

JIS

JAPANESE INDUSTRIAL STANDARD

**End Fittings and Adapters for
Hydraulic Hose Assemblies**

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JAPANESE INDUSTRIAL STANDARD

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End Fittings and Adapters for Hydraulic
Hose Assemblies

B 8363-1988

1. Scope

This Japanese Industrial Standard specifies the end fittings, hereinafter referred to as the "fittings", and adapters for hose assemblies to be used for hydraulic equipment and hydraulic circuits using mineral working fluid. However, this standard is applicable to the fittings and adapters to be used for water based working fluid, synthetic system working fluid or medicated fluid, as agreed between the parties concerning acceptance.

Remark: The units and numerical values given in { } in this standard are in accordance with the customary Units, and are Standard values.

2. Classification

2.1 Types of Fittings The types of the fittings shall be classified as given in Table 1 according to shape.

Table 1. Types of Fittings

Type of fitting		Symbol	Attached figure
Taper external thread fittings for pipe		R	1
Parallel external thread fittings for pipe		G	2
Parallel internal thread female seat union fittings for pipe		F	3
Parallel internal thread male seat union fittings for pipe		C	4
Flanged head fittings Type I	Straight	S	5
	45°	4S	
	90°	9S	
Flanged head fittings Type II	Straight	H	6
	45°	4H	
	90°	9H	
(Metric external screw thread fittings)		(M)	7
(Metric internal screw thread female seat union fittings)		(MF)	8

Remark: Those given in parentheses are given for informative reference.

Applicable Standards: See page 7.

2.2 Types of Adapters The types of the adapters shall be classified as given in Table 2 according to shape.

Table 2. Types of Adapter

Type of adapter		Symbol	Attached figure
Shape	Screw thread		
Male to male adapter	Taper external thread for pipe on one end, parallel external thread for pipe male seat on another end	A 1	9
Male to male adapter	Taper external thread for pipe on one end, parallel external thread for pipe female seat on another end	A2	10
Male to femal union adapter	Taper external thread for pipe on one end, parallel internal thread for pipe male seat union on another end	A3	11
90° elbow	Taper external thread for pipe on one end, parallel external thread for pipe male seat on another end	E 1	12
90° elbow	Taper external thread for pipe on one end, parallel external thread for pipe female seat on another end	E 2	13
45° elbow	Taper external thread for pipe on one end, parallel external thread for pipe male seat on another end	E 3	14
45° elbow	Taper external thread for pipe on one end, parallel external thread for pipe female seat on another end	E 4	15

3. Performances

3.1 Pressure Resistances The pressure resistances for fittings and adapters shall be in accordance with the following:

3.1.1 Pressure Resistance for Fittings When the pressure resistance for fitting has been tested by the pressure resistance tests specified in Table 2 of JIS B 8360, JIS B 8362 or JIS B 8364, neither leakage nor other abnormalities shall be caused. However, fittings shall not be used at pressure exceeding the maximum working pressure of Table 3.

Furthermore, the maximum working pressure mentioned herein means that maximum pressure at which the fitting is capable of being used continuously.

Table 3. Maximum Working Pressures of Fitting

Unit: MPa{kgf/cm²}

Symbol of fitting	Designation of fitting						
	5, 6, 8, 9	12	15	19	25	32	38, 50
R, G, F, C, (M) ⁽¹⁾ (MF) ⁽¹⁾	34.5{352}		27.5{280}		20.5 {209}	17.0 {173}	10.5 {107}
S, 4 S, 9 S	—	34.5 {352}	—	34.5{352}		24.0{245}	20.5{209}
H, 4 H, 9 H						24.0{245}	

Note ⁽¹⁾ The symbols in parentheses are given for informative reference.

3.1.2 Pressure Resistances for Adapters When the pressure resistance for adapter has been tested in accordance with the method of 8.3.2 at the test pressure of 2 times the pressure given in Table 4, neither leakage nor other abnormalities shall be caused. However, adapters shall not be used at pressure exceeding the maximum working pressure of Table 4.

Table 4. Maximum Working Pressure of Adapters

Unit: MPa{kgf/cm²}

Designation of adapter	Maximum working pressure
6	34.5 {352}
9	
12	
19	27.5 {280}
25	20.5 {209}
32	17.0 {173}
38	10.5 {107}
50	

3.2 Fastening Torques When the union fitting and union adapter have been tested by the method 8.4 with the test torques of 2 times the fastening torques specified in Table 5, neither breakage nor harmful deformation, nor the leakage from union part nor other abnormalities shall be caused.

Further, the union fitting and union adapter shall not be used with exceeding the fastening torque of Table 5.

Table 5. Fastening Torques

Unit: N·m { kgf·m }

Designation of fitting (or adapter)	5, 6	8, 9	12	15, 19	25	32	38	50
Fastening torque	25 { 2.6 }	49 { 5.0 }	59 { 6.0 }	118 { 12.0 }	137 { 14.0 }	167 { 17.0 }	206 { 21.0 }	245 { 25.0 }

4. Dimensions

4.1 Dimensions of Fittings The dimensions of fittings shall conform to Attached Figs. 9 to 8.

4.2 Dimensions of Adapters The dimensions of adapters shall conform to Attached Figs. 9 to 15.

4.3 Dimensions and Dimensional Tolerances for Screw Threads The dimensions and dimensional tolerances for screw threads shall be in accordance with Table 6.

Table 6. Dimensions and Dimensional Tolerances for Screw Threads

Type of thread	Dimensions and dimensional tolerances
Taper pipe threads	To be in accordance with JIS B 0203.
Parallel pipe threads	To be in accordance with Grade B of Appendix of JIS B 0202.
Metric fine screw threads	To be in accordance with JIS B 0207 and Grade 2 of JIS B 0211.

5. Appearances

The fittings and adapters shall be free from such defects as crackings, harmful flaws in use, cavities and abnormal deformations.

6. Surface Treatment

The fittings and adapters shall generally be treated with the coating of Class 1 Grade 2 (MF Zn II) specified in JIS H 8610, or rust prevention equal or superior thereto.

In the case where plating is to be processed, the corrosion resistance test shall be carried out in accordance with 8.5, and the generation of red rust shall not exist. Regarding the places where the protective coatings of plating have been removed due to application of fastening and other rust prevention treatment, it shall be as agreed between the parties concerning acceptance.

7. Materials

The materials of the fittings and adapters shall generally be Class B (SGDB) specified in JIS G 3108, or that complying with 3.

8. Testing Methods

8.1 Measurements of Dimensions The measurements of the dimensions shall be carried out by direct measurement or limit gauges.

8.2 Measurements of Thread Accuracy The measurement of the thread accuracy shall be carried out by means of the limit gauge for screw threads shown in Table 7 or inspecting tools having accuracy equal or superior thereto.

Table 7. Limit Gauges for Screw Threads

Type of threads	Limit gauge for screw threads
Taper pipe threads	To be in accordance with JIS B 0253.
Parallel pipe threads	To be in accordance with that for Grade B threads of JIS B 0254.
Metric fine screw threads	To be in accordance with that for Grade 2 threads of JIS B 0252.

8.3 Pressure Resistance Tests

8.3.1 Pressure Resistance Test of Fittings The pressure resistance test of fittings shall be in accordance with the methods specified 8.1 of JIS B 8360, JIS B 8362 or JIS B 8364.

8.3.2 Pressure Resistance Test of Adapters The pressure resistance test of adapters shall be carried out by pressurizing with water or oil at an ordinary temperature up to the test pressure of 2 times the maximum working pressure specified in Table 4, and after a lapse of 1 min the presence of leakage and other abnormalities shall be examined.

8.4 Fastening Torque Test The fastening torque test of the union fitting and union adapter shall be carried out in accordance with the following:

- (1) Attach the adapter for testing⁽²⁾ to a sample and after it has been fastened up to the test torque of two times the fastening torque specified in Table 5 by means of a torque wrench specified in JIS B 4650, and release. Repeat this procedure five times, ascertain that the union nut can be turned easily with hand, and examine the presence of breakage, harmful deformation, and other abnormalities on each part of the fitting.

Note (2) The shape and dimensions of the adapter for testing shall generally conform to the adapter as appropriate, and its material shall be S 25 C of JIS G 4051 or that having quality equal or superior thereto.

- (2) After the testing of (1), carry out the testing of 8.3.

8.5 Salt Spray Test In the salt spray test, carry out testing for 24 h in accordance with JIS Z 2371 or the method in accordance with that, as appropriate, and examine the presence of generation of red rust on the base metal of the fitting and adapter. However, places of which protection coatings have been removed due to application of fastening shall be excluded.

9. Inspection

9.1 Type Inspection The type inspection shall be carried out on the following inspection items, and the results shall conform to 3., 4., 5. and 6.

- (1) Appearance
- (2) Surface treatment
- (3) Dimensions
- (4) Pressure resistance
- (5) Fastening torque

9.2 Acceptance Inspection The acceptance inspection shall be carried out on the following inspection items, and the results shall conform to 4. and 5.

- (1) Appearance
- (2) Dimensions

The inspection on (1) Appearance shall be the 100 % inspection, and on (2) Dimensions shall be the sampling inspection. However, the sampling inspection system shall be as agreed between the parties concerning acceptance.

10. Packaging

In packaging the fittings and adapters, their interior shall be cleansed, and dust preventive measures shall be executed so as to prevent intrusion of dirt, dusts and the like.

11. Designation

The fittings and adapters shall be designated by the number of Standard, symbols and designation of fitting and adapter.

Example: JIS B 8363 R-6

12. Markings

12.1 Marking on Product The fittings and adapters shall be marked with the following information.

- (1) Manufacturer's name or its abbreviation