OPERATION & MAINTENANCE MANUAL

ROBUST
RELIABLE
Heavy duty

JAMALPUR JACK

Jamalpur workshop Manufactured
ELECTRICALLY OPERATED
SYNCHRONIZED JMP JACK
(25t CAPACITY UNIVERSAL)

An IMS & ISO 50001: 2011 Certified Organisation

LOCOMOTIVE WORKSHOP, JAMALPUR
EASTERN RAILWAY

JMP JACK TYPE – 25t (Universal)

Lifting of ICF, LHB & EMU Coaches, Wagons & DEMU/DPC

शेखर घोषाल
प्रधान मुख्य यांत्रिक इंजीनियर

S R GHOSHAL
Principal Chief Mechanical Engineer

पूर्व रेलवे
EASTERN RAILWAY

प्रधान मुख्य यांत्रिक इंजीनियर कार्यालय
17, नेताजी सुभाष रोड,
कोलकाता – 700 001
OFFICE OF THE
PR. CHIEF MECHANICAL ENGINEER
17, NETAJI SUBHAS ROAD
KOLKATA – 700 001
TEL – 033-22300439,
FAX – 033-22305641

Date : 11.02.2020

FOREWORD

Locomotive Workshop, Jamalpur has developed and started manufacturing of a new design of Jamalpur Jack of 25 Ton Capacity. This is Universal Jack which can be used for lifting of ICF Coaches, LHB Coaches, EMU Coaches, MEMU Coaches, all kind of Wagons & DEMU/DPC. Earlier different kinds of Jacks were used for lifting of different types of Rolling Stocks.

Jamalpur Workshop has also developed a new wire-less system for individual and synchronized operation of Jacks through remote control system. This system can be operated from a distance of 50 mts. from the location of the Jacks.

Jamalpur Jacks are versatile and are being supplied throughout Indian Railways including NTPC, SAIL & DRDO.

The need for an exhaustive Operation & Maintenance Manual of JMP Jack has been felt by the Users/Consignees for a long time. I am happy that Jamalpur Workshop has taken out this Manual.

This booklet is intended to meet the requirements of users in operation & maintaining the Jack.

Best wishes,

S. R. Ghoshal
Principal Chief Mechanical Engineer

Foreword

Foreword

Locomotive Workshop, Jamalpur has developed and manufactured a new design of Jamalpur Jack 25 Tonne Capacity (Universal) for lifting of ICF, LHB, EMU, Coaches, Wagons & DEMU/DPC. It also improved a new wire-less system for operating of JMP Jacks through remote control system from a distance of 50 mts. from the location of Jacks.

JMP Jacks are being supplied to All Indian Railways including NTPC, SAIL & DRDO.

This booklet is intended to meet the requirement of users in operation & maintenance of the Jack, Do's & Don'ts with more effectiveness.

(P.N.MANJHI)
Dy. CME (Crane)
E.Rly/Jamalpur Works

Acknowledgement

DISCLAIMER AND ACKNOWLEDGEMENTS

This booklet on "Operation & Maintenance of 25 T capacity Universal Jamalpur Jack" would not have come into its present form without the dedicated effort put in by Sri Shashi Kumar, Senior Section Engineer / JMP JACK Shop and the motivation provided by Sri. Bimal Kumar Singh, Senior Section Engineer / JMP JACK Shop.

Assistance provided by:

Sri. Anil Kumar, Sr. Tech. / JMP JACK Shop.

Sri. Pankaj Kumar, Tech.-II (Elect.) / JMP JACK Shop.

Co-operation given by:

Sri. Indradeo Kumar Mandal, Senior Section Engineer / Drawing Centre.

Sri. Ajit Kumar, Senior Section Engineer / Drawing Centre.

Sri. Ranjan Kumar Singh, Senior Section Engineer / JMP JACK Shop.

Sri. Bajrangi Singh, Senior Section Engineer / JMP JACK Shop.

Sri. Santosh Kumar Singh, Sr. Tech / PD / JMP Jack.

Sri. Mukesh Bharti, Tech-I / PD / JMP Jack

All deserve special thanks.

Every care has been taken to ensure the correctness of this manual's information and contents but no liability can be accepted for any errors or emissions.

The contents of this manual has been carefully evaluated and checked but due to constant technical developments we reserve the right to effect technical changes, modifications or amendments without prior notice.

This manual or parts thereof may not be reproduced without permission.

(P.N.MANJHI)
Dy. CME (Crane)
E.Rly/Jamalpur Works

Content

CONTENT

Technical Data

COMPARATIVE LEADING PARAMETERS OF SYNCHRONIZED JAMALPUR JACK (EARLIER)

Sl. No.	Description	Type - I	Type - II	Type - III	Type - IV
1	Specialized for	Diesel Locos & Wagons only	Carriage & Coaches (ICF & BEML only)	LHB coaches only	EMU coaches only
2	Individual capacity	25 Tonne	15 Tonne	15 Tonne	15 Tonne
3	Total capacity for one set (consisting of 4 Jacks which can work simultaneously)	100 Tonne	60 Tonne	60 Tonne	60 Tonne
4	Total lift of claw	1342 mm	1370 mm	1360 mm	1360 mm
5	Maximum claw height from ground level	2127 mm	2000 mm	2140 mm	2140mm
6	Minimum claw height from ground level	785 mm	630 mm	780 mm	780 mm
7	Claw Length	203 mm	350 mm	500 mm	533 mm
8	Claw projection from centre of beam	538 mm	690 mm	840 mm	873 mm
9	Ground clearance when resting on wheels	20 mm	20 mm	20 mm	20 mm
10	Hoisting speed	200 mm per minute (approx)	200 mm per minute (approx)	200 mm per minute (approx)	200 mm per minute (approx)
11	Net weight of one jack	1.5 Ton (approx)	1.5 Ton (approx)	1.5 Ton (approx)	1.5 Ton (approx)
12	Overall dimensions	2673 mm x 1220 mm x 1048 mm	2673 mm x 1220 mm x 1048 mm	2673mm x 1470 mm x 1048 mm	2673 mm x 1470 mm x 1048 mm
13	Portability	All Manually Portable			
14	Power required	For all 380-415 Volt 50 HZ 3- phase AC Supply			
15	Nature of Drive & power supply	Power for the lifting screw is obtained from a specially designed motorized gearbox with worm drive. A 5 H.P squirrel cage, totally enclosed, fan cooled, horizontally foot mounted,380/415V,3-phase,50 Hz brake motor is directly placed over the gearbox for power transmission through a chain drive.			

Technical Data

COMPARATIVE LEADING PARAMETERS OF SYNCHRONIZED JAMALPUR JACK (AT PRESENT)

Sl. No.	Description	Type – 15t (Universal)	Type – 25t (Universal)	Type – 35t
1	Recommended for Lifting of	ICF &LHB coaches only	ICF, LHB & EMU Coaches, DEMU/ DPC & Wagons	HHP Locos, Electric Locos & All Alco Locos
2	Minimum Claw Height from Ground Level	700 mm	700 mm	895 mm
3	Maximum Claw height from ground level	2060 mm	2060 mm	2655 mm
4	Total lift of Claw	1360 mm	1360 mm	1760 mm
5	Claw Length/Claw Size	500 mm x 57 mm	203 mm x 257 mm	135 mm x 267 mm
6	Claw Projection from Centre of Beam	835 mm	835 mm	795 mm
7	Claw Projection from Centre of Screw Spindle	613 mm	613 mm	573 mm
8	Ground clearance when resting on wheel	20 mm	20 mm	20 mm
9	Hoisting speed (Up/Dn)	200 mm/min (Approx.)	200 mm/min (Approx.)	200 mm/min (Approx.)
10	Net weight of one Jack	1.5 Tonne (Approx)	1.5 Tonne (Approx)	2.0 Tonne (Approx)
11	Over all dimension (H x L x W)	2673 x 1470 x 1048 mm	2673 x 1470 x 1048 mm	3273 x 1300 x 1076 mm
12	Load surface area.	540 mm x 1033 mm	540 mm x 1033 mm	800 mm x 1300 mm
13	Major Dia of Screw Spindle	100 mm	100 mm	110 mm
14	Length of Screw Spindle	2530 mm	2530 mm	3128 mm
15	Thread Length of Screw Spindle	1676 mm	1676 mm	2236 mm
16	Pitch of Screw Spindle	25 mm	25 mm	25 mm
17	Height of Load Nut	203 mm	203 mm	305 mm
18	Motor Capacity	5 HP	7.5 HP	10 HP
19	Single Acting Thrust Ball Bearing.	SKF 53416U	SKF 5346U	SKF 53420U
20	Self-Aligned Ball Bearing	SKF 2310	SKF 2310	SKF 2312
21	Sprocket Small Teeth	Duplex	Duplex	Triplex
22	Sprocket Large Teeth	Duplex	Duplex	Triplex
23	Chain	Duplex	Duplex	Triplex
24	D.O.L (Individual) Starter	16 AMP	25 AMP	40 AMP
25	Type of Beam	Single 'I' Beam	Single 'I' Beam	Double 'U' Beam
26	Single Row Deep Groove Ball Bearing	SKF 6215	SKF 6215	SKF 6217

Technical Data

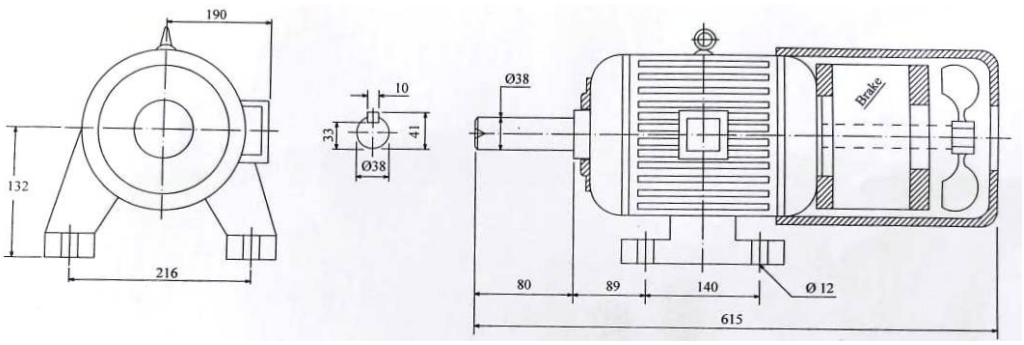
SPECIFICATION FOR 7.5 H.P BRAKE MOTOR

Motor has to be accommodated in a space 615 mm x 258 mm.

1	Power	:	7.5 HP
2	Pole	:	4
3	Mounting	:	Horizontally foot mounted
4	Type	:	Squirrel cage
5	Enclosure	:	Totally enclosed
6	Phase	:	3 Phase
7	Voltage	:	380/415 volt
8	Frequency	:	50 Hz
9	Frame Model	:	132 S
10	Cooling	:	Fan cooled
11	Specification	:	IS 325 or latest
12	Insulation class	:	"B"
13	Full load RPM	:	1430
14	Make	:	Pathe, Delta, ABB etc.
15	Qty per Jack	:	One No.

BRAKE

1	Brake Type	:	Fail safe Disc Type
2	Braking Torque	:	9.500 Kgm minimum
3	Class of Insulation	:	'B'
4	Coil	:	Electromagnetic coil
5	Volt	:	380/415 Volt
6	Frequency	:	50 Hz.
7	Phase	:	3 Phase
8	Power Supply	:	AC
9	Make	:	Pethe, Delta, ABB etc.
10	Qty/Jack	:	One Set
11		:	DAT-23 X



HORIZONTAL FOOT MOUNTED MOTORS
(B-3 CONSTRUCTION)

Technical Data

SPECIFICATION FOR LIMIT SWITCH

1	Type	:	Oil Tight
2	Housing	:	Die cast Aluminum
3	Contact combination	:	1 NO. & 1 NC
4	Voltage	:	500 Volt
5	Frequency	:	50 Hz
6	Current	:	10 amps
7	Power Supply	:	AC
8	Braking	:	Quick brake spring loaded lever braking with roller one no.
9	Specification	:	IS 2147 of 1962
10	Protection	:	IP 65
11	Make	:	SIEMENS, ESSEN, Havells, BCH etc.
12	Qty /Jack	:	Three Nos.

SPECIFICATION of AIR BRAKE D.O.L STARTER (INDIVISUAL)

1	Voltage	:	415 volt
2	Frequency	:	50 Hz
3	Pole	:	3 Pole / 4 Pole
3A	Phase	:	3 Phase
4	Contactors	:	2 sets AC contactor coils, 25 Amp. each. One set of contactor coil is controlled by the forward direction of rotation through inching type push button and the other set through another inching type push button to control the reverse direction of motor. There is electrical interlocking contact to prevent both sets of contactors to close simultaneously.
5	Push Button	:	One normally closed auxiliary contacts & one stop push button.
6	Power Plug	:	2 Nos.
7	Power Socket	:	2 Nos.
8	Control Plug	:	2 Nos.
9	Control Socket	:	2 Nos.
10	Over all dimension of starter	:	Length 360mm Breadth 280 mm Thickness 162mm
11	Make	:	BCH, Havells, Jeevan etc.
12	Qty/Jack	:	One No.

Technical Data

SPECIFICATION OF AIR BREAKE DOL STARTER (WALL MOUNTING TYPE)

1.	Voltage	:	415 Volt
2.	Frequency	:	50Hz
3.	Type	:	Wall Mounting
4.	Phase	:	3 Phase
5.	H.P	:	30 H.P
6.	Power Supply	:	AC
7.	Contact Combination	:	Over Load
8.	Make	:	BCH, Havells & SIEMENS.
9.	Qty per set of 4 nos. Jack	:	One No.

SPECIFICATION OF PENDENT TYPE PUSH BUTTON

1.	Voltage	:	415 Volt
2.	Frequency	:	50Hz
3.	Type	:	Inching type push button
4.	Current	:	10 Amp.
5.	Power Supply	:	AC
6.	Phase	:	3 Phase
7.	Make	:	L&T (Type-PB-2, Cat. No.SS 90502), Similar of BCH, SIEMENS, Havells etc.
8.	Qty per set of 4 nos. Jack	:	One No.
9.	Body	:	Fiber

General Information

CAPABILITY:

(i) The 25t Capacity Universal Jamalpur Jacks are capable of lifting and lowering of ICF, LHB & EMU Coaches, Wagons & DEMU/DPC for inspection and maintenance.
(ii) Each Jack has the capacity to lift of 25t and four such Jacks make one complete set. Each set has got a total capacity is 100 Tonne.
(iii) There JMP jack can be possible to operate the Jacks individually, in pairs or all four together in synchronization for lifting/lowering and sustaining function from a master control panel.
(iv) The accuracy of synchronization, when operated in pair or in fours, will be within ± 5mm.
(v) Each Jack has capable of lifting and sustaining the proof load any a point between the maximum and minimum heights.
(vi) Each Jack tested as 1:20 times the proof load.

UTILITY:

25t Capacity Universal Jamalpur jacks have been design for:
(a) Lifting of ICF, LHB & EMU Coaches, Wagons & DEMU/DPC.
(b) For inspection and maintenance.
(c) Wheeling and de-wheeling in sheds/Workshop/C&W Depot.
(d) Various other lifting purposes with suitable adaptors.

PORTABILITY:

While lifting the load the jacks rest completely on bottom base. When movements of jacks from one place to another place is required the lifting carriage to be brought down so that the yoke is pressed, which lifts the base, the Jack rests on the three wheels thus making it portable for being pulled manually.

DRIVE:

Through 7.5 H.P. A.C. Induction motor 400/440 V.50HZ electro-magnetic brake. Details can be seen from the attached schematic diagram. (Page No. 35)

CONSTRUCTION FEATURES:

The Jack is of rigid fabricated construction. The upright column (i.e. 'U' Beam) is heavy fabricated construction which is welded on the top of fabricated gear box. The elevating screw spindle is having buttress thread, supported with single acting thrust ball bearing (SKF-53416-U) at the bottom of the top of the Gear Box and Self Aligning ball bearing (SKF-2310) at the top of I Beam. This in parts takes care of an axial load to the screw spindle even under loaded condition.

CAUTION:

To prevent over-running of lifting carriage in either direction upper and lower limit switches have been provided. An ultimate limit switch is also provided below the lower limit switch on the top surface of the Gear Box as an extra precautionary measure.

General Information

POWER SUPPLY:
415 V, 3 Phase, 50HZ.A.C.Drive is through 7.5 H.P Squirrel cage A.C. Induction motor suitable for 415 V.3Ph. 50 HZ. The motor is specially designed and provided with an electro-magnetic brake.

FOUNDATION:
It is most essential to have a **leveled concrete floor approximately 200 mm deep below each Jack**. This shall ensure that the floor is firm enough to take the load.

INSTALLATION:
After un-loading, the main screw and guide ways of the control column of jacks should be properly cleaned by Kerosene Oil. Fill approximately 15 lts. of prescribed gear box oil in the gear box through oil cap, the machine is well equipped with electrical fittings as per diagram. Please ensure voltage and current. Check the terminal which might be loosened due to jolting in transit. The jacks are ready for operation (diagram shown at page- 38).

COMMISSIONING :
Before starting the motor the following point should be checked properly:-
1. Study the operation manual thoroughly before starting the machine.
2. The machine thoroughly cleaned with cleaning cloth.
3. All Bolts and Nuts must be adequately tightened.
4. Clean the control panel, motor, limit switches etc.
5. All electrical connection including earthing must be checked.
6. All level of Gear Box must be checked.
7. Test the Jacks in no load condition.
8. The manual release of the brake of motor must be properly adjusted.
9. Ensure correct direction of the movement of lifting claw with respect to the operating switch.
10. The position of the limit switch with respect to the extreme level position must be checked.
11. Lubricate the machine as indicated at page No. 36.
12. Loading pad of lifting claw must be free from Oil & Grease.

OPERATION:
Permission for operating the Jack will be given only after Jacks one properly installed, commissioned and load tested for its operation and test report are satisfactory. Following are few guidelines:-
1. The operator must be highly skilled, trained and must carefully referred the operation & maintenance manual.
2. He must study all the components and understand their functions properly.
3. All the Jacks will be perfectly aligned with respect to the loading point of the equipment to be lifted.
4. The lifting claw will be lowered under the level of load point.
5. Then push the lifting claw under the load. The lifting claw should be sufficiently lowered. So that the moving point of the load (to be lift) will not touch the Jack when entering at the working place.
6. Care should be taken that no foreign material is present in between the load point & lifting claw. One number 100/125 mm wooden block may be kept in the between the load point & lifting claw to get aN additional safety.

General Information

STARTING UP/ Synchronizing :

a. Connection all the 04 nos. Jacks with electrical cables (4 core cable with 4 pin & 5 pin plug) as per wiring diagram, the Jack No.-1 provided with master control to be connected with power source.

b. There are two push buttons marked 'UP' & 'DOWN' on master controller of Jack No.-1 pressing of 'UP' button operates hoisting and 'DOWN' button operates lowering of lifting slide.

c. All 04 Nos. Jacks to be positioned beneath the lifting pads of Coaches/Wagons and by operating the individual starter on each Jack, The claw is to be lifted till this just touches the lifting pad of the Coach/Wagon.

d. After all 04 nos. Jacks claw have been positioned and engaged then 'UP' push button of master controller is pressed for simultaneously movement of all 04 nos. Jacks claw to lift the Coach/Wagon till we desired height is reached, on releasing the push button the movement of Jacks claw will stop.

Please Note: - The synchronous motion to the lifting claw of the Jacks must be visually supervised during operation. Visible difference in height must be equalized by individual adjustment of each Jack.

General Information

LOAD TESTING (Individual Test):

Individual load testing of all Jacks have been at JMPW as per following format:-

TEST REPORT OF JMP/JACK

No. **Date:-**

Ref:-

1)	No. of Jacks		:	
2)	Capacity/Type		:	
3)	Sl. No. of the Jacks		:	
4)	**Test Conducted (Individually)**		**:**	
	a)	Free Load	:	
	b)	On Load	:	
	c)	On Load + 20% Load	:	
5)	**Test Conducted (Synchronously)**		**:**	
	a)	Hoisting Speed (Upward)	:	200 mm/ minute (approx)
	b)	Hoisting Speed (Downward))	:	200 mm/ minute (approx)

Note:- Your representative Sri……, has been explained & Trained regarding the operation, maintenance and synchronizing of JMP-Jack.

Signature of
SSE/JMP Jack Shop (MCTR)/JMP

Signature of authorized
Representative of Consignee

Major Components

COMPONENTS

'I' BEAM (WJ-58):

'I' Beam of the Jack is built-up/fabricated from standard rolled plates as per IS: 2062E250A with welded construction. Flange of the beam is made from 28 mm thick rolled plates and the web of the beam is of 20mm thick plate, which is welded with the flange, The fabricated beam to be machined in outer surface & inner surface of guide roller as per JMP Drg. No. 23/74, Alt-9.
The complete beam is welded vertically on the top surface of the Gear Box (WJ-45) touching the lifting screw bearing housing (WJ-74), supported by two brackets welded with beam as well as gear box. Sketch shown at Page No.41.

GEAR BOX (WJ-45):

It is a horizontal foot mounted Gear box having vertical out-turn and horizontal input mechanism. It is made by fabricating steel plates having lifting screw bearing housing (WJ-/74), worm bearing block RH & LH (WJ-64 & WJ-65) two bracket (WJ-48) and stiffeners etc which one welded to Gear Box.

Screw Spindle (WJ-5):

The screw spindle is made from 110mm dia Cl-IV steel bar. The threads are of buttress type.
The bottom end of the screw spindles is fitted with angular contact bearing SKF-53416 U and connected with worm wheel (WJ-26). This takes care of an axial load to screw even under loaded condition. The top end of the screw spindle is supported from upper end of the vertical beam by a single acting ball bearing SKF-2310 housed in side the cast top bracket (WJ-7), bolted with beam. The screw spindle is protected from dust and dirt by means of leather bellow Jackets with coller at both ends. Drawing of screw spindle shown in Page No. 42.

Brass Nut (WJ-6):

This component is made from Bronze casting. The thread inside the nut is matched with thread of screw spindle (WJ-5) for proper setting and uninterrupted movement of the nut along with screw spindle. Both ends and all faces of the nut are faced for proper seating of lifting slide.

LIFTING SLIDE (WJ-35) :

The lifting slide is fabricated from steel plates with welded construction. It is suspended on screw spindle. Guide rollers are provided in the lifting slide to balance the lifting slide vertically due to cantilever load on lifting claw. The claw of the lifting slide is projected to suit the lifting load. Pointers are provided with the lifting slide for operating the limit switches fitted for extreme travel position at both upward & down ward directions.

Major Components

SIDE WHEEL (WJ-83) AND REAR WHEEL (WJ-84):

Both components are made from cast iron casting. These are used for transportation of Jacks from one place to another inside the working area. Two numbers of side wheel (WJ-83) are provided at both ends of a shaft along with Link (RH & LH- 97 & 98) and one Rear Wheel (i.e. small wheel) at the rear end of the Jack. When the Jack rests the wheels, the base of the Jack is lifted and a clearance of 20mm approx is made from ground level which enables the Jacks fro a free movement on a leveled surface. The rear wheel (WJ-84) is provided with pulling handles arrangement for steering action for bi-axial movement of the Jack. The base of the Jack can be rested on the level surface when shifting is not required.

WORM (WJ-25):

The worm is made from 135mm Ø CI-IV steel bar. The threads are of ACME type. It is set in side the gear box and match with worm wheel (WJ-26) for transmitting horizontal rotation of the worm to the vertical movement of the brass nut (WJ-6) fitted on screw spindle (WJ-5) through worm wheel (WJ-26).

WORM WHEEL (WJ-26):

The worm wheel is made from bronze cast CI-I. It is set inside the gear box for transmitting vertical movement of the brass nut fitted with screw spindle through the worm (WJ-25)
Total nos. of teeth = 38 nos.

LARGE SPROCKET (WJ-24):

Large sprocket is made from forging material. Large sprocket fitted with worm (WJ-25) and connected to small sprocket by duplex roller chain for transmission of power from motor to the worm (WJ-25).

TOP BRACKET (WJ-7):

Top bracket is made from cast iron. Ball bearing NO.SKF-2310 is set in the housing of Top Bracket and the top bracket cover is fixed with bolt & nuts. The top bracket is paced at the top end of the screw spindle (WJ-5) and fixed by bolts & nuts with the beam to support the screw spindle in vertical position.

7.5 H.P BRAKE MOTOR:

A 7.5 H.P brake motor, horizontally foot mounted, squirrel cage fan cooled motor suitable for 415 Volt, 3 phase, 50 Hz, AC supply is operated from the DOL starter mounted on individual Jack or from a master controller (i.e. push button switch). The motor is mounted on individual Jack, on the base plate provided on frame of the Jack by means of bolts & nuts.

BRAKE:

It is un-electromagnetic coil AC brake. The brake is suitable for operation on 380/415 volt 3 phase, 50Hz, AC having a minimum torque of 3045 kgm minimum. The brake is operated only when the motor is disenergised i.e. the brake is normally in closed/braked condition.

Major Components

CONTROL PANEL:

A master controller is mounted separately on one no. of Jack in addition to the individual DOL starter. The master control panel permits simultaneous operation of all the four Jacks to lift and lower the load synchronously. For individual operation of the Jacks the individual starter mounted on each Jack is to be operated.
Limit switches are provided on the jacks for extreme travel position at both upward and downward directions.
An ultimate limit switch is also provided on the top surface of Gear box as an extra precautionary measure.

CABLE:

There are four sets of cables; each set consists of one power and one control cable. The terminated ends of the cables are provided with plugs, with five pins. Two power and two control sockets are provided with individual Air Break D.O.L. Starters mounted on the individual Jacks. One wall mounting type D.O.L starter is provided as master controller with one of the Jacks for simultaneous synchronizing operation of all the four Jacks.

The Power and control cables are 4 core, 1.5 Sq. mm (48x0.2mm) copper conductor and single core 2.5 Sq. mm copper conductor respectively.

The cable sets can be removed after taking out the plugs from the sockets and can be stored in a safe place when the Jacks are not in use.

AIR BRAKE DOL STARTER (INDIVIDUAL):

Individual DOL starter, vertically mounted on individual Jack. The DOL starter is suitable for operation on 415 volt, 3 phase, 50 Hz AC having 02 sets 25 Amp. AC contactor coils, one no. over relay unit etc. which are fitted inside of DOL starter box. Circuit diagram and details are shown at Page No.37.

Operating Instruction

OPERATING INSTRUCTIONS

After connecting all four jacks with the electrical cables as per wiring diagram, the jack No.1 provided with master controller to be connected with power source.

The correct wiring is to be first checked up as follows:-

- There are two push buttons marked "UP" & "DOWN" on master controller of Jacks No.1. Pressing of "UP" button operates hoisting and "DOWN" button operates lowering of lifting slide.
- All four jacks to be positioned beneath the lifting pads of loco/coaches/wagons and by operating the individual starter on each jack, the claw is to be lifted till this just touches the lifting pad of the Electric/Diesel Loco/Coach/Wagon.
- After all four claws have been positioned and engaged properly the "UP' push button of Master Controller is pressed for simultaneous movements of all four claws to lift the loco/coach/wagon till the desired height is reached. On releasing the push button the movement of claws will stop.
- After carrying out necessary operations on the locos/coach/wagon the Master Controller "DOWN" push button is to be pressed, till the coach/wagon is through down on rails.

DO's

- Study the operation manual thoroughly before starting the machine
- Clean the machine with cleaning cloth.
- Clean the control panel, motor, limit switches etc.
- Ensure proper leveling to the ground.
- Retighten all the terminal and connection screws, all bolts & nuts before putting the machine into operation.
- Check all electric connections and earthing. Test the jacks in no load condition.
- Ensure correct direction of motor in the push button switch.
- Adjust the extreme level position of the limit switches.
- Lubricate the machine as indicated at Page No. 36.
- Disconnect power /electric supply after the load is raised.
- Follow the instruction under headings.
- Maintenance, adjustment and break-down and remedies. Maintenance of the machine should be done by the trained personnel.
- Check the supply the current in the socket on the basis of continuity.
- The four core cable of 5 pin plug should be connect on left side of DOL Starter.
- The four core cable of 4 pin plug should be connect on right side of DOL starter.
- Before starting the motor, check the three phase current in the motor should have the same voltage.

DON'Ts

- Don't clean with Jute or Scrap cotton.
- Don't disturb the adjustments of the machine.
- Don't remove the limit switch.
- Don't remove fittings of the machine.
- Don't lift the base of the jack more than 20mm from the ground.

Maintenance Instruction

MAINTENANCE INSTRUCTIONS

LUBRICATION:

Proper up keep and maintenance of these jacks is a pre-requisite for smooth and sustained operation. The following guide lines may be kept in view. Lubrication of all motion parts as per chart given below:-

INSTURCTION FOR LUBRICATION:

Point of Lubrication	Frequency	Amount	Remarks
1,2,3,4	Fortnightly	4-5 strokes	Grease Gun
5 &6	Quarterly	Required amount	Grease
7 & 8	Weekly	Small amount	Oil
9 & 10	Weekly	Reqd. amount	Oil Can
11	Monthly	Reqd. amount	Grease

Ref: Schematic Diagram at Page No. 36.

RECOMMENDED LUBRICANTS:

Parts to be lubricated	Grade	Lubricant Recommended
Gear Box	Oil viscosity 250 – 280	RR-606MG I.O.L Servo Mesh SP 257 or similar
Screws, Nuts and Wheels	Oil Viscosity 64 - 72	Servo Way 68 or similar
Bearings	Lithium based anti-friction bearing. Grease drop point not below 180 deg. C	Servo Gem 2 or similar

ELECTRICAL EQUIPMENT – MAINTENANCE:

Maintenance should be carried out only by trained person. Functional check of the electrical equipment's to acertain the reliable condition should take place every 1000-1500 operating hours.

It is necessary to replace some parts of the electrical equipment due to long use, their equivalent quality ensure the faultless operation.

Electrical switch gear should be protected against dust, chips and moisture.

Bearings of electrical motor to be greased once in a year.

Maintenance Instruction

MAINTENANCE SCHEDULE OF MOTORS AND STARTER

DAILY

i) To check the bearings and body temperature of the motors.
ii) To clean the motor body.
iii) To check up visually vibrations of the motors and motor shaft and abnormal behavior if any.

MONTHLY

i) Terminal connections to be checked.
ii) Motor and starter to be blown through pneumatic pressure and clean the dust etc.
iii) Foundation bolts, nuts, driving; gears fitted on the motor shaft to be examined and key to be checked.
iv) Check the single phasing protectors and over-load relay and reset if necessary.

HALF YEARLY

i) Insulation resistances to be checked with.
ii) To check the earth connection & its continuity with the main earth.
iii) To check the contactors of the starter and to re-adjust or recondition if necessary.
iv) All the bolts, nuts studs and movable parts to be checked.

YEARLY

i) Remove motors from its location to a place where the same can be safely dismantled.
ii) Dismantle the motors.
iii) Overhaul the motors thoroughly (Greasing etc.)
iv) Overhaul the starter thoroughly.

TROUBLE SHOOTING

	Problems	Probable causes	Suggested remedies
A	Electrical motors do not start.	Low voltage supply, Blown out fuse, Loose contact in circuit. Defective contact points in the contactors.	Check the voltage supply. Replace fuse. Tighten all screws and electrical contacts. Clean or replace contacts if necessary.
B	Too much instantaneous noise near main motor at starting.	Motors fan cover loose, chain tension loose.	Tighten cover: Adjust chain.
C	Main spindle does not stop quickly after switching off the main motor.	Brake not functioning.	Check all the relevant electrical connection. Adjust brake.
D	Excessive heating of main spindle.	Improper adjustment of axial and radial play of the spindle bearings.	Adjust plays, top and bottom check nut.
E	Lifting movement jerky.	Improper lubrication, Roller too tight, Roller pin broken	Lubricate properly, check roller, Replace pin.
F	When DOL starter not functioning	DOL starter can be tripped	Over load of DOL starter reset and turned to resume.
G	If abnormal sound in motor.	Motor brake can be loose.	Brake of motor should be check.

Shop Manufacturing Items

SL. NO.	DESCRIPTION	Part No.
1	Motor Base Plate	WJ-43/M
2	Bracket for Motor	WJ-46
3	Support	WJ-47
4	Rear Wheel Pin (Pivot)	WJ-49
5	Rear Wheel Bracket Plate	WJ-87/M
6	Rear Wheel Handle	WJ-90/M
7	Plate for Motor box (Locking Plate)	WJ-121/M
8	Base plate for master DOL starter	WJ-124
9	Base plate for Individual DOL starter	WJ-125
10	Base plate for Conduit Pipe	WJ-126
11	Bracket Plate for Limit Switch.	WJ-127
12	Clamp for Conduit Pipe	WJ-128/M
13	Bracket for Limit Switch	WJ-129/M
14	Pin	PN-731
15	Pin	PN-732
16	Metallic Nipple for limit switch, Size-1/2" dia x $1^1/_2$" long	
17	Gear Box Cover Handle Size- 10 mm dia	
18	Chain Cover Plate Size- 16 mm thick	

Material List

MECHANICAL ITEM

Sl.No.	Part No.	Description	Reference Drawing No.
1	WJ-5	SCREW SPINDLE	JMP/51165/171.242
2	WJ-6/M	BRASS NUT	,,
3	WJ-7	TOP BRACKET (MOD)	,,
4	WJ-8/M	LEATHER BELLOW WITH COLLER	,,
5	WJ-9/M	BELLOW END PIECE (TOP)	,,
6	WJ-10/M	BELLOW END PIECE (BOTTOM)	,,
7	WJ-11/M	CHECK NUT FOR SCREW SPINDLE	,,
8	WJ-12/M	NUT STOP FOR WJ-5	,,
9	WJ-13/M	MAKE UP PIECE BOTTOM	
10	WJ-14/M	MAKE UP PIECE TOP (MOD)	
11	WJ-15	BALL BEARING SKF-2310	,,
12	WJ-16	THRUST BALL BEARING SKF-MBE 53416 U	,,
13	WJ-17	BALL BEARING SKF- 6215	,,
14	WJ-18	BALL BEARING SKF-7213 BG	,,
15	WJ-19/M	BEARING SEAL	,,
16	WJ-20/M	THRUST BEARING SEAL	,,
17	WJ-21	BALL BEARING SKF-6208	,,
18	WJ-22/M	JUBILEE CLIP	WORK TO PART DRG
19	WJ-23/M	SPROCKET(SMALL)	JMP/51166/171.243
20	WJ-24/M	SPROCKET(LARGE)	,,
21	WJ-25	WORM	,,
22	WJ-26/M	WORM WHEEL	,,
23	WJ-27	LOCK NUT FOR WORM	,,
24	WJ-28	LOCK RING FOR WARM/Seeger clip for WJ-25	,,
25	WJ-29/M & 30/M	FRP CHAIN COVER	,,
26	WJ-31/M	DISTANCE PIECE	,,
27	WJ-33	ROLLER CHAIN	,,
28	WJ-35	LIFTING SLIDE COMPLETE	JMP/51167/171.244
29	WJ-36/A	SWIVEL PLATE	,,
30	WJ-38/M	GUIDE ROLLER	,,
31	WJ-39	GUIDE ROLLER PIN	,,
32	WJ-40	COVER PLATE	,,
33	WJ-41/M	"SEEGER" CIRCLIP	,,
34	WJ-43/M	MOTOR BASE PLATE	JMP/51168/171.245
35	WJ-45	GEAR BOX	JMP/51169/171.246
36	WJ-46/M	BRACKET FOR MOTOR	,,
37	WJ-47	SUPPORT	,,
38	WJ-48/M	BRACKET FOR WHEEL SHAFT	,,
39	WJ-49	PIN FOR REAR WHEEL	,,
40	WJ-53	PAD FOR SNAP LOCK/LOCKING PLATE	,,
41	WJ-55/M & 56/M	ANGLE IRON 40 X 40 X 6	WORK TO PART DRG
42	WJ-58/M	BEAM 228 X 210 X 2368 MM	,,
43	WJ-60	TOP BRACKET COVER	
44	WJ-61	GEAR BOX PLATE TOP (MOD)	JMP/51169/171.246
45	WJ-62/M	GEAR BOX SIDE PLATE R.H	,,
46	WJ-63/M	GEAR BOX SIDE PLATE L.H	,,

Material List

Sl.No.	Part No.	Description	Reference Drawing No.
47	WJ-64/M	WORM LBEARING BLOCK R.H	WORK TO PART DRG
48	WJ-65/M	WORM BEARING BLOCK L.H	,,
49	WJ-66/M	GEAR BOX BOTTOM PLATE	,,
50	WJ-67/M	STRENGTHING PLATE	,,
51	WJ-68/M	PAD SUPPORT	,,
52	WJ-69/M	PAD SUPPORT	,,
53	WJ-70/M	PAD SUPPORT	,,
54	WJ-71/M	GEAR BOX TOP STIFFNER (MOD.)	,,
55	WJ-72	GEAR BOX TOP STIFFNER LONG (MOD.)	,,
56	WJ-73	GEAR BOX TOP STIFFNER SMALL (MOD.)	,,
57	WJ-74/M	LIFTING SCREW BEARING HOUSING (MOD.)	WORK TO PART DRG
58	WJ-75/M	GEAR BOX PLATE (FRONT)	JMP/51169/171.246
59	WJ-76/M	GEAR BOX BOTTOM COVER	,,
60	WJ-77/M	WORM SLEEVE OUTER	,,
61	WJ-78/M	WORM SLEEVE INNER	,,
62	WJ-79/M	COVER	,,
63	WJ-80	JOINTING	,,
64	WJ-81/M	JOINTING	,,
65	WJ-82	JOINTING	,,
66	WJ-83	SIDE WHEEL WITH CAST ON RUBBER TYPE	JMP/51170/171.247
67	WJ-84	REAR WHEEL WITH CAST ON RUBBER TYPE	,,
68	WJ-87/M	REAR WHEEL BRACKET (COMPLETE)	,,
69	WJ-90/M	REAR WHEEL HANDLE (COMPLETE)	,,
70	WJ-93/M	LEVER (COMPLETE)	,,
71	WJ-93/A	LEVER ARM	
72	WJ-97/M	SIDE WHEEL LINK R.H	,,
73	WJ-98/M	SIDE WHEEL LINK L.H	,,
74	WJ-99/M	LEVER	,,
75	WJ-101/M	SHAFT	
76	WJ-102	SIDE WHEEL AXLE	,,
77	WJ-103	LIFTING SIDE PLATE	
78	WJ-104	LIFTING SIDE PLATE	
79	WJ-105	PLATE FOR LIFTING SLIDE	
80	WJ-106	LIFTING SIDE PLATE	
81	WJ-107	LIFTING PLATE	
82	WJ-108	LIFTING CHEQURE PLATE	
83	WJ-109	PLATE	
84	WJ-110	PLATE	
85	WJ-112	PIN BOSS	
86	WJ-113	HOLDING PIN	
87	WJ-115	REAR WHEEL BRACKET	
88	WJ-119	FORK END	
89	WJ-121/M	PLATE FOR MOTOR BASE	
90	WJ-122/M	POINTER (TOP)	WORK TO PART DRG
91	WJ-123/M	POINTER (BOTTOM)	,,
92	WJ-124	BASE PLATE FOR MASTER STARTER	,,
93	WJ-125/M	BASE PLATE FOR INDIVIDUAL STARTER	,,
94	WJ-126/M	BASE PLATE FOR CONDUCT PIPE	,,
95	WJ-127/M	BRACKET FOR LIMIT SWITCH	,,
96	WJ-128/M	CLAMP FOR CONDUCT PIPE	,,

Material List

97	WJ-129/M	BRACKET FOR LIMIT SWITCH	,,
98	KY-36	KEY FOR LINK	
99	KY-40	KEY FOR LEVER BUSH	,,
100	KY-43	KEY FOR SCREW SPINDLE	,,
101	KY-63	KEY FOR LARGE SPROCET	,,
102	KY-87	KEY FOR MOTOR SHAFT	,,
103	PC-2176	ELBOW	,,
104	PC-2355	PLUG	,,
105	PC-2356	PLUG	,,
106	PC-2357	PLUG	,,
107	LA/GL-155/M	¼" BSP STD.SOFT GREASE NIPPLE	
108	PN-731	PIN	
109	PN-732	PIN	
110	-	1/8" THICK PLATES FOR SWIVEL PLATE	
111	-	G.BOX COVER PLATE HANDLE,10MM Ø	
112	-	CHAIN COVER PLATE, 1.6 MM TH.	
113	-	5/8"X I "LONG HEX. HEAD BOLT	
114	-	5/8"X 5/2" LONG HEX. HEAD BOLT	
115	-	5/8"X I "LONG HEX. HEAD BOLT & NUT	
116	-	3/8"X I "LONG HEX. HEAD BOLT	
117	-	3/8"X 5/4 "LONG HEX. HEAD BOLT & NUT	
118	-	3/8"X 3/2 "LONG HEX. HEAD BOLT & NUT	
119	-	1/2"X I "LONG HEX. HEAD BOLT	
120	-	5/16"X I "LONG HEX. HEAD BOLT & NUT	
121	-	5/16"X1/2 "LONG HEX. HEAD BOLT & NUT	
122	-	1/4"X1/2 "LONG HEX. HEAD BOLT	
123	-	1/4"X3/4 "LONG HEX. HEAD BOLT	
124	-	4 MMX25MM LONG HEX.HD SCREW & NUT	
125	-	5/8" Ø STEEL PLAIN WASHER	
126	-	5/8" Ø SPRING STEEL WASHER	
127	-	3/8" Ø STEEL PLAIN WASHER	
128	-	3/8" Ø SPRING STEEL WASHER	
129	-	5 MM SPLIT COTTER PIN	
130	-	3.2 MM SPLIT COTTER PIN	
131		GREASE Servo RR-3 T	
132		GEAR OIL RR-606 MG T	
133		Makers Name Plate as per Sample	
134		Cir Clip for Worm(WJ-25)	

Trade procured Items- Electrical

Sl. No.	Description of Electrical Items	Qty. Per Set of 5 Jacks
1E	Air break direct-on line starter wall mounting type with push button control. Suitable for 3 phase 50 HZ. 415 V.20 HP Motor. The contactor coil of the starter must be suitable for 415 V. 50 HZ. AC supply. The starter shall be complete with over load and NO Volt. Protection. Acceptable Brand-BCH, SIEMENS. Havells, Andrew Yule and L&T.	1 No.
2E	Air break direct -on line starter with 2sets of 3 pole contactor each set controlled separately by 415V. 50HZ, AC Contactor Coils. One set of contactor coil is to be controlled by the forward direction of rotation through an inching type push button and the other set through another inching button to control the reverse, direction of 5 HP, 3 Phase, 50HZ, 415Volts, AC Motor. There must be electrical inter locking contact to prevent both set of contactors to close simultaneously. Each of above push buttons should have one normally closed auxiliary contacts and One stop push buttons are required. The starter shall be complete with over load, shall be wired and shall be provided with power plug and socket with locking arrangement as shown in schematic diagram. Drg. 1736/23 and 1737/23. Each starter is to be provided with 2Nos. power plug and sockets and 2Nos.of control plug and sockets. Maximum Dimension 280 mm (B) X 360 mm (L) X 162mm(T). Acceptable Brand- BCH, SIEMENS, Havells, Andrew Yule and L&T.	5 Nos.
3E	Pendent type push button assly with 2Nos. of normally open inching type push button suitable for 415V,5 Amp. with cable entry arrangement. L&T "Make" Type - PB-2Cat No. SS 90502 or Similar of BCH, SIEMENS, Havells, Make.	1 No.
4E	7.5HP brake motor with fail safe disc brake assembly as per following specifications (a) Motors 7.5HP squirrel cage totally enclosed fan cooled horizontally foot mounted 112 M frame size with brake attachment complete with fan cover key's including holding down bolt for brake attachment as per Dy.CEE(W)/JMP's revised specification No. WJ/Jack/V/44 dt. 22.10.84. (b) Brake : Fail safe Disc brake minimum braking torque 3.45Kg.m to be fitted with the motor mentioned above with electromagnetic coil 380/415 volts AC 50HZ complete with suitable cover and tool. (c) Complete maintenance/operation manual in duplicate to be provided with motor and brake assembly. (d) Approval of one advance sample of motor assembly by consignee before bulk manufacture to be taken. Acceptable makes: Crompton Greaves, Elgi, AEI, ABB and Pethe, Delta.	5 Nos.
5E	Limit switch, Oil tight die cast aluminum housing suitable for 500 Volts, 10Amp. AC supply quick brake spring loaded lever with roller 01 No. NC with normal roller lever as per SIEMENS model No. 3822-100-0-10A, 500Volts or BCH'S Catalogue Code No. LLG(S). or L&T, ESSEN, Havells Make.	15 Nos.

Trade procured Items- Electrical

Sl. No.	Description of Electrical Items	Qty. Per Set of 5 Jacks
6E	4 Core Cable 1.5 Sq.mm (48/0.2mm) Copper conductor insulated and heavy duty sheathed flexible cord 1100Volt grade conforming to IS-1554 (Pt.-1) 1981. (i) Test certificate for routine test as per relevant; specification. (ii) Guarantee/Warranty certificate to be produced along with the material. Any defect to be replaced free of cost. Acceptable Brands- UNISTAR, KDK, Ever shine, GLOSTER, ICC, HAVELLS, PYNE. Supply should be executed by the manufactures or their authorized dealers.	70 Mtrs. (17.5 mtrs per Jack)
7E	TEE 25mm Rigid Plastic Conduit for electrical installation.	5 Nos.
8E	"Bend" 25mm Rigid Plastic Conduit for electrical installation Normal heavy gauge.	20 Nos.
9E	Check Nut Hexagonal 25mm Metallic.	25 Nos.
10E	Nipple 2" Long Rigid Metallic Conduit 25mm.	15 Nos.
11E	Flexible conduit pipe (Metallic) 19mm or 3/4" dia, material similar to codification No.42-31-3016.	4 Mtrs.
12E	Rigid plastic conduit 25mm IS-1650/64 for electrical installation. It should be solid drawn heavy Gauge conduit.	37.5 Mtrs.
13E	Flexible conduit pipe (Metallic) 12.5mm or 1/2" dia material similar to codification No.42-31-3016	4 Mtrs.
14E	Single Core 2.5 sq.mm (80/0.2mm) copper Conductor insulator and sheathed cable 1100V, Grade, Brand UNISTAR, KDK Ever shine, HAVELL's GLOSTER, INCAB, FINOLEX. Supply should be executed by the manufacturer of their authorized dealers.	100 Mtrs.
15E	Flexible Conduit Pipe (Plastic) – 20mm dia.	5 Mtrs.
16E	MS ERW Pipe ½" dia.	1 Mtr.

Trade procured Items- Mechanical

Sl. No		Material Description	Material Specn.	Qty Reqd. Per Jack	Unit
1	i	Self-Aligning Ball Bearing SKF-2310, size- 50mm ID, 110mm OD, 40mm thickness. Makes : FAG / URB / SKF/MBE	BS-292 or latest	1	No.
	ii	Single Row Deep Groove Ball Bearing SKF-6215, size- 75mm ID, 130mm OD, 25mm thickness. Makes : FAG / URB / SKF/MBE	BS-292 or latest	1	No.
	iii	Single Row Angular Contact Ball Bearing SKF-7213 BEM, size- 65mm ID, 120mm OD, 23mm thickness , Makes: FAG / URB / SKF/MBE	BS-292 or latest	2	Nos.
	iv	Single Acting Thrust Ball Bearing Sphered Housing Washer and Non Acting Ring SKF-53416 U, size- 80mm ID, 175mm OD, 78mm thickness , Makes : FAG/MBE/SKF	BS-292 or latest	1	No.
	v	Single Row Deep Groove Ball Bearing SKF- 6208, size- 40mm ID, 80mm OD, 18mm thickness, Makes: URB/SKF/FAG/MBE.	BS-292 or latest	1	No.
2	i	Standard Duplex Roller Chain (1/2"x5/16" Size). Pitch-12.7mm, Roller Dia- 8.51mm Along with Relevant Data. Breaking Load 3180 Kgf.(Min.) Av. Wt. 1.36Kg Per Meter. Make- RENOND-XD, DIAMOND	ROLON Chain No - 08. B-2 / DR 1278	2.000	Mtrs
	ii	Sprocket Large, as per Drg. No.WJ-24/M, Alt-'d'.		1	No
	iii	Small Sprocket WJ-23/M,as per Drg. No.-WJ-23/M, Alt-4		1	No
3	i	Leather Bellow With Collar.as per drg.no. WJ-8/M ALT-2	As per Drg.	1	No.
	ii	Jubllee Clip, as per Drg. No.- WJ-22/M, Alt.-2	As per Drg.	2	Nos.
	iii	Bellow End Piece (Top), WJ-9/M, as per Drg. No.WJ-9/M, Alt-2		1	Set
	iv	Bellow End Piece (Bottom), WJ -10/M, as per Drg. No.WJ -10/M,Alt-2			
4	i	Bearing Seal Bore - 60mm, OSD-90mm, Width- 13mm, (Spring Loaded Oil Seal) Make-Sunny, Dulux, Royal Plus, Alley. as per Drg. No.-19/M,Alt.-1	As per Sketch.	1	Set
	ii	Thrust Bearing Seal, Bore-146mm., OSD-175mm. Width 19mm.(Spring Loaded Oil Seal) Make-Sunny, Dulux, Royal Plus, Alley.as per Drg. No.-20/M,Alt.-1	As per Sketch.		
	iii	Joint compressed asbestos fiber permaile oil GR-0/1 or A/0TH 1.5MM Size-1600mm x 3800mm mat. Specn -IS:2712 of 1979. Make- T.J. Thermo seal, Ulrite, Champion	IS-2712 of 1979	0.750	Kg.
4a	i	1/4" BSP Parallel Soft Grease Nipple (Male) As per Drg. No.- LA/GL-155/M, Alt-2	As per Drg.	2	Nos.
	ii	Makers Name Plate As Per Sample		1	No.
	iii	4mm X 25mm slot head Bolt with Nut Hex Head Block. Make - UNBRAKO, GKW, FITTING, LPS Brand.	IS- 2389/1968	9	Nos.
	iv	5/8" X 1" Bolt Hex Head Block Fully Threaded. Make- UNBRAKO, GKW, FITTING LPS Brand.	BS : 970 EN : 24	3	Nos.
	v	1/2" X 1" Bolt Hex Head Block Fully Threaded. Make- UNBRAKO, GKW, FITTING LPS Brand.	BS : 970 EN : 24	10	Nos.
	vi	3/8" X 3/2" Bolt Hex Head Block Fully Threaded with Nut Make-UNBRAKO, GKW, FITTING LPS Brand.	BS : 970 EN : 24	6	Nos.
	vii	3/8" X 5/4" Bolt Hex Head Block Fully Threaded with Nut Make-UNBRAKO, GKW, FITTING LPS Brand.	BS : 970 EN : 24	10	Nos.
	viii	1/4" X 1/2" Bolt Hex Head Block Fully Threaded. With nut Make-UNBRAKO, GKW, FITTING LPS Brand.	BS : 970 EN : 24	8	Nos.
	ix	1/4" X 1" Bolt Hex Head Block Fully Threaded With Nut , Make-UNBRAKO, GKW, FITTING LPS Brand	BS : 970 EN : 24	16	Nos.
	x	Hexagonal Bright Bolt with Nut Fully Threaded 5/8" X 3" with Medium Quality Make LPS,GKW,FITTING	IS-4218 (Part-6) 1987 or Letest	5	Nos.
	xi	M.S.ERW Pipe Size-32mm OD & 25mm ID in length of 2.5 Mtrs.	IS-1239/ Heavy	1.250	Mtrs.
5	i	F.R.P. Chain Cover as per JMP's drg. No.- WJ-29/M/A, Alt-1		1	No.
6	i	40mm x 40mm x 6mm M.S. Angle, IS: 2062-2011 Grade E-250 A		0.070	MT
	ii	300 x 90 x 8mm MS Channel Size- 395mm length (machined finished)	IS:2062/11 E 250 A	20	Kg.
	iii	8MM M.S Round Bar Cl-II		1	Kg.

Trade procured Items- Mechanical

7	i	High-gloss Synthetic Enamel paint (Phiroza Blue), make- Berger, Asian, Dulux.		2.40	Ltrs.
	ii	High-gloss Synthetic Enamel paint (Signal Red), make- Berger, Asian, Dulux, ,		1.20	Ltrs.
	iii	Primer Red Oxide Make-Berger or Asian,		1.50	Ltrs.
	iv	Thinner 124 Make-Berger or Asian, Dulux		0.50	Ltrs.
8	i	Top Bracket, WJ-7/M, as per Drg. No.WJ-7/M, Alt-3		1	No
	ii	Side Wheel Link (RH), WJ-97/M, as per Drg. No.WJ-97/M,Alt-2		1	Set
	iii	Side Wheel Link (LH), WJ-98/M, as per Drg. No.WJ-98/M Alt-2			
	iv	Fork End, WJ-119/M, as per Drg. No.WJ-119/M, Alt-3,		1	No
	v	Rear Wheel Bracket Steel Block, WJ-115/M, as per Drg. No.WJ-115/M, Alt -4	IS-1875/ 92,Cl-III	1	No
9	i	Lever Arm with Bush(Complite) WJ-93, as per Drg. No.- JMP/JJ/SPL-1A/2017, Item No.-5, Alt.-3		1	Set
	ii	Key for Lever Bush KY-40,as per Drg. No.- JMP/JJ/SPL-1A/2017, Item No.-3,Alt.-3			
	iii	Lever WJ-99,as per Drg. No.- JMP/JJ/SPL-1A/2017, Item No.-7,Alt.-3		1	No
	iv	Shaft WJ-101,as per Drg. No.- JMP/JJ/SPL-1A/2017, Item No.-1,Alt.-3		1	No
	v	Top Bracket Cover WJ-60,as per Drg. No.- JMP/JJ/SPL-1A/2017, Item No.-6,Alt.-3	IS:2062/11 E 250 A Cu	1	No
	vi	Key for Link KY-36, as per Drg. No.- JMP/JJ/SPL-1A/2017, Item No.-2,Alt.-3	As per Drg.	2	No
	vii	Key for screw spindle KY-43,as per Drg. No.- JMP/JJ/SPL.2/17, Item No.-3,Alt.-3	As per Drg.	1	No
	viii	Key for large sprocket KY-63,as per Drg. No.- JMP/JJ/SPL.-1A/2017, Item No.-8,Alt.-3	As per Drg.	1	No
	ix	Make up pieces(Top) mod.WJ-14/M, as per Drg. No.- JMP/JJ/SPL-2/17, Item No.- 2,Alt.-3		1	Set
	x	Make up pieces(Bottom) WJ-13/M, as per Drg. No.- JMP/JJ/SPL.2/17, Item No.-1,Alt.-3			
	xi	Side Wheel Axle WJ-102 as per Drg.No.-JMP/JJ/SPL-1A/2017, Item-4,Alt.-3		2	No
10	i	Side Wheel, WJ-83/M, as per JMP Drg. No. WJ-83/M, Alt-3		2	Nos.
	ii	Rear Wheel, WJ-84/M, as per JMP Drg. No.WJ-84/M, Alt-2		1	No
11	i	Set of Worm & Worm Wheel, one set consisting of **(1)** one no. Worm as per JMP Drg.no. WJ-25/M Alt no. 3 with two nos. lock nut as per JMP Drg.no. WJ-27/M Alt no. 4 and **(2)** one no. Worm Wheel as per JMP Drg.no. WJ--26/M Alt no.5.	As per Drg.	1	Set
12	i	Set of Screw Spindle & Screw Nut, one set consists of one no. each of the following items **(1)** Screw Spindle as per JMP Drg. No. 80/62 Alt 7 (**2**) Screw Nut as per JMP Drg. no. WJ-6/M Alt 2 with four nos check nut in each screw spindle as per JMP Drg.no. WJ-11/M Alt-5.	As per Drg.	1	Set
13	i	Modified Universal Design Lifting Assembly of 25 ton Jamalpur Jack as per Drg. No.-JMP/Jack/05/2019.	As per Drg.	1	No
	ii	Circlip as per Sketch. No JMP/26/2000, Alt-1		2	Nos.
14	i	Gear Box (WJ-45) Complete as per Drg. No. JMP/SK/11/08 Alt No.- 5	As per Drg.	1	No
15	i	Maintenance and operation manual for JMP Jack as per sample Mode of manual binding-Spiral Binding, Quality of Manual Paper:- Art Paper Glossy Finish -170 GSM,		1	No.
16	i	Spares with metallic Kit Box Complete, one set consist of 17 items as per Annexure attached.		1	Set
	ii	Polythene cover of 0.5 mm thickness (min) to Size-10'-10"x 5'-5" with one Left side open as per sketch no. 1/85 dt 03.01.85.		1	No.

17	i	Beam as per JMP Drg. No 23/74 Alt. 0	As per Drg	1	No

Component Assembly

1) Gear Box Assembly

The Gear box assembly is shown in the sketch at Page No. 47.

a) Gear box WJ-45 is of fabricated design.
b) On the top surface of the fabricated gear box the lifting screw bearing housing (WJ-74) is welded in which the screw spindle assembly is inserted.
c) At the two sides of the Gear box, worm bearing blocks RH & LH (WJ-64 & WJ-65) are welded to support the worm shaft (WJ-25).
d) Two brackets (lugs) WJ-48 are welded at the top corners of the gear box for supporting wheel shaft (WJ-101).
e) Gear box stiffeners (WJ-71, 72 & 73) are welded inside the gear box top to strengthen it.
f) Screw spindle assembly is set on the Gear box.
g) Worm assembly is set in the Gear Box matching the teeth of worm wheel (WJ-26).
h) Three pad supports (WJ-68,WJ-69 & WJ-70) are welded at the Bottom inner face of the Gear Box.

2) GEAR BOX & BEAM ASSEMBLY

The beam assembly is shown in the sketch at Page No. 41

The I-beam is welded on the top surface of the Gear Box vertically along with the lifting screw bearing housing (WJ-74). It is further supported with two triangular plates welded with the flange of the beam and the Gear box top surface

3) Screw spindle assembly

The screw spindle assembly is shown in the sketch at Page No. 42.

a) At the bottom end of the screw spindle (WJ-5) distance piece bottom (WJ-14) is inserted and set against the collar of the spindle. Thrust ball bearing SKF 53416 U is inserted and the Thrust Ball bearing seal (WJ-20/M) is set over it.
b) The thrust bearing seal of SKF 53416 U is set inside the top groove of lifting screw bearing housing (WJ-74), fabricated at the top of the Gear box.
c) The screw spindle bottom end is then inserted in the Gear box through the hole of lifting screw bearing housing.
d) Bearing No. SKF 6215 is inserted on the projected end of screw spindle, inside the Gear Box, and set in the inner housing of the lifting screw bearing housing.
e) Worm wheel (WJ-26) is then fixed at the bottom end of the screw spindle with key and locked with a pair of check Nuts (WJ-11).
f) Screw Nut (WJ-6) is inserted from the top end of the screw spindle.
g) Bellow end pieces (WJ-9 & WJ-10) are set at both the ends of the Leather bellow and clamped properly with Jubilee clips. The leather Bellow is then put over the screw spindle to protect the spindle from dirt & dust.

h) Ball bearing No. SKF 2310 is set in the housing of Top bracket (WJ-7) and the top bracket cover is fixed. The Top Bracket is placed at the top end of the screw spindle and fixed by bolt, and nuts with the beam to support the screw spindle in vertical position.

Component Assembly

4) Lifting slide assembly

The lifting slide assembly is shown in the sketch at Page No. 43.

a) The main body of the lifting slide WJ-35 is made by fabricating steel plates of different size and shape.
b) Four nos. of Guide Rollers (WJ-38) are fitted with the help of Guide roller Pin (WJ-39) from inside the lifting slide and locked with circlips.
c) Four nos. of Grease Nipples are set on the Guide Roller pins (WJ-39).
d) Four nos. of Pin Boss (WJ-112) are set on the Guide Roller Pin and welded with the Lifting slide from outside.
e) Two sets of swivel plate (WJ-36A) and 25mm thick plate (WJ-104) are fixed from inside the Lifting slide with holding pins (WJ-113) and welded with the Lifting slide.
f) Chequered plate (WJ-108) is welded on the projected claw of the lifting slide.
g) The complete Lifting slide is inserted on the screw spindle for vertical movement of load.

5) Rear wheel & Handle assembly

The Rear wheel & handle arrangement is shown in the sketch at Page No. 44.

A handle arrangement is provided for manual operation for transportation of the Jack inside the working area. One end of the handle assembly is welded with a U- shaped fork having groove in the forks for keeping the handle in a locked upright vertical position, when the Jack is not required for transportation.

6) Sprocket & Chain Assly

The sprocket & chain assembly is shown in the sketch at Page No. 45

One small sprocket WJ-23 is fitted with the shaft of the 7.5HP motor and one sprocket large WJ-24 is fitted with the worm shaft WJ-25. Both the sprockets are connected by Duplex Roller chain for transmission of Power from the motor to the worm assembly. The sprockets and chain assembly is covered with a F.R.P chain cover. The chain cover is fitted with the Jack brackets by nuts & bolts.

7) Side wheel with shaft assembly

The side wheel assembly is shown in the sketch at Page No. 46.

a) Wheel shaft (WJ-101) is inserted through the Right hand lug (WJ-48) fitted on the top of Gear Box.
b) Lever WJ-99, is inserted on the shaft and the shaft is then passed through the right supporting bracket.
c) Lever Bush (WJ-99) welded with lever Arm (WJ 93A) is inserted on the shaft and the shaft is passed through the left hand supporting bracket and lug of the Gear box.

Component Assembly

d) Lever (WJ-99) is fixed at desired location on the shaft with Hex head screw (Gb1-1508) to operate the limit switch fixed at the top of gear box.

e) Two side wheel links (WJ-97 & 98) are fixed at two ends of the shaft by means of keys.

f) Side wheel Axles (WJ-102) are inserted in the other ends of side wheel links and fixed with Hex. Head screws.

g) Two side wheels (WJ-83) are then put over the side wheel Axles and locked with split cotter pins.

8) Worm and Worm Wheel assembly

The Worm & Worm Wheel assembly is shown at Page No. 48 & 49.

a) Two nos of bearings SKF 7213 are put over the larger shaft of the worm (WJ-25) and locked in position with a pair of check nuts.

b) One no of bearings SKF 6208 is set on the short end of the worm and locked in position with circlip.

c) One Gasket & worm sleeve outer (WJ-77) are placed in position at the right hand side of Gear Box. (WJ-45).

d) The long end of the worm shaft with bearing is then inserted into the hole of Worm sleeve outer (WJ-77) from inside the G/Box and the short end of the worm shaft with bearing is inserted in the hole of worm bearing block LH (WJ-65) at the left hand side of G/Box.

e) One Gasket is put over the outer face of the WJ-77. Worm sleeve inner (WJ-78) is inserted inside the WJ-77 and fixed on the G/Box with Hex head screws.

f) The worm is then set matching with the worm wheel (WJ-26) as shown in the sketch at Page No. 49.Rotation of Worm thus rotates the screw spindle (WJ-5) which in turn gives upward or downward movement of Brass Nut (WJ-6) and the whole lifting assembly.

9) Top Bracket Assemble

a) One no ball bearing No. SKF-2310 is set in the housing of Top Bracket (WJ-7) and then Top Bracket Cover (WJ-60) is fixed with 06 nos. ¼" bolts.

Schematic Diagram

Schematic Diagram

1 Dimensional Drawing
2 Diagram Drive System
3 Diagram Lubricant Points
4 Wiring Diagram of Individual DOL Starter
5 Synchronizing Diagram Control System

Dimensional Drawing

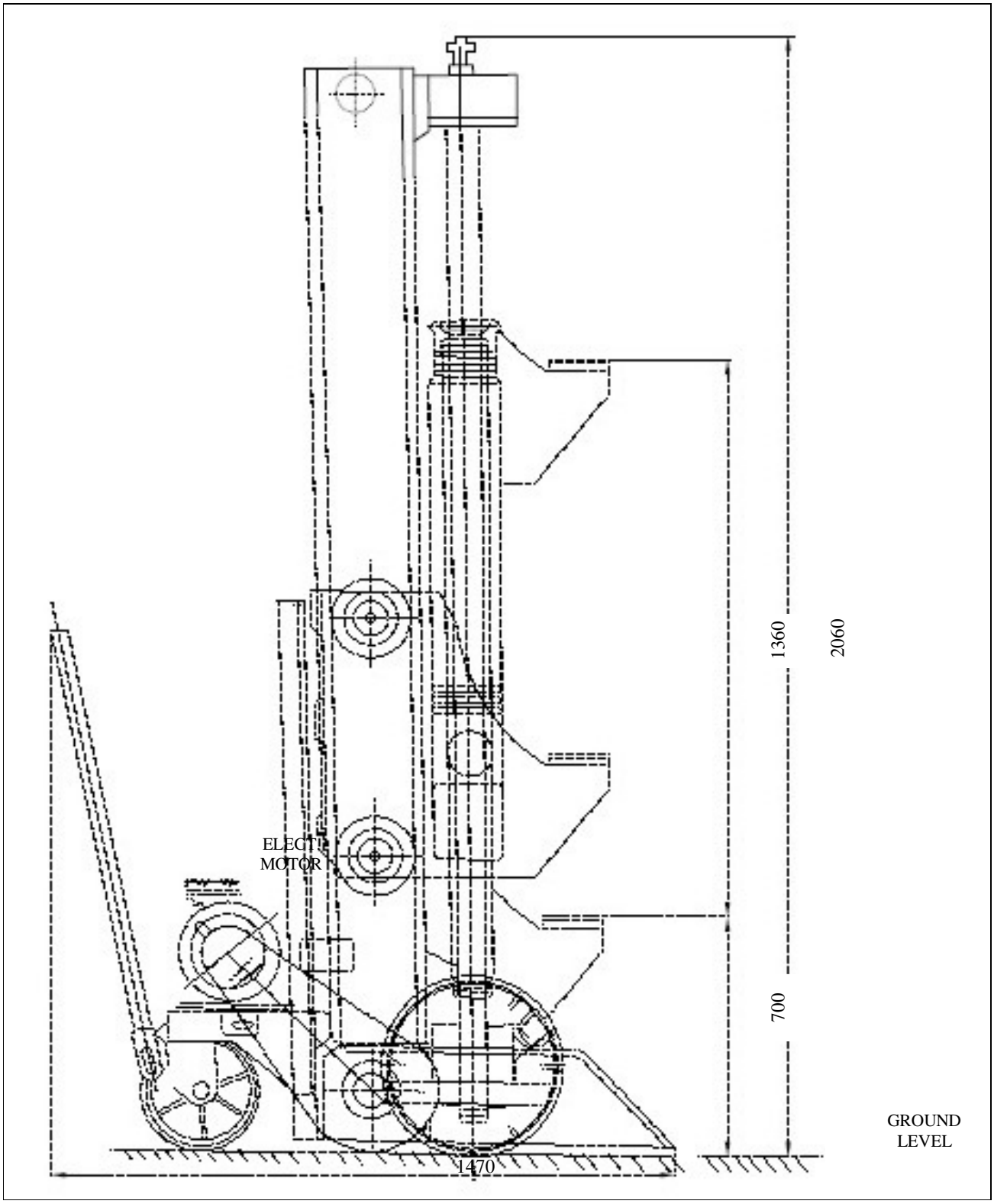
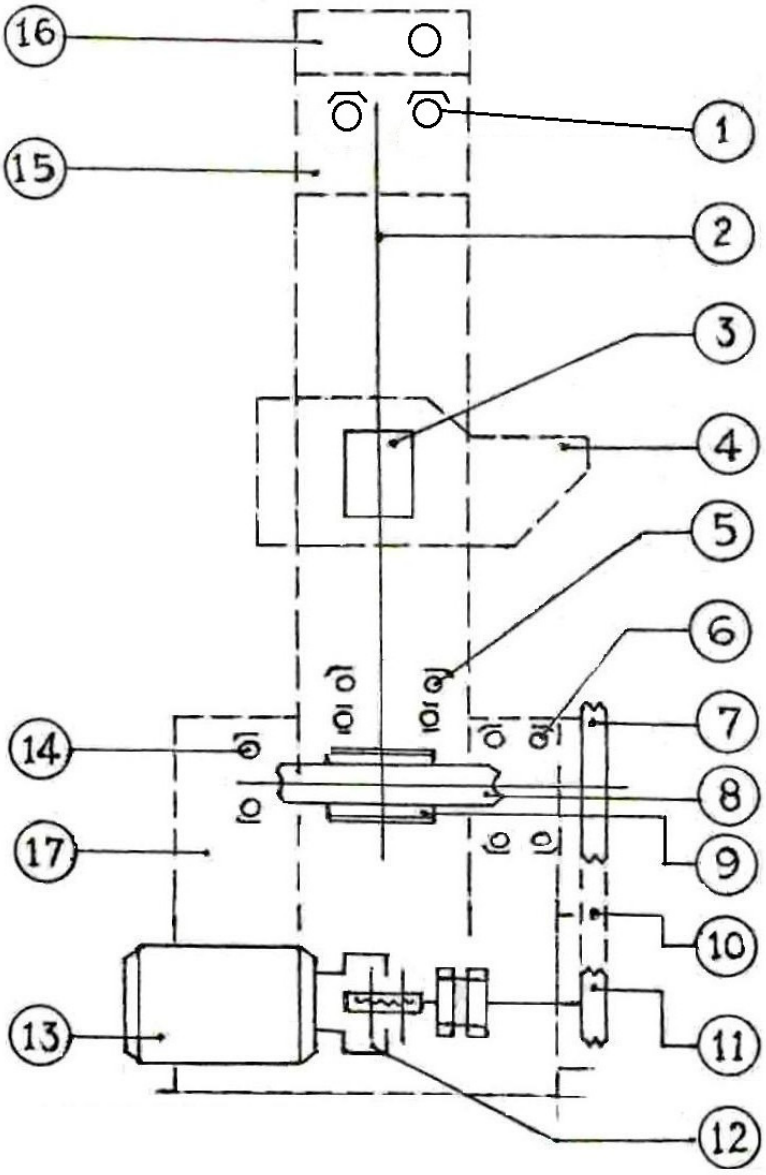
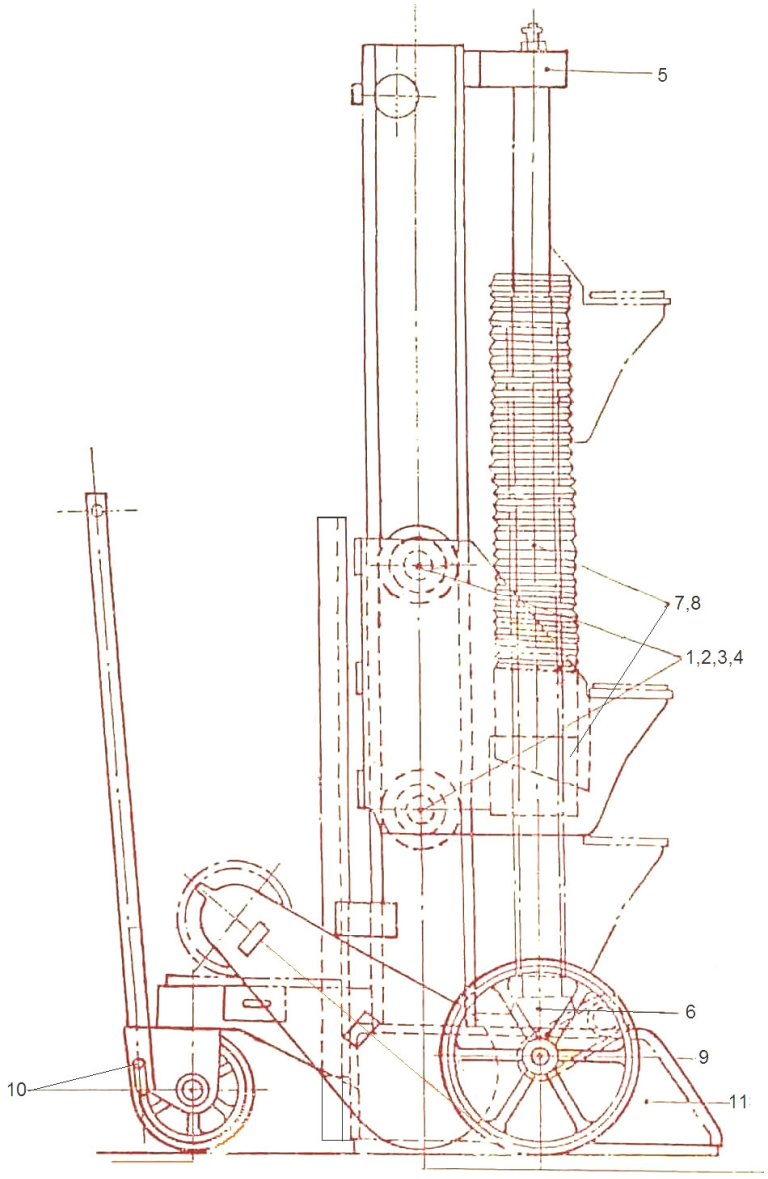


Diagram Drive System



1. Self Aligning Ball Bearing, SKF-2310
2. Screw Spindle (WJ-5)
3. P.B.Nut (WJ-6)
4. Lifting Slide Complete (WJ-35)
5. Single Acting Thrust Ball/Brg. SKF 53416U
6. Ball Bearing SKF-6208
7. Sprocket Large (WJ-24)
10. Duplex Roller Chain
11. Sprocket Small (WJ-23)
12. Elect. Magnetic Brake
13. 7.5 H.P.Brake Motor
14. Ball Bearing SKF-7213
15. Top Bracket (WJ-7)
16 Beam (WJ-58)

Diagram Lubricant Points



POINTS OF LUBRICANTS

1,2,3,4 - GUIDE ROLLER PIN

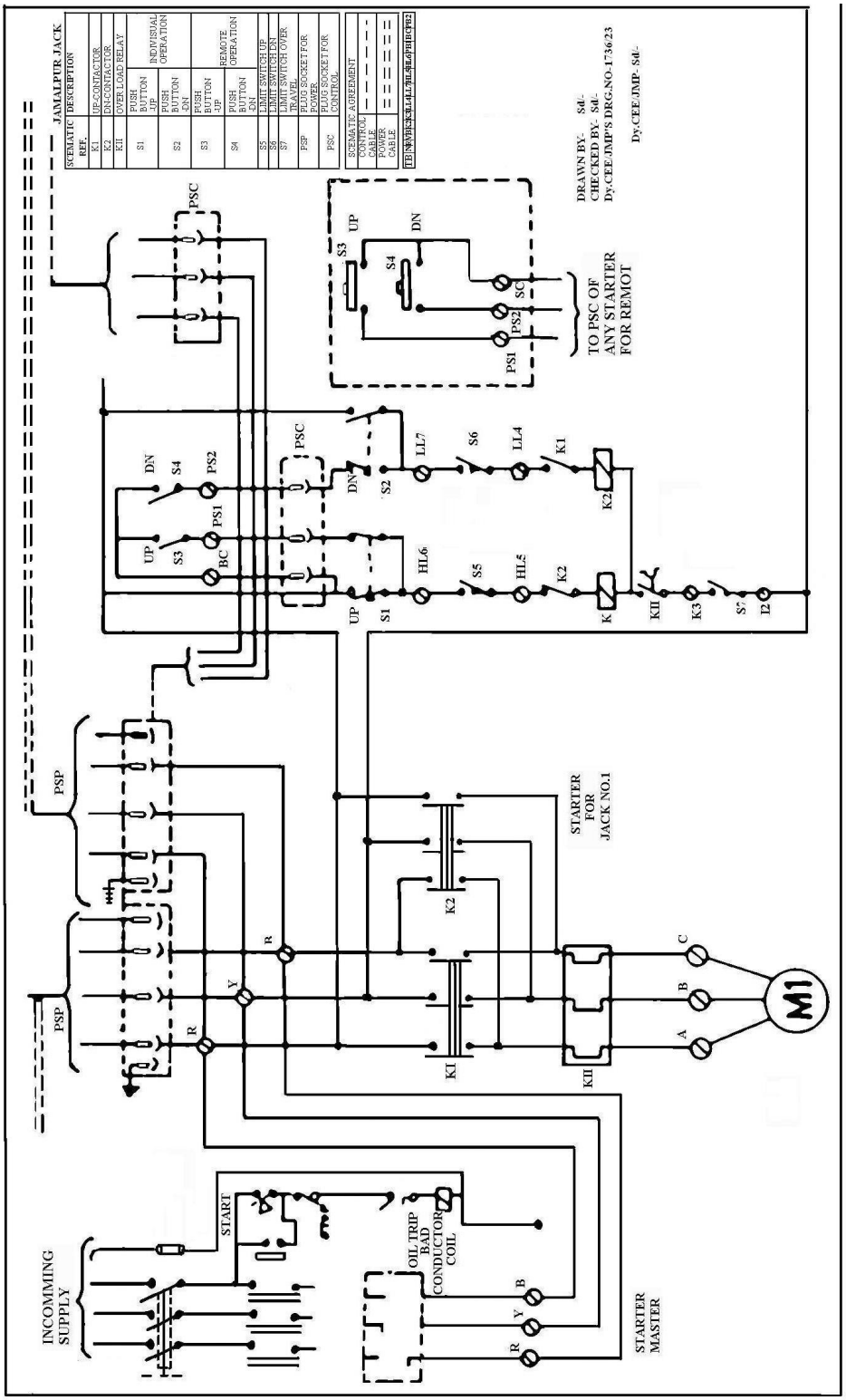
5 - TOP BRACKET & BRACKET FOR WHEEL SHAFT

7, 8 - SCREW SPINDLE & BRASS NUT

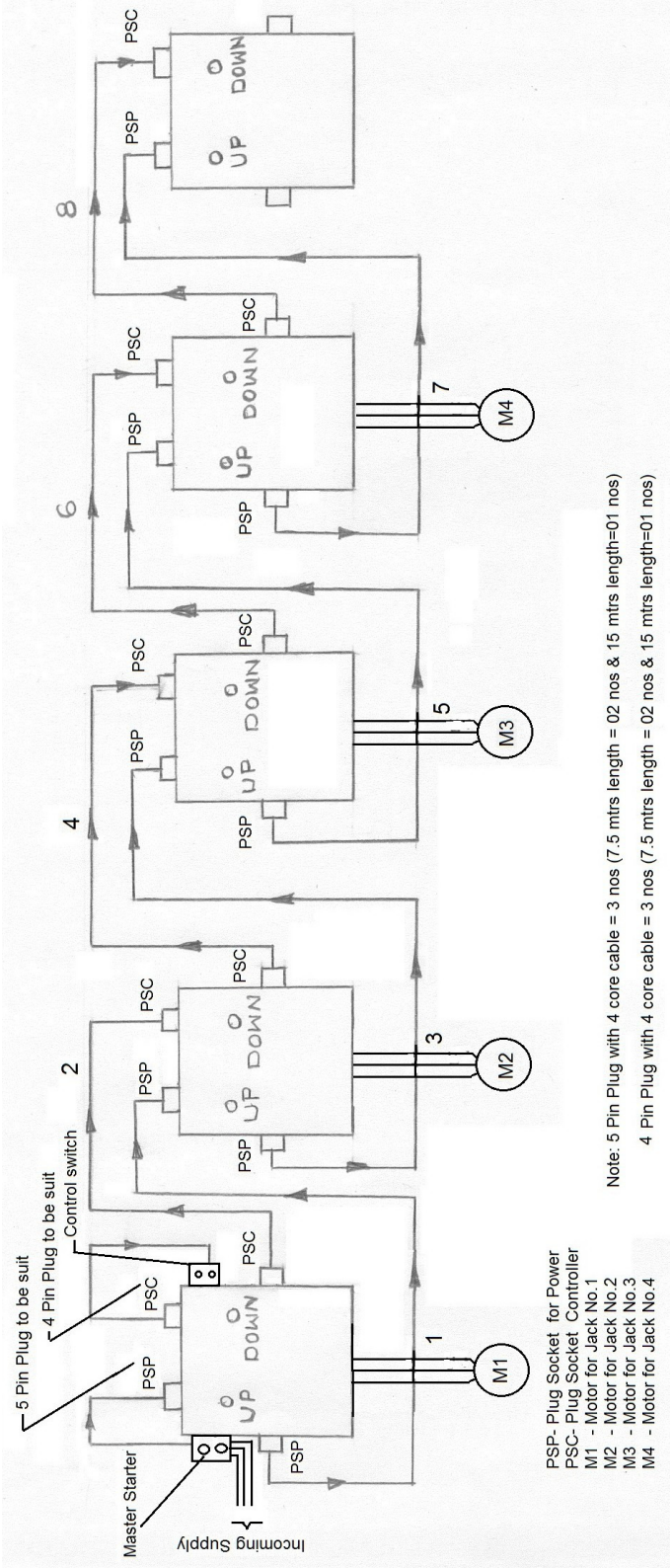
9 - BIG SIDE WHEEL PIN & REAR WHEEL PIN

11 - GEAR BOX

Wiring Diagram of Individual DOL Starter



Synchronizing Diagram Control System

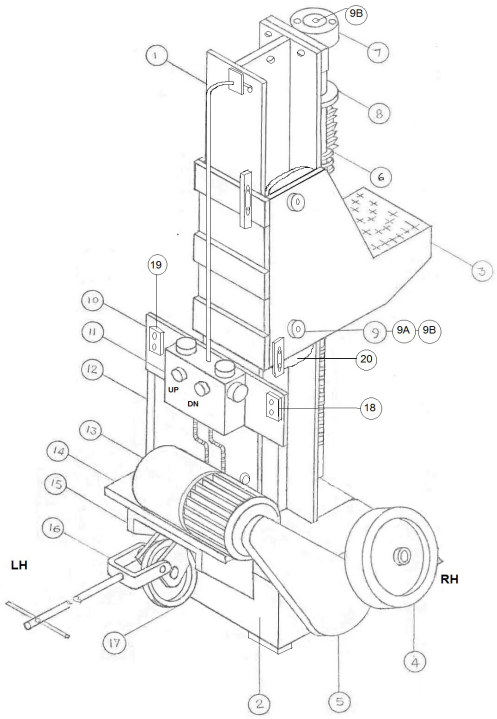


Spare Parts Catalogue

Spare Parts Catalogue

1 General Arrangement
2 Gear Box & Beam Assly
3 Screw Spindle Assly
4 Lifting Slide Assly
5 Rear Wheel & Handle Assly
6 Sprocket with Chain Cover Assly
7 Side Wheel with Shaft Assly
8 Gear Box Assly
9 Worm & Worm Wheel Assly
10 Worm Assly
11 Top Bracket Assly.

General Arrangement



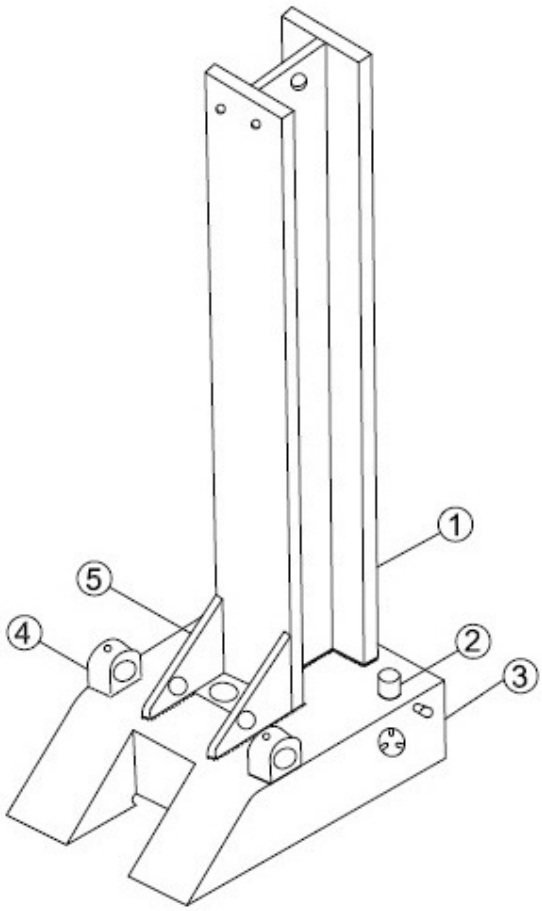
ASSEMBLY

DRAWING NO	DESCRIPTION	QTY/JACK
JMP/51164/171.241	GENERAL ARRANGEMENT	1

COMPONENTS

REF NO.	REF.DRG.NO.	DESCRIPTION	QTY/ ASSLY
1	WJ-58	'I' BEAM	1
2	WJ-45	GEAR BOX COMPLETE ASSLY.	1
3	WJ-35	LIFTING SLIDE COMPLETE	1
4	WJ-83	SIDE WHEEL	2
5	WJ-29	CHAIN COVER	1
6	WJ-5	SCREW SPINDLE (MOD)	1
7	WJ-7	TOP BRACKET	1
8	WJ-8	LEATHER BELLOW	1
9	WJ-39	GUIDE ROLLER PIN	4
9A	WJ-112	PIN BOSS	4
9B	TRADE	¼" GREASE NIPPL	4
10	WJ-125	BASE PLATE FOR STARTER	1
11	TRADE	D.O.L.STARTER (INDIVIDUAL)	1
12	TRADE	M.S.ANGLE	2
13	TRADE	7.5 HP BRAKE ELECT. (MOTOR)	1
14	WJ-43	MOTOR BASE PLATE	1
15	WJ-46	BRACKET FOR MOTOR (CHANNEL)	1
16	WJ-90	REAR WHEEL HANDLE COMPLETE	1
17	WJ-84	REAR WHEEL	1
18	TRADE	PENDENT TYPE PUSH BUTTON (each set of 4 Jacks)	1
19	TRADE	MASTER STARTER (each set of 4 Jacks)	1
20	WJ-38	GUIDE ROLLER	4

Gear Box & Beam Assembly



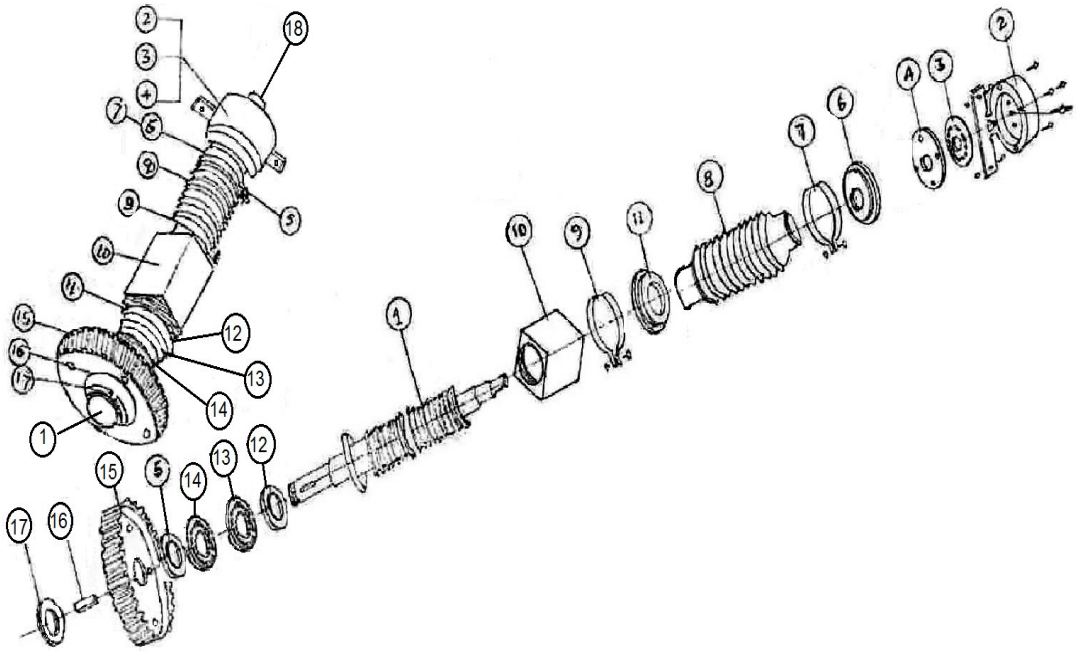
ASSEMBLY

DRAWING NO	DESCRIPTION	QTY/JACK
JMP/51168/171.245	GEAR BOX & BEAM ASSLY	1

COMPONENTS

REF. NO	REF. DRG.NO.	DESCRIPTION	QTY/ASSLY
1	WJ-58	'I' BEAM	1
2.	PC-2355	PLUG	1
3	WJ-45	GEAR BOX COMPLETE	1
4	WJ-48	BKT. FOR WHEEL SHAFT	2
5	WJ-47	SUPPORT BRACKETS	2

Screw Spindle Assembly



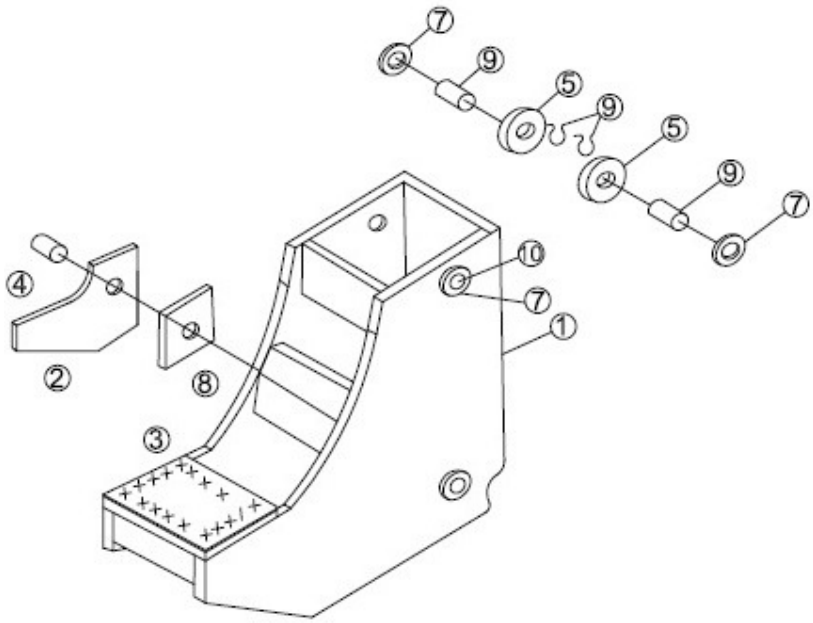
ASSEMBLY

DRAWING NO	DESCRIPTION	QTY/JACK
JMP/51165.171.242	SCREW SPINDLE ASSLY	1

COMPONENTS

REF. NO	REF. DRG. NO.	DESCRIPTION	QTY/ASSLY
1	WJ-5	SCREW SPINDLE (MOD)	1
2	WJ-7	TOP BRACKET (MOD)	1
3	TRADE	BALL BEARING (SKF 2310)	1
4	WJ-60	TOP BRACKET COVER	1
5	WJ-13	MAKE UP PIECE (BUTTOM)	1
6	WJ-9	BELLOW END PIECE (TOP)	1
7	WJ-22	JUBILEE CLIP	1
8	WJ-8	LEATHER BELLOW WITH COLLAR	1
9	WJ-22	JUBILEE CLIP	1
10	WJ-06	P.B.SCREW NUT	1
11	WJ-10/M	BELLOW END PIECE (BOTTOM)	1
12	WJ-14	MAKE UP PIECE (TOP)	1
13	TRADE	THRUST BEARING (SKF 53416 U)	1
14	TRADE	BALL BEARING (SKF 6215)	1
15	WJ-26	WORM WHEEL	1
16	KY-43	KEY	1
17	WJ-11/M	CHECK NUT FOR SCREW SPINDLE	2
18	TRADE	¼"GREASE NIPPLE	1

Lifting Slide Assembly



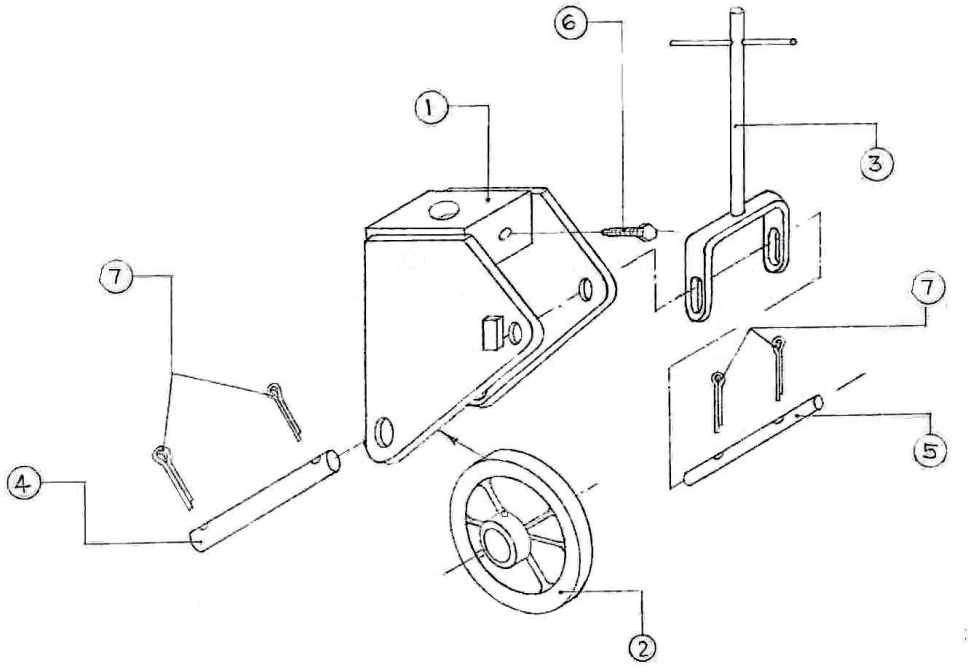
ASSEMBLY

DRAWING NO	DESCRIPTION	QTY/JACK
JMP/51167/171.244	LIFTING SLIDE ASSLY	1

COMPONENTS

REF. NO	REF.DRG.NO.	DESCRIPTION	QTY/ASSLY
1	WJ-35	LIFTING SLIDE COMPLETE	1
2	WJ-104	PLATE 25 THICK X 305 X 205	2
3	WJ-36	SWIVEL PLATE	2
4	WJ-113	HOLDING PIN	2
5	WJ-38	GUIDE ROLLER	4
6	WJ-39	GUIDE ROLLER PIN	4
7	WJ-112	PIN BOSS	4
8	WJ-108	CHEQURED PLATE	1
9	TRADE	CIRCLIP	4
10	TRADE	GREASE NIPPLE	4

Rear Wheel & Handle assembly



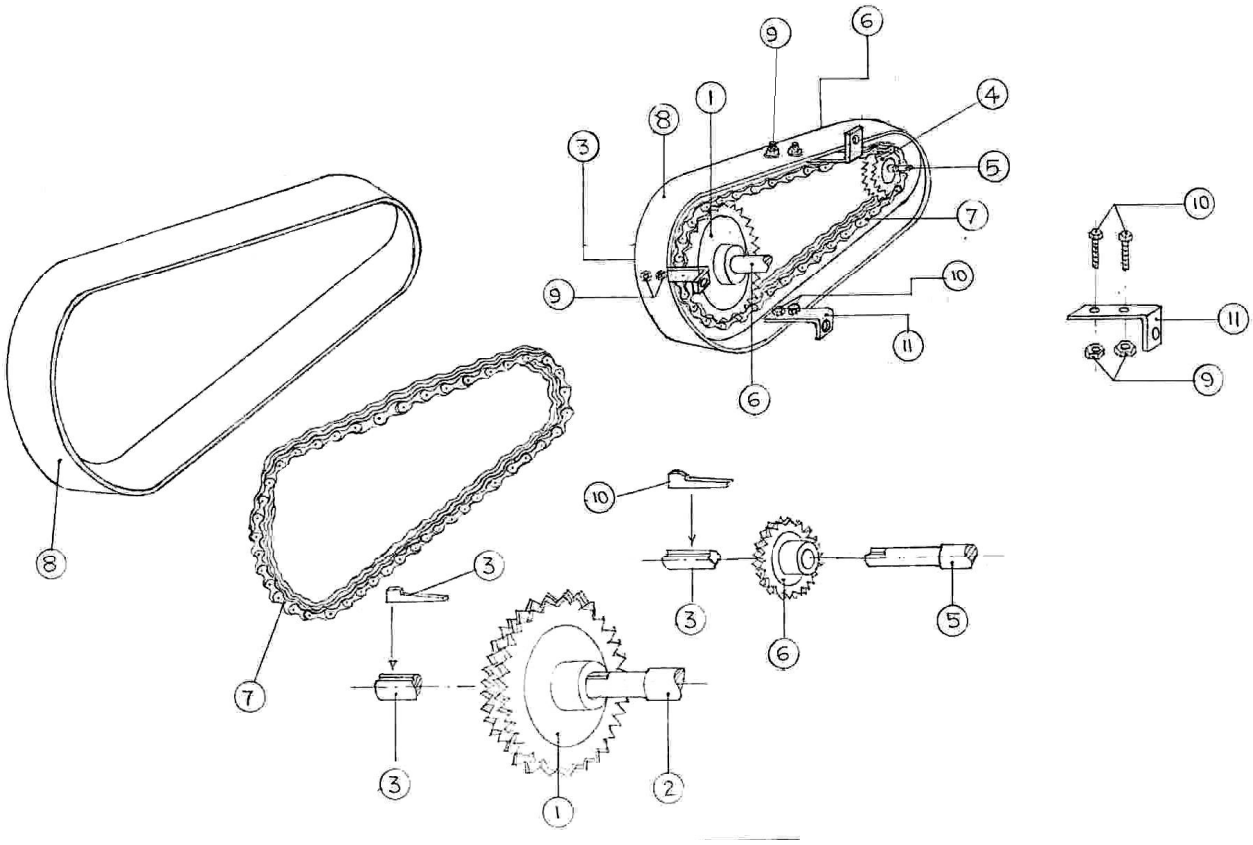
ASSEMBLY

DRAWING NO	DESCRIPTION	QTY/JACK
JMP/51170/171.247	REAR WHEEL & HANDLE ASSLY	1

COMPONENTS

REF. NO	REF.DRG.NO.	DESCRIPTION	QTY/ASSLY
1	WJ-87	REAR WHEEL BRACKE COMPLETE	1
2	WJ-84	REAR WHEEL	1
3	WJ-90	REAR WHEEL HANDLE COMPLETE	1
4	PN-732	WHEEL PIN	1
5	PN-731	HANDLE PIN	1
6	TRADE	3/8" BSW BOLT	1
7	TRADE	SPLIT PIN	4

Sprocket Chain Cover assembly



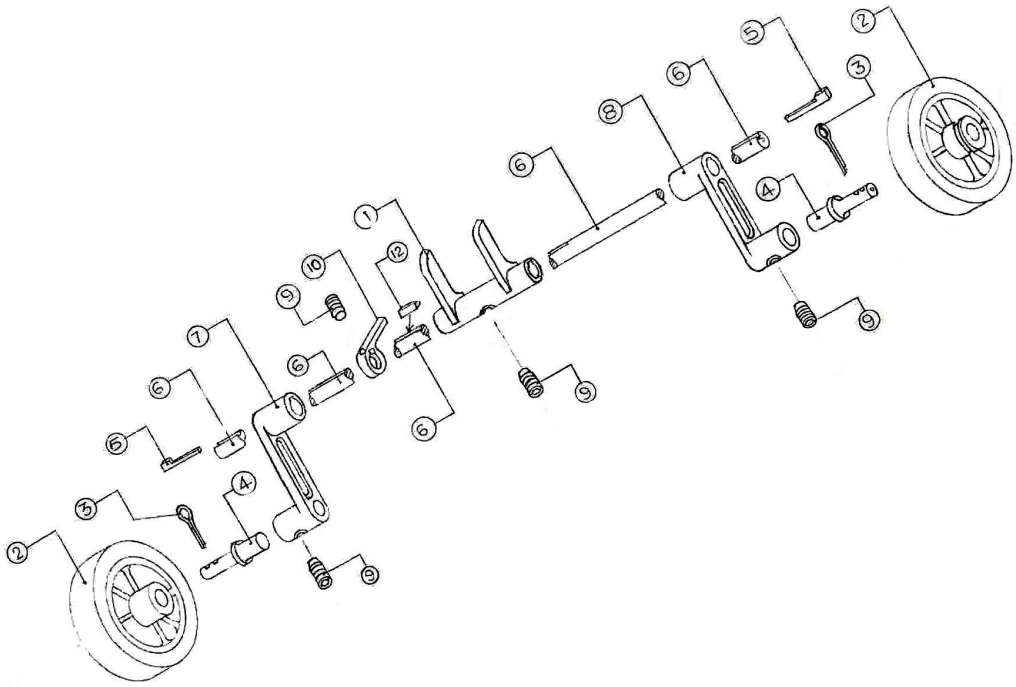
ASSEMBLY

DRAWING NO	DESCRIPTION	QTY/JACK
JMP/51166/171.243	SPROCKET & CHAIN COVER ASSLY	1

COMPONENTS

REF. NO	REF. DRG. NO.	DESCRIPTION	QTY/ASSLY
1	WJ-24	SPROCKET (LARGE)	1
2	WJ-25	WORM SHAFT	1
3	KY-63	KEY	1
4	WJ-23	SPROCKET (SMALL)	1
5	-	MOTOR SHAFT	1
6	-	MOTOR SHAFT KEY	1
7	-	CHAIN (DUPLEX ROLL)	1
8	WJ-29	CHAIN COVER (F.R.P)	1
9	-	HEX NUT ¼" BSW	6
10	-	HEX.HD.SCREW ¼" x ½"	6
11	-	CLAMP FOR CHAIN COVER	3

Side Wheel with Shaft Assembly



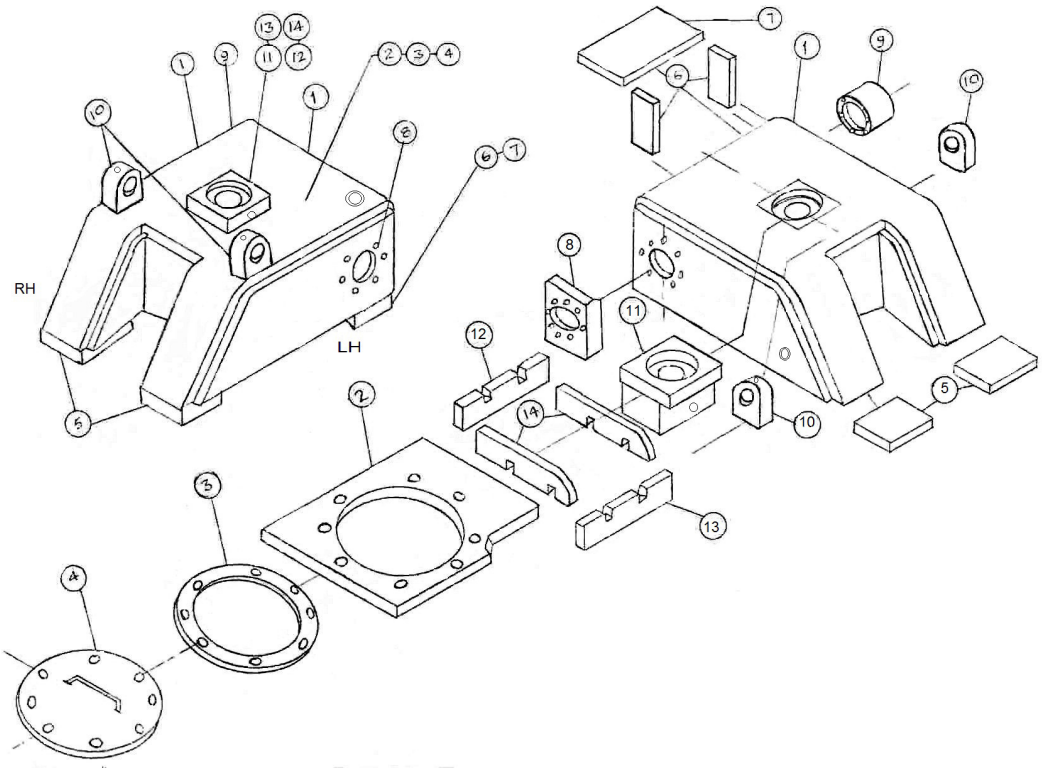
ASSEMBLY

DRAWING NO	DESCRIPTION	QTY/JACK
JMP/51170/171.247	SIDE WHEEL WITH SHAFT ASSLY	1

COMPONENTS

REF. NO	REF. DRG. NO.	DESCRIPTION	QTY/ASSLY
1	WJ-93	LEVER (COMPLETE)	1
2	WJ-83	SIDE WHEEL	2
3	-	SPLIT PIN	2
4	WJ-102	SIDE WHEEL AXLE	2
5	USE KY-36	GIB HEAD KEY (LINK KEY)	2
6	WJ-101	SHAFT	1
7	WJ-98	SIDE WHEEL LINK L.H	1
8	WJ-97	SIDE WHEEL LINK R.H	1
9	----	GRUB SCREW	4
10	WJ-99	LEVER	1

Gear Box assembly



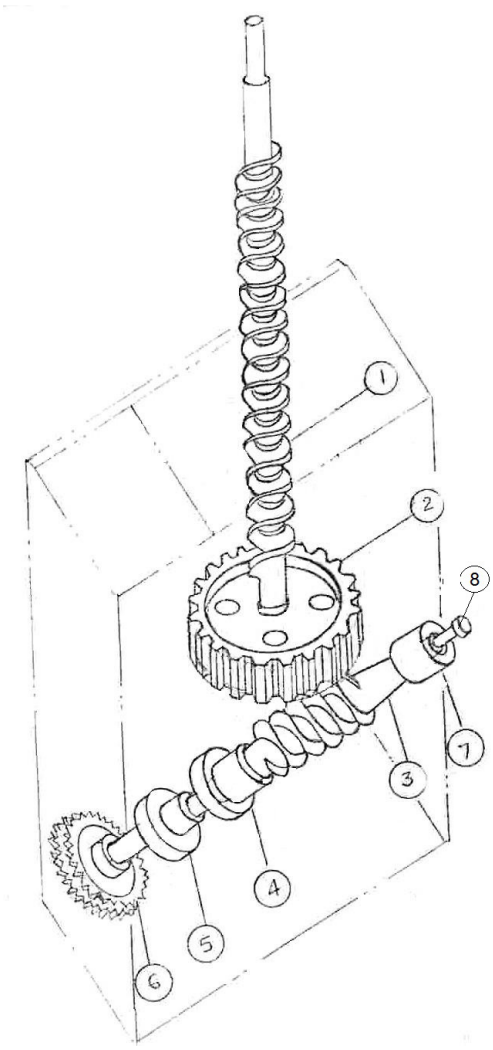
ASSEMBLY

DRAWING NO	DESCRIPTION	QTY/JACK
JMP/51169/171.246	GEAR BOX ASSLY	1

COMPONENTS

REF. NO	REF. DRG. NO.	DESCRIPTION	QTY/ASSLY
1	WJ-45	GEAR BOX	1
2	WJ-66	GEAR BOX BOTTOM PLATE	1
3	-	GASKET (COMPRESSED ASBESTUS)	1
4	WJ-76	GEAR BOX BOTTOM COVER	1
5	WJ-69	PAD SUPPORT	2
6	WJ-70	PAD SUPPORT	2
7	WJ-68	PAD SUPPORT	1
8	WJ-64	WORM BEARING BLOCK L.H	1
9	WJ-65	WORM BEARING BLOCK R.H	1
10	WJ-48	BRACKET FOR WHEEL SHAFT	2
11	WJ-74	LIFTING SCREW BEARING HOUSING	1
12	WJ-73	GEAR BOX TOP STIFFENER (SMALL MOD)	1
13	WJ-72	GEAR BOX TOP STIFFENER (LONG MOD)	1
14	WJ-71	GEAR BOX TOP STIFFENER (MOD0	2

Worm & Worm Wheel assembly



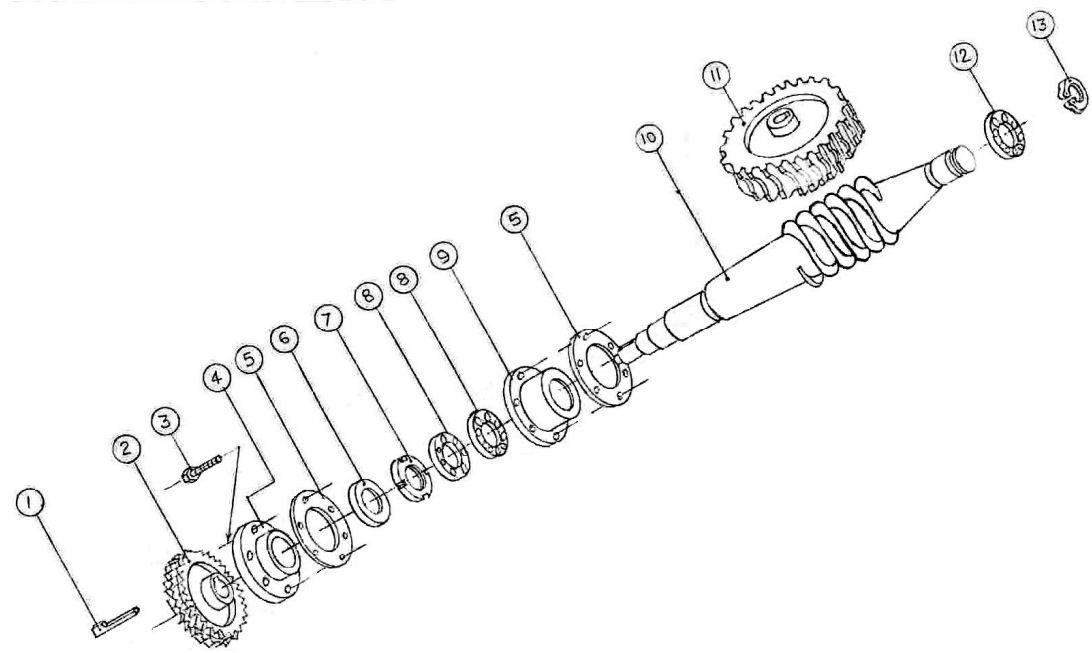
ASSEMBLY

DRAWING NO	DESCRIPTION	QTY/JACK
JMP/51165/171.242	WORM & WORM WHEEL ASSLY	1

COMPONENTS

REF. NO	REF.DRG.NO.	DESCRIPTION	QTY/ASSLY
1	WH-5	SCREW SPINDLE (MOD)	1
2	WJ-26	WORM WHEEL	1
3	WJ-25	WORM SHAFT	1
4	WJ-77	WORM SLEEVE OUTER	1
5	WJ-78	WORM SLEEVE INNER	1
6	WJ-24	SPROCKET (LARGE)	1
7	TRADE	BALL BEARING (SKF-6208)	1
8	TRADE	CIRCLIP (SMALL)	1

Worm assembly



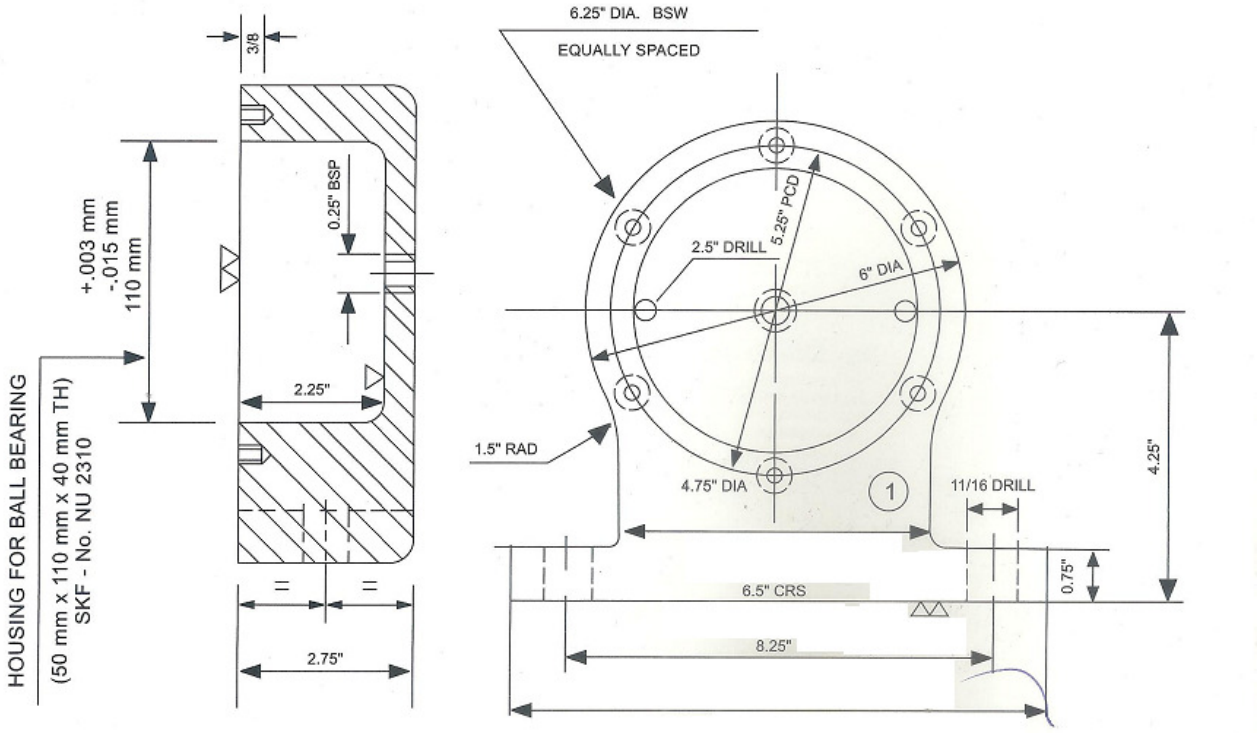
ASSEMBLY

DRAWING NO	DESCRIPTION	QTY/JACK
JMP/51164/171.242	WORM ASSLY	1

COMPONENTS

REF. NO	REF.DRG.NO.	DESCRIPTION	QTY/ASSLY
1	-	KEY	1
2	WJ-24	SPROCKET (LARGE)	1
3	TRADE	HEX.HD.BOLT (5/8" X 2 ½")	6
4	WJ-78	WORM SLEEVE (INNER)	1
5	TRADE	GASKET 1.5 MM THICK	2
6	TRADE	BEARING SEAL	1
7	WJ-27	CHECK NUT FOR WORM	2
8	TRADE	BEARING (SKF-7213)	2
9	WJ-77	WORM SLEEVE (OUTER)	1
10	WJ-25	WORM	1
11	WJ-26	WORM WHEEL	1
12	TRADE	BEARING (SKF-6208)	1
13	TRADE	CIRCLIP SMALL	1

Top Bracket assembly



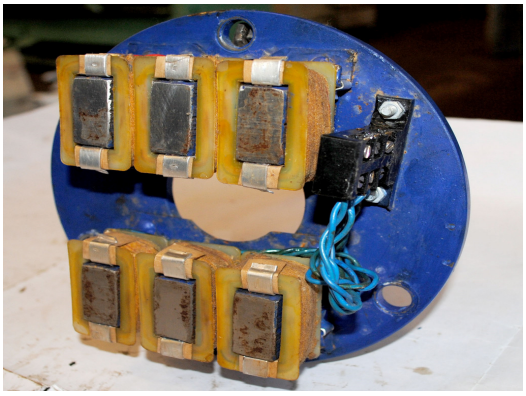
ASSEMBLY	:	DRAWING No.	DESCRIPTION	QTY./JACK
		JMP/51165/171.242	TOP BRACKET ASSEMBLY	1
		REF. DRG. No.		
		WJ-7/M		

Trade Procured Items

7.5 HP Brake Motor

30 HP Brake Motor
(Master Starter)

Air Brake DOL Starter
(Individual)



Brake Coil

Single Row Deep Groove
Ball Bearing SKF-6215

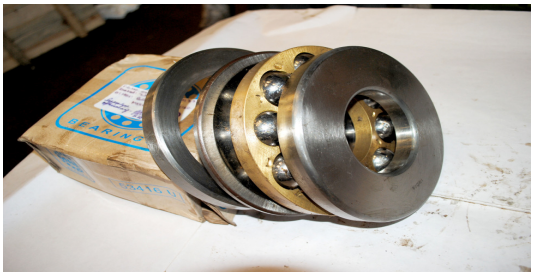
Single Row Angular Contact
Ball Bearing SKF-7213

Trade Procured Items

Single Row Deep Groove
Ball Bearing SKF-6208

Self-Aligning
Ball Bearing SKF-2310

Bearing Seal



Single Acting Thrust Ball
Bearing Sphered Housing
Washer & Non Acting Ring
SKF-53416 U

Duplex Roller Chain

Chain Cover

Trade Procured Items

Check Nut

Guide Roller

Leather Below

Limit Switch

Limit Switch

Link (LH & RH)

Trade Procured Items

Pendent Type Push Button

Sprocket Large

Rear Wheel Bracket

Screw Nut

Screw Spindle

Side Wheel

Trade Procured Items

Small Sprocket

Top Bracket

Worm

Worm Wheel

JMP JACK TYPE – 35t

Lifting of HHP Locos, Electric Locos & All Alco Locos

MAY WE HELP YOU

Dy. Chief Mechanical Engineer (Crane)
Locomotive Workshop, Jamalpur
Eastern Railway
Rly. Phone No.:020-73352, P & T No.:-06344-243109
Mobile No.: +91-9771447408

Assistant Works Manager (Crane)
Locomotive Workshop, Jamalpur
Eastern Railway
Rly. Phone No.:020-73376
Mobile No.: +91-9771447414

Senior Section Engineer / Jamalpur Jack Shop (MCTR)
Locomotive Workshop, Jamalpur
Eastern Railway
Rly. Phone No.:020-73460
Mobile No.: +91-9771447574, +91-9771447576 & +91-9262390461

Senior Section Engineer / Jamalpur Jack (PD Section)
Locomotive Workshop, Jamalpur
Eastern Railway
Rly. Phone No.:020-73395
Mobile No.: +91-9771447951