Product Design Assessments.

This Certificate of Manufacturing Assessment is an evaluation of the manufacturer alone and is neither an approval nor a rejection of the product described above. Unless cancelled, expired or revoked, this certificate remains valid subject to annual audits.

Consult the ABS Type Approval website to confirm the continued validity of this certificate and the status of the particular products being manufactured.

ISSUE DATE 28 September 2016 EXPIRATION DATE 27 September 2021

SURVEYOR Phaniker Kanad Manohar

FIRST ANNUAL ENDORSEMENT

SECOND ANNUAL ENDORSEMENT

THIRD ANNUAL ENDORSEMENT

FOURTH ANNUAL ENDORSEMENT

Certificate Number: 17-SG156266-PDA
09APR2017

Confirmation of Product Type Approval

Please refer to the "Service Restrictions" shown below to determine if Unit Certification is required for this product.

This certificate reflects the information on the product in the ABS Records as of the date and time the certificate is printed.

Pursuant to the Rules of the American Bureau of Shipping (ABS), the manufacturer of the below listed product held a valid Manufacturing Assessment (MA) with expiration date of 12-JAN-2022. The continued validity of the Manufacturing Assessment is dependent on completion of satisfactory audits as required by the ABS Rules.

And, a Product Design Assessment (PDA) valid until subject to continued compliance with the Rules or standards used in the evaluation of the product.

The above entitle the product to be called Product Type Approved.

The Product Design Assessment is valid for products intended for use on ABS classed vessels, MODUs or facilities which are in existence or under contract for construction on the date of the ABS Rules used to evaluate the Product.

ABS makes no representations regarding Type Approval of the Product for use on vessels, MODUs or facilities built after the date of the ABS Rules used for this evaluation.

Due to wide variety of specifications used in the products ABS has evaluated for Type Approval, it is part of our contract that; whether the standard is an ABS Rule or a non-ABS Rule, the Client has full responsibility for continued compliance with the standard.

Product Name: Flexible Hose
Model Name(s): 421SN

Presented to:
PARKER HANNIFIN INDIA PVT. LTD
KHASARA NO. 145, 146, 153/1, 153/3, 157
AMRAVATI ROAD, BAZARGAON
MAHARASHTRA 440023
India

Intended Service:	Hydraulic Oils, Water, Compressed Air
Description:	Flexible hose
Tier:	3
Ratings:	Hose internal diameter **1/4 inch to 2 inches, pressure range 40-225 bar.** Design temperature: -40 deg C to 125 deg C For detailed ratings see attached table.
Service Restrictions:	Unit Certification is not required for this product.
Comments:	1) The Manufacturer has provided a declaration about the control of, or the lack of Asbestos in this product. 2) Hoses are to be completed with factory assembled end fittings or factory supplied end fittings installed in accordance with manufacturer's specifications. 3) End connections are to comply with applicable requirements and limitations of the Steel Vessel Rules for the intended service (e.g. 4-6-7/3.5.1) 4) Hose assemblies are to be installed only where flexibility is required and are not to be subject to torsional deflection under normal conditions; hose length is to be limited to that required by flexibility only. 5) Not to be installed in applications where large amount of repeated flexing is expected in combination with pressure pulses. 6) Marking for Flexible hoses are to be permanently marked by the manufacturer with the following details as per 4-6-2/5.7.6 of the Steel Vessel Rules: Hose manufacturer's name or trademark. Date of manufacture (month/year). Designation

Certificate Number: 17-SG159004-PDA
09APR2017

Confirmation of Product Type Approval

Please refer to the "Service Restrictions" shown below to determine if Unit Certification is required for this product.

This certificate reflects the information on the product in the ABS Records as of the date and time the certificate is printed.

Pursuant to the Rules of the American Bureau of Shipping (ABS), the manufacturer of the below listed product held a valid Manufacturing Assessment (MA) with expiration date of 12-JAN-2022. The continued validity of the Manufacturing Assessment is dependent on completion of satisfactory audits as required by the ABS Rules.

And, a Product Design Assessment (PDA) valid until subject to continued compliance with the Rules or standards used in the evaluation of the product.

The above entitle the product to be called Product Type Approved.

The Product Design Assessment is valid for products intended for use on ABS classed vessels, MODUs or facilities which are in existence or under contract for construction on the date of the ABS Rules used to evaluate the Product.

ABS makes no representations regarding Type Approval of the Product for use on vessels, MODUs or facilities built after the date of the ABS Rules used for this evaluation.

Due to wide variety of specifications used in the products ABS has evaluated for Type Approval, it is part of our contract that; whether the standard is an ABS Rule or a non-ABS Rule, the Client has full responsibility for continued compliance with the standard.

Product Name: Flexible Hose
Model Name(s): 301SN

Presented to:
PARKER HANNIFIN INDIA PVT. LTD
KHASARA NO. 145, 146, 153/1, 153/3, 157
AMRAVATI ROAD, BAZARGAON
MAHARASHTRA 440023
India

Intended Service:	Hydraulic Oils, Water, Compressed Air
Description:	Flexible hose
Tier:	3
Ratings:	Hose internal diameter **1/4 inch to 2 inches, pressure range 40 - 400 bar.** Design temperature: -40 C to 100 C For detailed ratings see attached table.
Service Restrictions:	Unit Certification is not required for this product.
Comments:	1) The Manufacturer has provided a declaration about the control of, or the lack of Asbestos in this product. 2) Hoses are to be completed with factory assembled end fittings or factory supplied end fittings installed in accordance with manufacturer's specifications. 3) End connections are to comply with applicable requirements and limitations of the Steel Vessel Rules for the intended service (e.g. 4-6-7/3.5.1) 4) Hose assemblies are to be installed only where flexibility is required and are not to be subject to torsional deflection under normal conditions; hose length is to be limited to that required by flexibility only. 5) Not to be installed in applications where large amount of repeated flexing is expected in combination with pressure pulses. 6) Marking for Flexible hoses are to be permanently marked by the manufacturer with the following details as per 4-6-2/5.7.6 of the Steel Vessel Rules: Hose manufacturer's name or trademark. Date of manufacture (month/year). Designation

Certifications

Lloyd's Register

Type Approval Certificate Extension

This is to certify that Certificate Nos. 11/10000(E3), 11/10050(E3), 11/10050(E1), 11/10050(E2) & 11/10056(E2) for the undernoted products is extended and reendorsed as shown.

This certificate is issued to:

PRODUCER	Parker Hannifin India Private Limited
PLACE OF PRODUCTION	Khasara #140, 144, 150/1, 150/3, 157, Amravati Road, Butaegaon, Nagpur - 440033, Maharashtra, India
DESCRIPTION	High pressure, fire resistant flexible hoses of non-metallic material with or without permanently attached end fittings
TYPE	PIX series PIX-PERFORMER-15N & -25N PIX-PROKOMP-15C & -25C PIX-THERMAL-15N & -25N PIX-HIPULSE-40P & -40N PIX-DARTUS-280, -300 & -420
APPLICATION	PIX-PERFORMER-15N & -25N PIX-PROKOMP-15C, -25C Medium to high pressure hydraulic lines suitable for marine, mining, offshore and general industrial applications PIX-THERMAL-15N & -25N Medium to high pressure hydraulic lines suitable for marine, mining, offshore and general industrial applications up to operating temperature of 135 °C PIX-HIPULSE-40P & -40N PIX-DARTUS-280, -300 & -420 Heavy duty impulsive high pressure hydraulic systems for marine, mining, offshore and general industrial applications like excavators, dozers, dumpers, cranes, compactors, rock breakers and hydraulic drill rigs and other construction equipment
Certificate No	11/10056(E2)
Issue Date	27 June 2016
Expiry Date	26 June 2021
Sheet	1 of 3

N. Nagaraj
Yokohama Technical Support Office
Lloyd's Register Group Limited

N. Nagaraj
Yokohama Technical Support Office
Lloyd's Register Group Limited

Lloyd's Register Group Limited
71 Fenchurch Street, London EC3M 4BS

DNV·GL

Certificate No:
TAP00000H2

TYPE APPROVAL CERTIFICATE

This is to certify:
That the Flexible Hoses of Non-Metallic Material with Permanently Fitted Couplings

with type designation(s):
Parker: No Skive 381SN & 421SN and Parker 471 / PIX: PERFORMER, THERMAL, PROKOMP, ARMOUR

Issued to
Parker Hannifin India Pvt. Ltd.
Nagpur maharashtra, India

is found to comply with
DNV GL rules for classification – Ships Pt.4 Ch.6 Piping systems
DNVGL-OS-D101 – Marine and machinery systems and equipment, Edition July 2015
DNV GL class programme: DNVGL-CP-0183 – Type approval – Flexible hoses

Application :
Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV GL.

Temperature range: THERMAL: -40°C to +135°C, Others: -40°C to +100°C
Max. working press.: Dependent on size and type, see certificate
Sizes: See certificate

This Certificate is valid until 2020-12-31.
Issued at Høvik on 2016-09-28

DNV GL local station: Mumbai

Approval Engineer: Advi Sansini

for DNV GL

Marianne Sparen Marsveg
Head of Section

421SN

Hydraulic
EN 853 1SN / SAE 100 R1 AT

# Part Number	Hose I.D		Hose R.O.D	Hose O.D	Working Pressure		Minimum Bend Radius		Approx. Weight	
	inch	mm	mm	mm	psi	bar	inch	mm	lbs/ft	kg/m
421SNMSHA-4	1/4	6.4	11.1	13.4	3250	225	2.0	50	0.15	0.23
421SNMSHA-5	5/16	7.9	12.7	15.0	3125	215	2.3	58	0.18	0.27
421SNMSHA-6	3/8	9.5	15.1	17.4	2600	180	2.5	65	0.22	0.33
421SNMSHA-8	1/2	12.7	18.2	20.7	2325	160	3.5	90	0.30	0.44
421SNMSHA-10	5/8	15.9	21.4	23.9	1875	130	4.0	100	0.34	0.50
421SNMSHA-12	3/4	19.0	25.4	27.8	1525	105	4.8	120	0.46	0.68
421SNMSHA-16	1	25.4	33.3	35.8	1275	88	6.0	150	0.63	0.94
421SNMSHA-20	1-1/4	31.8	41.8	44.8	900	63	16.5	420	0.97	1.44
421SNMSHA-24	1-1/2	38.1	46.4	51.0	725	50	20.0	500	1.07	1.59
421SNMSHA-32	2	50.8	59.5	64.5	575	40	25.0	630	1.51	2.25
*421SNPM-38PM	2-3/8	60.3	69.0	75.0	362	25	30.0	762	1.73	2.58
*421SNPM-40PM	2-1/2	63.5	73.0	77.5	362	25	30.0	762	1.86	2.77
*421SNPM-48PM	3	76.2	86.4	94.4	290	20	36.0	915	2.59	3.85
*421SNPM-56PM	3-1/2	88.9	98.5	105.5	220	15	42.0	1067	2.89	4.30
*421SNPM-64PM	4	101.6	110.0	117.0	145	10	43.5	1105	3.09	4.60

Impulse test conducted with Parker Fittings. "All hoses upto -16 have passed 1,50,000 cycles impulse test at half the Min. bend radius". "Not covered under HS/SAE/EN

Markets

Type Approvals:
BV, DNV-GL, LR, MED, ABS

Application:
Recommended for medium pressure hydraulic oil lines.

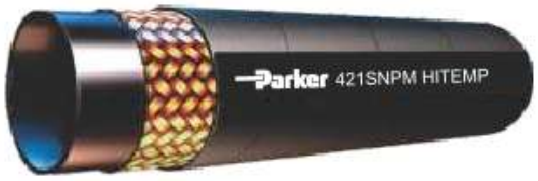
Construction:

Inner tube	:	NBR - Synthetic rubber
Reinforcement	:	One braid steel wire
Outer Cover	:	NBR-PVC synthetic rubber

Bend radius up to 1"

Temp. Range
- 40°C to 100°C (-40°F to 212°F)

Impulse Cycles:
Specified - 1,50,000 cycles.
Tested upto - 3,00,000 cycles.



421SN High Temperature

Hydraulic
EXCEEDS EN 853 1SN / SAE 100R1AT

# Part Number	Hose I.D		Hose R.O.D	Hose O.D	Working Pressure		Minimum Bend Redius		Approx. Weight	
	inch	mm	mm	mm	psi	bar	inch	mm	lbs/ft	kg/m
421SNPMHITEMP-4PM	1/4	6.4	11.1	13.4	3250	225	4.0	100	0.15	0.23
421SNPMHITEMP-5PM	5/16	7.9	12.7	15.0	3125	215	4.5	115	0.18	0.27
421SNPMHITEMP-6PM	3/8	9.5	15.1	17.4	2600	180	5.0	130	0.22	0.33
421SNPMHITEMP-8PM	1/2	12.7	18.2	20.7	2325	160	7.0	180	0.30	0.44
421SNPMHITEMP-10PM	5/8	15.9	21.4	23.9	1875	130	8.0	200	0.34	0.50
421SNPMHITEMP-12PM	3/4	19.0	25.4	27.8	1525	105	9.5	240	0.46	0.68
421SNPMHITEMP-16PM	1	25.4	33.3	35.5	1275	88	12.0	300	0.63	0.94
421SNPMHITEMP-20PM	1-1/4	31.8	40.5	43.5	900	63	16.5	420	0.97	1.44
421SNPMHITEMP-24PM	1-1/2	38.1	46.4	50.4	725	50	20.0	500	1.07	1.59
421SNPMHITEMP-32PM	2	50.8	59.5	63.5	575	40	25.0	630	1.51	2.25

Markets

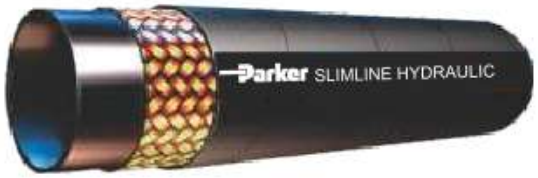
Application:
Recommended for medium pressure hydraulic oil lines & up to 135°C

Construction:

Inner tube	:	CPE - Synthetic rubber
Reinforcement	:	One braid steel wire
Outer Cover	:	CPE / CR Synthetic rubber

Temp. Range
- 40°C to 135°C
(-40°F to 275°F)

SLIMLINE



Hydraulic
EN 857 1SC

# Part Number	Hose I.D		Hose R.O.D	Hose O.D	Working Pressure		Minimum Bend Radius		Approx. Weight	
	inch	mm	mm	mm	psi	bar	inch	mm	lbs/ft	kg/m
EN857PM-4PM	1/4	6.4	10.2	13.0	3265	225	2.9	75	0.13	0.19
EN857PM-5PM	5/16	7.9	11.5	14.0	3120	215	3.3	85	0.14	0.21
EN857PM-6PM	3/8	9.5	13.6	16.4	2610	180	3.5	90	0.17	0.26
EN857PM-8PM	1 /2	12.7	17.0	19.5	2325	160	5.1	130	0.24	0.35
EN857PM-10PM	5/8	15.9	20.4	22.5	1885	130	5.9	150	0.30	0.45
EN857PM-12PM	3/4	19.0	23.8	26.2	1525	105	7.0	180	0.36	0.54
EN857PM-16PM	1	25.4	31.3	34.0	1275	88	9.0	230	0.54	0.80

*Extremely Compact hose dimensions, extra high flexibility, extra small minimum bend radius, very low weight

Markets

Transportation, Military, Construction, Agriculture, Grounds & Building Maintenance, Machine Tool, Utility Equipment, Personnel Lift Equipment, Industrial

Application:
Recommended for medium pressure hydraulic oil lines, compact design supports at constraint installation routing.

Construction:

Inner tube	:	NBR - Synthetic rubber
Reinforcement	:	One high tensile steel wire braid
Outer Cover	:	SBR - Synthetic rubber

Temp. Range
- 40°C to +100°C (-40°F to +212°F)

301SN

Hydraulic
EN 853 2SN / SAE 100 R2AT

# Part Number	Hose I.D		Hose R.O.D	Hose O.D	Working Pressure		Minimum Bend Radius		Approx. Weight	
	inch	mm	mm	mm	psi	bar	inch	mm	lbs/ft	kg/m
301SNMSHA-4	1/4	6.4	12.9	15.0	5800	400	2.0	50	0.26	0.39
301SNMSHA-5	5/16	7.9	14.3	16.6	5000	350	2.2	58	0.29	0.43
301SNMSHA-6	3/8	9.5	16.9	19.0	4775	330	2.5	65	0.36	0.53
301SNMSHA-8	1/2	12.7	19.8	22.3	4000	275	3.5	90	0.42	0.63
301SNMSHA-10	5/8	15.9	23.0	25.5	3600	250	4.0	100	0.50	0.74
301SNMSHA-12	3/4	19.0	27.0	29.4	3100	215	4.8	120	0.64	0.95
301SNMSHA-16	1	25.4	34.9	38.1	2400	165	6.0	150	0.91	1.35
301SNMSHA-20	1-1/4	31.8	44.0	47.5	1800	125	16.5	420	1.52	2.26
301SNMSHA-24	1-1/2	38.1	50.8	54.5	1300	90	20.0	500	1.58	2.35
301SNMSHA-32	2	50.8	63.5	67.2	1150	80	25.0	630	1.96	2.92
*301SNPM-38PM	2-3/8	60.3	71.5	75.8	1015	70	30.0	762	2.29	3.41
*301SNPM-40PM	2-1/2	63.5	76.2	82.5	1000	69	30.0	762	2.81	4.18
*301SNPM-48PM	3	76.2	89.4	96.0	650	45	36.0	915	3.19	4.75
*301SNPM-56PM	3-1/2	88.9	101.2	107.5	400	28	42.0	1067	3.49	5.20
*301SNPM-64PM	4	101.6	113.2	118.5	365	25	43.5	1105	3.56	5.30

Impulse test conducted with Parker Fittings. *All hoses upto -16 have passed 2,00,000 cycles impulse test at half the Min. bend radius*. *Not covered under HS/SAE/EN

Markets

Transportation, Military, Construction, Agriculture, Grounds & Building Maintenance, Railroad, Utility Equipment, Personnel Lift Equipment, Machine Tool, Waste & Refuse, Material Handling, Paving & Road Maintenance, Ground Support Equipment, Industrial, Mining, Automotive

Type Approvals:
BV, DNV-GL, LR, MED, ABS

Application:
Recommended for high pressure hydraulic oil lines.

Construction:

Inner tube	:	NBR - Synthetic rubber
Reinforcement	:	Two braids steel wire
Outer Cover	:	NBR- PVC Synthetic rubber

1/2 Bend radius up to 1"

Temp. Range
- 40°C to 100°C (-40°F to 212°F)

Impulse Cycles:
Specified - 2,00,000 cycles.
Tested upto - 4,00,000 cycles.

301SN High Temperature

Hydraulic
Exceeds EN 853 2SN / SAE 100 R2AT

# Part Number	Hose I.D		Hose R.O.D	Hose O.D	Working Pressure		Minimum Bend Radius		Approx. Weight	
	inch	mm	mm	mm	psi	bar	inch	mm	lbs/ft	kg/m
301SNPMHITEMP-4PM	1/4	6.4	12.9	15.0	5800	400	4.0	100	0.26	0.39
301SNPMHITEMP-5PM	5/16	7.9	14.3	16.6	5000	350	4.5	115	0.29	0.43
301SNPMHITEMP-6PM	3/8	9.5	16.9	19.0	4775	330	5.0	130	0.36	0.53
301SNPMHITEMP-8PM	1/2	12.7	19.8	22.3	4000	275	7.0	180	0.42	0.63
301SNPMHITEMP-10PM	5/8	15.9	23.0	25.5	3600	250	8.0	200	0.50	0.74
301SNPMHITEMP-12PM	3/4	19.0	27.0	29.4	3100	215	9.5	240	0.64	0.95
301SNPMHITEMP-16PM	1	25.4	34.9	38.1	2400	165	12.0	300	0.91	1.35
301SNPMHITEMP-20PM	1-1/4	31.8	40.5	43.5	1800	125	16.5	210	1.09	1.62
301SNPMHITEMP-24PM	1-1/2	38.1	46.5	50.0	1300	90	20.0	250	1.33	1.98
301SNPMHITEMP-32PM	2	50.8	60.3	64.0	1150	80	25.0	300	1.84	2.74

Markets

Transportation, Military, Construction, Agriculture, Grounds & Building Maintenance, Railroad, Utility Equipment, Personnel Lift Equipment, Machine Tool, Waste & Refuse, Material Handling, Paving & Road Maintenance, Ground Support Equipment, Industrial, Mining, Automotive

Application:
Recommended for high pressure hydraulic oil lines & up to 135°C.

Construction:
Inner tube : CPE - Synthetic rubber
Reinforcement : Two braids steel wire
Outer Cover : CPE / CR Synthetic rubber

Temp. Range
- 40°C to 135°C
(-40°F to 275°F)

462PM / SLIMLINE

Hydraulic
EN 857 2SC

# Part Number	Hose I.D		Hose R.O.D	Hose O.D	Working Pressure		Minimum Bend Radius		Approx. Weight	
	inch	mm	mm	mm	psi	bar	inch	mm	lbs/ft	kg/m
462PM-4PM	1/4	6.4	11.2	13.6	5800	400	3.0	75	0.20	0.30
462PM-5PM	5/16	7.9	12.7	15.2	5000	350	3.3	85	0.24	0.35
462PM-6PM	3/8	9.5	15.0	17.4	4785	330	3.5	90	0.28	0.41
462PM-8PM	1 /2	12.7	18.3	20.9	4000	275	5.1	130	0.34	0.50
462PM-10PM	5/8	15.9	21.4	24.0	3625	250	6.7	170	0.48	0.71
462PM-12PM	3/4	19.0	25.5	27.7	3120	215	7.4	200	0.54	0.81
462PM-16PM	1	25.4	33.4	35.6	2395	165	9.8	250	0.82	1.22

Markets

Transportation, Military, Construction, Agriculture, Grounds & Building Maintenance, Machine Tool, Utility Equipment, Personnel Lift Equipment, Industrial

Application:
Recommended for high pressure hydraulic oil lines, compact design supports at constraint installation routing.

Construction:
Inner tube : NBR - Synthetic rubber
Reinforcement : Two braids steel wire
Outer Cover : SBR - Synthetic rubber

Temp. Range
- 40°C to +100°C
(-40°F to +212°F)

471 / 471TC

Hydraulic – Tough Cover
EN857 TYPE 2SC

# Part Number	Hose I.D		Hose O.D		Working Pressure		Minimum Bend Radius		Approx. Weight	
	inch	mm	inch	mm	psi	bar	inch	mm	lbs/ft	kg/m
471 / 471TC-4	1/4	6.3	0.51	13	5800	400	2	50	0.20	0.30
471 / 471TC-6	3/8	10.0	0.68	17	5000	350	2-1/2	65	0.28	0.42
471 / 471TC-8	1/2	12.5	0.80	20	4250	300	3-1/2	90	0.35	0.52
471 / 471TC-10	5/8	16.0	0.94	24	3625	250	4	100	0.44	0.66
471 / 471TC-12	3/4	19.0	1.09	28	3125	215	4-3/4	120	0.58	0.86
*471 / 471TC-16	1	25.0	1.40	35	2500	175	6	150	0.79	1.17

* Under Validation

Markets

Application:
Petroleum base hydraulic fluids and lubricating oils.

Construction:

Inner tube	:	NBR - Synthetic rubber
Reinforcement	:	Two braids steel wire
Outer Cover	:	NBR-PVC Synthetic rubber Smooth Cover for TC and Wrap Finish for regular Hose

Temp. Range
-40°C to +100°C
(-40°F to +212°F)

Type Approvals: ABS

436

Hydraulic - Compact High Temperature (150°C)
SAE 100R16

# Part Number	Hose I.D		Hose O.D	Working Pressure		Minimum Bend Radius	
	inch	mm	mm	psi	bar	inch	mm
436PM-4PM	1/4	6.4	13.4	5000	350	2.0	50
436PM-6PM	3/8	9.5	17.4	4000	280	2.5	65
436PM-8PM	1/2	12.7	20.7	3500	245	3.5	90
436PM-10PM	5/8	15.9	23.9	2750	192	4.0	100
436PM-12PM	3/4	19.0	27.8	2250	157	4.8	120
436PM-16PM	1	25.4	36.8	2000	140	6.0	150
436PM-20PM	1-1/4	31.8	45.4	1625	113	8.3	210
*436-24	1-1/2	38.1	51.0	1250	87	10.0	250
*436-32	2	50.8	64.6	1125	78	12.5	315

*Validated to Parker GHS

Markets

Application:
Recommended for high pressure hydraulic oil lines & up to 150°C.

Construction:

Inner tube	:	CPE - Synthetic rubber
Reinforcement	:	Two braids steel wire
Outer Cover	:	CPE- Synthetic rubber, blue colour cover

Temp. Range
- 48°C to +150°C
(-55°F to +302°F)

451PM / TRI-K-FLEX

Hydraulic
SAE 100R17

# Part Number	Hose I.D		Hose R.O.D	Hose O.D	Working Pressure		Minimum Bend Radius		Approx. Weight	
	inch	mm	mm	mm	psi	bar	inch	mm	lbs/ft	kg/m
451PM-4PM	1/4	6.4	10.2	12.2	3000	210	2.0	50	0.12	0.18
451PM-5PM	5/16	7.9	11.7	13.9	3000	210	2.1	55	0.13	0.20
451PM-6PM	3/8	9.5	13.8	15.8	3000	210	2.5	65	0.20	0.30
451PM-8PM	1/2	12.7	18.0	20.1	3000	210	3.5	90	0.31	0.46
451PM-10PM	5/8	15.9	22.1	23.9	3000	210	3.9	100	0.47	0.70
451PM-12PM	3/4	19.0	25.6	27.7	3000	210	4.7	120	0.60	0.90
451PM-16PM	1	25.4	34.6	37.6	3000	210	5.9	150	0.81	1.20

Markets

Application:
Petroleum base hydraulic fluids and lubricating oils.

Construction:
Inner tube : NBR - Synthetic rubber
Reinforcement : One or two braids steel wire
Outer Cover : SBR - Synthetic rubber

Temp. Range
- 40°C to +100°C
(-40°F to +212°F)

MH-174™

BCS 174-1992 Underground Mining

# Part Number	Hose I.D		Hose R.O.D	Hose O.D	Working Pressure		Minimum Bend Radius		Approx. Weight	
	inch	mm	mm	mm	psi	bar	inch	mm	lbs/ft	kg/m
MH174PM-4PM	1/4	6.4	12.7	17.0	6525	450	4.0	100	0.31	0.46
MH174PM-6PM	3.8	9.5	17.0	21.1	5510	380	5.1	130	0.46	0.68
MH174PM-8PM	1 /2	12.7	21.1	26.4	5250	362	5.9	150	0.64	0.95
MH174PM-10PM	5/8	15.9	24.5	29.8	4060	280	7.5	190	0.73	1.08
MH174PM-12PM	3/4	19.0	28.3	33.7	4000	276	9.0	230	0.97	1.45
MH174PM-16PM	1	25.4	35.3	40.7	3120	215	11.8	300	1.15	1.71
MH174PM-20PM	1-1/4	31.8	41.4	47.5	2495	172	15.0	380	1.61	2.40
MH174PM-24PM	1-1/2	38.1	48.0	54.1	2120	146	17.7	450	1.81	2.70
MH174PM-32PM	2	50.8	60.7	66.8	1625	112	23.6	600	2.35	3.50

* Conforms to British Coal 174-1992 specifications.

Markets

Application:
Recommended for medium-high pressure hydraulic oil lines & for underground mines applications.

Construction:
Inner tube : NBR - Synthetic rubber
Reinforcement : Two high tensile steel wire braids
Outer Cover : CR - Synthetic rubber, flame resistant

Temp. Range
- 40°C to +100°C (-40°F to +212°F)

Impulse Cycles:
Tested upto - 1,00,000 cycles @ 35 CPM.

SAE 100R5R

Hydraulic

# Part Number	Hose I.D		Hose O.D		Working Pressure		Minimum Bend Radius		Approx. Weight	
	inch	mm	inch	mm	psi	bar	inch	mm	lbs/ft	kg/m
R5RPM-4PM	3/16	5.0	0.51	13.0	3045	210	2.95	75	0.15	0.23
R5RPM-5PM	1/4	6.4	0.57	14.4	3045	210	3.35	85	0.17	0.26
R5RPM-6PM	5/16	7.9	0.68	17.2	2277	157	3.93	100	0.24	0.35
R5RPM-8PM	13/32	10.3	0.77	19.5	2030	140	4.52	115	0.27	0.40
R5RPM-10PM	1 /2	12.7	0.92	23.4	1769	122	5.51	140	0.38	0.56
R5RPM-12PM	5/8	15.9	1.0	27.4	1523	105	6.49	165	0.44	0.66
R5RPM-16PM	7/8	22.2	1.23	31.4	812	56	7.28	185	0.45	0.67
R5RPM-20PM	1-1/8	28.7	1.5	38.1	624	43	9.0	230	0.54	0.80
R5RPM-24PM	1-3/8	34.9	1.5	44.5	508	35	10.43	265	0.72	1.07
R5RPM-32PM	1-13/16	46.0	1.75	56.5	348	24	13.2	335	0.99	1.48
R5RPM-40PM	2-3/8	60.0	2.87	73.0	348	24	21.0	610	1.41	2.10

Markets

Application:

Recommended for medium pressure hydraulic oil lines & meets SAE 100R5 specifications.

Construction:

Inner tube	:	NBR - Synthetic rubber
Reinforcement	:	One fibre braid and one steel wire braid
Outer Cover	:	SBR - Synthetic rubber

Temp. Range

- 40°C to +100°C
(-40°F to +212°F)

Impulse Cycles:

Tested upto - 1,50,000 cycles

SAE 100R5C

Hydraulic

# Part Number	Hose I.D		Hose O.D		Working Pressure		Minimum Bend Radius	
	inch	mm	inch	mm	psi	bar	inch	mm
R5CPM-4PM	3/16	5.0	0.51	13.0	3045	210	2.95	75
R5CPM-5PM	1/4	6.4	0.58	14.8	3045	210	3.4	85
R5CPM-6PM	5/16	8.0	0.68	17.2	2277	157	4.0	100
R5CPM-8PM	13/32	10.3	0.77	19.5	2030	140	4.6	115
R5CPM-10PM	1/2	12.7	0.92	23.4	1769	122	5.5	140
R5CPM-12PM	5/8	16.0	1.08	27.4	1523	105	6.5	165
R5CPM-16PM	7/8	22.2	1.23	31.4	812	56	7.3	185
R5CPM-20PM	1-1/8	29.0	1.50	38.1	624	43	9.0	230
R5CPM-24PM	1-3/8	35.0	1.75	44.5	508	35	10.5	265
R5CPM-32PM	1-13/16	46.0	2.22	56.4	348	24	13.2	335
R5CPM-40PM	2 -3/8	60.0	2.87	73.0	348	24	21.0	610

Markets

Application:

- Oil lubrication system in Railway diesel Engine.
- Purging operation in steel melting shop in Steel industries
- Petroleum base hydraulic fluids and lubricating oils.

Construction:

Inner Tube	:	NBR - Synthetic rubber
Reinforcement	:	High tension steel wire braid
Outer Cover	:	Fibre braid

Temp. Range

-40°C to +100°C
(-40°F to +212°F)

SAE 100R5C High Temperature

Hydraulic

# Part Number	Hose I.D		Hose O.D		Working Pressure		Minimum Bend Radius	
	inch	mm	inch	mm	psi	bar	inch	mm
R5CPMHITEMP-4PM	3/16	5.0	0.51	13.0	3045	210	2.95	75
R5CPMHITEMP-5PM	1/4	6.4	0.58	14.8	3045	210	3.4	85
R5CPMHITEMP-6PM	5/16	8.0	0.68	17.2	2277	157	4.0	100
R5CPMHITEMP-8PM	13/32	10.3	0.77	19.5	2030	140	4.6	115
R5CPMHITEMP-10PM	1/2	12.7	0.92	23.4	1769	122	5.5	140
R5CPMHITEMP-12PM	5/8	16.0	1.08	27.4	1523	105	6.5	165
R5CPMHITEMP-16PM	7/8	22.2	1.23	31.4	812	56	7.3	185
R5CPMHITEMP-20PM	1-1/8	29.0	1.50	38.1	624	43	9.0	230
R5CPMHITEMP-24PM	1-3/8	35.0	1.75	44.5	508	35	10.5	265
R5CPMHITEMP-32PM	1-13/16	46.0	2.22	56.4	348	24	13.2	335
R5CPMHITEMP-40PM	2 -3/8	60.0	2.87	73.0	348	24	21.0	610

Markets

Transportation · Railroad · Automotive

Application:

- Oil lubrication system in Railway diesel Engine.
- Purging operation in steel melting shop in Steel industries
- Petroleum base hydraulic fluids and lubricating oils.

Construction:

Inner Tube : CPE - Synthetic rubber
Reinforcement : High tension steel wire braid
Outer Cover : Fibre braid

Temp. Range

-40°C to +150°C
(-40°F to +302°F)

601PM / EN 854 R3

Hydraulic

# Part Number	Hose I.D		Hose O.D	Working Pressure		Minimum Bend Radius		Approx. Weight	
	inch	mm	mm	psi	bar	inch	mm	lbs/ft	kg/m
601PM-4PM	1/4	6.4	14.3	1250	86	3.0	75	0.11	0.17
601PM-5PM	5/16	7.9	17.5	1200	83	4.0	100	0.16	0.24
601PM-6PM	3/8	9.5	19.0	1125	78	4.0	100	0.19	0.28
601PM-8PM	1/2	12.7	23.8	1000	69	4.9	125	0.32	0.47
601PM-10PM	5/8	15.9	27.0	875	60	5.5	140	0.37	0.55
601PM-12PM	3/4	19.0	31.8	750	52	5.9	150	0.42	0.63
601PM-16PM	1	25.4	38.1	565	39	8.0	205	0.57	0.85
601PM-20PM	1-1/4	31.8	44.5	375	26	9.8	250	0.74	1.10
*601PM-24PM	1-1/2	38.1	50.8	250	17	12.0	306	0.82	1.22
*601PM-32PM	2	50.8	64.0	215	15	16.1	410	0.91	1.35

* Proprietary

Markets

Transportation · Construction · Grounds & Building Maintenance · Personnel Lift Equipment · Machine Tool · Waste & Refuse · Material Handling · Industrial

Application:

Recommended for hydraulic oil lines, heavy-duty transmission oil cooler lines.

Construction:

Inner tube : NBR - Synthetic rubber
Reinforcement : Two fibre braids
Outer Cover : SBR - Synthetic rubber

Temp. Range

- 40°C to +100°C
(-40°F to +212°F)

881PM / SAE 100R4

Hydraulic
Suction and Return line

# Part Number	Hose I.D inch	Hose I.D mm	Hose O.D mm	Working Pressure psi	Working Pressure bar	Minimum Bend Radius inch	Minimum Bend Radius mm	Approx. Weight lbs/ft	Approx. Weight kg/m
881PM-12PM	3/4	19.0	29.0	305	21	1.6	40	0.32	0.49
881PM-16PM	1	25.4	35.0	250	17	2.2	55	0.42	0.62
881PM-20PM	1-1/4	31.8	42.0	205	14	2.8	70	0.53	0.79
881PM-24PM	1-1/2	38.0	50.0	145	10	3.2	80	0.75	1.12
881PM-32PM	2	50.8	62.0	145	10	3.9	100	0.89	1.33
881PM-40PM	2-1/2	63.5	75.0	145	10	6.7	170	1.21	1.80
881PM-48PM	3	76.2	88.0	145	10	8.9	225	1.45	2.15

Markets

Transportation, Construction, Grounds & Building Maintenance, Utility Equipment, Personnel Lift Equipment, Oil Field Service, Industrial, Automotive

Application:
Recommended for hydraulic return lines / suction lines.

Construction:
Inner tube : NBR - Synthetic rubber
Reinforcement : Multiple layers of fibre braids and one helical wire
Outer Cover : CR-Synthetic rubber

Temp. Range
- 40°C to +100°C
(-40°F to +212°F)

Type Approvals: ABS

EN 854 R6 / SAE 100R6

Hydraulic

# Part Number	Hose I.D inch	Hose I.D mm	Hose O.D mm	Working Pressure psi	Working Pressure bar	Minimum Bend Radius inch	Minimum Bend Radius mm	Approx. Weight lbs/ft	Approx. Weight kg/m
SAE100R6PM-4PM	1/4	6.4	12.7	400	28	2.5	65	0.09	0.13
SAE100R6PM-5PM	5/16	7.9	14.3	400	28	3.0	75	0.11	0.16
SAE100R6PM-6PM	3/8	9.5	15.9	400	28	3.0	75	0.12	0.18
SAE100R6PM-8PM	1/2	12.7	19.8	400	28	3.9	100	0.17	0.25
SAE100R6PM-10PM	5/8	15.9	23.0	350	24	4.9	125	0.20	0.30
SAE100R6PM-12PM	3/4	19.0	26.6	300	21	5.9	150	0.23	0.34
*SAE100R6PM-16PM	1	25.4	32.5	190	13	9.1	230	0.31	0.46

* Proprietary

Markets

Transportation, Construction, Grounds & Building Maintenance, Utility Equipment, Personnel Lift Equipment, Machine Tool, Material Handling, Ground Support Equipment, Automotive

Application:
Recommended for hydraulic low pressure lines, return lines & drain lines.

Construction:
Inner tube : NBR- Synthetic rubber
Reinforcement : One synthetic textile braid
Outer Cover : SBR- Synthetic rubber

Temp. Range
- 40°C to +100°C
(-40°F to +212°F)

POWERFLEX™

Hydraulic
More Power - More Flexibility

# Part Number	Hose I.D		Hose R.O.D	Hose O.D	Working Pressure		Minimum Bend Radius		Approx. Weight	
	inch	mm	mm	mm	psi	bar	inch	mm	lbs/ft	kg/m
PFPM-4PM	1/4	6.4	11.5	13.2	5800	400	2.0	50	0.20	0.30
PFPM-5PM	5/16	7.9	13.8	15.4	5100	350	2.1	55	0.26	0.39
PFPM-6PM	3/8	9.5	15.8	17.4	4800	330	2.4	60	0.33	0.49
PFPM-8PM	1/2	12.7	18.2	19.9	4000	275	3.5	90	0.34	0.51
PFPM-10PM	5/8	15.9	21.9	23.5	4000	275	4.0	100	0.48	0.71
PFPM-12PM	3/4	19.0	27.0	30.1	4000	275	6.0	150	0.74	1.10
PFPM-16PM	1	25.4	35.0	38.2	3600	250	8.0	200	1.04	1.55

Special Characteristics : Very high pressure exceeding EN 853 2SN Extra high flexibility with half SAE,DIN bend radius
Compact OD suited for better hose routing in tight areas

Markets

Application:
Recommended for high pressure hydraulic oil lines. **Highly flexible & resistant to impulses.**

Construction:

Inner tube	:	NBR- Synthetic rubber
Reinforcement	:	Two special high tensile steel wire braids
Outer Cover	:	SBR- Synthetic rubber

Temp. Range
- 40°C to +100°C
(-40°F to +212°F)

PERPETUITY

High Impulse Hose

# Part Number	Hose I.D		Hose R.O.D	Hose O.D	Working Pressure		Minimum Bend Radius		Approx. Weight	
	inch	mm	mm	mm	psi	bar	inch	mm	lbs/ft	kg/m
465PPT-4PM	1/4	6.4	11.3	13.1	6520	450	1.77	45	0.22	0.32
465PPT-5PM	5/16	7.9	12.9	14.7	5800	400	2.17	55	0.26	0.38
465PPT-6PM	3/8	9.5	15.0	16.8	5290	365	2.56	65	0.27	0.40
465PPT-8PM	1/2	12.7	18.6	20.4	5070	350	3.15	80	0.38	0.56
465PPT-10PM	5/8	15.9	22.7	24.7	4350	300	3.54	90	0.50	0.74
465PPT-12PM	3/4	19.1	27.1	29.3	4350	300	4.72	120	0.70	1.04
465PPT-16PM	1	25.4	33.7	35.9	3260	225	6.30	160	0.91	1.34

Markets

Application:
Recommended for high pressure hydraulic oil lines & up to 120°C. **Has a tighter bend radius than standard minimum bend radius and greater flexibility for easier routing.**

Construction:

Inner tube	:	NBR - Synthetic rubber
Reinforcement	:	Two braids steel wire
Outer Cover	:	CR / NBR/ PVC Synthetic rubber

Temp. Range
- 40°C to +120°C
(-40°F to +248°F)

HITECH HOSE

Hydraulic
Hot Oil

# Part Number	Hose I.D		Hose O.D		Working Pressure		Minimum Bend Radius	
	inch	mm	inch	mm	psi	bar	inch	mm
HITECHPM-8PM	1/2	12.5	0.76	19.3	1000	69	3.50	90
HITECHPM-12PM	3/4	19.1	1.04	26.4	1000	69	4.75	121
HITECHPM-16PM	1	25.4	1.30	33.0	1000	69	6.00	152
HITECHPM-32PM	2	50.8	2.48	63.0	500	34	18.00	457
HITECHPM-40PM	21/2	63.5	2.97	75.4	500	34	22.05	560

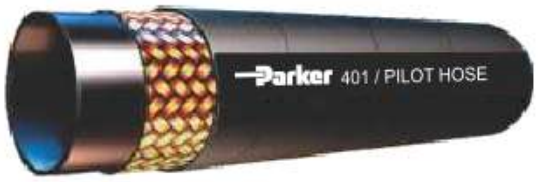
Markets

Application:
Pressurised hot oil lines and rotary oil / air compressor lines.

Construction:

Inner tube : CPE - Synthetic rubber
Reinforcement : High tension steel wire braid
Outer Cover : Fibre braid

Temp. Range
- 40°C to + 150°C
(-40°F to +302°F)



401 / PILOT HOSE

# Part Number	Hose I.D		Hose R.O.D	Hose O.D	Working Pressure		Minimum Bend Radius		Approx. Weight	
	inch	mm	mm	mm	psi	bar	inch	mm	lbs/ft	kg/m
401-4	1/4	6.4	9.7	11.6	2170	150	2.0	50	0.09	0.14
401-6	3/8	9.5	13.1	14.8	1450	100	2.6	65	0.14	0.21
401-8	1/2	12.7	16.5	18.6	1450	100	3.0	75	0.20	0.29

Markets

Application:
Recommended for low pressure lines with installation constraints. Ideal for severe installations like engine compartments.

Construction:

Inner tube : NBR - Synthetic rubber
Reinforcement : One braid steel wire
Outer Cover : CR - Synthetic rubber

Temp. Range
- 40°C to +120°C
(-40°F to +248°F)

SUPERJACK

Hydraulic Jack Hose

# Part Number	Hose I.D inch	Hose I.D mm	Hose R.O.D mm	Hose O.D mm	Working Pressure psi	Working Pressure bar	Minimum Bend Radius inch	Minimum Bend Radius mm	Approx. Weight lbs/ft	Approx. Weight kg/m
JKPM-4PM	1/4	6.4	12.7	14.8	10000	690	4.0	102	0.26	0.38
JKPM-6PM	3/8	9.5	16.7	18.8	10000	690	5.0	127	0.36	0.53

Markets

Construction, Utility Equipment, Personnel Lift Equipment

Application:
Recommended for constant high pressure hydraulic oil lines, for applications like hydraulic jacks.

Construction:
Inner tube : NBR - Synthetic rubber
Reinforcement : Two braids steel wire
Outer Cover : SBR - Synthetic rubber

Temp. Range
- 40°C to +100°C
(-40°F to +212°F)

701

Hydraulic
EN 856 4SP

# Part Number	Hose I.D inch	Hose I.D mm	Hose R.O.D mm	Hose O.D mm	Working Pressure psi	Working Pressure bar	Minimum Bend Radius inch	Minimum Bend Radius mm	Approx. Weight lbs/ft	Approx. Weight kg/m
701MSHA-6	3/8	9.5	17.5	21.4	6500	450	7.0	180	0.48	0.71
701MSHA-8	1/2	12.7	20.2	24.6	6000	420	9.0	230	0.60	0.90
701MSHA-10	5/8	15.9	23.8	28.0	5000	350	10.0	250	0.77	1.15
701MSHA-12	3/4	19.0	28.2	32.0	5000	350	11.8	300	1.04	1.55
701MSHA-16	1	25.4	35.3	39.5	4000	280	13.3	340	1.40	2.08

* Impulse test conducted with Parker Fittings.

Markets

Construction, Grounds & Building Maintenance, Oil Field Service, Material Handling, Paving & Road Maintenance, Ground Support Equipment, Automotive

Application:
Recommended for very high pressure hydraulic power lines.

Construction:
Inner tube : CR - Synthetic rubber
Reinforcement : Four spiral steel wire
Outer Cover : CR - Synthetic rubber

Temp. Range
- 40°C to +100°C
(-40°F to +212°F)

Impulse Cycles:
Specified - 4,00,000 cycles
Tested up to - 8,00,000 cycles

Type Approvals:
BV, LR, MED

731

Hydraulic
EN 856 4SH

# Part Number	Hose I.D		Hose R.O.D	Hose O.D	Working Pressure		Minimum Bend Radius		Approx. Weight	
	inch	mm	mm	mm	psi	bar	inch	mm	lbs/ft	kg/m
731MSHA-12	3/4	19.0	28.4	32.0	6000	420	11.0	280	1.06	1.58
731MSHA-16	1	25.4	35.2	39.0	5500	380	13.5	340	1.36	2.03
731MSHA-20	1-1/4	31.8	41.9	45.3	4700	325	18.0	460	1.81	2.70
731MSHA-24	1-1/2	38.1	48.8	53.3	4200	290	22.0	560	2.21	3.29
731PM-32PM*	2	50.8	63.2	68.0	3600	250	27.0	700	3.09	4.60

*Under validation with Parker fittings / specification

*Impulse test conducted with Parker Fittings.

Markets

Military, Construction, Grounds & Building Maintenance, Personnel Lift Equipment, Oil Field Service, Paving & Road Maintenance, Ground Support Equipment, Mining

Application:
Recommended for very high pressure hydraulic power lines.

Construction:

Inner tube	:	CR - Synthetic rubber
Reinforcement	:	Four spiral steel wire
Outer Cover	:	CR - Synthetic rubber

Temp. Range
- 40°C to +100°C
(-40°F to +212°F)

Impulse Cycles:
Specified - 4,00,000 cycles
Tested up to - 8,00,000 cycles

Type Approvals:
ABS, BV, LR, MED

721

Hydraulic
EN 856 R12

# Part Number	Hose I.D		Hose R.O.D	Hose O.D	Working Pressure		Minimum Bend Radius		Approx. Weight	
	inch	mm	mm	mm	psi	bar	inch	mm	lbs/ft	kg/m
721MSHA-6	3/8	9.5	17.2	20.0	4000	280	2.5	65	0.47	0.70
721MSHA-8	1/2	12.7	20.7	24.0	4000	280	3.5	90	0.56	0.84
721MSHA-10	5/8	15.9	24.6	27.2	4000	280	4.0	100	0.70	1.04
721MSHA-12	3/4	19.0	27.7	30.5	4000	280	4.7	120	0.94	1.40
721MSHA-16	1	25.4	34.9	38.0	4000	280	6.0	150	1.28	1.90
721MSHA-20	1-1/4	31.8	43.9	46.2	3000	210	8.2	210	1.68	2.50
721MSHA-24	1-1/2	38.1	50.4	53.3	2500	175	10.0	250	1.93	2.87
721PM-32PM*	2	50.8	63.6	65.9	2500	175	25.0	635	2.76	4.10

* Under validation with Parker fittings / specification

* Impulse test conducted with Parker Fittings.

Markets

Construction, Grounds & Building Maintenance, Utility Equipment, Personnel Lift Equipment, Oil Field Service, Material Handling, Paving & Road Maintenance, Ground Support Equipment, Industrial, Mining

Application:
Recommended for very high pressure hydraulic power lines. Constant pressure on all IDs upto 1"

Construction:

Inner tube	:	CR - Synthetic rubber
Reinforcement	:	Four spiral steel wire
Outer Cover	:	CR - Synthetic rubber

1/2 Bend radius up to 1-1/2"

Temp. Range
- 40°C to +125°C
(-40°F to +257°F)

Impulse Cycles:
Specified - 5,00,000 cycles
Tested up to - 10,00,000 cycles

Type Approvals:
BV, LR, MED

781

Hydraulic
EN 856 R13

# Part Number	Hose I.D		Hose R.O.D	Hose O.D	Working Pressure		Minimum Bend Radius		Approx. Weight	
	inch	mm	mm	mm	psi	bar	inch	mm	lbs/ft	kg/m
781MSHA-12	3/4	19.0	29.0	31.9	5000	350	9.5	240	1.04	1.55
781MSHA-16	1	25.4	35.6	38.5	5000	350	12.0	300	1.40	2.08
781MSHA-20	1-1/4	31.8	46.8	50.0	5000	350	16.5	420	2.59	3.85
781MSHA-24	1-1/2	38.1	54.3	57.6	5000	350	20.0	500	3.23	4.81
781PM-32PM*	2	50.8	68.1	70.9	5000	350	25.0	640	4.48	6.67

* Under validation with Parker fittings / specification

* Impulse test conducted with Parker Fittings.

Markets

Construction, Oil Field Service, Waste & Refuse, Material Handling, Paving & Road Maintenance, Industrial

Type Approvals:
ABS, BV, LR, MED

Application:
Recommended for very high pressure hydraulic power lines, constant pressure on all hose sizes.

Construction:

Inner tube	:	CR - Synthetic Rubber
Reinforcement	:	Four or six spiral steel wire
Outer Cover	:	CR - Synthetic Rubber

Temp. Range
- 40°C to +125°C
(-40°F to +257°F)

Impulse Cycles:
Specified - 5,00,000 cycles
Tested up to - 10,00,000 cycles

792PM / SPIRAFLEX

Hydraulic
SAE 100 R15

# Part Number	Hose I.D		Hose R.O.D	Hose O.D	Working Pressure		Minimum Bend Redius		Approx. Weight	
	inch	mm	mm	mm	psi	bar	inch	mm	lbs/ft	kg/m
792MSHA-12	3/4	19.0	28.4	32.0	6000	420	10.5	265	1.08	1.60
792PM-16PM	1	25.4	35.2	38.5	6000	420	13.0	330	1.41	2.10
792PM-20PM	1-1/4	31.8	46.8	49.6	6000	420	17.5	445	2.62	3.90
792PM-24PM	1-1/2	38.1	54.3	57.1	6000	420	21.0	530	3.43	5.11

Markets

Construction, Grounds & Building Maintenance, Utility Equipment, Machine Tool, Oil Field Service, Paving & Road Maintenance, Ground Support Equipment, Industrial

Type Approvals: MED

Application:
Recommended for very high pressure hydraulic power lines. Constant pressure on all hose sizes.

Construction:

Inner tube	:	CR - Synthetic rubber
Reinforcement	:	Four or six high tensile steel wire spirals
Outer Cover	:	SBR - Synthetic rubber

Temp. Range
- 40°C to +125°C
(-40°F to +257°F)

Impulse Cycles:
Specified - 5,00,000 cycles
Tested up to - 10,00,000 cycles

- Push-Lok® Hose - 801
- Transportation - 201 & 213
- Hydraulic - 387, 487, 451TC/ST, 351TC/ST, 787 & 797

Imported Hose

B

ENGINEERING YOUR SUCCESS.

PUSH-LOK®

801 – Push-Lok Plus®

Multipurpose
Available Cover Colors: GRA RED YEL BLU GRN BLK

# Part Number	Hose I.D		Hose O.D		Working Pressure		Minimum Bend Radius		Approx. Weight	
	inch	mm	inch	mm	psi	bar	inch	mm	lbs/ft	kg/m
801-4	1/4	6.3	0.50	12.7	350	24	2-1/2	65	0.09	0.13
801-6	3/8	10.0	0.63	15.9	350	24	3	75	0.11	0.16
801-8	1/2	12.5	0.78	19.8	300	21	5	125	0.18	0.27
801-10	5/8	16.0	0.91	23.0	300	21	6	150	0.19	0.28
801-12	3/4	19.0	1.03	26.2	300	21	7	180	0.24	0.36
801-16	1	25.0	0.28	32.6	200	14	10	250	0.37	0.55

Markets

Construction · Utility Equipment · Industrial · Machine Tool · Ground Support Equipment · Automotive

Application:
Pneumatic, Petroleum base hydraulic fluids, lubricating oils and antifreeze solutions.
Diesel fuel - approved only when coupled with HY Series fittings.

Construction:
Inner tube : Synthetic rubber
Reinforcement : One fiber braid
Outer Cover : Synthetic rubber, MSHA accepted

Temp. Range
Air : +70°C (+158°F)
Water : +85°C (+185°F)
Oil : -40°C to +125°C (-40°F to 257°F)




201

Transportation
SAE 100R5 SAE J140 All / D.O.T. FMVSS 106 All-Brake

# Part Number	Hose I.D		Hose O.D		Working Pressure		Minimum Bend Radius		Approx. Weight	
	inch	mm	inch	mm	psi	bar	inch	mm	lbs/ft	kg/m
201-4	3/16	5.0	0.52	12	3000	210	3	75	0.15	0.22
201-5	1/4	6.3	0.58	15	3000	210	3-3/8	85	0.18	0.27
201-6	5/16	8.0	0.68	17	2250	157	4	100	0.23	0.34
201-8	13/32	10.0	0.77	20	2000	140	4-1/2	115	0.27	0.40
201-10	1/2	12.5	0.92	23	1750	122	5-1/2	140	0.37	0.55
201-12	5/8	16.0	1.08	27	1500	105	6-1/2	165	0.40	0.60
201-16	7/8	22.0	1.23	31	800	56	7-3/8	185	0.46	0.68
201-20	1-1/8	29.0	1.50	38	625	43	9	230	0.51	0.76
201-24	1-3/8	35.0	1.75	44	500	35	10-1/2	265	0.68	1.01
201-32	1-13/16	46.0	2.22	56	350	24	13-1/4	335	0.89	1.32
201-40	2-3/8	60.0	2.88	73	350	24	24	610	0.31	1.95
201-48	3	76.0	3.56	90	200	14	33	840	2.09	3.11

Markets

Transportation

Application:
Petroleum base hydraulic fluids and lubricating oils, diesel fuels and antifreeze solutions.

Construction:

Inner tube	:	Synthetic rubber
Reinforcement	:	One fiber braid and one steel braid
Outer Cover	:	Fiber braid

Temp. Range
-40°C to +150°C
(-40°F to +302°F)

213

Transportation
SAE J140 AI / D.O.T. FMVSS 106 AI - Air Brake

# Part Number	Hose I.D		Hose O.D		Working Pressure		Minimum Bend Radius		Approx. Weight	
	inch	mm	inch	mm	psi	bar	inch	mm	lbs/ft	kg/m
213-4	3/16	5.0	0.49	12.5	2000	140	3/4	20	0.12	0.18
213-5	1/4	6.3	0.55	14	1500	105	1	25	0.14	0.21
213-6	5/16	8.0	0.62	16	1500	105	1-1/4	30	0.17	0.25
213-8	13/32	10.0	0.74	19	1250	87	1-3/4	45	0.20	0.30
213-10	1/2	12.5	0.83	21	1000	70	2-1/4	55	0.22	0.33
213-12	5/8	16.0	0.96	24	750	52	2-3/4	70	0.24	0.36
213-16	7/8	22.0	1.21	31	400	28	3-1/2	90	0.30	0.45
213-20	1-1/8	29.0	1.49	38	300	21	4-1/2	115	0.44	0.65
213-24	1-3/8	35.0	0.73	44	300	21	7-1/2	190	0.52	0.77
213-32	1-13/16	46.0	2.14	54	200	14	14	355	0.67	1.00
213-40*	2-3/8	61.0	0.88	73	175	12	24	610	1.31	1.95

*NOTE: Due to fitting size, this is a factory crimp only.

Markets

Transportation

Application:
Petroleum base hydraulic fluids and lubricating oils, diesel fuels and antifreeze solutions.

Construction:

Inner tube	:	PKR®
Reinforcement	:	One fibre braid and one steel braid
Outer Cover	:	Fibre braid

Temp. Range
-45°C to +150°C
(-50°F to +302°F)

387

Hydraulic – Constant Working Pressure
ISO 18752 CLASS 210 -AC/BC/CC

# Part Number	Standard Cover	Tough Cover	Super Tough	Hose I.D		Hose O.D		Working Pressure		Minimum Bend Radius		Approx. Weight	
	387	387TC	387ST	inch	mm	inch	mm	psi	bar	inch	mm	lbs/ft	kg/m
	ISO 18752 Performance												
387-4	AC	AC	AC	1/4	6.3	0.53	13.4	3000	210	2	50	0.16	0.24
387-6	AC	AC	AC	3/8	10.0	0.69	17.4	3000	210	2-1/2	65	0.23	0.34
387-8	AC	AC	AC	1/ 2	12.5	0.82	20.7	3000	210	3-1/2	90	0.29	0.43
387-10	AC	AC	AC	5/8	16.0	0.94	23.9	3000	210	4	100	0.33	0.49
387-12	AC	AC	AC	3/4	19.0	1.10	27.8	3000	210	4-3/4	120	0.58	0.86
387-16	AC	AC	AC	1	25.0	1.40	35.4	3000	210	6	150	0.79	1.17
387-20	BC	CC	CC	1-1/4	31.5	1.82	46.3	3000	210	8-1/4	210	1.74	2.59
387-24	BC	CC	CC	1-1/2	38.0	2.08	52.8	3000	210	10	250	2.01	2.99
387-32	BC	CC	CC	2	51.0	2.61	66.2	3000	210	12-1/2	320	2.75	4.09

Markets

Transportation, Military, Construction, Agriculture, Grounds & Building Maintenance, Waste & Refuse, Material Handling, Forestry, Railroad, Paving & Road Maintenance, Personnel Lift Equipment, Machine Tool

Application:
Petroleum base hydraulic fluids and lubricating oils.

Construction:
Inner tube : Synthetic rubber
Reinforcement : One or two braid steel wire (4-spiral for size -20, -24 and -32)
Outer Cover :
Standard Cover : Synthetic rubber
ToughCover : Synthetic rubber abrasion resistant
SuperTough : Synthetic rubber super abrasion resistant

Temp. Range
Standard Cover:
-40°C to +100°C
(-40°F to +212°F) - AC/BC

ToughCover & SuperTough:
-40°C to +125°C
(-40°F to +257°F) - CC

Performance

487

Hydraulic – Constant Working Pressure
ISO 18752 CLASS 280 - AC/BC/CC

# Part Number	Standard Cover	Tough Cover	Super Tough	Hose I.D		Hose O.D		Working Pressure		Minimum Bend Radius		Approx. Weight	
	487	487TC	487ST	inch	mm	inch	mm	psi	bar	inch	mm	lbs/ft	kg/m
	ISO 18752 Performance												
487-4	AC	AC	AC	1/4	6.3	0.52	13.1	4000	280	2	50	0.20	0.30
487-6	AC	AC	AC	3/8	10.0	0.68	17.2	4000	280	2-1/2	65	0.28	0.42
487-8	AC	AC	AC	1/ 2	12.5	0.81	20.4	4000	280	3-1/2	90	0.35	0.52
487-10	AC	AC	AC	5/8	16.0	0.94	23.9	4000	280	4	100	0.44	0.66
487-12	AC	AC	AC	3/4	19.0	1.10	27.8	4000	280	4-3/4	120	0.58	0.86
487-16	AC	AC	AC	1	25.0	1.49	37.8	4000	280	6	150	1.34	1.99
487-20	BC	CC	CC	1-1/4	31.5	1.82	46.3	4000	280	8-1/4	210	1.74	2.59
487-24	BC	CC	CC	1-1/2	38.0	2.03	52.8	4000	280	10	250	2.07	3.08
487-32	BC	CC	--	2	51.0	2.65	67.3	4000	280	12-1/2	320	4.35	6.47

Markets

Transportation, Military, Construction, Grounds & Building Maintenance, Forestry, Material Handling

Application:
Petroleum base hydraulic fluids and lubricating oils.

Construction:
Inner tube : Synthetic rubber
Reinforcement : One or two braid steel wire (4-spiral for size -16, -20,-24 and -32).
Outer Cover :
Standard Cover : Synthetic rubber
ToughCover : Synthetic rubber abrasion resistant
SuperTough : Synthetic rubber super abrasion resistant

Temp. Range
Standard Cover:
-40°C to +100°C
(-40°F to +212°F) - AC/BC

ToughCover & SuperTough:
-40°C to +125°C
(-40°F to +257°F) - CC

Performance

451TC/ST

451TC
Hydraulic – Tough Cover
SAE 100R17, J1942 / ISO 11237 – 1 TYPE R17 – Constant Working Pressure / USCG HF / ABS

451ST
Hydraulic – Super Tough Cover
SAE 100R17 / ISO 11237 - 1 TYPE R17 – Constant Working Pressure

# Part Number	Hose I.D		Hose O.D		Working Pressure		Minimum Bend Radius		Approx. Weight	
	inch	mm	inch	mm	psi	bar	inch	mm	lbs/ft	kg/m
451TC/ST-4	1/4	6.3	0.52	13	3000	210	2	50	0.16	0.24
451TC/ST-6	3/8	10.0	0.68	17	3000	210	2-1/2	65	0.23	0.34
451TC/ST-8	1/ 2	12.5	0.80	20	3000	210	3-1/2	90	0.35	0.52
451TC/ST-10	5/8	16.0	0.94	24	3000	210	4	100	0.44	0.66
451TC/ST-12	3/4	19.0	1.10	28	3000	210	4-3/4	120	0.58	0.86
451TC/ST-16	1	25.0	1.40	35	3000	210	6	150	0.79	1.17
451TC/ST-20	1-1/4	31.5	1.85	47	3000	210	8-1/4	210	1.50	2.23

Markets

*Extremely Compact hose dimensions, extra high flexibility, extra small minimum bend radius, very low weight

Application:
Petroleum base hydraulic fluids and lubricating oils.

Construction:
Inner tube : Synthetic Rubber
Reinforcement : One or two braid steel wire (4-spiral for size -20)
Outer Cover : Synthetic rubber abrasion resistant, MSHA accepted

Temp. Range
-40°C to +100°C
(-40°F to +212°F)

Performance
1/2 TC ST

351TC/ST

351TC
Hydraulic – Tough Cover
SAE 100R19, J517 – Constant Working Pressure

351ST
Hydraulic – Super Tough Cover
SAE 100R19, J517 – Constant Working Pressure

# Part Number	Hose I.D		Hose O.D		Working Pressure		Minimum Bend Radius		Approx. Weight	
	inch	mm	inch	mm	psi	bar	inch	mm	lbs/ft	kg/m
351TC/ST-4	1/4	6.3	0.51	13	4000	280	2	50	0.20	0.30
351TC/ST-6	3/8	10.0	0.67	17	4000	280	2-1/2	65	0.28	0.42
351TC/ST-8	1/ 2	12.5	0.80	20	4000	280	3-1/2	90	0.35	0.52
351TC/ST-10	5/8	16.0	0.93	24	4000	280	4	100	0.44	0.66
351TC/ST-12	3/4	19.0	1.09	28	4000	280	4-3/4	120	0.58	0.86

Markets

Application:
Petroleum base hydraulic fluids and lubricating oils.

Construction:
Inner tube : Synthetic rubber
Reinforcement : Two braids steel wire
Outer Cover : Synthetic rubber abrasion resistant, MSHA accepted.

Temp. Range
-40°C to +100°C
(-40°F to +212°F)

Performance
1/2 TC ST

787

Hydraulic – Constant Working Pressure
ISO 18752 CLASS 350 - BC/DC

Part Number	Standard Cover 787	Tough Cover 787TC	Hose I.D inch	Hose I.D mm	Hose O.D inch	Hose O.D mm	Working Pressure psi	Working Pressure bar	Minimum Bend Radius inch	Minimum Bend Radius mm	Approx. Weight lbs/ft	Approx. Weight kg/m
	ISO 18752 Performance											
787-8	BC	DC	1/ 2	12.5	0.83	21.1	5000	350	3-1/2	90	0.45	0.67
787-10	BC	DC	5/8	16.0	0.94	23.9	5000	350	4	100	0.54	0.80
787-12	BC	DC	3/4	19.0	1.10	27.9	5000	350	4-3/4	120	0.78	1.16
787-16	BC	DC	1	25.0	1.40	35.7	5000	350	6	150	1.17	1.74
787-20	BC	DC	1-1/4	31.5	1.77	44.9	5000	350	8-1/4	210	1.95	2.89
787-24	BC	DC	1-1/2	38.0	2.08	52.8	5000	350	10	255	2.66	3.96
787-32	BC	DC	2	51.0	2.66	67.6	5000	350	12-1/2	318	4.37	6.50

Markets

Military, Construction, Foreestry, Oil Field Service, Industrial, Mining

Application:
Petroleum base hydraulic fluids and lubricating oils.

Construction:

Inner tube	: Proprietary Synthetic Rubber
Reinforcement	: Four or six spiral steel wires
Outer Cover	:
Standard Cover	: Synthetic rubber
Tough Cover	: Synthetic rubber abrasion resistant
Super Tough	: Synthetic rubber super abrasion resistant

Temp. Range
Standard Cover:
-40°C to +100°C
(-40°F to +212°F) - BC

Tough Cover & Super Tough:
-40°C to +125°C
(-40°F to +257° F) - DC

Performance
1/2 TC

797

Hydraulic – Constant Working Pressure
ISO 18752 CLASS 420 - BC/CC/DC

Part Number	Standard Cover 797	Tough Cover 797TC	Hose I.D inch	Hose I.D mm	Hose O.D inch	Hose O.D mm	Working Pressure psi	Working Pressure bar	Minimum Bend Radius inch	Minimum Bend Radius mm	Approx. Weight lbs/ft	Approx. Weight kg/m
	ISO 18752 Performance											
797-8	BC	DC	1/ 2	12.5	0.83	21.1	6000	420	4	100	0.45	0.67
797-10	BC	DC	5/8	16.0	0.94	23.9	6000	420	4-1/2	100	0.54	0.80
797-12	BC	DC	3/4	19.0	1.10	27.9	6000	420	5-1/4	135	0.78	1.16
797-16	BC	DC	1	25.0	1.40	35.7	6000	420	6-1/2	165	1.17	1.74
797-20	BC	DC	1-1/4	31.5	1.77	44.9	6000	420	8-3/4	225	1.95	2.89
797-24	BC	CC	1-1/2	38.0	2.08	52.8	6000	420	12	305	2.66	3.96
797-32	BC	CC	2	51.0	2.66	67.6	6000	420	15	380	4.37	6.50

Markets

Military, Construction, Foreestry, Oil Field Service, Industrial, Mining

Application:
Petroleum base hydraulic fluids, lubricating oils

Construction:

Inner tube	: Proprietary Synthetic Rubber
Reinforcement	: Four or six spiral steel wires
Outer Cover	:
Standard Cover	: Synthetic rubber
Tough Cover	: Synthetic rubber abrasion resistant
Super Tough	: Synthetic rubber super abrasion resistant

Temp. Range
Standard Cover:
-40°C to +100°C
(-40°F to +212°F) -BC

Tough Cover & Super Tough:
-40°C to +125°C
(-40°F to +257° F) - CC/DC

Performance
1/2 TC

NOMOGRAM

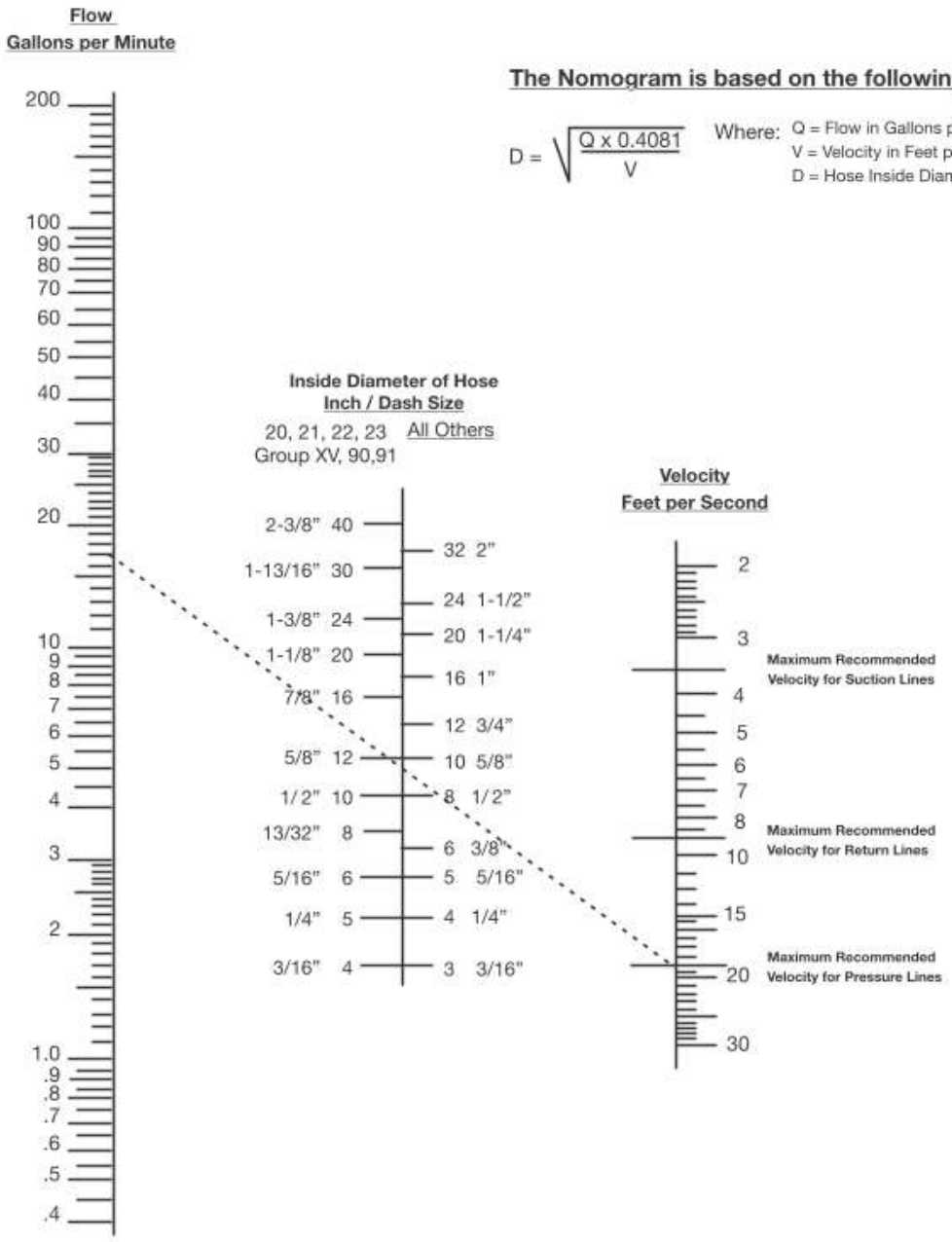
Flow Capacities at Recommended Flow Velocities

The nomogram below is provided as an aid in determining the correct hose size.

How to use the nomogram: Determine the proper flow rate your system requires, then connect a straight edge from the selected flow rate to the recommended velocity range. The required hose I.D. will appear at the intersection of the straight edge and the center column. If the straight edge passes through the scale between sizes listed, use the next larger I.D. hose.

Example: Locate 16 gallons per minute in the left-hand column and 20 feet per second (fps) in the right-hand column (the maximum recommended velocity range for pressure lines). Lay a straight edge across these two points. The inside diameter required is shown in the center column at or above the straight edge. In this case, we need a hose I.D. of 0.625 (5/8") inch (or larger).

Use the same procedure for suction of return lines, except utilizing their respective maximum recommend velocities.



The Nomogram is based on the following formula:

$$D = \sqrt{\frac{Q \times 0.4081}{V}}$$

Where: Q = Flow in Gallons per Minute (gpm)
V = Velocity in Feet per Second (ft/sec)
D = Hose Inside Diameter (inches)

CONVERSION TABLE

	UNIT	CONVERSION UNIT	FACTOR
PRESSURE	1 pound per square-inch	bar	0.06895
	1 bar	psi	14.5035
	1 pound per squre-inch	MPa	0006895
	1 mega pascal	psi	145.035
	1 kilo pascal	bar	0.01
	1 bar	kPa	100
	1 mega pascal	bar	10
	1. bar	MPa	0.1
LENGTH	1 inch	mm	25.4
	1 milimetre	in	0.03934
	1 foot	m	0.3048
	1 metre	ft	3.28084
AREA	1 square-inch	cm2	6.4516
	1 cubic centimetre	cubic in	0.0610
VOLUME	1 gallon (UK)	ltr	4.54596
	1 litre	gal (UK)	0.219976
	1 gallon (US)	ltr	3.78533
	1 litre	gal (US)	0.264177
WEIGHT	1 pound	kg	0.453592
	1 kilogramme	lb	2.204622
FLOW RATE	1 gallon per minute (UK)	l / min	0.54596
	1 litre per minute	gal / min. (UK)	0.219976
	1 gallon per minute (US)	l / min.	3.78533
	1 litre per minute	gal / min. (US)	0.264178
VELOCITY	1 foot per second	m / s	0.3048
	1 metre per second	ft / s	3.280840
TEMPERATURE	Fahrenheit degree	°C	5/9 (°F-32)
	Celsius degree	°F	°C9/5+32

PSI TO METRIC			
Pounds per Square Inch (psi)	Kilo Pascals (KPa)	Mega Pascals (MPa)	Bar (Bar)
10	68.9	0.07	0.7
20	137.9	0.14	1.4
30	206.8	0.21	2.1
40	275.8	0.28	2.8
50	344.7	0.34	3.4
60	413.7	0.41	4.1
70	482.6	0.48	4.8
80	551.6	0.55	5.5
90	620.5	0.62	6.2
100	689	0.7	6.9
200	1,379	1.4	13.8
300	2,068	2.1	20.7
400	2,758	2.8	27.6
500	3,447	3.4	34.5
600	4,137	4.1	41.4
700	4,826	4.8	48.3
800	5,516	5.5	55.2
900	6,205	6.2	62.1
1,000	6,895	6.9	68.9
2,000	13,790	13.8	137.9
3,000	20,684	20.7	206.8
4,000	27,579	27.6	275.8
5,000	34,474	34.5	344.7
6,000	41,369	41.4	413.7
7,000	48,263	48.3	482.6
8,000	55,158	55.2	551.6
9,000	62,053	62.1	620.5
10,000	68.948	68.9	689
20,000	137,895	137.9	1,379
30,000	206.843	206.8	2,068
40,000	275,790	275.8	2,758

METRIC TO PSI			
Kilo Pascals (KPa)	Mega Pascals (MPa)	Bar (Bar)	Pounds per Square Inch (psi)
100	0.1	1	14.5
200	0.2	2	29.0
300	0.3	3	43.5
400	0.4	4	58.0
500	0.5	5	72.5
600	0.6	6	87.0
700	0.7	7	101.5
800	0.8	8	116.0
900	0.9	9	130.5
1,000	1.0	10	145.0
2,000	2.0	20	290.1
3,000	3.0	30	435.1
4,000	4.0	40	580.2
5,000	5.0	50	725.2
6,000	6.0	60	870.2
7,000	7.0	70	1,015.3
8,000	8.0	80	1,160.3
9,000	9.0	90	1,305.3
10,000	10.0	100	1,450
20,000	20.0	200	2,901
30,000	30.0	300	4,351
40,000	40.0	400	5,802
50,000	50.0	500	7,252
60,000	60.0	600	8.,702
70,000	70.0	700	10,153
80,000	80.0	800	11,603
90,000	90.0	900	13,053
100,000	100	1000	14,504
200,000	200	2000	29,008
300,000	300	3000	43,511

Ratings	1. Excellent 2. Good Resistance 3. Testing recommended - Data not available x Not recommended

CHEMICAL RESISTANCE TABLE

Chemical Name	Hose Polymer					
	Nitrile	PVC NBR	SBR	CPE	EPDM	CR
A						
Acetic Acid 5-25%	2	2	-	1	1	1
Acetic Acid 50%	x	2	-	1	3	2
Acetic Acid Boiling	x	x	x	x	x	x
Alcohol Ethyl	1	1	1	1	1	1
Alcohol Methyl	1	1	1	1	1	1
Alcohol Isopropyl (Isopropanol)	2	2	2	2	2	2
Ammonium Hydroxide - dilute	1	1	1	1	1	2
Ammonium Hydroxide - concentrated	x	x	x	1	1	2
Animal Oil	1	1	x	1	x	2
Aniline	1	1	x	1	x	x
Antifreeze alcohol base	2	2	x	2	1	2
Antifreeze glycol base	1	1	x	1	x	x
Aqua Regia	x	x	x	2	x	x
ASTM Oil No 1 (IRM Oil No 1)	1	1	2	1	3	1
ASTM Oil No 2 (IRM Oil No 2)	1	1	3	1	3	1
ASTM Oil No 3 (IRM Oil No 3)	1	1	x	1	x	2
ASTM Ref fuel A	1	1	x	1	3	2
ASTM Ref fuel B	1	1	x	2	x	2
ASTM Ref fuel C	2	2	x	x	x	x
B						
Brake Fluid petroleum base	1	1	3	1	x	2
Brake Fluid synthetic base	x	x	x	1	x	x
Benzaldehyde	x	x	x	2	x	x
Benzine	x	x	x	x	x	x
Butyle Acetate	x	x	x	2	x	x
C						
Calcium Chloride	1	1	1	1	1	1
Calcium Carbonate	2	2	1	1	1	1
Calcium Hydroxide	2	2	1	1	1	1
Calcium Hydroxide 50%	-	-	-	-	-	-
Calcium Nitrate	1	1	1	1	1	1
Carbon Tetrachloride	-	-	-	-	-	-
Carbon Dioxide	1	1	-	1	1	1
Castor Oil	2	1	-	1	-	x
Carbon Disulfide	x	x	x	x	x	x
Caustic Soda 20%	2	-	-	1	1	2
Caustic Soda 50%	2	-	-	1	1	2
Chlorine Water 25%	x	x	x	x	x	x
Chlorobenzene	x	x	x	x	x	x
Chloroform	x	x	x	x	x	x
Chromic Acid 50%	x	x	x	x	x	x
Coal Tar	2	2	x	2	x	x
Corn Oil	2	2	x	2	x	2
Cottonseed Oil	1	1	x	2	x	x
Creosote	2	2	x	x	x	x
Cutting Oil Water soluble	1	1	x	1	x	x
Cyclohexane	2	2	x	x	x	x
Cyclohexanone	x	x	x	x	x	x

Ratings	1. Excellent 2. Good Resistance 3. Testing recommended - Data not available x Not recommended

CHEMICAL RESISTANCE TABLE

Chemical Name	Hose Polymer					
	Nitrile	PVC NBR	SBR	CPE	EPDM	CR
D						
Decalin	2	2	x	2	x	x
Developing Fluid - Hypo	-	-	-	1	x	2
Dibutyl Phthalate	x	x	x	2	x	x
Diesel Fuel	2	1	x	2	x	2
Diethyl Amine	2	2	x	2	x	x
Diethylene Glycol	1	1	1	1	1	1
Dimethyle Formamide	x	x	x	x	x	x
Dioctyle Phthalate	x	x	x	x	x	x
Dioctyle Sebacate	x	x	x	x	x	x
E						
Ethyle Acetate	x	x	x	x	x	x
Ethyle Acetoacetate	x	x	x	x	x	x
Ethylene Dichloride	x	x	x	x	x	x
Ethylene Glycol	1	1	1	1	1	1
Athyl Alcohol	1	1	1	1	1	1
Esters	x	x	x	x	x	x
F						
Ferric Chloride 5% agitated	2	2	x	2	x	2
Ferric Chloride 10%	1	1	x	2	x	x
Ferrous Sulphate 10%	2	2	x	2	x	x
Formaldehyde	x	x	x	x	x	x
Formic Acid	x	x	x	x	x	x
Freon 12	**use A.C.**	**hose only**	x	x	x	x
Freon 134 a	**use A.C.**	**hose only**	x	x	x	x
G						
Gas Natural	x	x	x	x	x	x
Gasohol	2	2	x	x	x	x
Gasoline Aviation	2	2	x	x	x	x
Glycol FR Fluids	1	1	x	x	x	x
Glycerene	1	1	1	1	1	1
H						
Heptane	1	1	x	1	x	x
Hexane	1	1	x	1	x	x
Hydraulic Fluids std-petroleum base	1	1	x	1	x	2
Hydraulic Fluids water - glycol base	1	1	1	1	1	1
Hydrochloric Acid - dilute	x	x	x	2	x	2
Hydrochloric Acid- concentrated 37%	x	x	x	1	x	x
Hydrogen	1	1	1	1	1	1
Hydrogen Peroxide - dilute 30%	2	x	x	1	x	x
Hyapoid Gas	1	1	x	x	x	x
I						
Ink	1	1	x	2	x	x
Insulating Oil (Transformer Oil)	1	1	x	2	x	2
Iso Octane	1	1	x	1	x	2
Iso Propyl Alcohol	2	2	3	1	1	1

Ratings	1. Excellent 2. Good Resistance 3. Testing recommended - Data not available x Not recommended

CHEMICAL RESISTANCE TABLE

Chemical Name	Hose Polymer					
	Nitrile	PVC NBR	SBR	CPE	EPDM	CR
K						
Kerosene	1	1	x	1	x	x
Ketones	x	x	x	x	x	x
L						
Lactic Acid	x	x	x	1	x	1
Light Grease	1	1	x	-	x	x
Lecithin	x	x	x	x	x	2
Linseed Oil	1	1	x	x	x	x
Lubricating Oil (SAE 10,20,30,40,50)	1	1	x	2	x	3
M						
Methylene Dichloride	x	x	x	x	x	x
Methyl Isobutyl Ketone (MIBK)	x	x	x	2	x	x
Motor Oil	1	1	x	2	x	2
Mineral Oil	1	1	x	2	x	2
Mahine Oil	1	1	x	3	x	x
Magnesium Hydroxide	2	2	x	1	2	1
Methanol / Methyl Alcohol	1	1	1	1	1	1
Methyl Acetate	x	x	x	x	x	x
Methyl Acrylate	x	x	x	x	x	x
Methyl Ethyl ketone (MEK)	x	x	x	2	x	x
Methylene Dichloride	x	x	x	x	x	x
Methyl Isobutyl Ketone (MIBK)	x	x	x	2	x	x
N						
Naphtha	x	x	x	x	x	x
Naphthalene (Camphor)	x	x	x	x	x	x
Nickel Plating Solution	2	2	x	-	x	2
Nitric Acid - dilute	x	x	x	3	x	x
Nitric Acid - concentrated	x	x	x	x	x	x
Nitrogen	1	2	1	1	1	1
Nitromethane	x	x	x	2	x	x
N-Octane	1	2	x	1	x	x
O						
Oil Crude	2	2	x	2	x	x
Oleic Acid	2	2	2	1	2	2
Olive Oil	2	2	x	2	x	x
Oils (SAE upto 95 degree C)	1	1	3	2	x	2
P						
Paint Solvent	x	x	x	x	x	x
Paint Thinner (Ducco)	x	x	x	x	x	x
Palm Oil	1	1	x	2	x	2
Parafffin Oil	1	1	x	2	x	2
Perchloric Acid	x	x	x	x	x	x
Perchloroethylene	x	x	x	x	x	x
Phenol (Carbolic Acid)	x	x	x	2	x	x
Phosphate Ester	x	x	x	2	x	x
Phosphoric Acid - dilute	2	2	x	2	x	2
Phosphoric Acid - concentrated	x	x	x	x	x	x
Phosphoric Acid 50%	x	x	x	2	x	2
Plating Solution Chrome	x	x	x	x	x	x
Plating Solution Nickel	2	-	-	-	-	-
Potassium Hydroxide	2	2	x	3	2	3
Propylene Glycol	1	1	x	1	1	1
Pyridine	x	x	x	x	x	x

CHEMICAL RESISTANCE TABLE

Ratings	
	1. Excellent
	2. Good Resistance
	3. Testing recommended
	- Data not available
	x Not recommended

Chemical Name	Hose Polymer					
	Nitrile	PVC NBR	SBR	CPE	EPDM	CR
Q						
Quench Oil	2	2	-	-	-	-
Quinoline	1	2	-	-	-	-
R						
Refined Wax	1	1	x	1	-	2
Rapeseed Oil	1	1	x	1	x	2
S						
Salt water / Sea water	2	2	2	1	1	2
Sewage Water	2	2	2	1	1	1
Silicone Oils	2	2	x	1	1	2
Silicon Grease	2	2	x	2	x	x
Silver Nitrate	1	1	1	1	1	1
Soap Solution	1	1	1	1	1	1
Sodium Chloride - Saturated	1	1	1	1	1	1
Sodium Hydroxide - dilute	2	2	1	1	1	1
Sodium Hydroxide 50% cold	x	x	1	1	1	2
Sodium Thiosulphate (HYPO)	1	1	1	-	x	1
Soyabean Oil	2	2	x	-	x	3
Starch	2	2	-	-	-	2
Stearic Acid	2	2	2	1	2	2
Stodard Solvent	2	2	x	2	x	3
Styrene	x	x	x	x	x	x
Sulfuric Acid - concentrated	x	x	x	x	x	x
Sulfuric Acid - dilute	2	2	x	1	x	1
T						
Tall Oil	2	2	x	2	x	2
Tar (Bitumenous)	2	2	2	x	x	x
Terpenol	2	2	x	1	x	x
Transfomer Oil	1	1	x	2	x	x
Toulene (Toulol)	3	3	x	3	x	x
Turbine Oil	2	2	x	2	x	x
Trichloroethylene	x	x	x	x	x	x
Turpentine	2	2	x	2	x	x
U						
Urea Solution	2	2	2	2	2	2
V						
Vamish	x	x	x	x	x	x
Vegetable Oils	1	1	x	1	x	2
Vinyle Chloride	x	x	x	x	x	x
Vinyle Acetate	x	x	x	x	x	x
W						
Water Mine Acid	1	1	1	1	1	1
Water Salt	1	1	1	1	1	1
Water in Oil Emulsion	1	1	1	1	1	1
X						
Xylene	x	x	x	x	x	x
Z						
Zinc Chloride	1	1	1	1	1	1
Zeolites	1	1	1	1	1	1

Safety Guide

⚠ Parker Safety Guide for Selecting and Using Hose, Tubing, Fittings and Related Accessories

Parker Publication No.4400-B-1
Revised : May, 2002

WARNING : Failure or improper selection 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.
Electrocution 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. and no other Hose can be used for such in flight applications.

1.0 GENERAL INSTRUCTIONS

1.1 Scope : This safety guide provides instruction for selecting and using (including assembling, installing, and maintaining) these products. For convence, 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" in this safety guide. All assemblies made with Hose are called "Hose Assemblies" All products commonly called "fittings" or "couplings" 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, Fittingsand Related Accessories that are being considerd for use.

1.2 Fail-Safe : Hose, and 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 or Hose Assembly or Fitting will not endanger persons or property.

1.3 Distribution : Provide a copy of this safety guide to each person that is 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 considered or selected.

1.4 User Responsibility : Due to the wide variety of operating conditions and applications for Hose and fittings, Parker and its distributors do not represent or warrant that any particular Hose of 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 its own analysis and testing, is solely responsible for :

* Making the final selection of the Hose and Fitting
* 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 Hose and Fittings 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 product 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 Fitting and the Hose/Fitting interface to be sufficiently conductive to drain off static electricity.Extreme care must be exercised when selecting Hoseand Fittings for these or any other applications in which electrical conductivity ornonconductivity 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 •nish (some Fitting finishes are electrically conductive while others are non- conductive),manufacturing methods (including moisture control),how the Fittingscontact 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 these 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 Fitting 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 Fitting for such use.

2.1.2 Electrically Conductive Hose:Parker manufacturers 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 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 as- semblies comply with AGA Requirements 1-93,"Hoses for Natural Gas Vehicles and Fuel Dispensers ".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 dangerous static charge buildup,which occurs in,for example,high velocity CNG dispensing or transfer.Do not use any other Hose for CNG applications where static charge buildup may occur,even if electrically conductive.Use of other Hoses in CNG applications or failure to properly connect or ground this Hose can cause a fire or an explosion resulting in death,personal injury,and property damage.Care must also be taken to protect against CNG permeation through the Hose wall.See section 2.6,Permeation,for more information.Parker CNG Hose is intended for dispenser and vehicle use at a maximum temperature of 180 °F.Parker CNG Hose should not be used in confined spaces or unventilated areas or areas exceeding 180 °F.Final assemblies must be tested for leaks.CNG Hose Assemblies should be tested on a monthly basis for conductivity per AGA 1-93.

Parker manufacturers special Hose for aerospace in flight applications.Aerospace in flight applications employing Hose to transmit fuel,lubricating fluids and hydraulic fluids require a special Hose with a conductive inner tube.This Hose for in flight applications is available only from Parker 's Strato flex Products Division.Do not use any other Parker Hose for in flight applications,even if electrically conductive.Use of other Hoses for in flight applications or failure to properly connect or ground this Hose can cause a fire or an explosion resulting in death,personal injury ,and property damage.These Hose assemblies for in flight applications must meet all applicable aerospace industry,aircraft engine, and aircraft requirements.

2.2 Pressure:Hose selection must be made so that the published maximum recommended working pressure of the Hose is equal to or greater than the maximum system pressure.Surge pressures 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 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).

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 that 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 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.

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.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 couplings with disconnect sleeves can unintentionally disconnect if they are dragged over obstructions or if the sleeve is bumped or moved enough to cause disconnect, Threaded couplings should be considered where there is a potential for accidential uncoupling.

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,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 manufacturers Hose or a Parker Hose on another manufacturers 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 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.

Do not crimp or swage another manufacturers Fitting with a Parker crimp or swage die unless authorized in writing by the engineering manager of 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 Reusable:Permanent:Do not reuse any field attachable (reusable) 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 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.

4.0 HOSE AND FITTING MAINTENANCE AND REPLACEMENT INSTRUCTIONS

4.1 Even with proper selection and installation,Hose life may be signifi cantly 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.

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.

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 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 AGA 1-93 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.

MSDS 'S (Available upon request.)

Federal OSHA regulation 29 CFR 1910.1200 requires that we transmit to our customers Material Safety Data Sheets for all material covered under the law.If you are an employer in SIC 20-39 who has not yet received them,you are required to obtain them from us and provide the information to employees as directed in Secton (b)of the requlation.Please contact the Hose Products Division -Technical Services Department:(PH)440-943-5700 (FAX)440-943-3129.

The items described in this document and other documents or descriptions provided by Parker Hannifin Corporation, as subsidiaries and its authorized distributors are hereby offered for sale at prices to be established by Parker Hanni •n Corporation,its subsidiaries and its authorized distributors. This offer and its acceptance by any customer ("Buyer ")shall be governed by all of the following Terms and Conditions. Buyer 's order for any such item,when communicated to Parker Hannifin Corporation, its subsidiary or an authorized distributor ("Seller ")verbally or in writing,shall constitute acceptance of this offer.

1. Terms and Conditions of Sale:All descriptions,quotations,proposals,offers, acknowledgments,acceptances and sales of Seller 's products are subject to and shall be governed exclusively by the terms and conditions stated herein.Buyer 's acceptance of any offer to sell is limited to these terms and conditions.Any terms or conditions in addition to,or inconsistent with those stated herein,proposed by Buyer in any acceptance of an offer by Seller, are hereby objected to. No such additional,different or inconsistent terms and conditions shall become part of the contract between Buyer and Seller unless expressly accepted in writing by Seller.Seller 's acceptance of any offer to purchase by Buyer is expressly conditional upon Buyer 's assent to all the terms and conditions stated herein,including any terms in addition to, or inconsistent with those contained in Buyer 's offer.Acceptance of Seller 's products shall in all events constitute such assent.
2. Payment:Payment shall be made by Buyer net 30 days from the date of delivery of the items purchased hereunder.Any claims by Buyer for omissions or shortages in a shipment shall be waived unless Seller receives notice thereof within 30 days after Buyer 's receipt of the shipment.
3. Delivery:Unless otherwise provided on the face hereof,delivery shall be made F.O.B.Seller 's plant.Regardless of the method of delivery,however,risk of loss shall pass to Buyer upon Seller 's delivery to a carrier.Any delivery dates shown are approximate only and Seller shall have no liability for any delays in delivery.
4. Warranty:Seller warrants that the items sold thereunder shall be free from defects in material or workmanship for a period of 365 days from the date of shipment to Buyer, or 2,000 hours of use, whichever expires first. THIS WARRANTY COMPRISES THE SOLE AND ENTIRE WARRANTY PERTAINING TO ITEMS PROVIDED HEREUNDER.SELLER MAKES NO OTHER WARRANTY,GAURANTEE,OR REPRESENTATION OF ANY KIND WHATSOEVER.ALL OTHER WARRANTIES,INCLUDING BUT NOT LIMITED TO,MERCHANTIBILITY AND FITNESS FOR PURPOSE,WHETHER EXPRESS,IMPLIED,OR ARISING BY OPERATION OF LAW,TRADE USAGE,OR COURSE OF DEALING ARE HEREBY DISCLAIMED. NOTWITHSTANDING THE FOREGOING,THERE ARE NO WARRANTIES WHATSOEVER ON ITEMS BUILT OR ACQUIRED WHOLELY OR PARTIALLY, TO BUYER 'S DESIGNS OR SPECIFICATIONS.
5. Limitation Of Remedy:SELLER 'S LIABILITY ARISING FROM OR IN ANY WAY CONNECTED WITH THE ITEMS SOLD OR THIS CONTRACT SHALL BE LIMITED EXCLUSIVELY TO REPAIR OR REPLACEMENT OF THE ITEMS SOLD OR REFUND OF THE PURCHASE PRICE PAID BY BUYER, AT SELLER 'S SOLE OPTION.IN NO EVENT SHALL SELLER BE LIABLE FOR ANY INCIDENTAL,CONSEQUENTIAL OR SPECIAL DAMAGES OF ANY KIND OR NATURE WHATSOEVER,INCLUDING BUT NOT LIMITED TO LOST PROFITS ARISING FROM OR IN ANY WAY CONNECTED WITH THIS AGREEMENT OR ITEMS SOLD HEREUNDER,WHETHER ALLEGED TO ARISE FROM BREACH OF CONTRACT,EXPRESS OR IMPLIED WARRANTY,OR IN TORT,INCLUDING WITHOUT LIMITATION, NEGLIGENCE,FAILURE TO WARN OR STRICT LIABILITY.
6. Changes,Reschedules and Cancellations:Buyer may request to modify the designs or specifications for the items sold herunder as well as the quantities and delivery dates thereof,or may request to cancel all or part of this order, however,no such requested modification or cancellation shall become part of the contract between Buyer and Seller unless accepted by Seller in a written amendment to this Agreement.Acceptance of any such requested modification or cancellation shall be at Seller 's discretion,and shall be upon such terms and conditions as Seller may require.
7. Special Tooling:A tooling charge may be imposed for any special tooling, including without limitation,dies,fixtures,molds and patterns,acquired to manufacture items sold pursuant to this contract.Such special tooling shall be and remain Seller 's property notwithstanding payment of any charges by Buyer.In no event will Buyer acquire any interest in apparatus belonging to Seller which is utilized in the manufacture of the items sold hereunder,even if such apparatus has been specially converted or adapted for such manufacture and notwithstanding any charges paid by Buyer.Unless otherwise agreed, Seller shall have the right to alter,discard or otherwise dispose of any special tooling or other property in its sole discretion at any time.
8. Buyer 's Property:Any designs,tools,patterns,materials,drawings,confidential information or equipment furnished by Buyer or any other items which become Buyer 's property,may be considered obsolete and may be destroyed by Seller after two (2)consecutive years have elapsed without Buyer placing an order for the items which are manufactured using such property.Seller shall not be responsible for any loss or damage to such property while it is in Seller 's possession or control.
9. Taxes:Unless otherwise indicated on the face hereof,all prices and charges are exclusive of excise,sales,use,property,occupational or like taxes which may be imposed by any taxing authority upon the manufacture,sale or delivery of the items sold hereunder.If any such taxes must be paid by Seller of if Seller is liable for the collection of such tax,the amount thereof shall be in additon to the amounts for the items sold.Buyer agrees to pay all such taxes or to reimburse Seller therefore upon receipt of its invoice.If Buyer claims exemption from any sales,use or other tax imposed by any taxing authority, Buyer shall save Seller harmless from and against any such tax,together with any interest or penalties thereon which may be assessed if the items are held to be taxable.
10. Indemnity For Infringement of Intellectual Property Rights:Seller shall have no liability for infringement of any patents,trademarks,copyrights,trade dress,trade secrets or similar rights except as provided in this Part 10. Seller will defend and indemnify Buyer against allegations of infringement of U.S.patents,U.S.trademarks,copyrights,trade dress and trade secrets (hereinafter "Intellectual Property Rights ").Seller will defend at its expense and will pay the cost of any settlement or damages awarded in an action brought against Buyer based on an allegation that an item sold pursuant to this contract infringes in the Intellectual Property Rights of a third party. Seller 's obligation to defend and indemnify Buyer is contingent on Buyer notifying Seller within ten (10)days after Buyer becomes aware of such allegations of infringement,and Seller having sole control over the defense of any allegations or actions including all negotiations for settlement or compromise.If an item sold hereunder is subject to a claim that it infringes the Intellectual Property Rights of a third party,Seller may,at its sole expense and options,procure for Buyer the right to continue using said item,replace or modify said item so as to make it noninfringing,or offer to accept return of said item and return the purchase price less a reasonable allowance for depreciation.Notwithstanding the foregoing,Seller shall have no liability for claims of infringement based on information provided by Buyer,or directed to items delivered hereunder for which the designs are specified in whole or part by Buyer,or infringements resulting from the modification,combination or use in a system of any item sold hereunder.The foregoing provisions of this Part 10 shall constitute Seller 's sole and exclusive liability and Buyer 's sole and exclusive remedy for infringement of Intellectual Property Rights. If a claim is based on information provided by Buyer or if the design for an item delivered hereunder is speci fied in whole or in part by Buyer,Buyer shall defend and indemnify Seller for all costs,expenses or judgments resulting from any claim that such item infriges any patent,trademark,copyright,trade dress,trade secret or any similiar right.
11. Force Majeure:Seller does not assume the risk of and shall not be liable for delay or failure to perform any of Seller 's obligations by reason of circumstances beyond the reasonable control of Seller (hereinafter "Events of Force Majeure "). Events of Force Majeure shall include without limitation, accidents,acts of God,strikes or labor disputes,acts,laws,rules or regulations of any government or government agency,fires,foods,delays or failures in delivery of carriers or suppliers,shortages of materials and any other cause beyond Seller 's control.
12. Entire Agreement/Governing Law:The terms and conditions set forth herein, together with any amendments,modifications and any different terms or conditions expressly accepted by Seller in writing,shall constitute the entire Agreement concerning the items sold,and there are no oral or other representations or agreements which pertain thereto.This Agreement shall be governed in all respects by the law of the State of Ohio.No actions arising out of the sale of the items sold hereunder or this Agreement may be brought by either party more than two (2)years after the cause of action accrues.

Certifications

DNV·GL

MANAGEMENT SYSTEM CERTIFICATE

This is to certify that the management system of

Parker Hannifin India Pvt. Ltd.
Khasara No. 145, 146, 153/1, 153/3, 157, Mouza Bazargaon, Amaravati Road, Nagpur – 440 023, Maharashtra, India

has been found to conform to the Environmental Management System standard:
ISO 14001:2004

This certificate is valid for the following scope:
Design & manufacture of braided, spiral reinforced and industrial hoses

DNV·GL

MANAGEMENT SYSTEM CERTIFICATE

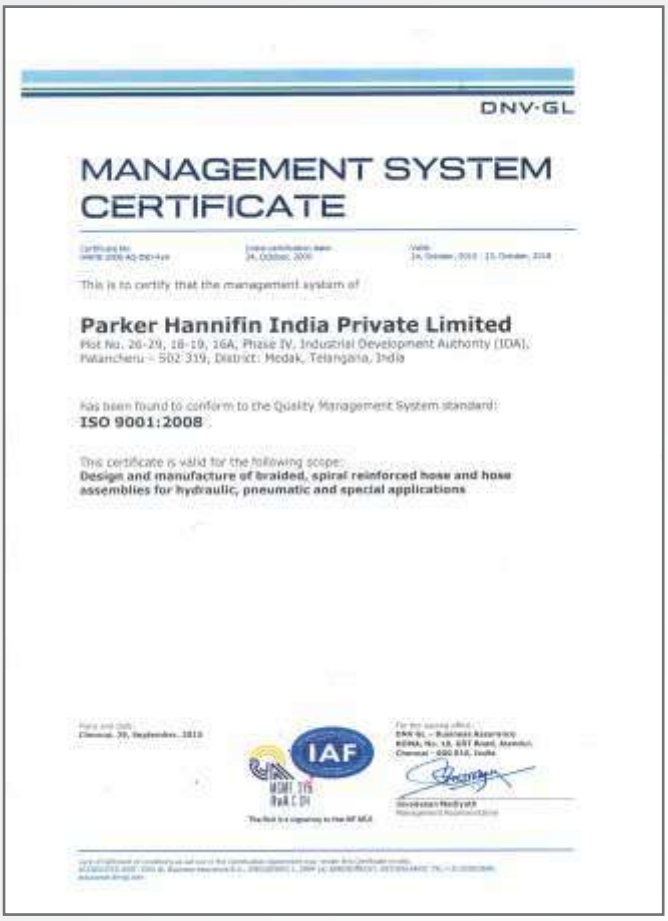
This is to certify that the management system of

Parker Hannifin India Pvt. Ltd.
Khasara No 145, 146, 153/1, 153/3, 157, Mouza Bazargaon, Amaravati Road, Nagpur – 440 023, Maharashtra, India

has been found to conform to the Occupational Health and Safety Management System standard:
OHSAS 18001:2007

This certificate is valid for the following scope:
Design & manufacture of braided, spiral reinforced and industrial hoses

Certifications



DNV·GL

MANAGEMENT SYSTEM CERTIFICATE

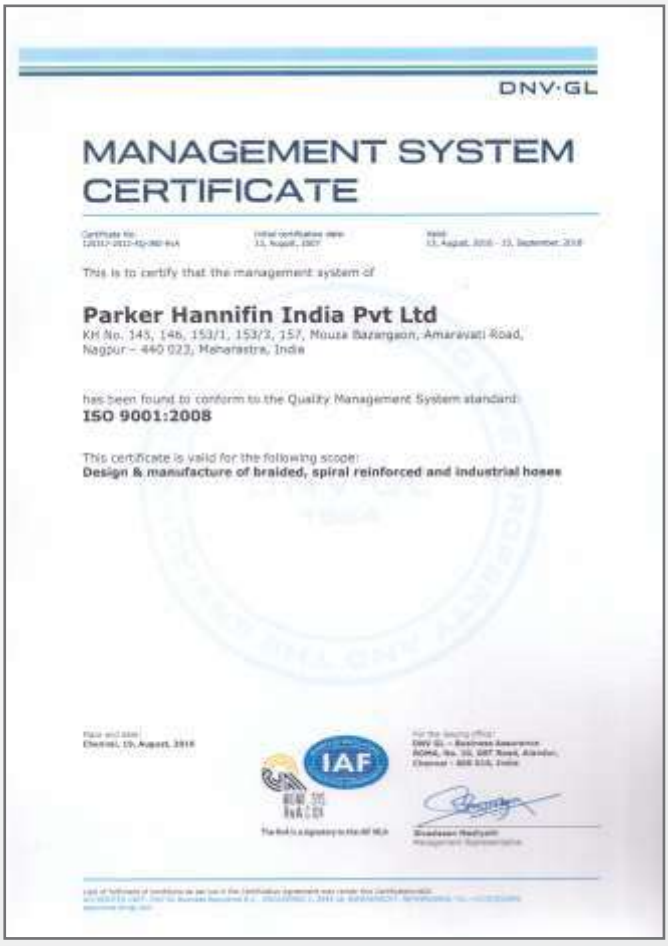
This is to certify that the management system of

Parker Hannifin India Private Limited
Plot No. 26-29, 18-19, 16A, Phase IV, Industrial Development Authority (IDA),
Patancheru – 502 319, District: Medak, Telangana, India

has been found to conform to the Quality Management System standard:
ISO 9001:2008

This certificate is valid for the following scope:
Design and manufacture of braided, spiral reinforced hose and hose assemblies for hydraulic, pneumatic and special applications

IAF



DNV·GL

MANAGEMENT SYSTEM CERTIFICATE

This is to certify that the management system of

Parker Hannifin India Pvt Ltd
KH No. 145, 146, 153/1, 153/3, 157, Mouza Bazargaon, Amaravati Road,
Nagpur – 440 023, Maharastra, India

has been found to conform to the Quality Management System standard:
ISO 9001:2008

This certificate is valid for the following scope:
Design & manufacture of braided, spiral reinforced and industrial hoses

IAF

Parker Hannifin India Pvt. Ltd.

India HQ / Manufacturing Unit:

Mumbai
Plot EL-26, MIDC
TTC Industrial Area
Mahape, Navi Mumbai - 400 709, India.
Ph: +91-22-4124 2500

Manufacturing Units:

Hyderabad
26-29, 18-19, 16A, I.D.A.,
Phase - IV, Patancheru,
Hyderabad, India.
Ph: +91-8455-248700

Nagpur
Khasra 145, 146, 153/1, 153/3, 157,
Amravati Rd., Bazargaon,
Nagpur - 440023, India.
Ph: +91-7118-665202

Connect With Us
fcindia@parker.com
www.parker.com

Sales Offices:

Delhi
C5-171, 7th Floor, Tower A,
The Correnthum, A-41, Sector 62,
Noida, Delhi - 201301, India.
Ph: +91-120-4742918 / 4742902

Kolkata
City Centre B - 502, 5th Floor,
Salt Lake City Sector - 1,
Kolkata - 700064, India.
Ph: + 91-33-23584415-17

Bengaluru
Regional Office:
No. V-2 (A), 14th Cross, 2nd Stage,
Peenya Industrial Estate,
Bengaluru - 560 058, India.
Ph.: + 91-80-4128 7364

Chennai
Plot No. P41/2, Eight Avenue,
Domestic Tariff Area,
Mahindra World City,
Chengelpattu, Kancheepuram Dist.
Chennai - 603002, India.
Ph: + 91-44-4391 0700 / 4391 0799

CIN - U29119MH1989PTC050377

ENGINEERING YOUR SUCCESS.