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REV	ECO	Release	Drawn	REVISION HISTORY
-2	2019-023	2019-05-28	SGO	Customer Drawing

High Pressure NPT Pipe Fittings

This application note provides information about High Pressure NPT Pipe Fittings available from Mountain High Equipment & Supply (MH) for use in aviation oxygen systems, as well as general guidelines and procedures for handling and installation.

GENERAL SPECIFICATIONS

Material: UNS C36000 (CDA-360) Brass
 Pressure Rating: 3300 PSI Standard Dynamic Pressure
 Temp Range: -50°F to +130°F [-45°C to +55°C]
 Clean: For Oxygen Service

See accompanying tables for weights, dimensions, and other individual parameters

Handling

Fittings must be handled carefully in order to avoid contamination, or damage to threads which could interfere with proper sealing. Fittings supplied by MH are warranted as "cleaned for oxygen service" provided original shipping packaging is intact.

Cleaning

High pressure oxygen systems must be free of grease, oil or other unapproved lubricants or cleaning agents, as well as any metal particles. Such contaminants, aside from having the potential to clog or damage critical orifices or filters in the system, pose an **extreme safety hazard** with the potential of fire or explosion. Therefore, cleanliness in the preparation and assembly of oxygen system components is critical.

Fittings and other components used in oxygen systems must be examined internally just prior to final assembly and re-cleaned if necessary (NFPA 99). FAA Advisory Circular **AC 43.13-2B** also specifies the cleaning of oxygen lines and fittings that have not been previously cleaned and sealed and lists several approved methods for doing so (Paragraph 608d),

Fittings obtained from MH have been cleaned for oxygen service and should not need to be re-cleaned so long as proper hygiene has been maintained in the assembly process. Fittings or other hardware obtained elsewhere (even if the *same* part) may therefore not be suitable for use in oxygen systems unless it is known for certain that they have been properly cleaned.

Purging

Just prior to final assembly to any associated equipment, connections must be purged with air to remove any contaminants. Contaminants include not only metal particles generated in equipment preparation, but any cleaning fluid residue that may be present from previous cleaning procedures.

Use clean, dry compressed air to purge system connections as required. Introduce the air in such a way that any contaminants present are completely ejected from the system rather than displaced into adjacent components.

Caution: Conventional "Shop Air" systems may have lubricating oil introduced into the system and therefore would not be suitable for the purging of oxygen system components.

Installation

Apply oxygen-compatible Teflon tape (e.g., MIL-SPEC T27730A) to the threads of NPT fittings prior to installation. Wrap the tape clockwise as viewed from the NPT threaded end of the fitting. Three wraps of tape are generally sufficient.

Do not allow the tape to extend beyond the inboard end of the threads. If any tape should become separated and enter the system it could obstruct internal filters or orifices. It would be better to leave the first thread exposed than to create a situation where a loose piece of tape could enter the oxygen system.

Check for leakage once installation is complete. De-pressurize the line before disassembly. If a fitting is removed or loosened, the Teflon tape must be replaced.

Other Connection Options

Pipe Fittings are generally not recommended for aviation oxygen systems but may be employed as necessary in order to adapt to existing equipment or fittings.

For high-pressure oxygen connections, MH recommends Copper Tubing and Compression Tube Fittings. MH devices typically provide SAE J1926 ports with a high-pressure O-Ring seal. Copper Tubing, Compression Tube Fittings, and SAE J1926 adapters are available from MH.

JIC Fittings are another option for high-pressure oxygen connections. The MH Braided Flex Hose (with JIC fittings) offers the advantage of a flexible connection.

For low-pressure connections (15-60 PSI regulated oxygen output), MH provides a selection of polyurethane tubing and convenient "One-Touch" fittings.

References

For more information about hardware and accessories available from MH:

- 5SHDW-0100-00 High Pressure Copper Tubing and Compression Tube Fittings
- 5SHDW-0300-00 High Pressure NPT Pipe Fittings
- 5SHDW-0500-00 High Pressure Adapter Fittings

UNLESS OTHERWISE SPECIFIED, DIMENSIONS ARE IN INCHES. TOLERANCES ARE:
 0.X ±.015 ANGLES ± 3°
 0.XX ±.010 FRACTIONS ± 1/64
 0.XXX ±.005

INTERPRET GD&T PER ASME 14.5

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THIRD ANGLE PROJECTION	DRAWN SGO 2017-05-11
	CHECKED EAM 2017-05-19
	ENGINEER TD 2017-05-19
DO NOT SCALE DRAWING	APPROVED HBS 2017-05-19

MH MOUNTAIN HIGH E&S CO. REDMOND, OR. USA

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DWG TITLE High Pressure NPT Pipe Fittings [SCD]	
DWG NUMBER 5SHDW-0300-00	DWG REV. -2
CAD FILE 5SHDW-0300-00\$-2	INV. PART NUMBER 00HDW-03xx-00
DWG FORMAT: ESR-002 Rev H [20]	DWG SCALE
DWG SHEET 1 OF 2	DWG SIZE A 8½x11

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Insert #: 5IHDW-0300-00

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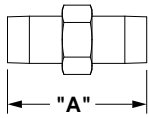


Fig 1
Nipple

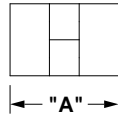


Fig 2
Coupling

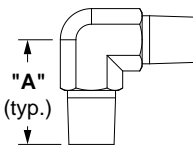


Fig 3
Male Elbow

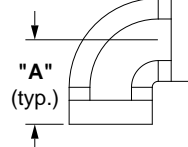


Fig 4
Elbow

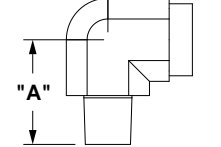


Fig 5
Street Elbow

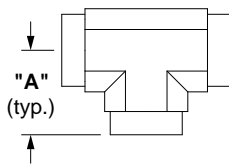


Fig 6
Tee

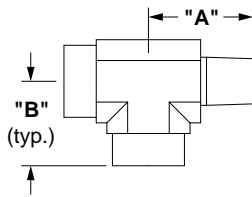


Fig 7
Street Tee

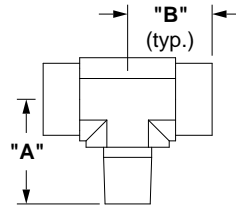


Fig 8
Branch Tee

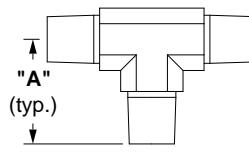


Fig 9
Male Tee

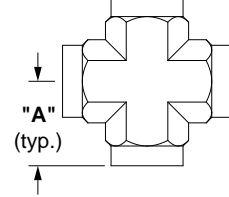


Fig 10
Cross

Fig.	MH p/n	Fitting	Thread	Weight Oz. [g]	Dim "A" In. [mm]	Dim "B" In. [mm]	Wrench
1	00HDW-0300-00	Nipple	1/4-18	1.13 [32]	1.45 [37]		5/8
1	00HDW-0302-00	Nipple	1/8-27	.56 [16]	1.06 [27]		7/16
2	00HDW-0304-00	Coupling	1/4-18	1.41 [40]	1.13 [29]		3/4
2	00HDW-0306-00	Coupling	1/8-27	.71 [20]	.75 [19]		5/8
3	00HDW-0316-00	Male Elbow	1/4-18	1.62 [46]	1.09 [28]		9/16
3	00HDW-0318-00	Male Elbow	1/8-27	.78 [22]	.78 [20]		7/16
4	00HDW-0320-00	Elbow	1/4-18	2.47 [70]	.88 [22]		3/4
4	00HDW-0322-00	Elbow	1/8-27	.99 [28]	.66 [17]		9/16
5	00HDW-0324-00	Street Elbow	1/4-18	2.61 [74]	1.09 [28]	.88 [22]	3/4
5	00HDW-0326-00	Street Elbow	1/8-27	1.20 [34]	.78 [20]	.66 [17]	9/16
6	00HDW-0332-00	Tee	1/4-18	3.10 [88]	.88 [22]		3/4
6	00HDW-0340-00	Tee	1/8-27	1.27 [36]	.66 [17]		9/16
7	00HDW-0334-00	Street Tee	1/4-18	3.17 [90]	1.09 [28]	.88 [22]	3/4
7	00HDW-0342-00	Street Tee	1/8-27	1.48 [42]	.78 [20]	.66 [17]	9/16
8	00HDW-0338-00	Branch Tee	1/4-18	3.39 [96]	1.09 [28]	.88 [22]	7/8
8	00HDW-0346-00	Branch Tee	1/8-27	1.62 [46]	.78 [20]	.66 [17]	9/16
9	00HDW-0336-00	Male Tee	1/4-18	2.33 [66]	1.09 [28]		9/16
9	00HDW-0344-00	Male Tee	1/8-27	.85 [24]	.78 [20]		7/16
10	00HDW-0348-00	Cross	1/4-18	5.50 [156]	.88 [22]		3/4
10	00HDW-0350-00	Cross	1/8-27	3.35 [95]	.66 [17]		9/16

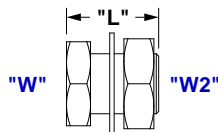


Fig 11
Bulkhead

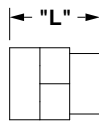


Fig 12
Adapter

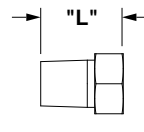


Fig 13
Adapter

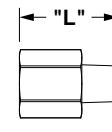


Fig 14
Adapter

Fig.	MH p/n	Fitting	Thread 1	Thread 2	Weight Oz. [g]	Dim "L"	Wrench "W"	Wrench "W2"
11	00HDW-0355-00	Bulkhead Panel = .26 [6.6] MAX THRU = Ø.75 [19]	1/4-18 FNPT		2.47 [70]	.94 [24]	1	1
11	00HDW-0351-00	Bulkhead Panel = .35 [8.9] MAX THRU = Ø.625 [16]	1/8-27 FNPT		2.12 [60]	.96 [24]	7/8	15/16
12	00HDW-0308-00	Reducing Union	1/4-18 FNPT	1/8-27 FNPT	1.20 [34]	.94 [24]	3/4	
13	00HDW-0314-00	Reducing Bushing	1/4-18 MNPT	1/8-27 FNPT	.56 [16]	.86 [22]	5/8	
14	00HDW-0352-00	Reducing Adapter	1/8-27 FNPT	1/8-27 MNPT	.99 [28]	1.03 [2]	5/8	

DWG
NUMBER

5SHDW-0300-00

DWG
REV. -2

DWG
SHEET 2 OF 2

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Insert #: 5IHDW-0300-00