INTER PLANT STANDARD IN STEEL INDUSTRY		
IPSS	**SPECIFICATION OF HYDRAILIC HOSE ASSEMBLY & END FITTING FOR HYDRAULIC LINES**	**IPSS: 1-02-007-18 (First Revision)**
	Corresponding IS does not exist	Formerly: IPSS: 1-02-007-85, IPSS: 1-02-017-85, IPSS: 1-02-025-84

0. FOREWORD

0.1 Interplant standardization activity in steel industry is being pursued under the aegis of the Indian Standards Institution (ISI) and the Steel Authority of India Limited (SAIL). This Inter Plant Standard prepared and revised by Standards Committee on Basic Standards, Hydraulic, Pneumatic and Lubricating Equipment, IPSS 1:2 with the active participation of the representatives of all the steel plants and consultants and was first adopted in January, 1985. Thereafter standard was revised by merging IPSS: 1-02-007-85, IPSS: 1-02-017-85 and IPSS: 1-02-025-84 in January, 2018.

0.2 Objective of this Standard is to achieve rationalization and unification of parts and sub-assemblies used in steel plant equipment and accessories, and provide guidance in indenting stores or equipment for existing and new installations by individual steel plants. For exercising effective control on the inventories, it is advisable to select a fewer number of sizes or types from among those mentioned in this standard for the purpose of company standards of individual steel plants. It is not desirable to make deviations in the technical requirement.

1 SCOPE

This Interplant standard covers the dimensions, material and other technical requirement of hose assemblies and end fittings to hydraulic lines. These fittings are meant to be used with male stud coupling body

conforming to IPSS: 1-02-005-18 ‘Specification for ferrule type male stud coupling and male stud coupling bodies for hydraulic lines’, metric coupling nuts conforming to IPSS: 1-02-008-18 ‘Specification for coupling nuts for permanently attached hose and fittings’ and IPSS:1-02-003-18 ‘Specification for wire braided high pressure hydraulic hose (Latest revision).

2 DIMENSIONS

The dimensions shall be as given in Table 1.

3 MATERIAL

The material shall be 14 Mn1 S 14 as per IS : 1570- (All Parts) ‘Schedule for wrought steels for general engineering purposes’ or any other alloy steel as agreed to between the user and the manufacturer.

The material for ferrules and coupling nuts shall conform to IPSS:1-02-006-18.

4 TYPE OF END FITTINGS

4.1 There are three types of end fittings designated as Type A, Type B and Type C and illustrated in Fig. 1 and Fig. 2. Type A and Type B consist of two parts, namely, hose nipples and hose fastener and coupling nut assembled on hose nipples. Form of hose fastener is same for all the three types, while that of hose nipples varies.

4.2 Type A end fitting has got free pipe end which in conjunction with ferrule and coupling nut can be connected to coupling while type B is suitable for directly coupling it to the free end of seamless pipe through ferrule and coupling nut.

4.3 Type C has recessed sealing cone 60 Deg. The coupling nut shall have metric threads or pipe threads conforming to IS: 4218 (Part 1)-2001 ÍSO Metric Screw Threads: Part 1 Basic and design profiles or IS: 554 – 1999 ‘Dimension for pipe threads where pressure light joints are required on the threads respectively.

5. CONSTRUCTION

5.1 Hose Assemblies

Hose assembly shall consist of a length of the hose fitted with end fittings at either end. Different types of hose assemblies are obtained by using different types of end fittings on the hose.

5.2 **Ferrule and Coupling Nut**

Ferrule and coupling nuts (see IPSS: 1-02-006-18 ‘Specification for ferrules and metric coupling nuts for male stud coupling’) are required when type A end fittings are used.

Note – In order to make hose assembly with end fittings, the outer cover of hose shall be removed to the extent of full insertion in the hose fastener. Next the hose fastener shall be pushed over the hose and finally the hose nipple shall be screwed in.

6 SURFACE PROTECTION

6.1 The end fitting shall be zinc plated in accordance with IS: 1573-1986 ‘Specification for electric plated coatings of zinc on iron and steel ’or phosphate to class A2 of IS: 3618-1966 ‘Specification for Phosphate Treatment of Iron and Steel for Protection against Corrosion’ or as agreed to between the user and the manufacturer.

6.2 Coupling nuts are to be phosphate to class A2 of IS: 3618-1966 or as agreed to between the user and the manufacturer.

7 TOLERANCES

7.1 Dimensional deviation for intolerance dimension shall be medium class according to IS : 2102 (Part 1) – 1993 ‘General Tolerances for Dimensions and Form and Position : Part 1 General Tolerances for Linear and Angular Dimensions (second revision)’’.

7.2 Tolerance on threads shall conform to IS: 4218 (Part 4) – 2001 ÍSO Metric Screw Threads : Part 4 Tolerances System (first revision)’, class 6 g in case of metric threads or IS : 554-1999 in case of pipe threads.

8 TECHNICAL REQUIREMENTS

8.1 The hose assemblies covered by this standard are intended for assembly with the threads of the male stud coupling bodies conforming to IPSS: 1-02-005-18.

8.2 For normal applications, working temperature up to 120 deg C is permitted. The working pressure is considered same as normal pressure (NP) given in Table 1.

8.3 The thread of the coupling nut shall be matric threads conforming to IS: 4218-2001 'IOS Metric screw threads'.

8.4 Product grades and tolerances shall conform to IS: 1367 (Part 2) – 2002 'Technical supply conditions for threaded steel fasteners : Part 2 Product grades and tolerances

8.5 Metric coupling nut shall conform to IPSS 1-02-008-18 'Specification for coupling nut for male stud coupling body of permanently attached hose end fittings'.

8.6 Surface Protection – The adaptors shall be phosphate to class A2 of IS : 3618 – 1966 'Specification for phosphate treatment of iron and steel for protection against corrosion'.

9 WORKMANSHIP AND FINISH

The end fittings, ferrules and coupling nuts shall be free from cracks, burrs, pits and other defects and shall be well finished.

10. DESIGNATION

The hose assembly having a normal bore 16mm and length 2000 mm with type A end fitting at one end and type B end fitting at the other end and working at the pressure P designated as : **Hose Assembly 16A x 200-p, B IPSS : 1-02-007-18** (P shall be specified by the user)

11. TESTS

110percent hose assemblies along with their fittings are to be pressure tested at double the working pressure in the premises of the manufacturer in the presence of buyer's representatives, before the bulk supply.

Proof pressure test, hydraulic stability test and impulse test for hose assembly shall be as specified in IPSS: 1-02-003-18.

12. TEST CERTIFICATES

The manufacturer shall provide a test certificate for its satisfactory performance conforming to this standard.

13. **GUARNTEE**

The manufacturers shall provide a guarantee against defective material and bad workmanship for a period of 12 months from the date of actual use or 18 months from the date of receipt, whichever is earlier.

14. **PACKING**

Each consignment shall be separately packed in polythene bag with some packing material to avoid damage to the threads and put in a cardboard box before delivery.

15. **MARKING**

The manufacturer shall emboss the manufacturer's name/ trade-mark and designation on the end fitting of each hose assembly.

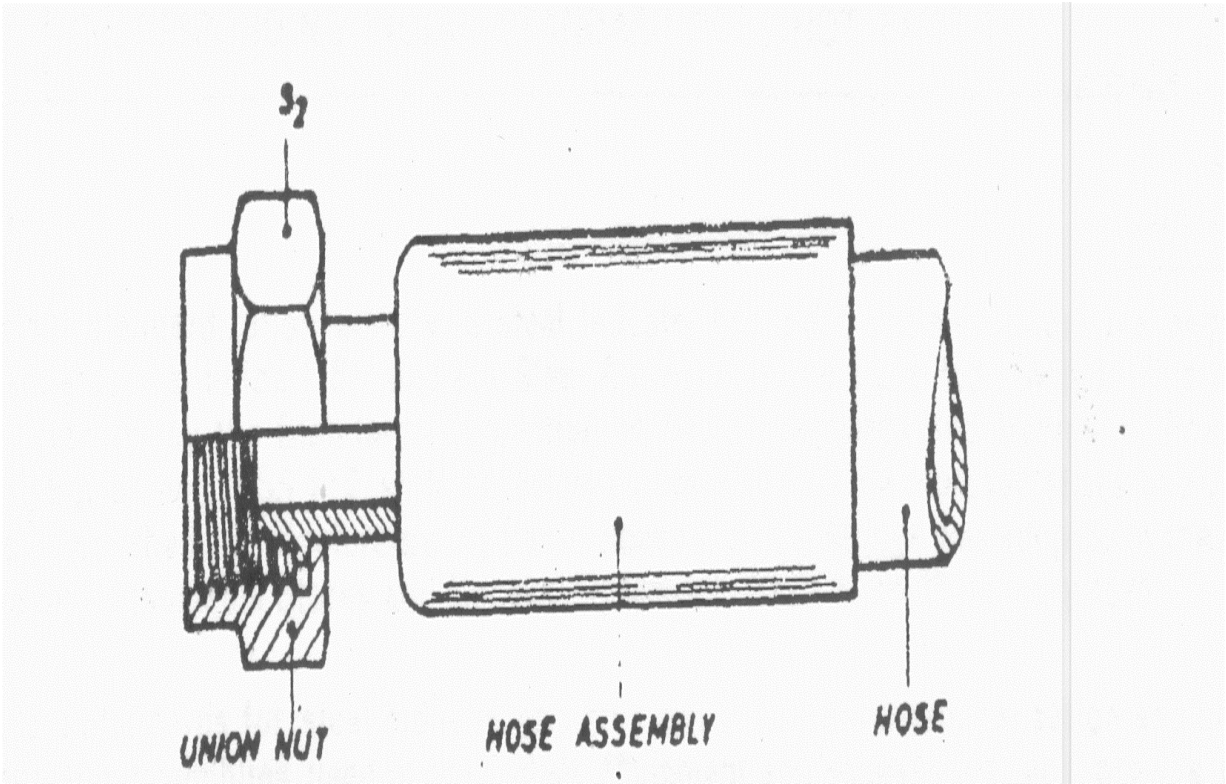

TABLE 1 : DIMENSIONS OF PERMANENTLY ATTACHED HOSE END FITTINGS

(All dimensions are in mm)

Series	Designation	Internal Diameter of Hose	D1	Sz A/F
Light (L)	NP 250	4	M 12 x 1.5	17
		6	M 14 x 1.5	19
		8	M 16 x 1.5	22
		10	M 18 x 1.5	24
		12	M 22 x 1.5	30
	NP 160	15	M 26 x 1.5	32
		19	M 30 x 2	35
	NP 100	24	M 36 x 2	41
		30	M 45 x 2	50
		36	M 52 x 2	60
Heavy (H)	NP 640	4	M 14 x 1.5	17
		5	M 16 x 1.5	19
		6.3	M 18 x 1.5	22
		8	M 20 x 1.5	24
		10	M 22 x 1.5	27
	NP 400	12.5	M 24 x 1.5	30
		14	M 30 x 2	38
		19	M 36 x 2	46
	NP 250	25	M 42 x 2	50
		31.5	M 52 x 2	60

Note : In case flair is provided, it shall be as follow :

Flair 60 Deg. – Conforming to DIN 7631

Flair 24 Deg. – Conforming to DIN 3901

Flair 30 Deg. – Conforming to DIN 3902

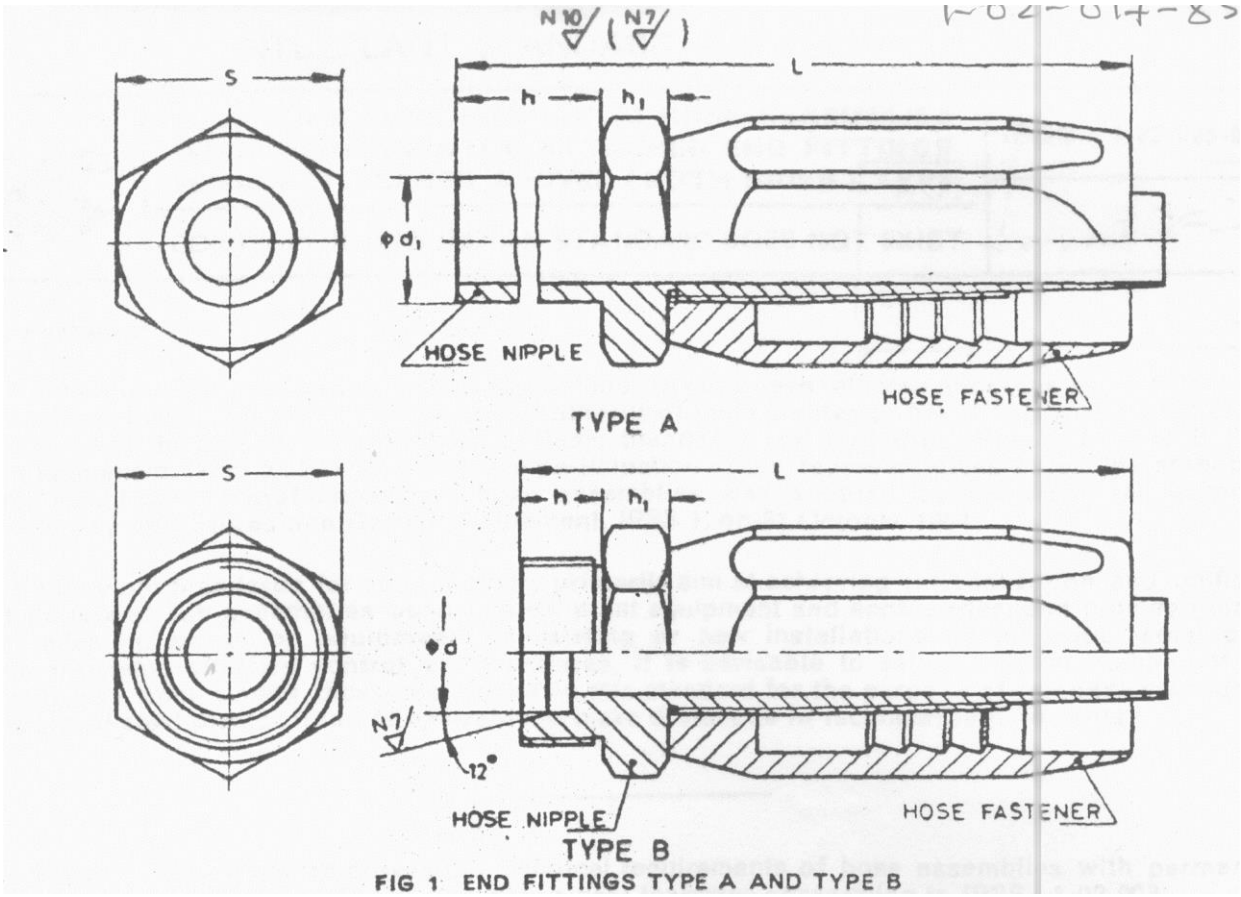

Figure 1 : END FITTINGS TYPE A AND TYPE B

TABLE 2 : DIMENSIONS FOR END FITTINGS – TYPE A & TYPE B

(All dimensions are in mm)

Nominal Bore Size of Hose	Outside Diameters of Tube (d1)	Type A				Type B				
	(d1)	h	h1	L	A/F for hose Nipple S*	h	h1	L	Thread Size	A/F for Hose Nipple S*
5	8	23	6	64	12	12	8	55	M 16 x 1.5	19
6.3	10	24	6	68	12	12	8	58	M 18 x 1.5	22
8	12	25	7	73	17	12	9	62	M 20 x 1.5	22
10	14	27	7	79	17	12	10	67	M 22 x 1.5	27
12.5	16	30	8	88	19	14	12	76	M 24 x 1.5	27
16	20	32	9	95	22	14	14	83	M 30 x 2	32
19	25	34	10	106	27	16	17	93	M 36 x 2	41
25	30	36	14	116	32	18	19	103	M 42 x 2	50
31.5	38	38	19	132	41	20	23	118	M 52 x 2	55

Tolerance on S : h12 for

TABLE 3 – DIMENSIONS FOR END FITTINGS (TYPE C)

All dimensions are in millimeters

Nominal Bore Size of Hose	Coupling Nut – Type C					
	Metric		BSP			
	Thread Size	A/F for Hose Nipple S*	Thread Size	A/F for the Hose Nipple S*	h 2	h 1
5	M 12 X 1.5	17	Rp 0.25	17	20	7
6.3	M 14 X 1.5	19	Rp 0.25	19	22	7
8	M 16 X 1.5	22	Rp 0.25	22	26	8
10	M 18 X 1.5	24	Rp 0.25	24	30	9
12.5	M 22 X 1.5	30	Rp 0.25	30	36	12
16	M 25 X 1.5	36	Rp 0.25	36	44	14
19	M 30 X 2	41	Rp 0.25	41	48	17
25	M 36 X 2	46	Rp 0.25	46	62	22
31.5	M 45 X 2	55	Rp 0.25	55	70	23
38	M 52 X 2	65	Rp 0.25	65	80	25
51	M 65 X 2	75	Rp 0.25	75	100	30

Tolerance on S : h13 for S up to 32 mm
h14 for s over to 32 mm

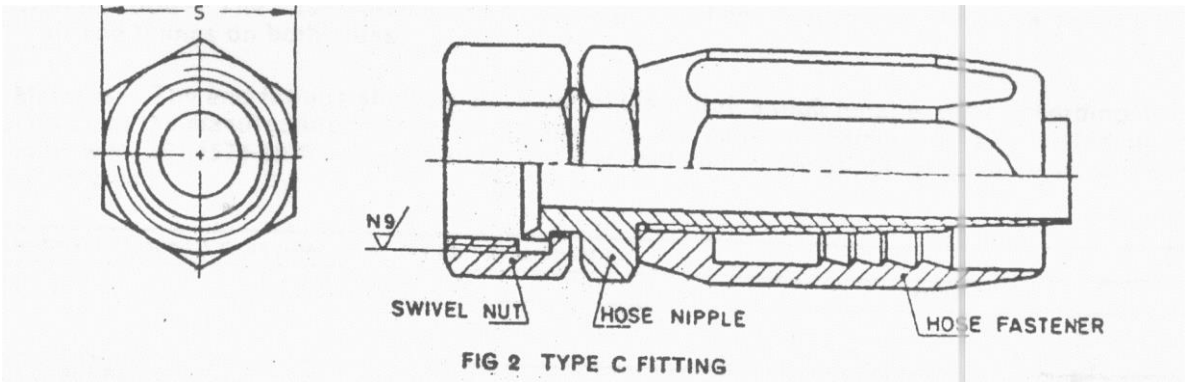

Figure 3 : END FITTING TYPE C

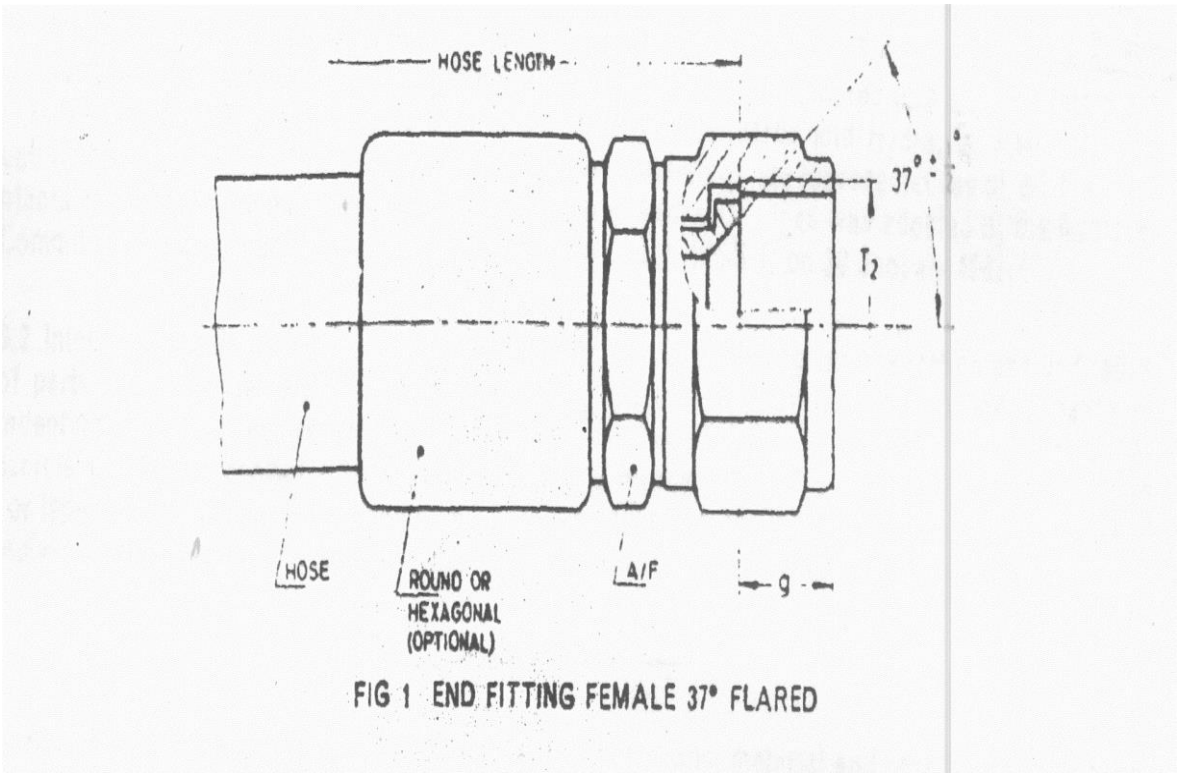

FIG 1 END FITTING FEMALE 37° FLARED

Figure 3 End Fitting Female 37" Flared