INTER PLANT STANDARD IN STEEL INDUSTRY		
IPSS	**SPECIFICATION FOR GEAR PUMPS FOR LUBRICATION SYSTEM**	IPSS: 1-05-018-18 (Second Revision)
	Corresponding IS does not exist	Formerly: IPSS: 1-05-018-85

0. FOREWORD

0.1 This Interplant Standards activity in steel industry has been initiated under the aegis of the Indian Standards Institution (ISI) and the Steel Authority of India Ltd (SAIL). This Interplant Standards, prepared by the Standards Committee on Safety, Pumps and Compressors, IPSS 1:5, with the active participation of the representatives of all the steel plants, major consultants and established manufacturers of oil resistant nitrile rubber sheets, gaskets etc. and was adopted by the Approval Committee on Consumable stores and General Equipment, IPSS 1 on August, 1985. Thereafter this standard has been discussed in the standard committee meeting on Basic Standards and Hydraulic, Pneumatic and Lubricating Equipment, IPSS 1:2 and revised on January, 2018.

0.2 Interplant Standards for steel industry primarily aim at achieving rationalization and unification of parts and sub-assemblies used in steel plant equipment and accessories and provide guidance in indenting stores or 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 (or types), from those mentioned in this standard for the purpose of company standards of individual streel plants. It is not desirable to make deviations in the technical requirements.

1. SCOPE

This Interplant Standard covers the technical requirements, such as duty points, principal dimensions, characteristics of oil used and other salient points for positive displacement gear pumps for lubrication system designed for pressure upto 7 bar.

2. CHARACTRISTICS OF LUBRICATION OIL HANDLED

The lubrication oil handled shall be of kinematic viscosity range – 32 to 680 centistokes at 40oC . The relation between viscosity and temperature is given at Fig. 1.

3. CONSTRUCTION

3.1 Casing –The pump case shall be light quality FG 200 conforming to IS: 210-1993 ‘Specification for grey iron castings (third revision)’. The casing shall be of robust construction and shall be hydraulically tested to withstand twice the rated pressure or 1.5 times the shut-off pressure whichever is higher. The inlet and outlet connections shall be of flanged / screwed type. The drilling for the flanges shall be according to IS: 6392-1971 ‘Specification for steel pipe flanges’.

3.2 Rotors – Driving and driven rotors shall be of suitably heat treated carbon steel and shall have accurately generated gear teeth to ensure uniform rate of discharge.

3.3 Bearings – Rotor shall be mounted on antifriction sleeve bearings fitted in housing and carried in chambers machined in the end covers.

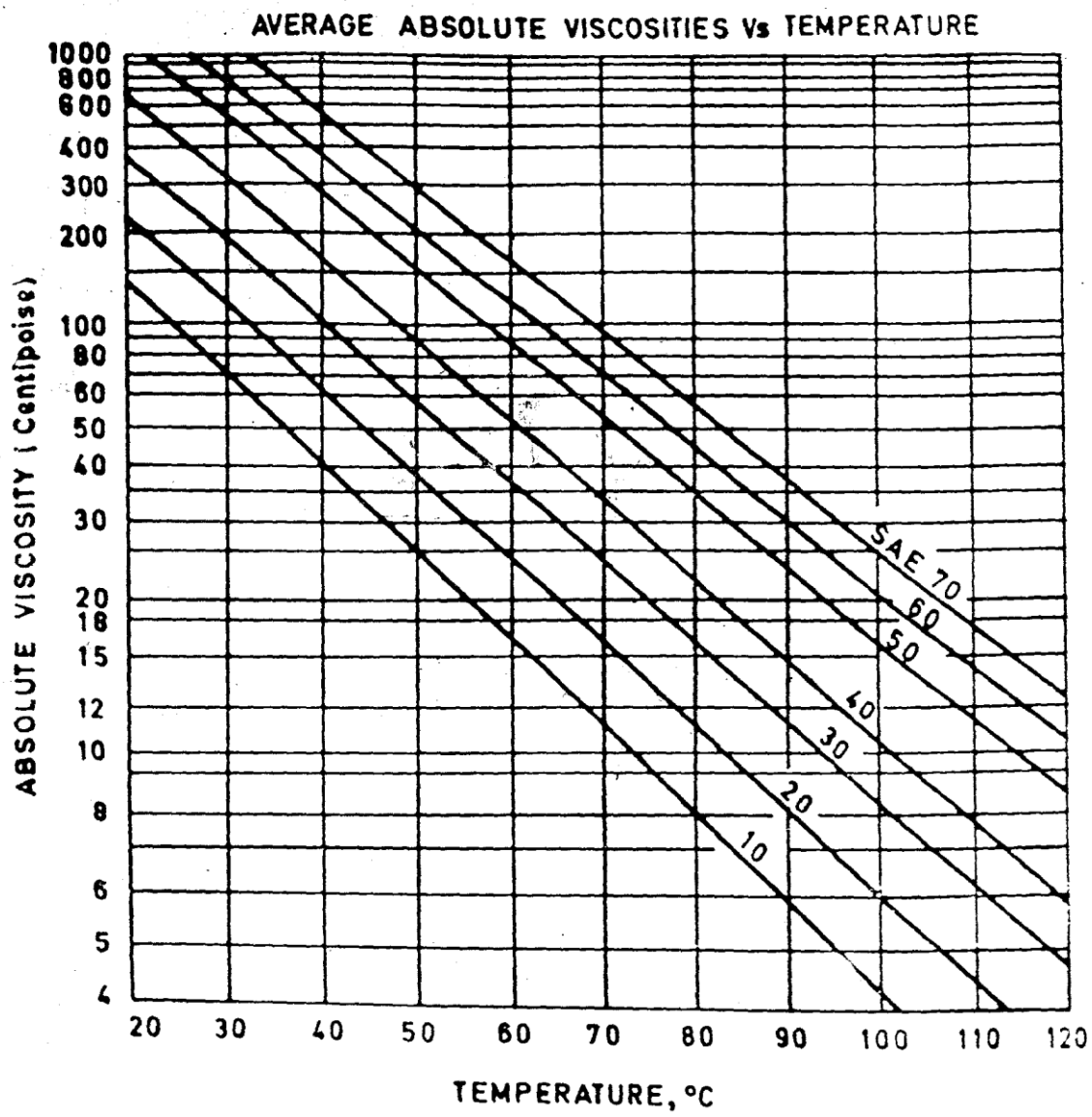

FIG. 1 GRAPH FOR VISCOSITY Vs TEMPERATURE

3.4 **Mounting Arrangement** – The pump shall be either foot mounted or flange mounted as specified by the purchaser.

3.5 **Couplings** -= Couplings shall generally be bush pin type flexible coupling (IPSS: 1-01-003-81) Keys and keyways shall be according to IS : 2292-1974 'Specification for taper keys and keyways (First revision)'.

3.6 Duty-Points – Normally the pump will be designed for continuous duty operation for a pressure of 7 bar.

3.7 Lubrication – The pump shall be completely self-lubricating.

3.8 Pressure Relief Valve – The pump shall have provision for in-built / external pressure relief.

3.9 Oil Seals and Sealing Rings – Oil seals shall be according to

IPSS: 1-02-013-81 and O-rings shall be according to IPSS: 1-02-001-18

4. DIMENSIONS

4.1 Principal dimensions shall be as given in Table 1 read with Fig. 2.

TABLE – 1 :PRINCIPAL DIMENSIONS OF GERA PUMPS FOR LUBRICATION SYSTEM

(Clause 4.1)

All dimensions in milli-metres

Designation	Discharge in Litres per Minute	Working Pressure in bar	Suction Delivery Diameter	Maximum Pump Speed rev. min.	Centre Height A	Overhung of Shaft End from Centre of the Unit D	Nominal Diameter Shaft G	Centre Distance of Base Bolts (Cross-wise), M	Centre Distance of Base Bolts (Length-wise), N	Diameter of Base Bolt Holes
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**
50-4-38	50	4	38	1500	135	145	19	65	140	13
140-4-45	140	4	45	1500	135	155	19	65	140	13
230-4-51	230	4	51	1500	175	175	28	85	200	13
300-4-76	300	4	76	1000	200	200	28	85	200	13
700-4-89	700	4	89	1000	250	250	32	110	255	16
950-4-114	950	4	114	750	265	265	45	195	330	25

NOTE 1 – The above values are based on standard oil with viscosity 500 SSU (112.6 centistokes) at 43oC. The relation between centistokes and SSU is :

$$CS = 0.226\,T - \frac{195}{T}$$

Where T= Viscosity in SSU, and

CS = Viscosity in centistokes.

NOTE 2 – The graph showing relation between CS and SSU may be seen **Fig. 3**

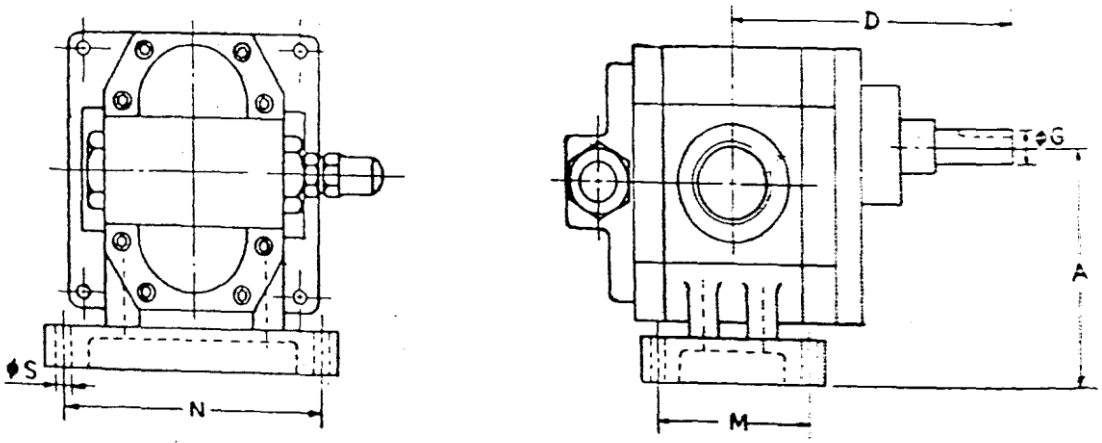

FIG. 2 GENERAL ARRANGEMENT OF A GEAR PUMP

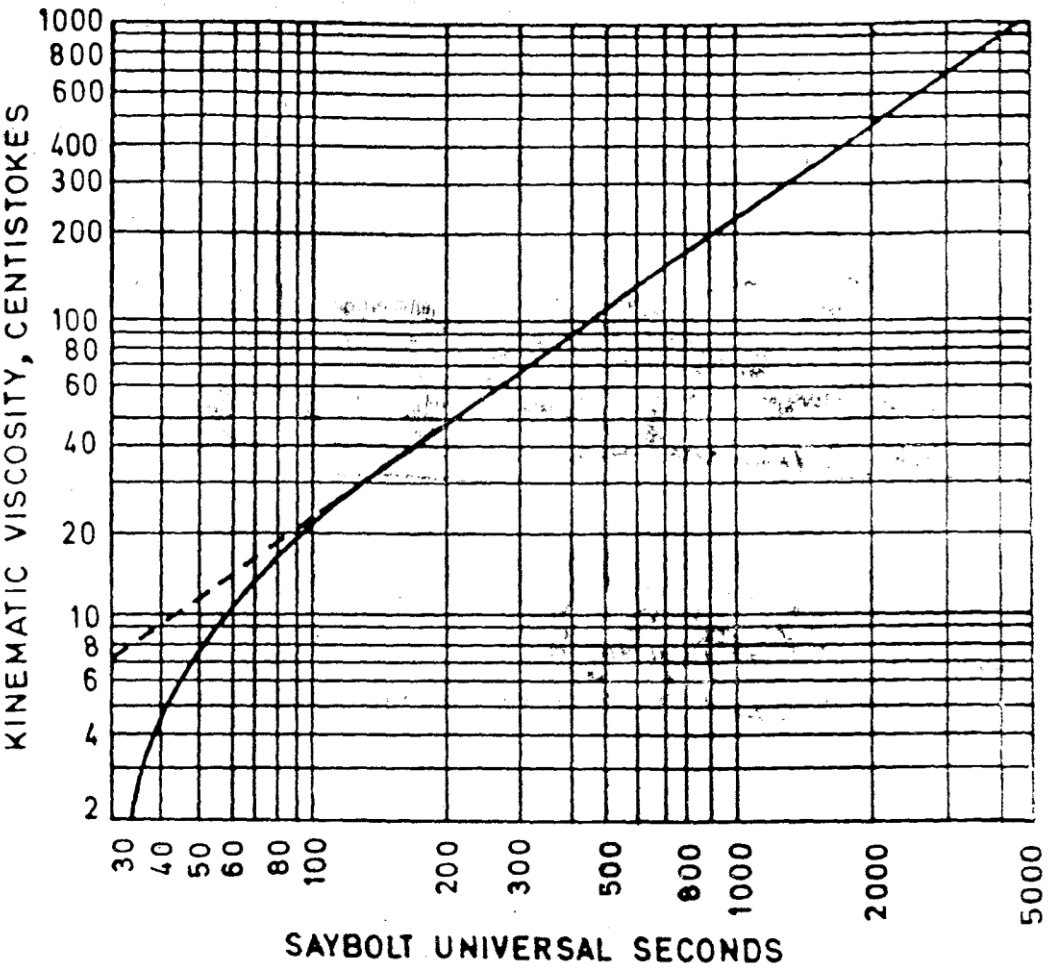

FIG. 3 GRAPH FOR SSU *Vs* CENTISTOKES

5. DESIGNATION

A gear pump having a delivery of 50 liters per minute working at 4 bar and having suction and delivery diameter of 38 mm shall be designated as :

Gear Pump 50-4-38, IPSS: 1-05-018-18

6. MARKING

The pumps shall be marked with following details:

a) Name or trade-mark of the manufacturer, and

b) Designation

7. GUARANTEE

The pump shall be guaranteed by the manufacturer for satisfactory performance for a minimum period of 12 months after commissioning or 18 months from the date of supply, whichever is earlier. The manufacturer shall replace the unit/component free of cost to the satisfaction of the customer if any material flaw, poor-workmanship or design defect is found during the guarantee period.