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# SPPL

## SURAKSHA RUBBER PRODUCTS PVT. LTD.

Sister Concern of **VANSH INDUSTRIES**  
A Reliable & Trusted Name for Hoses  
& Hose Assemblies

# HYDRAULIC INDUSTRIAL AUTOMOTIVE HOSE ASSEMBLIES & HOSE END FITTINGS



Certification & Inspection



U.S. Department of Labor  
Mine Safety & Health Administration



Progress through Research



Bureau of Indian Standard



CERTIFIED  
COMPANY  
9001:2015



D-U-N-S®  
REGISTERED™



**SURAKSHA**  
L P G H O S E

**GAZFLEX**



## SAE RECOMMENDED PRACTICES FOR HYDRAULIC HOSES & HOSE ASSEMBLIES

The SAE J1273 guidelines recommend practices while selecting, routing, fabricating, installing, replacing, maintaining and storing hose for Fluid Power Systems.

Following are the recommendations of good practices which can increase life of Hose Assembly.

The standard recommends that hose assemblies in use should be inspected regularly for leaks, kinks, cover blisters, cover abrasions and other damages. Damaged or, worn out assemblies must be replaced immediately. Not complying these recommendations may result in serious personal injury or, property damage.

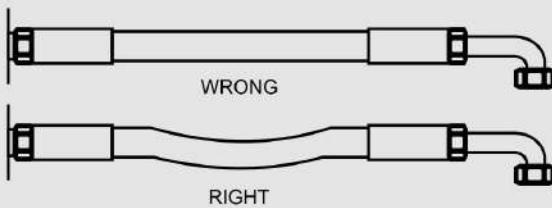
These recommended practices, take into account safety of human and system, maximising life of Hose & Hose Assemblies.

1. Select Proper Hose for the application. Simply matching ID/OD is not enough but it should be along with types of Hose.
2. Hydraulic Components selection should also be based on Application Temperature, Pressure and Bend Radius. Don't exceed recommended component limits.
3. Hose must not be Stretched. Kinked, Crushed, Twisted while installing or, during its use. Hose must not be bent to less than its recommended minimum bend Radius.
4. Follow proper hose storage for hose shelf life.

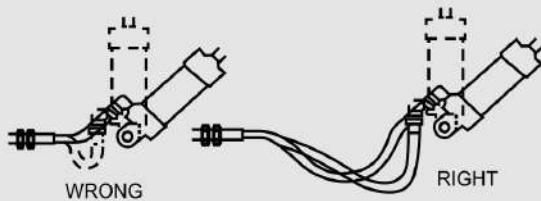
### CORRECT HOSE ASSEMBLY INSTALLATION TIPS

Hose Assembly installation should comply with Hose routing standard SAE J 1273.

The Following Diagrams show Proper Hose installations which provide Maximum performance & cost savings.



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

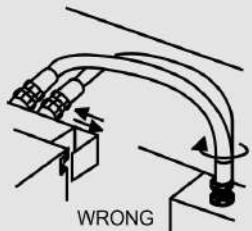


Adequate hose length is necessary to distribute movement on flexing applications and to avoid abrasion.

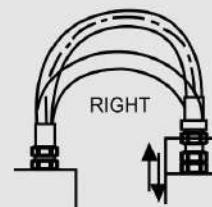
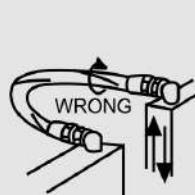
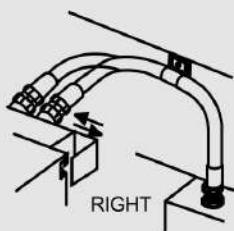


When radius is below the required minimum, use an angle adapter to avoid sharp bends. Exceeding minimum bend radius will greatly reduce hose assembly life.

## ASSEMBLY INSTRUCTIONS



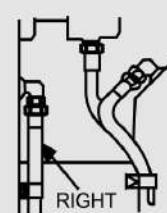
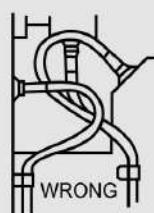
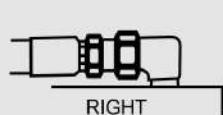
Avoid twisting of hose lines bent in two planes by clamping hose at change of plane



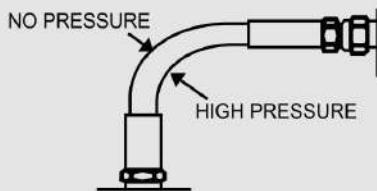
Hose is weakened when installed in twisted position. Prevent twisting and distortion by bending hose in same plane as the motion of the port to which hose is connected



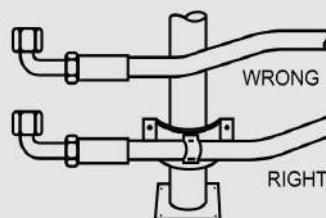
Reduce number of pipe thread joints by using hydraulic adapters instead of pipe fittings



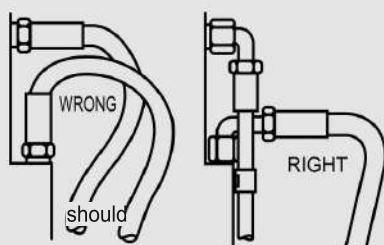
Route hose directly by using 45° and/or 90° adapter fittings. Avoid excessive hose length to improve appearance & neater installation for easier maintenance.



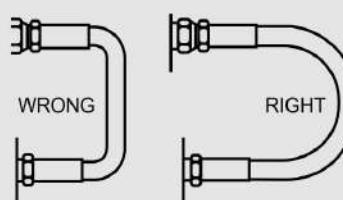
To allow for length changes when hose is pressurized do not clamp at bends so that curves will absorb changes. Do not clamp high and low pressure lines together.



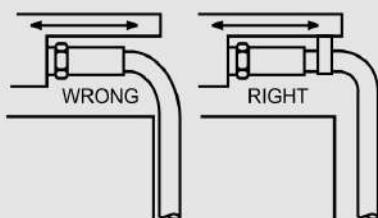
High ambient temperatures shorten hose life, so make sure hose is kept away from hot parts. If this is not possible, insulate hose with sleeves.



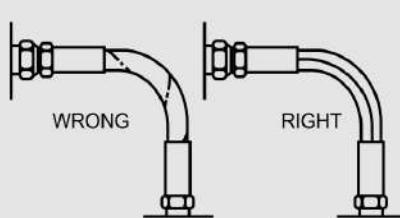
Elbows and adapters should be used to relieve strain on the assembly, and to provide neater installations which will be more accessible for inspection and maintenance.



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



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.

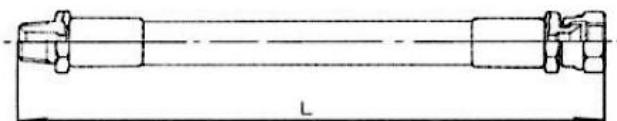


When installing hose, make sure it is not twisted. Pressure applied to a twisted hose can result in hose failure or loosening of connections.

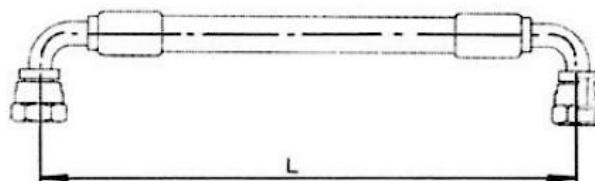
## How to calculate the Assembly Length

- End to End of both fittings

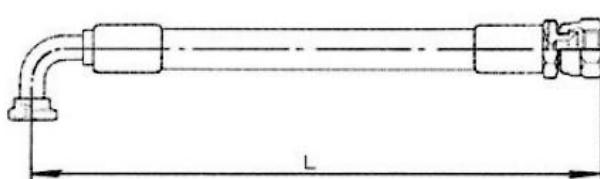
Case 1)



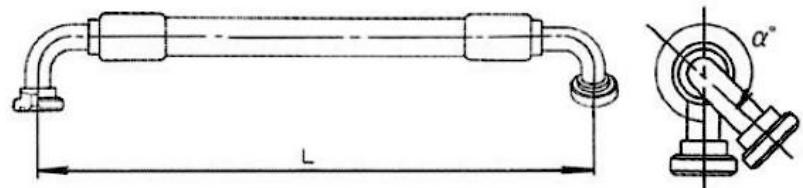
Case 2)



Case 3)



Case 4)



## Hose Protective Material

### 1. SPRING

For Protection of Small bending at the end of end fittings.

### 2. SPRING GUARD

For whole Hose Length Surface Protection

### 3. WIRE BRAID

For the protection of whole hose from Metal Cutting Powder, Stone and Sharp Edged & Chips

### 4. GLASS WOOL WIRE BRAID

For protection of High Temperature and Heat.

### 5. VINYLCOVER

For the Protection from Abrasion or Damage.

### 6. PLASTIC /PU PROTECTION / SLEEVE / COIL

For the protection from Abrasion.

## **TIGHTENING TORQUE (HOSE FITTING)**

While fixing the fitting of hose assemblies, it should be tightened with suitable torque otherwise there would be leakage of fluid or breakage of fitting.

SIZE	Metric Size	3.2	5	6.3	8	10	12.5	16	19	25	31.5	38	51
	mm Size	3	5	6	8	9	12	15	19	25	32	38	50
	Dash Size	-02	-03	-04	-05	-06	-08	-10	-12	-16	-20	-24	-32

JIS THREAD	1/8	1/4	1/4	3/8	3/8	1/2	3/4	3/4	1	1-1/4	1-1/2	2
Tightening torque N.m	15	25	25	34	34	64	132	132	196	225	255	316
UNF Thread	-	-	7/16-20	1/2-20	9/16-18	3/4-16	7/8-14	1-1/16-12	1-5/16-12	1-5/8-12	1-7/8-12	2-1/2-12
Tightening torque N.m	-	-	25	29	39	49	69	118	137	167	212	296
DIN DKO (Light)	-	-	M 12 x 1.5	M14 x 1.5	M16 x 1.5	M18 x 1.5	M22 x 1.5	M26 x 1.5	M36 x 2.0	M36 x 2.0	M45 x 2.0	-
Tightening torque N.m	-	-	15	25	35	40	60	85	105	135	250	-
DIN DKO (Heavy)	-	-	-	M16 x 1.5	M18 x 1.5	M20 x 1.5	M24 x 1.5	M30 x 2.0	M36 x 2.0	M42 x 2.0	M52 x 2.0	-
Tightening torque N.m	-	-	-	35	40	45	74	105	135	205	270	-
SSFST/45/90 (M)	-	-	-	-	-	M8 x 1.25	-	M10 x 1.5	M10 x 1.5	M12 x 1.75	M14 x 2.0	M14 x 2.0
Tightening torque N.m	-	-	-	-	-	20~25	-	28~40	37~48	48~62	62~79	73~90
SSFT/45/90 (UNF)	-	-	-	-	-	5/16-18	-	3/8-16	3/8-16	7/16-14	1/2-13	1/2-13
Tightening torque N.m	-	-	-	-	-	20~25	-	28~40	37~48	48~62	62~79	73~90
HSFST/45/90 (M)	-	-	-	-	-	M8 x 1.25	-	M10 x 1.5	M12 x 1.75	M14 x 2.0	M16 x 2.0	M20 x 2.5
Tightening torque N.m	-	-	-	-	-	20~25	-	34~45	56~68	85~102	158~181	271~294
HSFST/45/90 (UNF)	-	-	-	-	-	5/16-18	-	3/8-16	7/16-14	1/2-13	5/8-11	3/4-10
Tightening torque N.m	-	-	-	-	-	20~25	-	34~45	56~68	85~102	158~181	271~294
ORFS	-	-	9/16-18	-	11/16-16	13/16-16	1-14	1-3/16-12	1-7/16-12	1-11/16-12	2-12	-
Tightening torque N.m	-	-	15	-	26	45	64	93	130	180	213	-

### **Allowance of hose assembly length (Based on JIS.B. 8360/8362)**

Hose Assembly Length (mm)	Allowance (mm)
Under 500	+10 0
Over 500 to Under 1,000	+15 0
Over 1,000 to Under 2,000	+20 0
Over 2,000 to Under 5,000	+1.0% 0
Over 5,000	+2.0% 0

## Hose Assemblies

### SPECIFICATION : Hydraulics (MSHA Certified)



<b>Usage / Application</b>	Earth Movers, Constructions & Infrastructure, Coal Sector, Metal Mines & Plant, Steel Plant, Railways
<b>Size/ Type</b>	1/4" to 2" in Single & Double Wire braided SAE 100 R1, R2, R3, R6 Or J30 R6 and Jack Hose
<b>Hose Assembly Length</b>	As per Customer Requirement
<b>Maximum Working Pressure</b>	28 to 330 bar
<b>Material</b>	Hydraulic Oil Resistant Rubber
<b>Fitting Specification</b>	Standard Swage (BSP, JIC, ORFS, METRIC, JIS and NPT) SKIVE AND NON SKIVE
<b>Surface Protection</b>	Optional

### SPECIFICATION : STEERING (MSHA Certified)



<b>Usage / Application</b>	Tractors/ Passenger Vehicle/ Commercial Vehicles
<b>Size/ Type</b>	1/4" 3/8" or 1/2" in Single or Double Wire Braiding & R6 Rayon Braiding
<b>Hose Assembly Length</b>	As per Customer Requirement
<b>Maximum Working Pressure</b>	28 bar to 330 bar
<b>Material</b>	Hydraulic Oil Resistant Rubber
<b>Fitting Specification</b>	Standard Swage (BSP, JIC, ORFS, METRIC, JIS, NPT, AND FLANGE) SKIVE AND NON SKIVE
<b>Surface Protection</b>	Spring Gaurd

### SPECIFICATION : TRACTOR TROLLEY HOSES



<b>Usage / Application</b>	Loading & Unloading of Material from Trolley Attached to Tractor
<b>Size/ Type</b>	3/8" & 1/2" in Single & Double Wire Braided
<b>Hose Assembly Length</b>	As per Customer Requirement
<b>Maximum Working Pressure</b>	138 bar -260 bar
<b>Material</b>	Weather, Oil & Abrasion Resistance Synthetic Rubber Blend.
<b>Fitting Specification</b>	Crimp / Swivel (BSP & NPT)
<b>Surface protection</b>	Optional

### SPECIFICATION : Fire Extinguisher Applications



<b>Usage / Application</b>	Fire Extinguishing Application
<b>Size/ Type</b>	3/8" or 1/2" in Single Wire Braiding
<b>Hose Assembly Length</b>	As per Customer Requirement
<b>Maximum Working Pressure</b>	180 to 300 bar
<b>Material</b>	CO <sub>2</sub> Gas Resistant Synthetic Rubber
<b>Fitting Specification</b>	1/4" BSP & 1/2" fix Male/Female with 7/8 NPT swivel
<b>Surface Protection</b>	Optional

## Hose Assemblies

**SPECIFICATION : FUEL DISPENSING (BS EN 1360)  
(ATEX UK CERTIFIED)**

<b>Usage / Application</b>	Fuel Dispensing / Transfer Applications
<b>Size/Type</b>	5/8", 3/4" & 1.0" in Single Wire Braid, BS EN 1360
<b>Hose Assembly Length</b>	As per Customer Requirement
<b>Maximum Working Pressure</b>	16 bar Max
<b>Material</b>	Gasoline and Diesel Synthetic Rubber
<b>Fitting Specification</b>	Crimp / Reusable (BSP & NPT) - Mild Steel/Brass
<b>Surface Protection</b>	N.A.

**FUEL DISPENSING  
HOSE ASSEMBLY**



**CNG HOSE ASSEMBLY**



**SPECIFICATION : CNG HOSE (SAE J30 R6 & 15722 (Class 1))  
(ARAI APPROVED)**

<b>Usage / Application</b>	Industrial & Automotive CNG Applications
<b>Size/Type</b>	3/16", 1/4" , 5/16" & 1/2"
<b>Hose Assembly Length</b>	As per Customer Requirement
<b>Maximum Working Pressure</b>	21 bar Max
<b>Material</b>	Fuel Resistant Synthetic Rubber
<b>Fitting Specification</b>	Crimp / Reusable (BSP & NPT) - Mild Steel/Brass
<b>Surface Protection</b>	N.A.

## Hose Assemblies

### SPECIFICATION : LPG HOSE : IS 9573 - Part-1 (Industrial/ Commercial Hoses LERC Approved)



<b>Usage / Application</b>	LPG Transfer & Handling for Industrial/Commercial Application
<b>Size / Type</b>	Nominal Size : 1/4", 5/16", 3/8", 1/2", 5/8", 3/4", 1" Single wire braided
<b>Hose Assembly Length</b>	As per Customer Requirement
<b>Maximum Working Pressure</b>	25 bar Max.
<b>Material</b>	Ozone, Weather, LPG & Abrasion Resistance Synthetic Rubber Blend
<b>Fitting Specification</b>	Crimp / Swivel (BSP & NPT) / Male
<b>Surface protection</b>	N.A.

### SPECIFICATION : LPG HOSE : IS 9573 - Part - 2



<b>Usage / Application</b>	LPG Transfer & Handling for Industrial Low to Medium Pressure Application
<b>Size / Type</b>	5/16" Single Wire braided
<b>Hose Assembly Length</b>	As per Customer Requirement
<b>Maximum Working Pressure</b>	10 bar
<b>Material</b>	Ozone, weather, LPG & abrasion resistance synthetic rubber blend.
<b>Fitting Specification</b>	Crimp / Male Swivel (BSP & NPT)
<b>Surface protection</b>	N.A.

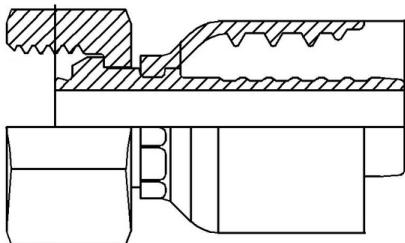
### SPECIFICATION : BS EN 1762 Type-D / BS 4089 (Industrial & Commercial)



<b>Usage / Application</b>	LPG Transfer and Handling for Industrial High Pressure Application
<b>Size / Type</b>	1/2", 5/8", 3/4", 1.0", 1-1/4", 1-1/2", 2" in Single Wire Braid as per BS EN 1762-2017 Type -D / BS - 4089
<b>Hose Assembly Length</b>	As per Customer Requirement
<b>Maximum Working Pressure</b>	25 bar Max
<b>Material</b>	Ozone, Weather, LPG & Abrasion Resistance Synthetic Rubber Blend.
<b>Fitting Specification</b>	Crimp (BSP & NPT)
<b>Surface protection</b>	N.A.

## END CONNECTORS

### BSP Female Straight Fitting



**Standard** - ISO 8434-6

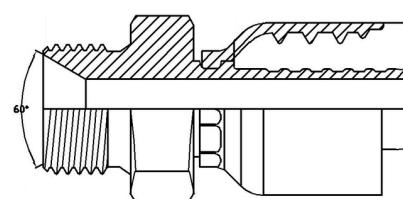
**Used for hose**-

SAE 100 R1, R2, R16, R17, R19, R7, R6, R4, TEFILON

**O- Ring** - NBR

**Cone** - 60° Type

### BSP Male straight / 90 degree bend Fitting



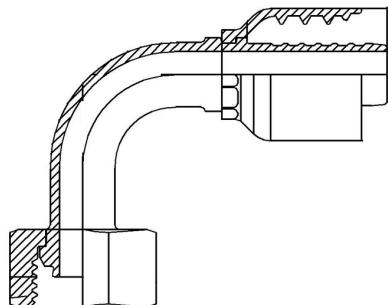
**Standard** - ISO 8434-6

**Used for hose**-

SAE 100 R1, R2, R16, R17, R19, R7, R6, R4, TEFILON

**Cone** - 60° (Inside)

### BSP Female 90 degree bend Fitting



**Standard** - ISO 8434-6

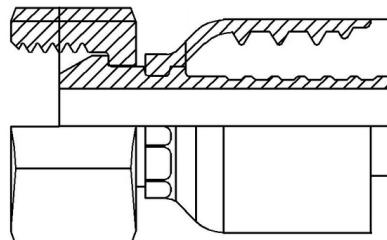
**Used for hose**-

SAE 100 R1, R2, R16, R17, R19, R7, R6, R4, TEFILON

**O- Ring** - NBR

**Cone** - 60° Type

### BSP Female Straight Skive Type Fitting



**Standard** - ISO 8434-6

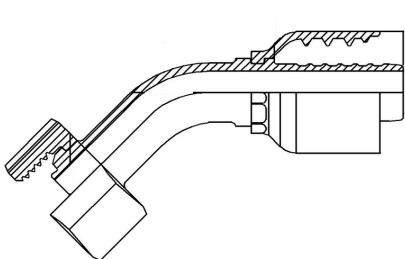
**Used for hose**-

SAE 100 R1, R2, R16, R17, R19, R7, R6, R4, TEFILON

**O- Ring** - NBR

**Cone** - 60°

### BSP Female 45 degree bend Fitting



**Standard** - ISO 8434-6

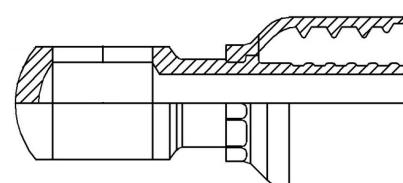
**Used for hose**-

SAE 100 R1, R2, R16, R17, R19, R7, R6, R4, TEFILON

**O- Ring** - NBR

**Cone** - 60° Type

### BANJO Straight Fitting



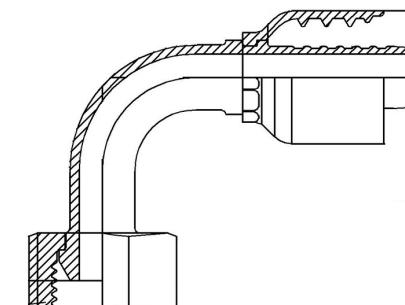
**Standard** - DN-7642

**Used for hose**-

SAE 100 R1, R2, R16, R17, R19, R7, R6, R4, TEFILON

**WITHOUT BOLT**

### BSP Female 90 degree bend Skive type Fitting



**Standard** - ISO 8434-6

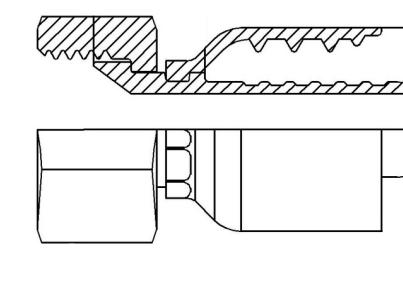
**Used for hose**-

SAE 100 R1, R2, R16, R17, R19, R7, R6, R4, TEFILON

**O- Ring** - NBR

**Cone** - 60° Type

### JIC Female Straight Fitting



**Standard** - ISO 8434-2

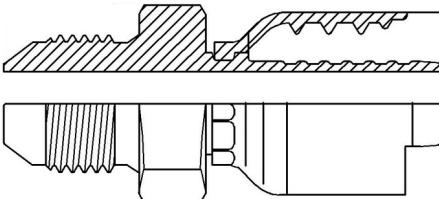
**Used for hose**-

SAE 100 R1, R2, R16, R17, R19, R7, R6, R4, TEFILON

**Cone** - 37° Type

## END CONNECTORS

### JIC Male straight Fitting



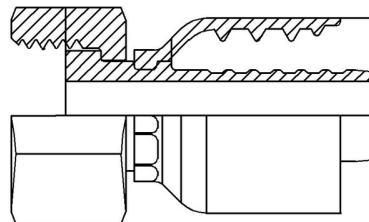
**Standard** - ISO 8434-2

**Used for hose -**

SAE 100 R1, R2, R16,  
R17, R19, R7, R6, R4,  
TEFLON

**Cone** - 37° Type

### ORFS Female Straight Fitting



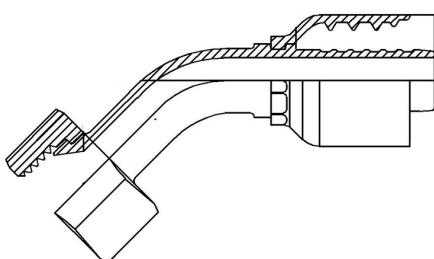
**Standard** - ISO 8434-3

**Used for hose -**

SAE 100 R1, R2, R16,  
R17, R19, R7, R6, R4,  
TEFLON

**Cone** - Flat Face Type

### JIC Female 45 degree bend Fitting



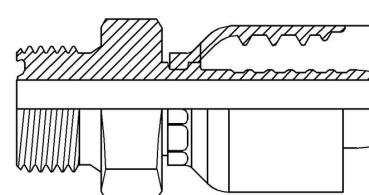
**Standard** - ISO 8434-2

**Used for hose -**

SAE 100 R1, R2, R16,  
R17, R19, R7, R6, R4,  
TEFLON

**Cone** - 37° Type

### ORFS Male Straight Fitting



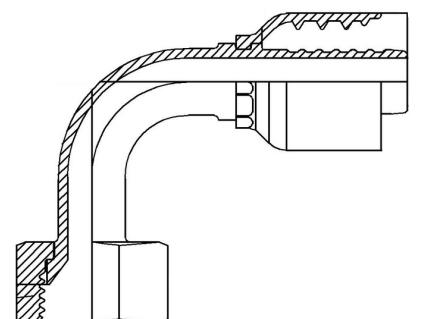
**Standard** - ISO 8434-3

**Used for hose -**

SAE 100 R1, R2, R16,  
R17, R19, R7, R6, R4,  
TEFLON

**Cone** - Flat Face Type

### JIC Female 90 degree bend Fitting



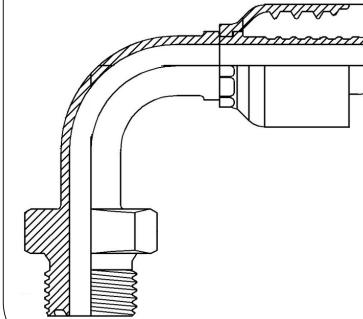
**Standard** - ISO 8434-2

**Used for hose -**

SAE 100 R1, R2, R16,  
R17, R19, R7, R6, R4,  
TEFLON

**Cone** - 37° Type

### ORFS Male 90 degree bend Fitting



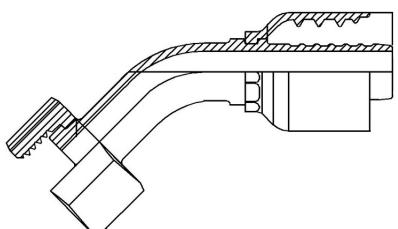
**Standard** - ISO 8434-3

**Used for hose -**

SAE 100 R1, R2, R16,  
R17, R19, R7, R6, R4,  
TEFLON

**Cone** - Flat Face Type

### ORFS Female 45 degree bend Fitting



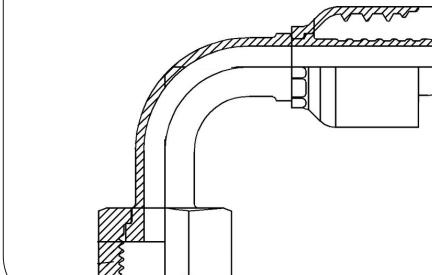
**Standard** - ISO 8434-3

**Used for hose -**

SAE 100 R1, R2, R16,  
R17, R19, R7, R6, R4,  
TEFLON

**Cone** - Flat Face Type

### ORFS Female 90 degree bend Fitting



**Standard** - ISO 8434-3

**Used for hose -**

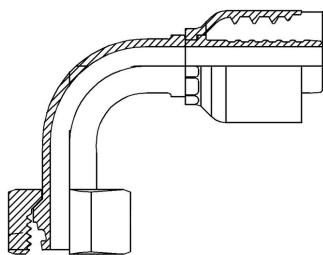
SAE 100 R1, R2, R16,  
R17, R19, R7, R6, R4,  
TEFLON

**Cone** - Flat Face Type

## END CONNECTORS

### METRIC Female 90 degree bend with O-Ring

Din Metric 24° Cone Female bend 90°



**Standard** - Din EN ISO 8434-1

**Used for hose -**

SAE 100 R1, R2, R16,  
R17, R19, R7, R6, R4,  
TEFLON

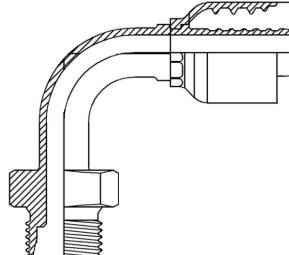
**O-ring -**NBR

**Light series -**FDLO

**Heavy series -**FDHO

### METRIC Male 90 degree bend

Din Metric 24° Cone Male bend 90°



**Standard** - Din EN ISO 8434-1

**Used for hose -**

SAE 100 R1, R2, R16,  
R17, R19, R7, R6, R4,  
TEFLON

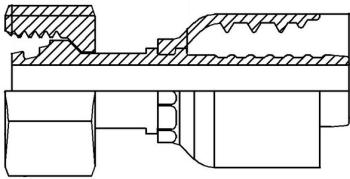
**O-ring -**NBR

**Light series -**FDLO

**Heavy series -**FDHO

### METRIC Female Straight with O-Ring

Din Metric 24° Cone Female Straight



**Standard** - Din EN ISO 8434-1

**Used for hose -**

SAE 100 R1, R2, R16,  
R17, R19, R7, R6, R4,  
TEFLON

**O-ring -**NBR

**Light series -**FDLO

**Heavy series -**FDHO

### Metric Stand Pipe

Din Metric Stand Pipe

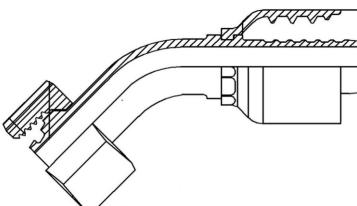
**Standard** - Din EN ISO 8434-1

**Used for hose -**

SAE 100 R1, R2, R16,  
R17, R19, R7, R6, R4,  
TEFLON

### METRIC Female 45 degree bend with O-Ring

Din Metric 24° Cone Female bend 45°



**Standard** - Din EN ISO 8434-1

**Used for hose -**

SAE 100 R1, R2, R16,  
R17, R19, R7, R6, R4,  
TEFLON

**O-ring -**NBR

**Light series -**FDLO

**Heavy series -**FDHO

### Flange Code 61 Straight

**Standard** - SAE 6162-1  
3000 PSI CODE 61

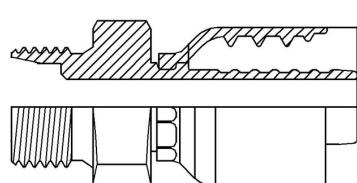
**Used for hose -**

SAE 100 R1, R2, R16,  
R17, R19, R7, R6, R4,  
TEFLON

**O-ring -**NBR

### METRIC Male Straight

Din Metric 24° Cone Male Straight



**Standard** - Din EN ISO 8434-1

**Used for hose -**

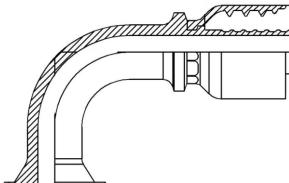
SAE 100 R1, R2, R16,  
R17, R19, R7, R6, R4,  
TEFLON

**O-ring -**NBR

**Light series -**FDLO

**Heavy series -**FDHO

### Flange Code 61 bend 90 degree



**Standard** - SAE 6162-1  
3000 PSI CODE 61

**Used for hose -**

SAE 100 R1, R2, R16,  
R17, R19, R7, R6, R4,  
TEFLON

**O-ring -**NBR



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