

Aeroquip®
3900 Series Quick-Disconnect Couplings

Provides safety and reliability for aircraft, missile and GSE applications using standard or special fluids at pressures up to 1000 psi



General Characteristics

Eaton's Aeroquip 3900 Series Coupling is a self-sealing, quick-disconnect coupling specifically designed for maximum reliability and safety when used with normally hard-to-handle fluids. It eliminates spillage, leakage or spraying during connection and disconnection by employing a unique mechanically actuated sleeve. This sleeve overcomes the usual limitation of dynamic reciprocating seals used with low lubricity fluids.

Features

- Positive valve operation
- Non-spill – no spray design
- Minimum air inclusion and fluid loss
- Push-Pull operation
- Lowest pressure loss (only 1.5 psi [10.3 kPa] @ 6 gpm [22.7 lpm]) -8 size
- Easily adapted to remote operation
- Low force required to connect

Principal of Operation

The 3900 Series Coupling is easily connected with one hand by a simple push together motion requiring no twisting, turning or cocking. The mating halves are completely sealed by an O-ring *before* the valves are opened. A positive lock is obtained through two sets of locking balls in the hose attaching half of the coupling, one of which engages the ball race of the bulkhead half when fully connected. The coupling may be disconnected by an equally simple pulling motion of the union sleeve. This motion positively closes and seals the coupling valves *before* disconnection has occurred. This is accomplished by the set of locking balls incorporated as an integral part of the sleeve valve in the hose attaching half, which will not release until the sleeve has been mechanically pulled shut and sealed.

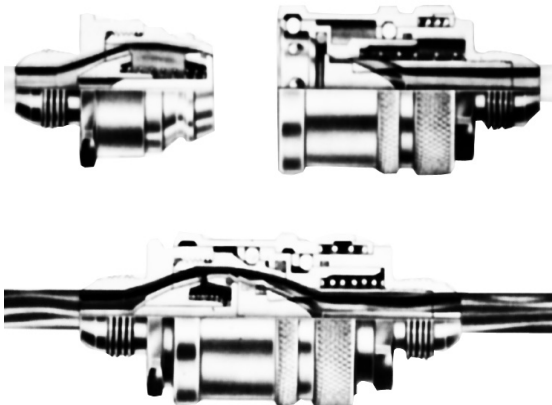
The push-pull feature, with the mechanically closed positive seal with no spillage/air inclusion, makes the design ideally suited to various remote disconnect methods such as solenoid, lanyard or pneumatic.

Operation of Eaton's Aeroquip 3900 Series Coupling is simple and positive. A mechanically actuated sleeve valve overcomes the limitations of a sliding seal and makes possible a no-air inclusion, no-fluid loss self-sealing coupling for many new applications, with difficult to handle fluids.

Couplings can be furnished with special packings and body materials for a variety of fluids or gases. Other end fittings or connection variations may be designed for special coupling situations such as remote operation. Contract your Eaton representative for assistance.

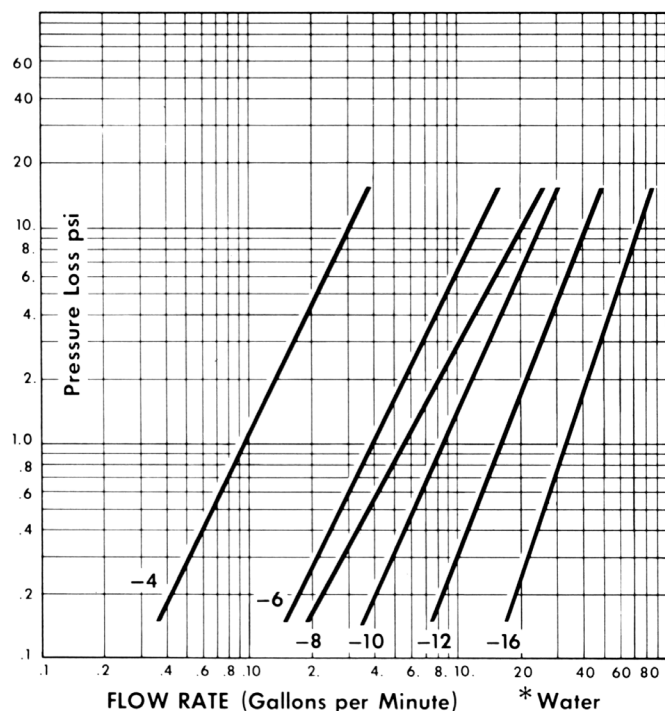


Uncoupled



Coupled

Specifications



Pressure Loss vs. Flow

Pressure loss and flow characteristics of the 3900 series couplings are superior to any valved coupling of its time. A glance at the cutaway illustration (on page 1) shows how these features are obtained by careful proportioning, streamlined valves and avoidance of exposed springs and abrupt changes in the flow pattern. This superior flow pattern makes possible smaller line sizes, smaller pump capacity and other improvements in the system.

To find the pressure loss for a given coupling size at a given flow rate:

- 1) Find the flow rate at the bottom of the chart and read up until line intersects the curve for the coupling size in question
- 2) Read across to find the pressure loss data in the chart to the left is plotted for water at 70°F to 90°F (21°C to 32°C).

Operating Temperatures	Continuous	Intermittent
Fuel	-65°F to +160°F (-54°C to +71°C)	—
Synthetic Oil (MIL-L-7808)	-65°F to +325°F (-54°C to +163°C)	-65°F to +375°F (-54°C to +191°C)
Coolant (ethylene glycol solution)	-65°F to +275°F (-54°C to +135°C)	—

Suggested Applications and Fluids*: Fuel Systems
Oil Systems
Hydraulic Systems

Electronic Cooling	Glycol solutions Deionized Water FC-75	Coolanol 25 &35 DC200 PAO
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Acids and many other corrosive or hazardous fluids.

* With appropriate changes in materials and packings, couplings may be adapted to a wide range of fluids and temperature ranges.

Pressure Data (psi/kPa)

Sizes -4 thru -16

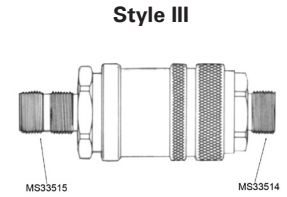
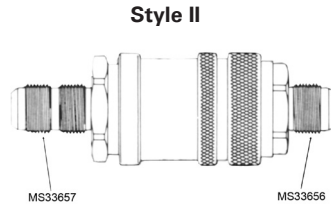
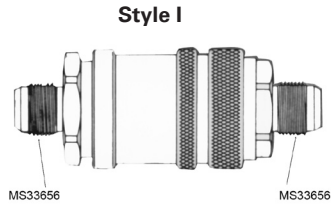
Operating	Proof	Burst
1000/6895	1500/10342.5	2500/17237.5

Force to Connect (-8 size)

Line Pressure On (psi/kPa)	Hose Half (lbs./kg)	Bulkhead Half (lbs./kg)
0	25/11.3	25/11.3
50/344.75	50/22.6	40/18.1
100/689.5	80/36.2	62/28.1
150/1034.25	110/49.8	85/38.5

Note: data on other sizes available upon request

Coupling Styles & Part Numbers



Application	Fuel	Oil	Coolants		Fuel	Oil	Coolants		Fuel	Oil	Coolants	
Specification	MIL-C-7413A Type I	MIL-C-7413A Type II	Ethylene Glycol Solution	Coolanol 25 & 35	MIL-C-7413A Type I	MIL-C-7413A Type II	Ethylene Glycol Solution	Coolanol 25 & 35	MIL-C-7413A Type I	MIL-C-7413A Type II	Ethylene Glycol Solution	Coolanol 25 & 35
Coupling Half, Blkhd Mounting	390210	390206	3902	390261	390212	390213	390202	390275	390216	390217	390204	390254
Coupling Assembly	390008	390055	3900	390059	390010	390058	390012	390060	390016	390017	390018	390061
Coupling Half, Hose Attaching	390509	390505	3905	390544	390509	390505	3905	390544	390511	390512	390503	390563

How to complete part number

3900-8 = Complete coupling part number

└─ = dash size (tube O.D. in 1/16"

└─ = base number

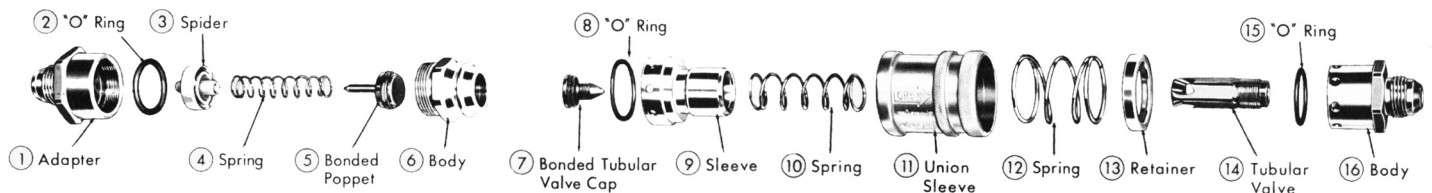
Cap and Plug Info

3907 - size: Dust cap for bulkhead (male) fittings

3909 - size: Dust plug for hose attaching (female) fittings

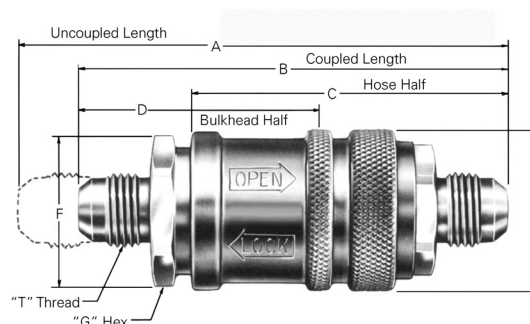
Component Parts

Material	Items
Aluminum	1, 3, 5, 7, 11,13,14,16
Stainless Steel	4, 6, 9, 10,12

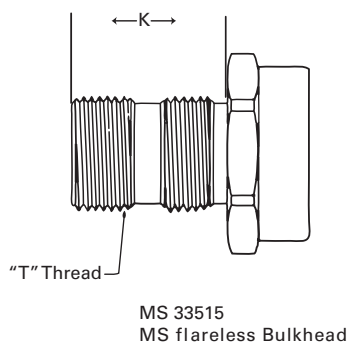
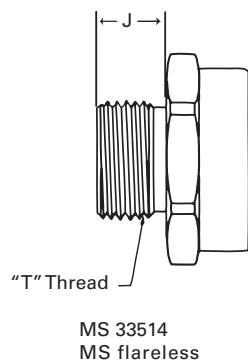
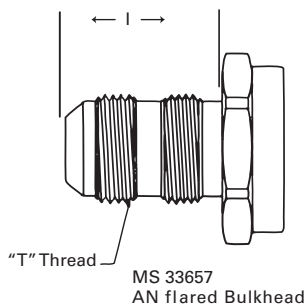
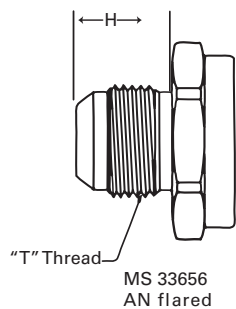


End Fitting Dimensions

Dash Size	Tube Size	Weight (lbs/kg)			Dimensions (in/mm)						
		Style I	Style II	Style III	A	B	C	D	E Dia.	F	G Hex.
4	1/4	0.14/.063	0.15/.068	0.15/.068	3.67/93.2	2.95/74.9	2.04/51.8	1.58/40.1	1.00/25.4	0.90/22.8	0.81/20.5
6	3/8	0.23/.104	0.24/.108	0.24/.108	4.07/103.3	3.26/82.8	2.28/57.9	1.74/44.1	1.20/30.4	1.11/28.1	1.00/25.4
8	1/2	0.44/.199	0.46/.208	0.45/.204	4.82/122.4	3.82/97.0	2.72/69.0	2.04/51.8	1.50/38.0	1.40/35.5	1.25/31.7
10	5/8	0.50/.226	0.52/.235	0.51/.231	5.23/132.8	4.17/105.9	3.01/76.4	2.16/54.8	1.55/39.3	1.44/36.5	1.31/33.2
12	3/4	0.65/.294	0.68/.308	0.67/.303	5.56/141.2	4.47/113.5	3.16/80.2	2.34/59.4	1.75/44.4	1.65/41.9	1.50/38.0
16	1	1.31/.594	1.36/.616	1.34/.607	6.9/175.2	5.27/133.8	3.84/97.5	2.77/70.3	2.25/57.1	2.23/56.6	2.00/50.8



End Fittings



End Fitting Dimensions

Dash Size	Tube Size	Dimensions (in/mm)				"T" Thread
		H	I	J	K	
4	1/4	0.55/13.9	1.05/26.6	0.45/11.4	0.97/24.6	7/16-20 UNF
6	3/8	0.56/14.2	1.13/28.7	0.47/11.9	1.11/28.1	9/16-18 UNF
8	1/2	0.66/16.7	1.28/32.5	0.56/14.2	1.16/29.4	3/4-16 UNF
10	5/8	0.76/19.3	1.42/36.0	0.63/16.0	1.30/33.0	7/8-14 UNF
12	3/4	0.86/21.8	1.59/40.3	0.69/17.2	1.41/35.8	1-1/16-2 UN
16	1	0.91/23.1	1.59/40.3	0.69/17.2	1.41/35.8	1-5/16-12 UN

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