



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









Hose Catalog - 2013

FCGHPD - 5



ENGINEERING YOUR SUCCESS.

SYMBOL	MEANING
#	Dash Number
	Hose I.D
	Hose R.O.D
	Hose O.D
	Working Pressure
	Minimum Bend Radius
	Weight



Warning:



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

Parker Publication No. FCGHPD 5 Revised Jan 2013

Failure or improper selection or improper use of hose, tubing, fittings, assemblies or related accessories ("Products") can cause death, personal injury or property damage. Possible consequences of failure or improper selection or improper use of these Products include but are not limited to.

- * Fittings thrown off at high speed.
- * High Velocity fluid discharge.
- * Explosion or burning of the conveyed fluid.
- * Electrocutation from high voltage electric powerlines.
- * Contact with suddenly moving or falling objects that are controlled by the conveyed fluid.
- * Injections by high-pressure fluid discharge.
- * Dangerously whipping Hose.
- * Contact with conveyed fluids that may be hot, cold, toxic or otherwise injurious.
- * Sparking or explosion caused by static electricity buildup or other sources of electricity.
- * Sparking or explosion while spraying paint or flammable liquids.

Before selecting or using any of these Products, it is important that you read and follow the instructions.

Table of Contents

	Page No.
Introduction	1 - 10
Visual Index	11 - 12
Overview Chart	13 - 14
Hose	
Braided Hydraulic Hose	15 - 20
Braided Hydraulic / Thermoplastic Hose	21
Braided Hydraulic Hose	22 - 23
Braided Hydraulic / Industrial Hose	24
Braided Industrial Hose	25 - 26
Braided Industrial / Multi Spiral Hose	27
Multi Spiral Hose	28 - 30
Technical	
NOMOGRAM	31
Conversion Table	32
Chemical Resistance Table	33 - 36
Safety Guide	37 - 38
Safety Guide & MSDS Statement	39 - 40
Offer of Sale	40

Introduction

Parker Hannifin India Pvt. Ltd. is India's leading manufacturer and exporter of Multi Spiral and Braided Hydraulic hoses to DIN, EN, SAE, ISO, IS & BS specifications.

Parker Hannifin India is committed to the design, manufacture and distribution of reinforced rubber hoses, for conveying fluids in hydraulic systems at medium, high and very high pressures for the fluid power industry.

These hoses are used in high-pressure hydraulic circuits in industries such as earthmoving, construction, mining, agriculture, marine, transportation and injection moulding.

Parker Hannifin India's high quality levels are confirmed by type approvals received from recognized organizations such as MSHA-USA, Directorate General Mines Safety DGMS-India & Pressure Equipment Directorate (ATEX) .

Parker Hannifin India's Quality Management System is ISO 9001 : 2008 certified, by DNV, giving further evidence of the company's commitment to quality.



Braided Hose Line



Spiral Hose Line

Few OEM Customers :

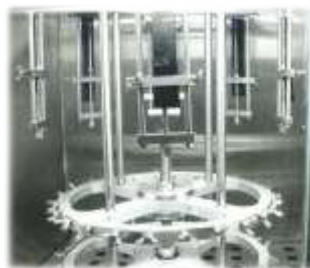
- Hyva India Pvt. Ltd.
- Bombardier Transportation India Ltd.
- Ashok Leyland Ltd.
- John Deere
- Thermo King
- Hyundai Construction Equipment India
- Gilbarco Veeder-Root
- Midco
- Bharat Earth Movers Ltd.
- L & T Komatsu Ltd.
- Telco Construction Equipment Co. Ltd.
- Volvo India Ltd.
- Klockner Desma
- Atlas Capco (I) Ltd.
- Plasser India Pvt. Ltd.
- JCB

Parker Hannifin India (Hyderabad Unit) exports @ 50% of its production to North and South America, Europe, Australia, Far & Middle East and has the distinction of hydraulic hose manufacturer to have received the prestigious all India Rubber Industries Association (AIRIA) Top Export Award and Chemicals & Allied Products export Promotion Council (CAPEXIL) Certificates of Merit for Excellence in Exports.



The Parker Hannifin India Advantages :

- Total Hose Assembly Solution
- Complete Range of High Quality Spiral & Braided Hose
- Customised Hose
- Flexible Production Runs
- Value / Cost Benefits to Customers
- Personalized Customer Service
- Technical Advice & Support
- Prompt after Sale Service
- ISO 9001:2008 certified Company



Ozone Test View Glass



R & D Centre

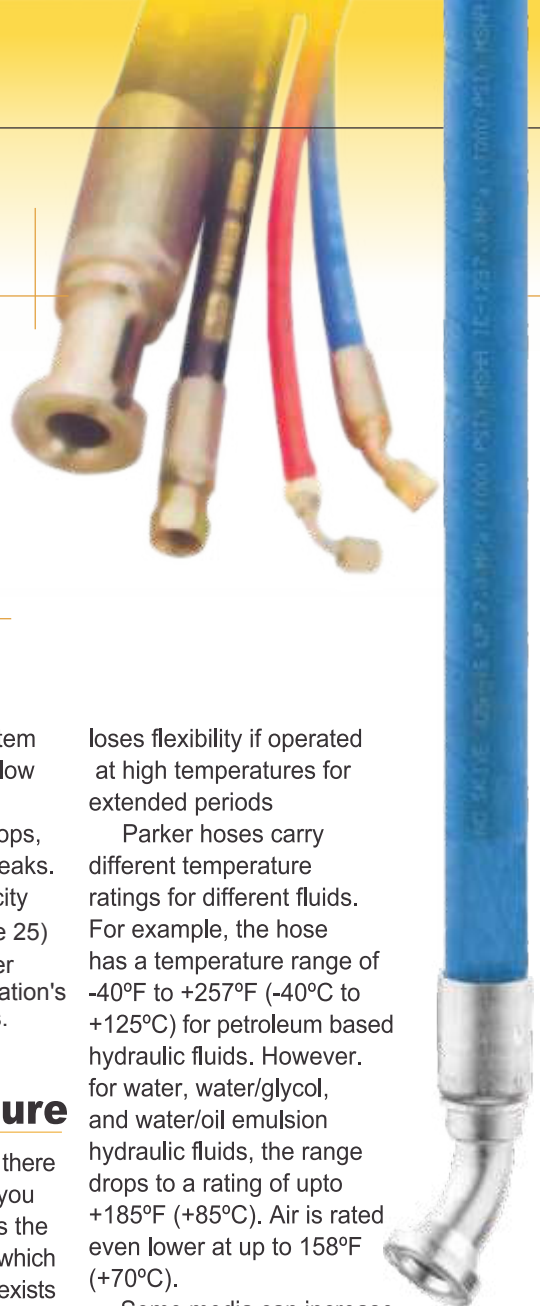


PLC Based Automatic Test Bench



Ozone Test Chamber





Before You SPEC it, STAMP it.



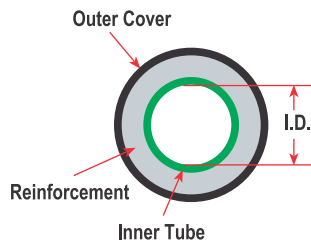
When you order hose and fittings from Parker, remember the word “STAMP.” That way you won’t forget important information!

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. Don’t know the hose size? Check the layline. If the

original printing has worn off, the original hose must be cut and the inside diameter measured. Be sure to measure the overall assembly length and fitting orientation before cutting hose.



The hose must be sized accurately to obtain the proper flow velocity. A flow that’s too slow

results in sluggish system performance, while a flow that’s too high causes excessive pressure drops, system damage, and leaks.

Use the flow Capacity Nomogram (refer page 25) to determine the proper hose I.D. for an application’s flow rate requirements.

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

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.

Dash No.	Hose I.D.			
	All except R5 - Series Hoses		R5	
	Inches	Millimeters	Inches	Millimeters

-3	3/16	5	-	-
-4	1/4	6.3	3/16	5
-5	5/16	8	1/4	6.3
-6	3/8	10	5/16	8
-8	1/2	12.5	13/32	10
-10	5/8	16	1/2	12.5
-12	3/4	19	5/8	16
-16	1	25	7/8	22
-20	1-1/4	31.5	1-1/8	29
-24	1-1/2	38	1-3/8	35
-32	2	51	1-13/16	46
-40	2-1/2	63	2-3/8	60
-48	-	-	3	76



Application

Before selecting 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

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.

abrasive surface, would be best handled by our family of abrasion-resistant hose with Gladiator cover.

When application space is tight, bend radius is another important consideration. Parker offers full line of hoses designed for half SAE bend radius at full SAE-rated pressures. Compact™ hoses increased flexibility and smaller outer diameter allows faster easier routing in small spaces, reducing both hose length and inventory requirements.

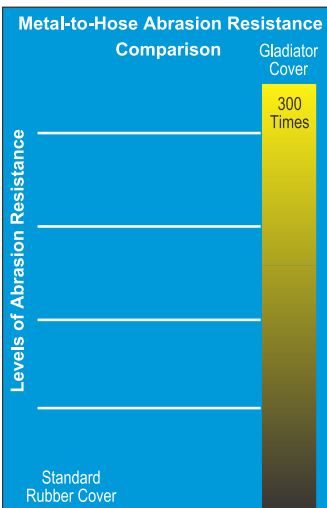
Industry standards set specific requirements concerning construction type, size, tolerances burst pressure, and impulse cycles



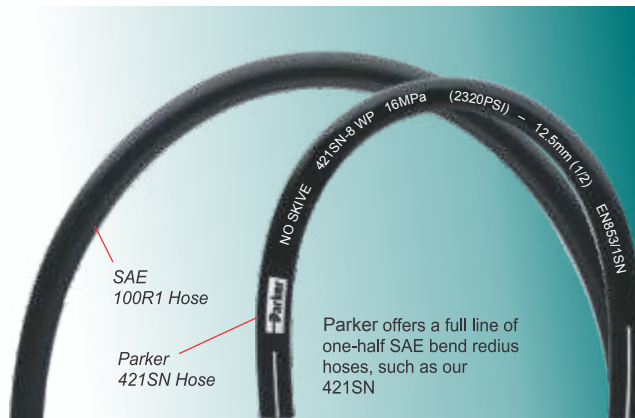
of hoses. Parker hydraulic hoses meet or exceed standards such as :

- .SAE (Society of Automotive Engineers)
- . EN (European Norm)
- . DIN (Deutsche Institute for Normung)
- . ISO (International Standards Organization)

Governmental agencies control additional standards for particular industries such as D.G.M.S. You must select a hose that meets the legal requirements as well as the functional requirements of the application.



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



Parker offers a full line of one-half SAE bend radius hoses, such as our 421SN

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



Before You SPEC it, STAMP it.

Size Application Pressure
Temperature Media



Media

What will the hose convey? Some applications require the use of specialized oils or chemicals. Consequently the hose you order must be compatible with the medium being conveyed. Compatibility must cover not just the inner tube but the cover, hose fittings, and o-rings as well. Use the Chemical Resistance Chart to select the correct components of the hose assembly that will be compatible with the system's media. The chart contains the chemical resistance rating of a variety of fluids.



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

All Parker hydraulic hoses have passed the industry rated specifications for burst pressure and carry

a 4:1 safety factor unless otherwise noted. Burst pressure rating 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 chart 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.

A hose assembly (which consists of hose and two fittings) would have a maximum working pressure of the lesser of the three components. For example, the fittings have a 12,000 psi rating, the hose has a 5,800

psi rating, therefore the maximum pressure rating of the hose assembly would be 5,800 psi. Pressure ratings for each Parker end connection can be provided on request.



Pressure spikes can occur during machine operation in an instant. They can occur so quickly in fact, that standard glycerin filled gauges 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.





Parker T72TC-8 WP
Parker TOUGH COVER 482TC-8 W

Abrasion? We've Got You Covered.

Our expanded line of abrasion-resistant hose offers you a world of protection, not to mention a choice of covers: Gladiator cover for the really rough stuff. Our Gladiator covered hoses can simplify your assemblies by eliminating the need for any additional protective sleeving

From the superior flexibility and tighter bend

radius of our wire-braided compact™ Hoses... to the wide fluid compatibility and high pressure performance of our No-Skive spiral hoses... our expanded family of abrasion-resistant hoses gets the job done right, giving you the results you need in the construction, forestry, mining injection molding, refuse and recycling, and energy industries.



Results from the ISO 6945 metal to hose abrasion test show that Gladiator cover hose offer significantly greater abrasion resistance than standard rubber cover hose.

Optional Cover

Type	Features
Gladiator Cover	Excellent abrasion resistance. Very good resistance to ozone and cold flexibility



Braided vs Spiral Hose

Hydraulic hose can be referred to by construction style, of which there are two main types : braided and spiral. The majority of "low pressure hoses" have a textile braided construction. They're commonly used to transmit petroleum-based fluids, diesel fuel, hot lubricating oil, air, ethylene glycol anti-freeze, and water. "Medium pressure hoses" typically feature one-and two-wire braided construction. These hoses are frequently found on construction equipment, heavy-duty trucks and trailer/semi trailer vehicle applications. In general, braided hose is selected for its flexibility.

At one time in the industry, two-wire braided hose was most commonly used in many applications. But the advent of larger, off-road specialty equipment drove the creation of spiral hose, which is very well suited for applications where extremely high impulse pressure is encountered.

Today, hydrostatic drives using four and six-wire spiral hoses can be found

on everything from lawn tractors to earth movers. Because today's world demands faster, more powerful equipment requiring increased working pressures, Parker is responding with an expansive offering of spiral products.

Contact your local Parker distributor to see the full range of hose choices, and to discuss their various applications.



Parker Hose: Built to Solve Problems.

The Best Hose for Your Operation? The one That Gets the Job Done Right



Bendable? You Bet!

Looking for flexible hose that can be routed in tight spaces?

Parker has a full line of Compact™ Hoses designed for one half SAE bend radius at full SAE pressure. These hoses plumb and bend tighter than other SAE 100R1, 100R2 and 100R12 type hoses, reducing hose length requirements by up to 47%. The tighter bend radius means fewer bent tube fittings and longer life in applications where machinery movement causes

hoses to bend sharply. It also means reduced inventory requirements for you.

In addition to maximum flexibility and excellent bendability Parker compact hoses offer smaller outer diameters and abrasion resistant cover choices. Characteristics that make them the hoses of choice for mobile hydraulic systems, agricultural machinery, forestry equipment, fork lifts, construction, machinery, injection molding, automotive, and the paper industry.



301SN / 421SN hoses has half the minimum bend radius of DIN 2SN / 1SN hoses.

Inner Beauty

The inner tube of a hose is offered in several different rubber compounds. Each rubber compound can react differently to the media being conveyed. The inner tube must also resist effects of high or low temperatures and environmental elements. The table on the right, highlights popular rubber compounds used for hose inner tubes.

Inner Tube Compounds

Type	Features
Nitrile Rubber	Excellent resistance to petroleum-based fluids and environmentally friendly fluids.
Synthetic Rubber	Good resistance to petroleum-based fluids. Poor resistance to water-based glycol fluids.
Butyl Rubber	Very good weathering resistance. Good physical properties. Poor resistance to petroleum based fluids.
EPDM Rubber	Excellent resistance to phosphate ester fluids and dry air Poor resistance to petroleum-based fluids.

Hose Hint




The layline, or printing along the length of a hose, contains a wealth of useful information about that product. Inside diameter, maximum working pressure, part number, industry standards that the hose meets and even manufacturing date are among the information supplied.



Our Hose Makes the World a Smaller Place

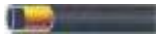





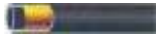



















Parker "Worldwide" is our global hose line. It's made to meet or exceed the same strict international quality specifications no matter where it's manufactured. So now, regardless of where your equipment is made or used, you can rely on our Worldwide Hose, and accompanying fittings, to provide seamless application coverage and leak-free performance. Best of all, it's available through many of our worldwide Parker distributors.










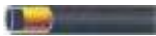

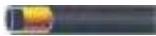















<p>Medium Pressure Hose</p> 	<p>421SN Page-15</p>  <p>EN 853 1SN / SAE 100R1 AT</p>	<p>421SNPM Page-15</p> 	<p>421SNPMHITEMP Page-15</p>  <p>EXCEEDS 1SN</p>
<p>301SN Page-16</p>  <p>EN 853 2SN / SAE 100R2AT</p>	<p>301SNPM Page-16</p> 	<p>301SNPMHITEMP Page-16</p>  <p>EXCEEDS 2SN</p>	<p>MBR HOSE Page-17</p>  <p>EXCEEDS SAE 100 R1AT / R2AT</p>
<p>436 Page-17</p>  <p>SAE 100R 16 / ISO 11237 type R16</p>	<p>PERPETUITY Page-17</p> 	<p>POWERFLEX Page-18</p>  <p>MORE POWER - MORE FLEXIBILITY</p>	<p>SLIM LINE Page-18</p>  <p>EN 857 1SC</p>
<p>PILOT HOSE Page-18</p> 	<p>KISAN TROLLEY HOSE Page-19</p> 	<p>SLIM HOLE HOSE (3 Wire) Page-19</p> 	<p>SLIM HOLE HOSE (4 Wire) Page-19</p> 
<p>SLIM LINE Page-20</p>  <p>EN 857 2SC</p>	<p>MH 174 Page-20</p>  <p>BCS 174-1992 UNDER GROUND MINING</p>	<p>SLIMPAC Page-20</p>  <p>SAE 100R16</p>	<p>TRI-K-FLEX Page-21</p>  <p>SAE 100R17</p>
<p>540N - Thermoplastic Hose Page-21</p>  <p>MEETS OR EXCEEDS SAE 100R7</p>	<p>520N - Thermoplastic Hose Page-21</p>  <p>MEETS OR EXCEEDS SAE 100R8</p>	<p>SUPERJACK Page-22</p> 	
<p>Low Pressure Hose</p> 	<p>SAE 100R5R Page-22</p> 	<p>EN 854 R3 Page-22</p> 	<p>SAE 100R4 Page-23</p>  <p>SUCTION AND RETURN LINE</p>
<p>EN 854 R6 Page-23</p> 	<p>1TE Page-23</p>  <p>EN 854</p>	<p>2TE Page-24</p>  <p>EN 854</p>	<p>3TE Page-24</p>  <p>EN 854</p>
<p>Industrial Hoses</p> 	<p>AIRMASTER Page-24</p>  <p>EXCEEDS IS 446 : 1980 TYPE 3</p>	<p>AIR / WATER HOSE Page-25</p>  <p>Exceeds IS 446 Type 1 and 444 Type 2</p>	<p>PNEUMATIC TOOL HOSE Page-25</p>  <p>Exceeds IS 446 Type 2</p>
<p>LPG HOSE Page-25</p>  <p>BS 4089 : 1989 TYPE 1</p>	<p>FUEL DESPENSING HOSE-I Page-26</p>  <p>BS EN 1360 TYPE 3 : ATEX APPROVED</p>	<p>FUEL DESPENSING HOSE-II Page-26</p>  <p>BS 3395 TYPE 3C</p>	<p>FUEL HOSE - SOFT WALL Page-26</p>  <p>EXCEEDS IS 2396 : 1988</p>
<p>THERMIC STEAM - I Page-27</p>  <p>IS 10655 : 1999 TYPE 2 / BS 5342</p>	<p>THERMIC STEAM - II Page-27</p>  <p>IS 10655:1999 TYPE 3 / BS 5342</p>	<p>CEMENT MASTER Page-27</p>  <p>MATERIAL HANDLING HOSE</p>	

 <p>High Pressure Hoses</p>	<p>701 / EN856 4SP Page-27</p> 	<p>731 / EN856 4SH Page-28</p> 	<p>721 / EN 856 R12 Page-28</p> 
<p>781 / EN 856 R13 Page-28</p> 	<p>SPIRAFLEX Page-29</p>  <p>SAE 100R15</p>	<p>SPIRALBLAST 20K Page-29</p>  <p>WATERBLAST</p>	<p>SPIRALBLAST 25K Page-29</p>  <p>WATERBLAST</p>
<p>SPIRALBLAST 30K Page-30</p>  <p>WATERBLAST</p>	<p>SPIRALBLAST 36K Page-30</p>  <p>WATERBLAST</p>	<p>SPIRALBLAST 50K Page-30</p>  <p>WATERBLAST</p>	<p>3000 OG Page-30</p> 

Hose Overview Chart

Hose Size	Hose Reinforcement																	Standard Temp. Range °F	SAE	EN	Page	
		-4	-5	-6	-8	-10	-12	-16	-20	-24	-32	-36	-38	-40	-48	-56	-64					
421SNMSHA		3265	3120	2610	2320	1890	1525	1275	915	725	580								-40/+212	100R1AT	853 1SN	15
421SNPM														362	362	290	220	145	-40/+212			15
421SNPM HITEMP		3265	3120	2610	2320	1890	1525	1275	915	725	580								-40/+212		853 1SN	15
301SNMSHA		5800	5100	4800	4000	3600	3100	2400	1800	1300	1160								-40/+212	100R2AT	853 2SN	16
301SNPM														1015	1000	650	400	365	-40/+212			16
301SNPM HITEMP		5800	5100	4800	4000	3600	3100	2400	1800	1300	1160								-40/+275		853 2SN	16
MBR 421SNPM										425									-40/+212	100R1AT		17
MBR 301SNPM														1160					-40/+212	100R2AT		17
436PM		5000		4000	3500	2750	2250	2000	1625	1250	1125								-55/+302	100 R16		17
PERPETUITY (465PPT)		6520	5800	5290	5070	4350	4350	3260											-40/+120			17
POWERFLEX (PFP)		5800	5100	4800	4000	4000	4000	3600											-40/+212			18
SLIMLINE (EN857PM)		3265	3120	2610	2320	1885	1525	1275											-40/+212		857 1SC	18
PILOT HOSE (401)		2170	1740	1450	1450														-40/+248			18
KISAN TROLEY (KTPM)				1740	1740														-40/+212			19
SLIM HOLE (3WIREPM)															1500				-40/+250			19
SLIM HOLE (4WIREPM)															2600	1375			-40/+250			19
SLIMLINE (462PM)		5800	5075	4785	3990	3625	3120	2395											-40/+212		857 2SC	20
MH 174PM (BCS 174-1999)		6525		5510	5250	4060	4000	3120	2495	2120	1625								-40/+212			20
SLIMPAC (431PM)		5000	4250	4000	3500	2750	2250	2000	1625										-40/+212	100R16		20
TRI-K-FLEX (451PM)		3045	3045	3045	3045	3045	3045	3045											-40/+212	100R17		21
540N		2750	2500	2250	2000	1250													-40/+212	100R7		21
520N		5000	4500	4000	3500	2750													-40/+212	100R8		21
SUPERJACK (JKPM)		10000	10000																-40/+212			22
R5RPM		3000	3000	2250	2000	1750	1500	800	625	500	350				350				-40/+212	100R5R		22
601PM		1250	1200	1125	1000	875	750	565	375	250	215								-40/+212	100R3	854	22
881PM							300	250	200	150	100				62	55			-40/+212	100R4		23

Hose Overview Chart

Hose Size	Hose Reinforcement	Temperature Range (°F)																Standard Temp. Range °F	SAE	EN	Page	
		-4	-5	-6	-8	-10	-12	-16	-20	-24	-32	-36	-38	-40	-48	-56	-64					
SAE100R6PM		400	400	400	400	350	300	190											-40/+212	100R6	854	23
1TEPM		360	290	290	230	230	175	175											-40/+212		854	23
2TEPM		1090	985	915	840	725	655	580											-40/+275		854	24
3TEPM		2105	1885	1595	1350	1160	1015	800	650	580	480								-40/+212		854	24
AIRMASTER (AMHPM)							500	500	500	500	500								-31/+212			24
AIR / WATER HOSE (WHPM)				170			170	170											-30/+82			25
PNEUMATIC TOOL HOSE (AHPM)		200	200	200	200		200	200											-30/+82			25
LPGPM (BS4089:1989 TYPE 1)				362	362	362	362	362	362	362	362								-20/+113			25
BSPHPM (BSEN1360 TYPE 3)						232	232	232											-40/+131			26
BSPHPM (BSEN 3395 TYPE 3C)							112	112											-40/+131			26
ISPHPM (EXCEEDS IS2396:1988)							116	116											-40/+131			26
SH1PM (IS10655:1999 TYPE 2 / BS5342)					150	150	150	150	150	150	150								Upto 363			27
SH2PM (IS10655 TYPE 3 / BS5342)					232	232	232	232	232	232	232								Upto 401			27
7363R4PM																	50	149				27
701MSHA				6500	6000	5000	5000	4000											-40/+212		856 4SP	27
731MSHA						6000	5500	4700	4200	3600									-40/+212		856 4SH	28
721MSHA				4000	4000	4000	4000	4000	3000	2500	2500								-40/+257		856 R12	28
781MSHA							5000	5000	5000	5000	5000								-40/+257		856 R13	28
792MSHA							6000	6000	6000	6000									-40/+212	100R15		29
SB20KPM				8000	8000		8000	8000											-32/+176			29
SB25KPM				10000	10000		10000	10000											-32/+176			29
SB30KPM				12000	12000		12000	12000											-32/+176			30
SB36KPM				14500	14500														-32/+176			30
SB50KPM				20000	20000														-32/+176			30
3000 OG														3000	3000				-40/+250			30

421SN

Hydraulic

EN 853 1SN / SAE 100 R1 AT



# Part Number	Hose I.D.		Hose R.O.D mm	Hose O.D mm	Working Pressure		Minimum Bend Radius		Approx. Weight	
	inch	mm			psi	MPa	inch	mm	lbs/ft	kg/m
421SNMSHA-4	1/4	6.4	11.1	13.4	3265	22.5	2.0	50	0.15	0.23
421SNMSHA-5	5/16	7.9	12.7	15.0	3120	21.5	2.3	58	0.18	0.27
421SNMSHA-6	3/8	9.5	15.1	17.4	2610	18.0	2.5	65	0.22	0.33
421SNMSHA-8	1/2	12.7	18.2	20.7	2320	16.0	3.5	90	0.30	0.44
421SNMSHA-10	5/8	15.9	21.4	23.9	1890	13.0	4.0	100	0.34	0.50
421SNMSHA-12	3/4	19.0	25.4	27.8	1525	10.5	4.8	120	0.46	0.68
421SNMSHA-16	1	25.4	33.3	35.8	1275	8.8	6.0	150	0.63	0.94
421SNMSHA-20	1-1/4	31.8	41.8	44.8	915	6.3	16.5	420	0.97	1.44
421SNMSHA-24	1-1/2	38.1	46.4	51.0	725	5.0	20.0	500	1.07	1.59
421SNMSHA-32	2	50.8	59.5	64.5	580	4.0	25.0	630	1.51	2.25

* Impulse test conducted with Parker Fittings.

" All hoses upto-16 have passed 1,50,000 cycles impulse test at half the Min. bend radius "

Application : Petroleum base hydraulic fluids and lubricating oils.

Inner Tube : Synthetic Rubber
Reinforcement : One braid steel wire.

Cover : Synthetic Rubber.

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

Impulse Cycles :

Specified - 1,50,000 cycles.

Tested upto - 3,00,000 cycles.

421SNPM

Hydraulic



# Part Number	Hose I.D.		Hose R.O.D mm	Hose O.D mm	Working Pressure		Minimum Bend Radius		Approx. Weight	
	inch	mm			psi	MPa	inch	mm	lbs/ft	kg/m
421SNPM-38PM	2-3/8	60.3	69.0	75.0	362	2.5	30.0	762	1.73	2.58
421SNPM-40PM	2-1/2	63.5	73.0	77.5	362	2.5	30.0	762	1.86	2.77
421SNPM-48PM	3	76.2	86.4	94.4	290	2.0	36.0	915	2.59	3.85
421SNPM-56PM	3-1/2	88.9	98.5	105.5	220	1.5	42.0	1067	2.89	4.30
421SNPM-64PM	4	101.6	110.0	117.0	145	1.0	43.5	1105	3.09	4.60

Not cover under HS/SAE/EN

Application : Petroleum base hydraulic fluids and lubricating oils.

Inner Tube : Synthetic Rubber
Reinforcement : One braid steel wire.

Cover : Synthetic Rubber.

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

421SNPMHITEMP - High Temperature

Hydraulic

EXCEEDS EN 853 1SN / SAE 100R1AT



# Part Number	Hose I.D.		Hose R.O.D mm	Hose O.D mm	Working Pressure		Minimum Bend Radius		Approx. Weight	
	inch	mm			psi	MPa	inch	mm	lbs/ft	kg/m
421SNPMHITEMP-4PM	1/4	6.4	11.1	13.4	3265	22.5	4.0	100	0.15	0.23
421SNPMHITEMP-5PM	5/16	7.9	12.7	15.0	3120	21.5	4.5	115	0.18	0.27
421SNPMHITEMP-6PM	3/8	9.5	15.1	17.4	2610	18.0	5.0	130	0.22	0.33
421SNPMHITEMP-8PM	1/2	12.7	18.2	20.7	2320	16.0	7.0	180	0.30	0.44
421SNPMHITEMP-10PM	5/8	15.9	21.4	23.9	1890	13.0	8.0	200	0.34	0.50
421SNPMHITEMP-12PM	3/4	19.0	25.4	27.8	1525	10.5	9.5	240	0.46	0.68
421SNPMHITEMP-16PM	1	25.4	33.3	35.5	1275	8.8	12.0	300	0.63	0.94
421SNPMHITEMP-20PM	1-1/4	31.8	40.5	43.5	915	6.3	16.5	420	0.97	1.44
421SNPMHITEMP-24PM	1-1/2	38.1	46.4	50.4	725	5.0	20.0	500	1.07	1.59
421SNPMHITEMP-32PM	2	50.8	59.5	63.5	580	4.0	25.0	630	1.51	2.25

Application : Petroleum base hydraulic fluids and lubricating oils.

Inner Tube : Synthetic Rubber
Reinforcement : One braid steel wire.

Cover : Synthetic Rubber.

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

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			psi	MPa	inch	mm	lbs/ft	kg/m
301SNMSHA-4	1/4	6.4	12.9	15.0	5800	40.0	2.0	50	0.26	0.39
301SNMSHA-5	5/16	7.9	14.3	16.6	5100	35.0	2.2	58	0.29	0.43
301SNMSHA-6	3/8	9.5	16.9	19.0	4800	33.0	2.5	65	0.36	0.53
301SNMSHA-8	1/2	12.7	19.8	22.3	4000	27.5	3.5	90	0.42	0.63
301SNMSHA-10	5/8	15.9	23.0	25.5	3600	25.0	4.0	100	0.50	0.74
301SNMSHA-12	3/4	19.0	27.0	29.4	3100	21.5	4.8	120	0.64	0.95
301SNMSHA-16	1	25.4	34.9	38.1	2400	16.5	6.0	150	0.91	1.35
301SNMSHA-20	1-1/4	31.8	44.0	47.1	1800	12.5	16.5	420	1.52	2.26
301SNMSHA-24	1-1/2	38.1	50.8	54.5	1300	9.0	20.0	500	1.58	2.35
301SNMSHA-32	2	50.8	63.5	67.2	1160	8.0	25.0	630	1.96	2.92

* Impulse test conducted with Parker Fittings.

" All hoses upto-16 have passed 2,00,000 cycles impulse test at half the Min. bend radius "

Application : Petroleum base hydraulic fluids and lubricating oils.

Inner Tube : Synthetic rubber.

Reinforcement : Two braid steel wire.

Cover : Synthetic rubber

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

Impulse Cycles :

Specified - 2,00,000 cycles.

Tested upto - 4,00,000 cycles.

301SNPM

Hydraulic



# Part Number	Hose I.D.		Hose R.O.D	Hose O.D	Working Pressure		Minimum Bend Radius		Approx. Weight	
	inch	mm			psi	MPa	inch	mm	lbs/ft	kg/m
301SNPM-38PM	2-3/8	60.3	71.5	75.8	1015	7.0	30.0	762	2.29	3.41
301SNPM-40PM	2-1/2	63.5	76.2	82.5	1000	6.9	30.0	762	2.81	4.18
301SNPM-48PM	3	76.2	89.4	96.0	650	4.5	36.0	915	3.19	4.75
301SNPM-56PM	3-1/2	88.9	101.2	107.5	400	2.8	42.0	1067	3.49	5.20
301SNPM-64PM	4	101.6	113.2	118.5	365	2.5	43.5	1105	3.56	5.30

Not cover under HS/SAE/EN

Application : Petroleum base hydraulic fluids and lubricating oils.

Inner Tube : Synthetic rubber.

Reinforcement : Two braid steel wire.

Cover : Synthetic rubber

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

301SNPMHITEMP - High Temperature

Hydraulic

EXCEEDS EN 853 2SN / SAE 100R2AT



# Part Number	Hose I.D.		Hose R.O.D	Hose O.D	Working Pressure		Minimum Bend Radius		Approx. Weight	
	inch	mm			psi	MPa	inch	mm	lbs/ft	kg/m
301SNPMHITEMP-4PM	1/4	6.4	12.9	15.0	5800	40.0	4.0	100	0.26	0.39
301SNPMHITEMP-5PM	5/16	7.9	14.3	16.6	5100	35.0	4.5	115	0.29	0.43
301SNPMHITEMP-6PM	3/8	9.5	16.9	19.0	4800	33.0	5.0	130	0.36	0.53
301SNPMHITEMP-8PM	1/2	12.7	19.8	22.3	4000	27.5	7.0	180	0.42	0.63
301SNPMHITEMP-10PM	5/8	15.9	23.0	25.5	3600	25.0	8.0	200	0.50	0.74
301SNPMHITEMP-12PM	3/4	19.0	27.0	29.4	3100	21.5	9.5	240	0.64	0.95
301SNPMHITEMP-16PM	1	25.4	34.9	38.1	2400	16.5	12.0	300	0.91	1.35
301SNPMHITEMP-20PM	1-1/4	31.8	40.5	43.5	1800	12.5	16.5	210	1.09	1.62
301SNPMHITEMP-24PM	1-1/2	38.1	46.5	50.0	1300	9.0	20.0	250	1.33	1.98
301SNPMHITEMP-32PM	2	50.8	60.3	64.0	1160	8.0	25.0	300	1.84	2.74

Application : Petroleum base hydraulic fluids and lubricating oils.

Inner Tube : Synthetic Rubber

Reinforcement : Two braid steel wire.

Cover : Synthetic Rubber

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

MBR HOSE

Hydraulic

EXCEEDS SAE STANDARDS



# Part Number	Hose I.D.		Hose R.O.D	Hose O.D	Working Pressure		Minimum Bend Radius		Approx. Weight	
	inch	mm	mm	mm	psi	MPa	inch	mm	lbs/ft	kg/m
421SNPM-24PM230MBR	1-1/2	38.1	44.5	47.5	425	2.9	9.0	230	0.71	1.05
301SNPM-32PM300MBR	2	50.8	60.3	64.0	1160	8.0	12.0	300	1.75	2.58

Application : Petroleum base hydraulic fluids and lubricating oils.

Inner Tube : Synthetic rubber.

Reinforcement :

One braid steel wire for 230MBR Hose.

Two braid steel wire for 300MBR Hose.

Cover : Synthetic rubber

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

436

Hydraulic - Compact high temperature
SAE 100R 16 / ISO 11237 type R16



# Part Number	Hose I.D.		Hose O.D	Working Pressure		Minimum Bend Radius	
	inch	mm	mm	psi	MPa	inch	mm
436PM-4PM	1/4	6.0	13.4	5000	35.0	2.0	50
436PM-6PM	3/8	10.0	17.4	4000	28.0	2.5	65
436PM-8PM	1/2	12.0	20.7	3500	24.5	3.5	90
436PM-10PM	5/8	16.0	23.9	2750	19.2	4.0	100
436PM-12PM	3/4	19.0	27.8	2250	15.7	4.8	120
436PM-16PM	1	25.4	36.8	2000	14.0	6.0	150
436PM-20PM	1 1/4	31.8	45.4	1625	11.3	8.3	210
*436-24	1 1/2	38.1	51.0	1250	8.7	10.0	250
*436-32	2	50.8	64.6	1125	7.8	12.5	315

Application: Petroleum base hydraulic fluids & lubricating oils.

Construction

Inner tube: Synthetic Rubber

Reinforcement: Two braids steel wire

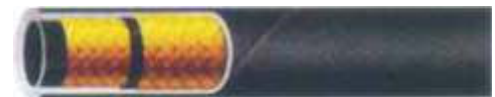
Cover: Synthetic Rubber

Blue colour

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

*Validated to Parker GHS

PERPETUITY



# Part Number	Hose I.D.		Hose R.O.D	Hose O.D	Working Pressure		Minimum Bend Radius		Approx. Weight	
	inch	mm	mm	mm	psi	MPa	inch	mm	lbs/ft	kg/m
465PPT-4PM	1/4	6.4	11.3	13.1	6520	45.0	1.77	45.0	0.22	0.32
465PPT-5PM	5/16	7.9	12.9	14.7	5800	40.0	2.17	55.0	0.26	0.38
465PPT-6PM	3/8	9.5	15.0	16.8	5290	36.5	2.56	65.0	0.27	0.40
465PPT-8PM	1/2	12.7	18.6	20.4	5070	35.0	3.15	80.0	0.38	0.56
465PPT-10PM	5/8	15.9	22.7	24.7	4350	30.0	3.54	90.0	0.50	0.74
465PPT-12PM	3/4	19.1	27.1	29.3	4350	30.0	4.72	120.0	0.70	1.04
465PPT-16PM	1	25.4	33.7	35.9	3260	22.5	6.30	160.0	0.91	1.34

Construction:

Inner tube - Synthetic Rubber

Reinforcement - Two braid steel wire.

Outer cover - Synthetic Rubber

Temp. Range :

- 40°C to + 120°C

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	MPa	inch	mm	lbs/ft	kg/m
PFPM-4PM	1/4	6.4	11.5	13.2	5800	40.0	2.0	50	0.20	0.30
PFPM-5PM	5/16	7.9	13.8	15.4	5100	35.0	2.1	55	0.26	0.39
PFPM-6PM	3/8	9.5	15.8	17.4	4800	33.0	2.4	60	0.33	0.49
PFPM-8PM	1/2	12.7	18.2	19.9	4000	27.5	3.5	90	0.34	0.51
PFPM-10PM	5/8	15.9	21.9	23.5	4000	27.5	4.0	100	0.48	0.71
PFPM-12PM	3/4	19.0	27.0	30.1	4000	27.5	6.0	150	0.74	1.10
PFPM-16PM	1	25.4	35.0	38.2	3600	25.0	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

Application : Petroleum base hydraulic fluids and lubricating oils.

Inner Tube : Synthetic Rubber
Reinforcement : Two special high tensile steel wire braid.

Cover : Synthetic Rubber

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

Impulse Test : Tested upto 5,00,000 cycles.

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	MPa	inch	mm	lbs/ft	kg/m
EN857PM-4PM	1/4	6.4	10.2	13.0	3265	22.5	2.9	75	0.13	0.19
EN857PM-5PM	5/16	7.9	11.5	14.0	3120	21.5	3.3	85	0.14	0.21
EN857PM-6PM	3/8	9.5	13.6	16.4	2610	18.0	3.5	90	0.17	0.26
EN857PM-8PM	1/2	12.7	17.0	19.5	2320	16.0	5.1	130	0.24	0.35
EN857PM-10PM	5/8	15.9	20.4	22.5	1885	13.0	5.9	150	0.30	0.45
EN857PM-12PM	3/4	19.0	23.8	26.2	1525	10.5	7.0	180	0.36	0.54
EN857PM-16PM	1	25.4	31.3	34.0	1275	8.8	9.0	230	0.54	0.80

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

Application : Petroleum base hydraulic fluids and lubricating oils.

Inner Tube : Synthetic Rubber
Reinforcement : One high tensile steel wire braid.

Cover : Synthetic Rubber.

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

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	MPa	inch	mm	lbs/ft	kg/m
401-4	1/4	6.4	9.7	11.6	2170	15.0	2.0	50	0.09	0.14
401-5	5/16	7.9	11.5	13.1	1740	12.0	2.4	60	0.12	0.18
401-6	3/8	9.5	13.1	14.8	1450	10.0	2.6	65	0.14	0.21
401-8	1/2	12.7	16.5	18.6	1450	10.0	3.0	75	0.20	0.29

Application : Petroleum base hydraulic fluids and lubricating oils.

Inner Tube : Synthetic Rubber
Reinforcement : One wire braid.

Cover : Synthetic Rubber.

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

KISAN TROLLEY 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	MPa	inch	mm	lbs/ft	kg/m
KTPM-6PM	3/8	9.5	15.1	17.4	1740	12.0	5.0	130	0.21	0.31
KTPM-8PM	1/2	12.7	18.3	20.3	1740	12.0	7.0	180	0.26	0.38

Application : Petroleum base hydraulic fluids and lubricating oils.

Inner Tube : Synthetic Rubber

Reinforcement : One wire braid.

Cover : Synthetic Rubber.

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

SLIM HOLE HOSE (3 Wire)



# Part Number	Hose I.D		Hose O.D	Working Pressure		Minimum Bend Radius		Approx. Weight	
	inch	mm	mm	psi	MPa	inch	mm	lbs/ft	kg/m
3WIREPM-40PM	2-1/2	63.5	86.0	1500	10.3	30.0	762	3.42	5.05

Application : Designed for rotary hole on oil rigs and hydraulic applications.

Inner Tube : Synthetic oil resistant rubber

Reinforcement : Three braid high tensile steel wire

Cover : Oil & abrasion resistant synthetic rubber

Temp. Range : -40°F to +250°F (-40°C to +121°C)

SLIM HOLE HOSE (4 Wire)



# Part Number	Hose I.D		Hose O.D	Working Pressure		Minimum Bend Radius		Approx. Weight	
	inch	mm	mm	psi	MPa	inch	mm	lbs/ft	kg/m
4WIREPM-40PM	2-1/2	63.5	86.0	2600	18.0	30.0	762	4.37	6.45
4WIREPM-48PM	3	76.2	99.1	1375	9.5	43.5	1105	4.55	6.72

Application : Designed for rotary hole on oil rigs and hydraulic applications.

Inner Tube : Synthetic oil resistant rubber

Reinforcement : Four braid high tensile steel wire

Cover : Oil & abrasion resistant synthetic rubber

Temp. Range : -40°F to +250°F (-40°C to +121°C)

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	MPa	inch	mm	lbs/ft	kg/m
462PM-4PM	1/4	6.4	11.2	13.6	5800	40.0	3.0	75	0.20	0.30
462PM-5PM	5/16	7.9	12.7	15.2	5075	35.0	3.3	85	0.24	0.35
462PM-6PM	3/8	9.5	15.0	17.4	4785	33.0	3.5	90	0.28	0.41
462PM-8PM	1/2	12.7	18.3	20.9	3990	27.5	5.1	130	0.34	0.50
462PM-10PM	5/8	15.9	21.4	24.0	3625	25.0	6.7	170	0.48	0.71
462PM-12PM	3/4	19.0	25.5	27.7	3120	21.5	7.4	200	0.54	0.81
462PM-16PM	1	25.4	33.4	35.6	2395	16.5	9.8	250	0.82	1.22

Application : Petroleum base hydraulic fluids and lubricating oils.

Inner Tube : Synthetic Rubber
Reinforcement : Two braid steel wire.

Cover : Synthetic Rubber

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

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	MPa	inch	mm	lbs/ft	kg/m
MH174PM-4PM	1/4	6.4	12.7	17.0	6525	45.0	4.0	100	0.31	0.46
MH174PM-6PM	3/8	9.5	17.0	21.1	5510	38.0	5.1	130	0.46	0.68
MH174PM-8PM	1/2	12.7	21.1	26.4	5250	36.2	5.9	150	0.64	0.95
MH174PM-10PM	5/8	15.9	24.5	29.8	4060	28.0	7.5	190	0.73	1.08
MH174PM-12PM	3/4	19.0	28.3	33.7	4000	27.6	9.0	230	0.97	1.45
MH174PM-16PM	1	25.4	35.3	40.7	3120	21.5	11.8	300	1.15	1.71
MH174PM-20PM	1-1/4	31.8	41.4	47.5	2495	17.2	15.0	380	1.61	2.40
MH174PM-24PM	1-1/2	38.1	48.0	54.1	2120	14.6	17.7	450	1.81	2.70
MH174PM-32PM	2	50.8	60.7	66.8	1625	11.2	23.6	600	2.35	3.50

Application : Petroleum base hydraulic fluids and lubricating oils.

Inner Tube : Synthetic Rubber
Reinforcement : Two high tensile steel wire braid.

Cover : Synthetic Rubber-flame resistant.

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

Impulse Test : Tested upto 1,00,000 cycles.

* Conforms to British Coal 174-1992 specifications.

SLIMPAC

Hydraulic
SAE 100R16



# Part Number	Hose I.D.		Hose R.O.D	Hose O.D	Working Pressure		Minimum Bend Radius		Approx. Weight	
	inch	mm	mm	mm	psi	MPa	inch	mm	lbs/ft	kg/m
431PM-4PM	1/4	6.4	11.9	13.7	5000	35.0	2.0	51	0.19	0.28
431PM-5PM	5/16	7.9	12.9	15.0	4250	29.3	2.2	57	0.20	0.30
431PM-6PM	3/8	9.5	15.4	17.5	4000	28.0	2.5	64	0.26	0.38
431PM-8PM	1/2	12.7	18.1	20.6	3500	24.5	3.5	89	0.34	0.51
431PM-10PM	5/8	15.9	22.1	24.1	2750	19.0	4.0	102	0.40	0.60
431PM-12PM	3/4	19.0	25.6	27.9	2250	15.5	4.8	121	0.54	0.80
431PM-16PM	1	25.4	32.4	34.6	2000	14.0	6.0	152	0.74	1.10
431PM-20PM	1-1/4	31.8	39.6	42.6	1625	11.3	8.2	210	1.01	1.50

Application : Petroleum base hydraulic fluids and lubricating oils.

Inner Tube : Synthetic rubber.
Reinforcement : Two braid steel wire.

Cover : Synthetic rubber.

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

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	MPa	inch	mm	lbs/ft	kg/m
451PM-4PM	1/4	6.4	10.2	12.2	3045	21.0	2.0	50	0.12	0.18
451PM-5PM	5/16	7.9	11.7	13.9	3045	21.0	2.1	55	0.13	0.20
451PM-6PM	3/8	9.5	13.8	15.8	3045	21.0	2.5	65	0.20	0.30
451PM-8PM	1/2	12.7	16.4	20.1	3045	21.0	3.5	90	0.31	0.46
451PM-10PM	5/8	15.9	22.1	23.9	3045	21.0	4.1	105	0.47	0.70
451PM-12PM	3/4	19.0	25.6	27.7	3045	21.0	4.9	125	0.60	0.90
451PM-16PM	1	25.4	34.6	37.6	3045	21.0	5.9	150	0.81	1.20

Application : Petroleum base hydraulic fluids and lubricating oils.

Inner Tube : Synthetic Rubber
Reinforcement : One or Two braid steel wire.

Cover : Synthetic Rubber

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

540N - General Hydraulic Hose

MEETS OR EXCEEDS SAE 100R7



# Part Number	Hose I.D.		Hose O.D	Working Pressure		Minimum Bend Radius		Vac. Rating	Approx. Weight	
	inch	mm	mm	psi	MPa	inch	mm	Hg./73°C (Inch)	lbs/ft	kg/m
540N-4	1/4	6	13	2750	19.0	1.5	38	28.0	0.07	0.10
540N-5	5/16	8	15	2500	17.2	1.8	44	28.0	0.07	0.10
540N-6	3/8	10	17	2250	15.5	2.0	51	28.0	0.09	0.13
540N-8	1/2	13	21	2000	13.8	3.0	76	28.0	0.13	0.19
540N-12	3/4	19	27	1250	8.6	6.0	152	28.0	0.17	0.25

Also available in Non conductive (Max electrical leakage dosen't exceed 50 µA when subjected to 37.5KV for 5 mins)

Special Feature: Greater range of fluid compatibility than SAE 100 R1 hose

Application: Hydraulic & Pneumatic systems. Excellent chemical compatibility, wide temperature range, agricultural spraying.

Urethane foam mixers, robotics, fire resistant fluid and hot water

Construction:

Tube: Nylon

Reinforcement: Fiber

Cover: Matte finish Urethane Perforated Black cover

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

Vacuum Rating: 28 inch Hg

520N - General Hydraulic Hose

MEETS OR EXCEEDS SAE 100R8



# Part Number	Hose I.D.		Hose O.D	Working Pressure		Minimum Bend Radius		Vac. Rating	Approx. Weight	
	inch	mm	mm	psi	MPa	inch	mm	Hg./73°C (Inch)	lbs/ft	kg/m
520N-4	1/4	6	13	5000	34.5	2.0	51	28.0	0.07	0.10
520N-5	5/16	8	15	4500	31.0	2.5	64	28.0	0.08	0.12
520N-6	3/8	10	17	4000	27.6	2.5	64	28.0	0.09	0.13
520N-8	1/2	13	21	3500	24.1	4.0	102	28.0	0.14	0.20
520N-12	3/4	19	27	2750	19.0	6.0	152	28.0	0.17	0.25

Also available in Non conductive (Max electrical leakage dosen't exceed 50 µA when subjected to 37.5KV for 5 mins)

Special Feature: Greater range of fluid compatibility than SAE 100 R2 hose

Application: Hydraulic & Pneumatic systems. Excellent chemical compatibility, wide temperature range, agricultural spraying. Urethane foam mixers, robotics, fire resistant fluid and hot water

Construction:

Tube: Nylon

Reinforcement: Fiber

Cover: Matte finish Urethane Perforated Black cover

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

Vacuum Rating: 28 inch Hg

SUPERJACK

Hydraulic



# Part Number	Hose I.D.		Hose R.O.D mm	Hose O.D mm	Working Pressure		Minimum Bend Radius		Approx. Weight	
	inch	mm			psi	MPa	inch	mm	lbs/ft	kg/m
JKPM-4PM	1/4	6.4	12.7	14.8	10000	69.0	4.0	102	0.26	0.39
JKPM-6PM	3/8	9.5	16.7	18.8	10000	69.0	5.0	127	0.36	0.53

Inner Tube : Synthetic Rubber
Reinforcement : Two braided steel wire.
Cover : Synthetic Rubber
Temp. Range : -40°F to +212°F
 (-40°C to +100°C)

SAE 100R5R

Hydraulic



# Part Number	Hose I.D.		Hose O.D mm	Working Pressure		Minimum Bend Radius		Approx. Weight	
	inch	mm		psi	MPa	inch	mm	lbs/ft	kg/m
R5RPM-4PM	3/16	5.0	13.0	3000	20.7	2.9	75	0.15	0.23
R5RPM-5PM	1/4	6.4	14.4	3000	20.7	3.4	86	0.17	0.26
R5RPM-6PM	5/16	7.9	17.2	2250	15.5	4.0	102	0.24	0.35
R5RPM-8PM	13/32	10.3	19.5	2000	13.8	4.6	117	0.27	0.40
R5RPM-10PM	1/2	12.7	23.4	1750	12.1	5.5	140	0.38	0.56
R5RPM-12PM	5/8	15.9	27.4	1500	10.3	6.5	165	0.44	0.66
R5RPM-16PM	7/8	22.2	31.4	800	5.5	7.4	187	0.45	0.67
R5RPM-20PM	1-1/8	28.7	38.1	625	4.3	9.0	229	0.54	0.80
R5RPM-24PM	1-3/8	34.9	44.5	500	3.4	10.5	267	0.72	1.07
R5RPM-32PM	1-13/16	46.0	56.5	350	2.4	13.2	337	0.99	1.48
R5RPM-38PM	2-3/8	60.3	73.0	350	2.4	21.0	610	1.36	2.02

Application : Petroleum base hydraulic fluids, and lubricating oils.
Inner Tube : Synthetic rubber.
Reinforcement : One fiber braid and one steel wire braid.
Cover : Synthetic rubber.
Temp. Range : -40°F to +212°F
 (-40°C to +100°C)

EN 854 R3

Hydraulic



# Part Number	Hose I.D.		Hose O.D mm	Working Pressure		Minimum Bend Radius		Approx. Weight	
	inch	mm		psi	MPa	inch	mm	lbs/ft	kg/m
601PM-4PM	1/4	6.4	14.3	1250	8.6	3.0	76	0.11	0.17
601PM-5PM	5/16	7.9	17.5	1200	8.3	4.0	102	0.16	0.24
601PM-6PM	3/8	9.5	19.0	1125	7.8	4.0	102	0.19	0.28
601PM-8PM	1/2	12.7	23.8	1000	6.9	5.0	127	0.32	0.47
601PM-10PM	5/8	15.9	27.0	875	6.0	5.5	140	0.37	0.55
601PM-12PM	3/4	19.0	31.8	750	5.2	6.0	152	0.42	0.63
601PM-16PM	1	25.4	38.1	565	3.9	8.0	203	0.57	0.85
601PM-20PM	1-1/4	31.8	44.5	375	2.6	10.0	254	0.74	1.10
601PM-24PM	1-1/2	38.1	50.8	250	1.7	12.0	306	0.82	1.22
601PM-32PM	2	50.8	64.0	215	1.5	16.1	410	0.91	1.35

Application : Petroleum base hydraulic fluids and lubricating oils.
Inner Tube : Synthetic rubber.
Reinforcement : Two fiber braids.
Cover : Synthetic rubber.
Temp. Range : -40°F to +212°F
 (-40°C to +100°C)

SAE 100R4

Hydraulic

Suction and Return line



# Part Number	Hose I.D.		Hose O.D. mm	Working Pressure		Minimum Bend Radius		Approx. Weight	
	inch	mm		psi	MPa	inch	mm	lbs/ft	kg/m
881PM-12PM	3/4	19.0	29.0	305	2.1	1.6	40	0.32	0.49
881PM-16PM	1	25.4	35.0	250	1.7	2.2	55	0.42	0.62
881PM-20PM	1-1/4	31.8	42.0	205	1.4	2.8	70	0.53	0.79
881PM-24PM	1-1/2	38.0	50.0	145	1.0	3.2	80	0.75	1.12
881PM-32PM	2	50.8	62.0	145	1.0	3.9	100	0.89	1.33
881PM-40PM	2-1/2	63.5	75.0	145	1.0	6.7	170	-	-
881PM-48PM	3	76.2	88.0	145	1.0	8.9	225	-	-

Application : Petroleum base hydraulic fluids and lubricating oils.
Inner Tube : Synthetic rubber.
Reinforcement : Multiple layers of fiber braid and one helical wire.
Cover : Synthetic rubber.
Temp. Range: -40° F to +212° F (-40°C to +100°C)

EN 854 R6 / SAE100R6

Hydraulic



# Part Number	Hose I.D.		Hose O.D. mm	Working Pressure		Minimum Bend Radius		Approx. Weight	
	inch	mm		psi	MPa	inch	mm	lbs/ft	kg/m
SAE100R6PM-4PM	1/4	6.4	12.7	400	2.8	2.5	64	0.09	0.13
SAE100R6PM-5PM	5/16	7.9	14.3	400	2.8	3.0	76	0.11	0.16
SAE100R6PM-6PM	3/8	9.5	15.9	400	2.8	3.0	76	0.12	0.18
SAE100R6PM-8PM	1/2	12.7	19.8	400	2.8	4.0	102	0.17	0.25
SAE100R6PM-10PM	5/8	15.9	23.0	350	2.4	5.0	127	0.20	0.30
SAE100R6PM-12PM	3/4	19.0	26.6	300	2.1	6.0	152	0.23	0.34
SAE100R6PM-16PM	1	25.4	32.5	190	1.3	9.1	230	0.31	0.46

Application : Low pressure hydraulic oils.
Inner Tube : Synthetic Rubber
Reinforcement : One synthetic textile braid.
Cover : Synthetic Rubber.
Temp. Range : -40°F to +212°F (-40°C to +100°C.)

1TE

EN 854



# Part Number	Hose I.D.		Hose O.D. mm	Working Pressure		Minimum Bend Radius	
	inch	mm		psi	MPa	inch	mm
1TEPM-4PM	1/4	6.0	12.4	360	2.5	1.8	45
1TEPM-5PM	5/16	8.0	13.9	290	2.0	2.6	65
1TEPM-6PM	3/8	10.0	15.5	290	2.0	3.0	75
1TEPM-8PM	1/2	12.0	18.7	230	1.6	3.5	90
1TEPM-10PM	5/8	16.0	22.9	230	1.6	4.5	115
1TEPM-12PM*	3/4	19.0	26.0	175	1.2	6.5	165
1TEPM-16PM*	1	25.4	33.4	175	1.2	8.7	220

Application: Low pressure hydraulics
Construction
Inner tube: Synthetic Rubber
Reinforcement: One synthetic textile braid
Cover: Synthetic Rubber

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

* -12 & -16 not covered in EN854.

2TE

EN 854



# Part Number	Hose I.D.		Hose O.D. mm	Working Pressure		Minimum Bend Radius	
	inch	mm		psi	MPa	inch	mm
2TEPM-4PM	1/4	6.0	13.4	1090	7.5	1.6	40
2TEPM-5PM	5/16	8.0	14.9	985	6.8	2.0	50
2TEPM-6PM	3/8	10.0	16.5	915	6.3	2.4	60
2TEPM-8PM	1/2	12.0	19.7	840	5.8	2.8	70
2TEPM-10PM	5/8	16.0	23.9	725	5.0	3.5	90
2TEPM-12PM	3/4	19.0	27.0	655	4.5	4.3	110
2TEPM-16PM	1	25.4	34.4	580	4.0	5.9	150

Application: Petroleum base hydraulic fluids & lubricating oils.
Construction
Inner tube: Synthetic Rubber
Reinforcement: Two Fiber braids
Cover: Synthetic Rubber

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

3TE

EN 854



# Part Number	Hose I.D.		Hose O.D. mm	Working Pressure		Minimum Bend Radius	
	inch	mm		psi	MPa	inch	mm
3TEPM-4PM	1/4	6.0	14.4	2105	14.5	1.8	45
3TEPM-5PM	5/16	8.0	16.9	1885	13.0	2.2	55
3TEPM-6PM	3/8	10.0	18.5	1595	11.0	2.8	70
3TEPM-8PM	1/2	12.0	21.7	1350	9.3	3.3	85
3TEPM-10PM	5/8	16.0	25.9	1160	8.0	4.1	105
3TEPM-12PM	3/4	19.0	29.0	1015	7.0	5.1	130
3TEPM-16PM	1	25.4	35.9	800	5.5	5.9	150
3TEPM-20PM	1 1/4	31.8	42.3	650	4.5	7.5	190
3TEPM-24PM	1 1/2	38.1	49.6	580	4.0	9.4	240
3TEPM-32PM	2	50.8	62.3	480	3.3	11.8	300

Application: Petroleum base hydraulic fluids & lubricating oils.
Construction
Inner tube: Synthetic Rubber
Reinforcement: Two Fiber braids
Cover: Synthetic Rubber

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

AIRMASTER

EXCEEDS IS 446 : 1980 TYPE 3



# Part Number	Hose I.D.		Hose R.O.D. mm	Hose O.D. mm	Working Pressure		Minimum Bend Radius		Approx. Weight	
	inch	mm			psi	MPa	inch	mm	lbs/ft	kg/m
AMHPM-12PM	3/4	19.0	25.4	27.7	500	3.5	9.4	241	0.39	0.58
AMHPM-16PM	1	25.4	31.6	35.6	500	3.5	12.0	305	0.56	0.83
AMHPM-20PM	1-1/4	31.8	40.0	43.0	500	3.5	16.0	419	0.81	1.20
AMHPM-24PM	1-1/2	38.1	46.4	50.4	500	3.5	20.0	508	1.01	1.50
AMHPM-32PM	2	50.8	59.5	63.5	500	3.5	25.0	635	1.20	1.78

Application : High pressure rock drill and pneumatic service in drilling. Quarries, construction and general industry.
Inner Tube : Heat and oil mist resistant synthetic rubber.
Reinforcement : One high tensile steel wire braid.
Cover : Synthetic Rubber
Temp. Range : -31°F to +212°F
 (-35°C to +100°C)

AIR / WATER HOSE

Exceeds IS 446 Type 1 and 444 Type 2

# Part Number	Hose I.D.		Hose O.D. mm	Working Pressure		Minimum Bend Radius	
	inch	mm		psi	MPa	inch	mm
WHPM-8PM	1/2	12.5	20	170	1.17	4.92	125
WHPM-12PM	3/4	19	28.5	170	1.17	7.09	180
WHPM-16PM	1	25.4	35.5	170	1.17	11.81	300



Construction:
Inner tube: Synthetic Rubber
Reinforcement: One Textile braid
Outer: Synthetic Rubber

Service Temp: -30°C to +82°C

PNEUMATIC TOOL HOSE

Exceeds IS 446 Type 2

# Part Number	Hose I.D.		Hose O.D. mm	Working Pressure		Minimum Bend Radius	
	inch	mm		psi	MPa	inch	mm
AHPM-4PM	1/4	6.4	12.7	200	1.38	-	-
AHPM-5PM	5/16	7.9	14.3	200	1.38	-	-
AHPM-6PM	3/8	10.0	16.7	200	1.38	-	-
AHPM-8PM	1/2	12.5	20	200	1.38	4.92	125
AHPM-12PM	3/4	19	28.5	200	1.38	7.09	180
AHPM-16PM	1	25.4	33.5	200	1.38	11.81	300



Construction:
Inner tube: Synthetic Rubber
Reinforcement: One Textile braid
Outer: Synthetic Rubber

Service Temp: -30°C to +82°C

LPG HOSE

BS 4089:1989 TYPE 1

# Part Number	Hose I.D.		Hose O.D. mm	Working Pressure		Minimum Bend Radius		Approx. Weight	
	inch	mm		psi	MPa	inch	mm	lbs/ft	kg/m
LPGPM-6PM	3/8	9.5	19.6	362	2.5	4.7	120	0.28	0.42
LPGPM-8PM	1/2	12.7	22.8	362	2.5	5.9	150	0.33	0.48
LPGPM-10PM	5/8	15.9	26.0	362	2.5	7.0	185	-	-
LPGPM-12PM	3/4	19.0	30.1	362	2.5	8.8	225	0.54	0.80
LPGPM-16PM	1	25.4	37.9	362	2.5	11.8	300	0.73	1.08
LPGPM-20PM	1-1/4	31.8	46.0	362	2.5	14.9	380	0.91	1.35
LPGPM-24PM	1-1/2	38.1	52.4	362	2.5	17.7	450	1.06	1.56
LPGPM-32PM	2	50.8	66.7	362	2.5	23.6	600	1.42	2.1



Application : Transfer of LPG in liquid or vapour form which is unvented between operations (permanently filled with liquid or vapour) including automotive.

Inner Tube : Synthetic Rubber
Reinforcement : One high tensile steel wire braid.

Cover : Synthetic rubber.

Temp. Range : -20°F to +113°F (-20°C to +45°C)

FUEL DISPENSING HOSE - I

BS EN 1360 TYPE 3 : **ATEX Approved***



# Part Number	Hose I.D.		Hose R.O.D mm	Hose O.D mm	Working Pressure		Minimum Bend Radius		Approx. Weight	
	inch	mm			psi	MPa	inch	mm	lbs/ft	kg/m
BSPHPM-10PM BLACK	5/8	16.0	-	25.3	232	1.6	3.0	80	0.36	0.53
BSPHPM-12PM BLACK	3/4	19.0	24.2	26.4	232	1.6	4.0	100	0.38	0.56
BSPHPM-14PM BLACK	-	21.0	-	28.5	232	1.6	5.0	125	0.44	0.65
BSPHPM-16PM BLACK	1	25.4	30.2	32.5	232	1.6	6.0	150	0.48	0.71

Application : Fuel dispensing.
Inner Tube : Synthetic Rubber
Reinforcement : One wire braid.
Cover : Synthetic Rubber.
Temp. Range : -40°F to +131°F (-40°C to +55°C)

* For other color hose please change the suffix accordingly hose colors available in green, blue, red, yellow

PDH manufactured as per BS EN 1360-Type 3 : 2005

Confirms to Pressure Equipment Directive 97/23/EC (PED)

Confirms to Council Directive 94/9/EC of (ATEX) of 23 March 1994 category 2 non electrical equipments

*Factory made Hose assemblies only

FUEL DISPENSING HOSE - II

BS 3395 TYPE 3C



# Part Number	Hose I.D.		Hose R.O.D mm	Hose O.D mm	Working Pressure		Minimum Bend Radius		Approx. Weight	
	inch	mm			psi	MPa	inch	mm	lbs/ft	kg/m
BSPHPM-12PM	3/4	19.0	28.3	32.0	125	0.9	6.0	150	0.58	0.86
BSPHPM-16PM	1	25.4	34.6	38.0	125	0.9	8.0	200	0.75	1.11

Application : Fuel dispensing.
Inner Tube : Synthetic Rubber
Reinforcement : One wire braid.
Cover : Synthetic Rubber.
Temp. Range : -40°F to +131°F (-40°C to +55°C)

FUEL HOSE - SOFT WALL

EXCEEDS IS 2396 : 1988



# Part Number	Hose I.D.		Hose O.D mm	Working Pressure		Minimum Bend Radius	
	inch	mm		psi	MPa	inch	mm
ISPHPM-12PM	3/4	19.0	32.0	116	0.8	6.0	150
ISPHPM-16PM	1	25.4	38.0	116	0.8	8.0	200

Application : Fuel dispensing.
Inner Tube : Synthetic Rubber
Reinforcement : Two textile braids & copper wire
Temp. Range : -40°F to +131°F (-40°C to +55°C)

THERMIC STEAM - I

IS 10655:1999 TYPE 2 / BS 5342



# Part Number	Hose I.D.		Hose R.O.D	Hose O.D	Working Pressure		Minimum Bend Radius		Approx. Weight	
	inch	mm	mm	mm	psi	MPa	inch	mm	lbs/ft	kg/m
SH1PM-8PM	1/2	12.7	20.5	24.7	150	1.0	7.0	178	0.34	0.50
SH1PM-10PM	5/8	15.9	-	27.9	150	1.0	8.0	200	0.47	0.70
SH1PM-12PM	3/4	19.0	27.5	31.4	150	1.0	9.5	240	0.50	0.75
SH1PM-16PM	1	25.4	34.6	38.0	150	1.0	12.0	300	0.65	0.97
SH1PM-20PM	1-1/4	31.8	41.2	47.2	150	1.0	16.5	420	1.08	1.60
SH1PM-24PM	1-1/2	38.1	47.0	53.5	150	1.0	20.0	500	1.21	1.80
SH1PM-32PM	2	50.8	61.0	66.8	150	1.0	25.0	635	1.55	2.30

Application : Steam at high temperature.

Inner Tube : Steam and heat resistant EPDM rubber.

Reinforcement : One high tensile steel wire braid.

Cover : Synthetic Rubber

Temp. Range : Upto 363°F (Upto 184°C)

THERMIC STEAM - II

IS 10655:1999 TYPE 3 / BS 5342



# Part Number	Hose I.D.		Hose R.O.D	Hose O.D	Working Pressure		Minimum Bend Radius		Approx. Weight	
	inch	mm	mm	mm	psi	MPa	inch	mm	lbs/ft	kg/m
SH2PM-8PM	1/2	12.7	21.8	26.7	232	1.6	7.0	178	0.48	0.72
SH2PM-10PM	5/8	15.9	-	29.9	232	1.6	8.0	200	0.60	0.90
SH2PM-12PM	3/4	19.0	28.9	33.4	232	1.6	9.5	240	0.67	1.00
SH2PM-16PM	1	25.4	35.8	40.0	232	1.6	12.0	300	0.77	1.15
SH2PM-20PM	1-1/4	31.8	42.8	50.0	232	1.6	16.5	419	1.21	1.80
SH2PM-24PM	1-1/2	38.1	48.6	56.7	232	1.6	20.0	500	1.55	2.30
SH2PM-32PM	2	50.8	62.6	70.0	232	1.6	25.0	635	1.68	2.50

Application : Steam at very high temperature.

Inner Tube : Steam and heat resistant EPDM rubber.

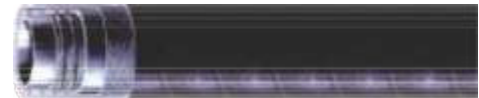
Reinforcement : Two high tensile steel wire braids.

Cover : Synthetic Rubber

Temp. Range : Upto 401°F (Upto 205°C)

CEMENT MASTER

MATERIAL HANDLING HOSE



# Part Number	Hose I.D.		Hose O.D	Working Pressure		Minimum Bend Radius		Approx. Weight	
	inch	mm	mm	psi	MPa	inch	mm	lbs/ft	kg/m
7363R4PM-64PM	4.0	101.6	119.0	50	0.35	48.0	1220	3.04	4.48

Application : Low pressure pneumatic transfer of bulk dry cement and pneumatic/Air feed line to the container.

Inner Tube : Synthetic Rubber

Reinforcement : Multiple layers of fabric and one helical wire

Cover : Synthetic Rubber

Temp. Range : Max 149° F (Max 65° C)

701

Hydraulic

EN 856 4SP



# Part Number	Hose I.D.		Hose R.O.D	Hose O.D	Working Pressure		Minimum Bend Radius		Approx. Weight	
	inch	mm	mm	mm	psi	MPa	inch	mm	lbs/ft	kg/m
701MSHA-6	3/8	9.5	17.5	21.4	6500	45.0	7.0	180	0.48	0.71
701MSHA-8	1/2	12.7	20.2	24.6	6000	41.5	9.0	230	0.60	0.90
701MSHA-10	5/8	15.9	23.8	28.0	5000	35.0	10.0	250	0.77	1.15
701MSHA-12	3/4	19.0	28.2	32.0	5000	35.0	11.8	300	1.04	1.55
701MSHA-16	1	25.4	35.3	39.5	4000	27.5	13.3	340	1.40	2.08

Application : Petroleum base hydraulic fluids and lubricating oils.

Inner Tube : Synthetic rubber.

Reinforcement : Four spiral steel wire.

Cover : Synthetic rubber.

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

Impulse Test :

Specified - 4,00,000 cycles. Tested upto - 8,00,000 cycles.

* Impulse test conducted with Parker Fittings.

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	MPa	inch	mm	lbs/ft	kg/m
731MSHA-12	3/4	19.0	28.4	32.0	6000	42.0	11.0	280	1.06	1.58
731MSHA-16	1	25.4	35.2	39.0	5500	38.0	13.5	340	1.36	2.03
731MSHA-20	1-1/4	31.8	41.9	45.3	4700	32.5	18.0	460	1.81	2.70
731MSHA-24	1-1/2	38.1	48.8	53.3	4200	29.0	22.0	560	2.21	3.29
731PMMSHA-32PM*	2	50.8	63.2	68.0	3600	25.0	27.0	700	3.09	4.60

Application : Petroleum base hydraulic fluids and lubricating oils.
Inner Tube : Synthetic rubber.
Reinforcement : Four spiral steel wire.
Cover : Synthetic rubber
Temp. Range: -40°F to +212°F (-40°C to +100°C)
Impulse Test :
 Specified - 4,00,000 cycles.
 Tested upto - 8,00,000 cycles.

* Under validation with Parker fittings / specification

* Impulse test conducted with Parker Fittings.

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	MPa	inch	mm	lbs/ft	kg/m
721MSHA-6	3/8	9.5	17.2	20.0	4000	28.0	2.5	65	0.47	0.70
721MSHA-8	1/2	12.7	20.7	24.0	4000	28.0	3.5	90	0.56	0.84
721MSHA-10	5/8	15.9	24.6	27.2	4000	28.0	4.0	100	0.70	1.04
721MSHA-12	3/4	19.0	27.7	31.0	4000	28.0	4.7	120	0.94	1.40
721MSHA-16	1	25.4	34.9	38.0	4000	28.0	6.0	150	1.28	1.90
721MSHA-20	1-1/4	31.8	43.9	46.2	3000	21.0	8.2	210	1.68	2.50
721MSHA-24	1-1/2	38.1	50.4	53.3	2500	17.5	10.0	250	1.93	2.87
721PMMSHA-32PM*	2	50.8	63.6	65.9	2500	17.5	25.0	635	2.76	4.10

Application : Petroleum base hydraulic fluids, and lubricating oils.
Inner Tube : Synthetic rubber.
Reinforcement : Four spiral steel wire.
Cover : Synthetic rubber.
Temp. Range: -40°F to +257°F (-40°C to +125°C)
Impulse Test :
 Specified - 5,00,000 cycles.
 Tested upto - 10,00,000 cycles.

* Under validation with Parker fittings / specification

* Impulse test conducted with Parker Fittings.

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	MPa	inch	mm	lbs/ft	kg/m
781MSHA-12	3/4	19.0	29.0	31.9	5000	35.0	9.5	240	1.04	1.55
781MSHA-16	1	25.4	35.6	38.5	5000	35.0	12.0	300	1.40	2.08
781MSHA-20	1-1/4	31.8	46.8	50.0	5000	35.0	16.5	420	2.59	3.85
781MSHA-24	1-1/2	38.1	54.3	57.6	5000	35.0	20.0	500	3.23	4.81
781PMMSHA-32PM*	2	50.8	68.1	70.9	5000	35.0	25.0	630	4.48	6.67

Application : Petroleum base hydraulic fluids and lubricating oils.
Inner Tube : Synthetic rubber.
Reinforcement : Four or Six spiral steel wire.
Cover : Synthetic rubber .
Temp. Range: -40°F to +257°F (-40°C to +125°C)
Impulse Test :
 Specified - 5,00,000 cycles.
 Tested upto - 10,00,000 cycles.

* Under validation with Parker fittings / specification

* Impulse test conducted with Parker Fittings.

SPIRAFLEX

Hydraulic
SAE 100 R15



# Part Number	Hose I.D.		Hose R.O.D	Hose O.D	Working Pressure		Minimum Bend Radius		Approx. Weight	
	inch	mm	mm	mm	psi	MPa	inch	mm	lbs/ft	kg/m
792MSHA-12	3/4	19.0	28.4	32.0	6000	41.4	10.5	267	1.08	1.60
792PMMSHA-16PM	1	25.4	35.2	38.5	6000	41.4	13.0	330	1.41	2.10
792PMMSHA-20PM	1-1/4	31.8	46.8	49.6	6000	41.4	17.5	445	2.62	3.90
792PMMSHA-24PM	1-1/2	38.1	54.3	57.1	6000	41.4	21.0	533	3.43	5.11

Application : Extremely high pressure, heavy duty, high impulse hydraulics

Inner Tube : Oil resistant Synthetic rubber.

Reinforcement : Four or Six high tensile steel wire spirals

Cover : Synthetic rubber.

Temp. Range : -40°F to +212°F continuous + 249°F Intermittent (-40°C to +100°C) continuous + 121°C Intermittent

Impulse Test :

Specified - 5,00,000 cycles.
Tested upto - 10,00,000 cycles.

SPIRABLAST 20K™

WATERBLAST



# Part Number	Hose I.D.		Hose R.O.D	Hose O.D	Working Pressure		Minimum Bend Radius		Approx. Weight	
	inch	mm	mm	mm	psi	MPa	inch	mm	lbs/ft	kg/m
SB20KPM-6PM	3/8	9.5	17.5	20.0	8000	55.1	7.1	180	-	-
SB20KPM-8PM	1/2	12.7	20.2	23.2	8000	55.1	9.5	240	-	-
SB20KPM-12PM	3/4	19.0	28.2	32.0	8000	55.1	9.8	250	-	-
SB20KPM-16PM	1	25.4	35.2	38.5	8000	55.1	13.4	340	-	-

Application : Ultra high pressure, water blast applications only (Not recommended for hydraulic applications)

Inner Tube : Synthetic rubber.

Reinforcement : Four high tensile steel wire spirals

Cover : Synthetic rubber.

Temp. Range : 32°F to +176°F (0°C to +80°C) continuous.

SPIRABLAST 25K™

WATERBLAST



# Part Number	Hose I.D.		Hose R.O.D	Hose O.D	Working Pressure		Minimum Bend Radius		Approx. Weight	
	inch	mm	mm	mm	psi	MPa	inch	mm	lbs/ft	kg/m
SB25KPM-6PM	3/8	9.5	17.5	21.2	10000	69.0	7.1	180	0.49	0.73
SB25KPM-8PM	1/2	12.7	20.2	24.4	10000	69.0	9.5	240	0.61	0.90
SB25KPM-12PM	3/4	19.0	28.4	32.0	10000	69.0	9.8	250	1.06	1.57
SB25KPM-16PM	1	25.4	35.2	38.3	10000	69.0	13.4	340	1.42	2.10

Application : Ultra high pressure, water blast applications only (Not recommended for hydraulic applications)

Inner Tube : Water and Oil resistant Synthetic rubber.

Reinforcement : Four high tensile steel wire spirals

Cover : Synthetic rubber - abrasion, ozone and weather resistant.

Temp. Range : 32°F to +176°F (0°C to +80°C) continuous.

SPIRABLAST 30K™

WATERBLAST



# Part Number	Hose I.D.		Hose R.O.D	Hose O.D	Working Pressure		Minimum Bend Radius		Approx. Weight	
	inch	mm	mm	mm	psi	MPa	inch	mm	lbs/ft	kg/m
SB30KPM-6PM	3/8	9.5	17.5	21.4	12000	83.0	7.1	180	0.66	0.97
SB30KPM-8PM	1/2	12.7	22.6	25.7	12000	83.0	9.5	240	0.77	1.13
SB30KPM-12PM	3/4	19.0	29.0	32.4	12000	83.0	9.8	250	1.15	1.69

Application : Ultra high pressure, water blast applications only (Not recommended for hydraulic applications)

Inner Tube : Water and Oil resistant Synthetic rubber.

Reinforcement : Four high tensile steel wire spirals

Cover : Synthetic rubber - abrasion, ozone and weather resistant.

Temp. Range : 32°Fto+176°F (0°C to+80°C) continuous.

SPIRABLAST 36K™

WATERBLAST



# Part Number	Hose I.D.		Hose R.O.D	Hose O.D	Working Pressure		Minimum Bend Radius		Approx. Weight	
	inch	mm	mm	mm	psi	MPa	inch	mm	lbs/ft	kg/m
SB36KPM-6PM	3/8	9.5	19.0	22.8	14500	100.0	7.9	200	0.70	1.03
SB36KPM-8PM	1/2	12.7	23.1	27.2	14500	100.0	11.9	300	0.90	1.33

Application : Ultra high pressure, water blast applications only (Not recommended for hydraulic applications)

Inner Tube : Water and Oil resistant Synthetic rubber.

Reinforcement : Four high tensile steel wire spirals

Cover : Synthetic rubber - abrasion, ozone and weather resistant.

Temp. Range : 32°Fto+176°F (0°C to+80°C) continuous.

SPIRABLAST 50K™

WATERBLAST



# Part Number	Hose I.D.		Hose R.O.D	Hose O.D	Working Pressure		Minimum Bend Radius		Approx. Weight	
	inch	mm	mm	mm	psi	MPa	inch	mm	lbs/ft	kg/m
SB50KPM-6PM	3/8	9.5	22.7	25.5	20000	138.0	7.9	200	-	-
SB50KPM-8PM	1/2	12.7	27.7	30.7	20000	138.0	11.9	300	1.52	2.25

Application : Ultra high pressure, water blast applications only (Not recommended for hydraulic applications)

Inner Tube : Water and Oil resistant Synthetic rubber.

Reinforcement : Four high tensile steel wire spirals

Cover : Synthetic rubber - abrasion, ozone and weather resistant.

Temp. Range : 32°Fto+176°F (0°C to+80°C) continuous.

3000 OG

# Part Number	Hose I.D.		Hose O.D	Working Pressure		Minimum Bend Radius	
	inch	mm	mm	psi	MPa	inch	mm
701PM-40PM	2-1/2	63.5	81.3	3000	20.7	30.0	762
701PM-48PM	3	76.2	96.0	3000	20.7	43.5	1105

Inner Tube : Synthetic resistant to oil & Oils with H2S

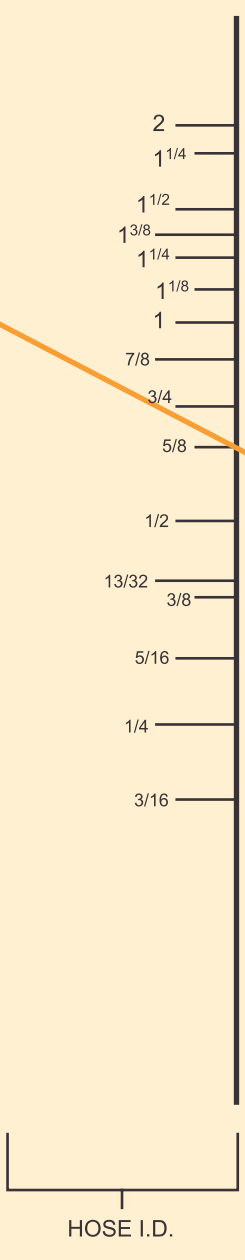
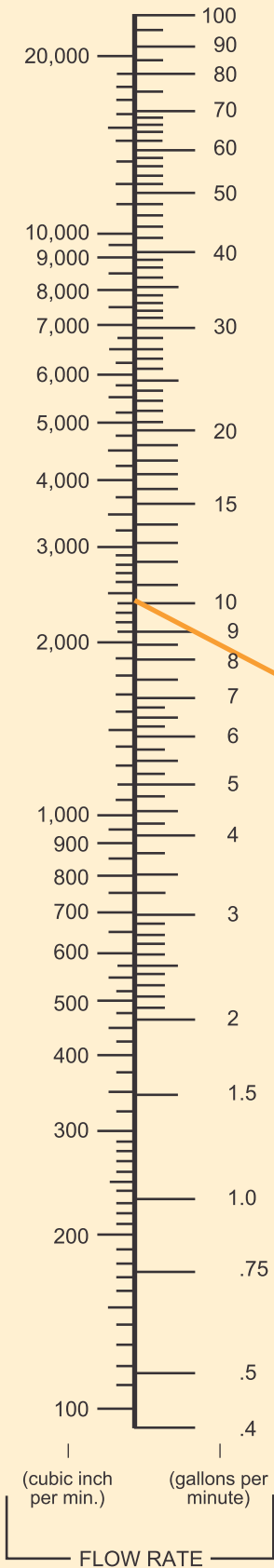
Reinforcement : 4Wire Spirals

Cover : Synthetic Rubber resistant to abrasion and black oil.

Temp. Range : -40°C to +121°C (-40°F to +250°F)

NOMOGRAM

Selecting Hose Style by Flow Capacity



Based on Formula

$$\text{AREA (sq.in.)} = \frac{\text{gpm} \times 0.3208}{\text{VELOCITY (fps)}}$$

RECOMMENDED VELOCITY RANGE FOR SUCTION LINES

RECOMMENDED VELOCITY RANGE FOR PRESSURE LINES



HOW TO USE THIS CHART : 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 centre column. If the straight edge passes through the scale between size listed, use the next larger I.D. hose.

EXAMPLE : The flow rate your system requires is 10 gallons per minute. Connect your straight edge from the 10 gallon per minute flow rate column to the recommended velocity range for pressure lines of 10 feet per second (fps). The straight edge intersects at 5/8, so the recommended hose I.D. is 5/8".

CONVERSION TABLE

	UNIT	CONVERSION UNIT	FACTOR
PRESSURE	1 pound per square-inch	bar	0.06895
	1 bar	psi	14.5035
	1 pound per square-inch	MPa	0.006895
	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
	1 inch	mm	25.4
	1 millimetre	in	0.03934
LENGTH	1 foot	m	0.3048
	1 metre	ft	3.28084
	1 square-inch	cm2	6.4516
AREA	1 cubic centimetre	cubic in	0.0610
	1 gallon (UK)	litr	4.54596
VOLUME	1 litre	gal (UK)	0.219976
	1 gallon (US)	litr	3.78533
	1 litre	gal (US)	0.264177
	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



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
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

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
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

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
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
Paraffin 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
Transformer 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 convenience, all rubber and / or thermoplastic products commonly called "hose" or "tubing" are called "Hose" in this safety guide. All assemblies made with Hose are called "Hose" 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, Fittings and Related Accessories that are being considered 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 or Fitting is suitable for any specific end use system. This safety guide does not analyze all technical parameters that must be considered in selecting a product. The user, through 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 Hose and Fittings for these or any other applications in which electrical conductivity or nonconductivity is a factor.

The electrical conductivity or nonconductivity of Hose and Fittings is dependent upon many factors and may be susceptible to change. These factors include but are not limited to the various materials used to make the Hose and the Fittings, Fitting finish (some Fitting finishes are electrically conductive while others are non-conductive), manufacturing methods (including moisture control), how the Fittings contact the Hose, age and amount of deterioration or damage or other changes, moisture content of the Hose at any particular time, and other factors. The following are considerations for electrically nonconductive and conductive Hose. For other applications consult the individual catalog pages and the appropriate industry or regulatory standards for proper selection.

2.1.1 Electrically Nonconductive Hose: Certain applications require that the Hose be nonconductive to prevent electrical current flow or to maintain electrical isolation. For 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 manufactures special Hose for certain applications that require electrically conductive Hose. Parker manufactures special Hose for conveying paint in airless paint spraying applications. This Hose is labeled "Electrically Conductive Airless Paint Spray Hose" on its layline and packaging. This Hose must be properly connected to the appropriate Parker Fittings and properly grounded in order to dissipate dangerous static charge buildup, which occurs in all airless paint spraying applications. Do not use any other Hose for airless paint spraying, even if electrically conductive. Use of any other Hose or failure to properly connect the Hose can cause a fire or an explosion resulting in death, personal injury, and property damage. Parker manufactures a special Hose for certain compressed natural gas ("CNG") applications where static electricity buildup may occur. Parker CNG Hose assemblies comply with 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 manufactures 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 pressure system must be below the

Safety Guide

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 than minimum bend radius, and cutting, any of which can cause premature Hose failure. Any Hose that has been kinked or bent to a radius smaller than the minimum bend radius, and any Hose that has been cut or is cracked or is otherwise damaged, should be removed and discarded.

2.12 Proper End Fitting: See instructions 3.2 through 3.5. These recommendations may be substantiated by testing to industry standards 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 the Hose 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 accidental 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 manufacturer's Hose or a Parker Hose on another manufacturer's Fitting unless (i) the engineering manager or chief engineer of the appropriate Parker division approves the Assembly in writing or that combination is expressly approved in the appropriate Parker literature for the specific Parker product, and (ii) the user verifies the Assembly and the application through analysis and testing. For Parker Hose that does not specify a Parker Fitting, the user is solely responsible for the selection of the proper Fitting and Hose Assembly procedures. See instruction 1.4. 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 manufacturer's Fitting with a Parker crimp or swage die unless authorized in writing by the engineering manager or chief engineer of the appropriate Parker division.

3.4 Parts: Do not use any Parker Fitting part (including but not limited to socket, shell, nipple, or insert) except with the correct Parker mating parts, in accordance with Parker published instructions, unless authorized in writing by the engineering manager or chief engineer of the appropriate Parker division.

3.5 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 significantly reduced without a continuing maintenance program. The severity of the application, risk potential from a possible Hose failure, and experience with any Hose failures in the application or in similar applications should determine the frequency of the inspection and the replacement for the Products so that Products are replaced before any failure occurs. A maintenance program must be established and followed by the user and, at minimum, must include instructions 4.2 through 4.7.

4.2 Visual Inspection Hose/Fitting: Any of the following conditions require immediate shut down and replacement of the Hose Assembly:

- Fitting slippage on Hose,;
- Damaged, cracked, cut or abraded cover (any reinforcement exposed);
- Hard, stiff, heat cracked, or charred Hose;
- Cracked, damaged, or badly corroded Fittings;

Safety Guide & MSDS Statement

- 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 Section (b) of the regulation. 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 Hannifin 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, GUARANTEE, OR REPRESENTATION OF ANY KIND WHATSOEVER. ALL OTHER WARRANTIES, INCLUDING BUT NOT LIMITED TO, MERCHANTABILITY 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 hereunder 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

Offer of Sale

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 or if Seller is liable for the collection of such tax, the amount thereof shall be in addition 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 specified 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 infringes any patent, trademark, copyright, trade dress, trade secret or any similar 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, floods, 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.

Notes

A series of horizontal dotted lines for writing notes.

Notes

A series of horizontal dotted lines for writing notes.

ATEX Certification



PED Certification





DET NORSKE VERITAS

MANAGEMENT SYSTEM CERTIFICATE

Certificate No. 04978-2006-AQ-IND-RvA Rev. 03

This is to certify that

**PARKER HANNIFIN INDIA PRIVATE LIMITED
FLUID CONNECTORS GROUP, INDIA**

at

Plot No.: 26/29, 18-19, 16A, Phase IV, Industrial Development Authority (IDA),
Patancheru, Dist. Medak - 502 319, Andhra Pradesh, 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 AND SPIRAL REINFORCED HOSE,
HOSE ASSEMBLIES FOR HYDRAULIC, PNEUMATIC AND
SPECIAL APPLICATIONS**

Initial Certification date:

24 October 2000

This Certificate is valid until:

23 October 2015

*The audit has been performed under the
supervision of:*

Venkata Reddy Alikepalli
Lead Auditor



Place and date of issue:

Chennai, 31 October 2012

for the Accredited Unit:

DET NORSKE VERITAS CERTIFICATION B.V.,
THE NETHERLANDS

Bhupalam Ajit
Management Representative

Lack of fulfilment of conditions as set out in the Certification Agreement & the annexure to this certificate may render this Certificate invalid.

DET NORSKE VERITAS CERTIFICATION B.V. Zwolseweg 1, 2994 LB Barendrecht, The Netherlands, TEL: +31 10 2922 688 - www.dnv.com / www.dnv.nl
ISSUED BY: DET NORSKE VERITAS AS, EMGEEN CHAMBERS, 10, C.S.T. ROAD, SANTACRUZ (E), MUMBAI - 400 098, INDIA - www.dnv.com / www.dnvindia.com

Parker Hannifin India Pvt. Ltd.

REGD. OFFICE

Plot No. EL-26, M.I.D.C., T.T.C, Industrial Area,
Mahape, Navi Mumbai - 400 703. India
Tel.: 022 - 41242580 / 81 / 82 / 83 / 84 / 85

MANUFACTURING FACILITY

26-29, 18-19, 16A, I.D.A. Phase IV, Patancheru - 502 319,
Dist. Medak, (Near Hyderabad), Andhra Pradesh, India
Tel.: +91-8455-248700 Fax: +91-8455-248789
e-mail : parker.hyderabad@parker.com

Distributed by