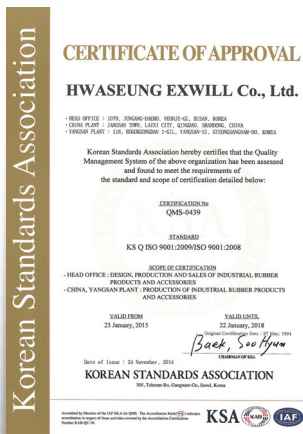




ISO 9001



ISO 14001

For further information regarding products on this catalog, please contact to the address below.



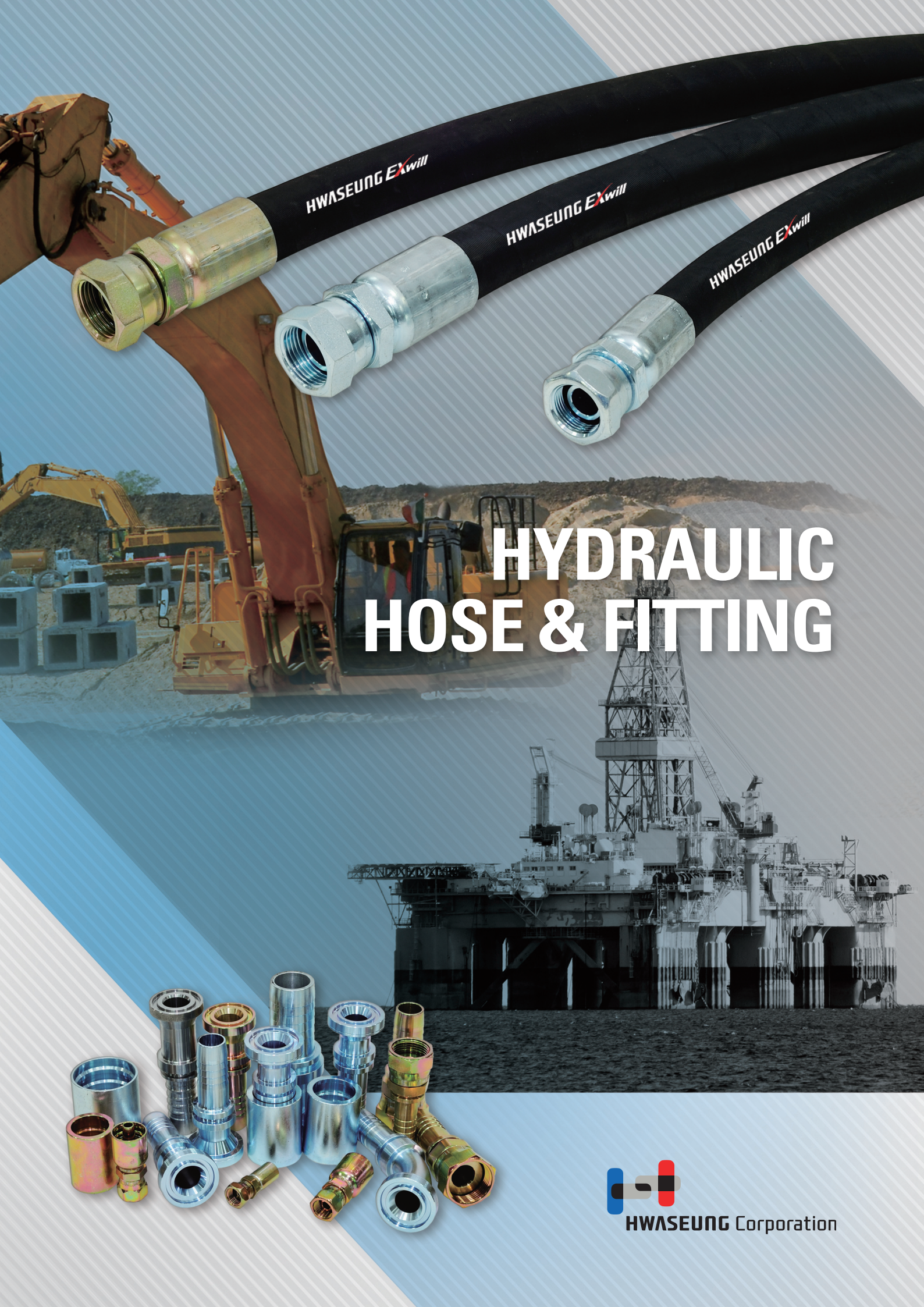
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HYDRAULIC HOSE & FITTING



HWASEUNG Corporation

Hwaseung engages the world

Hwaseung creates value

Since its foundation in 1953, Hwaseung has actively responded to the changing world and achieved growth with constant challenges and innovation.

Currently, with a global network that embraces the world with businesses in automotive parts, advanced materials, footwear ODM, chemical and trade networks, Hwaseung is enhancing competencies in overseas business and accelerating growth to become a GLOBAL STANDARD group that enriches the future life for humanity.



HWASEUNG
EXwill

HWASEUNG belongs to following department

Automotive Parts

With the greatest market share in weatherstrips and hoses in Korea, we are striving to become one of the BIG 3 companies in the global marketplace.

Advanced Materials

We provide the very best products and technologies that win global recognition as Korea's No.1 rubber materials company.

Footwear ODM

We are shaping the world's best brand with trends that keep us one step ahead of global brands.

Chemical

We are enhancing global competitiveness in the future chemical industry by developing high-value products.

Trade Networks

We are constantly developing new businesses by building a global network with 21st-century strategic business in mind.





Business Area

Belt

Fabric Rubber C/Belt
Steel Cord, Rubber C/Belt
PVC/PU C/Belt

Hose

Industrial Hose
Hydraulic Hose
Welding Hose
PVC Hose

Sheet

Rubber Sheet
TPE Sheet

Fender & Marine System

Rubber Fender
Expansion-Joint
Sleeve Hose
Rubber Seal
Rubber Lining
Railroad pad
Other



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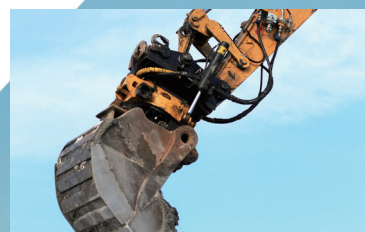
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- * 1Wire Braid Hose
- * 2Wire Braid Hose
- * 4Wire Spiral Hose
- * 1Textile Braid Hose
- * Suction & Return Line Hose
- * Paint Spray Hose

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- * Fitting Nomenclature 52
- * 09 Series 56
- * 12 Series 67
- * 13 Series 74
- * CT Series 79
- * CA Series 80

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Equipments and Capacity

Making Machine List

Wire & Textile Yarn Braid Hose Making Line

2017. 8.(Rev. 0)

Machine	Specifications		Quantity	Remark
Resin Mandrel Extruder M/C	Ø70		1	-
Inner Tube Extruder M/C	Ø120		2	-
Wire Winding M/C	-		6	-
Wire Reinforcement Braid M/C	RB-2 (Sungil)	20Cr x 2Deck	1	1/4" ~ 1/2"
		24Cr x 2Deck	4	1/2" ~ 1"
		36Cr x 2Deck	1	1"
	MR-11	20Cr x 2Deck	1	1/4" ~ 1/2"
		24Cr x 1Deck	2	1/2" ~ 1"
		24Cr x 2Deck	4	
	MR-15 (Mayer)	18Cr x 2Deck	1	1/4" ~ 3/8"
		24Cr x 2Deck	3	1/2" ~ 1"
	FST	16Cr x 2Deck	1	1/4" ~ 1/2"
		20Cr x 2Deck	1	
		20Cr x 1Deck	1	
		36Cr x 2Deck	1	1" ~ 2"
	-	48Cr x 2Deck	1	1-1/4" ~ 2-1/2"
	Big Bore	96Cr x 2Deck	1	2-1/2" ~ 6"
Textile Reinforcement Braid M/C	FST	24Cr x 1Deck	1	1/4" ~ 1"
Outer Cover Extruder M/C	Ø120		2	-
P.P Covering Extruder M/C	Ø120		2	-
Wrapping M/C	-		2	-
Vulcanizing M/C	6m / 42m		2 / 1	-
P.P Stripping M/C	-		1	-
Unwrapping M/C	-		2	-
Mandrel Stripping M/C	Flexible Mandrel		3	-
	Steel Mandrel		1	-
Proof Pressure Tester	-		4	-
Hose Coiling M/C	-		3	-
Wrapping Packing M/C	-		2	-

Wire Spiral Hose Making Line

Machine	Specifications	Quantity	Remark
Inner Tube Extruder M/C	Ø120	1	-
Wire Winding M/C	-	3	-
Wire Reinforcement Braid M/C	30Cr x 4Deck	1	3/8" ~ 2"
	36Cr x 4Deck(Sungil)	2	
Outer Cover Extruder M/C	Ø120 / Ø150	1 / 1	-
Wrapping M/C	-	1	-
Vulcanizing M/C	42m	1	-
Mandrel Stripping M/C	-	1	-
Unwrapping M/C	-	1	-
Proof Pressure Tester	-	1	-
Hose Coiling M/C	-	2	-
Wrapping Packing M/C	-	1	-

Equipments and Capacity

Manufacture Capacity

2017. 8.(Rev. 0)

Item	Size	Capacity(Meters)		
		(Day)	(Month)	(Year)
Wire Braid Hose	1/4" ~ 2"	37,500	937,500	11,250,000
Wire Spiral Hose	3/8" ~ 2"	10,000	250,000	3,000,000
etc Hose	Max. 6"	2,500	62,500	750,000
Total		50,000	1,250,000	15,000,000



Hydraulic Hose Test Machine List

2017. 8.(Rev. 0)

Machine	Quantity
Mooney Viscometer	1
Rheometer	2
Specific Gravity Tester	1
Rubber Sheet Vulcanizing Press	1
Tensile & Compression Tester	2
Hardness Tester	1
Aging Tester	2
Heat Tester	2
Ozone Tester	1

Machine	Quantity
Oil Resistance Tester	1
Rubber Hose Abrasion Tester	1
Low Temperature Tester	1
Electrical Conductivity Tester	1
Flame Resistance Tester	1
Working, Proof, Burst Pressure Tester	2
Vacuum Tester	1
Static Impulse Tester(BIMAL)	1
Dynamic Impulse Tester(BIMAL)	1



Method to Select HS Corporation Hose

Remember the below 7 words to select hose

STAMPED

- S _ Size
- T _ Temperature
- A _ Application
- M _ Material to be conveyed
- P _ Pressure
- E _ End of Couplings
- D _ Delivery(Volume and velocity)



Size

- Hose Inner Diameter is determined by Flow and Flow velocity of Fluids.
- If Flow velocity is low, the system performance declines, and if Flow velocity is high, it causes excessive Pressure drop, System damage and leakage of Fluids.
- To determine Hose inner diameter, refer to the Flow Capacity Monograph.
- To verify Hose inner diameter, see the outside Marking Part.
- If being unable to see the outside Marking Part, Cut the Hose and measure Hose inner diameter.
- Refer to the below table for Hose inner diameter.

Dash No.	All Hoses except for conveyance and refrigerant		Hoses for conveyance and refrigerant	
	inch	mm	inch	mm
-3	3/16"	4.8	-	-
-4	1/4"	6.4	3/16"	4.8
-5	5/16"	7.9	1/4"	6.4
-6	3/8"	9.5	5/16"	7.9
-8	1/2"	12.7	13/32"	10.3
-10	5/8"	15.9	1/2"	12.7
-12	3/4"	19.1	5/8"	15.9
-14	7/8"	22.2	-	-
-16	1"	25.4	7/8"	22.2

Dash No.	All Hoses except for conveyance and refrigerant		Hoses for conveyance and refrigerant	
	inch	mm	inch	mm
-20	1-1/4"	31.8	1-1/8"	28.6
-24	1-1/2"	38.1	1-3/8"	34.9
-32	2"	50.8	1-13/16"	46.0
-36	2-1/4"	57.2	-	-
-40	2-1/2"	63.5	2-3/8"	60.3
-48	3"	76.2	-	-
-56	3-1/2"	88.9	-	-
-64	4"	101.6	-	-
-72	4-1/2"	114.3	-	-

Flow Capacity Monograph

Hose Size Select for Flow and Flow Velocity

To select the correct Hose, use the Calculation Formula and Monograph below.

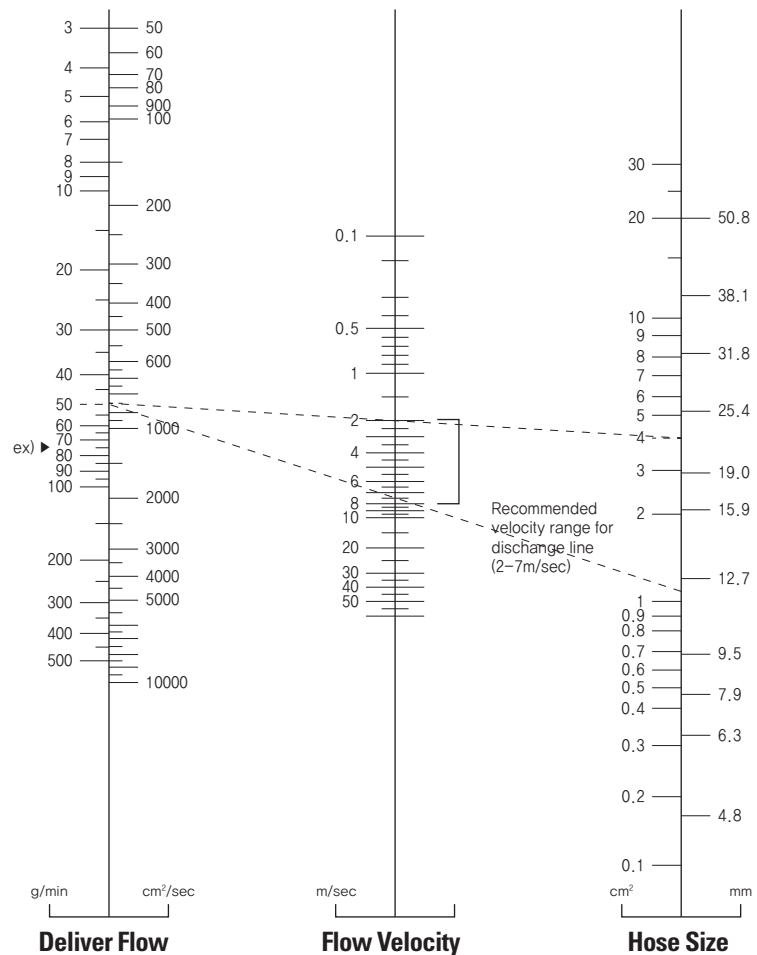
Calculation Formula

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

Q : Flow in Gallons per Minute(gpm)

V : Velocity in Feet per Second(ft/sec)

D : Hose Inner Diameter(inch)



* Hose Cross Sectional Area Calculating Formula : Cross Sectional Area = Flow / Flow Velocity

ex) What is the Hose Size if Delivery Flow 50 l/min and Flow Velocity 2~7 m/sec?

The correct Hose Size is on extension lines from Delivery Flow and Flow Velocity. That means that the Hose Inner Diameter is Ø 12.7 ~ Ø 19.0 mm within the range dotted lines on the above graph.

Method to Select HS Corporation Hose

Temperature

- There are two types of Temperature affecting Hoses.
- The Temperature of Fluids and the Ambient Temperature formed on the surface.
- The Temperature of Fluids affects the inner rubber layer of Hose, and the Ambient Temperature affects the surface rubber layer and the reinforcement layer.
- Refer to the range of Workable Temperature marked on the Request Capacity for each Hose.

Application

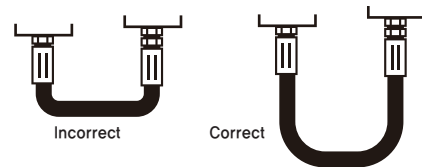
Check the below points, and then determine the Assembly Specifications of High Pressure Hoses.

- Where will the hose be used?
- On which equipment will the hose be attached, and how will the environmental factor affect the hose?
- What is the type of the Coupling? What is the size of the Coupling Screw?
- Is the Coupling permanent attachment style? Or is the Coupling site attachment style?
- Does the specific mechanical load occur for the Hose Assembly?
- What is the minimum bending Radius of the attached hose?

※ When considering bending radius of hose assemble, secure 2 times of the straight line to the minimum hose external diameter at the starting point of fitting and bending of the hose.

- Does excessive abrasion on the Hose surface occur by repetitive movement?
- Is there a specific matter on the operation method of Fluids?

If it is difficult to check above points, order the same specifications as the working one which had be attached before.



Material to be conveyed

Check the Fluids which is applied to the Hose.

There is a case to use the special Chemical Liquid besides the general Flow Pressure Hydraulic Oil.

In this case, use the Liquid produced with the appropriate material having resistance to the Fluids.

※ Check the attached Chemical Resistance Chart in the catalog, and select the correct Liquid.

(Hose Inner Side/Hose Outer Side/Couplings/O-rings and etc)

Pressure

When selecting the Hoses, the most important thing is to check the System Working Pressure.

The Maximum Working Pressure must be lower than the Working Pressure marked on the Hoses.

The higher Working Pressure than the Hose Maximum Working Pressure may shorten the life of Hoses.

Recommend you must use of appropriate Hoses for Working Pressure.

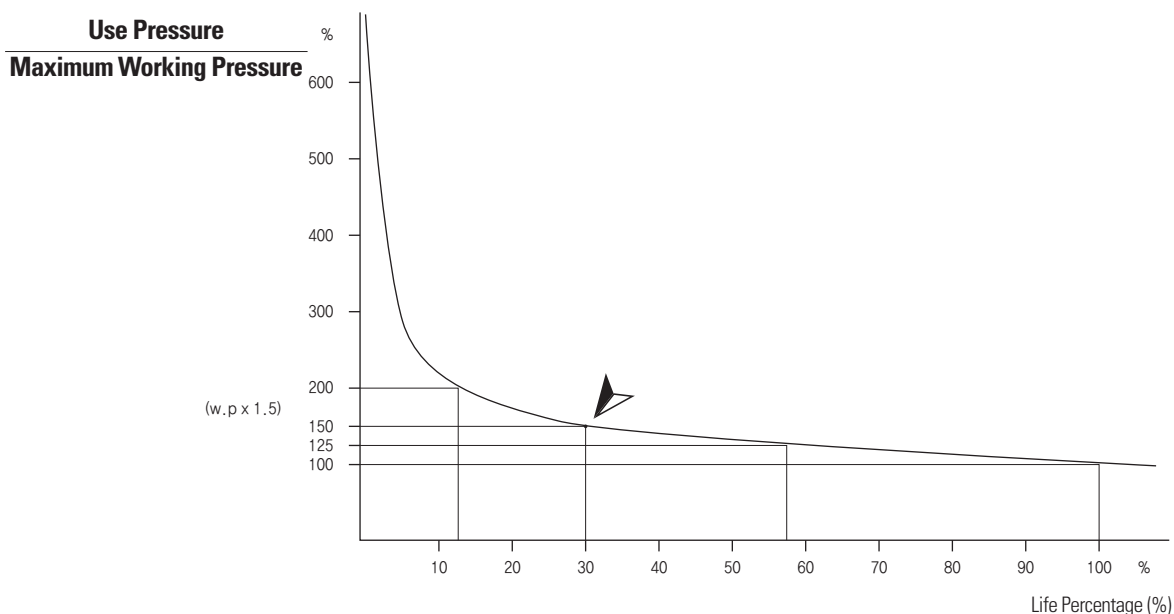
※ The types of pressure for the Hoses are as below.

Classification	Content
Maximum Working Pressure	Maximum usable pressure in System
Proof Pressure	As proofing the Hose quality, usually Double of Maxim Working Pressure
Minimum Burst Pressure	Minimum Pressure bursting the hose (usually 4 times of Maximum Working Pressure)
Design Burst Pressure	Designed Pressure upon reinforcement material and standard

Method to Select HS Corporation Hose

Relation of Hose Use Pressure and the life

High Pressure Hoses made with wire for the reinforcement layer have a characteristic Metal Fatigue Limit by Inner Pressure. Maximum Working Pressure guarantees more than 100 % of the regulated life considering Fatigue Limit of Reinforcement Layer, but when using over Maximum Working Pressure, the Hose Inner Pressure drops rapidly. The graph shows the relation of Working Pressure and Life of Hose.



ex) If using the 1.5 times of Maximum Working Pressure, the life of hose will be shortened to 30%.

End of Couplings

- To assemble the Hose into the system, check the specifications of Couplings which are attached at the end of Hose.
- Refer to the catalog about Couplings material, the screw thread, types and assemble types.

Delivery(Volume and velocity)

- If the existing Hose Size works in system with correct Flow and Flow Velocity, recommend to replace with the same specifications.
- For building or changing to new system, use the Nomo graph and determine the required Hose Size.

Definition and Structure of Hydraulic Hose

1. Definition of Hydraulic Hose

• High Pressure Hose? Not only for delivery of Material to be conveyed as basis use of hose but also for delivery the required power for Industrial equipments and Civil engineering construction equipments.

• Use of hose

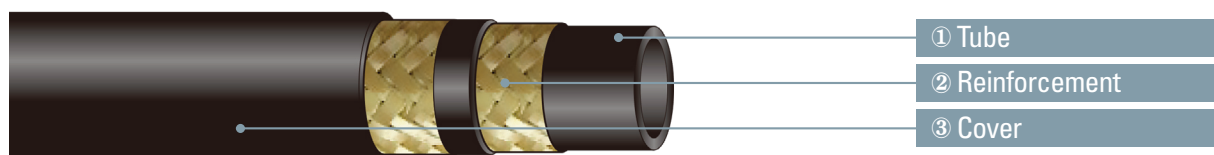
▶ Hydraulic Hose: Delivers power (hydraulic pressure) to operate machines and Civil engineering construction equipments.

▶ Industrial Hose: For general use to move simple Fluids.



2. Structure of Hydraulic Hose

- Generally composed of Tube, Reinforcement and Cover.



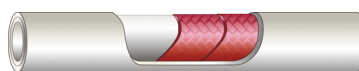
Tube



Performance

Work like artery to prevent the leakage of Fluids as maintaining gas tight of hose

Reinforcement



Performance

Work as muscle to reinforce inner pressure against the pressure in system and, Physical performance for the hose safety changes upon type of reinforcement material and method.

Cover



Performance

Protect inner rubber and reinforcement as the most outer layer, and type, standard, manufacturer, working pressure of the hose and etc are marked. In addition, generally Cover should be selected correctly for use environment such as oil resistance, wear resistance, weather resistance and extreme temperature upon the use of hose. Lastly, it is required for impact resistance, wear resistance when the hose contacts the outside object.

Hose Pressure and Unit Conversion Table

SAE HOSE WORKING PRESSURE (psi)

Specifica- tion	Hose Style	Description	NOMINAL HOSE INSIDE DIAMETER in INCHES and DASH SIZE															
			3/16 (-3)	1/4 (-4)	5/16 (-5)	3/8 (-6)	1/2 (-8)	5/8 (-10)	3/4 (-12)	1 (-16)	1-1/4 (-20)	1-1/2 (-24)	2 (-32)	2-1/2 (-40)	3 (-48)	3-1/2 (-56)	4 (-64)	
SAE J517	100R1	1WIRE BRAID	3000	2750	2500	2250	2000	1500	1250	1000	625	500	375					
SAE J517	100R1 TYPE S	HIGH PRESSURE 1WIRE BRAID	3630	3260	3120	2610	2320	1890	1520	1280	910	730	580					
SAE J517	100R2	2WIRE BRAID	5000	5000	4250	4000	3500	2750	2250	2000	1625	1250	1125	1000				
SAE J517	100R2 TYPE S	HIGH PRESSURE 2WIRE BRAID	6020	5800	5080	4790	3990	3630	3120	2390	1810	1310	1160	1020				
SAE J517	100R3	2FABRIC BRAID	1500	1250	1200	1125	1000	875	750	565	375							
SAE J517	100R4	SUCTION							300	250	200	150	100	62	56	45	35	
SAE J517	100R6	1FABRIC BRAID	500	400	400	400	400	350	300									
SAE J517	100R7	THERMOPLASTIC	3000	2750	2500	2250	2000	1500	1250	1000								
SAE J517	100R8	HIGH PRESSURE THERMOPLASTIC	5000	5000		4000	3500	2750	2250	2000								
SAE J517	100R9	4WIRE SPIRAL				4500	4000		3000	3000	2500	2000	2000					
SAE J517	100R10	HIGH PRESSURE 4WIRE SPIRAL	10000	8750		7500	6250		5000	4000	3000	2500	2500					
SAE J517	100R11	HIGH PRESSURE 6WIRE SPIRAL	12500	11250		10000	7500		6250	5000	3500	3000	3000	2500				
SAE J517	100R12	4WIRE SPIRAL				4000	4000	4000	4000	4000	3000	2500	2500					
SAE J517	100R13	5000PSI WIRE SPIRAL							5000	5000	5000	5000	5000					
SAE J517	100R15	6000PSI WIRE SPIRAL				6000	6000		6000	6000	6000	6000						
SAE J517	100R16	COMPACT WIRE BRAID		5000	4250	4000	3500	2750	2250	2000	1625							
SAE J517	100R16 TYPE S	HIGH PRESSURE COMPACT WIRE BRAID	6020	5800	5080	4790	3990	3630	3120	2390	1810							
SAE J517	100R17	3000PSI WIRE BRAID		3000	3000	3000	3000	3000	3000	3000								
SAE J517	100R18	3000PSI THERMOPLASTIC	3000	3000	3000	3000	3000	3000	3000	3000								

SAE HOSE WORKING PRESSURE (psi)

Specifica- tion	Hose Style	Description	NOMINAL HOSE INSIDE DIAMETER in INCHES and DASH SIZE															
			1/8 (-3)	3/16 (-4)	1/4 (-5)	5/16 (-6)	3/8 (-7)	13/32 (-8)	1/2 (-10)	5/8 (-12)	3/4 (-14)	7/8 (-16)	1 (-18)	1-1/8 (-20)	1-3/8 (-24)	1-13/16 (-32)	2-3/8 (-40)	3 (-48)
SAE J517	100R5	1WIRE BRAID TEXTILE COVER		3000	3000	2250		2000	1750	1500		800		625	500	350	350	200
SAE J517	100R14	1WIRE BRAID PTFE	1500	1500	1500	1500	1500	1000	800	800	800	800	800	600				

EN HOSE WORKING PRESSURE (psi)

Specification	Hose Style	Description	NOMINAL HOSE INSIDE DIAMETER in INCHES and DASH SIZE											
			3/16 (-3)	1/4 (-4)	5/16 (-5)	3/8 (-6)	1/2 (-8)	5/8 (-10)	3/4 (-12)	1 (-16)	1-1/4 (-20)	1-1/2 (-24)	2 (-32)	
EN 853	1ST	1WIRE BRAID STANDARD COVER	3630	3265	3120	2610	2320	1890	1525	1280	915	725	580	
EN 853	1SN	1WIRE BRAID THIN COVER	3630	3265	3120	2610	2320	1890	1525	1280	915	725	580	
EN 853	2ST	2WIRE BRAID STANDARD COVER	6020	5800	5075	4785	3990	3625	3120	2395	1815	1305	1160	
EN 853	2SN	2WIRE BRAID THIN COVER	6020	5800	5075	4785	3990	3625	3120	2395	1815	1305	1160	
EN 856	4SP	4WIRE SPIRAL		6530		6455	6020	5080	5080	4065	3050	2685	2395	
EN 856	4SH	HIGH PRESSURE 4WIRE SPIRAL							6095	5515	4715	4210	3630	
EN 857	1SC	COMPACT 1WIRE BRAID		3265	3120	2610	2325	1890	1525	1280				
EN 857	2SC	COMPACT 2WIRE BRAID		5805	5080	4790	3990	3630	3120	2395				

PRESSURE CONVERSION CHART

	psi	mbar	Bar	kPa	MPa	Kgf/cm ²
psi	1	68.95	0.0689	6.895	0.0069	0.070307
mbar	0.0145	1	0.001	0.1	0.0001	1019.716
Bar	14.504	1000	1	100	0.1	1.019716
kPa	0.14504	10	0.01	1	0.001	0.010197
MPa	145.04	10,000	10	1000	1	10.197162
Kgf/cm ²	14.223393	980.665	0.980665	98.0665	0.098067	1

LENGTH CONVERSION CHART

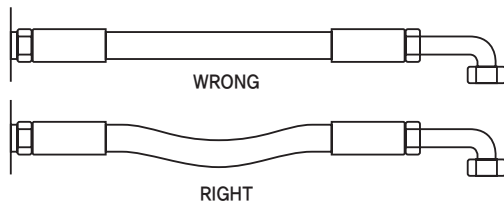
	cm	m	inch	feet	yard	mile
cm	1	0.01	0.393701	0.032808	0.010936	0.000006
m	100	1	39.370079	3.28084	1.093613	0.000621
inch	2.54	0.0254	1	0.083333	0.027778	0.000016
feet	30.48	0.3048	12	1	0.333333	0.000189
yard	91.44	0.9144	36	3	1	0.000568
mile	160934.4	1609.344	63360	5280	1760	1



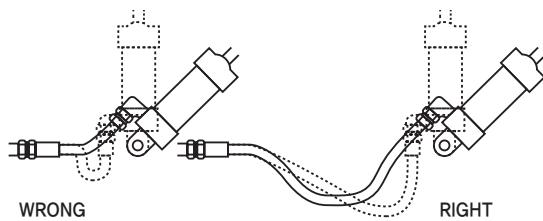
Hose Assembly Routing Tips

Proper hose installation is essential for satisfactory performance. If hose length is excessive, the appearance of the installation will be unsatisfactory and unnecessary cost of equipment will be involved. If hose assemblies are too short to permit adequate flexing and changes in length due to expansion or contraction, hose service life will be reduced.

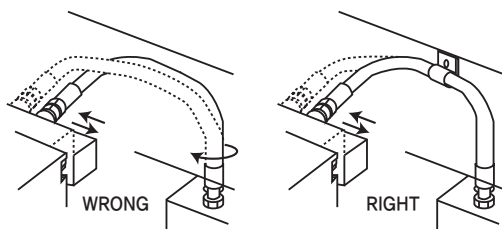
The following diagrams show proper hose installations which provide maximum performance and cost savings. Consider these examples in determining length of a specific assembly.



When hose installation is straight, allow enough slack in hose line to provide for length changes which will occur when pressure is applied.



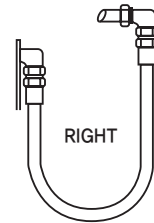
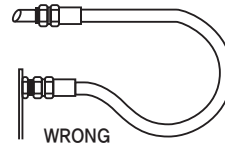
Adequate hose length is necessary to distribute movement on flexing applications and to avoid abrasion.



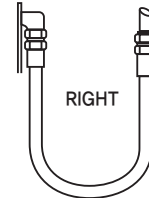
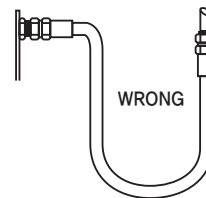
Avoid twisting of hose lines bent in two planes by clamping hose at change of plane.



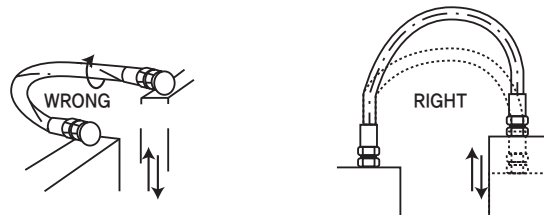
Reduce number of pipe thread joints by using hydraulic adapters instead of pipe fittings.



When radius is below the required minimum, use an angle adapter to avoid sharp bends.



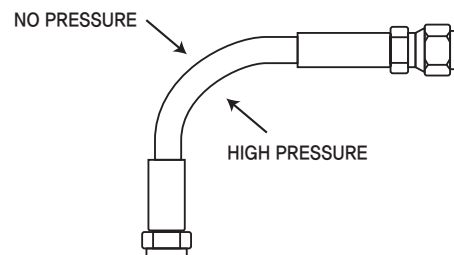
Use proper angle adapters to avoid tight bend in hose.



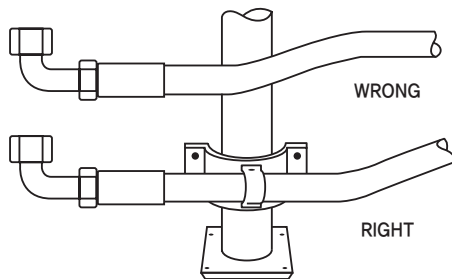
Prevent twisting and distortion by bending hose in same plane as the motion of the port to which hose is connected.



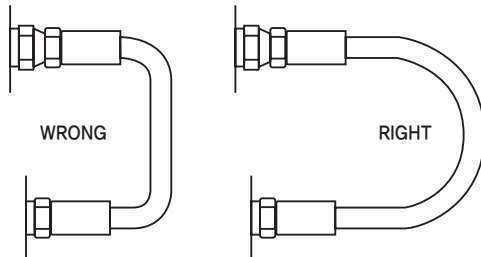
Route hose directly by using 45° and/or 90° adapter and fittings. Avoid excessive hose length to improve appearance.



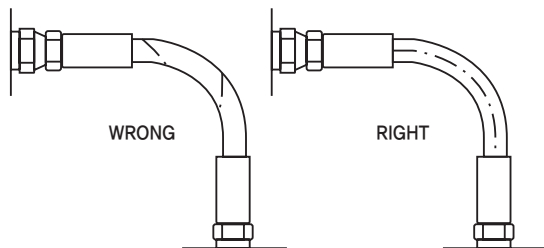
Note : To allow for length changes when hose is pressurized, do not clamp at bends so that curves will absorb changes. Do not clamp high and low pressure lines together.



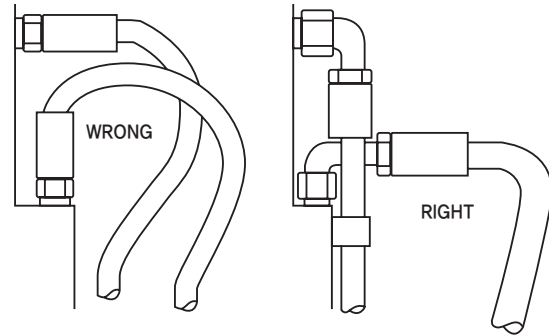
High ambient temperatures shorten hose life, so make sure hose is kept away from hot parts. If this is not possible, insulate hose.



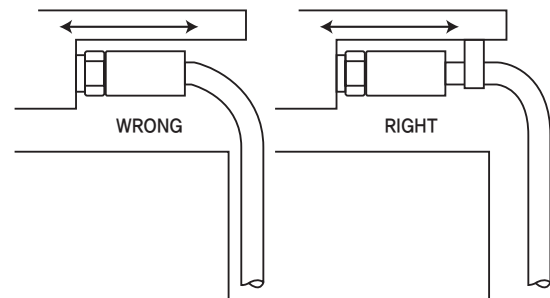
To avoid hose collapse and flow restriction, keep hose bend radius as large as possible. Refer to hose specification tables for minimum bend radius.



When installing hose, make sure it is not twisted. Pressure applied to a twisted hose can result in hose failure or loosening of connections.



Elbows and adapters should be used to relieve strain on the assembly, and to provide neater installations which will be more accessible for inspection and maintenance.



Run hose in the installation so that it avoids rubbing and abrasion. Often, clamps are required to support long hose runs or to keep hose away from moving parts. Use clamps of the correct size. A clamp too large allows hose to move inside the clamp and causes abrasion.



Hydraulic Flareless Assembly Procedure (per SAE J514 6.1.3 & 6.1.4)

1. Bottom the tube in the coupling, and tighten the nut until the ferrule just grips the tube. With a little experience, the technician can determine this point by feel. If the couplings are bench assembled, the gripping action can be determined by rotating the tube by hand as the nut is drawn down. When the tube can no longer be turned by hand, the ferrule has started to grip the tube.
2. After the ferrule grips the tube, tighten the nut one full turn. This may vary slightly with different tubing materials, but for general practice, it is a good rule for the technician to follow.

Chemical Resistance Table

General Chemical Resistance of Hose Compounds

WARNING The following data is based on tests and believed to be reliable; however, the tabulation should be used as a guide ONLY, since it does not take into consideration all variables, such as elevated temperatures, fluid contamination, concentration, etc. that may be encountered in actual use. All critical applications should be tested. Contact hwaseung Corporation for recommendation and assistance.

Note All data based on 70°F unless otherwise noted..

Common Name	ASTM Designation D1418-64	Composition	General Properties
Buna-N or Nitrile	NBR	Nitrile - Butadiene	Excellent oil resistance. Good physical properties.
Cross Linked Polyethylene	XLPE	Cross Linked Polyethylene	Excellent resistance to most solvents, oils and chemicals. Do not confuse with chemical properties of standard polyethylene.
EPT or EPDM	EPDM	Ethylene - Propylene - diene - terpolymer	Good general purpose polymer. Excellent heat, ozone, and weather resistance. Not oil resistant.
Fluorocarbon resin (Teflon)	TFE	Polytetra - Fluoroethylene	Excellent chemical and solvent resistance, inert to most materials. Smooth anti-adhesive surface-easily cleaned.
GRS or SBR	SBR	Styrene - Butadiene	Good physical properties, including abrasion resistance. Not oil resistant.
Hypalon	CSM	Chloro - sulfonated Polyethylene	Excellent ozone, weathering and acid resistance. Good abrasion and heat resistance. Can be compounded for good oil resistance.
Natural	NR	Isoprene Rubber(Natural)	Excellent physical properties, including abrasion resistance. Not oil resistant.
Neoprene	CR	Chloroprene	Excellent weathering resistance. Flame retarding. Good oil resistance. Good physical properties.
Chlorinated Polyethylene	SM	Chloro - Polyethylene	Good long term resistance to UV and weathering. Good oil and chemical resistance. Excellent flame resistance. Good low temperature impact resistance.
Viton	FPM	Fluorocarbon Rubber	Excellent high temperature resistance, particularly in air or oil. Very good chemical resistance.
Epichlorohydrin	ECO	Ethylene Oxide Chloromethyl	Excellent oil and ozone resistance. Fair flame resistance and low permeability to gases. Good low temperature properties.
Butyl	IIR	Isobutene - Isoprene	Very good weathering resistance, low permeability to air. Good physical properties. Poor resistance to petroleum based fluids.
Ultra - High Molecular Weight Polyethylene	UHMW	Ultra - High Molecular Weight Polyethylene	Excellent chemical resistance.

Chemical Resistance Table

The table below is based on reliable information. Care should be taken to use this data as a guide only, and to take into account such variables as temperature, concentration and fluid contamination. All ratings are given at room temperature, unless stated otherwise. For High Temperature Applications, contact hwaseung Corporation.

WARNING! Never use brass couplings with any ammonia based fluids.

Rating Scale	HS Corporation Hose Poly- mers								Couplings & Adapters					
Blank: No known data available A: Excellent, little or no swelling or softening B: Good, swelling or softening is moderate C: Fair, conditional service may be expected D: Unsatisfactory, not recommended -: Not tested														
Chemical Name	CPE	EPDM	Polyester	Neoprene	Nylon	Teflon	TPE	Urethane	Nitrile	Carbon Steel	Stainless Steel 304	Stainless Steel 316	Aluminum	Brass
A														
Acetaldehyde	-	A	B	D	B	B	-	D	D	A	A	A	A	A
Acetic Acid, 10%	A	C	C	A	A	A	A	D	C	D	B	B	B	D
Acetic Acid, 20%	A	A	C	A	B	A	A	D	C	D	B	B	B	D
Acetic Acid, 30%	A	A	C	A	C	A	A	D	D	D	B	B	B	D
Acetic Acid, 50%	C	C	C	D	C	A	C	D	D	D	B	B	B	D
Acetic Acid, Glacial	C	B	D	D	D	A	D	D	D	D	B	B	B	-
Acetic Anhydride	A	B	C	B	D	A	D	D	D	D	B	B	B	D
Acetone	A	A	C	D	A	A	A	D	D	A	A	A	A	A
Acetylene	B	A	B	B	A	A	-	C	C	A	A	A	A	B
Acrylonitrile	S	D	-	D	A	A	D	D	D	A	A	A	B	A
Adipic Acid	-	A	-	A	-	A	-	A	A	-	-	-	-	-
Alum	A	A	D	A	C	A	-	D	A	D	B	B	D	D
Aluminum Chloride Solution	A	A	B	A	D	A	-	B	A	D	B	B	D	D
Aluminum Sulfate Solution	A	A	B	A	A	A	A	B	A	D	D	B	D	D
Ammonia, Gas	D	D	D	D	D	D	D	D	D	A	A	A	A	D
Ammonia, Liquid	D	D	D	D	D	D	D	D	D	-	A	A	-	D
Ammonium Carbonate	-	A	C	A	B	A	-	A	B	A	A	A	-	-
Ammonium Chloride	A	A	A	A	D	A	-	B	B	D	B	B	D	D
Ammonium Hydroxide Solution	C	A	D	A	A	A	-	D	D	B	A	A	-	D
Ammonium Nitrate	A	A	C	A	B	A	-	A	A	B	A	A	D	-
Ammonium Sulfate Solution	A	A	C	A	B	A	-	B	A	D	D	B	D	D
Amyl Acetate	C	A	A	D	B	A	D	D	D	D	A	A	D	B
Amyl Alcohol	B	A	D	A	B	A	A	D	C	A	A	A	A	A
Anhydrous Ammonia	D	D	D	D	D	D	D	D	D	-	-	-	-	-
Aniline	C	B	D	D	C	A	A	D	D	B	A	A	D	D
Animal Oils & Fats	A	B	B	B	A	A	A	D	A	A	A	A	A	-
Argon	C	A	A	D	A	A	-	A	A	-	-	-	-	-
ASTM Oil No. 1	A	D	A	A	A	A	D	A	A	A	A	A	A	A
ASTM Oil No. 2	A	D	A	B	A	A	D	B	A	A	A	A	A	A
ASTM Oil No. 3	A	D	B	B	A	A	D	A	A	A	A	A	A	A
ASTM Ref. Fuel A	B	D	A	B	A	A	D	B	A	A	A	A	A	A
ASTM Ref. Fuel B	C	D	A	D	A	A	D	B	B	A	A	A	A	A
ASTM Ref. Fuel C	C	D	B	D	A	A	D	C	B	A	A	A	-	A
Asphalt	B	D	B	C	B	A	-	B	B	A	A	A	B	B
Aviation Gasoline	C	D	C	D	-	A	-	B	A	A	A	A	A	-
B														
Barium Chloride	A	A	C	A	B	A	-	A	A	D	B	B	D	B
Barium Hydroxide	A	A	B	A	B	A	-	D	A	D	A	A	D	D
Benzaldehyde	C	B	B	D	A	A	D	D	D	A	A	A	A	A
B														
Benzene	C	D	B	D	B	A	D	D	D	A	A	A	A	A
Benzyl Alcohol	A	C	C	C	B	A	D	-	D	A	A	A	A	-
Borax Solution	A	A	B	A	B	A	-	A	C	B	A	A	D	B
Boric Acid	A	A	B	A	C	A	A	A	A	D	B	B	A	D
Bromine	D	D	D	D	D	B	-	D	D	D	D	D	-	D
Butane	D	D	A	A	B	A	-	D	A	A	A	A	-	A
Butanol	A	B	B	A	C	A	B	D	A	A	A	A	A	A
Butanone	-	A	A	D	B	A	D	D	D	-	-	-	-	-
Butyl Acetate	D	D	B	D	B	A	-	D	D	B	A	A	A	A
C														
Calcium Chloride	A	A	A	A	B	A	-	A	A	D	B	A	D	-
Calcium Hydroxide	A	A	C	A	A	A	-	D	A	D	D	A	-	B
Calcium Hypochlorite, 6%	A	A	B	C	A	A	-	B	D	D	D	B	D	D
Calcium Bisulfide	C	A	B	C	B	A	-	C	B	-	B	B	D	D
Calcium Nitrate	A	A	A	A	A	A	-	D	A	D	B	B	D	A
Carbon Dioxide	A	B	A	B	B	A	-	D	A	A	A	A	A	A
Carbon Monoxide	A	A	A	A	A	A	-	A	A	A	A	A	A	A
Carbon Tetrachloride	D	D	D	C	D	A	D	D	D	D	D	B	B	B
Carbonic Acid	A	A	D	A	B	A	D	A	B	D	A	A	B	D
Castor Oil	A	B	B	A	B	A	-	B	A	A	A	A	A	A
Chlorine Gas, Dry	D	D	D	C	D	A	D	D	D	B	D	D	-	B
Chlorine Gas, Wet	D	D	D	D	D	B	D	D	D	D	D	D	D	D
Chloroacetic Acid	B	B	D	A	C	A	D	D	D	D	D	D	-	B
Chlorobenzene	D	D	D	D	A	A	D	B	D	B	B	B	D	A
Chloroform	D	D	D	D	A	A	D	D	D	B	A	A	D	A
Chlorosulfonic Acid	-	D	D	D	D	A	-	D	D	A	-	-	-	-
Chromic Acid, 10%	C	D	D	C	D	A	D	D	D	D	D	B	D	D
Chromic Acid, 50%	-	D	D	D	D	A	D	D	D	D	D	B	A	D
Citric Acid Solution	A	A	B	A	B	A	A	A	A	D	D	A	D	D
Coal Oil	A	D	A	B	A	A	D	C	A	A	A	A	A	A
Copper Chloride Solution	A	A	A	A	D	A	-	B	A	D	D	A	-	D
Copper Sulfate Solution	A	A	B	A	B	A	-	C	A	D	A	A	D	D
Creosote	B	D	D	D	D	A	D	C	C	B	A	A	A	D
Cresol	D	D	D	D	D	A	D	D	D	B	A	A	B	-
Cyclohexane	A	D	A	D	B	A	D	B	B	A	A	A	A	A
Cyclohexanol	B	D	C	B	B	A	D	-	C	-	A	A	B	-
Cyclohexanone	C	C	B	D	B	A	D	D	D	-	A	A	B	-
D														
DDT Preparations	A	D	-	D	A	A	-	D	D	-	-	-	-	-

Chemical Resistance Table

The table below is based on reliable information. Care should be taken to use this data as a guide only, and to take into account such variables as temperature, concentration and fluid contamination. All ratings are given at room temperature, unless stated otherwise. For High Temperature Applications, contact hwaseung Corporation.

WARNING! Never use brass couplings with any ammonia based fluids.

Rating Scale	HS Corporation Hose Poly- mers									Couplings & Adapters				
Blank: No known data available A: Excellent, little or no swelling or softening B: Good, swelling or softening is moderate C: Fair, conditional service may be expected D: Unsatisfactory, not recommended -: Not tested										Carbon Steel	Stainless Steel 304	Stainless Steel 316	Aluminum	Brass
Chemical Name	CPE	EPDM	Polyester	Neoprene	Nylon	Teflon	TPE	Urethane	Nitrile	Carbon Steel	Stainless Steel 304	Stainless Steel 316	Aluminum	Brass
D														
Diammonium Phosphate	-	A	C	A	B	A	-	D	A	-	-	-	-	-
Dibutyl Ether	B	C	-	D	-	A	A	D	D	A	A	A	A	A
Dibutyl Phthalate	C	B	B	D	B	A	A	D	D	A	A	A	A	A
Dichloro Benzene	D	D	D	D	A	A	D	D	D	-	A	A	-	A
Dichloro Ethylene	-	D	D	D	C	A	D	C	D	-	D	D	D	D
Diesel Fuel	A	D	B	D	A	A	D	C	A	-	A	A	-	-
Diethyl Ether	C	D	B	D	B	A	A	A	D	A	A	A	A	A
Diethyl Sebacate	C	B	A	D	-	A	A	D	D	-	A	A	-	A
Dioctyl Phthalate	C	B	B	D	B	A	A	D	D	A	A	A	A	A
E														
Ethanol	A	A	C	A	A	A	A	D	A	D	A	A	-	A
Ethyl Acetate	C	B	C	D	A	A	A	D	D	A	A	A	B	B
Ethyl Chloride	D	C	D	D	A	A	D	C	A	B	A	A	A	B
Ethylene Chlorohydrin	C	B	D	B	D	A	D	D	D	A	A	B	D	-
Ethylene Dichloride	C	D	D	D	C	A	D	D	D	-	A	A	D	-
Ethylene Glycol @ 70° F	A	A	A	A	A	A	A	B	A	B	A	A	A	A
Ethylene Oxide	D	C	A	D	A	A	-	D	D	-	-	-	-	-
F														
Fatty Acid Esters	B	D	B	B	A	A	D	D	A	B	A	A	A	B
Ferric Chloride	A	A	B	A	D	A	-	A	A	D	D	D	D	D
Ferric Nitrate	A	A	C	A	A	A	-	A	A	-	A	A	-	-
Ferric Sulfate	A	A	C	A	A	A	-	B	A	D	A	A	D	D
Ferrous Chloride	A	A	A	A	A	A	-	B	A	D	A	B	-	B
Ferrous Sulfate	A	A	C	A	A	A	-	A	A	D	A	A	A	B
Fluorine	D	D	D	D	D	D	D	D	D	-	-	-	-	-
Formaldehyde	B	A	C	B	C	A	A	D	C	A	A	A	A	D
Formic Acid	D	A	D	A	D	A	A	D	D	D	B	A	A	B
Freon 12	C	C	A	C	A	A	D	C	C	B	A	A	A	A
Freon 22	C	D	D	A	A	A	D	D	D	-	-	-	-	-
Freon 113	-	D	A	A	D	A	D	C	A	A	A	A	A	-
Freon 502	-	A	-	A	A	A	D	-	B	-	-	-	-	-
Furfural	B	B	B	C	C	A	A	D	D	-	-	-	-	-
Furfuryl Alcohol	B	B	B	D	A	A	A	D	D	B	A	A	A	A
G														
Gas, Coal	B	A	B	A	A	-	D	B	D	A	A	A	-	B
Gas, High Octane	C	D	A	D	A	A	D	C	A	-	-	-	-	-
Gasoline	B	D	A	D	A	A	-	A	B	B	A	A	A	A
Glycerine	A	A	A	A	A	A	A	D	D	A	B	A	A	B
Greases	C	D	A	D	A	A	A	D	A	A	A	A	A	A

Rating Scale	HS Corporation Hose Poly- mers									Couplings & Adapters				
Blank: No known data available A: Excellent, little or no swelling or softening B: Good, swelling or softening is moderate C: Fair, conditional service may be expected D: Unsatisfactory, not recommended -: Not tested										Carbon Steel	Stainless Steel 304	Stainless Steel 316	Aluminum	Brass
Chemical Name	CPE	EPDM	Polyester	Neoprene	Nylon	Teflon	TPE	Urethane	Nitrile					
H														
Helium	A	A	A	A	A	A	A	A	A	-	A	A	-	-
Heptane	B	D	B	B	A	A	A	B	A	A	A	A	A	A
n-Hexane	B	D	A	A	B	A	A	B	A	A	A	A	A	A
Hydrazine	B	A	D	B	D	A	-	D	B	-	-	-	-	-
Hydraulic Fluid (Petroleum)	A	D	A	B	A	A	D	B	A	A	A	A	A	A
Hydrochloric Acid, 10%	A	A	B	A	A	A	A	B	C	D	D	D	D	D
Hydrochloric Acid, 20%	A	A	C	B	B	A	A	C	C	D	D	D	D	D
Hydrocyanic Acid	B	A	D	B	D	A	A	D	C	D	A	A	A	D
Hydrofluoric Acid	A	C	D	B	C	A	D	D	D	D	D	D	D	D
Hydrogen Gas	A	A	A	A	A	A	-	A	A	D	D	D	A	-
Hydrogen Peroxide, 20%	A	C	D	D	A	A	-	D	D	D	B	A	A	D
Hydrogen Sulfide, (wet)	C	A	A	C	D	A	-	D	D	B	B	A	-	D
I														
Iodine Pentafluoride	D	D	-	D	-	A	-	D	D	D	B	B	D	-
Iodoform	D	D	-	D	-	-	-	-	-	-	-	-	-	-
Isobutyl Alcohol	B	A	-	A	-	A	-	D	B	A	A	A	A	B
Isooctane	A	D	A	B	A	B	D	A	A	A	A	A	B	A
Isopropyl Acetate	C	B	C	D	A	A	-	D	D	B	B	A	D	A
Isopropyl Alcohol	B	A	C	B	A	A	-	D	B	A	A	A	A	B
Isopropyl Ether	B	D	-	D	-	A	-	B	B	A	A	A	A	A
J														
JP - 4 Fuel	B	D	A	D	C	A	D	C	A	A	A	A	B	A
K														
Kerosene	B	D	A	D	C	A	D	C	A	A	A	A	A	A
Ketones	C	A	D	D	A	A	D	D	D	A	A	A	B	A
L														
Lacquer Solvents	C	D	D	D	A	A	-	D	D	D	B	A	A	A
Lactic Acid	A	A	D	A	A	A	-	B	A	D	B	A	D	B
Lard	B	B	B	B	A	A	A	C	A	A	A	A	A	D
Lead Acetate	B	A	-	B	A	A	-	D	B	B	B	B	D	A
Lead Nitrate	A	A	-	A	-	A	-	-	A	A	B	B	-	-
Lime Bleach	-	A	-	B	-	A	-	-	A	D	B	A	-	-
Linoleic Acid	C	D	-	D	-	A	-	-	B	D	B	A	A	-
Linseed Oil	A	C	B	B	A	A	-	B	A	A	A	A	B	B
Liquified Petroleum Gas	C	D	B	C	A	A	-	C	A	-	-	-	-	-
Lubricating Oils (Petroleum)	A	D	A	B	A	A	-	B	A	A	A	A	A	A
M														
Magnesium Chloride (Aq)	A	A	B	A	A	A	-	A	A	D	B	A	D	B
Magnesium Hydroxide (Aq)	A	A	C	A	B	A	-	D	B	A	A	A	D	D

Chemical Resistance Table

The table below is based on reliable information. Care should be taken to use this data as a guide only, and to take into account such variables as temperature, concentration and fluid contamination. All ratings are given at room temperature, unless stated otherwise. For High Temperature Applications, contact hwaseung Corporation.

WARNING! Never use brass couplings with any ammonia based fluids.

Rating Scale	HS Corporation Hose Polymers									Couplings & Adapters				
Blank: No known data available A: Excellent, little or no swelling or softening B: Good, swelling or softening is moderate C: Fair, conditional service may be expected D: Unsatisfactory, not recommended -: Not tested										Carbon Steel	Stainless Steel 304	Stainless Steel 316	Aluminum	Brass
Chemical Name	CPE	EPDM	Polyester	Neoprene	Nylon	Teflon	TPE	Urethane	Nitrile					
M														
Magnesium Sulfate (Aq)	A	A	B	A	A	A	-	D	A	B	B	B	B	B
Maleic Acid	D	B	-	D	C	A	-	D	D	B	B	A	-	-
Maleic Anhydride	D	D	-	D	-	A	-	-	D	-	-	-	-	-
Mercury Chloride (Aq)	A	A	-	B	-	A	-	-	A	D	A	A	D	D
Methane	A	D	B	C	A	A	D	C	A	-	A	A	-	-
Methanol	A	A	C	B	A	A	A	D	A	A	A	A	A	B
Methyl Acetate	B	A	B	D	A	A	-	D	D	A	A	A	A	A
Methyl Acrylate	D	B	-	D	C	A	D	D	D	A	A	A	A	A
Methyl Bromide	D	D	D	D	A	A	D	D	B	A	A	A	D	A
Methyl Cellulose	C	B	-	C	-	A	A	D	C	B	B	B	B	A
Methyl Chloride	D	C	D	D	A	A	D	D	D	A	A	A	-	A
Methyl Ethyl Ketone	C	A	B	D	A	A	D	D	D	A	A	A	B	A
Methyl Isobutyl Ketone	C	B	D	D	A	A	D	D	D	A	A	A	A	A
Methyl Methacrylate	C	D	-	D	C	A	C	D	D	B	B	B	-	-
Methylene Chloride	C	C	D	D	D	A	D	D	D	A	A	A	D	A
Mineral Oil	B	D	A	B	A	A	D	A	B	A	A	A	B	A
Monochlorobenzene	D	D	C	D	B	A	D	D	D	A	A	A	D	A
N														
Naphtha	B	D	A	D	A	A	D	C	B	B	A	A	A	A
Naphthalene	D	D	C	D	A	A	D	B	D	A	A	A	-	A
Natural Gas	A	D	B	A	A	A	D	C	A	A	A	A	-	B
Neon Gas	A	A	-	A	A	A	A	A	A	-	-	-	-	-
Nickel Acetate (Aq)	B	A	-	B	-	A	-	D	B	A	A	A	A	A
Nickel Chloride (Aq)	A	A	D	A	D	A	-	D	A	A	A	A	A	A
Nickel Sulfate (Aq)	A	A	D	A	D	A	-	C	A	-	-	-	-	-
Nitric Acid (10%)	B	B	D	B	D	A	A	D	D	D	A	A	-	D
Nitric Acid (conc.)	C	D	D	D	D	A	D	D	D	D	A	A	-	D
Nitric Acid (Red Fuming)	D	D	D	D	D	A	D	D	D	D	A	A	A	D
Nitro Benzene	C	A	D	D	D	A	C	D	D	A	A	A	A	A
Nitroethane	C	B	-	C	-	A	A	D	D	A	A	A	A	A
Nitrogen	A	A	A	A	B	A	A	A	A	A	A	A	A	A
Nitrous Oxide	A	A	-	B	D	A	-	B	A	A	A	A	-	D
O														
n-Octane	C	D	A	D	B	A	B	D	B	-	-	-	-	-
Octyl Alcohol	B	C	-	B	-	A	-	D	B	A	A	A	-	B
Oleic Acid	B	D	C	C	A	A	-	B	A	B	B	A	A	B
Oleum Spirit	C	D	B	D	A	A	-	C	B	-	-	A	-	-
Oxalic Acid	C	A	D	B	A	A	A	D	B	D	B	A	B	D
Oxygen	B	A	B	A	A	A	A	A	B	A	A	A	A	A

Rating Scale	HS Corporation Hose Polymers									Couplings & Adapters				
Blank: No known data available A: Excellent, little or no swelling or softening B: Good, swelling or softening is moderate C: Fair, conditional service may be expected D: Unsatisfactory, not recommended -: Not tested										Carbon Steel	Stainless Steel 304	Stainless Steel 316	Aluminum	Brass
Chemical Name	CPE	EPDM	Polyester	Neoprene	Nylon	Teflon	TPE	Urethane	Nitrile					
O														
Ozone	B	A	B	C	D	A	A	A	D	A	A	A	A	A
P														
Paint Thinner	D	D	-	D	B	A	D	-	D	B	B	A	B	D
Palmitic Acid	A	B	A	B	D	A	A	A	A	B	B	A	A	D
Perchloric Acid	C	B	D	B	D	A	D	D	D	D	B	A	D	-
Perchloroethylene	D	D	D	D	B	A	D	D	D	A	A	A	D	D
Petroleum	A	D	A	B	B	A	A	B	A	A	A	A	A	A
Phenol	D	D	D	D	D	A	D	D	D	-	A	A	A	-
Phosphate Esters, 72° F	A	A	A	D	A	A	A	D	D	-	-	-	-	-
Phosphoric Acid, 40%	D	A	D	A	A	A	A	D	D	D	B	A	D	B
Picric Acid	C	C	D	C	C	A	D	D	D	D	A	A	D	D
Potassium Chloride (Aq)	A	A	B	A	A	A	-	A	A	-	B	B	-	D
Potassium Cyanide	A	A	B	A	A	A	-	A	A	B	A	A	D	D
Potassium Dichromate (Aq)	A	A	B	A	B	A	-	B	A	A	B	B	B	-
Potassium Hydroxide (Aq) 50%	B	A	D	B	A	A	B	D	B	A	A	A	-	-
Potassium Nitrate (Aq)	A	A	B	A	A	A	-	A	A	A	A	B	B	B
Potassium Sulfate (Aq)	A	A	B	A	A	A	-	A	A	A	B	B	A	B
Propane	B	D	B	B	A	A	-	C	A	A	A	A	-	A
Propyl Alcohol	A	A	-	A	D	A	A	A	A	A	A	A	-	B
Propyl Nitrate	-	B	-	D	-	A	-	D	D	-	-	-	-	-
Propylene	D	D	-	D	-	A	-	D	D	A	A	A	A	-
Propylene Glycol 70°F	A	A	-	C	-	A	-	B	A	A	A	A	-	-
Pydraul 50E	B	B	A	D	A	A	-	D	D	A	A	A	-	-
Pydraul 312C	B	D	B	D	A	A	A	D	D	A	A	A	-	-
R														
Resorcinol	D	B	D	D	D	A	D	D	D	-	-	-	-	-
S														
SAE No. 10 Oil	A	D	A	-	A	A	D	A	A	A	A	A	A	A
Sea Water	A	A	A	A	A	A	A	D	A	B	A	A	D	B
Silicate Esters	B	D	C	A	B	A	-	A	B	-	-	-	-	-
Silicone Grease	A	A	A	A	A	A	-	A	A	A	A	A	A	A
Silicone Oil	A	A	B	A	B	A	-	A	A	A	A	A	A	A
Silver Nitrate	A	A	-	A	A	A	-	A	B	B	A	A	A	B
Skydrol 500	A	A	B	D	A	A	A	D	D	A	A	A	A	-
Soap Solution	A	A	A	B	B	A	A	C	A	A	A	A	A	A
Soda Ash	A	A	B	A	B	A	-	B	A	A	A	A	D	B
Sodium Acetate (Aq)	B	A	-	B	B	A	-	D	B	A	A	A	A	A
Sodium Chloride (Aq)	A	A	A	A	A	A	A	A	A	B	B	A	D	D
Sodium Hydroxide, 50%	A	A	C	A	A	A	A	B	B	D	B	B	D	D

Chemical Resistance Table

The table below is based on reliable information. Care should be taken to use this data as a guide only, and to take into account such variables as temperature, concentration and fluid contamination. All ratings are given at room temperature, unless stated otherwise. For High Temperature Applications, contact hwaseung Corporation.

WARNING! Never use brass couplings with any ammonia based fluids.

Rating Scale	HS Corporation Hose Poly- mers									Couplings & Adapters													
Blank: No known data available A: Excellent, little or no swelling or softening B: Good, swelling or softening is moderate C: Fair, conditional service may be expected D: Unsatisfactory, not recommended -: Not tested	CPE		EPDM		Polyester		Neoprene		Nylon		Teflon		TPE		Urethane		Nitrile		Carbon Steel	Stainless Steel 304	Stainless Steel 316	Aluminum	Brass
Chemical Name																							
S																							
Sodium Hypochlorite (Aq)	B	B	B	B	A	A	A	D	B	D	D	D	D	-									
Sodium Sulfide	A	A	B	A	A	A	-	A	A	D	D	B	D	D									
Sodium Nitrate	A	A	B	B	B	A	-	B	A	A	B	B	B	B									
Sodium Peroxide	B	A	B	B	D	A	-	D	B	D	A	A	A	D									
Stannic Chloride (Aq)	A	A	B	C	D	A	-	B	A	D	D	D	D	D									
Steam, 212° F	D	A	D	D	D	A	A	D	D	A	A	A	-	B									
Stearic Acid	B	B	B	B	A	A	A	A	B	D	B	A	D	D									
Styrene	D	D	D	D	A	A	-	D	D	B	D	B	D	B									
Sulfur Chloride	D	D	C	D	D	A	-	C	D	D	D	B	D	D									
Sulfur Dioxide	C	A	D	D	D	A	-	D	D	B	A	A	A	A									
Sulfuric Acid (Diluted)	B	A	A	A	D	A	A	D	B	D	B	A	D	-									
Sulfuric Acid (Concentrated)	D	D	D	D	D	A	-	D	D	-	A	A	-	-									
T																							
Tannic Acid	A	A	A	A	A	A	A	A	A	B	A	A	B	D									
Tar, Bituminous	B	D	B	C	B	A	-	B	B	A	A	A	A	B									
Tartaric Acid	A	C	B	B	A	A	A	A	A	D	B	B	B	D									
Tertiary Butyl Alcohol	B	B	-	B	-	A	-	D	B	-	-	-	-	-									
Tertiary Butyl Mercaptan	D	D	-	D	-	A	-	D	D	-	-	-	-	-									
Tetrachloroethylene	D	D	-	D	C	A	-	D	D	-	-	-	-	-									
Tetra Hydrofuran (THF)	C	D	C	D	A	A	D	D	D	B	-	-	-	-									
Toluene	C	D	C	D	A	A	D	D	D	A	A	A	A	A									
Transformer Oil	A	D	-	B	B	A	-	B	A	A	A	A	A	A									
Transmission Fluid, Type A	B	D	B	B	B	A	-	B	A	A	A	A	A	A									
Tributyl Phosphate	-	D	C	D	B	A	-	D	D	A	-	-	D										
Trichloroacetic Acid	D	B	D	D	D	A	-	D	D	-	-	-	-	-									
Trichloroethane	D	D	D	D	B	A	D	D	D	-	-	-	-	-									
Trichloroethylene	D	D	D	D	B	A	D	D	D	D	B	A	D	A									
Trisodium Phosphate	A	A	A	A	A	A	-	B	A	-	-	-	-	-									
Tung Oil	A	D	B	A	B	A	-	C	A	A	A	A	A	A									
Turpentine	C	D	B	D	A	A	D	D	A	D	A	A	A	B									
U																							
Urea	A	A	B	A	A	A	-	B	A	A	A	A	B	-									
Uric Acid	-	-	D	-	A	A	A	D	-	-	-	-	-	-									
V																							
Vinegar	A	A	C	B	A	A	-	D	C	D	B	A	D	D									
Vinyl Chloride	D	D	-	D	-	A	-	-	D	B	A	A	B	D									
W																							
Water, 72° F	A	A	A	A	A	A	A	A	A	A	A	A	A	A									
Water, 140° F	A	A	B	A	A	A	A	D	A	B	A	A	A	A									

Rating Scale	HS Corporation Hose Poly- mers									Couplings & Adapters				
Blank No known data available A Excellent, little or no swelling or softening B Good, swelling or softening is moderate C Fair, conditional service may be expected D Unsatisfactory, not recommended - Not tested										Carbon Steel	Stainless Steel 304	Stainless Steel 316	Aluminum	Brass
Chemical Name	CPE	EPDM	Polyester	Neoprene	Nylon	Teflon	TPE	Urethane	Nitrile					
W														
Water, 212° F	A	A	D	D	D	A	A	D	D	C	B	B	C	C
Water/Glycol solutions 72°F	A	A	A	A	A	A	A	C	A	-	-	-	-	-
Water/Glycol solutions 125°F	A	-	B	A	A	A	A	D	A	-	-	-	-	-
Water/Glycol solutions 180°F	A	-	D	A	A	A	A	D	A	-	-	-	-	-
Water, Soda	A	A	A	-	A	A	A	-	A	D	B	B	D	D
White Oil	A	D	-	B	-	A	-	A	A	-	-	-	-	-
Wood Oil	A	D	B	B	B	A	-	C	A	A	A	A	A	-
X														
Xylene	D	D	C	D	B	A	D	D	D	B	B	B	-	-
Z														
Zinc Chloride (Solution)	A	A	C	A	B	A	A	B	A	D	B	A	D	D





Hoses

HWASEUNG Corporation

SYMBOL	
	Hose Inner Diameter
	Hose Outer Diameter
	Maximum Working Pressure
	Minimum Burst Pressure
	Minimum Bend Radius
	Weight

- # 10010 Hydraulic Hose(SAE 100R1 Type AT)
- # 10020 Hydraulic Hose(SAE 100R2 Type AT)
- # 21010 Hydraulic Hose(EN 853 Type 1SN / SAE 100R1 Type AT)
- # 21020 Hydraulic Hose(EN 853 Type 2SN / SAE 100R2 Type AT)
- # Pilot Compact Hydraulic Hose
- # 10016 Compact Hydraulic Hose(SAE 100R16)
- # 10017 3,000Psi Compact Hydraulic Hose(SAE 100R17)
- # 30010 Compact Hydraulic Hose(EN 857 Type 1SC)
- # 30020 Compact Hydraulic Hose(EN 857 Type 2SC)
- # 65020 Jack Hydraulic Hose(W.P = 700Bar, S.F 2 : 1)
- # 55010 Medium Pressure Hose(Textile Braid)
- # 40010 Pressure Washer Hose(1 Wire Braid)
- # High Pressure Blast Hose(4Wire Spiral)
- # 75010 & 75020 Hydraulic Air Hose
- # 10060 Textile Braid Hose(SAE 100R6)
- # 10012 4W/S Hydraulic Hose(SAE 100R12)
- # 10013 4W/S Hydraulic Hose(SAE 100R13)
- # 22041 4W/S Hydraulic Hose(EN 856 4SP)
- # 22042 4W/S Hydraulic Hose(EN 856 4SH)
- # 10040 Suction & Return Line Hose(SAE 100R4)
- # 45010 & 45020 Steam Hydraulic Hose
- # Oil Stand Hose
- # High Temperature Hydraulic Hose(1Wire Braid)
- # Big Bore Wire Braid Hose(2Wire Braid)
- # Paint Spray Hose

Hose Visual Index

1Wire Braid Hose ▶▶▶	# 10010 Hydraulic Hose 	# 21010 Hydraulic Hose 
# Pilot Compact Hydraulic Hose 	# 10017 3,000Psi Compact Hydraulic Hose 	# 30010 Compact Hydraulic Hose 
# 40010 Pressure Washer Hose  	# 75010 Hydraulic Air Hose 	# 45010 Steam Hydraulic Hose 
# Oil Stand Hose  	# High Temperature Hydraulic Hose  	2Wire Braid Hose ▶▶▶
# 21020 Hydraulic Hose 	# 10016 Compact Hydraulic Hose 	# 10017 3,000Psi Compact Hydraulic Hose 
# 30020 Compact Hydraulic Hose 	# 65020 Jack Hydraulic Hose 	# 75020 Hydraulic Air Hose 

# 45020 Steam Hydraulic Hose 	# Big Bore Wire Braid Hose 	4Wire Spiral Hose ▶▶▶
# High Pressure Blast Hose 	# 10012 4W/S Hydraulic Hose 	# 10013 4W/S Hydraulic Hose 
# 22041, 22042 4W/S Hydraulic Hose 	1Textile Briad Hose & Etc ▶▶▶	# 55010 Medium Pressure Hose 
# 10060 Textile Braid Hose 	# 10040 Suction & Return Line Hose 	# Paint Spray Hose 

10010 Hydraulic Hose (SAE 100R1 Type AT)

Structure

Tube | Oil Resistance Synthetic Rubber

Reinforcement | 1 Wire Braid(1W/B)

Cover | Oil, Ozone, Weather and Abrasion Resistance
Synthetic Rubber



Use and Working Temperature

Mineral working oil and lubricating oil Use Line |

-40°C ~ +100°C(-40°F ~ +212°F) / Intermittent duty, possible to use up to +125°C(+257°F)

Water, Water + Glycol, Water + Oil Emulsion Working Oil Use Line |

to +85°C(+185°F)

Air Use Line | -40°C ~ +70°C(-40°F ~ +158°F)

Maximum Working Pressure Range : 26 ~193 Bar

Part No.												
	inch	mm	inch	mm	bar	psi	bar	psi	inch	mm	kg/m	lb/ft
10010-K04	1/4	6.4	0.59	15.0	193	2,750	772	11,000	3.94	100	0.22	0.15
10010-K05	5/16	7.9	0.65	16.6	175	2,500	700	10,000	4.53	115	0.27	0.18
10010-K06	3/8	9.5	0.75	19.0	158	2,250	632	9,000	4.92	125	0.34	0.23
10010-K08	1/2	12.7	0.87	22.2	140	2,000	560	8,000	7.09	180	0.42	0.28
10010-K10	5/8	15.9	1.00	25.4	105	1,500	420	6,000	8.07	205	0.51	0.34
10010-K12	3/4	19.1	1.15	38.1	88	1,250	352	5,000	9.45	240	0.66	0.44
10010-K16	1	25.4	1.50	38.1	70	1,000	280	4,000	11.81	300	0.96	0.65
10010-K20	1-1/4	31.8	1.90	48.3	44	625	176	2,500	16.54	420	1.34	0.90
10010-K24	1-1/2	38.1	2.15	54.6	35	500	140	2,000	19.69	500	1.65	1.11
10010-K32	2	50.8	2.65	67.3	26	375	104	1,500	24.80	630	2.15	1.44

For air or gas application above 10Bar, the cover should be pin pricked and requires its working pressure above 20Bar the resin hose is suitable.



10020 Hydraulic Hose (SAE 100R2 Type AT)

Structure

Tube | Oil Resistance Synthetic Rubber

Reinforcement | 2 Wire Braid(2W/B)

Cover | Oil, Ozone, Weather and Abrasion Resistance
Synthetic Rubber



Use and Working Temperature

Mineral working oil and lubricating oil Use Line |

-40°C ~ +100°C (-40°F ~ +212°F) / with intermittent use, to +125°C (+257°F)

Water, Water + Glycol, Water + Oil Emulsion Working Oil Use Line |
to +85°C (+185°F)

Air Use Line | -40°C ~ +70°C (-40°F ~ +158°F)

Maximum Working Pressure Range : 79 ~ 350Bar

Part No.												
	inch	mm	inch	mm	bar	psi	bar	psi	inch	mm	kg/m	lb/ft
10020-K04	1/4	6.4	0.62	15.7	350	5,000	1,400	20,000	3.94	100	0.36	0.24
10020-K05	5/16	7.9	0.68	17.3	298	4,250	1,192	17,000	4.53	115	0.43	0.29
10020-K06	3/8	9.5	0.78	19.7	280	4,000	1,120	16,000	4.92	125	0.53	0.36
10020-K08	1/2	12.7	0.91	23.1	245	3,500	980	14,000	7.09	180	0.66	0.44
10020-K10	5/8	15.9	1.04	26.3	190	2,750	760	11,000	8.07	205	0.79	0.53
10020-K12	3/4	19.1	1.19	30.2	158	2,250	632	9,000	9.45	240	1.02	0.69
10020-K16	1	25.4	1.53	38.9	140	2,000	560	8,000	11.81	300	1.45	0.97
10020-K20	1-1/4	31.8	1.95	49.6	114	1,625	456	6,500	16.54	420	2.20	1.48
10020-K24	1-1/2	38.1	2.20	56.0	88	1,250	352	5,000	19.69	500	2.38	1.60
10020-K32	2	50.8	2.70	68.6	79	1,125	316	4,500	24.80	630	2.99	2.01

For air or gas application above 10Bar, the cover should be pin pricked and requires its working pressure above 20Bar the resin hose is suitable.

21010 Hydraulic Hose (EN 853 Type 1SN / SAE 100R1 Type AT)

21010 SHAR (Super High Abrasion Resistant)

Structure

Tube | Oil Resistance Synthetic Rubber

Reinforcement | 1 Wire Braid(1W/B)

Cover | Oil, Ozone, Weather and Abrasion Resistance
Synthetic Rubber



Use and Working Temperature

Mineral working oil and lubricating oil Use Line |

-40°C ~ +100°C (-40°F ~ +212°F) / with intermittent use, to +125°C (+257°F)

Water, Water + Glycol, Water + Oil Emulsion Working Oil Use Line |

to +85°C (+185°F)

Air Use Line | -40°C ~ +70°C (-40°F ~ +158°F)

Maximum Working Pressure Range : 40 ~ 230Bar

Part No.												
	inch	mm	inch	mm	bar	psi	bar	psi	inch	mm	kg/m	lb/ft
21010-K04	1/4	6.4	0.53	13.4	230	3,250	920	13,000	3.94	100	0.21	0.14
21010-K05	5/16	7.9	0.59	15.0	230	3,250	920	13,000	4.53	115	0.24	0.16
21010-K06	3/8	9.5	0.69	17.4	210	3,000	840	12,000	5.12	130	0.33	0.22
21010-K08	1/2	12.7	0.81	20.6	175	2,500	700	10,000	7.09	180	0.41	0.28
21010-K10	5/8	15.9	0.93	23.7	140	2,000	560	8,000	7.87	200	0.45	0.30
21010-K12	3/4	19.1	1.09	27.7	123	1,750	492	7,000	9.45	240	0.58	0.39
21010-K16	1	25.4	1.40	35.6	90	1,275	360	5,100	11.81	300	0.88	0.59
21010-K20	1-1/4	31.8	1.71	43.5	63	900	252	3,600	16.54	420	1.23	0.83
21010-K24	1-1/2	38.1	1.97	50.0	51	725	204	2,900	19.69	500	1.51	1.01
21010-K32	2	50.8	2.52	64.0	40	575	160	2,300	24.80	630	1.97	1.32

For air or gas application above 10Bar, the cover should be pin pricked and requires its working pressure above 20Bar the resin hose is suitable.



21020 Hydraulic Hose (EN 853 Type 2SN / SAE 100R2 Type AT)

21020 SHAR (Super High Abrasion Resistant)

Structure

Tube | Oil Resistance Synthetic Rubber

Reinforcement | 2 Wire Braid(2W/B)

Cover | Oil, Ozone, Weather and Abrasion Resistance
Synthetic Rubber



Use and Working Temperature

Mineral working oil and lubricating oil Use Line |

-40°C ~ +100°C (-40°F ~ +212°F) / with intermittent use, to +125°C (+257°F)

Water, Water + Glycol, Water + Oil Emulsion Working Oil Use Line |
to +85°C (+185°F)

Air Use Line | -40°C ~ +70°C (-40°F ~ +158°F)

Maximum Working Pressure Range : 88 ~ 410Bar

Part No.												
	inch	mm	inch	mm	bar	psi	bar	psi	inch	mm	kg/m	lb/ft
21020-K04	1/4	6.4	0.59	15.0	410	5,800	1,640	23,200	3.94	100	0.33	0.22
21020-K05	5/16	7.9	0.65	16.6	370	5,250	1,480	21,000	4.53	115	0.39	0.26
21020-K06	3/8	9.5	0.75	19.0	350	5,000	1,400	20,000	5.12	130	0.50	0.34
21020-K08	1/2	12.7	0.87	22.2	300	4,250	1,200	17,000	7.09	180	0.59	0.40
21020-K10	5/8	15.9	1.00	25.4	250	3,625	1,000	14,500	7.87	200	0.71	0.48
21020-K12	3/4	19.1	1.15	29.3	217	3,125	868	12,500	9.45	240	0.86	0.58
21020-K16	1	25.4	1.50	38.1	175	2,500	700	10,000	11.81	300	1.28	0.86
21020-K20	1-1/4	31.8	1.90	48.3	158	2,250	632	9,000	16.54	420	2.02	1.36
21020-K24	1-1/2	38.1	2.15	54.6	123	1,800	492	7,200	19.69	500	2.20	1.48
21020-K32	2	50.8	2.65	67.3	88	1,300	352	5,200	24.80	630	2.85	1.92

For air or gas application above 10Bar, the cover should be pin pricked and requires its working pressure above 20Bar the resin hose is suitable.

Pilot Compact Hydraulic Hose

Structure

Tube | Oil Resistance Synthetic Rubber

Reinforcement | 1 Wire Braid(1W/B)

Cover | Oil, Ozone, Weather and Abrasion Resistance
Synthetic Rubber



Use and Working Temperature

Mineral working oil and lubricating oil Use Line |

-40°C ~ +100°C (-40°F ~ +212°F) / with intermittent use, to +125°C (+257°F)

Water, Water + Glycol, Water + Oil Emulsion Working Oil Use Line |

to +85°C (+185°F)

Air Use Line | -40°C ~ +70°C (-40°F ~ +158°F)

Maximum Working Pressure Range : 125Bar

Part No.												
	inch	mm	inch	mm	bar	psi	bar	psi	inch	mm	kg/m	lb/ft
PILOT-K04	1/4	6.4	0.45	11.5	125	1,800	500	7,150	1.57	40	0.17	0.11
PILOT-K05	5/16	7.9	0.53	13.5	125	1,800	500	7,150	1.97	50	0.20	0.13
PILOT-K06	3/8	9.5	0.65	16.5	125	1,800	500	7,150	2.36	60	0.29	0.19
PILOT-K08	1/2	12.7	0.75	19.0	125	1,800	500	7,150	2.95	75	0.42	0.28

For air or gas application above 10Bar, the cover should be pin pricked and requires its working pressure above 20Bar the resin hose is suitable.

10016 Compact Hydraulic Hose (SAE 100R16)

10016 SHAR (Super High Abrasion Resistant)

Structure

Tube | Oil Resistance Synthetic Rubber

Reinforcement | 2 Wire Braid(2W/B)

Cover | Oil, Ozone, Weather and Abrasion Resistance
Synthetic Rubber



Use and Working Temperature

Mineral working oil and lubricating oil Use Line |

-40°C ~ +100°C (-40°F ~ +212°F) / with intermittent use, to +125°C (+257°F)

Water, Water + Glycol, Water + Oil Emulsion Working Oil Use Line |
to +85°C (+185°F)

Air Use Line | -40°C ~ +70°C (-40°F ~ +158°F)

Maximum Working Pressure Range : 140 ~ 350Bar

Part No.												
	inch	mm	inch	mm	bar	psi	bar	psi	inch	mm	kg/m	lb/ft
10016-K04	1/4	6.4	0.53	13.5	350	5,000	1,400	20,000	1.97	50	0.27	0.18
10016-K05	5/16	7.9	0.60	15.2	300	4,250	1,200	17,000	2.17	55	0.33	0.22
10016-K06	3/8	9.5	0.68	17.2	280	4,000	1,120	16,000	2.56	65	0.40	0.27
10016-K08	1/2	12.7	0.81	20.5	245	3,500	980	14,000	3.54	90	0.50	0.34
10016-K10	5/8	15.9	0.94	24.0	193	2,750	772	11,000	3.94	100	0.60	0.40
10016-K12	3/4	19.1	1.09	27.8	158	2,250	632	9,000	4.72	120	0.80	0.54
10016-K16	1	25.4	1.41	35.9	140	2,000	560	8,000	5.91	150	1.14	0.77

For air or gas application above 10Bar, the cover should be pin pricked and requires its working pressure above 20Bar the resin hose is suitable.

10017 3,000Psi Compact Hydraulic Hose

(SAE 100R17)

Structure

Tube | Oil Resistance Synthetic Rubber

Reinforcement | 1/4" to 5/8" - 1 Wire Braid(1W/B), 3/4" to 1" 2 Wire Braid(2W/B)

Cover | Oil, Ozone, Weather and Abrasion Resistance
Synthetic Rubber



Use and Working Temperature

Mineral working oil and lubricating oil Use Line |

-40°C ~ +100°C(-40°F ~ +212°F) / with intermittent use, to +125°C(+257°F)

Water, Water + Glycol, Water + Oil Emulsion Working Oil Use Line |

to +85°C(+185°F)

Air Use Line | -40°C ~ +70°C(-40°F ~ +158°F)

Maximum Working Pressure Range : 210Bar

Part No.												
	inch	mm	inch	mm	bar	psi	bar	psi	inch	mm	kg/m	lb/ft
10017-K04	1/4	6.4	0.49	12.5	210	3,000	840	12,000	1.97	50	0.19	0.13
10017-K05	5/16	7.9	0.56	14.3	210	3,000	840	12,000	2.17	55	0.22	0.15
10017-K06	3/8	9.5	0.65	16.5	210	3,000	840	12,000	2.56	65	0.32	0.22
10017-K08	1/2	12.7	0.78	19.7	210	3,000	840	12,000	3.54	90	0.46	0.31
10017-K10	5/8	15.9	0.94	24.0	210	3,000	840	12,000	3.94	100	0.57	0.38
10017-K12	3/4	19.1	1.10	28.0	210	3,000	840	12,000	4.72	120	0.78	0.52
10017-K16	1	25.4	1.43	36.2	210	3,000	840	12,000	5.91	150	1.40	0.94

For air or gas application above 10Bar, the cover should be pin pricked and requires its working pressure above 20Bar the resin hose is suitable.

30010 Compact Hydraulic Hose (EN 857 Type 1SC)

30010 SHAR (Super High Abrasion Resistant)

Structure

Tube | Oil Resistance Synthetic Rubber

Reinforcement | 1 Wire Braid(1W/B)

Cover | Oil, Ozone, Weather and Abrasion Resistance
Synthetic Rubber



Use and Working Temperature

Mineral working oil and lubricating oil Use Line |

-40°C ~ +100°C (-40°F ~ +212°F) / with intermittent use, to +125°C (+257°F)

Water, Water + Glycol, Water + Oil Emulsion Working Oil Use Line |
to +85°C (+185°F)

Air Use Line | -40°C ~ +70°C (-40°F ~ +158°F)

Maximum Working Pressure Range : 88 ~ 225Bar

Part No.												
	inch	mm	inch	mm	bar	psi	bar	psi	inch	mm	kg/m	lb/ft
30010-K04	1/4	6.4	0.49	12.4	225	3,200	900	12,800	2.95	75	0.18	0.12
30010-K05	5/16	7.9	0.54	13.6	215	3,050	860	12,200	3.35	85	0.21	0.14
30010-K06	3/8	9.5	0.62	15.8	180	2,550	720	10,200	3.54	90	0.26	0.17
30010-K08	1/2	12.7	0.74	18.9	160	2,300	640	9,200	5.12	130	0.34	0.23
30010-K10	5/8	15.9	0.88	22.3	130	1,850	520	7,400	5.91	150	0.44	0.30
30010-K12	3/4	19.1	1.02	25.8	105	1,500	420	6,000	7.09	180	0.54	0.36
30010-K16	1	25.4	1.32	33.5	88	1,250	352	5,000	9.06	230	0.77	0.52

For air or gas application above 10Bar, the cover should be pin pricked and requires its working pressure above 20Bar the resin hose is suitable.

30020 Compact Hydraulic Hose (EN 857 Type 2SC)

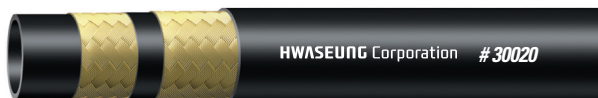
30020 SHAR (Super High Abrasion Resistant)

Structure

Tube | Oil Resistance Synthetic Rubber

Reinforcement | 2 Wire Braid(2W/B)

Cover | Oil, Ozone, Weather and Abrasion Resistance
Synthetic Rubber



Use and Working Temperature

Mineral working oil and lubricating oil Use Line |

-40°C ~ +100°C (-40°F ~ +212°F) / with intermittent use, to +125°C (+257°F)

Water, Water + Glycol, Water + Oil Emulsion Working Oil Use Line |

to +85°C (+185°F)

Air Use Line | -40°C ~ +70°C (-40°F ~ +158°F)

Maximum Working Pressure Range : 165 ~ 400Bar

Part No.												
	inch	mm	inch	mm	bar	psi	bar	psi	inch	mm	kg/m	lb/ft
30020-K04	1/4	6.4	0.53	13.5	400	5,700	1,600	22,800	2.95	75	0.27	0.18
30020-K05	5/16	7.9	0.60	15.2	350	5,000	1,400	20,000	3.35	85	0.33	0.22
30020-K06	3/8	9.5	0.68	17.2	330	4,700	1,320	18,800	3.54	90	0.40	0.27
30020-K08	1/2	12.7	0.81	20.5	275	3,950	1,100	15,800	5.12	130	0.50	0.34
30020-K10	5/8	15.9	0.94	24.0	250	3,600	1,000	14,400	6.69	170	0.60	0.40
30020-K12	3/4	19.1	1.09	27.8	215	3,100	860	12,400	7.87	200	0.80	0.54
30020-K16	1	25.4	1.41	35.9	165	2,350	660	9,400	9.84	250	1.14	0.77

For air or gas application above 10Bar, the cover should be pin pricked and requires its working pressure above 20Bar the resin hose is suitable.



65020 Jack Hydraulic Hose (W.P = 700Bar, S.F 2 : 1)

Structure

Tube | Oil Resistance Synthetic Rubber

Reinforcement | 2 Wire Braid(2W/B)

Cover | Oil, Ozone, Weather and Abrasion Resistance
Synthetic Rubber



Use and Working Temperature

For hydraulic jack |

-40°C ~ +100°C (-40°F ~ +212°F) / with intermittent use, to +125°C (+257°F)

Part No.												
	inch	mm	inch	mm	bar	psi	bar	psi	inch	mm	kg/m	lb/ft
65020-K04	1/4	6.4	0.59	15.1	700	10,000	1,400	20,000	3.94	100	0.36	0.24
65020-K06	3/8	9.5	0.74	18.9	700	10,000	1,400	20,000	5.12	130	0.53	0.36

For air or gas application above 10Bar, the cover should be pin pricked and requires its working pressure above 20Bar the resin hose is suitable.



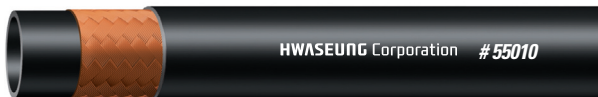
55010 Medium Pressure Hose (Textile Braid)

Structure

Tube | Oil Resistance Synthetic Rubber

Reinforcement | 1 Textile Braid(1T/B)

Cover | Oil, Ozone, Weather and Abrasion Resistance
Synthetic Rubber



Use and Working Temperature

Mineral working oil and lubricating oil Use Line |
-40°C ~ +100°C (-40°F ~ +212°F)

Water, Water + Glycol, Water + Oil Emulsion Working Oil Use Line |
to +85°C (+185°F)

Air Use Line | -40°C ~ +70°C (-40°F ~ +158°F)

Maximum Working Pressure Range : 35Bar

Part No.												
	inch	mm	inch	mm	bar	psi	bar	psi	inch	mm	kg/m	lb/ft
55010-K04	1/4	6.4	0.52	13.3	35	500	140	2,000	2.56	65	0.15	0.10
55010-K05	5/16	7.9	0.58	14.8	35	500	140	2,000	2.76	70	0.17	0.11
55010-K06	3/8	9.5	0.64	16.2	35	500	140	2,000	2.95	75	0.18	0.12
55010-K08	1/2	12.7	0.75	19.0	35	500	140	2,000	3.94	100	0.22	0.15
55010-K10	5/8	15.9	0.91	23.0	35	500	140	2,000	5.12	130	0.31	0.21
55010-K12	3/4	19.1	1.08	27.5	35	500	140	2,000	5.91	150	0.42	0.28
55010-K16	1	25.4	1.36	34.5	35	500	140	2,000	7.87	200	0.58	0.39

For air or gas application above 10Bar, the cover should be pin pricked and requires its working pressure above 20Bar the resin hose is suitable.



40010 Pressure Washer Hose (1 Wire Braid)

Structure

Tube | Oil Resistance Synthetic Rubber

Reinforcement | 1 Wire Braid(1W/B)

Cover | Oil, Ozone, Weather and Abrasion Resistance
Synthetic Rubber



Use and Working Temperature

Mineral working oil and lubricating oil Use Line |
-40°C ~ +100°C (-40°F ~ +212°F)

Air Use Line | -40°C ~ +70°C (-40°F ~ +158°F)

Maximum Working Pressure Range : 210Bar

Cover Color

Black Blue

Part No.												
	inch	mm	inch	mm	bar	psi	bar	psi	inch	mm	kg/m	lb/ft
40010-K04	1/4	6.4	0.49	12.5	210	3,000	840	12,000	1.97	50	0.19	0.13
40010-K05	5/16	7.9	0.56	14.3	210	3,000	840	12,000	2.17	55	0.22	0.15
40010-K06	3/8	9.5	0.65	16.5	210	3,000	840	12,000	2.56	65	0.32	0.22
40010-K08	1/2	12.7	0.78	19.7	210	3,000	840	12,000	3.54	90	0.46	0.31

For air or gas application above 10Bar, the cover should be pin pricked and requires its working pressure above 20Bar the resin hose is suitable.

High Pressure Blast Hose (4Wire Spiral)

Structure

Tube | Oil Resistance Synthetic Rubber

Reinforcement | 4 Wire Spiral(4W/S)

Cover | Oil, Ozone, Weather and Abrasion Resistance
Synthetic Rubber



Use and Working Temperature

Application |

Very high pressure hose for water scaling and jetting system

Mineral working oil and lubricating oil Use Line |

-40°C ~ +100°C (-40°F ~ +212°F)

Water, Water + Glycol, Water + Oil Emulsion Working Oil Use Line |

to +85°C (+185°F)

Maximum Working Pressure Range : 165 ~ 400Bar

Part No.												
	inch	mm	inch	mm	bar	psi	bar	psi	inch	mm	kg/m	lb/ft
HPBH-K04	1/4	6.4	0.69	17.6	1250	17,900	3,125	44,600	7.87	200	0.62	0.42
HPBH-K06	3/8	9.5	0.83	21.0	1250	17,900	3,125	44,600	8.27	210	0.92	0.62
HPBH-K08	1/2	12.7	0.96	24.5	1100	15,700	2,750	39,300	9.06	230	1.22	0.82
HPBH-K12	3/4	19.1	1.26	32.0	1100	15,700	2,750	39,300	9.84	250	1.86	1.25

75010 & 75020 Hydraulic Air Hose

Structure

Tube | Synthetic Rubber

Reinforcement | 1 Wire Braid or 2 Wire Braid(1W/B or 2W/B)

Cover | Ozone, Weather and Abrasion Resistance
Synthetic Rubber



Use and Working Temperature

Application |

High pressure air service for use in mining, civil engineering and construction Site

Temperature range |

-40°C ~ +70°C (-40°F ~ +160°F)

Cover Color

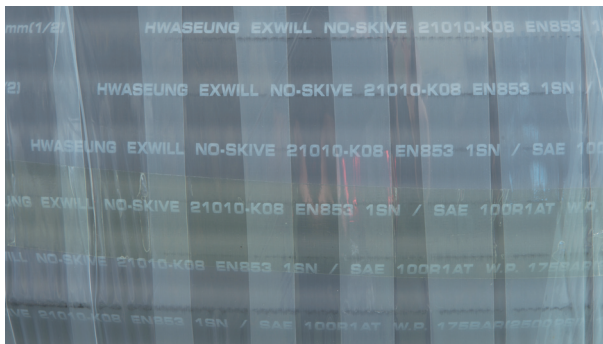
Black Yellow

75010 : 1 Wire Braid Air Hose

Part No.												
	inch	mm	inch	mm	bar	psi	bar	psi	inch	mm	kg/m	lb/ft
75010-K32	2	50.8	2.47	62.8	35	500	140	2,000	24.80	630	1.90	1.28

75020 : 2 Wire Braid Air Hose

Part No.												
	inch	mm	inch	mm	bar	psi	bar	psi	inch	mm	kg/m	lb/ft
75020-K32	2	50.8	2.54	64.4	45	650	180	2,600	24.80	630	2.10	1.41



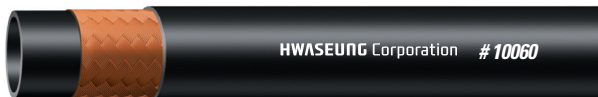
10060 Textile Braid Hose (SAE 100R6)

Structure

Tube | Oil Resistance Synthetic Rubber

Reinforcement | 1 Textile Braid(1T/B)

Cover | Oil, Ozone, Weather and Abrasion Resistance
Synthetic Rubber



Use and Working Temperature

Mineral working oil and lubricating oil Use Line |
-40°C ~ +100°C (-40°F ~ +212°F)

Water, Water + Glycol, Water + Oil Emulsion Working Oil Use Line |
to +85°C (+185°F)

Air Use Line | -40°C ~ +70°C (-40°F ~ +158°F)

Maximum Working Pressure Range : 20 ~ 28Bar

Part No.												
	inch	mm	inch	mm	bar	psi	bar	psi	inch	mm	kg/m	lb/ft
10060-K04	1/4	6.4	0.50	12.7	28	400	112	1,600	2.56	65	0.13	0.09
10060-K05	5/16	7.9	0.56	14.3	28	400	112	1,600	2.95	75	0.15	0.10
10060-K06	3/8	9.5	0.63	15.9	28	400	112	1,600	2.95	75	0.18	0.12
10060-K08	1/2	12.7	0.78	19.8	28	400	112	1,600	3.94	100	0.25	0.17
10060-K10	5/8	15.9	0.91	23.0	25	350	100	1,400	5.12	130	0.31	0.21
10060-K12	3/4	19.1	1.03	26.2	20	300	80	1,100	5.91	150	0.36	0.24

For air or gas application above 10Bar, the cover should be pin pricked and requires its working pressure above 20Bar the resin hose is suitable.

10012 4W/S Hydraulic Hose (SAE 100R12)

10012 SHAR (Super High Abrasion Resistant)

Structure

Tube | Oil Resistance Synthetic Rubber

Reinforcement | 4 Wire Spiral(4W/S)

Cover | Oil, Ozone, Weather and Abrasion Resistance
Synthetic Rubber



Use and Working Temperature

Mineral working oil and lubricating oil Use Line |
-40°C ~ +125°C (-40°F ~ +257°F)

Water, Water + Glycol, Water + Oil Emulsion Working Oil Use Line |
to +85°C (+185°F)

Air Use Line | -40°C ~ +70°C (-40°F ~ +158°F)

Maximum Working Pressure Range : 175 ~ 280Bar

Part No.												
	inch	mm	inch	mm	bar	psi	bar	psi	inch	mm	kg/m	lb/ft
10012-K12	3/4	19.1	1.21	30.7	280	4,000	1,120	16,000	9.45	240	1.47	0.99
10012-K16	1	25.4	1.50	38.0	280	4,000	1,120	16,000	11.81	300	2.00	1.34
10012-K20	1-1/4	31.8	1.85	47.0	210	3,000	840	12,000	16.54	420	2.86	1.92
10012-K24	1-1/2	38.1	2.11	53.5	175	2,500	700	10,000	19.69	500	3.24	2.18
10012-K32	2	50.8	2.63	66.7	175	2,500	700	10,000	24.80	630	4.80	3.23

For air or gas application above 10Bar, the cover should be pin pricked and requires its working pressure above 20Bar the resin hose is suitable.

10013 4W/S Hydraulic Hose (SAE 100R13)

10013 SHAR (Super High Abrasion Resistant)

Structure

Tube | Oil Resistance Synthetic Rubber

Reinforcement | 4 Wire Spiral(4W/S)

Cover | Oil, Ozone, Weather and Abrasion Resistance
Synthetic Rubber



Use and Working Temperature

Mineral working oil and lubricating oil Use Line |
-40°C ~ +125°C (-40°F ~ +257°F)

Water, Water + Glycol, Water + Oil Emulsion Working Oil Use Line |
to +85°C (+185°F)

Air Use Line | -40°C ~ +70°C (-40°F ~ +158°F)

Maximum Working Pressure Range : 350Bar

Part No.												
	inch	mm	inch	mm	bar	psi	bar	psi	inch	mm	kg/m	lb/ft
10013-K12	3/4	19.1	1.26	32.1	350	5,000	1,400	20,000	9.45	240	1.68	1.13
10013-K16	1	25.4	1.52	38.7	350	5,000	1,400	20,000	11.81	300	2.24	1.51

For air or gas application above 10Bar, the cover should be pin pricked and requires its working pressure above 20Bar the resin hose is suitable.

22041 4W/S Hydraulic Hose (EN 856 4SP)

22041 SHAR (Super High Abrasion Resistant)

Structure

Tube | Oil Resistance Synthetic Rubber

Reinforcement | 4 Wire Spiral(4W/S)

Cover | Oil, Ozone, Weather and Abrasion Resistance
Synthetic Rubber



Use and Working Temperature

Mineral working oil and lubricating oil Use Line |

-40°C ~ +125°C (-40°F ~ +257°F)

Water, Water + Glycol, Water + Oil Emulsion Working Oil Use Line |

to +85°C (+185°F)

Air Use Line | -40°C ~ +70°C (-40°F ~ +158°F)

Maximum Working Pressure Range : 350 ~ 450Bar

Part No.												
	inch	mm	inch	mm	bar	psi	bar	psi	inch	mm	kg/m	lb/ft
22041-K06	3/8	9.5	0.84	21.4	450	6,500	1,800	26,000	7.09	180	0.78	0.52
22041-K08	1/2	12.7	0.97	24.6	420	6,000	1,680	24,000	9.06	230	0.93	0.62
22041-K10	5/8	15.9	1.11	28.2	350	5,000	1,400	20,000	9.84	250	1.17	0.79

For air or gas application above 10Bar, the cover should be pin pricked and requires its working pressure above 20Bar the resin hose is suitable.

22042 4W/S Hydraulic Hose (EN 856 4SH)

22042 SHAR (Super High Abrasion Resistant)

Structure

Tube | Oil Resistance Synthetic Rubber

Reinforcement | 4 Wire Spiral(4W/S)

Cover | Oil, Ozone, Weather and Abrasion Resistance
Synthetic Rubber



Use and Working Temperature

Mineral working oil and lubricating oil Use Line |
-40°C ~ +125°C (-40°F ~ +257°F)

Water, Water + Glycol, Water + Oil Emulsion Working Oil Use Line |
to +85°C (+185°F)

Air Use Line | -40°C ~ +70°C (-40°F ~ +158°F)

Maximum Working Pressure Range : 250 ~ 420Bar

Part No.												
	inch	mm	inch	mm	bar	psi	bar	psi	inch	mm	kg/m	lb/ft
22042-K12	3/4	19.1	1.27	32.2	420	6,000	1,680	24,000	11.02	280	1.53	1.03
22042-K16	1	25.4	1.52	38.7	380	5,500	1,520	22,000	13.39	340	2.06	1.38
22042-K20	1-1/4	31.8	1.79	45.5	350	5,000	1,400	20,000	18.11	460	2.46	1.65
22042-K24	1-1/2	38.1	2.11	53.5	300	4,300	1,200	17,200	22.05	560	3.35	2.25
22042-K32	2	50.8	2.68	68.1	250	3,600	1,000	14,400	27.56	700	4.55	3.06

For air or gas application above 10Bar, the cover should be pin pricked and requires its working pressure above 20Bar the resin hose is suitable.

10040 Suction & Return Line Hose (SAE 100R4)

Structure

Tube | Oil Resistance Synthetic Rubber

Reinforcement | High tensile spiraled synthetic fiber reinforced with a helical spiral-wire

Cover | Oil, Ozone, Weather and Abrasion Resistance Synthetic Rubber



Use and Working Temperature

Mineral working oil and lubricating oil Use Line |
-40°C ~ +125°C (-40°F ~ +257°F)

Vacuum |
737mmHg / 29inHg

Maximum Working Pressure Range : 7 ~ 17Bar

Part No.												
	inch	mm	inch	mm	bar	psi	bar	psi	inch	mm	kg/m	lb/ft
10040-K16	1	25.4	1.50	38.1	17	250	68	1,000	5.91	150	0.99	0.67
10040-K20	1-1/4	31.8	1.75	44.5	14	200	56	800	7.87	200	1.19	0.80
10040-K24	1-1/2	38.1	2.00	50.8	10	150	40	600	9.84	250	1.42	0.95
10040-K32	2	50.8	2.52	63.9	7	100	28	400	11.81	300	1.93	1.30

For air or gas application above 10Bar, the cover should be pin pricked and requires its working pressure above 20Bar the resin hose is suitable.

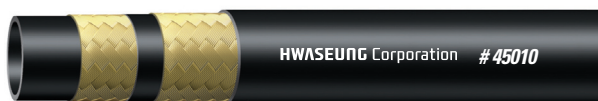
45010 & 45020 Steam Hydraulic Hose

Structure

Tube | Special High Temperature Resistance Synthetic Rubber

Reinforcement | 1 Wire Braid or 2 Wire Braid
(1W/B or 2W/B)

Cover | High temperature, Ozone and Weather Resistance
Synthetic Rubber



Use and Working Temperature

Applications |

High Pressure Steam and Pre-Heating Supply Line

Hose Working Temperature |

-30°C ~ +210°C(-20°F ~ +410°F) / Recommend a Intermittent duty at the temperature over 150°C

Cover Color

Black Red

Part No.												
	inch	mm	inch	mm	bar	psi	bar	psi	inch	mm	kg/m	lb/ft

45010 : 1 Wire Braid Steam Hose

45010-K12	3/4	19.1	1.18	30.0	14	200	140	2,000	9.45	240	0.90	0.60
45010-K16	1	25.4	1.44	36.5	14	200	140	2,000	11.81	300	1.20	0.81
45010-K20	1-1/4	31.8	1.83	46.5	14	200	140	2,000	16.54	420	1.60	1.08
45010-K24	1-1/2	38.1	2.01	51.0	14	200	140	2,000	19.69	500	2.00	1.34
45010-K32	2	50.8	2.62	66.5	14	200	140	2,000	24.80	630	2.40	1.61

45020 : 2 Wire Braid Steam Hose

45020-K12	3/4	19.1	1.22	31.0	17.5	250	175	2,500	9.45	240	1.20	0.81
45020-K16	1	25.4	1.42	36.0	17.5	250	175	2,500	11.81	300	1.50	1.01
45020-K20	1-1/4	31.8	1.91	48.5	17.5	250	175	2,500	16.54	420	2.10	1.41
45020-K24	1-1/2	38.1	2.19	55.5	17.5	250	175	2,500	19.69	500	2.50	1.68
45020-K32	2	50.8	2.68	68.0	17.5	250	175	2,500	24.80	630	3.10	2.08

■ Saturation Vapor Pressure and Temperature Comparison Table

압력	온도	압력	온도	압력	온도	압력	온도	압력	온도	압력	온도	압력	온도
kg/cm ²	°C	kg/cm ²	°C	kg/cm ²	°C	kg/cm ²	°C	kg/cm ²	°C	kg/cm ²	°C	kg/cm ²	°C
0.1	45.45	0.7	89.45	3.0	132.9	7.0	164.2	12	187.1	20	211.4	40	249.1
0.2	59.66	1.0	99.09	4.0	142.9	8.0	169.6	14	194.1	25	22.9		
0.3	68.67	1.5	110.8	5.0	151.1	9.0	174.5	16	200.4	30	232.2		
0.5	80.86	2.0	119.6	6.0	158.1	10	179.0	18	206.1	35	241.4		



Oil Stand Hose

Structure

Tube | Oil Resistance Synthetic Rubber

Reinforcement | 1 Wire Braid(1W/B)

Cover | Oil, Ozone, Weather and Abrasion Resistance
Synthetic Rubber



Use and Working Temperature

Applications |

For transferring Gasoline and Diesel

Hose Working Temperature |

-40°C ~ +93°C(-40°F ~ +200°F)

Cover Color

Black Yellow Blue Green

Part No.												
	inch	mm	inch	mm	bar	psi	bar	psi	inch	mm	kg/m	lb/ft
OSH-K12	3/4	19.1	1.10	28.0	10	150	40	600	3.94	100	0.60	0.40
OSH-K16	1	25.4	1.38	35.0	10	150	40	600	5.12	130	0.80	0.54



High Temperature Hydraulic Hose (1Wire Braid)

Structure

Tube | Special High Temperature Resistance Synthetic Rubber

Reinforcement | 1 Wire Braid(1W/B)

Cover | Oil, High temperature, Ozone and Weather Resistance
Synthetic Rubber



Use and Working Temperature

Mineral working oil and lubricating oil Use Line |
-40°C ~ +150°C (-40°F ~ +302°F)

Water, Water + Glycol, Water + Oil Emulsion Working Oil Use Line |
to +85°C (+185°F)

Air Use Line | -40°C ~ +70°C (-40°F ~ +158°F)

Maximum Working Pressure Range : 26 ~ 193Bar

Cover Color

Black Blue

Part No.												
	inch	mm	inch	mm	bar	psi	bar	psi	inch	mm	kg/m	lb/ft
HTH-K04	1/4	6.4	0.53	13.5	193	2,750	772	11,000	3.94	100	0.22	0.15
HTH-K05	5/16	7.9	0.60	15.2	175	2,500	700	10,000	4.53	115	0.27	0.18
HTH-K06	3/8	9.5	0.69	17.6	158	2,250	632	9,000	4.92	125	0.34	0.23
HTH-K08	1/2	12.7	0.82	20.8	140	2,000	560	8,000	7.09	180	0.42	0.28
HTH-K10	5/8	15.9	0.94	23.9	105	1,500	420	6,000	8.07	205	0.51	0.34
HTH-K12	3/4	19.1	1.10	28.0	88	1,250	352	5,000	9.45	240	0.66	0.44
HTH-K16	1	25.4	1.42	36.0	70	1,000	280	4,000	11.81	300	0.96	0.65
HTH-K20	1-1/4	31.8	1.73	43.9	44	625	176	2,500	16.54	420	1.34	0.90
HTH-K24	1-1/2	38.1	1.99	50.5	35	500	140	2,000	19.69	500	1.65	1.11
HTH-K32	2	50.8	2.54	64.6	26	375	104	1,500	24.80	630	2.15	1.44

For air or gas application above 10Bar, the cover should be pin pricked and requires its working pressure above 20Bar the resin hose is suitable.



Big Bore Wire Braid Hose (2Wire Braid)

Structure

Tube | Specially Designed Synthetic Rubber

Reinforcement | 2 Wire Braid(2W/B)

Cover | Ozone, Weather and Abrasion Resistance
Synthetic Rubber



Use and Working Temperature

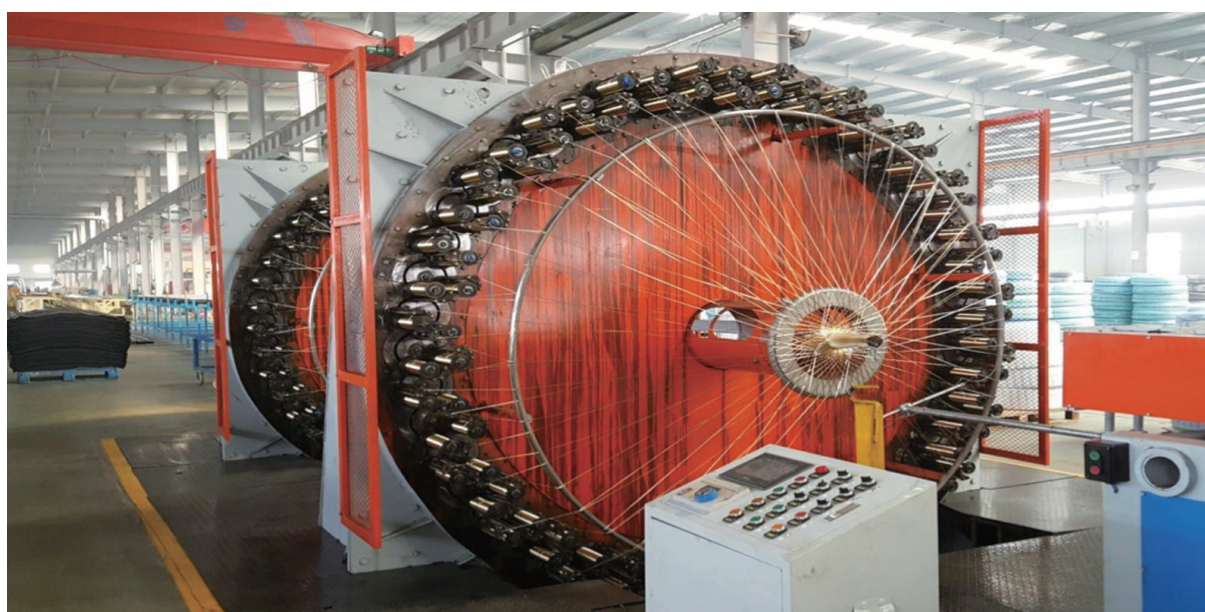
Applications |

For transferring fluids (Oil, Air, Water, Material and etc.)

Hose Working Temperature |

-30°C ~ +80°C (-20°F ~ +180°F)

Part No.												
	inch	mm	inch	mm	bar	psi	bar	psi	inch	mm	kg/m	lb/ft
BBWB-2.5	2-1/2	63.5	3.13	79.5	52.5	750	158	2,250	25.59	650		
BBWB-3	3	76.2	3.62	92.0	45.5	650	137	1,950	29.53	750		
BBWB-4	4	101.6	4.69	119.0	42	600	126	1,800	39.37	1,000		
BBWB-5	5	127.0	5.71	145.0	28	400	84	1,200	51.18	1,300		
BBWB-6	6	152.4	6.69	170.0	21	300	63	900	59.06	1,500		



Paint Spray Hose

Product Specifications

- Application** | • Light Weight, Excellent Flexibility for Operations.
• Superior Safety with Antistatic Properties.
• Excellent Resistance to High Pressure and Safe Construction for the Applications.

Tube | White & Black High Grade of Chemical Resistance Nylon(Polyamid)

- Reinforcement** | • 1 Wire braid
• 1 Textile braid + 1 Wire braid
• 2 Textile braid + 1 Wire braid

Cover | Abrasion, Oil, Weather & Ozone Resistance Poly Urethane

Temperature | -40°C ~ 100°C



Part No.							
	inch	mm	mm	bar	bar	mm	g/m
▶ 1 Wire braid							※ S.F 3 : 1
HSPW 04	3/16"	4.7	9.6	460	1,380	35	130
HSPW 06	1/4"	6.3	11.7	430	1,290	45	160
HSPW 09	3/8"	9.4	15.5	330	990	60	240
▶ 1 Textile braid + 1 Wire braid							※ S.F 3 : 1
HSPTW 06	1/4"	6.3	12.8	430	1,290	50	230
HSPTW 09	3/8"	9.5	16.8	430	1,290	70	310
▶ 1 Textile(Aramid) braid + 1 Wire braid							※ S.F 4 : 1
HSPAW 04	3/16"	4.7	11.2	500	2,000	50	170
HSPAW 06	1/4"	6.3	12.8	500	2,000	65	210
▶ 2 Textile(Aramid + P.E) braid + 1 Wire braid							※ S.F 4 : 1
HSPTW 09	3/8"	9.4	17.3	500	2,000	90	360



Fittings

HWASEUNG Corporation



Fitting Nomenclature

09 Series
12 Series
13 Series
CT Series
CA Series

Fitting Nomenclature

C	/	1	/	G2	/	13	-	16	-	16	S	100
1		2		3		4		5		6	7	8

※ Example Description

① Crimping Type

② Straight

③ SAE Flange 62 Code

④ SAE 100R13 Hose

⑤ Connection Size 1"

⑥ Hose Size 1"

⑦ Stainless Steel

⑧ Special Drop Length 100mm

1. Type _ C : Crimping / Permanent Type with No-Skive Hose

NS : No-Skive Type Shell

S : Crimping Type with Skive Hose

SS : Skive Type Shell

2. Shape _ 1 : Straight

2 : 22.5° Elbow

3 : 30° Elbow

4 : 45° Elbow

6 : 60° Elbow

7 : 67.5° Elbow

9 : 90° Elbow

3. Head Configuration or Connection Type _

C : JIS B8363 60° Cone with PF Thread Nut

F : JIS B8363 30° Flare with PF Thread Nut

M : JIS B8363 30° Flare with Metric Thread Nut

X : SAE J516 37° Flare(74° Cone) with UN(F) Thread

Y : Male JIC 37°

R : SAE J516 O-Ring Face Seal with UN(F) Thread

L : SAE J516 Long O-Ring Face with UN(F) Thread

G1 : SAE J518 Flange 61 Code

G2 : SAE J518 Flange 62 Code

P : PT Male Pipe Taper Thread

N : NPTF Male Pipe Taper Thread

FF : Male JIS/BSP Parallel Pipe Rigid Straight(30° Flare)

4. Hose Series _

09 : SAE 100R1, 2, 3, 9 / EN853 1SN, 2SN

12 : SAE 100R12

13 : SAE 100R13

CT : For Excavator Pilot Line

CA : 420Bar Heavy Duty

5. Connect Size / 6. Hose Size _

Dash Size	Hose I.D	JIS B8363 PT/PF Thread	NPT(F) Thread	SAE J514 37° Flare UNF	SAE J1453 ORFS	SAE J518 Flange 61 / 62	JIS B8363 Metric Thread
-2	1/8"	1/8"-28	1/8"-27	5/16"-24			
-3	3/16"			3/8"-24			
-4	1/4"	1/4"-19	1/4"-18	7/16"-20	9/16"-18		M14 X 1.5
-5	5/16"			1/2"-20			
-6	3/8"	3/8"-19	3/8"-18	9/16"-18	11/16"-16		M18 X 1.5
-8	1/2"	1/2"-14	1/2"-14	3/4"-16	13/16"-16	30.2 / 31.8	M22 X 1.5
-10	5/8"			7/8"-14	1"-14		
-12	3/4"	3/4"-14	3/4"-14	1-1/16"-12	1-3/16"-12	38.1 / 41.3	M27 X 2.0
-14	7/8"			1-3/16"-12			
-16	1"	1"-11	1"-11.5	1-5/16"-12	1-7/16"-12	44.5 / 47.6	M33 X 2.0
-20	1-1/4"	1-1/4"-11	1-1/4"-11.5	1-5/8"-12	1-11/16"-12	50.8 / 54.0	M42 X 2.0
-24	1-1/2"	1-1/2"-11	1-1/2"-11.5	1-7/8"-12	2"-12	60.3 / 63.5	
-32	2"	2"-11	2"-11.5	2-1/2"-12		71.4 / 79.4	

Tube Size	6	8	10	12	14	15	16	18	20	22	25	28	30	35	38	42
DIN 2353 24° Cone Heavy	M14X1.5	M16X1.5	M18X1.5	M20X1.5	M22X1.5		M24X1.5		M30X2.0		M36X2.0		M42X2.0		M52X2.0	
DIN 2353 24° Cone Light	M12X1.5	M14X1.5	M16X1.5	M18X1.5		M22X1.5		M26X1.5		M30X2.0		M36X2.0		M42X2.0		M52X2.0

7. Material _

Blank : Carbon Steel

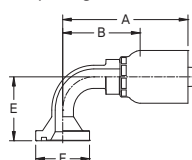
S : Stainless Steel

B : Brass

8. Option _

Drop Length : Actual Drop Length

ex) D100, D125



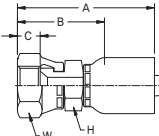
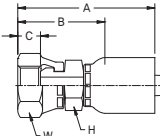
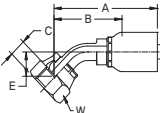
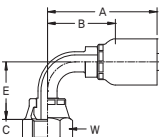
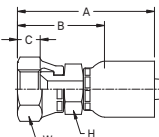
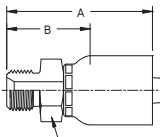
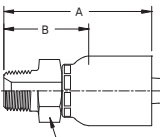
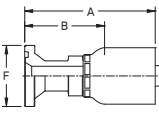
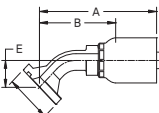
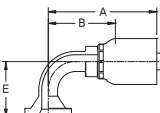
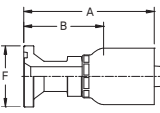
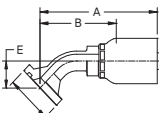
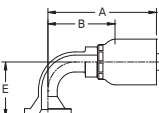
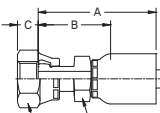
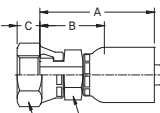
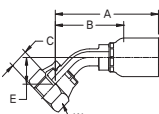
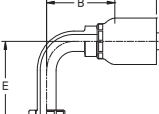
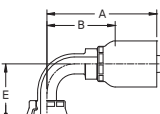
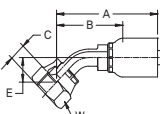
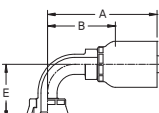
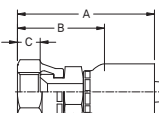
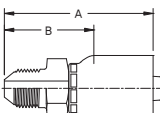
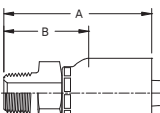
B : Cut-Off Allowance

F : Flange Dia

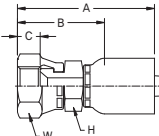
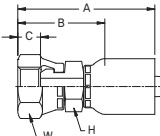
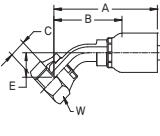
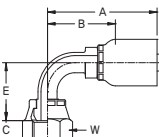
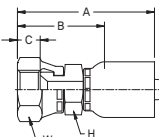
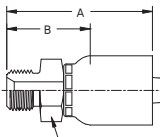
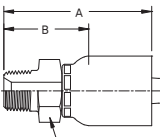
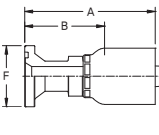
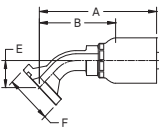
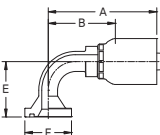
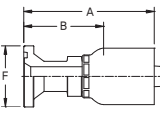
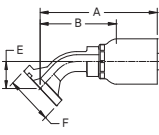
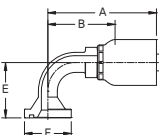
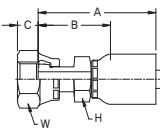
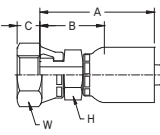
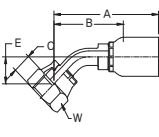
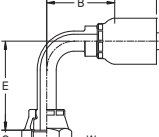
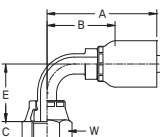
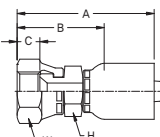
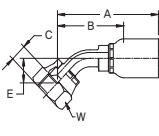
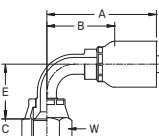
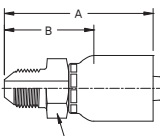
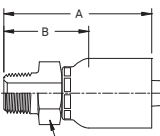
E : Drop Length

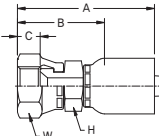
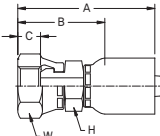
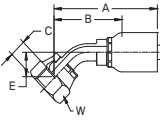
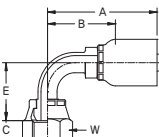
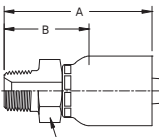
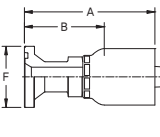
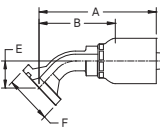
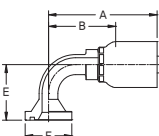
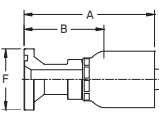
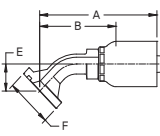
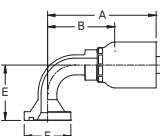
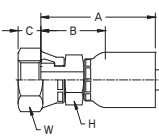
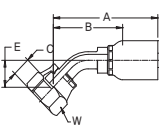
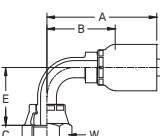
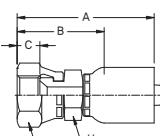
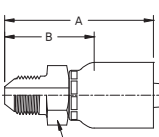
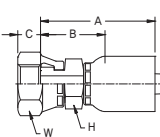
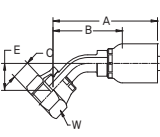
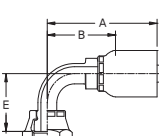
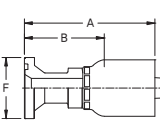
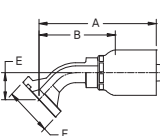
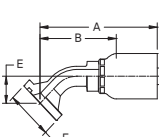
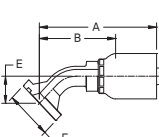
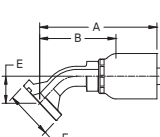
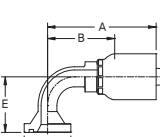


Fittings Visual Index

09 Series 	C1F09 (30° Flare) 	C1C09 (60° Flare) 	C4C09 45° Elbow (60° Cone) 
C9C09 90° Elbow (60° Cone) 	C1M09 (30° Flare) 	C1FF09 (30° Flare) 	C1P09 
C1G209 (Flange) 	C4G209 (Flange) 	C9G209 (Flange) 	C1G109 (Flange) 
C4G109 (Flange) 	C9G109 (Flange) 	C1L09 (O-Ring) 	C1R09 (O-Ring) 
C4R09 (O-Ring) 	C9R09 D (O-Ring) 	C9R09 (O-Ring) 	C4X09 (O-Ring) 
C9X09 	C1X09 	C1Y09 	C1N09 

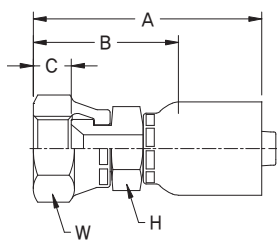
Fittings Visual Index

12 Series 	C1F12 (30° Flare) 	C1C12 (60° Cone) 	C4C12 (60° Cone) 
C9C12 (60° Cone) 	C1M12 (30° Flare) 	C1FF12 (30° Flare) 	C1P12 
C1G212 	C4G212 (Flange) 	C9G212 (Flange) 	C1G112 (Flange) 
C4G112 (Flange) 	C9G112 (Flange) 	C1L12 (O-Ring) 	C1R12 (O-Ring) 
C4R12 (O-Ring) 	C9R12 D (O-Ring) 	C9R12 (O-Ring) 	C1X12 
C4X12 	C9X12 	C1Y12 	C1N12 

13 Series 	C1F13 (30° Flare) 	C1C13 (60° Cone) 	C4C13 (60° Cone) 
C9C13 (60° Cone) 	C1P13 	C1G213 (Flange) 	C4G213 (Flange) 
C9G213 (Flange) 	C1G113 (Flange) 	C4G113 (Flange) 	C9G113 (Flange) 
C1R13 (O-Ring) 	C4R13 (O-Ring) 	C9R13 (O-Ring) 	C1X13 
C1Y13 	CT Series 	C1RCT (O-Ring) 	C4RCT (O-Ring) 
C9RCT (O-Ring) 	CA Series 	C1CA13 (Flange) 	C2CA13 (Flange) 
C3CA13 (Flange) 	C4CA13 (Flange) 	C6CA13 / C7CA13 (Flange) 	C9CA13 (Flange) 

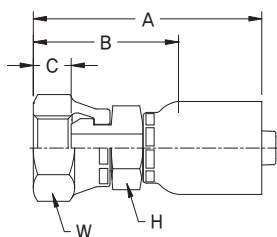
09 Series

C1F09 Female JIS/BSP Parallel Pipe Swivel Straight (30° Flare)

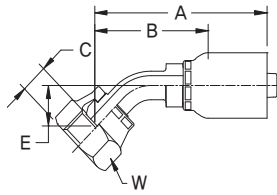


Part No.	Thread Size	Hose Size	A		Hex H	Hex W	Cut-Off Allowance B		NUT C	
	PF	inch	inch	mm	mm	mm	inch	mm	inch	mm
C1F09-4-4	1/4X19	1/4	2.01	51	19	19	1.26	32	0.35	8.9
C1F09-6-4	3/8X19	1/4	2.16	55	24	22	1.41	36	0.39	9.9
C1F09-6-6	3/8X19	3/8	2.43	62	24	22	1.40	36	0.39	9.9
C1F09-8-8	1/2X14	1/2	2.78	71	27	27	1.52	39	0.47	11.9
C1F09-12-10	3/4X14	5/8	3.16	80	36	36	1.72	44	0.50	12.7
C1F09-12-12	3/4X14	3/4	3.17	80	36	36	1.73	44	0.50	12.7
C1F09-16-16	1X11	1	3.64	92	41	41	2.02	51	0.58	14.7
C1F09-20-20	1-1/4X11	1-1/4	3.98	101	50	50	2.29	58	0.60	15.2

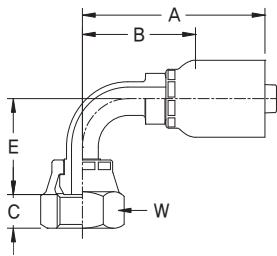
C1C09 Female JIS/BSP Parallel Pipe Swivel Straight (60° Cone)



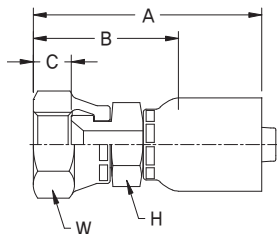
Part No.	Thread Size	Hose Size	A		Hex H	Hex W	Cut-Off Allowance B		NUT C	
	PF	inch	inch	mm	mm	mm	inch	mm	inch	mm
C1C09-4-4	1/4X19	1/4	2.07	53	19	19	1.32	33	0.23	5.8
C1C09-6-4	3/8X19	1/4	2.17	55	22	22	1.42	36	0.27	6.9
C1C09-6-5	3/8X19	5/16	2.25	57	22	22	1.49	38	0.27	6.9
C1C09-6-6	3/8X19	3/8	2.44	62	22	22	1.41	36	0.27	6.9
C1C09-8-6	1/2X14	3/8	2.57	65	27	27	1.54	39	0.35	8.9
C1C09-8-8	1/2X14	1/2	2.79	71	27	27	1.54	39	0.35	8.9
C1C09-12-8	3/4X14	1/2	3.02	77	36	36	1.77	45	0.38	9.7
C1C09-12-10	3/4X14	5/8	3.22	82	36	36	1.78	45	0.38	9.7
C1C09-12-12	3/4X14	3/4	3.22	82	36	36	1.79	45	0.38	9.7
C1C09-16-12	1X11	3/4	3.42	87	41	41	1.98	50	0.46	11.7
C1C09-16-16	1X11	1	3.73	95	41	41	2.11	54	0.46	11.7
C1C09-20-20	1-1/4X11	1-1/4	4.05	103	50	50	2.36	60	0.48	12.2
C1C09-24-24	1-1/2X11	1-1/2	3.91	99	60	60	2.54	65	0.48	12.2
C1C09-32-24	2X11	1-1/2	4.09	104	70	70	2.72	69	0.58	14.7
C1C09-32-32	2X11	2	4.49	114	70	70	2.71	69	0.58	14.7

09 Series**C4C09 Female JIS/BSP Parallel Pipe Swivel 45° Elbow (60° Cone)**

Part No.	Thread Size	Hose Size	A		Hex W	Cut-Off Allowance B		DROP E		NUT C	
	PF	inch	inch	mm	mm	inch	mm	inch	mm	inch	mm
C4C09-4-4	1/4X19	1/4	2.20	56	19	1.45	37	0.63	16	0.23	5.8
C4C09-6-6	3/8X19	3/8	2.57	65	24	1.55	39	0.67	17	0.27	6.9
C4C09-8-8	1/2X14	1/2	3.06	78	24	1.80	46	0.83	21	0.35	8.9
C4C09-12-12	3/4X14	3/4	3.82	97	27	2.38	61	1.02	26	0.38	9.7
C4C09-16-16	1X11	1	4.80	122	36	3.18	81	1.30	33	0.46	11.7
C4C09-20-20	1-1/4X11	1-1/4	5.86	149	36	4.17	106	1.81	46	0.48	12.2
C4C09-24-24	1-1/2X11	1-1/2	6.33	161	50	4.96	126	2.09	53	0.48	12.2

C9C09 Female JIS/BSP Parallel Pipe Swivel 90° Elbow (60° Cone)

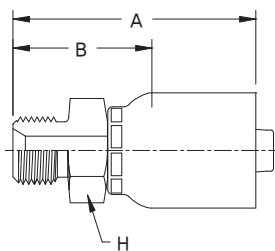
Part No.	Thread Size	Hose Size	A		Hex W	Cut-Off Allowance B		DROP E		NUT C	
	PF	inch	inch	mm	mm	inch	mm	inch	mm	inch	mm
C9C09-4-4	1/4X19	1/4	1.78	45	19	1.03	26	1.14	29	0.23	5.8
C9C09-6-6	3/8X19	3/8	2.20	56	22	1.18	30	1.30	33	0.27	6.9
C9C09-8-6	1/2X14	3/8	2.45	62	27	1.42	36	1.61	41	0.35	8.9
C9C09-8-8	1/2X14	1/2	2.70	69	27	1.44	37	1.61	41	0.35	8.9
C9C09-12-12	3/4X14	3/4	3.49	89	36	2.05	52	2.17	55	0.38	9.7
C9C09-16-16	1X11	1	4.70	119	41	3.08	78	2.89	74	0.46	11.7
C9C09-20-20	1-1/4X11	1-1/4	5.10	129	50	3.41	87	3.48	89	0.48	12.2
C9C09-24-24	1-1/2X11	1-1/2	5.57	141	60	4.20	107	4.33	110	0.48	12.2

C1M09 Female JIS/Metric Swivel Straight (30° Flare)

Part No.	Thread Size	Hose Size	A		Hex H	Hex W	Cut-Off Allowance B		NUT C	
	Metric	inch	inch	mm	mm	mm	inch	mm	inch	mm
C1M09-4-4	M14X1.5	1/4	2.06	52	19	19	1.31	33	0.40	10.2
C1M09-6-4	M18X1.5	1/4	2.17	55	24	24	1.42	36	0.40	10.2
C1M09-6-6	M18X1.5	3/8	2.44	62	24	24	1.41	36	0.40	10.2
C1M09-8-8	M22X1.5	1/2	2.82	72	27	27	1.56	40	0.51	13.0
C1M09-12-12	M27X2	3/4	3.16	80	36	36	1.72	44	0.49	12.4
C1M09-16-16	M33X2	1	3.57	91	41	41	1.95	50	0.51	13.0
C1M09-20-20	M42X2	1-1/4	3.95	100	50	50	2.26	57	0.57	14.5

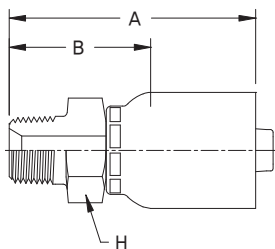
09 Series

C1FF09 Male JIS/BSP Parallel Pipe-Rigid Straight (30° Flare)



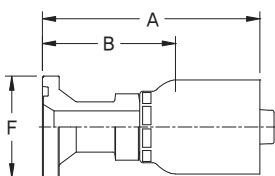
Part No.	Thread Size	Hose Size	A		Hex H	Cut-Off Allowance B	
	PF	inch	inch	mm	mm	inch	mm
1FF09-4-4	1/4X19	1/4	1.93	49	19	1.18	30
1FF09-6-6	3/8X19	3/8	2.29	58	22	1.26	32
1FF09-8-8	1/2X14	1/2	2.65	67	27	1.39	35
1FF09-12-12	3/4X14	3/4	3.02	77	36	1.58	40
1FF09-16-16	1X11	1	3.45	88	41	1.83	46
1FF09-20-20	1-1/4X11	1-1/4	3.77	96	50	2.08	53
1FF09-24-24	1-1/2X11	1-1/2	3.58	91	60	2.21	56

C1P09 Male JIS/BSP Taper Pipe-Rigid Straight

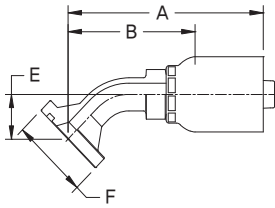


Part No.	Thread Size	Hose Size	A		Hex H	Cut-Off Allowance B	
	PT	inch	inch	mm	mm	inch	mm
C1P09-4-4	1/4X19	1/4	1.92	49	19	1.17	30
C1P09-6-4	3/8X19	1/4	1.98	50	22	1.23	31
C1P09-6-6	3/8X19	3/8	2.24	57	22	1.22	31
C1P09-8-8	1/2X14	1/2	2.68	68	27	1.42	36
C1P09-12-12	3/4X14	3/4	2.98	76	36	1.54	39
C1P09-16-16	1X11	1	3.48	88	41	1.86	47
C1P09-20-20	1-1/4X11	1-1/4	3.79	96	50	2.10	53
C1P09-24-24	1-1/2X11	1-1/2	3.43	87	60	2.06	52
C1P09-32-32	2X11	2	4.20	107	70	2.42	61

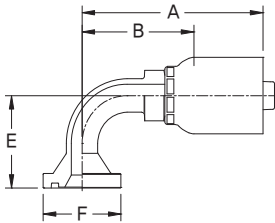
C1G209 SAE Code 62 Flange Straight



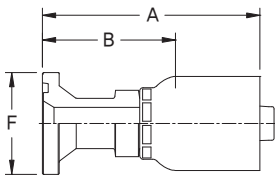
Part No.	FLANGE Size	Hose Size	A		Cut-Off Allowance B		FLANGE DIA. F	
		inch	inch	mm	inch	mm	inch	mm
C1G209-12-12	3/4	3/4	4.12	105	2.68	68	1.63	41.3
C1G209-16-16	1	1	4.81	122	3.19	81	1.88	47.6
C1G209-20-20	1-1/4	1-1/4	5.01	127	3.32	84	2.13	54.0
C1G209-24-24	1-1/2	1-1/2	6.34	161	4.15	105	2.50	63.5
C1G209-32-32	2	2	7.16	182	4.96	126	3.13	79.4

09 Series**C4G209 SAE Code 62 Flange 45° Elbow**

Part No.	FLANGE Size	Hose Size	A		Cut-Off Allowance B		FLANGE DIA. F		DROP E	
		inch	inch	mm	inch	mm	inch	mm	inch	mm
C4G209-12-12	3/4	3/4	3.89	99	2.45	62	1.63	41.3	1.06	27
C4G209-16-16	1	1	4.76	121	3.14	80	1.88	47.6	1.26	32
C4G209-20-20	1-1/4	1-1/4	5.61	142	3.92	100	2.13	54.0	1.50	38
C4G209-24-24	1-1/2	1-1/2	5.92	150	4.55	115	2.50	63.5	1.73	44

C9G209 SAE Code 62 Flange 90° Elbow

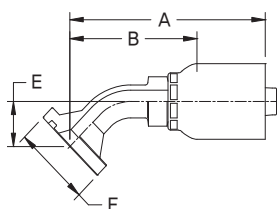
Part No.	FLANGE Size	Hose Size	A		Cut-Off Allowance B		FLANGE DIA. F		DROP E	
		inch	inch	mm	inch	mm	inch	mm	inch	mm
C9G209-12-12	3/4	3/4	3.51	89	2.07	53	1.63	41.3	2.28	58
C9G209-16-12	1	3/4	3.52	89	2.08	53	1.88	47.6	2.28	58
C9G209-16-16	1	1	4.28	109	2.66	67	1.88	47.6	2.76	70
C9G209-20-20	1-1/4	1-1/4	5.18	132	3.50	89	2.13	54.0	3.54	90
C9G209-24-24	1-1/2	1-1/2	5.44	138	4.07	103	2.50	63.5	4.09	104
C9G209-32-32	2	2	7.11	181	5.33	135	3.13	79.4	4.88	124

C1G109 SAE Code 61 Flange Straight

Part No.	FLANGE Size	Hose Size	A		Cut-Off Allowance B		FLANGE DIA. F	
		inch	inch	mm	inch	mm	inch	mm
C1G109-8-8	1/2	1/2	3.48	88	2.22	56	1.19	30.2
C1G109-12-12	3/4	3/4	3.86	98	2.42	61	1.50	38.1
C1G109-12-8	3/4	1/2	2.46	62	1.20	31	1.50	38.1
C1G109-16-12	1	3/4	2.74	70	1.31	33	1.75	44.5
C1G109-16-16	1	1	4.25	108	2.63	67	1.75	44.5
C1G109-20-16	1-1/4	1	3.20	81	1.58	40	2.00	50.8
C1G109-20-20	1-1/4	1-1/4	4.70	119	3.01	76	2.00	50.8
C1G109-24-20	1-1/2	1-1/4	3.22	82	1.54	39	2.38	60.3
C1G109-24-24	1-1/2	1-1/2	4.59	117	3.22	82	2.38	60.3
C1G109-32-24	2	1-1/2	3.14	80	1.77	45	2.81	71.4
C1G109-32-32	2	2	4.99	127	3.21	82	2.81	71.4

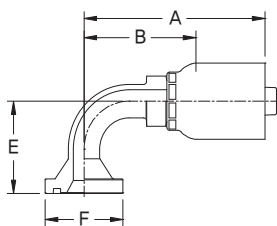
09 Series

C4G109 SAE Code 61 Flange 45° Elbow



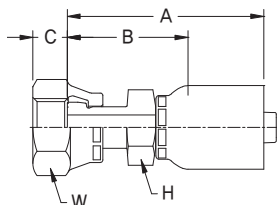
Part No.	FLANGE Size	Hose Size	A		Cut-Off Allowance B		FLANGE DIA. F		DROP E	
			inch	mm	inch	mm	inch	mm	inch	mm
C4G109-12-12	3/4	3/4	3.85	98	2.41	61	1.50	38.1	1.02	26
C4G109-16-12	1	3/4	3.85	98	2.41	61	1.75	44.5	1.10	28
C4G109-16-16	1	1	4.76	121	3.14	80	1.75	44.5	1.26	32
C4G109-20-16	1-1/4	1	4.76	121	3.14	80	2.00	50.8	1.26	32
C4G109-20-20	1-1/4	1-1/4	5.61	142	3.92	100	2.00	50.8	1.50	38
C4G109-24-20	1-1/2	1-1/4	5.72	145	4.03	102	2.38	60.3	1.69	43
C4G109-24-24	1-1/2	1-1/2	5.84	148	4.47	114	2.38	60.3	1.61	41
C4G109-32-32	2	2	7.19	183	5.41	138	2.81	71.4	1.97	50

C9G109 SAE Code 61 Flange 90° Elbow



Part No.	FLANGE Size	Hose Size	A		Cut-Off Allowance B		FLANGE DIA. F		DROP E	
			inch	mm	inch	mm	inch	mm	inch	mm
C9G109-12-12	3/4	3/4	3.51	89	2.07	53	1.50	38.1	2.28	58
C9G109-16-12	1	3/4	3.52	89	2.08	53	1.75	44.5	2.28	58
C9G109-16-16	1	1	4.28	109	2.66	68	1.75	44.5	2.76	70
C9G109-20-16	1-1/4	1	4.28	109	2.66	68	2.00	50.8	2.76	70
C9G109-20-20	1-1/4	1-1/4	5.39	137	3.70	94	2.00	50.8	3.54	90
C9G109-24-20	1-1/2	1-1/4	5.09	129	3.41	86	2.38	60.3	3.54	90
C9G109-24-24	1-1/2	1-1/2	5.55	141	4.18	106	2.38	60.3	4.09	104
C9G109-32-32	2	2	7.11	181	5.33	135	2.81	71.4	4.72	120

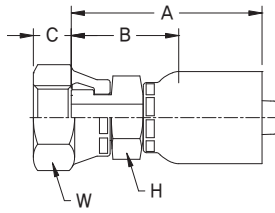
C1L09 Female "SEAL-LOK" Swivel Straight (Long) O-Ring Face Seal



Part No.	Thread Size	Hose Size	A		Hex H	Hex W	Cut-Off Allowance B		NUT C	
			inch	mm			inch	mm	inch	mm
C1L09-4-4	9/16X18	1/4	2.07	53	9/16	11/16	1.32	33	0.30	7.6
C1L09-6-4	11/16X16	1/4	2.14	54	11/16	13/16	1.39	35	0.33	8.4
C1L09-6-6	11/16X16	3/8	2.28	58	11/16	13/16	1.25	32	0.33	8.4
C1L09-8-6	13/16X16	3/8	2.53	64	13/16	15/16	1.50	38	0.42	10.7
C1L09-8-8	13/16X16	1/2	2.65	67	13/16	15/16	1.39	35	0.42	10.7
C1L09-8-10	13/16X16	5/8	2.82	72	15/16	15/16	1.38	35	0.42	10.7
C1L09-10-10	1X14	5/8	3.09	79	15/16	1-1/8	1.65	42	0.46	11.7
C1L09-12-12	1-3/16X12	3/4	3.31	84	1-1/8	1-3/8	1.87	48	0.54	13.7
C1L09-16-16	1-7/16X12	1	3.62	92	1-3/8	1-5/8	2.00	51	0.55	14.0

09 Series

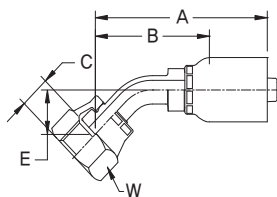
C1R09 Female "SEAL-LOK" Swivel Straight O-Ring Face Seal



Part No.	Thread Size	Hose Size	A		Hex H	Hex W	Cut-Off Allowance B		NUT C	
	UN	inch	inch	mm			inch	mm	inch	mm
C1R09-4-4	9/16X18	1/4	1.63	41	9/16	11/16	0.88	22	0.30	7.6
C1R09-4-4M	9/16X18	1/4	1.63	41	17	17	0.88	22	0.30	7.6
C1R09-4-6	9/16X18	3/8	1.90	48	11/16	11/16	0.87	22	0.30	7.6
C1R09-6-4	11/16X16	1/4	1.67	42	11/16	13/16	0.92	23	0.33	8.4
C1R09-6-4M	11/16X16	1/4	1.67	42	17	22	0.92	23	0.33	8.4
C1R09-6-5	11/16X16	5/16	1.75	44	11/16	13/16	1.00	25	0.33	8.4
C1R09-6-6	11/16X16	3/8	1.94	49	11/16	13/16	0.91	23	0.33	8.4
C1R09-6-6M	11/16X16	3/8	1.94	49	19	22	0.91	23	0.33	8.4
C1R09-6-8	11/16X16	1/2	2.16	55	13/16	13/16	0.90	23	0.33	8.4
C1R09-8-6	13/16X16	3/8	2.00	51	13/16	15/16	0.97	25	0.42	10.7
C1R09-8-6M	13/16X16	3/8	2.00	51	19	24	0.97	25	0.42	10.7
C1R09-8-8	13/16X16	1/2	2.22	56	13/16	15/16	0.96	24	0.42	10.7
C1R09-8-8M	13/16X16	1/2	2.22	56	22	24	0.96	24	0.42	10.7
C1R09-8-10M	13/16X16	5/8	2.39	61	22	24	0.95	24	0.42	10.7
C1R09-8-12	13/16X16	3/4	2.54	65	1-1/8	15/16	1.10	28	0.42	10.7
C1R09-10-8	1X14	1/2	2.30	58	15/16	1-1/8	1.04	26	0.46	11.7
C1R09-10-8M	1X14	1/2	2.30	58	24	30	1.04	26	0.46	11.7
C1R09-10-10	1X14	5/8	2.49	63	15/16	1-1/8	1.05	27	0.46	11.7
C1R09-10-10M	1X14	5/8	2.49	63	24	30	1.05	27	0.46	11.7
C1R09-12-8	1-3/16X12	1/2	2.48	63	1-1/8	1-3/8	1.22	31	0.54	13.7
C1R09-12-8M	1-3/16X12	1/2	2.48	63	32	36	1.22	31	0.54	13.7
C1R09-12-10	1-3/16X12	5/8	2.67	68	1-1/8	1-3/8	1.23	31	0.54	13.7
C1R09-12-10M	1-3/16X12	5/8	2.67	68	32	36	1.23	31	0.54	13.7
C1R09-12-12	1-3/16X12	3/4	2.68	68	1-1/8	1-3/8	1.24	31	0.54	13.7
C1R09-12-12M	1-3/16X12	3/4	2.68	68	32	36	1.24	32	0.54	13.7
C1R09-12-16	1-3/16X12	1	2.99	76	1-5/16	1-3/8	1.37	35	0.54	13.7
C1R09-16-12	1-7/16X12	3/4	2.83	72	1-3/8	1-5/8	1.39	35	0.55	14.0
C1R09-16-12M	1-7/16X12	3/4	2.83	72	36	41	1.39	35	0.55	14.0
C1R09-16-16	1-7/16X12	1	3.14	80	1-3/8	1-5/8	1.52	39	0.55	14.0
C1R09-16-16M	1-7/16X12	1	3.14	80	36	41	1.52	39	0.55	14.0
C1R09-20-16	1-11/16X12	1	3.08	78	1-5/8	1-7/8	1.46	37	0.57	14.5
C1R09-20-16M	1-11/16X12	1	3.08	78	41	50	1.46	37	0.57	14.5
C1R09-20-20	1-11/16X12	1-1/4	3.27	83	1-7/8	1-7/8	1.58	40	0.57	14.5
C1R09-20-20M	1-11/16X12	1-1/4	3.27	83	50	50	1.58	40	0.57	14.5

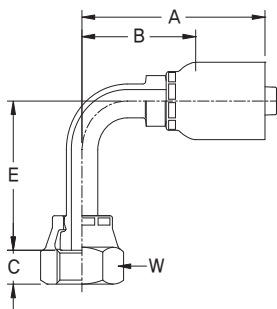
09 Series

C4R09 Female "SEAL-LOK" Swivel 45° Elbow O-Ring Face Seal



Part No.	Thread Size	Hose Size	A		Hex W	Cut-Off Allowance B		DROP E		NUT C	
	UN	inch	inch	mm		inch	mm	inch	mm	inch	mm
C4R09-4-4	9/16X18	1/4	1.97	50	11/16	1.21	31	0.39	10	0.30	7.6
C4R09-6-4	11/16X16	1/4	2.00	51	13/16	1.24	32	0.43	11	0.33	8.4
C4R09-6-6	11/16X16	3/8	2.34	59	13/16	1.31	33	0.43	11	0.33	8.4
C4R09-6-6M	11/16X16	3/8	2.61	66	22	1.58	40	0.71	18	0.33	8.4
C4R09-8-6	13/16X16	3/8	2.53	64	15/16	1.50	38	0.59	15	0.42	10.7
C4R09-8-8	13/16X16	1/2	2.82	72	15/16	1.57	40	0.59	15	0.42	10.7
C4R09-8-8M	13/16X16	1/2	2.82	72	24	1.57	40	0.59	15	0.42	10.7
C4R09-10-8	1X14	1/2	2.93	74	1-1/8	1.67	42	0.63	16	0.46	11.7
C4R09-10-10	1X14	5/8	3.18	81	1-1/8	1.73	44	0.63	16	0.46	11.7
C4R09-12-12	1-3/16X12	3/4	3.63	92	1-3/8	2.19	56	0.83	21	0.54	13.7
C4R09-12-12M	1-3/16X12	3/4	3.63	92	36	2.19	56	0.83	21	0.54	13.7
C4R09-16-12	1-7/16X12	3/4	3.75	95	1-5/8	2.32	59	0.94	24	0.55	14.0
C4R09-16-16	1-7/16X12	1	4.38	111	1-5/8	2.76	70	0.94	24	0.55	14.0
C4R09-16-16M	1-7/16X12	1	4.38	111	41	2.76	70	0.94	24	0.55	14.0
C4R09-20-20	1-11/16X12	1-1/4	5.70	145	1-7/8	4.02	102	1.61	41	0.57	14.5
C4R09-24-24	2X12	1-1/2	6.14	156	2-1/4	4.77	121	1.89	48	0.60	15.2

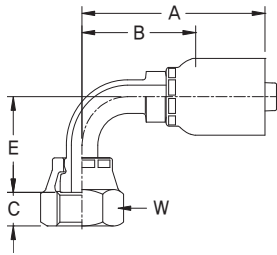
C9R09 D Female "SEAL-LOK" Swivel 90° Elbow (Long) O-Ring Face Seal



Part No.	Thread Size	Hose Size	A		Hex W	Cut-Off Allowance B		DROP E		NUT C	
	UN	inch	inch	mm		inch	mm	inch	mm	inch	mm
C9R09-4-4D	9/16X18	1/4	1.87	47	11/16	1.11	28	1.81	46	0.30	7.6
C9R09-6-6D	11/16X16	3/8	2.39	61	13/16	1.36	35	2.13	54	0.33	8.4
C9R09-8-8D	13/16X16	1/2	2.58	66	15/16	1.32	34	2.51	64	0.42	10.7
C9R09-10-10D	1X14	5/8	3.19	81	1-1/8	1.74	44	2.76	70	0.46	11.7
C9R09-12-12D	1-3/16X12	3/4	3.49	89	1-3/8	2.05	52	3.78	96	0.54	13.7
C9R09-12-12DM	1-3/16X12	3/4	3.49	89	36	2.05	52	3.78	96	0.54	13.7

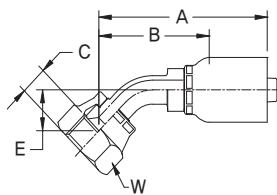
09 Series

C9R09 Female "SEAL-LOK" Swivel 90° Elbow (Short) O-Ring Face Seal



Part No.	Thread Size	Hose Size	A		Hex W	Cut-Off Allowance B		DROP E		NUT C	
	UN	inch	inch	mm		inch	mm	inch	mm	inch	mm
C9R09-4-4	9/16X18	1/4	1.78	45	11/16	1.02	26	0.83	21	0.30	7.6
C9R09-4-4M	9/16X18	1/4	1.78	45	17	1.02	26	0.83	21	0.30	7.6
C9R09-6-4	11/16X16	1/4	1.81	46	13/16	1.06	27	0.91	23	0.33	8.4
C9R09-6-6	11/16X16	3/8	2.20	56	13/16	1.18	30	0.91	23	0.33	8.4
C9R09-6-6M	11/16X16	3/8	2.20	56	22	1.18	30	0.91	23	0.33	8.4
C9R09-8-6	13/16X16	3/8	2.28	58	15/16	1.25	32	1.14	29	0.42	10.7
C9R09-8-8	13/16X16	1/2	2.58	66	15/16	1.32	34	1.14	29	0.42	10.7
C9R09-8-8M	13/16X16	1/2	2.58	66	24	1.32	34	1.14	29	0.42	10.7
C9R09-10-8	1X14	1/2	2.74	70	1-1/8	1.48	38	1.26	32	0.46	11.7
C9R09-10-10	1X14	5/8	2.97	76	1-1/8	1.53	39	1.26	32	0.46	11.7
C9R09-12-10	1-3/16X12	5/8	3.20	81	1-3/8	1.75	45	1.89	48	0.54	13.7
C9R09-12-12	1-3/16X12	3/4	3.49	89	1-3/8	2.05	52	1.89	48	0.54	13.7
C9R09-12-12M	1-3/16X12	3/4	3.49	89	36	2.05	52	1.89	48	0.54	13.7
C9R09-16-16	1-7/16X12	1	4.31	110	1-5/8	2.69	68	2.20	56	0.55	14.0
C9R09-16-16M	1-7/16X12	1	4.31	110	41	2.69	68	2.20	56	0.55	14.0
C9R09-20-20	1-11/16X12	1-1/4	5.10	129	1-7/8	3.41	87	3.23	82	0.57	14.5
C9R09-24-24	2X12	1-1/2	5.52	140	2-1/4	4.15	105	3.96	101	0.60	15.2

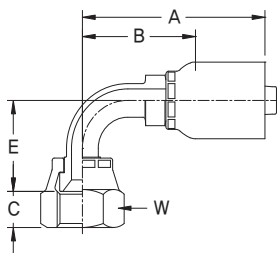
C4X09 Female SAE 37° Swivel - 45° Elbow



Part No.	Thread Size	Hose Size	A		Hex W	Cut-Off Allowance B		DROP E		NUT C	
	UN	inch	inch	mm		inch	mm	inch	mm	inch	mm
C4X09-4-4	7/16X20	1/4	1.97	50	9/16	1.22	31	0.39	10	0.34	8.6
C4X09-5-4	1/2X20	1/4	1.97	50	5/8	1.22	31	0.39	10	0.37	9.4
C4X09-6-4	9/16X18	1/4	2.00	51	11/16	1.25	32	0.43	11	0.37	9.4
C4X09-6-6	9/16X18	3/8	2.34	59	11/16	1.31	33	0.43	11	0.37	9.4
C4X09-8-6	3/4X16	3/8	2.46	63	7/8	1.44	36	0.55	14	0.42	10.7
C4X09-8-8	3/4X16	1/2	2.82	72	7/8	1.57	40	0.59	15	0.42	10.7
C4X09-10-8	7/8X14	1/2	2.86	73	1	1.61	41	0.59	15	0.49	12.4
C4X09-10-10	7/8X14	5/8	3.17	80	1	1.72	44	0.63	16	0.49	12.4
C4X09-12-10	1-1/16X12	5/8	3.63	92	1-1/4	2.19	56	0.83	21	0.56	14.2
C4X09-12-12	1-1/16X12	3/4	3.91	99	1-1/4	2.47	63	1.06	27	0.56	14.2
C4X09-16-12	1-5/16X12	3/4	3.75	95	1-1/2	2.32	59	0.94	24	0.60	15.2
C4X09-16-16	1-5/16X12	1	4.76	121	1-1/2	3.14	80	1.30	33	0.60	15.2
C4X09-20-20	1-5/8X12	1-1/4	5.84	148	2	4.15	105	1.77	45	0.62	15.7

09 Series

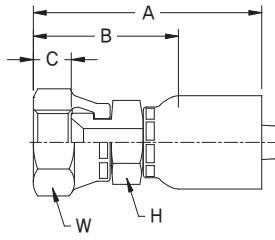
C9X09 Female SAE 37° Swivel - 90° Elbow



Part No.	Thread Size	Hose Size	A		Hex W	Cut-Off Allowance B		DROP E		NUT C	
	UN	inch	inch	mm		inch	mm	inch	mm	inch	mm
C9X09-4-4	7/16X20	1/4	1.79	45	9/16	1.04	26	0.83	21	0.34	8.6
C9X09-5-4	1/2X20	1/4	1.79	45	5/8	1.03	26	0.83	21	0.37	9.4
C9X09-6-4	9/16X18	1/4	1.78	45	11/16	1.02	26	0.87	22	0.37	9.4
C9X09-6-6	9/16X18	3/8	2.21	56	11/16	1.18	30	0.91	23	0.37	9.4
C9X09-8-6	3/4X16	3/8	2.21	56	7/8	1.18	30	1.10	28	0.42	10.7
C9X09-8-8	3/4X16	1/2	2.58	66	7/8	1.32	34	1.22	31	0.42	10.7
C9X09-10-8	7/8X14	1/2	2.58	66	1	1.32	34	1.22	31	0.49	12.4
C9X09-10-10	7/8X14	5/8	2.97	76	1	1.53	39	1.34	34	0.49	12.4
C9X09-12-10	1-1/16X12	5/8	2.98	76	1-1/4	1.53	39	1.89	48	0.56	14.2
C9X09-12-12	1-1/16X12	3/4	3.49	89	1-1/4	2.05	52	2.09	53	0.56	14.2
C9X09-16-12	1-5/16X12	3/4	3.49	89	1-1/2	2.05	52	2.20	56	0.60	15.2
C9X09-16-16	1-5/16X12	1	4.31	109	1-1/2	2.69	68	2.91	74	0.60	15.2
C9X09-20-16	1-5/8X12	1	4.37	111	2	2.75	70	3.07	78	0.62	15.7
C9X09-20-20	1-5/8X12	1-1/4	5.10	129	2	3.41	87	3.35	85	0.62	15.7
C9X09-24-24	1-7/8X12	1-1/2	5.64	143	2-1/4	4.27	109	4.33	110	0.74	18.8

09 Series

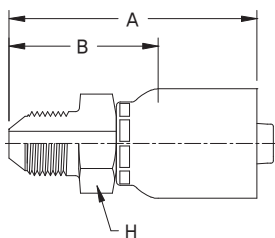
C1X09 Female SAE 37° Swivel



Part No.	Thread Size	Hose Size	A		Hex H	Hex W	Cut-Off Allowance B		NUT C	
	UN	inch	inch	mm			inch	mm	inch	mm
C1X09-4-4	7/16X20	1/4	1.93	49	9/16	9/16	1.18	30	0.34	8.6
C1X09-5-4	1/2X20	1/4	2.02	51	9/16	5/8	1.27	32	0.37	9.4
C1X09-5-5	1/2X20	5/16	2.07	53	11/16	5/8	1.32	33	0.37	9.4
C1X09-6-4	9/16X18	1/4	2.04	52	9/16	11/16	1.29	33	0.37	9.4
C1X09-6-5	9/16X18	5/16	2.09	53	11/16	11/16	1.34	34	0.37	9.4
C1X09-6-6	9/16X18	3/8	2.28	58	11/16	11/16	1.25	32	0.37	9.4
C1X09-8-6	3/4X16	3/8	2.39	61	11/16	7/8	1.36	35	0.42	10.7
C1X09-8-8	3/4X16	1/2	2.61	66	13/16	7/8	1.35	34	0.42	10.7
C1X09-10-6	7/8X14	3/8	2.49	63	7/8	1	1.46	37	0.49	12.4
C1X09-10-8	7/8X14	1/2	2.83	72	7/8	1	1.57	40	0.49	12.4
C1X09-10-10	7/8X14	5/8	2.91	74	15/16	1	1.47	37	0.49	12.4
C1X09-12-8	1-1/16X12	1/2	2.77	70	1-1/16	1-1/4	1.51	38	0.56	14.2
C1X09-12-10	1-1/16X12	5/8	3.09	79	1-1/16	1-1/4	1.65	42	0.56	14.2
C1X09-12-12	1-1/16X12	3/4	3.16	80	1-1/16	1-1/4	1.72	44	0.56	14.2
C1X09-12-16	1-1/16X12	1	3.48	88	1-3/8	1-1/4	1.86	47	0.56	14.2
C1X09-16-12	1-5/16X12	3/4	3.30	84	1-1/4	1-1/2	1.86	47	0.60	15.2
C1X09-16-16	1-5/16X12	1	3.61	92	1-3/8	1-1/2	1.99	51	0.60	15.2
C1X09-20-16	1-5/8X12	1	3.79	96	1-5/8	2	2.17	55	0.62	15.7
C1X09-20-20	1-5/8X12	1-1/4	3.92	100	1-7/8	2	2.23	57	0.62	15.7
C1X09-24-20	1-7/8X12	1-1/4	4.12	105	2-1/8	2-1/4	2.43	62	0.74	18.8
C1X09-24-24	1-7/8X12	1-1/2	3.83	97	2-1/8	2-1/4	2.46	62	0.74	18.8
C1X09-32-32	2-1/2X12	2	4.71	120	2-1/2	2-7/8	2.93	74	0.93	23.6

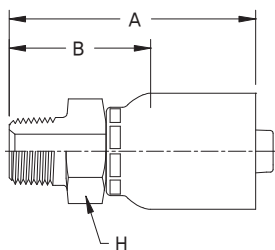
09 Series

C1Y09 Male SAE 37°



Part No.	Thread Size	Hose Size	A		Hex H	Cut-Off Allowance B	
	UN	inch	inch	mm		inch	mm
C1Y09-4-4	7/16X20	1/4	1.99	51	9/16	1.24	31
C1Y09-5-4	1/2X20	1/4	1.83	47	9/16	1.08	27
C1Y09-5-5	1/2X20	5/16	1.91	49	9/16	1.16	29
C1Y09-6-4	9/16X18	1/4	1.84	47	11/16	1.09	28
C1Y09-6-6	9/16X18	3/8	2.36	60	3/4	1.33	34
C1Y09-8-6	3/4X16	3/8	2.30	58	7/8	1.27	32
C1Y09-8-8	3/4X16	1/2	2.68	68	7/8	1.42	36
C1Y09-10-8	7/8X14	1/2	2.62	66	15/16	1.36	35
C1Y09-10-10	7/8X14	5/8	3.03	77	15/16	1.59	40
C1Y09-12-12	1-1/16X12	3/4	3.19	81	1-1/8	1.75	44
C1Y09-16-16	1-5/16X12	1	3.63	92	1-3/8	2.01	51
C1Y09-20-20	1-5/8X12	1-1/4	3.96	101	1-7/8	2.27	58
C1Y09-24-24	1-7/8X12	1-1/2	3.34	85	2	1.97	50

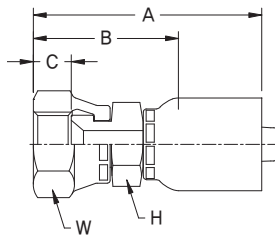
C1N09 Male NPTF



Part No.	Thread Size	Hose Size	A		Hex H	Cut-Off Allowance B	
	UN	inch	inch	mm		inch	mm
C1N09-2-4	1/8X27	1/4	1.79	45	9/16	1.04	26
C1N09-4-4	1/4X18	1/4	2.01	51	9/16	1.26	32
C1N09-6-4	3/8X18	1/4	1.86	47	11/16	1.11	28
C1N09-6-6	3/8X18	3/8	2.37	60	3/4	1.34	34
C1N09-8-6	1/2X14	3/8	2.39	61	7/8	1.36	35
C1N09-8-8	1/2X14	1/2	2.84	72	7/8	1.58	40
C1N09-12-8	3/4X14	1/2	2.68	68	1-1/16	1.42	36
C1N09-12-10	3/4X14	5/8	2.87	73	1-1/16	1.43	36
C1N09-12-12	3/4X14	3/4	3.09	78	1-1/16	1.65	42
C1N09-16-12	1X11-1/2	3/4	3.09	78	1-3/8	1.65	42
C1N09-16-16	1X11-1/2	1	3.59	91	1-3/8	1.97	50
C1N09-20-20	1-1/4X11-1/2	1-1/4	4.08	104	1-3/4	2.39	61
C1N09-24-24	1-1/2X11-1/2	1-1/2	3.50	89	2	2.13	54
C1N09-32-32	2X11-1/2	2	4.05	103	2-1/2	2.27	58

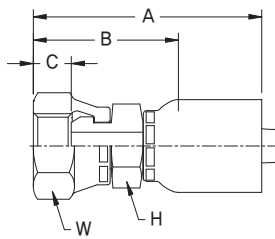
12 Series

C1F12 Female JIS/BSP Parallel Pipe Swivel Straight (30° Flare)



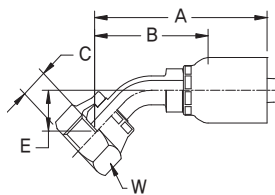
Part No.	Thread Size	Hose Size	A		Hex H	Hex W	Cut-Off Allowance B		NUT C	
	PF	inch	inch	mm	mm	mm	inch	mm	inch	mm
C1F12-12-12	3/4X14	3/4	3.17	80	36	36	1.79	45	0.50	12.7
C1F12-16-16	1X11	1	3.72	94	41	41	1.94	49	0.58	14.7
C1F12-20-20	1-1/4X11	1-1/4	3.98	101	50	50	2.29	58	0.60	15.2
C1F12-24-24	1-1/2X11	1-1/2	4.78	121	60	60	2.59	66	0.64	16.3
C1F12-32-32	2X11	2	5.11	130	70	70	2.91	74	0.69	17.5

C1C12 Female JIS/BSP Parallel Pipe Swivel Straight (60° Cone)



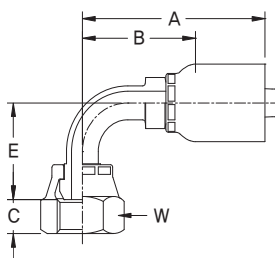
Part No.	Thread Size	Hose Size	A		Hex H	Hex W	Cut-Off Allowance B		NUT C	
	PF	inch	inch	mm	mm	mm	inch	mm	inch	mm
C1C12-12-10	3/4X14	5/8	3.12	79	36	36	1.88	48	0.38	9.7
C1C12-12-12	3/4X14	3/4	3.22	82	36	36	1.85	47	0.38	9.7
C1C12-16-12	1X11	3/4	3.42	87	41	41	2.04	52	0.46	11.7
C1C12-16-16	1X11	1	3.80	97	41	41	2.03	51	0.46	11.7
C1C12-20-20	1-1/4X11	1-1/4	4.05	103	50	50	2.36	60	0.48	12.2
C1C12-24-24	1-1/2X11	1-1/2	4.80	122	60	60	2.61	66	0.48	12.2
C1C12-32-32	2X11	2	5.15	131	70	70	2.95	75	0.58	14.7

C4C12 Female JIS/BSP Parallel Pipe Swivel 45° Elbow (60° Cone)



Part No.	Thread Size	Hose Size	A		Hex W	Cut-Off Allowance B		DROP E		NUT C	
	PF	inch	inch	mm	mm	inch	mm	inch	mm	inch	mm
C4C12-12-12	3/4X14	3/4	3.82	97	36	2.44	62	1.02	26	0.38	9.7
C4C12-16-16	1X11	1	4.88	124	41	3.10	79	1.30	33	0.46	11.7
C4C12-20-20	1-1/4X11	1-1/4	5.86	149	50	4.17	106	1.81	46	0.48	12.2

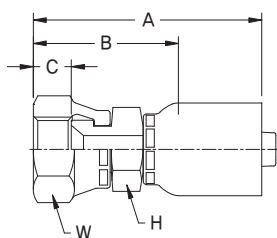
C9C12 Female JIS/BSP Parallel Pipe Swivel 90° Elbow (60° Cone)



Part No.	Thread Size	Hose Size	A		Hex W	Cut-Off Allowance B		DROP E		NUT C	
	PF	inch	inch	mm	mm	inch	mm	inch	mm	inch	mm
C9C12-12-12	3/4X14	3/4	3.49	89	36	2.11	54	2.17	55	0.38	9.7
C9C12-16-16	1X11	1	4.78	121	41	3.00	76	2.89	74	0.46	11.7
C9C12-20-20	1-1/4X11	1-1/4	5.10	129	50	3.41	87	3.48	89	0.48	12.2
C9C12-24-24	1-1/2X11	1-1/2	6.45	164	60	4.26	108	4.33	110	0.48	12.2

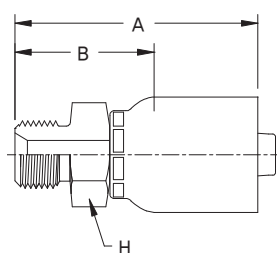
12 Series

C1M12 Female JIS/Metric Swivel Straight (30° Flare)



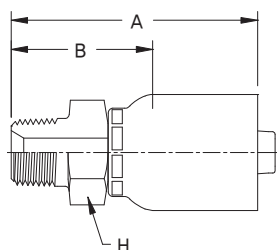
Part No.	Thread Size	Hose Size	A		Hex H	Hex W	Cut-Off Allowance B		NUT C	
	Metric	inch	inch	mm	mm	mm	inch	mm	inch	mm
C1M12-12-12	M27X2	3/4	3.16	80	36	36	1.78	45	0.49	12.4
C1M12-16-16	M33X2	1	3.65	93	41	41	1.87	47	0.51	13.0
C1M12-20-20	M42X2	1-1/4	3.95	100	50	50	2.26	57	0.57	14.5

C1FF12 Male JIS/BSP Parallel Pipe-Rigid Straight (30° Flare)



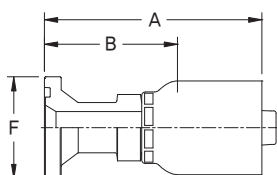
Part No.	Thread Size	Hose Size	A		Hex H	Cut-Off Allowance B	
	PF	inch	inch	mm	mm	inch	mm
C1FF12-12-12	3/4X14	3/4	3.02	77	36	1.64	42
C1FF12-16-16	1X11	1	3.53	90	41	1.75	44
C1FF12-20-20	1-1/4X11	1-1/4	3.77	96	50	2.08	53
C1FF12-24-24	1-1/2X11	1-1/2	4.40	112	60	2.21	56

C1P12 Male JIS/BSP Taper Pipe-Rigid Straight



Part No.	Thread Size	Hose Size	A		Hex H	Cut-Off Allowance B	
	PT	inch	inch	mm	mm	inch	mm
C1P12-12-12	3/4X14	3/4	2.98	76	36	1.60	41
C1P12-16-16	1X11	1	3.56	90	41	1.78	45
C1P12-20-20	1-1/4X11	1-1/4	3.79	96	50	2.10	53
C1P12-24-24	1-1/2X11	1-1/2	4.46	113	60	2.27	58
C1P12-32-32	2X11	2	4.95	126	70	2.75	70

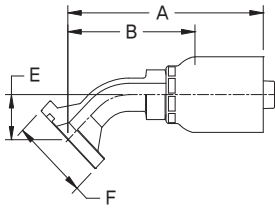
C1G212 SAE Code 62 Flange Straight



Part No.	FLANGE Size	Hose Size	A		Cut-Off Allowance B		FLANGE DIA. F	
		inch	inch	mm	inch	mm	inch	mm
C1G212-12-12	3/4	3/4	4.12	105	2.74	70	1.63	41.3
C1G212-16-12	1	3/4	3.10	79	1.72	44	1.88	47.6
C1G212-16-16	1	1	4.89	124	3.11	79	1.88	47.6
C1G212-20-16	1-1/4	1	3.68	93	1.90	48	2.13	54.0
C1G212-20-20	1-1/4	1-1/4	5.01	127	3.32	84	2.13	54.0
C1G212-24-24	1-1/2	1-1/2	6.34	161	4.15	105	2.50	63.5
C1G212-32-32	2	2	7.16	182	4.96	126	3.13	79.4

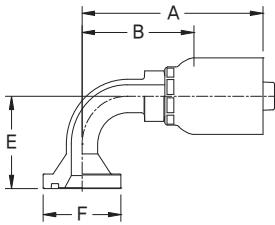
12 Series

C4G212 SAE Code 62 Flange 45° Elbow



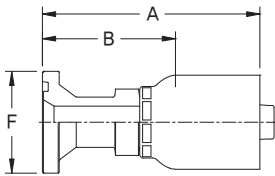
Part No.	FLANGE Size	Hose Size	A		Cut-Off Allowance B		FLANGE DIA. F		DROP E	
		inch	inch	mm	inch	mm	inch	mm	inch	mm
C4G212-12-12	3/4	3/4	3.89	99	2.51	64	1.63	41.3	1.06	27
C4G212-16-12	1	3/4	4.69	119	3.31	84	1.88	47.6	1.22	31
C4G212-16-16	1	1	4.83	123	3.05	78	1.88	47.6	1.26	32
C4G212-20-16	1-1/4	1	4.83	123	3.06	78	2.13	54.0	1.26	32
C4G212-20-20	1-1/4	1-1/4	5.61	142	3.92	100	2.13	54.0	1.50	38
C4G212-24-24	1-1/2	1-1/2	6.80	173	4.61	117	2.50	63.5	1.73	44

C9G212 SAE Code 62 Flange 90° Elbow



Part No.	FLANGE Size	Hose Size	A		Cut-Off Allowance B		FLANGE DIA. F		DROP E	
		inch	inch	mm	inch	mm	inch	mm	inch	mm
C9G212-12-12	3/4	3/4	3.51	89	2.13	54	1.63	41.3	2.28	58
C9G212-12-12100	3/4	3/4	3.51	89	2.13	54	1.63	41.3	3.94	100
C9G212-16-12	1	3/4	3.52	89	2.14	54	1.88	47.6	2.28	58
C9G212-16-1290	1	3/4	3.52	89	2.14	54	1.88	47.6	3.54	90
C9G212-16-16	1	1	4.35	110	2.57	65	1.88	47.6	2.76	70
C9G212-16-16130	1	1	4.35	110	2.57	65	1.88	47.6	5.12	130
C9G212-20-16	1-1/4	1	4.36	111	2.58	66	2.13	54.0	2.76	70
C9G212-20-20	1-1/4	1-1/4	5.18	132	3.50	89	2.13	54.0	3.54	90
C9G212-20-20120	1-1/4	1-1/4	5.39	137	3.70	94	2.13	54.0	4.72	120
C9G212-24-24	1-1/2	1-1/2	6.32	161	4.13	105	2.50	63.5	4.09	104
C9G212-32-32	2	2	7.78	198	5.58	142	3.13	79.4	4.88	124

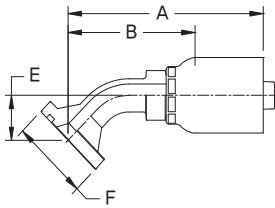
C1G112 SAE Code 61 Flange Straight



Part No.	FLANGE Size	Hose Size	A		Cut-Off Allowance B		FLANGE DIA. F	
		inch	inch	mm	inch	mm	inch	mm
C1G112-12-12	3/4	3/4	3.86	98	2.48	63	1.50	38.1
C1G112-16-12	1	3/4	2.74	70	1.36	35	1.75	44.5
C1G112-16-16	1	1	4.32	110	2.55	65	1.75	44.5
C1G112-20-16	1-1/4	1	3.27	83	1.50	38	2.00	50.8
C1G112-20-20	1-1/4	1-1/4	4.70	119	3.01	76	2.00	50.8
C1G112-24-20	1-1/2	1-1/4	3.22	82	1.54	39	2.38	60.3
C1G112-24-24	1-1/2	1-1/2	5.47	139	3.28	83	2.38	60.3
C1G112-32-24	2	1-1/2	4.01	102	1.82	46	2.81	71.4
C1G112-32-32	2	2	5.65	143	3.45	88	2.81	71.4

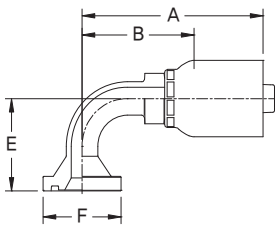
12 Series

C4G112 SAE Code 61 Flange 45° Elbow



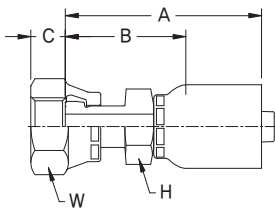
Part No.	FLANGE Size	Hose Size	A		Cut-Off Allowance B		FLANGE DIA. F		DROP E	
			inch	mm	inch	mm	inch	mm	inch	mm
C4G112-12-12	3/4	3/4	3.85	98	2.47	63	1.50	38.1	1.02	26
C4G112-16-12	1	3/4	3.85	98	2.47	63	1.75	44.5	1.10	28
C4G112-16-16	1	1	4.83	123	3.05	78	1.75	44.5	1.26	32
C4G112-20-16	1-1/4	1	4.83	123	3.06	78	2.00	50.8	1.26	32
C4G112-20-20	1-1/4	1-1/4	5.61	142	3.92	100	2.00	50.8	1.50	38
C4G112-24-20	1-1/2	1-1/4	5.72	145	4.03	102	2.38	60.3	1.69	43
C4G112-24-24	1-1/2	1-1/2	6.72	171	4.53	115	2.38	60.3	1.61	41
C4G112-32-24	2	1-1/2	7.10	180	4.91	125	2.81	71.4	1.97	50
C4G112-32-32	2	2	7.86	200	5.66	144	2.81	71.4	1.93	49

C9G112 SAE Code 61 Flange 90° Elbow



Part No.	FLANGE Size	Hose Size	A		Cut-Off Allowance B		FLANGE DIA. F		DROP E	
			inch	mm	inch	mm	inch	mm	inch	mm
C9G112-12-12	3/4	3/4	3.51	89	2.13	54	1.50	38.1	2.28	58
C9G112-12-12130	3/4	3/4	3.53	90	2.16	55	1.50	38.1	5.12	130
C9G112-16-12	1	3/4	3.52	89	2.14	54	1.75	44.5	2.28	58
C9G112-16-12130	1	3/4	3.52	89	2.14	54	1.75	44.5	5.12	130
C9G112-16-16	1	1	4.36	111	2.58	66	1.75	44.5	2.76	70
C9G112-16-16130	1	1	4.36	111	2.58	66	1.75	44.5	5.12	130
C9G112-20-16	1-1/4	1	4.36	111	2.58	66	2.00	50.8	2.76	70
C9G112-20-16100	1-1/4	1	4.36	111	2.58	66	2.00	50.8	3.94	100
C9G112-20-20	1-1/4	1-1/4	5.39	137	3.70	94	2.00	50.8	3.54	90
C9G112-20-20100	1-1/4	1-1/4	5.39	137	3.70	94	2.00	50.8	3.94	100
C9G112-20-20130	1-1/4	1-1/4	5.39	137	3.70	94	2.00	50.8	5.12	130
C9G112-24-20	1-1/2	1-1/4	5.09	129	3.41	86	2.38	60.3	3.54	90
C9G112-24-24	1-1/2	1-1/2	6.42	163	4.23	107	2.38	60.3	4.09	104
C9G112-32-32	2	2	7.78	198	5.58	142	2.81	71.4	4.72	120

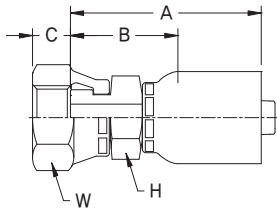
C1L12 Female "SEAL-LOK" Swivel Straight (Long) O-Ring Face Seal



Part No.	Thread Size	Hose Size	A		Hex H	Hex W	Cut-Off Allowance B		NUT C	
	UN		inch	mm			inch	mm	inch	mm
C1L12-10-10	1X14	5/8	3.00	76	15/16	1-1/8	1.75	45	0.46	11.7
C1L12-12-12	1-3/16X12	3/4	3.31	84	1-1/8	1-3/8	1.93	49	0.54	13.7
C1L12-16-16	1-7/16X12	1	3.70	94	1-3/8	1-5/8	1.92	49	0.55	14.0
C1L12-20-20	1-11/16X12	1-1/4	3.77	96	1-3/4	1-7/8	2.08	53	0.57	14.5
C1L12-24-24	2X12	1-1/2	4.75	121	2	2-1/4	2.56	65	0.60	15.2

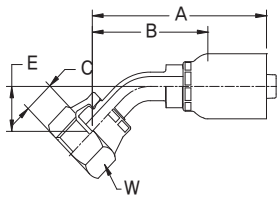
12 Series

C1R12 Female "SEAL-LOK" Swivel Straight O-Ring Face Seal



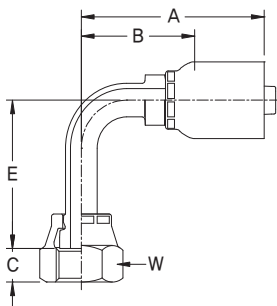
Part No.	Thread Size	Hose Size	A		Hex H	Hex W	Cut-Off Allowance B		NUT C	
	UN	inch	inch	mm			inch	mm	inch	mm
C1R12-12-12	1-3/16X12	3/4	2.68	68	1-1/8	1-3/8	1.30	33	0.54	13.7
C1R12-12-12M	1-3/16X12	3/4	2.68	68	32	36	1.30	33	0.54	13.7
C1R12-16-12M	1-7/16X12	3/4	2.83	72	36	41	1.45	37	0.55	14.0
C1R12-16-16	1-7/16X12	1	3.22	82	1-3/8	1-5/8	1.44	37	0.55	14.0
C1R12-16-16M	1-7/16X12	1	3.22	82	36	41	1.44	37	0.55	14.0
C1R12-20-16M	1-11/16X12	1	3.16	80	41	50	1.38	35	0.57	14.5
C1R12-20-20	1-11/16X12	1-1/4	3.27	83	1-7/8	1-7/8	1.58	40	0.57	14.5
C1R12-20-20M	1-11/16X12	1-1/4	3.27	83	50	50	1.58	40	0.57	14.5
C1R12-24-24	2X12	1-1/2	3.86	98	2	2-1/4	1.67	42	0.60	15.2

C4R12 Female "SEAL-LOK" Swivel 45° Elbow O-Ring Face Seal



Part No.	Thread Size	Hose Size	A		Hex W	Cut-Off Allowance B		DROP E		NUT C	
	UN	inch	inch	mm		inch	mm	inch	mm	inch	mm
C4R12-12-12	1-3/16X12	3/4	3.63	92	1-3/8	2.25	57	0.83	21	0.54	13.7
C4R12-16-12	1-7/16X12	3/4	3.75	95	1-5/8	2.38	60	0.94	24	0.55	14.0
C4R12-16-16	1-7/16X12	1	4.46	113	1-5/8	2.68	68	0.94	24	0.55	14.0
C4R12-20-20	1-11/16X12	1-1/4	5.70	145	1-7/8	4.02	102	1.61	41	0.57	14.5

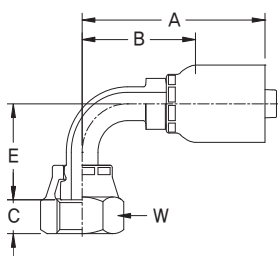
C9R12 D Female "SEAL-LOK" Swivel 90° Elbow (Long) O-Ring Face Seal



Part No.	Thread Size	Hose Size	A		Hex W	Cut-Off Allowance B		DROP E		NUT C	
	UN	inch	inch	mm		inch	mm	inch	mm	inch	mm
C9R12-12-12D	1-3/16X12	3/4	3.49	89	1-3/8	2.11	54	3.78	96	0.54	13.7
C9R12-12-12D	1-3/16X12	3/4	3.49	89	36	2.11	54	3.78	96	0.54	13.7

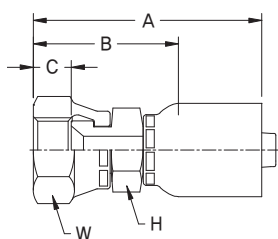
12 Series

C9R12 Female "SEAL-LOK" Swivel 90° Elbow (Short) O-Ring Face Seal



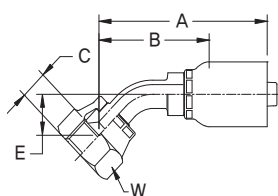
Part No.	Thread Size	Hose Size	A		Hex W	Cut-Off Allowance B		DROP E		NUT C	
	UN	inch	inch	mm		inch	mm	inch	mm	inch	mm
C9R12-10-10	1X14	5/8	2.88	73	1-1/8	1.63	41	1.26	32	0.46	11.7
C9R12-12-12	1-3/16X12	3/4	3.49	89	1-3/8	2.11	54	1.89	48	0.54	13.7
C9R12-16-12	1-7/16X12	3/4	3.49	89	1-5/8	2.11	54	2.20	56	0.55	14.0
C9R12-16-16	1-7/16X12	1	4.39	111	1-5/8	2.61	66	2.20	56	0.55	14.0
C9R12-20-16	1-11/16X12	1	4.76	121	1-7/8	2.98	76	2.52	64	0.57	14.5
C9R12-20-20	1-11/16X12	1-1/4	5.10	129	1-7/8	3.41	87	3.23	82	0.57	14.5

C1X12 Female SAE 37° Swivel



Part No.	Thread Size	Hose Size	A		Hex H	Hex W	Cut-Off Allowance B		NUT C	
	UN	inch	inch	mm		inch	inch	mm	inch	mm
C1X12-10-10	7/8X14	5/8	2.82	72	15/16	1	1.57	40	0.49	12.4
C1X12-12-10	1-1/16X12	5/8	3.00	76	1-1/16	1-1/4	1.75	44	0.56	14.2
C1X12-12-12	1-1/16X12	3/4	3.16	80	1-1/16	1-1/4	1.78	45	0.56	14.2
C1X12-16-12	1-5/16X12	3/4	3.30	84	1-1/4	1-1/2	1.92	49	0.60	15.2
C1X12-16-16	1-5/16X12	1	3.69	94	1-3/8	1-1/2	1.91	48	0.60	15.2
C1X12-20-16	1-5/8X12	1	3.87	98	1-5/8	2	2.09	53	0.62	15.7
C1X12-20-20	1-5/8X12	1-1/4	3.92	100	1-7/8	2	2.23	57	0.62	15.7
C1X12-24-20	1-7/8X12	1-1/4	4.12	105	2-1/8	2-1/4	2.43	62	0.74	18.8
C1X12-24-24	1-7/8X12	1-1/2	4.71	120	2-1/8	2-1/4	2.52	64	0.74	18.8
C1X12-32-32	2-1/2X12	2	5.38	137	2-1/2	2-7/8	3.18	81	0.93	23.6

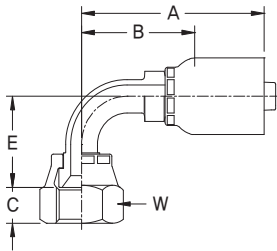
C4X12 Female SAE 37° Swivel - 45° Elbow



Part No.	Thread Size	Hose Size	A		Hex W	Cut-Off Allowance B		DROP E		NUT C	
	UN	inch	inch	mm	inch	inch	mm	inch	mm	inch	mm
C4X12-12-10	1-1/16X12	5/8	3.54	90	1-1/4	2.29	58	0.83	21	0.56	14.2
C4X12-12-12	1-1/16X12	3/4	3.91	99	1-1/4	2.53	64	1.06	27	0.56	14.2
C4X12-16-12	1-5/16X12	3/4	3.75	95	1-1/2	2.38	60	0.94	24	0.60	15.2
C4X12-16-16	1-5/16X12	1	4.84	123	1-1/2	3.06	78	1.30	33	0.60	15.2
C4X12-20-20	1-5/8X12	1-1/4	5.84	148	2	4.15	105	1.77	45	0.62	15.7
C4X12-24-24	1-7/8X12	1-1/2	7.25	184	2-1/4	5.06	128	2.05	52	0.74	18.8

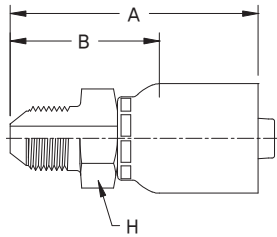
12 Series

C9X12 Female SAE 37° Swivel - 90° Elbow



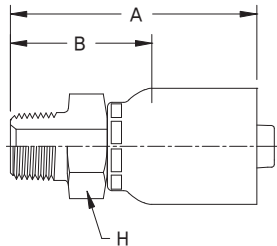
Part No.	Thread Size	Hose Size	A		Hex W	Cut-Off Allowance B		DROP E		NUT C	
	UN	inch	inch	mm	inch	inch	mm	inch	mm	inch	mm
C9X12-12-12	1-1/16X12	3/4	3.49	89	1-1/4	2.11	54	2.09	53	0.56	14.2
C9X12-16-12	1-5/16X12	3/4	3.49	89	1-1/2	2.11	54	2.20	56	0.60	15.2
C9X12-16-16	1-5/16X12	1	4.39	111	1-1/2	2.61	66	2.91	74	0.60	15.2
C9X12-20-20	1-5/8X12	1-1/4	5.10	129	2	3.41	87	3.35	85	0.62	15.7
C9X12-24-24	1-7/8X12	1-1/2	6.44	163	2-1/4	4.24	108	4.21	107	0.74	18.8

C1Y12 Male SAE 37°



Part No.	Thread Size	Hose Size	A		Hex H	Cut-Off Allowance B	
	PF	inch	inch	mm		inch	mm
C1Y12-12-12	1-1/16X12	3/4	3.19	81	1-1/8	1.81	46
C1Y12-16-16	1-5/16X12	1	3.71	94	1-3/8	1.93	49
C1Y12-20-20	1-5/8X12	1-1/4	3.96	101	1-7/8	2.27	58
C1Y12-24-24	1-7/8X12	1-1/2	4.30	109	2	2.11	54
C1Y12-32-32	2-1/2X12	2	4.96	126	2-5/8	2.76	70

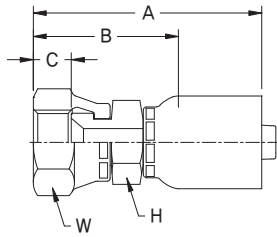
C1N12 Male NPTF



Part No.	Thread Size	Hose Size	A		Hex H	Cut-Off Allowance B	
	PF	inch	inch	mm		inch	mm
C1N12-12-12	3/4X14	3/4	3.09	78	1-1/16	1.71	43
C1N12-16-16	1X11-1/2	1	3.67	93	1-3/8	1.89	48
C1N12-20-20	1-1/4X11-1/2	1-1/4	4.08	104	1-3/4	2.39	61
C1N12-24-24	1-1/2X11-1/2	1-1/2	4.38	111	2	2.19	56
C1N12-32-32	2X11-1/2	2	4.72	120	2-1/2	2.52	64

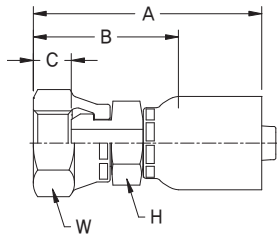
13 Series

C1F13 Female JIS/BSP Parallel Pipe Swivel Straight (30° Flare)



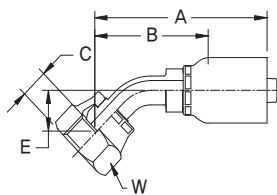
Part No.	Thread Size	Hose Size	A		Hex H	Hex W	Cut-Off Allowance B		NUT C	
	PF	inch	inch	mm	mm	mm	inch	mm	inch	mm
C1F13-12-12	3/4X14	3/4	3.65	93	36	36	1.89	48	0.50	12.7
C1F13-16-16	1X11	1	3.99	101	41	41	2.14	54	0.58	14.7
C1F13-20-20	1-1/4X11	1-1/4	4.82	122	50	50	2.43	62	0.60	15.2
C1F13-32-32	2X11	2	5.69	145	70	70	3.12	79	0.69	17.5

C1C13 Female JIS/BSP Parallel Pipe Swivel Straight (60° Cone)



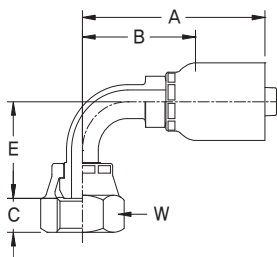
Part No.	Thread Size	Hose Size	A		Hex H	Hex W	Cut-Off Allowance B		NUT C	
	PF	inch	inch	mm	mm	mm	inch	mm	inch	mm
C1C13-12-12	3/4X14	3/4	3.75	95	36	36	1.99	51	0.38	9.7
C1C13-16-16	1X11	1	4.13	105	41	41	2.28	58	0.46	11.7
C1C13-20-20	1-1/4X11	1-1/4	4.95	126	50	50	2.56	65	0.48	12.2
C1C13-24-24	1-1/2X11	1-1/2	5.33	135	60	60	3.12	79	0.48	12.2
C1C13-32-32	2X11	2	5.57	142	70	70	3.00	76	0.58	14.7

C4C13 Female JIS/BSP Parallel Pipe Swivel 45° Elbow (60° Cone)



Part No.	Thread Size	Hose Size	A		Hex W	Cut-Off Allowance B		DROP E		NUT C	
	PF	inch	inch	mm	mm	inch	mm	inch	mm	inch	mm
C4C13-12-12	3/4X14	3/4	4.99	127	36	3.23	82	1.14	29	0.38	9.7
C4C13-16-16	1X11	1	5.15	131	41	3.30	84	1.30	33	0.46	11.7

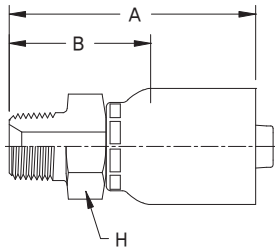
C9C13 Female JIS/BSP Parallel Pipe Swivel 90° Elbow (60° Cone)



Part No.	Thread Size	Hose Size	A		Hex W	Cut-Off Allowance B		DROP E		NUT C	
	PF	inch	inch	mm	mm	inch	mm	inch	mm	inch	mm
C9C13-12-12	3/4X14	3/4	4.01	102	36	2.25	57	2.17	55	0.38	9.7
C9C13-16-16	1X11	1	4.68	119	41	2.83	72	2.83	72	0.46	11.7

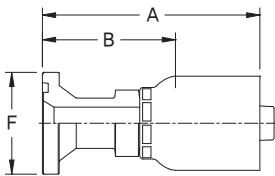
13 Series

C1P13 Male JIS/BSP Taper Pipe-Rigi Straight



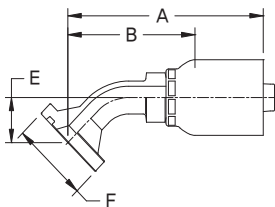
Part No.	Thread Size	Hose Size	A		Hex H	Cut-Off Allowance B	
	PT	inch	inch	mm	mm	inch	mm
C1P13-12-12	3/4X14	3/4	3.42	87	36	1.66	42
C1P13-16-16	1X11	1	3.77	96	41	1.92	49
C1P13-20-20	1-1/4X11	1-1/4	4.63	118	50	2.24	57
C1P13-24-24	1-1/2X11	1-1/2	4.54	115	60	2.33	59

C1G213 SAE Coe 62 Flange Straight



Part No.	FLANGE Size	Hose Size	A		Cut-Off Allowance B		FLANGE DIA. F	
		inch	inch	mm	inch	mm	inch	mm
C1G213-12-12	3/4	3/4	4.60	117	2.84	72	1.63	41.3
C1G213-16-12	1	3/4	3.58	91	1.82	46	1.88	47.6
C1G213-16-16	1	1	5.16	131	3.31	84	1.88	47.6
C1G213-20-16	1-1/4	1	3.95	100	2.10	53	2.13	54.0
C1G213-20-20	1-1/4	1-1/4	5.85	149	3.46	88	2.13	54.0
C1G213-24-20	1-1/2	1-1/4	4.77	121	2.38	60	2.50	63.5
C1G213-24-24	1-1/2	1-1/2	6.54	166	4.33	110	2.50	63.5
C1G213-32-32	2	2	7.63	194	5.06	128	3.13	79.4

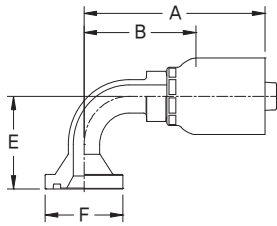
C4G213 SAE Coe 62 Flange 45° Elbow



Part No.	FLANGE Size	Hose Size	A		Cut-Off Allowance B		FLANGE DIA. F		DROP E	
		inch	inch	mm	inch	mm	inch	mm	inch	mm
C4G213-12-12	3/4	3/4	4.31	110	2.55	65	1.63	41.3	1.02	26
C4G213-16-12	1	3/4	4.33	110	2.57	65	1.88	47.6	1.02	26
C4G213-16-16	1	1	5.01	127	3.16	80	1.88	47.6	1.26	32
C4G213-20-16	1-1/4	1	5.56	141	3.71	94	2.13	54.0	1.26	32
C4G213-20-20	1-1/4	1-1/4	6.40	163	4.01	102	2.13	54.0	1.50	38
C4G213-24-24	1-1/2	1-1/2	6.99	178	4.78	121	2.50	63.5	1.73	44
C4G213-32-32	2	2	8.41	214	5.84	148	3.13	79.4	2.20	56

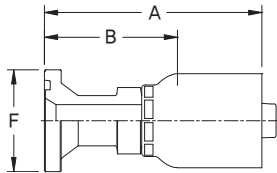
13 Series

C9G213 SAE Coe 62 Flange 90° Elbow



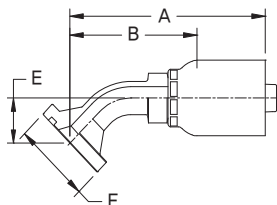
Part No.	FLANGE Size	Hose Size	A		Cut-Off Allowance B		FLANGE DIA. F		DROP E	
			inch	mm	inch	mm	inch	mm	inch	mm
C9G213-12-12	3/4	3/4	4.00	102	2.24	57	1.63	41.3	2.28	58
C9G213-12-1280	3/4	3/4	4.00	102	2.24	57	1.63	41.3	3.15	80
C9G213-12-12130	3/4	3/4	4.02	102	2.26	57	1.63	41.3	5.12	130
C9G213-16-12	1	3/4	4.00	102	2.24	57	1.88	47.6	2.28	58
C9G213-16-1290	1	3/4	4.06	103	2.30	58	1.88	47.6	3.54	90
C9G213-16-16	1	1	4.63	118	2.78	71	1.88	47.6	2.76	70
C9G213-16-16130	1	1	4.70	119	2.85	72	1.88	47.6	5.12	130
C9G213-20-16	1-1/4	1	4.64	118	2.79	71	2.13	54.0	2.76	70
C9G213-20-16130	1-1/4	1	4.71	120	2.86	73	2.13	54.0	5.12	130
C9G213-20-20	1-1/4	1-1/4	6.09	155	3.70	94	2.13	54.0	3.54	90
C9G213-20-20147	1-1/4	1-1/4	6.09	155	3.70	94	2.13	54.0	5.79	147
C9G213-24-20	1-1/2	1-1/4	7.09	180	4.70	119	2.50	63.5	4.35	111
C9G213-24-24	1-1/2	1-1/2	6.52	166	4.30	109	2.50	63.5	4.09	104
C9G213-24-24140	1-1/2	1-1/2	6.54	166	4.33	110	2.50	63.5	5.51	140
C9G213-32-32	2	2	7.99	203	5.42	138	3.13	79.4	5.43	138

C1G113 SAE Coe 61 Flange Straight



Part No.	FLANGE Size	Hose Size	A		Cut-Off Allowance B		FLANGE DIA. F	
			inch	mm	inch	mm	inch	mm
C1G113-12-12	3/4	3/4	4.34	110	2.58	66	1.50	38.1
C1G113-16-16	1	1	4.59	117	2.74	70	1.75	44.5
C1G113-20-20	1-1/4	1-1/4	5.53	140	3.14	80	2.00	50.8
C1G113-24-24	1-1/2	1-1/2	5.16	131	2.95	75	2.38	60.3
C1G113-32-32	2	2	6.12	155	3.55	90	2.81	71.4

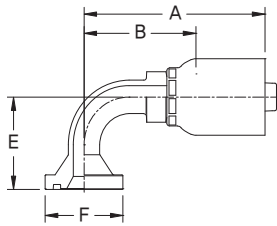
C4G113 SAE Coe 61 Flange 45° Elbow



Part No.	FLANGE Size	Hose Size	A		Cut-Off Allowance B		FLANGE DIA. F		DROP E	
			inch	mm	inch	mm	inch	mm	inch	mm
C4G113-12-12	3/4	3/4	4.31	110	2.55	65	1.50	38.1	1.02	26
C4G113-16-16	1	1	5.01	127	3.16	80	1.75	44.5	1.26	32
C4G113-20-20	1-1/4	1-1/4	6.34	161	3.95	100	2.00	50.8	1.38	35
C4G113-24-24	1-1/2	1-1/2	7.01	178	4.80	122	2.38	60.3	1.69	43

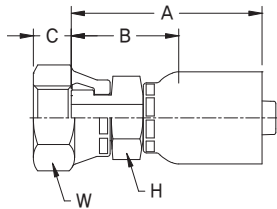
13 Series

C9G113 SAE Coe 61 Flange 90° Elbow



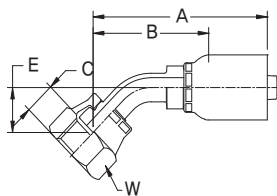
Part No.	FLANGE Size	Hose Size	A		Cut-Off Allowance B		FLANGE DIA. F		DROP E	
			inch	mm	inch	mm	inch	mm	inch	mm
C9G113-12-12	3/4	3/4	4.02	102	2.26	57	1.50	38.1	2.28	58
C9G113-12-1290	3/4	3/4	4.02	102	2.26	57	1.50	38.1	3.54	90
C9G113-12-12130	3/4	3/4	4.02	102	2.26	57	1.50	38.1	5.12	130
C9G113-16-12	1	3/4	4.03	102	2.27	58	1.75	44.5	2.28	58
C9G113-16-1280	1	3/4	4.07	103	2.31	59	1.75	44.5	3.15	80
C9G113-16-12130	1	3/4	4.07	103	2.31	59	1.75	44.5	5.12	130
C9G113-16-16	1	1	4.67	118	2.82	72	1.75	44.5	2.76	70
C9G113-16-16130	1	1	4.67	118	2.82	72	1.75	44.5	5.12	130
C9G113-20-20	1-1/4	1-1/4	6.77	172	4.38	111	2.00	50.8	2.99	76
C9G113-24-20	1-1/2	1-1/2	7.17	182	4.78	122	2.38	60.3	3.94	100
C9G113-24-24	1-1/2	1-1/2	6.52	166	4.30	109	2.38	60.3	4.09	104
C9G113-32-32	2	2	8.25	210	5.68	144	2.81	71.4	4.72	120

C1R13 Female "SEAL-LOK" Swivel Straight O-Ring Face Seal



Part No.	Thread Size	Hose Size	A		Hex H	Hex W	Cut-Off Allowance B		NUT C	
	UN		inch	mm			inch	mm	inch	mm
C1R13-12-12	1-3/16X12	3/4	3.17	81	1-1/8	1-3/8	1.41	36	0.54	13.7
C1R13-12-12	1-3/16X12	3/4	3.17	81	1-1/8	1-3/8	1.41	36	0.54	13.7
C1R13-12-12M	1-3/16X12	3/4	3.17	81	32	36	1.41	36	0.54	13.7

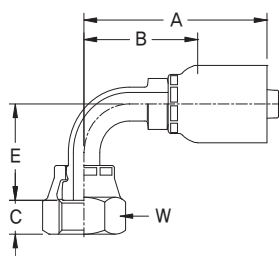
C4R13 Female "SEAL-LOK" Swivel 45° Elbow O-Ring Face Seal



Part No.	Thread Size	Hose Size	A		Hex W	Cut-Off Allowance B		DROP E		NUT C	
	UN		inch	mm		inch	mm	inch	mm	inch	mm
C4R13-12-12	1-3/16X12	3/4	4.11	104	1-3/8	2.35	60	0.83	21	0.54	13.7
C4R13-12-12M	1-3/16X12	3/4	4.11	104	36	2.35	60	0.83	21	0.54	13.7
C4R13-16-16	1-7/16X12	1	4.69	119	1-5/8	2.84	72	0.94	24	0.55	14.0
C4R13-16-16M	1-7/16X12	1	4.69	119	41	2.84	72	0.94	24	0.55	14.0

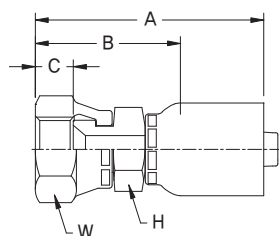
13 Series

C9R13 Female "SEAL-LOK" Swivel 90° Elbow (Short) O-Ring Face Seal



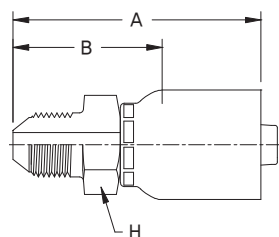
Part No.	Thread Size	Hose Size	A		Hex W	Cut-Off Allowance B		DROP E		NUT C	
	UN	inch	inch	mm		inch	mm	inch	mm	inch	mm
C9R13-12-12	1-3/16X12	3/4	3.97	101	1-3/8	2.21	56	1.93	49	0.54	13.7
C9R13-12-12M	1-3/16X12	3/4	3.97	101	36	2.21	56	1.93	49	0.54	13.7
C9R13-16-16	1-7/16X12	1	4.62	117	1-5/8	2.77	70	2.20	56	0.55	14.0
C9R13-16-16M	1-7/16X12	1	4.62	117	41	2.77	70	2.20	56	0.55	14.0
C9R13-16-16100	1-7/16X12	1	4.71	120	1-5/8	2.86	73	3.94	100	0.55	14.0

C1X13 Female SAE 37° Swivel

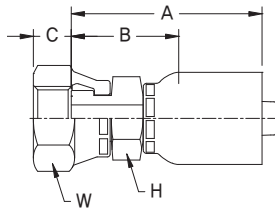


Part No.	Thread Size	Hose Size	A		Hex H	Hex W	Cut-Off Allowance B		NUT C	
	UN	inch	inch	mm	mm	mm	inch	mm	inch	mm
C1X13-12-12	1-1/16X12	3/4	3.65	93	1-1/8	1-1/4	1.89	48	0.56	14.2
C1X13-16-16	1-5/16X12	1	4.02	102	1-3/8	1-1/2	2.17	55	0.60	15.2
C1X13-20-20	1-5/8X12	1-1/4	4.91	125	1-3/4	2	2.52	64	0.62	15.7
C1X13-24-24	1-7/8X12	1-1/2	5.03	128	2	2-1/4	2.82	72	0.74	18.8
C1X13-32-32	2-1/2X12	2	5.89	150	2-1/2	2-7/8	3.32	84	0.93	23.6

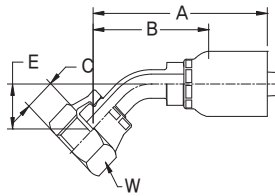
C1Y13 Male SAE 37°



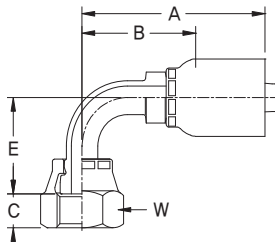
Part No.	Thread Size	Hose Size	A		Hex H	Cut-Off Allowance B	
	UN	inch	inch	mm	inch	inch	mm
C1Y13-16-16	1-5/16X12	1	3.81	97	1-3/8	1.96	50

CT Series**C1RCT Female "SEAL-LOK" Swivel Straight O-Ring Face Seal**

Part No.	Thread Size	Hose Size	A		Hex H	Hex W	Cut-Off Allowance B		NUT C	
	UN	inch	inch	mm			inch	mm	inch	mm
C1RCT-04-04	9/16X18	1/4		40.1	17	19		28		8.1
C1RCT-06-06	11/16X16	3/8		41.7	19	22		20.3		9.7
C1RCT-08-08	13/16X16	1/2		45.6	22	24		26		10.9

C4RCT Female "SEAL-LOK" Swivel 45° Elbow O-Ring Face Seal

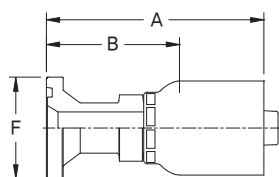
Part No.	Thread Size	Hose Size	A		Hex W	Cut-Off Allowance B		DROP E		NUT C	
	UN	inch	inch	mm		inch	mm	inch	mm	inch	mm
C4RCT-04-04	9/16X18	1/4		56	19		33.3		10		8.1
C4RCT-06-06	11/16X16	3/8		61.5	22		30		11		9.7
C4RCT-08-08	13/16X16	1/2		71.0	24		37		15		10.9

C9RCT Female "SEAL-LOK" Swivel 90° Elbow (Short) O-Ring Face Seal

Part No.	Thread Size	Hose Size	A		Hex W	Cut-Off Allowance B		DROP E		NUT C	
	UN	inch	inch	mm		inch	mm	inch	mm	inch	mm
C9RCT-04-04	9/16X18	1/4		46	19		24		21		8.1
C9RCT-06-06	11/16X16	3/8		50	22		27		23		9.7
C9RCT-08-08	13/16X16	1/2		57.2	24		31.2		29		10.9

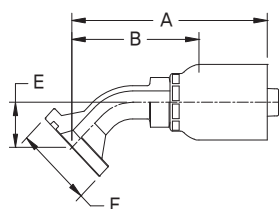
CA Series

C1CA13 Flange Straight



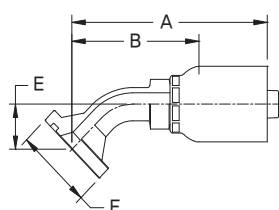
Part No.	FLANGE Size	Hose Size	A		Cut-Off Allowance B		FLANGE DIA. F	
		inch	inch	mm	inch	mm	inch	mm
C1CA13-12-12	3/4	3/4	4.34	110	2.58	66	1.50	38.1
C1CA13-16-16	1	1	4.59	117	2.74	70	1.75	44.5
C1CA13-20-20	1-1/4	1-1/4	5.53	140	3.14	80	2.00	50.8
C1CA13-24-24	1-1/2	1-1/2	5.16	131	2.95	75	2.38	60.3
C1CA13-32-32	2	2	6.12	155	3.55	90	2.81	71.4

C2CA13 Flange 22.5° Elbow



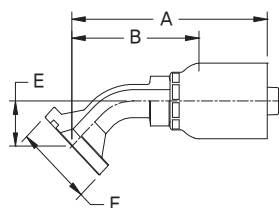
Part No.	FLANGE Size	Hose Size	A		Cut-Off Allowance B		FLANGE DIA. F		DROP E	
		inch	inch	mm	inch	mm	inch	mm	inch	mm
C2CA13-12-12	3/4	3/4	4.65	118.0	2.80	71.0	1.50	38.1	0.71	18.0
C2CA13-16-16	1	1	7.40	188.0	5.35	136.0	1.75	44.5	3.31	84.0
C2CA13-20-20	1-1/4	1-1/4	6.81	173.0	4.33	110.0	2.00	50.8	1.10	28.0
C2CA13-24-24	1-1/2	1-1/2	7.28	185.0	5.00	127.1	2.37	60.3	1.15	29.1
C2CA13-32-32	2	2	8.23	209.1	5.78	146.9	2.81	71.4	1.22	31.0

C3CA13 Flange 30° Elbow



Part No.	FLANGE Size	Hose Size	A		Cut-Off Allowance B		FLANGE DIA. F		DROP E	
		inch	inch	mm	inch	mm	inch	mm	inch	mm
C3CA13-12-12	3/4	3/4	4.45	113.0	2.68	68.0	1.50	38.1	0.91	23.0
C3CA13-16-16	1	1	5.28	134.0	3.74	95.0	1.75	44.5	0.98	25.0
C3CA13-20-20	1-1/4	1-1/4	6.69	170.0	4.23	107.5	2.00	50.8	1.26	32.0
C3CA13-24-24	1-1/2	1-1/2	7.26	184.5	4.17	106.0	2.37	60.3	1.52	38.5
C3CA13-32-32	2	2	8.00	203.3	5.66	143.8	2.81	71.4	1.64	41.7

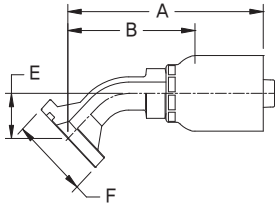
C4CA13 Flange 45° Elbow



Part No.	FLANGE Size	Hose Size	A		Cut-Off Allowance B		FLANGE DIA. F		DROP E	
		inch	inch	mm	inch	mm	inch	mm	inch	mm
C4CA13-12-12	3/4	3/4	4.31	110	2.55	65	1.50	38.1	1.02	26
C4CA13-16-16	1	1	5.01	127	3.16	80	1.75	44.5	1.26	32
C4CA13-20-20	1-1/4	1-1/4	6.34	161	3.95	100	2.00	50.8	1.38	35
C4CA13-24-24	1-1/2	1-1/2	7.01	178	4.80	122	2.38	60.3	1.69	43

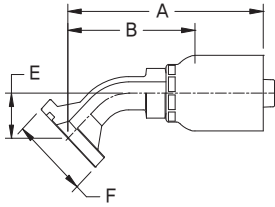
CA Series

C6CA13 Flange 60° Elbow



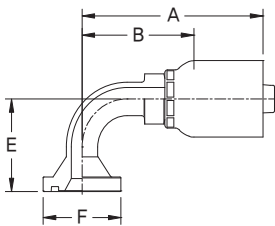
Part No.	FLANGE Size	Hose Size	A		Cut-Off Allowance B		FLANGE DIA. F		DROP E	
		inch	inch	mm	inch	mm	inch	mm	inch	mm
C6CA13-12-12	3/4	3/4	4.76	121.0	2.80	71.0	1.50	38.1	2.17	55.0
C6CA13-16-16	1	1	5.51	140.0	3.98	101.0	1.75	44.5	2.48	63.0
C6CA13-20-20	1-1/4	1-1/4	7.17	182.0	4.69	119.0	2.00	50.8	3.19	81.0
C6CA13-24-24	1-1/2	1-1/2	8.35	212.0	5.87	149.1	2.37	60.3	4.63	117.6
C6CA13-32-32	2	2	9.35	237.6	6.83	173.5	2.81	71.4	4.26	108.1

C7CA13 Flange 67.5° Elbow



Part No.	FLANGE Size	Hose Size	A		Cut-Off Allowance B		FLANGE DIA. F		DROP E	
		inch	inch	mm	inch	mm	inch	mm	inch	mm
C7CA13-12-12	3/4	3/4	4.61	117.0	2.64	67.0	1.50	38.1	2.20	56.0
C7CA13-16-16	1	1	5.16	131.0	6.62	92.0	1.75	44.5	6.19	81.0
C7CA13-20-20	1-1/4	1-1/4	6.89	175.0	4.41	112.0	2.00	50.8	3.35	85.0
C7CA13-24-24	1-1/2	1-1/2	7.94	201.8	5.26	133.6	2.37	60.3	4.09	103.8
C7CA13-32-32	2	2	9.25	235.0	6.51	165.4	2.81	71.4	4.55	115.6

C9CA13 Flange 90° Elbow



Part No.	FLANGE Size	Hose Size	A		Cut-Off Allowance B		FLANGE DIA. F		DROP E	
		inch	inch	mm	inch	mm	inch	mm	inch	mm
C9CA13-12-12	3/4	3/4	4.02	102	2.26	57	1.50	38.1	2.28	58
C9CA13-12-1290	3/4	3/4	4.02	102	2.26	57	1.50	38.1	3.54	90
C9CA13-12-12130	3/4	3/4	4.02	102	2.26	57	1.50	38.1	5.12	130
C9CA13-16-12	1	3/4	4.03	102	2.27	58	1.75	44.5	2.28	58
C9CA13-16-1280	1	3/4	4.07	103	2.31	59	1.75	44.5	3.15	80
C9CA13-16-12130	1	3/4	4.07	103	2.31	59	1.75	44.5	5.12	130
C9CA13-16-16	1	1	4.67	118	2.82	72	1.75	44.5	2.76	70
C9CA13-16-16130	1	1	4.67	118	2.82	72	1.75	44.5	5.12	130
C9CA13-20-20	1-1/4	1-1/4	6.77	172	4.38	111	2.00	50.8	2.99	76
C9CA13-24-20	1-1/2	1-1/4	7.17	182	4.78	122	2.38	60.3	3.94	100
C9CA13-24-24	1-1/2	1-1/2	6.52	166	4.30	109	2.38	60.3	4.09	104
C9CA13-32-32	2	2	8.25	210	5.68	144	2.81	71.4	4.72	120

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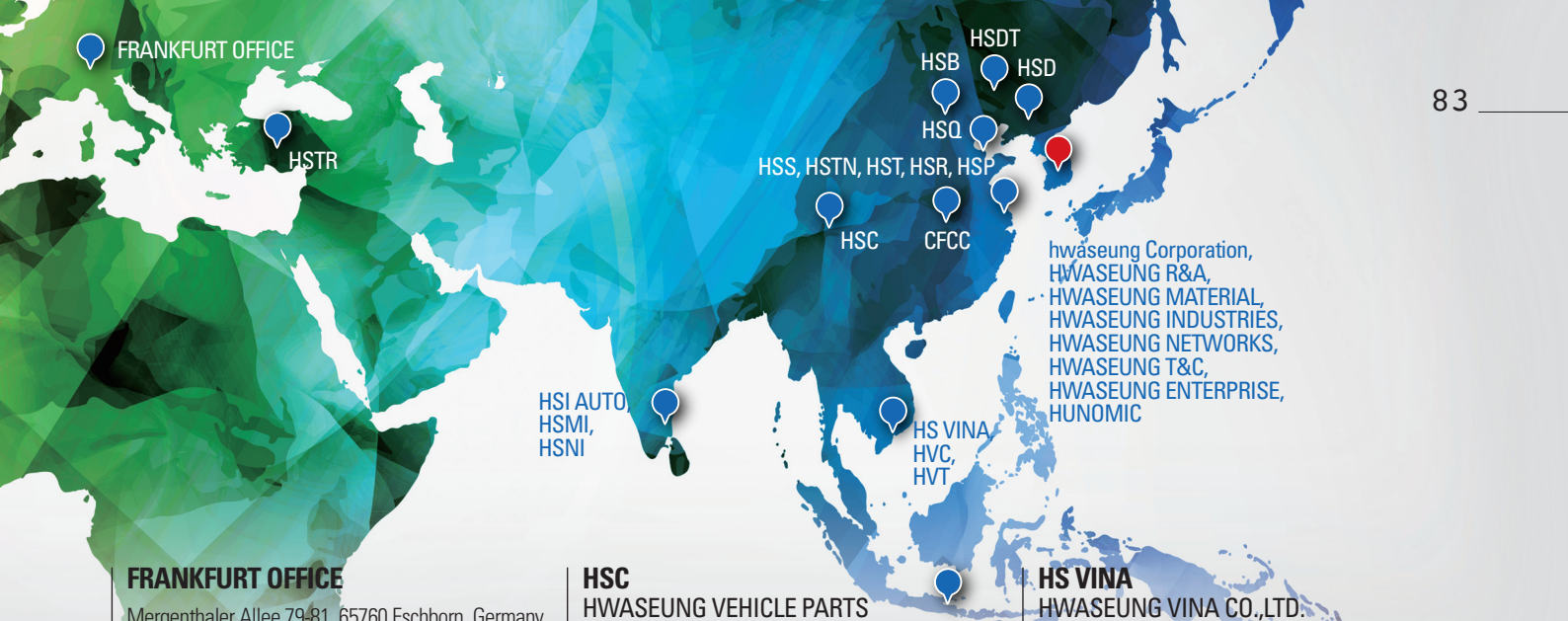
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MANUFACTURING CO., LTD.**

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Tel. 91-44-2681-0001~5 Fax. 91-44-2681-1899

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Xa An Ngai, Huyen Long Dien, Tinh Ba Ria - Vung Tau
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HS POLYTECH CO., LTD.

Duong so2, KCN Nhon Trach 1, Xa Phuoc Thien, Huyen
Nhon Trach, Tinh Dong Nai, Viet Nam
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IBS

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No, 2710, Saigon Trade Center, 37 Ton Duc Thang, Ben
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Tel. 84-8-3910-2377 Fax. 84-8-3910-2376

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HS LOGISTICS

Tel. 84-933-566-864

HSG

HS GLOBAL

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