U.S. JACK®

1125 INDUSTRIAL COURT
BENTON HARBOR, MI 49022
WWW.USJACK.COM

INSTRUCTION MANUAL
AND PARTS SHEET
MODEL #: D-51404
1-TON TRUCK AND BUS TRANSMISSION HANDLER HYDRAULIC JACK

NSN 4910-00-585-3622

OPERATING INSTRUCTIONS

1. Upon receiving jack, open release valve and pump handle several times. This will eliminate any airbound condition that may have occurred during shipment.
2. To raise jack, close release valve and operate pump handle.
3. To lower, open release valve.

FIND CENTER OF GRAVITY

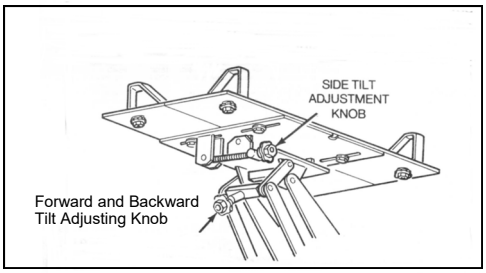
In handling the newer large transmission, it will be noted that they have grown considerably in length. It is important, first, to gauge as accurately as possible the center of gravity of the unit to be removed where you will want to place the jack adapter. On many transmissions this center of gravity is identified by small projecting lugs on the bottom of the case. On others it is located on the drawing of the transmission included in the truck service manual. In any case, you will find it to be toward the rear of the case, from the center. It is important that the transmission be generally in balance when being supported by the jack.

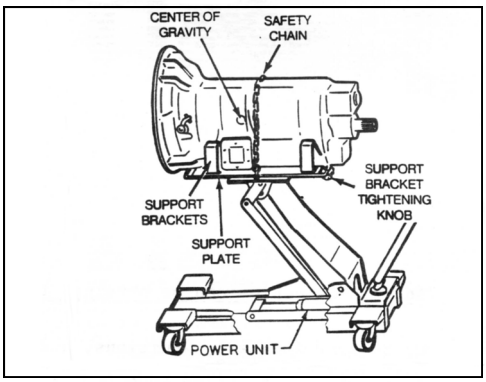
PREPARE TRANSMISSION FOR REMOVAL

1. Prepare transmission for removal in normal manner, by dropping drive shaft, removing projecting levers, accessories ect., and other components of the truck which might interfere when the transmission is lowered. If desired, the parking brake assembly may be removed also.
2. Remove all but three or four bell housing bolts, leaving those near the top, which can be reached when the jack is in place.

JACK PLACEMENT AND OPERATION

1. Place jack beneath transmission case as near to the center of balance as possible. This normally is rearward of the dimensional center of the unit.
2. Place triangle support brackets against transmission. Insert four bolts in nearest support plate holes and fasten with four tightening knobs.
3. Transmission case bottom must rest firmly on jack support plates. If necessary, due to transmission case irregularities, the jack adaptor may be tilted forward, backward, or from sided to side to match bottom contour of transmission case. his tilt adjustment is accomplished through adjustment screw, located on the end of the lift arm below the adaptor.
4. With transmission bottom on adapter plate, slide triangle support to firmly support transmission. (It is important to secure bolt knobs with wrench.) Securely fasten safety chain to hold transmission firmly in place while removing.
5. With jack firmly supporting transmission, complete bell housing bolt removal. Frequently this joint is firmly stuck together and must be forced slightly to break loose. This may be done with the jack by raising then lowering slightly.
6. When transmission has been lowered, it may be necessary, depending on the size of the unit, to jack up the front or rear axle of the truck to get the transmission out from under the truck.
7. Replacement of the transmission is performed in reverse order to removal. Keep in mind the adaptor tilt features which permit minute adjustment for alignment.





SAFETY IN-STRUCTIONS

1. Do not overload. Overloading can cause damage to or failure of the jack.
2. This jack is designed for use only on hard level surfaces capable of sustaining the load. Use on other than hard level surfaces can result in jack instability and possible loss of load.
3. When the jack is used for transporting a load, the lift arm must be in its lowest position. Roll only on hard level surface free of excessive crevices or obstructions.
4. Failure to heed these warnings may result in loss of load, damage to jack and/or failure resulting in personal injury or property damage.

Repair Kit 5-569
Power Unit 5-51903

FAILURE TO OPERATE

1. Release may not be completely closed.
2. Air-bound—see instruction No. 1.
3. Foreign matter in valve line—Repeat instruction No.1
4. Too much oil—Lower to filler screw level.
5. Interior parts may be worn allowing oil to bypass. Contact nearest Authorized Service Center.

MAINTENANCE AND LUBRICATION INSTRUCTIONS

1. Periodically check fluid level in power unit. Filler plug is behind back cover which is removable with four screws. Fluid level should be checked with lift arm in lowest position and with unit on a level surface. Fill to pipe plug level with recommended hydraulic fluid.
2. Keep all moving parts clean and well lubricated. Screw threads on tilt mechanisms require periodic cleaning and lubricating if used in extremely dirty areas.
3. Check all links and structural members for damage or excessive wear.

TO REMOVE POWER UNIT—5-51903

1. Remove roll pin on bridge block at front of ram
2. Disconnect handle socket pin on top of pump piston assembly.
3. Disconnect release knob by removing groove pin.
4. Remove “U” bolt at front of power unit.
5. Remove two (2) bolts holding base to frame.

SETTING THE RELIEF VALVE—See Figure 1
To set the relief valve, turn in the relief valve screw until tight. Pump the power unit until the support plates are at a height of 10 inches. Place a load of 2500 lbs. on the support plates. Lift the load to see if the unit is functioning properly. While pumping, slowly turn out the relief valve screw until the load cannot be lifted. The unit is now set to lift a maximum of 2500 lbs. Place the expansion plug in the relief valve hole to cover the screw and prevent tampering.

After the unit has been rebuilt, an extended load test should be run to determine if all parts have been assembled and tightened correctly. The support plates should be loaded with 2000 lbs. And the lift arm placed at a height of 10 inches. The drop of the support plates after a 30 minute period should not exceed .008 inches.

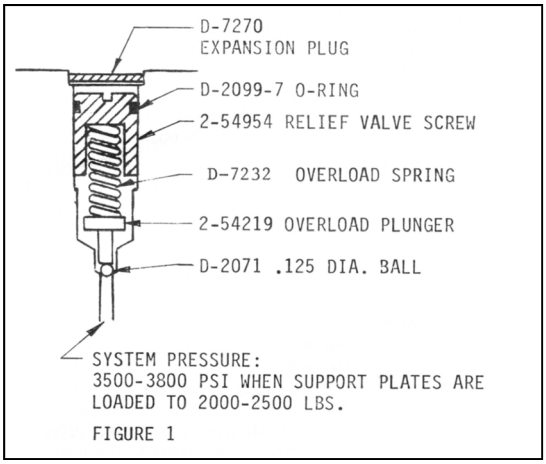


FIGURE 1

TROUBLE SHOOTING THE POWER UNIT

The following schematic drawings and reasons for malfunction are a guide for solving power unit operation problems.

SEE FIGURES 2 AND 3 on Page 4

A. POWER UNIT WILL NOT HOLD THE LOAD

When the power unit is under a load, the oil that is supporting the load is trapped in the cavity bounded by the ram, the release valve, and the discharge ball. If the oil is escaping from that cavity, the jack will slowly retract.

Places from which oil can be escaping are:

1. The release valve, if it is not fully closed or if the seat is damaged.
2. The ram packing, if it is worn out or damaged.
3. The discharge valve, if the seat is damaged or a foreign particles is holding the ball off its seat. If the suction valve is working, this normally results in a “handle raiser”.
4. The valve block casting, if it is porous and incapable of confining high pressure fluids.
5. The ram cylinder, if it is not turned in tight enough to seal on the base.
6. The release insert, if it is not turned in tight enough to seal in the base.
7. The relief valve, if it is not properly set or if the seat is damaged.

B. RAM WILL NOT MOVE WHEN HANDLE IS PUMP.

This could be due to one of the following:

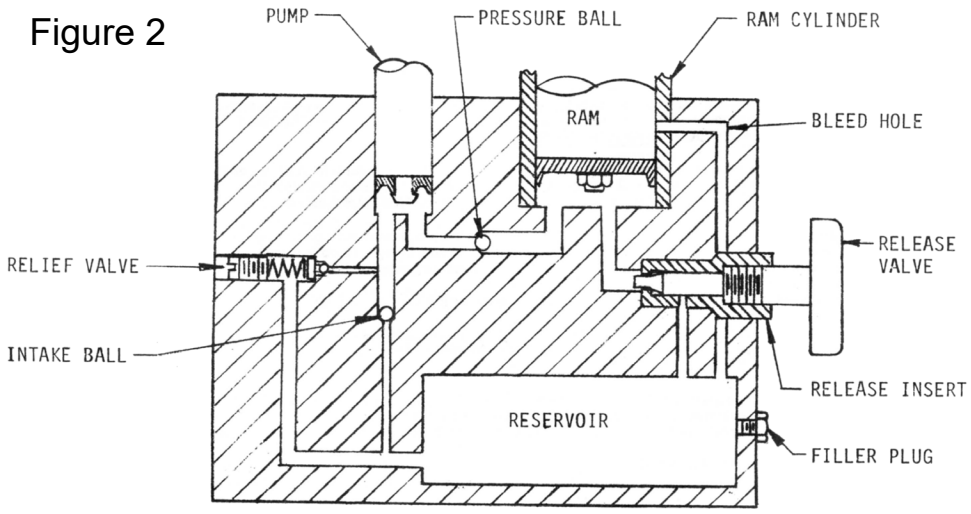
1. There is no oil in the reservoir or oil is low in the reservoir. The oil level should be up to the filler plug hole.
2. The intake valve is not functioning. The ball is either jammed into the seat and will not dislodge or the ball is being held off the seat by foreign materials and the oil merely swishes back and forth.
3. Power unit is air bound. Every jack has air in the reservoir, along with the oil. As long as the air stays at that location, it does not cause any trouble. However, if air finds its way to any other part of the system, the jack might become air bound.

When a large air bubble forms between the intake and pressure ball, the jack usually becomes inoperable. As the pump moves up and down trying to pump oil, the bubble just expands and contracts, preventing the formation of a vacuum in the pump chamber and halting the flow of oil from the reservoir.

A large bubble under the ram is not nearly as damaging, but it gives the ram an annoying “bouncy” action.

To bleed the system of air, make sure the unit is on a level service. With no load on the unit, pump to full height and open the relief valve wide to lower the unit. Remove the reservoir plug to allow any excess air to escape. Repeat this several times and all air should be removed from the pumping chamber.

Figure 2



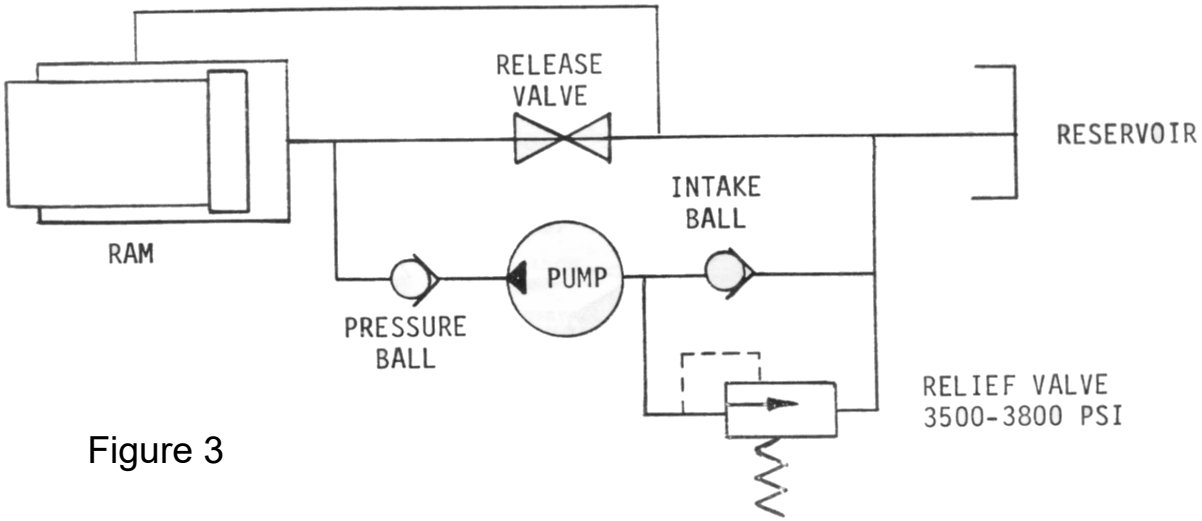


Figure 3

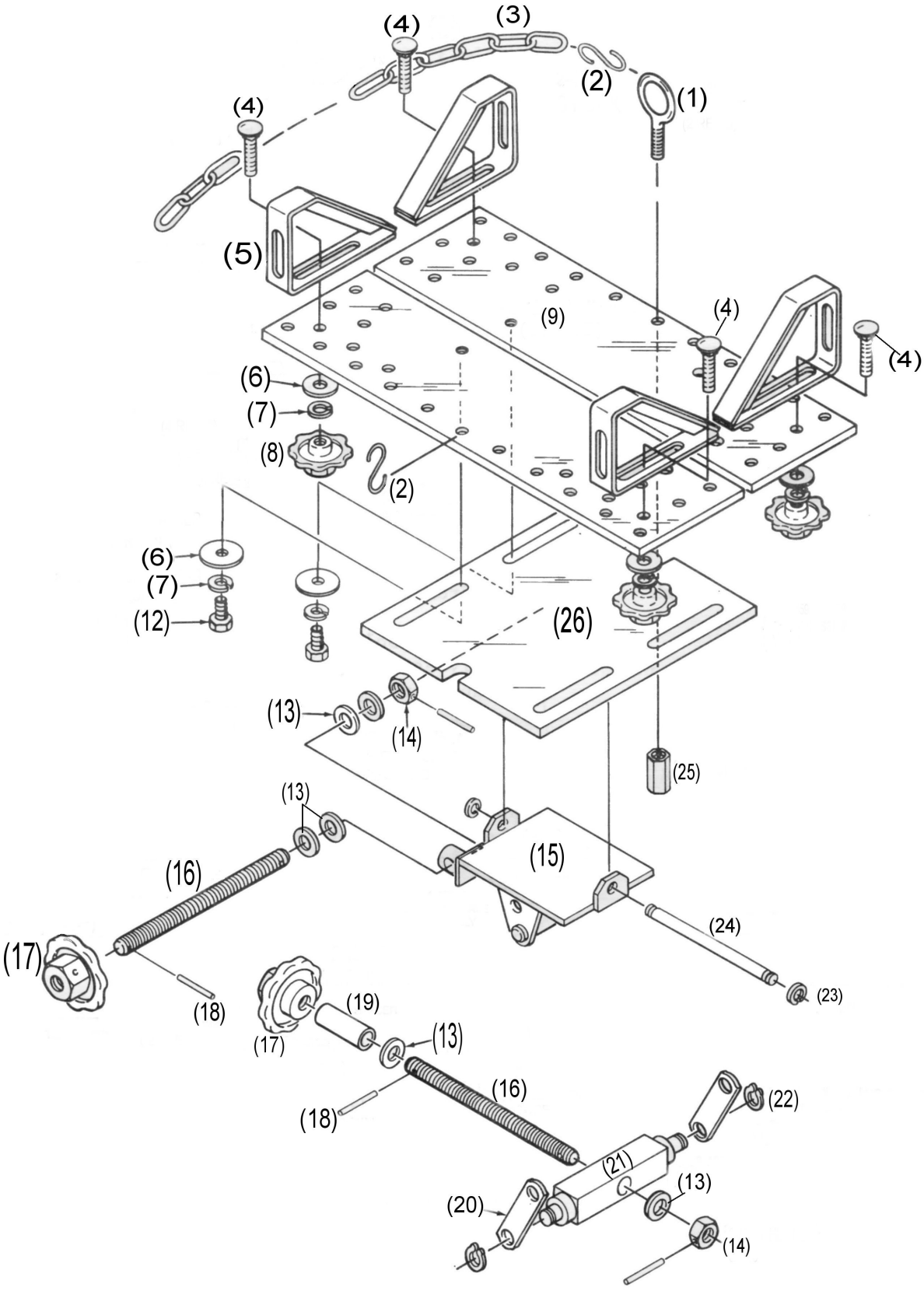
TRANSMISSION LIFT STRUCTURAL DIMENSIONS

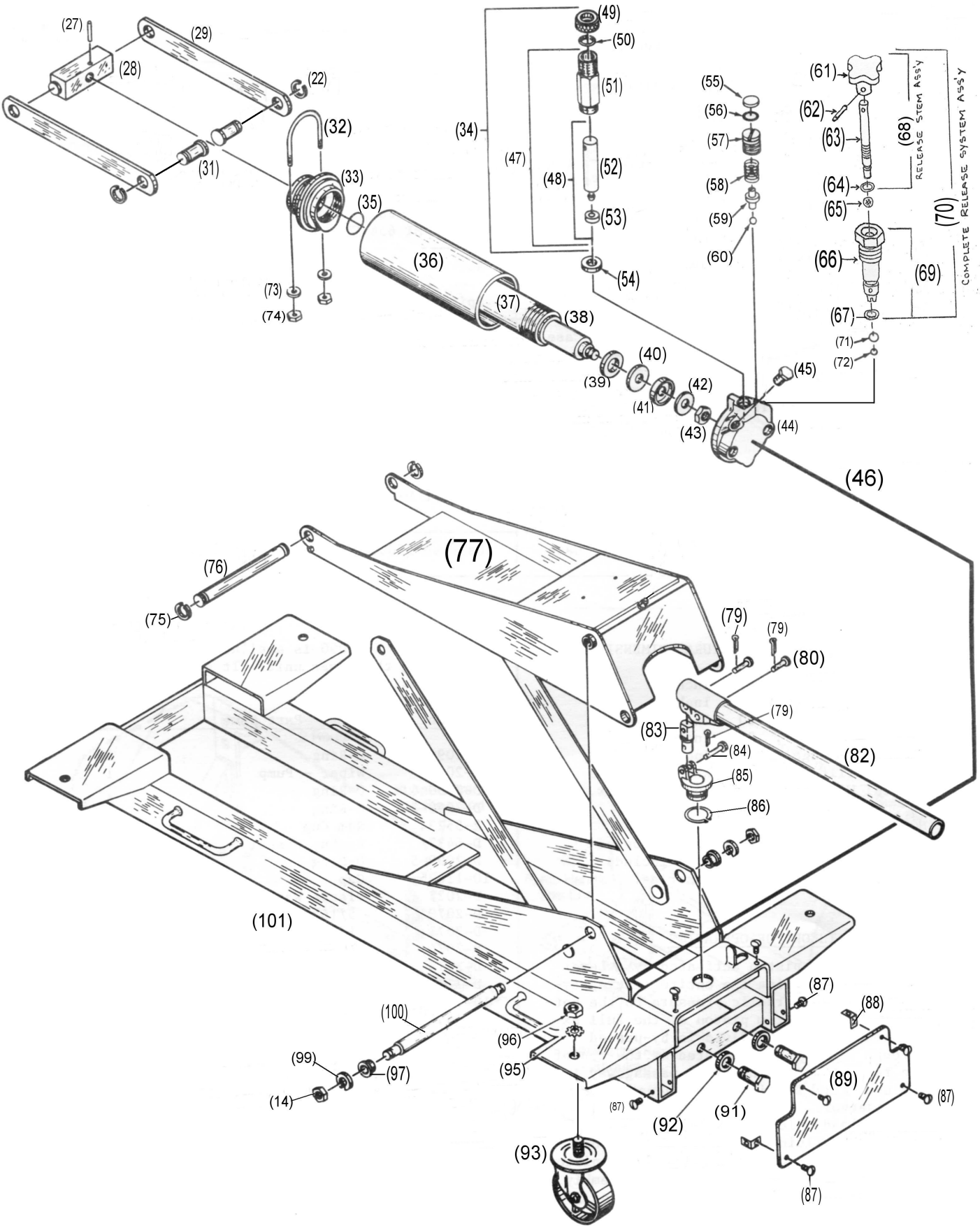
Length…… 47 inches
Width…… 23.5 Inches
Low Height…… . 10 inches
Raised Height… 35 Inches
Lifting Range…… 25 inches
Plate Tilt Angle… 15 degrees All directions
Appx. shipping weight 255 Pounds

NOTE: Low and raised heights are measured from the floor to the top of the support plate and do not include additional height of accessories.

THEORY OF OPERATION

A single piston activated by a lever arm operated during the entire lifting cycle, applies hydraulic pressure to the bottom side of the ram piston at the full extension of the ram; fluid is by-passed through a bleed hole located at the top of the ram assembly, through a passageway in the shell and casting, and evacuates to the reservoir. If the operator attempts to raise a load which exceeds the capacity of the device, fluid pressure builds up on the bottom face of the ram, pump and piston and spring loaded ball and valve assembly. When the pressure exceeds the cracking pressure of the adjustable relief valve, hydraulic fluid is evacuated to the reservoir.


(4)
(3)
(2)
(1)
(4)
(5)
(9)
(4)
(4)
(6)
(7)
(8)
(2)
(6)
(7)
(12)
(26)
(13)
(14)
(25)
(13)
(16)
(15)
(24)
(17)
(18)
(23)
(19)
(17)
(13)
(16)
(22)
(18)
(21)
(13)
(20)
(14)


(27)
(29)
(28)
(22)
(32)
(31)
(33)
(35)
(34)
(49)
(50)
(51)
(47)
(48)
(52)
(53)
(54)
(36)
(73)
(74)
(37)
(38)
(39)
(40)
(41)
(42)
(43)
(44)
(45)
(55)
(56)
(57)
(58)
(59)
(60)
(61)
(62)
(63)
(64)
(65)
(66)
(67)
(68) RELEASE STEM ASS'Y
(69)
(70) COMPLETE RELEASE SYSTEM ASS'Y
(71)
(72)
(46)
(77)
(76)
(75)
(79)
(80)
(83)
(84)
(85)
(86)
(82)
(101)
(100)
(99)
(97)
(14)
(96)
(95)
(87)
(88)
(89)
(92)
(91)
(93)

U.S. JACK COMPANY
PARTS LIST D-51404

ITEM NO.	PART NO.	ITEM DESCRIPTION	REQD
1	2-53332	EYE BOLT	2
2	2-45975	S HOOK	4
3	2-55017	SAFETY CHAIN	2
4	2-58434	BOLT	4
6	2-58730	WASHER	8
7	2-58731	LOCK WASHER	8
8	2-58601	ADJUSTER WHEEL	4
9	2-59992	PLATE	2
12	2-58268	BOLT	4
13	2-45859	WASHER	6
14	2-45857	HEX NUT 5/8-18	4
15	4-45943	SADDLE ASSEMBLE	
16	2-45862	TILT ADJ. SCREW	
17	2-45957	TILT WHEEL	
18	4-45858	PIN .128 X.94	4
19	2-45967	SPACER	
20	2-45935	CONNECTING LINK	2
21	2-45855	BRIDGE BLOCK	
22	D-6049-A	RETAINING 3/4	6
23	D-7254	RETAINING 1/2	2
24	D-8263	SIDE TILT SHAFT	
25	2-58448	NUT	2
26	4-45969	PLATFORM ASSEMBLY	
27	D-7674	ROLL PIN 1/4 x 1-1/4	
28	D-8206	BRIDGE BLOCK	
29	10-10599	LIFT ARM LINK	2
31	D-8211	LIFT ARM LINK PIN	2
32	10-10635	"U" BOLT	
33	10-10600	RESERVOIR HEAD	
34	19-12966	SERVICE PUMP ASSEMBLY	
35*	D-2099-25	"O" RING	
36	10-10594	RESERVIOR	
37	10-10595	RAM CYLINDER	
38	10-10589	RAM CYLINDER	
39	D-2835-A	RAM SPACER	
40*	D-6437	BACK UP WASHER	
41*	D-2834-A	RAM CUP	
42	D-2836	RAM CUP RETAINER	
43	D-2637	JAM NUT	
44	10-10588	PUMP BASE	
45*	10-10342	PIPE PLUG 1/4-18	
46	5-51903	POWER UNIT ASSEMBLY	
47	19-12965	PUMP ASSEMBLY	
48	4-54950	PUMP PISTON ASSEMBLY	
49	10-11740	PACKING NUT	
50*	D-2099-10	PUMP WIPER	
51	10-10598	PUMP CYLINDER	

ITEM NO.	PART NO.	ITEM DESCRIPTION	REQD
52	2-54949	PISTON PUMP	
53*	10-11885	PISTON CUP	
54*	D-2027	PISTON CYLINDER WASHER	
55*	D-7270	EXPANSION PLUG	
56*	D-2099-7	"O" RING	
57	2-54954	RELIEF VALVE SCREW	
58*	D-7232	OVERLOAD SPRING	
59*	2-54219	OVERLOAD PLUNGER	
60*	D-2071	BALL 1/8 DIA.	
61	10-10169	RELEASE KNOB	
62*	2-58745	ROLL PIN	
63	56105	STEM	
64*	D-2099-5	"O" RING	
65*	10-12399	BALL	
66	2-58436	RELEASE	
67*	D-2099-6	"O" RING	
68	56106	RELEASE STEM ASSEMBLY	
69	4-58462	INSERT ASSEMBLY	
70	56107	COMPLETE ASSEMBLY	
71*	D-2070	BALL 5/16 DIA.	
72*	D-2074	BALL 7/32 BALL DIA.	
73	D-5096	LOCK WASHER 1/4"	2
74	SJ-5628	HEX NUT 1/4-20	2
75	D-6049-A	RETAINING RING 3/4	2
76	2-45956	SADDLE SHAFT	
77	19-10809	LIFT ARM ASSEMBLY	
79*	2-58541	CLIP PIN	3
80*	10-12019	LINK PIN	2
82	4-59103	HANDLE SOCKET ASSEMBLY	
83	2-59102	HANDLE SOCKET LINK	
84*	10-10801	PUMP SWIVEL PIN	
85	10-10597	PUMP SWIVEL	
86	2-50576	RETAINING RING	
87	10-10637	MACHINE SCREW 10-24 x 3/8	8
88	10-10633	ANGLE BRACKET	4
89	10-10613	BACK COVER	
91	D-7279	CAP SCREW 1/2-20 x 1-1/4	2
92	D-6094	LOCK WASHER 1/2	2
93	10-10949	CASTER WHEEL	4
95	2-55235	LOCK WASHER	4
96	D-6041	JAM NUT 3/4-16	4
97	10-10606	SIDE FRAME BUSHING	2
99	D-7440	LOCK WASHER	2
100	10-10605	LIFT ARM HINGE PIN	
101	19-10806	FRAME ASSEMBLY	

Repair Kit 5-569 Power Unit 5-51903

ITEMS MARKED WITH * ARE INCLUDED IN THE REPAIR KIT

LIMITED WARRANTY

The manufacturer warrants its products against defective material and workmanship for 2 years from the date of original sale to the Buyer without charge provided that the equipment is shipped, transportation charges prepaid, with proof of date of purchase, to the nearest Authorized Service Depot for inspection. (Do not return to the factory). The Consumer's remedies under this warranty are limited to repair or replacement of parts at the option of the Manufacturer and its designated Authorized Service Depot. This warranty does not cover units that have been altered or attachments added to them which are not recommended by the Manufacturer. Use hydraulic jack oil only; use of other fluids voids this warranty as does unreasonable or improper use, such as overloading, or any other abusive practice or accident.

The duration of any implied warranties arising under state law, including implied warranties or merchantability or fitness for any particular purpose, are expressly limited to the duration of this written warranty.

In the event that the goods sold hereunder are defective or fail to conform to this written warranty or any implied warranty, and recovery of consequential damages is expressly excluded except as such exclusion is expressly prohibited by state law.

WARNING

A. THIS DEVICE IS A LIFTING DEVICE ONLY. THE LOAD SHALL BE SUPPORTED IMMEDIATELY BY OTHER APPROPRIATE MEANS.

B. DO NOT OVERLOAD. OVERLOADING CAN CAUSE DAMAGE TO OR FAILURE OF THE JACK.

C. LIFT ONLY ON AREAS OF THE VEHICLE AS SPECIFIED BY THE VEHICLE MANUFACTURER.

D. THIS JACK DESIGNED FOR USE ONLY ON HARD, LEVEL SURFACES CAPABLE OF SUSTAINING THE LOAD. USE ON OTHER THAN HARD, LEVEL SURFACES CAN RESULT IN JACK INSTABILITY AND POSSIBLE LOSS OF LOAD.

E. FAILURE TO HEED THESE WARNINGS MAY RESULT IN LOSS OF LOAD, DAMAGE TO THE JACK, AND/OR FAILURE RESULTING IN PERSONAL INJURY OR PROPERTY DAMAGE.

U.S. JACK®

1125 Industrial Court Benton Harbor, MI 49022
PH 269-925-7777 Fax 269-925-6656
www.usjack.com