INTERPLANT STANDARD - STEEL INDUSTRY		
IPSS	**SPECIFICATION FOR MECHANICAL JACKS** (First Revision)	**IPSS:1-07-041-03**
	Corresponding IS does not exist	Formerly: IPSS:1-07-041-91

0. FOREWORD

0.1 This Interplant Standard prepared by the Standards Committee on Paints and Portable Maintenance Equipment, IPSS 1:7 with the active participation of the representatives of all the steel plants and established manufacturers of Mechanical Jacks and was adopted in September 2003.

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

0.3 In the preparation of this Standard assistance has been derived from the following:

IS 1030:1998	Specification for carbon steel castings for general engineering purposes (*fifth revision*)
IS 4367:1991	Specification for Alloy steel forgings for general industrial use (*first revision*)
IS 1875:1992	Specification for carbon steel billets, blooms, slabs and bars for forgings (*fifth revision*)
IS 4552:1993 part 1&2	Specification for portable jacks for automobiles, mechanical and hydraulic

0.4 This standard was first published in the year 1991. The revision of the standard has been carried as the need was felt to limit the specification of gear operated journal and track type jack upto 15 tonnes of nominal capacity.

1. SCOPE

This Inter Plant Standard covers requirements and performance tests for Single Lift type Mechanical Jacks for use in the steel plants.

2. TYPES, CAPACITIES AND DIMENSIONS

TYPE	NOMINAL CAPACITY (in tonnes)	DIMENSIONS
i) Lever operated screw jack (S)	1.0, 2.5, 5, 10	See Fig 1 & Table 1
ii) Gear operated journal jack (J)	15	See Fig 2 & Table 2
iii) Track type jack (T)	5, 10, 15	See Fig 3 & Table 3

3. MATERIAL

Component of the jack	Type of Jack*	Material	Process and Heat treatment	Hardness HB
Head	S,J & T	Forged steel as per IS:1875-1992, Class V	Normalized, rough machined, oil quenched, tempered final finish	220-250
Body	S,J & T	Cast steel as per IS:1030-1998, Grade: 280-520N	Annealed and machined	
Spindle	S&J	Forged Alloy Steel as per Table 1, IS 4367:1991, $40Cr_4Mo_3$, grade number N9, (6.3 micron value)	Normalized, rough machined, oil quenched, tempered, thread cut, finished to roughness	208-252
Gear	J	-do-	Normalized, rough machined, oil quenched, tempered, gear teeth cut	250-280
Rack	T	-do-	Normalized,rough machined, oil quenched, tempered, teeth cut	250-280
Pawl	T	-do-	Normalized, machined, oil quenched, tempered	250-280
Pin	T	Forged steel as per IS:1875-1992, Class V micron value)	Normalized, machined, oil quenched, tempered, grind finish to roughness grade N6 (0.8	220-250

*S - Lever operated jack T - Track type jack J - Gear operated journal jack

4. GENERAL REQUIREMENTS

4.1 The base shall be so designed as to prevent tilting during normal operation.

4.2 Operating spindle shall have square thread and shall be suitable to withstand the specified load. The thread portion shall be cleaned and well lubricated preferably with graphite or moly-coating.

4.3 Each jack shall be supplied with an operating lever (*if specifically asked for*).

4.4 The head shall be flat chequered or cup shaped to prevent the load from slipping during operation.

4.5 All working surfaces of the jack shall be coated with suitable rust preventive paints. The external surface shall be painted with two coats of paint after applying red oxide.

4.6 Track type Jack shall normally be Single Acting Type unless specifically mentioned as Double Acting by the user.

5. TEST

5.1 Visual and Dimensional Test

Jacks shall be free from defects such as cracks, blow holes, eccentricity etc. and conform to the dimensions specified in the relevant table.

5.2 No Load Test

Jacks shall be operated without load to its maximum position and shall work smoothly without undue clearance between the moving parts.

5.3 Performance Test

Jacks shall be loaded with static load of 100 percent of the nominal capacity and operated from the minimum to the maximum position and back. After repeating this cycle 100 times, the jacks shall work smoothly throughout the range without undue play or slip between the moving parts.

5.4 Over Load Test

Jacks shall be loaded with a static load of 125 percent for all Lifting capacities. During this test the jack shall operate smoothly throughout the range without any slip or other visible damage.

5.5 Sequence of Testing

The sequence of test shall be as follows:

i) Visual and dimensional test (see 5.1 and Fig 1,2 & 3)
ii) No load test (see 5.2)
iii) Performance test (see 5.3) and
iv) Over load test (see 5.4)

6. DESIGNATION

For the purpose of procurement, the designation of the jack shall specify the type, nominal capacity of the jack and the number of this interplant standard.

Example:

A mechanical jack of nominal capacity 5 tonnes, lever operated screw jack shall be designated as: Jack S-5, IPSS:1-07-041-03

For nominal capacity 5 tonnes, Track type jack shall be designated as : Jack T-5, IPSS:1-07-041-03

For nominal capacity 15 tonnes, Gear operated journal Jack shall be designated as : Jack J-15, IPSS:1-07-041-03

7. TEST CERTIFICATE

With every jack, the manufacturer shall provide a certificate of test as per this standard preferably from a Government authorized agency.

8. GUARANTEE

Each jack shall be provided with a guarantee for its performance for 18 months from the date of supply or 12 months from the date of use, whichever is earlier.

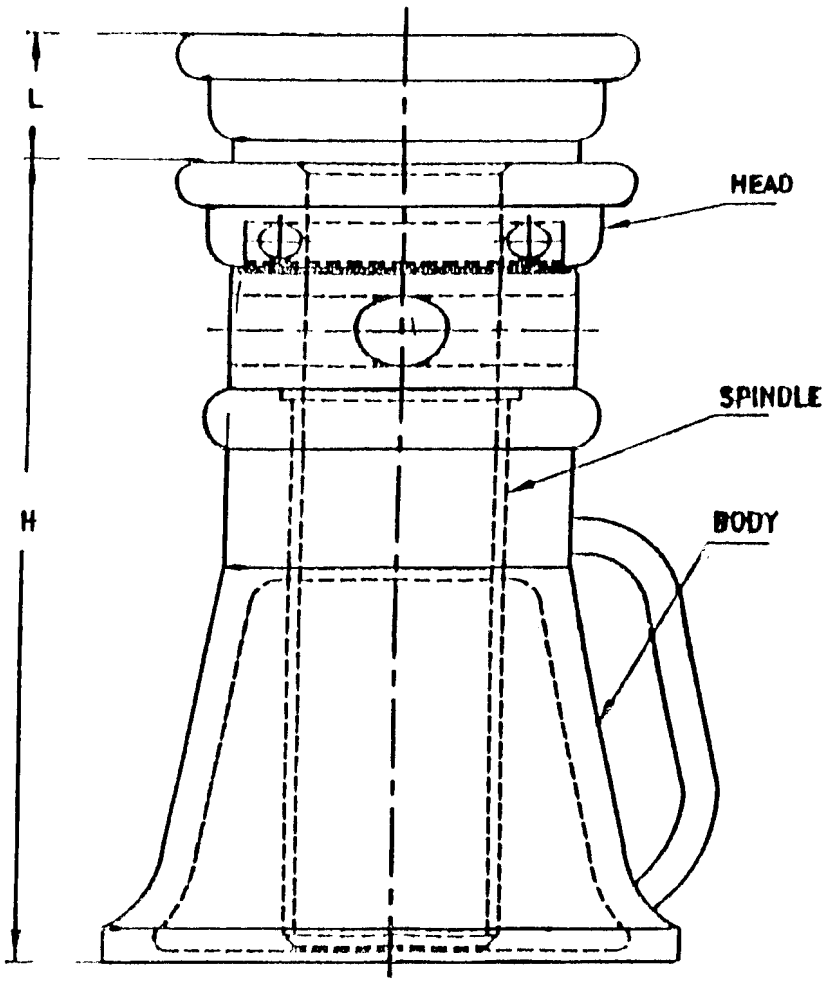
9. MARKING

Each Jack with be marked with the following:

i) Name or trade mark of the manufacturer and the year of manufacture
ii) Nominal capacity
iii) Lift and
iv) IPSS No

10. PACKING

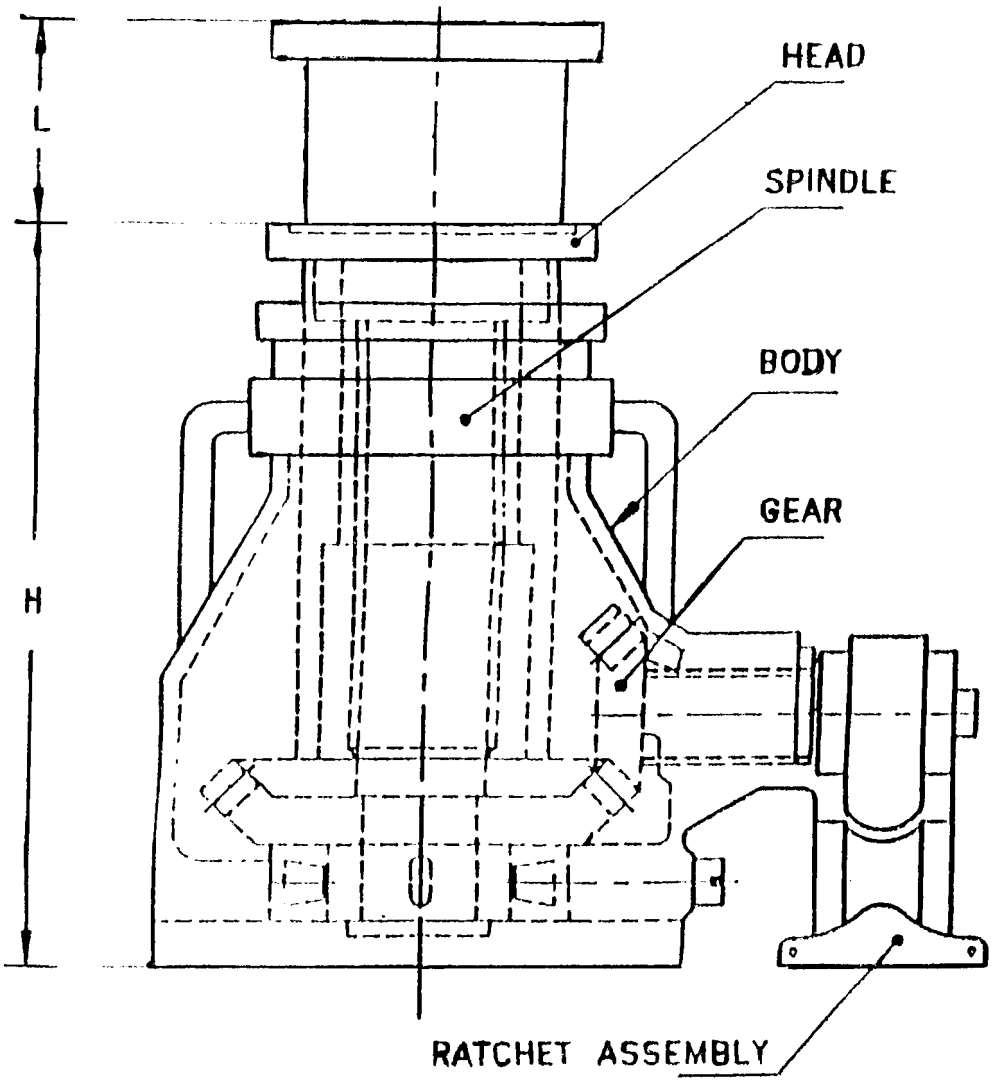
The jack shall be securely packed to prevent damage during transit.



(FIG TO BE READ ALONG WITH TABLE 1)
FIG. 1 LEVER OPERATED SCREW JACK

TABLE - 1
(All dimensions in millimetre)

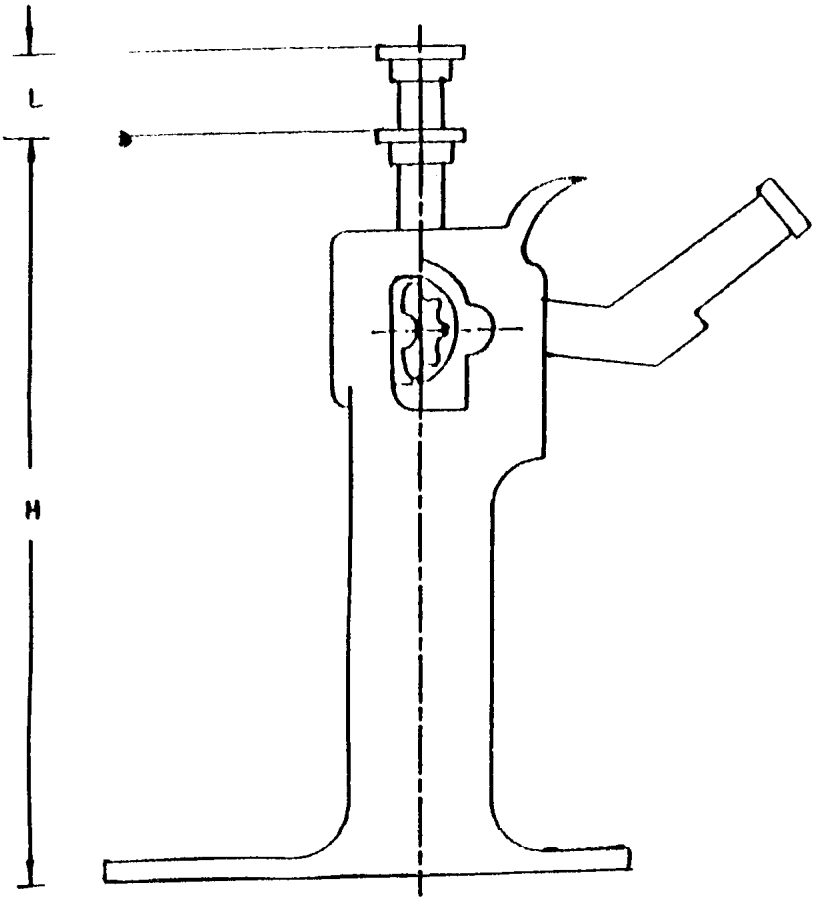
SL NO.	NOMINATION CAPACITY IN TONNES	CLOSED HEIGHT (H) MAX.	NOMINATION LIFT (L)	MASS Kg. (MAX)
1.	1.0	100	35	3.0
2.	2.5	125	50	4.0
3.	5	280	140	6.5
4.	10	280	140	14.0



(FIG TO BE READ ALONG WITH TABLE 2)
FIG. 2 GEAR OPERATED JOURNAL JACK

TABLE - 2
(All dimensions in millimetre)

SL NO.	NOMINATION CAPACITY IN TONNES	CLOSED HEIGHT (H) MAX.	NOMINATION LIFT (L)	MASS Kg. (MAX)
1.	15	254	127	20



(FIG TO BE READ ALONG WITH TABLE 3)
FIG. 3 TRACK TYPE JACK

TABLE -3
(All dimensions in millimetre)

SL NO.	NOMINATION CAPACITY IN TONNES	CLOSED HEIGHT (H) MAX.	NOMINATION LIFT (L)	MASS Kg. (MAX)
1.	5	450	230	26
2.	10	560	305	40
3.	15	560	300	42