

# DEFINING HOSE AND ASSEMBLY LENGTH

HOSE FITTINGS EQUIPMENT & ACCESSORIES ASSEMBLIES INSTALLATION & MAINTENANCE APPENDIX

## Identifying Hose ID

In the case of a hose assembly replacement, the inside diameter (ID) of the hose can be obtained from the existing assembly. The ID may be printed on the layline of the hose or may have to be measured. Before cutting the assembly, measure the overall assembly length and record the orientation of the fittings. See the following sections on how to measure overall assembly length and the offset angle between the two fittings. If the ID of the hose has not been determined, utilize the Hose ID Selection Nomograph in the Appendix. The chart will yield a hose ID recommendation based on flow capacity and flow velocity.

Hydraulic hose size or inside diameter is sometimes referred to as the "Dash Size." The Dash number is the ID of the hose in sixteenths of an inch. For example, a 1/4" ID hose, is equivalent to 4/16". The "Dash Size" would be "-4." A listing of the Dash sizes is shown below. Note that the Dash number applies to the hose ID for all hoses except SAE 100R5. In the case of SAE 100R5, the Dash number is equal to a relevant tube outside diameter (OD).

Dash No.	Hose ID (Except SAE 100R5)		SAE Dash Size* (SAE 100R5)	
	in	mm	in	mm
-2	1/8	3.2		
-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	19.0	5/8	15.9
-14	7/8	22.2		
-16	1	25.4	7/8	22.2
-20	1 1/4	31.8	1 1/8	28.6
-24	1 1/2	38.1	1 1/8	28.6
-32	2	50.8	1 13/16	46.0
-36	2 1/4	57.6		
-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	115.2		

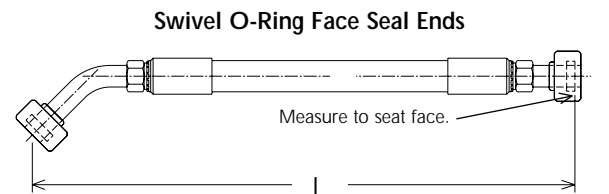
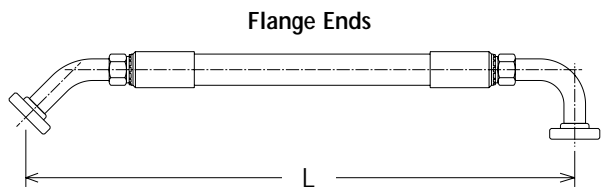
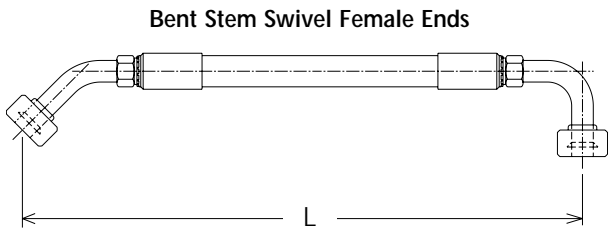
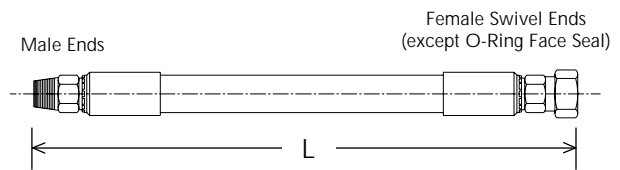
\* SAE Dash Size equals OD of the tubing, which has approximately the same ID as the hose, expressed in 1/16".

## Identifying Overall Assembly Length

Unless otherwise specified by the customer, the assembly's overall length is measured from the extreme end of one fitting to the extreme end of the other; except for the O-ring face seal fittings which shall be measured from the sealing face. Where elbow fittings are used, measurement shall be to the centerline of the sealing surface of the elbow end.

### Assembly Length Measurements

#### Overall Assembly Length



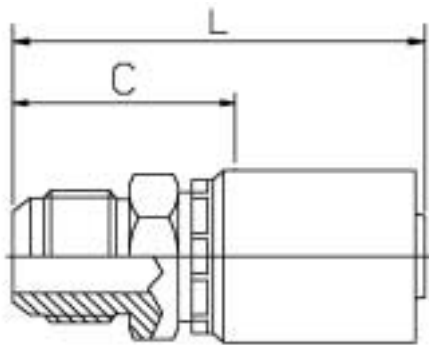
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## Determining Hose Cut Length

The hose cut length for a hose assembly is calculated by subtracting the cut-off factor (distance from the bottom of the ferrule or collar to the end of the fitting), denoted as "C" cut-off in the tables, from the actual assembly length required.

The "C" cut-off factor can be obtained from the fitting product tables. An example is shown below.

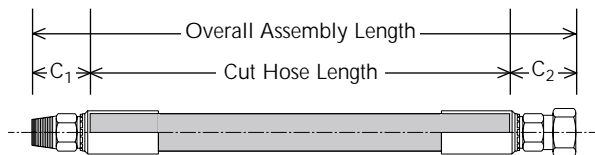
Part No	Hose ID (in) (mm)	Hose Dash Size	Thread Size (in-TPI)	Thread Dash Size	"C" Cut-off Factor (mm)	Stem Hex (mm)
JIC Solid Male 37	3/8 9.5	-6	9/16-18	-6	26.3	17



Knowing the overall length of the assembly desired, the "C" cut-off factor for each fitting is subtracted from the overall length to obtain the cut length of hose.

$$\text{Cut Hose Length} = \text{Assembly Overall Length} - (C_1 + C_2)$$

C1 and C2 are cut-off factors for each end. The "C" dimension may differ for each end, depending on the fitting.



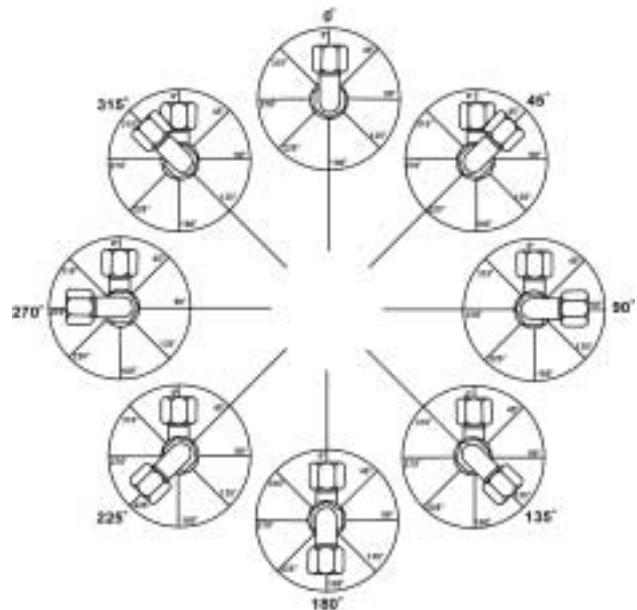
Hose assemblies should be manufactured to the following length tolerances.

Assembly Length	Tolerance (+/- in)	Tolerance (+/- in)	Tolerance (+/- mm)
Up through 12 inches (304.8mm)	0.13	1/8	3.2
Over 12 through 18 inches (304.8 through 457.2mm)	0.19	3/16	4.8
Over 18 through 36 inches (457.2 through 914.4mm)	0.25	1/4	6.4
Over 36 inches (914.4mm)	1%	1%	1%

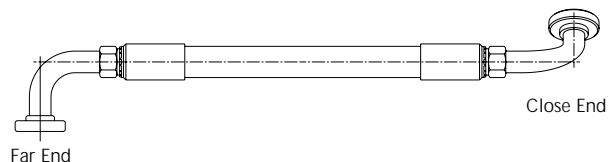
## Measuring the Offset Angle

The offset angle between two fittings is the number of degrees measured in a clockwise direction, between the fitting nearest the viewer and the farthest end fitting. Tolerances on the offset angle are +/- 3 degrees for assemblies up to 24 inches long and +/- 5 degrees for assemblies 24 inches and longer.

The following illustration shows the clockwise angle separation between a "close" fitting and a "far" fitting. The "close" fitting would be defined as the fitting closest when looking at an assembly end to end. The "far" fitting would be defined as the fitting on the far end of the assembly when looking at an assembly end to end. The far end is used as the reference point and the "close" end establishes the angular difference.



Far End Reference Measuring Clockwise



Clockwise Measurement (Degrees)

