INTERPLANT STANDARD IN STEEL INDUSTRY		
IPSS	**SPECIFICATION FOR HEAVY DUTY PIPE CLAMPS ASSEMBLY FOR HIGH PRESSURE HYDRAULIC PIPE LINES**	**IPSS:1-02-050-18** (First Revision)
	CORRESPONDING I S DOES NOT EXIST	Formerly: IPSS:1-02-050-95

0. FOREWORD

0.1 Interplant standardization in steel industry has been initiated under the aegis of the Indian Standards Institution (ISI) and the Steel Authority of India Limited (SAIL). This Interplant Standard has been prepared by the Standards Committee on Basic Standards and Hydraulic, Pneumatic and Lubricating equipment, IPSS 1:2 with the active participation of the representatives of all the steel plants and leading consultants and was first adopted in May, 1997. Thereafter standard was revised in January, 2018.

0.2 Interplant Standards for steel industry primarily aim at achieving rationalization and unification of parts and assemblies used in steel plant equipment and provide guidance in indenting stores for existing equipment (or while placing orders for additional requirements) by individual steel plants. For exercising effective control on inventories, it is advisable to select a fewer number of sizes/ types from those mentioned in this standard. These limited sizes/ types can be adopted as Plant Standards for an individual steel plant. It is not desirable to make deviations in technical requirements.

1. SCOPE

1.1 This Interplant Standard specifies the technical and general requirement like construction, dimensions and material of heavy duty pipe clamps used in high pressure pipe lines.

1.2 The pipe clamp assembly consists of bottom weld plate, clamp halves and top plate tightened together by studs or holes.

1.3 This standard covers clamps made up of polypropylene, polyamide or Aluminum suitable for working under following temperature conditions (Temp of surroundings) :

Clamp made of polypropylene are suitable for temperature up to 70 ^{0}C.

Clamp made of polyamide are suitable for temperature op to 120 ^{0} C and

Clamp made of aluminum are suitable for temperature up to 300 ^{0} C.

1.4 This standard covers the pipe clamps of sizes ranging from 6 mm to 250 mm O D.

2. TECHNICAL REQUIREMENTS

2.1 The pipe clamp shall effectively resist heavy shocks and vibrations, pressure surges and lateral forces of pipes during the operation of the system.

2.2 The upper and lower halves of clamp shall be identical.

3. CONSTRUCTION & DIMENSIONS

3.1 The pipe clamps assembly consist of two halves of clamps, top and bottom support plates, fixing bolts and nuts as shown in the Fig. – 1.

3.2 For pipe sizes above 30 mm if studs are used, it shall be specified by the user while ordering.

3.3 The overall dimensions of the single clamp assembly shall be as given in the Table – 1. For other type assemblies, dimensions should be as per agreement between supplier and purchaser.

4. MATERIAL

4.1 The material of the clamp halves shall be either polypropylene, polyamide or aluminum. This shall be specified by the symbols in the designation. The symbols to be used for material are given below:

Al - Aluminum

PP - Polypropylene

PA - Polyamide

MATERIAL PROPERTIES FOR CLAMP HALVES

		Polypropylene	Polyamide	Aluminium
Mechanical Property				
1.	Flexural Stress DIN 53452 N/ Sq. mm	36	130…200	70
2.	Impact Resistance DIN 53453 N/ Sq. mm	No Failure	60	
3.	Compressive Strength DIN 53454 N/ Sq. mm	90	120	HB 500…600
4.	Modules of Elasticity DIN 53452 N/ Sq. mm	2000	4500	70,000
5.	Tensile Strength DIN 53454 N/ sq. mm	27	170	180
Thermal Property				
1.	Max. Temp. Resistance Deg C	-30…90	-40…180	Up to 400
2.	Thermal Conductivity w/ mk	0.22	0.3	126

3.	Linear Expansion Coeff / Deg C	15 x 10^{-5}	5 x 10^{-5}	21 x 10^{-5}
Electrical Property				
1.	Specific volume resistivity (ohm x cm)	10^{18}	10^{15}	-
2.	Track Current Resistivity	Stage 5c	kA3c	-
Chemical Property				
1.	Weak Acids, solvents	Cond consistent	Cond consistent	-
2.	Benzine, Mineral oils	Cond consistent	Consistent	-
3.	Alcohol, other oils	Consistent	Consistent	-

4.2 The weld plate and top plate shall be made of steel conforming to grade 410 WA IS: 2062-2011“ weld able structural steel (Seventh Revision)”.

4.3 The hexagonal bolt shall conform to IS: 1367 (part 1) – 2002 “Technical supply conditions for threaded steel fasteners (third revision)”.

4.4 The top, bottom plates, studs and bolts, nuts shall be zinc plated passivated yellow as per IS: 1573 – 1986 “Specification of Electroplated coatings of zinc on iron and steel (second revision)”.

5. DESIGNATION

5.1 A pipe clamp for 48 mm outer diameter pipe having clamp material as polypropylene shall be designated as :

Pipe clamp PP – 48 – 4 – VM – 2 IPSS: 1-02-005-18

xx - xx - x - xx – x

1 2 3 4 5

1 – Material of pipe clamp

2 – O D of pipe in mm

3 – Series of clamp (for PP, PA, AL refer Table – 1)

4 - Mounting of clamp

No designation	-	for single clamp
VM	-	Vertical mounting
HM	-	Horizontal mounting

5 – No. of clamps in assembly

6. TEST CERTIFICATE

The manufacturer shall provide a test certificate for its satisfactory quality and performance during use.

7. MARKING

All the clamp assemblies shall be marked with following :

a. Manufacturer's name/ trade mark to be embossed on top plate,

b. IPSS designation code (point 1, 2, 3 only).

8. GUARANTEE

The manufacturer shall provide a guarantee against defective material and bad workmanship.

9. WORKMANSHIP & FINISH

9.1 The clamp shall be free from burrs, sharp edges and any other defects which may cause injury during use.

9.2 The clamp halves shall be free from blow holes, cracks etc.

10. PACKING

Each clamp assembly shall be supplied in assembled condition and shall be suitably packed to avoid any damage during transit.

TABLE – 1

DIMENSIONS FOR HEAVY DUTY CLAMPS

MATERIAL POLYPROPYLENE, POLYAMIDE, ALUMINIUM

(Read along with Fig. – 1)

Clamp Series	Dia of Hole d	Suitable Pipe Size (OD)		W	L	H	b	C	a	g	t	Bolt Size M	Remarks
		in mm	in inch										
	6	6	1.25"										
	8	8											
	10	10	3/8"	30	73	48	55	32	33	2	8	M10x45	
1	12	12	0.5"										
	14	14											
	15	15											
	16	16											
	18	18											
	20	20	3/4"										
2	22	22											
	25	25	1"	30	85	64	70	48	45	2	8	M10x60	
	28	28											
	30	30	1.25"										
	33												
3	35	35		30	100	76	84	60	60	2	8	M10x70	
	38	38											
	42	42											
	38	38	1.5"										
	42	42		45	150	110	115	90	90	3	10	M12x100	
4	48												
	50		2"										
	60												
	70	70											
	73	73	3"										
5	75	75		60	200	140	152	120	122	3.5	10	M16x130	
	89	89	3.5										
6	100	100	4"										
	114	114	4.5	80	270	200	205	170	168	4.5	15	M20x190	
	141	141	5.5"										
7	150	150	6.0"	90	310	230	250	200	205	4.5	15	M24x220	
	168	168	6.5"										
	200	200	8.0"	125	340	320	330	270	265	4.5	25	M30x305	

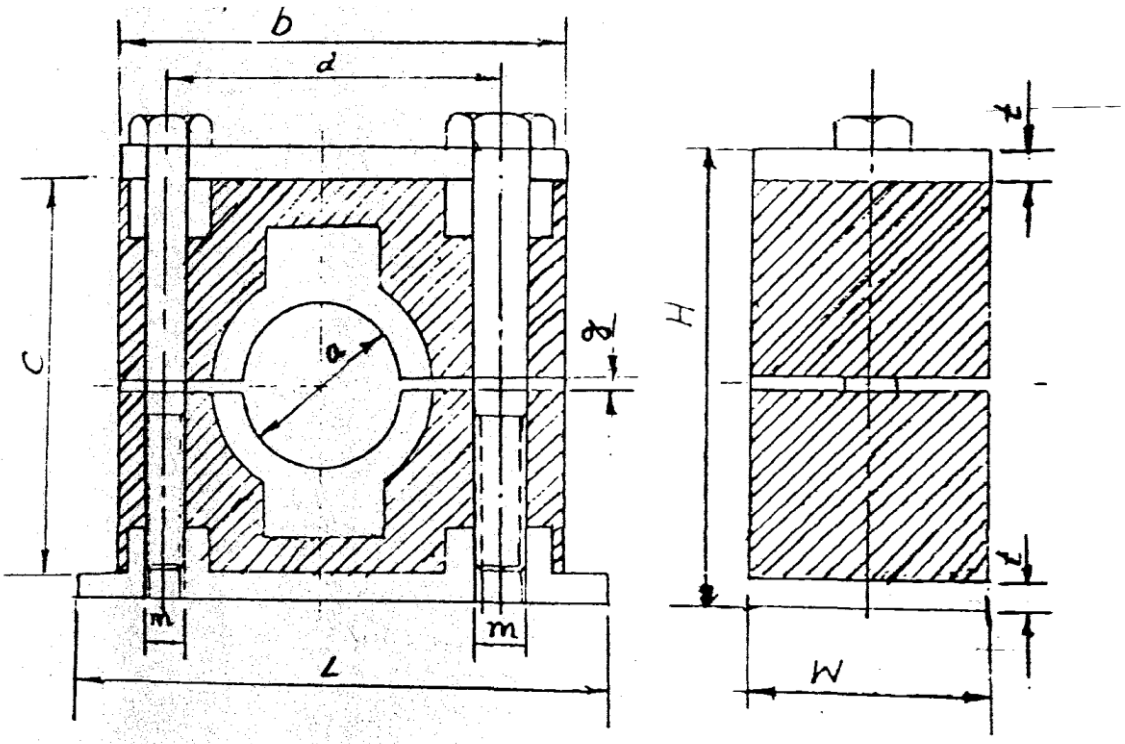

FIG - 1