

**HILMAN**

Toe Jack Instruction Manual



Models HTJ-5, HTJ-10 and HTJ-25

**HILMAN**

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USER AND MAINTENANCE INSTRUCTIONS FOR HILMAN TOE JACKS



IMPORTANT

This guide must be read and understood before using, maintaining or repairing this jack. The plant manager and the operators must take the following warnings seriously:

- These users and maintenance instructions concern any operator using, maintaining and repairing a Hilman Toe Jack.
- The plant manager must make sure that the operator is aware of all information given in the guide and ensure that this guide is always available when the jack is being used. If the jack is sold, used by other plant managers or operators then these instructions must be handed over.
- It is an impossible task to list and to update all rules and regulations in force in these instructions with regard to all user countries concerned. Consequently, the user must obtain all relevant information and ensure that this information is given to operators and taken into account by them.

1- GENERAL PRECAUTIONS

- This jack can only be used by skilled, competent and trained operators.
- This jack can only be used in compliance with the instructions given in this document. Personal injury and damage to property may occur if the jack is not used in compliance with these instructions.
- The operator must check that the jack is in good general condition prior to using it.
- Never use a jack on which the identification has been erased.
- The manufacturer refuses all responsibilities for any consequences resulting from a change or a modification in the characteristics without his written approval as well as for any repair made by third parties other than himself or his accredited repair shops.

2- DESCRIPTION

2.1. Identification:

Year, models & series no.: stamped on the pump board.

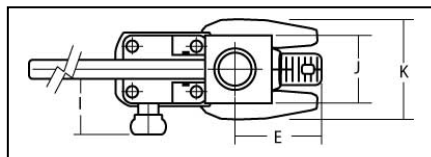
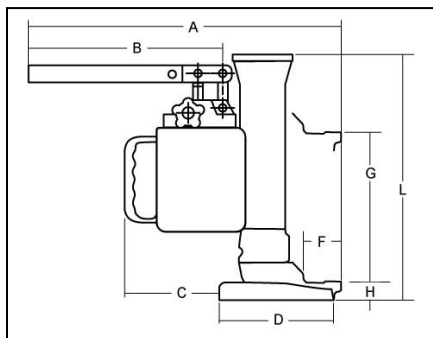
Capacity: embossed on the tank.

2.2. Description

The package contains:
the jack, control handle, retaining pin & these instructions.

Capacity (Tons)	5 T	10 T	25 T
Lift (mm)	206	233	233
Loading height / toe (mm)	25	25	58
Loading height / head (mm)	368	413	470
Load on lever (under full load)	38 daN	40 daN	40 daN
Weight:	24.5 kg	34.5 kg	107 kg
Lowering speed	Adjustable	Adjustable	Adjustable
Use temperatures	0°C ~ +50°C	0°C ~ +50°C	0°C ~ +50°C
Dimensions: (mm)			
A	547/627	582/642	930/1115
B	371/451	371/451	640/825
C	131	134	N/A
D	200	196	330
E	115	120	226
F	55	55	90
G	206	233	233
H	25	25	58
I	90	90	90
J	93	93	160
K	130	170	270
L	368/574	413/646	470/703

Safety Devices: In-plant pre-set limiter
Control handle used to immediately stop lowering



3- HANDLING, TRANSPORT, STORAGE

3.1. Storage

- Store jacks retracted in a dry place.

3.2. Handling, transport

- Jacks should only be handled using the handle provided for this purpose. Avoid carrying jacks using the jacking lever.
- Do not drop or throw jacks. Impacting the outside of the control lever may deform the piston making the pump unusable.
- Before transporting jacks, wedge them so as to stop them from hitting surrounding items.
- Make sure Pressure release knob is in “Closed” position to avoid air being drawn into hydraulic circuit.

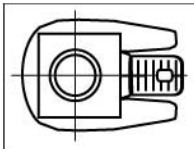
4- ASSEMBLY

The only assembly operation required is to fit the hand tube on the pump lever then to insert the safety pin.

5- USE

5.1. Field of use

The jacks from Hilman are designed for handling objects, lifting or moving loads from a sufficiently resistant and stationary location (for examples: concrete floor) using the toe or the head of the jack. The 5 and 10 Ton jacks can be used either vertically or horizontally. The 25 Ton Jack can be used only vertically. The body can be positioned in relation to the toe and the base so as to be able to lift objects in restricted areas. The toe must always be located above the base so that it can fold into it when the jack is closed (see sketch).



5.2 Operation

Lifting

- Turn the release valve knob in a clockwise direction until it is snug (i.e. Closed Position)
- Pump by moving the jacking in a up and down motion.
- Lifting stops as soon as the jacking lever is no longer moved.

Lowering:

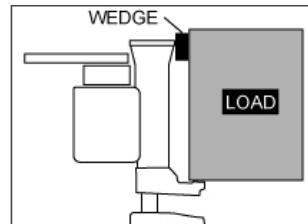
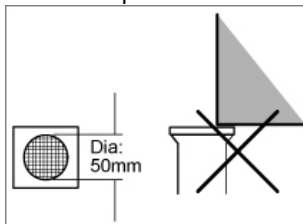
- Slowly loosen the release valve knob by turning it in a counter clockwise direction (i.e. Open Position). The more the knob is loosened the faster the load will be lowered.
- Stopping is instantaneous when the knob is tightened.

Note: When jack is not under a load, it is necessary to press on its head to lower it.

CAUTION: It is strictly forbidden to unscrew parts other than the control handle, except during a maintenance operation.

5.3. Safety precautions

- Lifting loads is dangerous operation. The personnel must be skilled, trained and experienced in this type of operation.
- Never exceed the maximum recommended limit.
- Make sure that load bearing points are resistant and stable (ground, load, etc.) prior to carrying out any operation.
- Only work on flat surfaces.
- Always put a wedge between the floor and the load, prepare it before starting the lifting operation.
- Make sure that the load remains stable during all lifting operations so that it cannot slide or tip over (block travelling plant and apply brakes).
- Never use jacks to lift loads when personnel are standing on it.
- Always set up the operation so that if an unforeseen failure occurs, it does not cause injury to the operator or damage to the environment.
- Never lift up a load with the end of the toe (or cause this situation after the toe has been moved). The toe must be fully fitted in place and the thrust point of the load must never be further away from the barrel than the place where the logo is embossed on the toe.
- Do not, under any circumstances, tamper with the adjustment of the jack's internal relief valve screw.
- Do not add additional load to a lifted load.
- Keep clear of lifted loads.
- When lifting by the toe, wedge the head of the jack on the load to avoid bending the column. Refer to sketch.
- Never lift up a load on the edge of the head of the jack. The load must always cover the top to contact the hatched area shown below.



- Lifting a load with several jacks is always a difficult operation that has to be carefully prepared and supervised. Pay special attention to the transfer of the load during lowering and lifting operations. The total capacity of the jacks used must be appreciable greater than the load to be lifted.

6- MAINTENANCE

IMPORTANT NOTE: Use only original HILMAN spare parts.

6.1. Preventive

A – Before each use

- Check that all plugs and screws are tightened by hand.
- Check that there are no visible signs of an oil leak.
- Check that the barrel, toe and base are not deformed or cracked.
- Check that the pump operates normally when not loaded.

B – Yearly

The frequency of this check should be shortened if the jack is used very frequently.

- Check that all nuts, screws and plugs are tightened. Adjust if necessary.
- When the jack is not under load: pump up to full travel distance until the release valve operates. No signs of leaks should be found (signs of oil on the column or the piston is normal). Release the pressure and inspect the column for signs of impacts, scratches as well as straightness. Replace the column if defective.
- Lower the jack by hand. Check that there are no friction points (slight vibrations are normal.)
- Examine carefully all external parts of the jack.
 - Barrel: deformation, cracks, impact marks.
 - Pump lever: deformation, excessive clearance in pins (replace pins if an excessive clearance is found).
 - Toe: deformation, cracks.
 - Base: deformation, cracks.
- In the event of doubt (especially regarding cracks), do not hesitate in replacing or carrying out any pertinent inspection to check the part.
- All defective parts must be replaced and, most of all, not straightened out, heated or welded.
- Part replacement must be in accordance with the instructions given under disassembly-assembly (paragraph 6.3).

6.2 Malfunction, Failures

FINDINGS	CAUSES / TESTS	REMEDIES
The hand tube is "slack" and the jack does not lift the load.	Try without load to find out if it is the same: Otherwise:	Bleed as in paragraph 6.3.2.E Replace the diaphragm.
The hand tube rises after each time it is pumped.	The check valve leaks.	Retry after pumping several times under no load. If this continues, replace it.
The jack does not lift up nor hold the load.	The load is too high. The relief valve is not fully tightened. If the fault continues	Check the weight of the load, check whether it is stuck somewhere or hooked onto something. Tighten it by hand, then retry. Replace the relief valve.
The hand tube is exceptionally hard to move.	The pump piston is twisted. The valve is seized.	Replace it. Replace it.
The hand tube is exceptionally hard to move and the jack does not lift normally.	Insufficient oil in the diaphragm.	Adjust the quantity of oil, refer to paragraph 6.3.2 E.

6.3. Disassembly - Assembly

These operations should only be carried out by skilled mechanics trained in the maintenance of hydraulic equipment using appropriate tooling.

6.3.1 Disassembly

Follow the instructions below in the given order to disassemble your unit fully.

A - Jack draining

- a) Lift the jack up and maintain the column (2) extended by putting a block between the base and the toe (5).
- b) Remove plug (8).
- c) Drain oil contained in the jack body (1).

B – Pump disassembly

- a) Remove spindle (19).
- b) Remove lever assembly (14), piston (26) and link (17) from the pump.
- c) Remove 4 screws (13).
- d) Separate the pump from the tank by rotating it 1/6th of a turn, using two M 10 screws in the tapped holes of screw (13).
- e) Remove diaphragm (10) from the tank, drain it and wipe it with a clean cloth. (only for 5t and 10t).
- f) Remove protector diaphragm.

C – Column disassembly

- a) Remove spring ring (3) using a pair of pliers. Scrap it.
- b) Remove the column, (2) toe (5) and guide (4) assembly from complete column (2).
- c) Heat guide (4) (~200_C) which was fitted with glue before unscrewing it.
- d) Remove toe (5), O-rings (6) and seals (7).

D- Pump disassembly

- a) Remove valve body (24).
- b) Remove suction valve located at the bottom of valve body (24) by unscrewing stop screw (32). Remove filter (51) located at the bottom of the valve body.
- c) Remove the bleed valve located on the top part of pump barrel (22) by consecutively unscrewing plug (33) and screw (32).
- d) Remove check valve (48) if it has to be replaced.
- e) Remove handle (42).
- f) Remove snap ring (41) before unscrewing the relief valve (34).
- g) Extract sleeve (23) using a press.
- h) Remove seals (27), (28), (29) and (46).

E – Discharge valve disassembly:

WARNING: This operation is not be carried out if you do not have the equipment required to calibrate the available jack.

Loosen nozzle (35) to access ball (36), shuttle (37) and spring (38).

F – Lever disassembly

Remove spindles (18) to separate lever (14) from piston (26) and link (17).

6.3.2. Assembly

Clean all parts, except the seals and the diaphragm, using a degreasing product (e.g.: trichlorethylene) prior to reassembling the jack then carefully dry these parts. Inspect all seals which may have been nicked during disassembly.

A – Column Assembly

- a. Install seals and O-rings (6) and (7) on the lifting toe (5).
- b. Lubricate the bore in the toe (5).
- c. Install toe (5) on column (2).
- d. Screw guide (4) on column (2) after having carefully cleaned threading and put a drop of strong threadlock LOCTITE on one part.
- e. Remove away surplus of threadlock.
- f. Lubricate the machined outer surface of the toe (5).
- g. Fit the completed assembly inside the jack body (1).
- h. Install spring ring (3) which, before installation, is in the shape of a straight wire with rounded ends, curve it slightly and fit it through the rounded part on the edge of the slot made in jack body. Hit the other end with a hammer while maintaining it firmly with pliers.

B- Pump Assembly

- a. Install seals (27), (28) and beta pin (16) on sleeve (23) then lubricate the bore of the pump in which they are fitted.

Caution: For the stage a) use a standard grease and not a silicon grease.
--

- b. Fit the sleeve in the pump barrel using a small hydraulic press.
- c. Install the suction valve in the body of valve (24) in accordance with the order given: ball (30), spring (31) and stop screw (32).

Caution: After the ball (30) has been fitted, hit it with a hammer using a soft steel drift to peen its seat and provide good sealing.

- d. Tighten the valve body (24) to the pump barrel (22) after having installed O-ring (25) and filter (51) using snap ring (50).
- e. Fit check valve (48) in the pump barrel (22).
- f. Install the bleed valve in the pump barrel (22) in the following order: spring (31), ball (30) then stop screw (32).
- g. Fit seals (29) after having coated them with silicon grease. Also coat the bore in the jack body in which the pump is mounted.

C – Relief valve assembly

- a. Assemble spring (38), shutter (37), ball (36) and nozzle (35).
- b. Lubricate O-ring (40) and fit it.
- c. Install relief valve (34) on the pump and fit snap ring (41).

D – Final Assembly of the jack (5 t and 10 t only)

- a. Position the jack vertically and hold the column in $\frac{1}{2}$ extended position.
- b. Fit diaphragm (10) in the tank of body (1).
- c. Fill the diaphragm with 5 CL of oil.
- d. Install pump assembly in its housing in the body. During this operation, make sure to not damage seals (29). A mallet is used for this assembly operation inserting a wooden shim on the top flat surface of the pump. (You can also buy a special tool for the assembly.)
- e. Tighten screws (13).
- f. Fill the jack body (1) through the top port until the oil flows out by the port of plug (8).
- g. Tighten plug (8) on the related seal (9).
- h. Fill the cavity of the piston with oil.
- i. Fit lever assembly (grease the pins) and open discharge valve ($\frac{1}{4}$ of turn).
- j. Lower the jack and purge it with the bleed valve ball in using a rod. Continue until the bubble escape by the bleed port.
- k. Tighten plug (33) on related sealing washer (47).

D – Final Assembly of the jack (25 t only)

- a. Position the jack vertically and hold the column in $\frac{1}{2}$ extended position.
- b. Fill the jack body through the top port.
- c. Tighten plug (8) on related seal (9) by the hand.
- d. Open the discharge valve.
- e. Lower the jack.
- f. Remove plug (8) and fill the jack with oil. First of all remove filter Rep A
- g. Push the bleed located under the filter Rep. A. Continue until the bubbles escape by the bleed port.
- h. Tighten plug (8) on related seal (9).
- i. Fill the cavity of the piston with oil.
- j. Fit lever assembly (grease the pins).
- k. Lift the jack to the top (if the lever becomes “slack” or does not lift normally restart to the stage a).

E – Testing:

Carry out the checks described in paragraph 6.1.B after assembly. Furthermore, if the discharge valve was removed, it would be necessary to check that the calibration of the valve did not change. For this, a load sensor (compression) will be fitted:

- As far as possible, between the toe and a sufficiently strong enough item.
- Otherwise between the head and sufficiently strong enough item.

This sensor should indicate the following values when the jack is actuated and the discharge valve has operated:

	5T	10T
On toe + 0, + 500 daN	5 000 daN	10 000 daN
On head* + - 1 000 daN	7 000 daN	13 000 daN

Calibration on the head is less significant as it depends on efficiency which varies from one jack to another.

IF THESE VALUES ARE NOT OBTAINED:

If they are lower: the jack may be used knowing that it can lift up a smaller load.

If they are greater: replace the discharge valve.

6.4. Maintenance Log

Reminder: The user is bound to keep a maintenance log up to date (Article R.233-12), in order to ensure operator safety.

7. CHECKS: STARTUP / PERIODIC

These checks are mandatory in all countries in EEC. In France, decree 93-41 "Users" dated 11/01/93 and law dated 9/06/93 set down the conditions. Other texts, laws or decrees passed or to be passed since the printing of these instructions will supersede the former mentioned

8. SCRAPPING

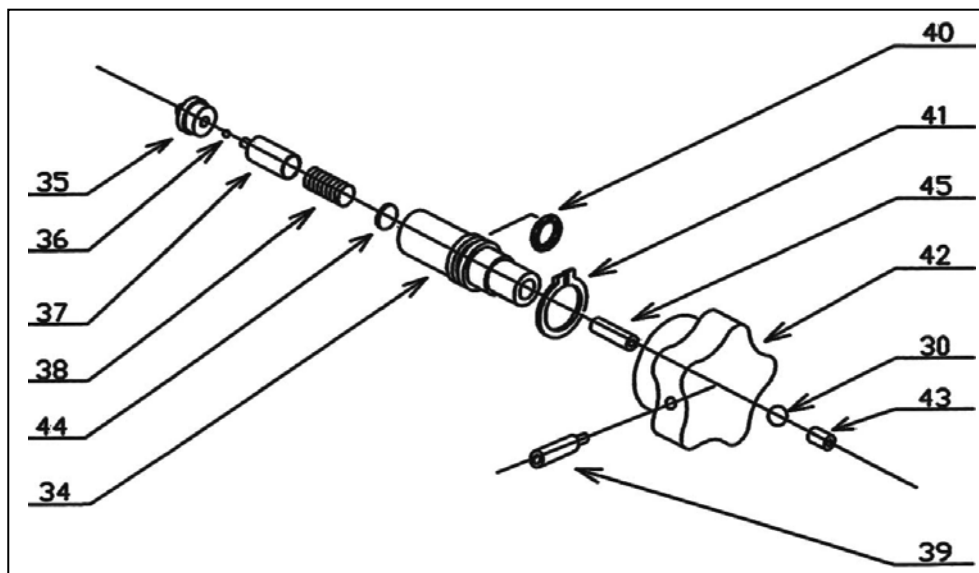
When a jack becomes old or when damage occurred likely to be a source of risk, the user **MUST** eliminate the equipment, i.e. ensure that it cannot be used. To this end (refer to paragraph 6.3):

- Drain the jack, paragraph 6.3.1.A
- Remove the relief valve, paragraph 6.3.1.Df.



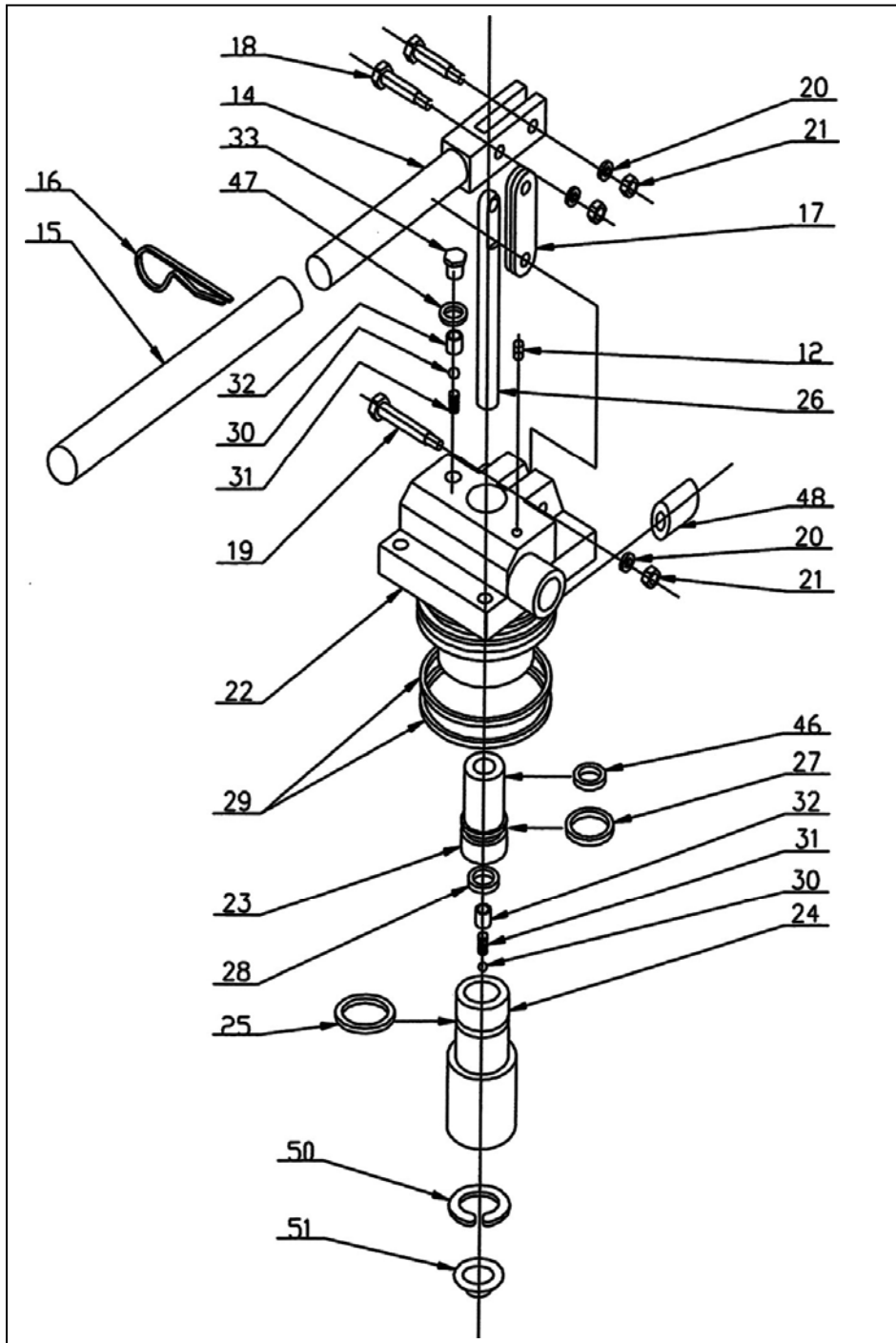
Check out our video on how to fill with oil

DISCHARGE VALVE

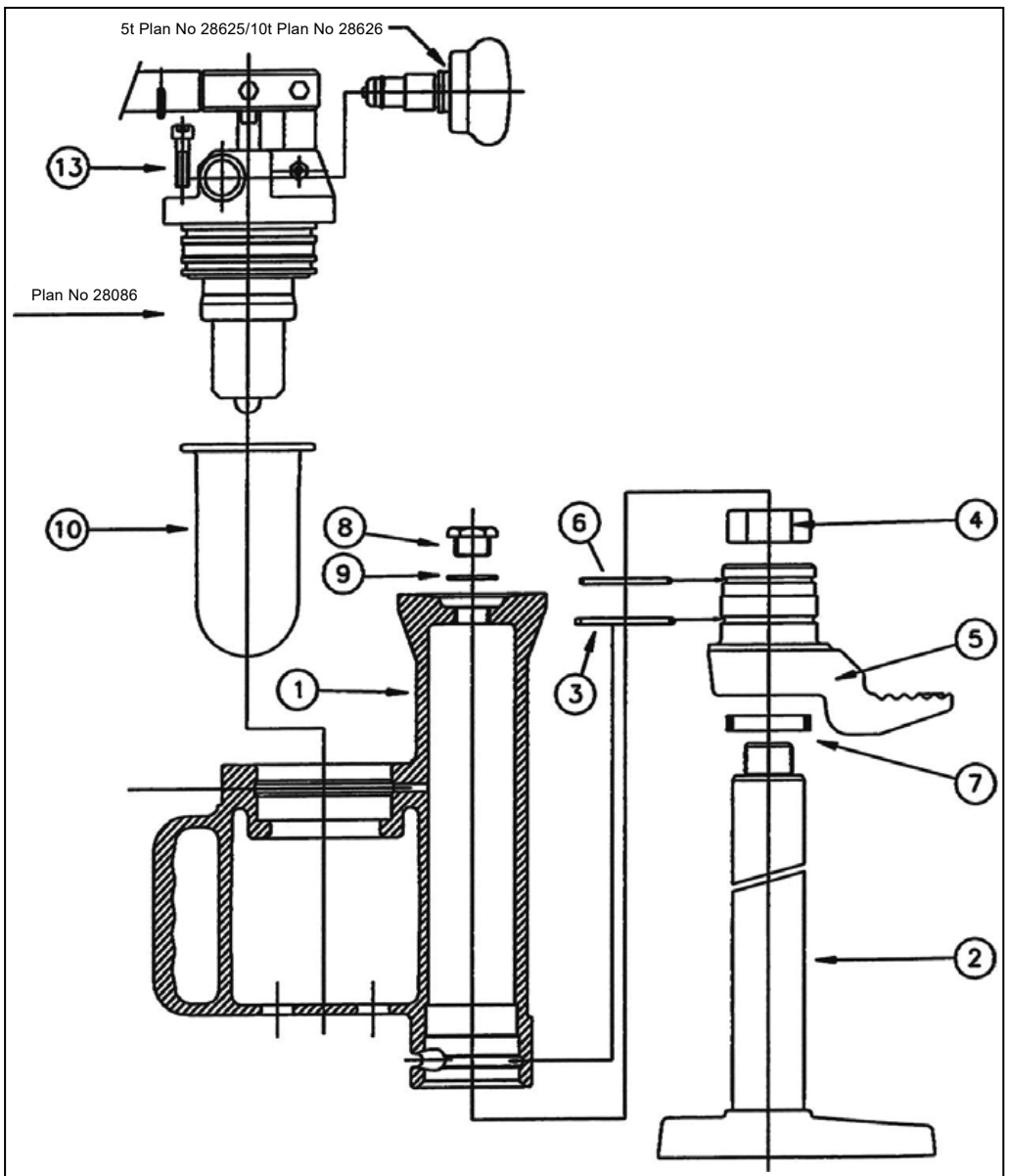


5 Ton Plan No. 28625
10 Ton Plan No. 28626

EXPLODED VIEW: PUMP



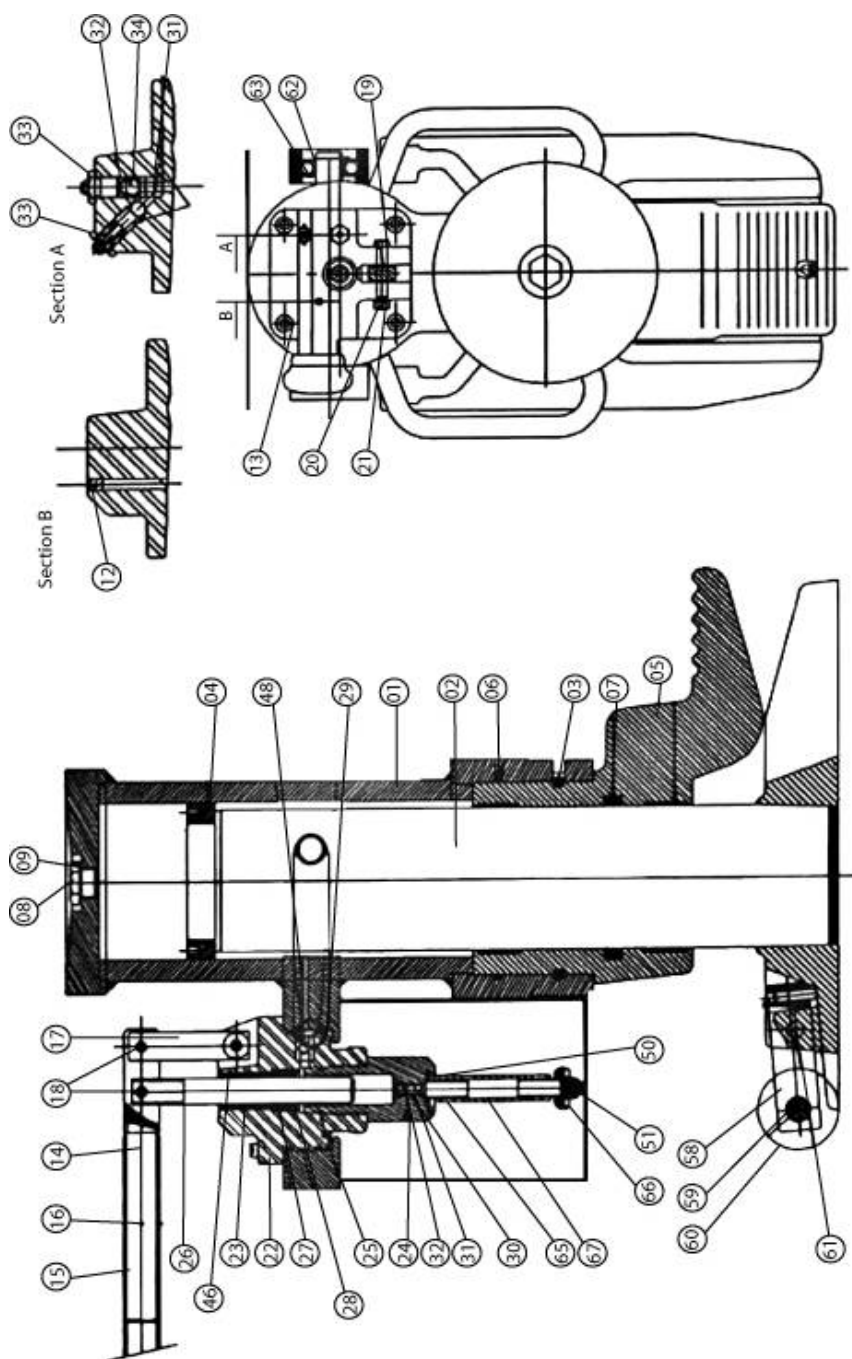
EXPLODED VIEW: 5t AND 10t TOE JACKS



5 & 10T HYDRAULIC JACKS PART LIST

ITEM	QTY	5T JACK	10T JACK	DESCRIPTION
01	1	28502	28503	JACK BODY
02	1	28488	28543	COLUMN
03	1	25618	25642	SPRING RING
04	1	28487	28504	GUIDE
05	1	28481	28482	TOE
06	1	60659	60661	O-RING
07	1	60160	60161	SEAL
08	1	28447	28447	PLUG
09	1	60652	60652	BS SEAL
10	1	26650	27920	DIAPHRAGM
12	1	60494	60494	EXPANDER PLUG
13	4	60300	60300	SCREW
14	1	32735	32735	LEVER
15	1	26656	26656	HAND TUBE
16	1	60174	60174	BETA PIN
17	1	28478	28478	LINK
18	2	28448	28448	SPINDLE
19	1	26668	26668	SPINDLE
20	3	60029	60029	WASHER
21	3	60046	60046	NUT
22	1	28508	28508	PUMP BARREL
23	1	28513	28513	SLEEVE
24	1	28511	28511	VALVE BODY
25	1	60654	60654	O-RING
26	1	28477	28477	PISTON
27	1	60294	60294	SEAL
28	1	60582	60582	SEAL
29	2	60295	60295	SEAL
30	3	60164	60164	BALL
31	2	27047	27047	SPRING
32	2	25627	25627	STOP SCREW
33	2	28089	28089	PLUG
34	1	25631	25631	RELIEF VALVE
35	1	27592	27592	NOZZLE
36	1	60169	60169	BALL
37	1	25633	25633	SHUTTER
38	1	25632	25632	SPRING
39	1	60602	60602	SCREW
40	1	60660	60660	O-RING
41	1	60171	60171	SNAP RING
42	1	25635	25635	KNOB
43	1	60603	60603	SCREW
44	1	28517	28517	WASHER
45	1	60669	60669	SCREW
46	1	60668	60668	SEAL
47	1	60653	60653	SEALING WASHER
48	1	60651	60651	CHECK VALVE
50	1	60671	60671	SNAP RING
51	1	28573	28573	FILTER

Exploded View: 25t Toe Jack



25 TON HYDRAULIC JACKS PART LIST

ITEM	QTY	25T JACK	DESCRIPTION
01	1	28791	BODY
02	1	26638	COLUMN
03	1	28802	SPRING RING
04	1	28803	GUIDE
05	1	28789	TOE
06	1	60705	O-RING
07	1	60666	SEAL
08	1	28447	PLUG
09	1	60652	BS SEAL
12	1	60494	EXPANDER PLUG
13	4	60300	SCREW
14	1	28480	LEVER
15	1	28814	HANDLING TUBE
16	1	60174	BETA PIN
17	1	28808	SMALL ROD
18	2	28448	SHAFT
19	1	26668	SHAFT
20	3	60029	WASHER
21	3	60046	NUT
22	1	28508	PUMP BARREL
23	1	28800	SLEEVE
24	1	28511	VALVE BODY
25	1	60654	O-RING
26	1	28801	PISTON
27	1	60294	SEAL
28	1	60662	SEAL
29	2	60295	SEAL
30	3	60164	BALL
31	3	27047	SPRING
32	2	25627	STOP SCREW
33	2	30607	SHUTTLE
34	1	25631	RELIEF VALVE
35	1	27592	NOZZLE
36	1	60169	BALL
37	1	25633	SHUTTER
38	1	25632	SPRING
39	1	60602	SCREW
40	1	60660	O-RING
41	1	60171	SNAP RING

ITEM	QTY	25T JACK	DESCRIPTION
42	1	25635	KNOB
43	1	60603	SCREW
44	1	28517	WASHER
45	1	60669	SCREW
46	1	60663	SEAL
48	1	60651	VALVE
50	1	60671	SNAP RING
51	1	28573	FILTER
55	1	60225	SNAP RING
56	2	60838	SCREW
58	2	28084	SMALL LINK
59	1	28085	SPINDLE
60	2	26649	RAIL WHEEL
61	2	28809	SHAFT
62	2	60226	SNAP RING
63	2	26648	WASHER
65	1	30111	NOZZLE
66	1	30112	FILTER SUPPORT
67	1	30609	PIPE

LIMITED WARRANTY

We warrant each new Hilman Toe Jack sold by us to be free from manufacturing defects in normal service for a period of one (1) year commencing with delivery of the Toe Jack to the original user. Our obligation under this warranty is expressly limited at our option, to the replacement or repair at Hilman, Incorporated, Marlboro, New Jersey 07746 USA, or at a service facility designated by us, of such part or parts as inspection shall disclose to have been defective. This warranty does not apply to defects caused by damage or unreasonable use, including failure to provide reasonable and necessary maintenance while in the possession of the consumer.

WE SHALL NOT BE LIABLE FOR CONSEQUENTIAL DAMAGES OF ANY KIND, including, but not limited to, consequential labor costs or transportation charges in connection with the replacement or repair of defective parts. We make no warranty with respect to trade accessories. They are subject to the warranties of their manufacturers.

ANY IMPLIED OR STATUTORY WARRANTIES, INCLUDING ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, ARE EXPRESSLY LIMITED TO THE DURATION OF THIS WRITTEN WARRANTY. We make no other express warranty, nor is anyone authorized to make any on our behalf.

*In compliance with 1975 Consumer Product Warranties Law
HILMAN, INCORPORATED, 12 Timber Lane, Marlboro, New
Jersey 07746

HILMAN SERVICE BULLETIN - HTJ-25 TOE JACK

NOTE: Do not lift the jack unless the release valve is fully closed. Lifting the jack with the release valve open will cause air to be sucked into the jack's hydraulic system causing faulty operation.

AIR PURGING PROCESS

Use the following steps to bleed air from the jack in the event it has been accidentally lifted with the release valve open.

- A) Close the release valve.
- B) Pump the jack to full extension without a load.
- C) Loosen the plug (1 1/16 socket) on the head of the jack.
- D) Allow air to bleed out until hydraulic oil starts to flow.
- E) Re-tighten the fill plug.
- F) Check the jack for proper operation.

**HILMAN**

Toe Jack Inspection Certificate

Capacity / Model Number: Serial Number: Manuf. Date:

Inspected by: _____

Inspection Date:

Inspector's Signature:

Approval Stamp:



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