

Effective: October 25, 2005

OWNER'S (OPERATOR'S) MANUAL

FOR

**HARRINGTON
STATIC & DYNAMIC
LOAD TESTER**

Model SHLT/DHLT

BEFORE USING THIS PRODUCT:

ALWAYS READ OWNER'S MANUAL

ALWAYS SAVE THIS BOOK FOR FUTURE REFERENCE

HARRINGTON
HOISTS AND CRANES

TABLE OF CONTENTS

1. ASSEMBLY INSTRUCTIONS FOR LOAD TESTER FRAME	3
1.1 Frame Assembly	3
1.2 Assembly of Static Option	9
1.3 Assembly of Dynamic Option	10
2. SEQUENCE OF OPERATIONS FOR STATIC HOIST LOAD TESTER	11
2.1 Load Testing a Manually Operated Hoist	11
3. SEQUENCE OF OPERATIONS FOR DYNAMIC HOIST LOAD TESTER	13
3.1 Load Testing an Electric Operated Hoist	13
3.2 Load Testing a Manually Operated Hoist	15
3.3 Trouble Shooting Tips	16
4. PARTS LIST	19
4.1 Step Assembly (50767)	19
4.2 Winch Assembly	20
4.3 Trolley Beam Assembly (50973)	21
4.4 Link Support (50614)	22
4.5 Electro-Hydraulic Base Assy. for Dynamic Option	23
4.6 English/Metric Tester Frame Assembly	24
4.7 English/Metric Tester Assembly - Static Option	27
4.8 English/Metric Tester Assembly - Dynamic Option	28
4.9 Electrical Components and Wiring Subassembly - Dynamic Option	31

1. ASSEMBLY INSTRUCTIONS FOR LOAD TESTER FRAME

Note: Please refer to drawing 50979 on page 26 entitled English/Metric Tester Frame Assembly. This portion of the assembly instructions is identical for either static or dynamic options.

Recommended Equipment:

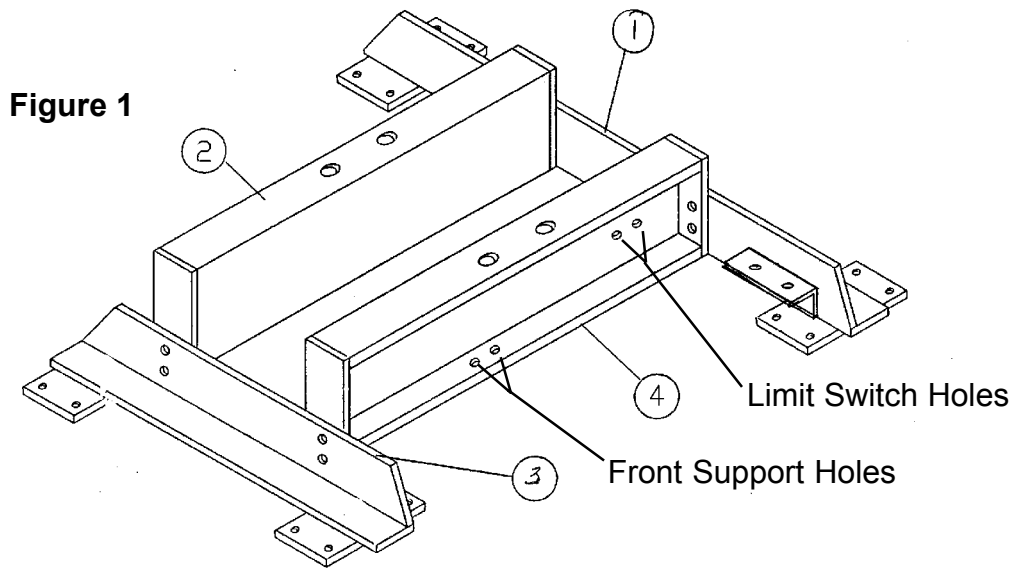
Forklift or hoist with a minimum capacity of one ton, various hand tools and two qualified assembly personnel.

Note: Please review this entire portion of the assembly instructions prior to beginning the assembly of the hoist tester frame. Follow the steps listed below for assembly of your hoist tester frame.

1.1 Frame Assembly

Step 1: Assembly of the hoist tester base item (5) on drawing 50979, page 26.

- a.) Locate all component parts for the base assembly and orient them according to Figure #1.
Note: Be sure that the support beam (4) with the front support holes is oriented on support angle B (1) as shown in Figure #1.
- b.) Secure the entire assembly by using eight (8) M16x65mm long bolts, item (16), eight (8) M16 lock washer, item (18), and eight (8) M16x20 nuts, item (19), as shown on drawing 50979.
- c.) Make certain that these fasteners are tight by applying 187 foot-lb of force using a torque wrench.
- d.) Install two plain caster, item (30), and two (2) swivel casters, item (31), to the frame using sixteen (16) 1/2x13x1 1/4" long bolts, item (26), sixteen (16) 1/2" diameter flat washer, item (28), sixteen (16) 1/2" diameter lock washers, item (27), and sixteen (16) 1/2-13 nuts, item (29), as shown on drawing 50979.
Note: The swivel casters are located on the front or narrow portions of the base. After tightening all fasteners lock the brakes on the swivel casters to prepare for the remainder of the assembly.



Step 2: Assembly of the lower beam, Figure #2, and the vertical column, Figure #3. Examine drawing #50979 for correct orientation of the lower beam, Figure #2, the vertical column, Figure #3 and the base assembly Figure #1.

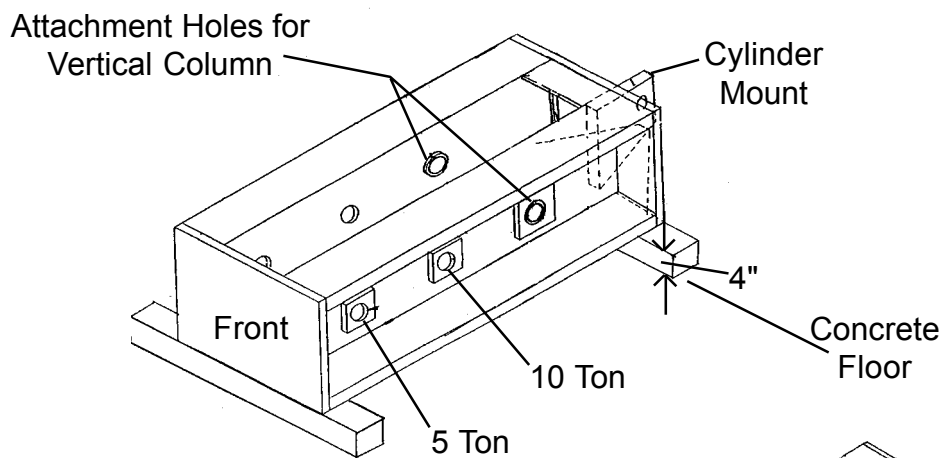


Figure 2

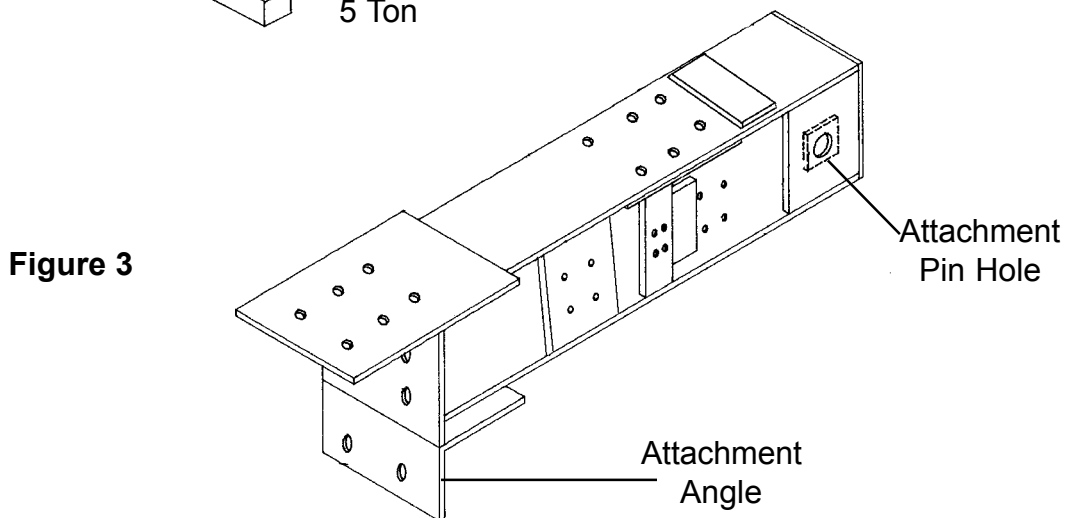
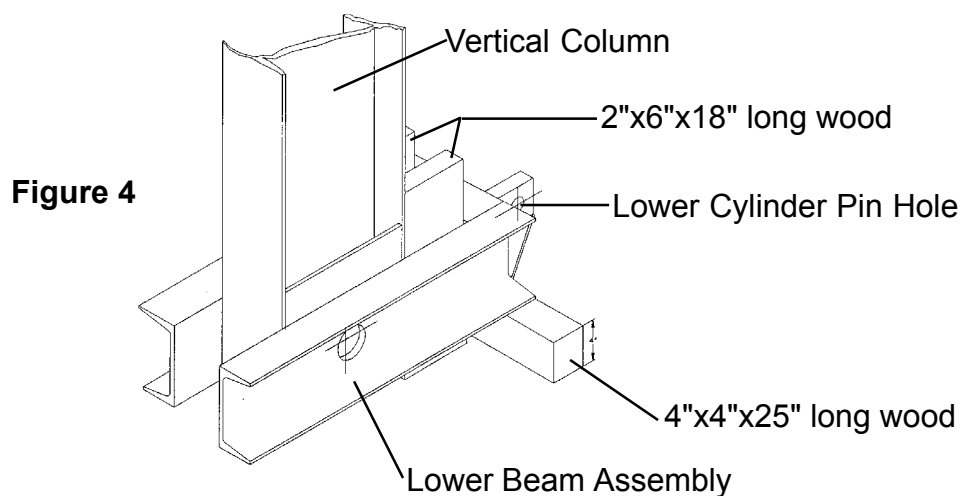


Figure 3

- a.) Remove the lower beam assembly, Figure #2, from the shipping crate using a forklift or bridge crane.
- b.) Locate the lower beam assembly securely on heavy blocks to allow approximately 4" of clearance between the bottom of the lower beam and a smooth flat surface preferably a concrete floor, as shown in Figure #2.
- c.) Select three long pins, item (7), and one orange colored size 1 1/4" master link, item (10), and one yellow colored size 1" master link, item (9). Also select six (6) M8x60mm long bolts, item (32), and six (6) M8 lock nuts, item (33) all shown on drawing 50979. Insert two (2) of the long pins in the pin holes labeled 5 ton and 10 ton, sliding them partially through the lower beam. Place the orange 1 1/4" master link on the pin at the 10 ton location and the yellow 1" master link on the pin at the 5 ton location. Now slide the pins the remainder of the way through the lower beam and secure them by placing the M8x60mm long bolt with lock nut at each end of the two pins, as shown in section A-A on drawing 50979.
- d.) Remove the vertical column, Figure #3 from the shipping crate using a forklift, trolley/hoist, or bridgecrane.
- e.) Orient the vertical column in a vertical position with the attachment pin hole at the bottom and the attachment angle in a position pointing toward the front of the lower beam. See Figures 2 and 3.
- f.) Lift the vertical column high enough to clear the lower beam and center the attachment pin hole in the vertical column directly above the attachment hole for the vertical column in the lower beam.
- g.) Lower the vertical column down between the two horizontally oriented channels of the lower beam and align attachment holes between the beam and the column.
- h.) Slide the third long pin, item (7), drawing 50979 through the attachment holes coupling the beam and column together. Install M8x60mm long bolts, item (32), and 8 lock nuts, item (33), as shown in section A-A on drawing 50979.
- i.) Slide two pieces of 2"x6"x18" long wood through the opening between the rear of the vertical column and the rear of the lower beam allowing them to bottom on the floor and extend vertically upward along the column. See Figure #4 below. These blocks of wood will prevent the lower beam from rotating about the attachment pin.



Step 3: Assembly of vertical column, Figure #3, and lower beam, Figure #2, to base assembly, Figure #1.

- a.) Lift the coupled vertical column and lower beam assembly by attaching to vertical column. Lift high enough to clear the base assembly and move directly over the base assembly.
- b.) Lower the vertical column and lower beam until the outriggers, Figure #5, can be attached to the base and vertical column.
- c.) Before installing the outriggers place the six (6) M20x46x100 bolts, item (13), with six (6) 3/4" flat washers, item (54), through the holes on the rear flange of the vertical column. These bolts will be used to attach the cylinder mount during a later step in the assembly instruction. These bolts must be placed with the threads pointing toward the rear of the load tester and must be inserted prior to the installation of the outriggers to avoid interference.
- d.) Fix both outriggers into position using four (4) M16x65mm long bolts, item (16), pushing through the lower attachment holes of the outriggers and through the attachment holes on the base. Secure the outriggers by placing M16 "U" washer, item (34), and M16 nuts, item (19), as shown on drawing 50979. Do not tighten these nuts until the remainder of the attachment bolts have been placed in the upper holes of the outriggers.
- e.) Align the upper holes of the outriggers and the vertical column attachment holes by using a drift punch until the four (4) M16x65mm long bolts, item (16), have been placed through the alignment holes at the top of the outrigger shown in drawing 50979. Secure the four (4) bolts with M16 flat washers, item (17), lock washer, item (18), and nuts, item (19).
- f.) Make certain that all M16 fasteners are tight by applying 187 foot-lb of force using a torque wrench.

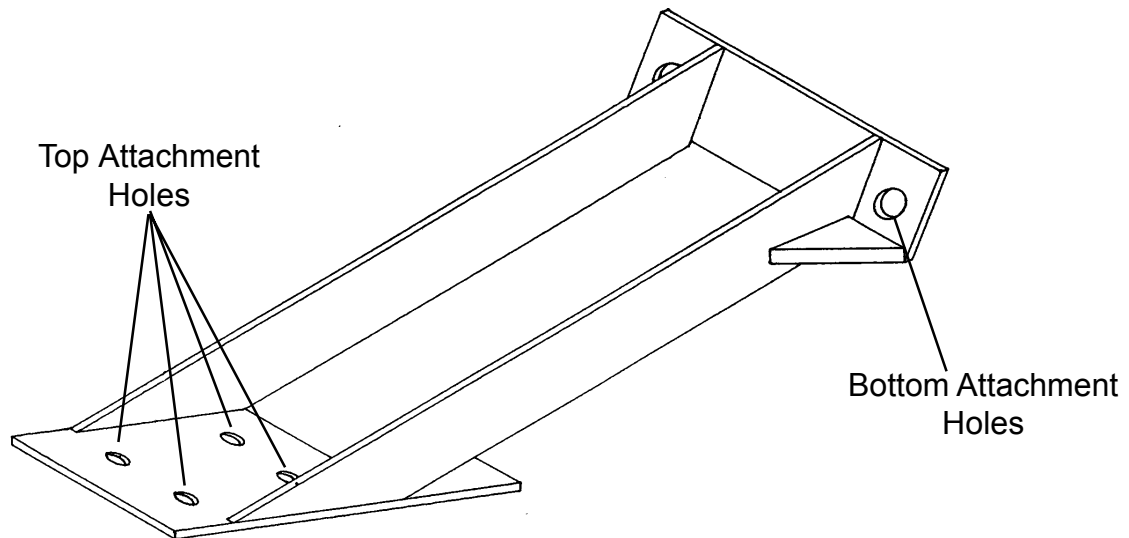
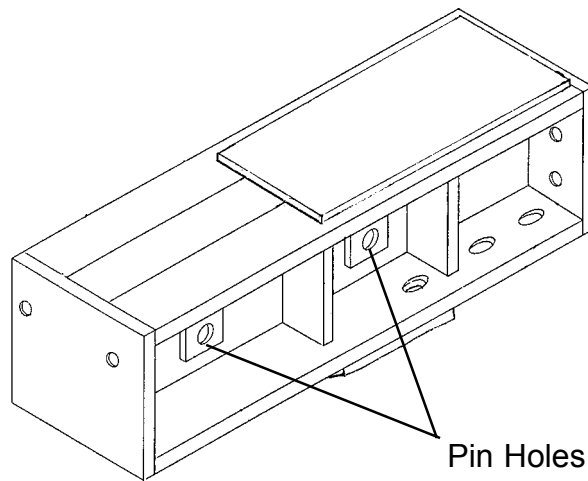


Figure 5

Step 4: Assembly of top beam, Figure #6, to vertical column, Figure #3.

- a.) Remove the upper beam, Figure #6, from the shipping crate using a forklift or bridgecrane.
- b.) Lift the upper beam, Figure #6, to the top of the vertical column and couple them by inserting six (6) M20x75mm long bolts, item (13), six (6) M20 lock washer, item (14), and six (6) M20x2.5 nuts, item (15), as shown on drawing 50979. Also insert six (6) M16x65mm long bolts, item (16), six (6) M16 "U" washers, item (34), six (6) M16 lock washers, item (18), and six (6) M16x2.0 nuts, item (19), shown on drawing 50979.
- c.) Make certain that all fasteners are tight by applying 187 foot-lb to the M16 fasteners and 367 foot-lb to the M20 fasteners, using a torque wrench.

Figure 6



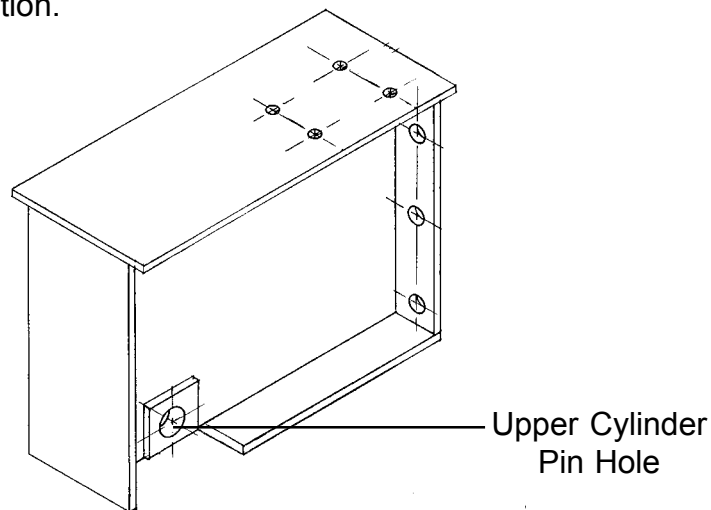
Step 5: Assembly of master links, item (9) and (10), to the upper beam as shown on drawing 50979.

- a.) Select the two (2) remaining short pins, item (7), and the one (1) remaining orange colored size 1 1/4" master link, item (10), and the yellow colored size 1" master link, item (9).
- b.) Insert the two (2) short pins into the pin holes and slide them partially through the top beam.
- c.) Place one (1) orange size 1 1/4" master link on the pin closest to the vertical column and labeled 10 ton and place the yellow size 1" master link farthest away from the vertical column and labeled 5 ton. Now slide the pins the remainder of the way through the top beam and secure them by placing one (1) M8x60mm long bolt, item (32), and an M8 lock nut, item (33), at each end of both pins as shown in section A-A drawing 50979.

Step 6: Assembly of cylinder mount, Figure #7, to vertical column, Figure #3 as shown on drawing 50979.

- a.) Remove the cylinder mount from the shipping crate using a forklift or bridgecrane.
- b.) Select six (6) M20 "I" taper washers, item (12), six (6) 3/4" flat washers, item (54), and twelve (12) M20x2.5 nuts, item (15).
- c.) Lower the cylinder mount and carefully align and slide over the six (6) M20 bolts protruding through the vertical column. The cylinder mount must be oriented so that the cylinder pin hole is located at the bottom rear corner of the cylinder mount.
- d.) Now place the six (6) M20 "I" taper washers, the six (6) 3/4" flat washers, and the six (6) M20 nuts respectively on the bolts. Make certain the nuts are tight by applying 367 foot-lb of force using a torque wrench. Now place one (1) each M20 nut in addition to the existing nuts and torque to ensure that the fasteners will remain secure during operation of the test stand. See drawing 50979 for details and orientation.

Figure 7



Step 7: Assembly of winch to tester frame. See assembly on page 20 and drawing 50979 page 26.

- a.) Select the components as shown on the winch assembly drawing page 20.
- b.) Assemble the RH and LH pulley mounts, items (1) and (4) page 20, and pulleys with components, items (6), (7), and (9), prior to attaching them to the tester frame. Be sure the mounting holes are oriented correctly as shown in the assembly drawing page 20. The ends of the frame with two (2) mounting holes are located to the front of the tester and the ends with the single mounting holes to the rear. Place all three (3) pulleys, pulley spacers, and pulley bushings in position and attach by using three (3) M12x70mm long bolts, item (50), three (3) M12 lock washers, item (47), and three (3) M12x1.75 nuts, item (46), as shown on assembly drawing 50979. Do not tighten nuts until after attaching to the tester frame.

- c.) Attach front and rear mounting brackets, items ② and ③ on winch assembly page 20, to the tester frame in their respective positions. See also drawing 50979 page 26, items ⑳ and ㉑ for correct placement.
- d.) Assemble pulley mounts and pulleys to frame by using two (2) M10x40mm long bolts, item ㉒, two (2) M10 lock washers, item ㉓, and two (2) M10x1.5 nuts, item ㉔. Tighten all fasteners located on this pulley mount.
- e.) Attach the winch, item ⑤, on page 20, to the tester by placing it on top of the cylinder mount as shown on drawing 50979 page 26. Use four (4) M10x40mm long bolts, item ㉒, four (4) M10 lock washers, item ㉓, and four (4) M10x1.5 nuts, item ㉔, to secure winch to load tester frame.

This completes the assembly of the frame for your hoist load tester. Please refer to section 1.2 if you have the static option or section 1.3 if you have the dynamic option.

1.2 Assembly of static hydraulic cylinder assembly to the tester frame assembly

- a.) Remove the static hydraulic cylinder assembly, item ⑫ on drawing 50979-1, from the shipping crate with a forklift or crane.
- b.) Select two (2) "U" bolt assemblies, item ㉒, from the hardware packet.
- c.) Lower the winch cable and attach it to the 1" master link in the lower beam assembly. Raise the winch which will lift the lower beam until the 2"x6"x18" long wood can be removed from between the rear of the lower beam and the vertical column.
- d.) Remove the lower pin from the cylinder (end opposite the rod end) and tilt the upper yoke away from the rear of the vertical column and gently slide the lower yoke over the lower beam cylinder mount, (see Figure #2 page 4 and 27). Lower the cylinder assembly until the holes in the yoke of the cylinder and the lower beam cylinder mount align. Insert the lower pin and replace the fixing clip to secure the lower yoke to the hoist tester frame. Now tilt the rod end of the cylinder forward adjusting the lower beam by raising or lowering the winch until the rod end holes align with the upper cylinder pin hole of the cylinder mount. Insert the upper pin and replace the fixing clip to secure the upper yoke to the cylinder mount.
- e.) Attach the pressure gauge to the appropriate location using the "U" bolt assemblies, item ㉒, as shown on drawing 50979-1.

1.3 Assembly of dynamic hydraulic system to hoist load tester frame, drawing 50924

- a.) Remove dynamic hydraulic system from the shipping crate using a forklift or crane.
- b.) Select the dynamic option hardware packet, the front support, item (4), and the DHLT stand cover, item (6) page 23.
- c.) Attach the front support, item (4), as shown on drawing 50924 to the base assembly of the load tester frame using two (2) M12x40mm long bolts, item (18), two (2) M12 "U" taper washers, item (19), two (2) M12 lock washers, item (20), and two (2) M12x1.75 nuts, item (21), as shown on drawing 50924. Tighten securely before proceeding to the next step.
- d.) Lower the dynamic hydraulic system assembly orienting the accumulator end according to drawing 50924. Fasten the system by inserting two (2) M12x40mm long bolts, item (18), through the rear mounting holes in the pump base and through the holes in the mounting angle, item (6), at the rear of the tester base, see Figure #1 and drawing 50924. Secure by placing two (2) M12 lock washers, item (20), and two (2) M12x1.75 nuts, item (21), onto the M12 bolts, item (18), and tighten.
- e.) Refer to parts "c" and "d" of section 1.2 for installation of cylinder assembly.
- f.) Attach the pressure gauge/adjusting valve to the appropriate location using two (2) M10x75 long bolts, item (25), two (2) M10 lock washers, item (12), and two (2) M10x1.5 nuts, item (13), as shown on drawing 50924 page 23.
- g.) Attach the lower arm limit switch assembly, item (39), to the base of the test stand using two (2) M8x20 socket head cap screws, item (40), and two (2) M8 lock washer, item (16), as shown on drawing 50924 page 30. Set the cam roller of the limit switch so it will activate the limit switch as the lower beam assembly is lifted and before the cylinder is fully extended. The measurement of the length of the rod that is extended when the limit switch is activated is approximately 4 1/2".
- h.) Attach the electrical enclosure, item (5), to the mounting bracket on the vertical column using four (4) 1/4-20x1 1/4" long bolts, item (6), four (4) 1/4" flat washers, item (7), and four (4) 1/4-20 nuts, item (8), as shown on drawing 50924.
- i.) Remove plug with red tag from pump oil tank and replace with vented cap.

This completes the assembly of the dynamic option of your hoist load tester. Please refer to the operation instructions for initial set up and operation of your tester.

2. SEQUENCE OF OPERATIONS FOR STATIC HOIST LOAD TESTER



WARNING

IMPROPER test stand use could result in death or serious injury.

To avoid these hazards:

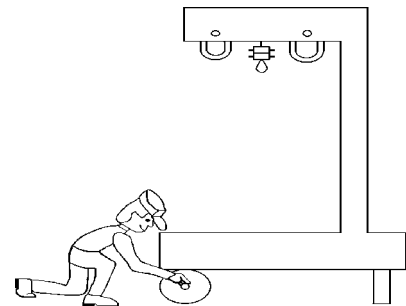
NEVER overload unit.

ALWAYS operate, inspect and maintain this test stand with operator safety as a goal.

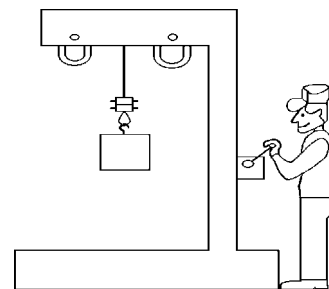
ALWAYS read owner's manual and safety instructions prior to use.

2.1 The following is a suggested procedure for load testing a manually operated hoist.

Step 1: If the hoist tester is mounted on casters, insure that the caster pivot and rolling locks are engaged.



Step 2: Always use the winch to lift heavy units into place.



Step 3: Using the hoist tester winch and hoist tester step, suspend a 1/4 to 5 ton hoist from front top link (yellow, size 1) or 6 to 10 ton hoist from the rear top link (orange, size 1 1/4).

Step 4: Engage the bottom hook through the corresponding master link on the lower beam assembly and remove the slack from the load chain.

Step 5: Review the calibration chart and locate the pressure setting that corresponds to the rated capacity of the hoist being tested.

Step 6: Operate the hoist in accordance with proper load lifting procedures. Monitor the pressure gauge until the desired pressure is reached.

Step 7: Leave the hoist suspended for 30 to 60 seconds and observe the gauge to be sure the pressure doesn't fluctuate. This will ensure that the hoist load brake is functioning properly.

Step 8: Lower and remove the hoist from the tester. The test is now complete.

⚠ CAUTION

Maximum cylinder stroke is 8". Do not try to exceed this value. Hoist and test stand overload will occur.

⚠ CAUTION

Do not overload the hoist tester. Overloading will shorten the life of the unit or cause a possible accident and will void the warranty.

If gauge pressure reading exceeds 1800 psi, **STOP OPERATION...** the hoist tester has reached its limit.

Do not switch links from 5 ton capacity to 10 ton capacity.

Do not overload the hoist beyond 125% of its rated capacity.

Anytime the cylinder lines are disconnected, the hoist tester **MUST BE RECALIBRATED.**

Calibration of the hoist load tester is recommended on an annual basis.

3. SEQUENCE OF OPERATIONS FOR DYNAMIC HOIST LOAD TESTER



WARNING

IMPROPER test stand use could result in death or serious injury.

To avoid these hazards:

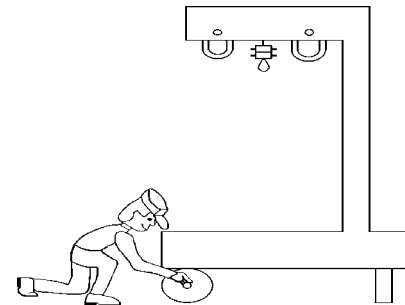
NEVER overload unit.

ALWAYS operate, inspect and maintain this test stand with operator safety as a goal.

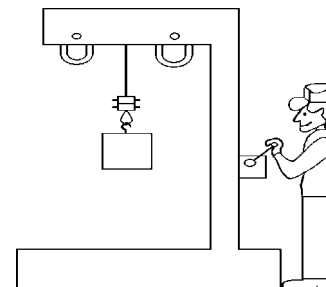
ALWAYS read owner's manual and safety instructions prior to use.

3.1 The following is a suggested procedure for load testing an electric operated hoist.

Step 1: If the hoist tester is mounted on casters, insure that the caster pivot and rolling locks are engaged.



Step 2: Always use the winch to lift heavy units into place.



Step 3: Using the hoist tester winch and hoist tester step, suspend a 1/4 to 5 ton hoist from front top link (yellow, size 1) or 6 to 10 ton hoist from the rear top link (orange, size 1 1/4).

Step 4: If the hoist is a Harrington ES series hoist, select the cord assembly with 5P plugs on both ends. Next plug the one 5P plug into receptacle on the electrical enclosure on the hoist test stand and the other 5P plug into the area where the pendant plug is normally inserted at the lower portion of the electrical enclosure of the hoist.

Step 4: Continued - If the hoist is a competitors model select the cord assembly that has one 5P plug on one end and wire pig tails on the other end. Place the 5P plug into the receptacle on the enclosure on the hoist test stand. Remove the cover from the electrical enclosure of the competitors hoist and attach the wire matching the labels on the wires to the corresponding function of the hoist.

⚠ CAUTION Never use the pendant that was provided with the hoist to perform the load test. Using the pendant provided with the hoist will bypass the limit switch on the hoist load tester. This could cause overload and possible damage to the hoist and the tester which could cause a serious accident.

Step 5: Connect power source to hoist that is to be tested.

Step 6: Connect the hoist load tester to the power supply. Depress the black button on the electrical enclosure and allow the accumulator to charge until the maximum pressure is reached and the pump motor shuts off.

Step 7: Adjust the reducing valve knob, item (10) on drawing 50924 page 30, to the hoist lift pressure setting for the appropriate model and capacity of the hoist (see calibration chart). Whenever adjusting the pressure setting, make sure that the pressure value is reached by adjusting from a lower value to a higher value.

Step 8: Slide the chain particle restraint, item (40) on drawing 50979-1, over the bottom hook and load chain and attach the chain particle restraint hook to the hoist.

Step 9: Attach the bottom hook to the corresponding bottom master link. Ease any slack from the load chain by gently depressing the up button of the hoist load tester pendant. Avoid sudden loading of the hoist and test stand. After all slack is removed from the load chain depress the up button and hold until the rod of the hydraulic cylinder has extended approximately 3 3/4" inches.

Adjust the reducing valve knob, item (10) drawing 50924, to the hoist lower pressure setting, and leave the hoist suspended for 30 to 60 seconds, This ensures that the hoist brake holds 125% of its rated capacity.

Lower the hoist approximately 3" and leave the hoist suspended for 30 to 60 seconds. The test procedure is now complete and the hoist has been tested both statically and dynamically.

3.2 The following is a suggested procedure for load testing a manually operated hoist.

- Step 1: Follow Steps 1, 2, and 3 of the suggested procedure for an electrically operated hoist.
- Step 2: Choose the corresponding master link on the lower beam and engage the bottom hook through the master link. Remove all slack from load chain.
- Step 3: Connect the hoist load tester to the correct power supply and depress the black button on the electrical enclosure energizing the test stand.
- Step 4: After the pump has charged the accumulator, adjust the reducing valve knob, item ⑩ drawing 50924, to the pressure setting on the calibration chart that corresponds to the capacity of the hoist being tested.
- Step 5: Raise the hoist until the cylinder rod has extended approximately 1" and leave the hoist suspended for 30 to 60 seconds. The hoist has now been tested.
- Step 6: Lower the hoist and disconnect it from the tester. This cycle will be repeated for every load test on manually operated hoists.

CAUTION

Maximum cylinder stroke is 5". Do not try to exceed this value. Hoist and test stand overload will occur.

CAUTION

Do not overload the hoist tester. Overloading will shorten the life of the unit or cause a possible accident and will void the warranty.

If gauge pressure reading exceeds 1800 psi, **STOP OPERATION...** the hoist tester has reached its limit.

Do not switch links from 5 ton capacity to 10 ton capacity.

Do not overload the hoist beyond 125% of its rated capacity.

Anytime the cylinder lines are disconnected, the hoist tester **MUST BE RECALIBRATED.**

Calibration of the hoist load tester is recommended on an annual basis.

WARNING

Remove tagged plug on pump tank and replace with vented cap before operating system.

3.3 Trouble Shooting Tips

FINDING AND SOLVING PROBLEMS:

Most hydraulic system failures follow the same pattern, a gradual or sudden loss of pressure or flow with a resulting loss of cylinder or motor power. Any one of the system's components may be at fault. By following step-by-step procedures, the trouble can be located in a short time.

1. SYSTEM INOPERATIVE

- | | |
|---|--|
| • No oil in system, insufficient oil in system | Fill system. Check for leaks. |
| • Wrong oil in system | Refer to specifications. Change oil. |
| • Filter is dirty or clogged | Drain oil and replace filter or filter element. |
| • Oil line restriction | Oil lines are dirty or collapsed. Clean or replace. |
| • Air leaks in pump suction line | Repair or replace as necessary. |
| • Worn or dirty pump | Clean, repair or replace. Check alignment. Check for contaminated oil. Drain and flush system. |
| • Badly worn components (valves, cylinders, etc.) | Examine and test for internal or external leakage. Replace faulty components. Check for cause of wear. |
| • Leakage | Check all components, particularly the relief valve for proper settings. Refer to technical manuals. |
| • Excessive load | Check unit specifications for load limits. |
| • Slipping or broken pump drive | Repair or replace belts, couplings, etc. Check for proper alignment or tension. |

2. SYSTEM OPERATES ERRATICALLY

- | | |
|-----------------------------------|---|
| • Air in system | Check suction side of system for leaks. Repair. |
| • Cold oil | Allow ample warm-up period. |
| • Dirty or damaged components | Clean or repair as necessary. |
| • Restriction in filters or lines | Clean and/or replace elements or lines. |

3. SYSTEM OPERATES SLOWLY

- Oil viscosity too high, cold oil
- Low oil level
- Air in system
- Badly worn pump, valves, cylinders, etc.
- Restriction in filters or lines
- Improper adjustments
- Oil leaks

Allow oil to warm up before operating machine.

Check reservoir and add oil as necessary.

Check suction side for leaks. Repair.

Repair or replace as needed.

Clean and/or replace elements or lines.

Check orifices, relief valves, etc. Adjust per manual.

Tighten fittings. Replace seals or damaged lines.

4. SYSTEM OPERATES TOO FAST

- Wrong size or incorrectly adjusted restrictor

Replace or adjust as necessary.

5. OVERHEATING OF OIL IN SYSTEM

- Oil passing through relief valve for excessive time
- Incorrect oil, low oil, or dirty oil
- Excessive component internal leakage
- Restriction in filters or lines
- Insufficient heat radiation
- Malfunctioning component

Return control valve to neutral when not in use.

Use recommended oil. Fill reservoir, clean oil, replace filter element.

Repair or replace component as necessary.

Clean and/or replace elements or lines.

Clean dirt and mud from reservoir and components.

Repair or replace.

6. FOAMING OF OIL

- Incorrect, low or dirty oil
- Air leaks

Replace, clean or add oil as needed.

Check suction line and component seals for suction leaks. Replace.

7. NOISY PUMP

- Low oil level, incorrect oil, foamy oil
- Suction line plugged, inlet screen plugged
- Worn or damaged pump

Replace, clean or add oil as needed.

Clean or replace.

Repair or replace

8. LEAKY PUMP OR MOTOR

- Damaged or worn shaft seal Check for misalignment.
- Loose or broken parts Tighten or replace.

9. CONTROL VALVE STICKY (BINDING)

- Valve linkage misaligned Repair.
- Tie-bolts too tight (stack valves) Loosen as necessary.
- Valve damaged Replace.

10. CONTROL VALVE LEAKS

- Tie-bolts too loose (stack valves) Tighten as necessary.
- Seals damaged or worn Replace.

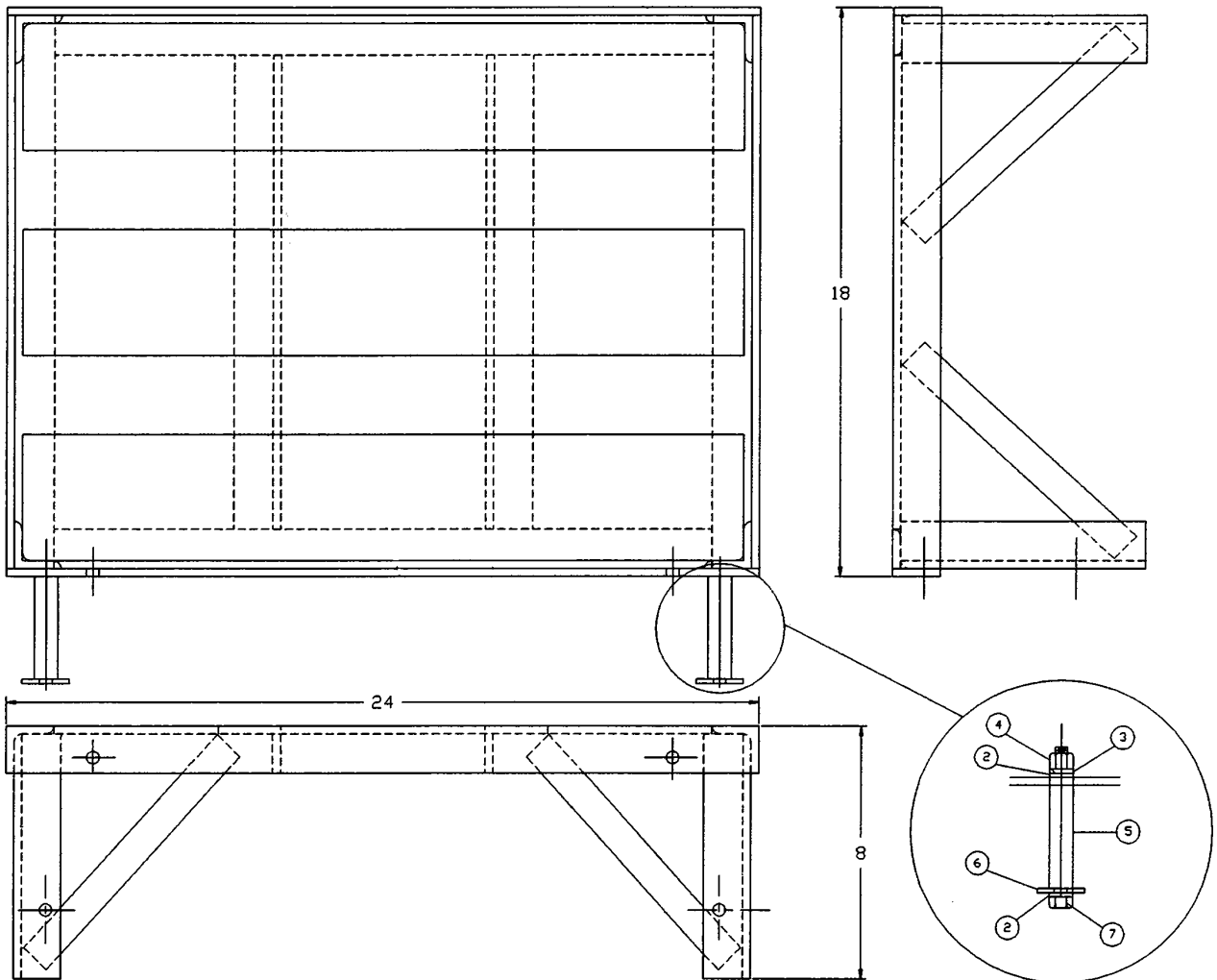
11. CYLINDER LEAKS

- Seals worn or damaged Replace.
- Rod damaged Replace.

4. PARTS LIST

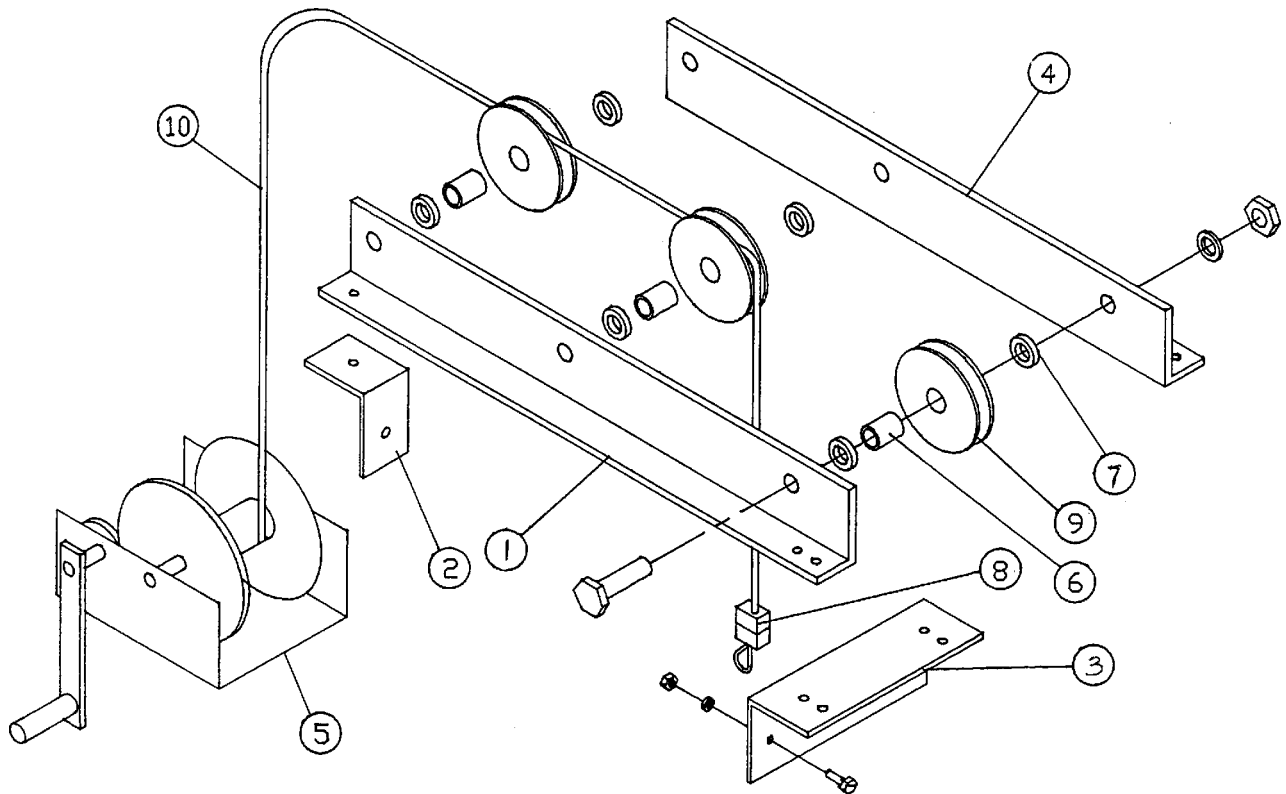
4.1 Step Assembly

Fig. No.	Name	Dwg. No.	Qty. per Assy.
1	Step Assembly	5076702	1
2	Flat Washer	9012514	4
3	Lock Washer	9012712	2
4	Nut	9093427	2
5	Tube Spacer	50779	2
6	Flat Spacer	50780	2
7	Bolt	9093365	2



4.2 Winch Assembly

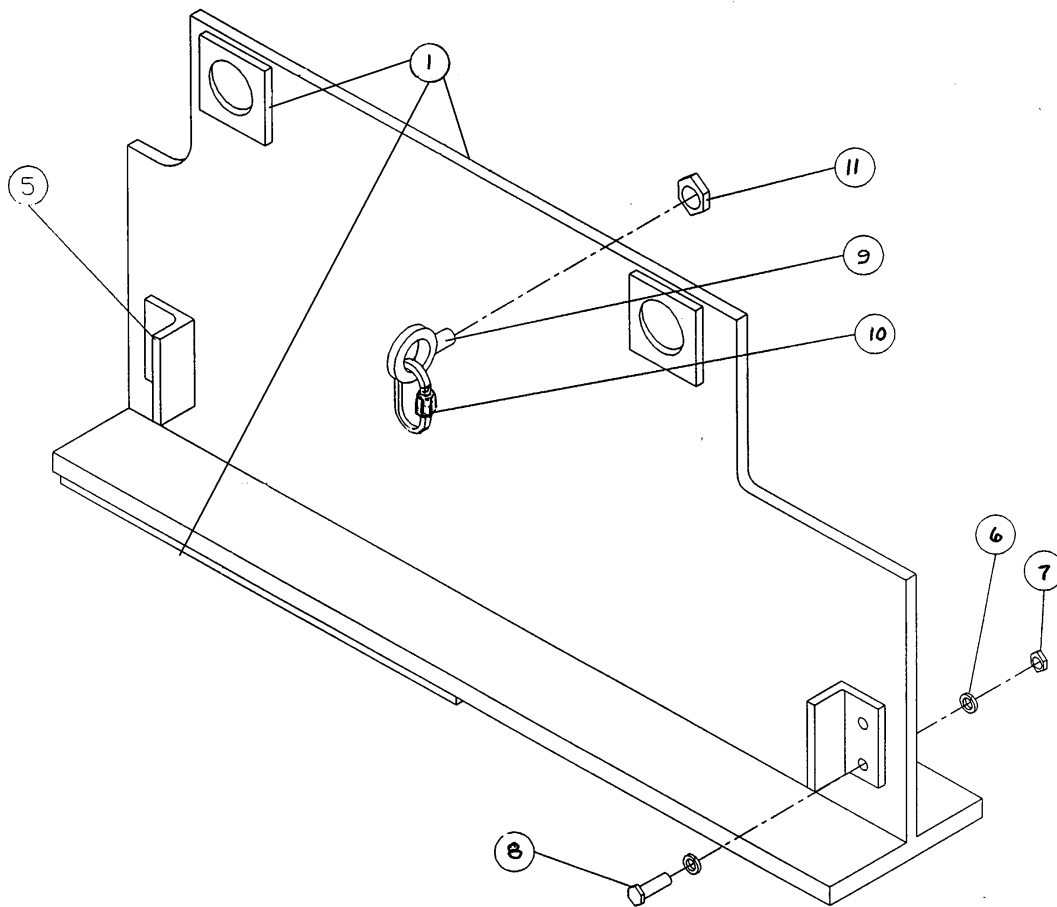
Fig. No.	Name	Dwg. No.	Qty. per Assy.
0	Winch Assembly		1
1	Pulley Mount LH	5099901	1
2	Rear Mounting Bracket	5099902	2
3	Front Mounting Bracket	5099903	1
4	Pulley Mount RH	5099904	1
5	Winch Base Modification	5065305	1
6	Pulley Bushing	5099906	3
7	Pulley Spacer	5099907	6
8	Wire Rope Clip	9003702	2
9	Pulley	9010601	3
10	Cable	9004002	20'



Winch Assembly

4.3 Trolley Beam Assembly

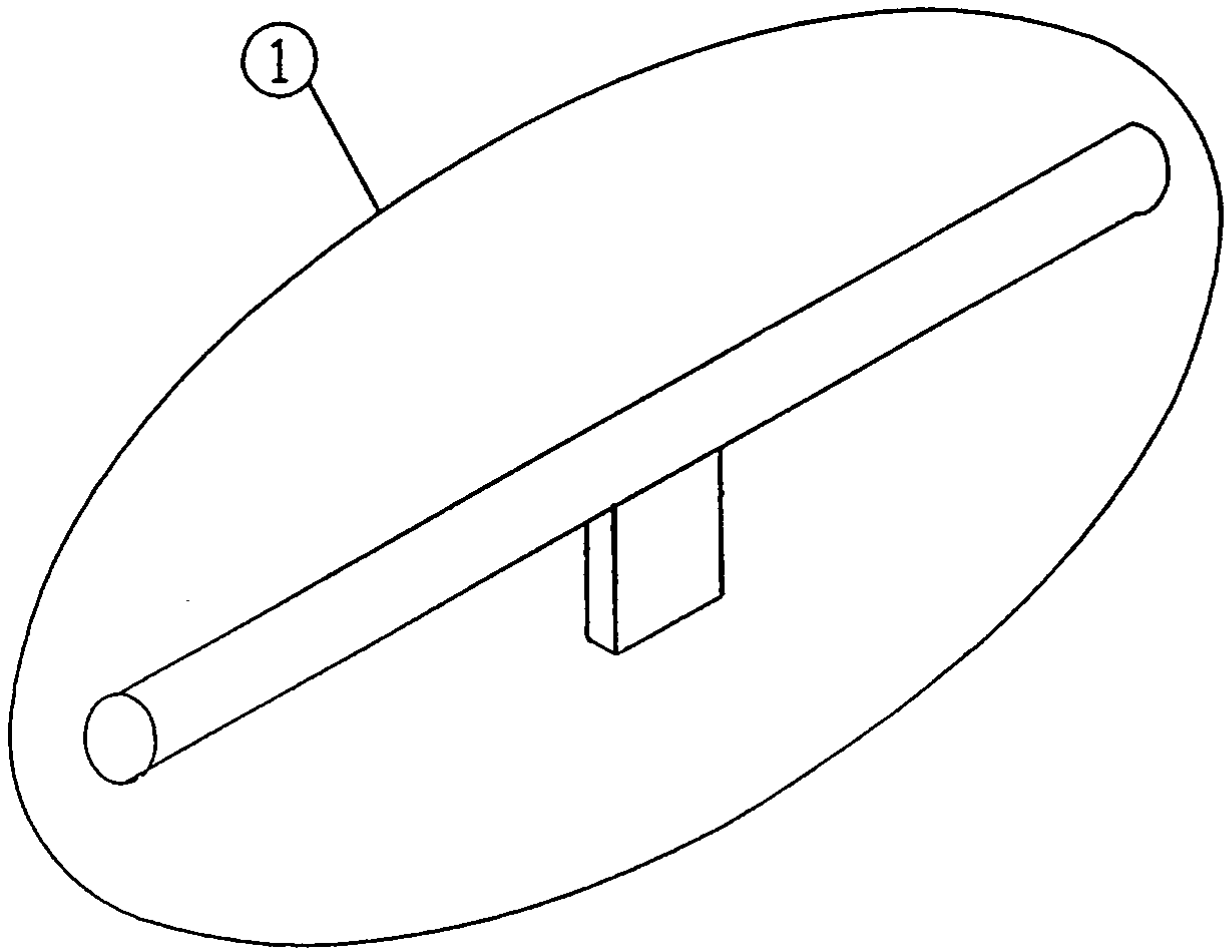
Fig. No.	Name	Dwg. No.	Qty. per Assy.
0	Trolley Beam Assembly	50973	
1	Trolley Beam Sub Assy.	50972	1
5	End Stop	52306-02	4
6	Spring Washer	9012713	8
7	Nut	9093433	4
8	Bolt	9093147	4
9	Eye Bolt	9010002	1
10	Threaded Connector	9010101	1
11	Nut	9003903	1



Trolley Beam Assembly

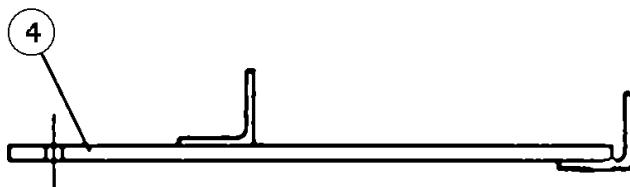
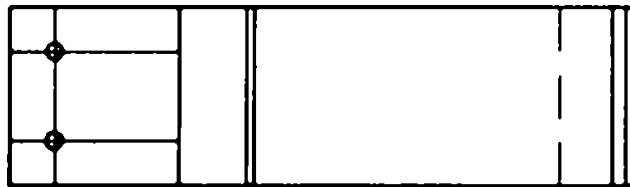
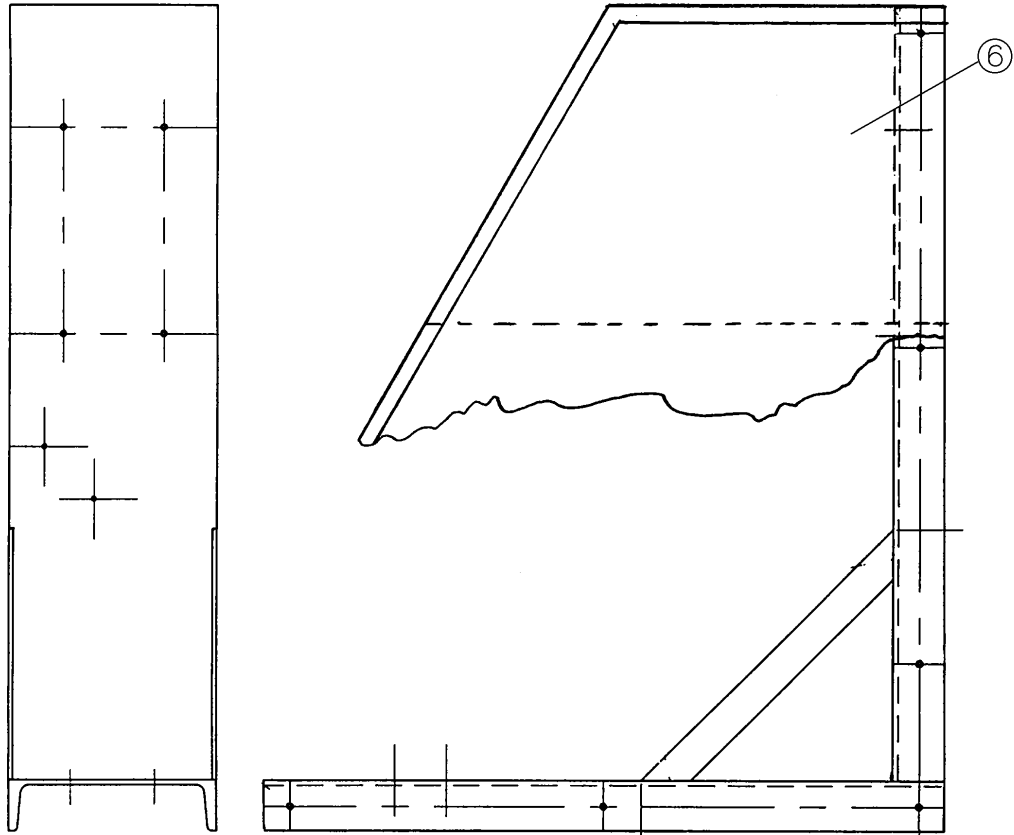
4.4 Link Support

Fig. No.	Name	Dwg. No.	Qty. per Assy.
1	Link Support	50614	1



4.5 Electro-Hydraulic Base Assembly for Dynamic Option

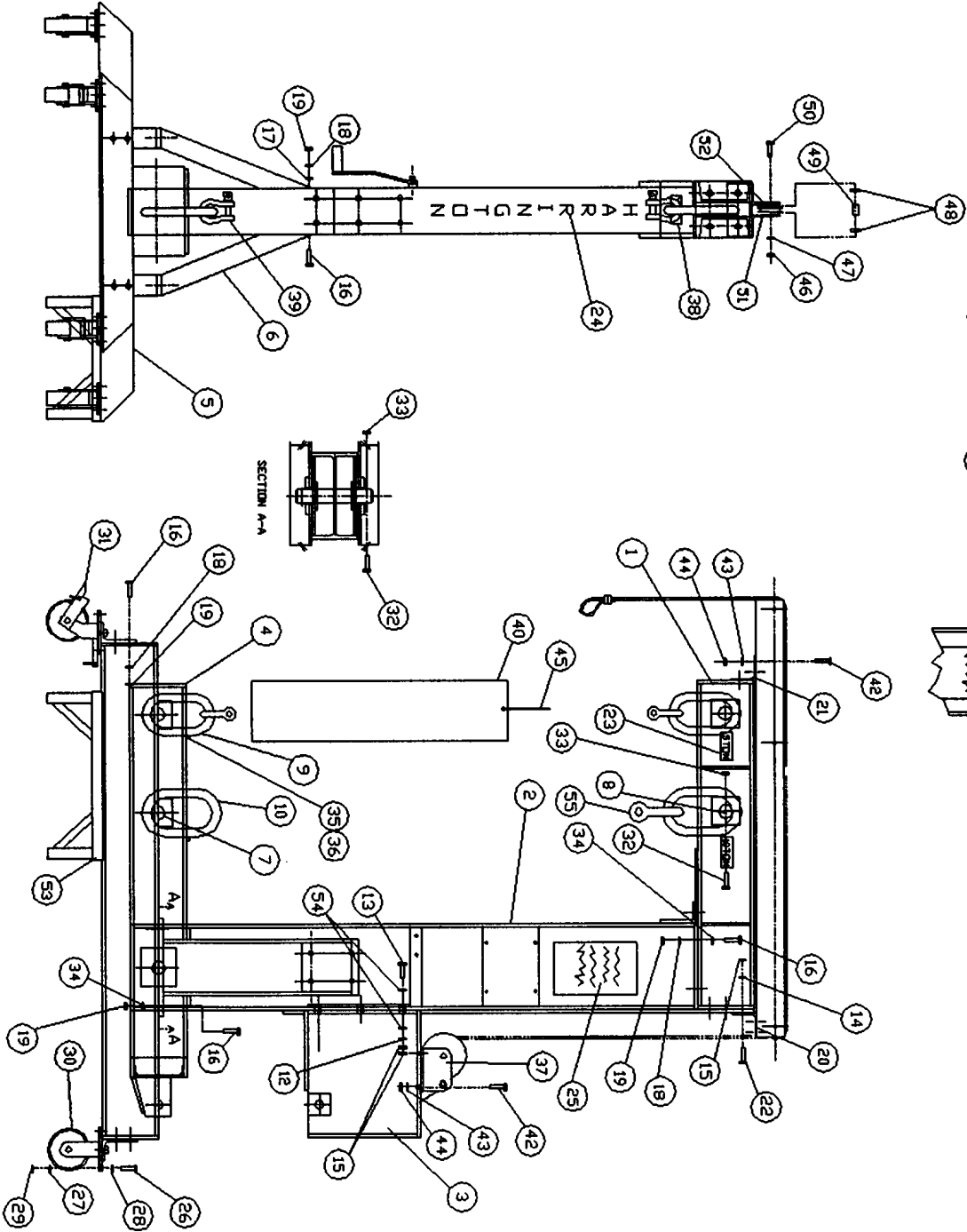
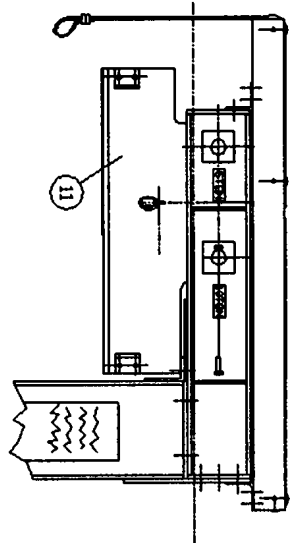
Fig. No.	Name	Dwg. No.	Qty. per Assy.
0	Electro-Hydraulic Base Assembly for Dynamic Option	50921	1
4	Front Support	509204	1
6	DHLT Stand Cover Hyd.	50923	1



4.6 English/Metric Tester Frame Assembly

Fig. No.	Name	Dwg. No.	Qty. per Assy.	Notes
0	Tester Frame Assembly	50979	1	
1	Top Beam Assembly	50980	1	
2	Column Assembly	50955	1	
3	Cylinder Mount	50950	1	
4	Lower Beam Assembly	50954	1	
5	Base Assembly	50554	1	
6	Outrigger Assembly	50558	2	
7	Pin	5055302	3	
8	Pin	5055301	2	
9	Master Link	9010201	2	
10	Master Link	9010202	2	
11	Trolley Test Beam Assy.	50973	1	
12	"I" Taper Washer	9043522	6	M20
13	Bolt	90931135	6	M20 x 46 x 80
14	Lock Washer	9012717	6	M20
15	Nut	9093445	18	M20 x 2.5
16	Bolt	9093192	22	M16 x 65
17	Flat Washer	9012517	4	M16
18	Lock Washer	9012715	18	M16
19	Nut	9093439	22	M16 x 2.0
20	Rear Mounting Bracket	5099902	2	
21	Front Mounting Bracket	5099903	1	
22	Bolt	90931135	6	M20 x 46 x 75
23	Capacity Plate	80037	4	
24	Label	80048	1	
25	Calibration Chart		1	
26	Bolt	9004785	16	1/2 - 13 x 1 1/4
27	Lock Washer	9005313	16	1/2
28	Flat Washer	9012515	16	M12
29	Nut	9003905	16	1/2 - 13
30	Plain Caster	9007203	2	
31	Swivel Caster	9007202	2	
32	Bolt	9093106	10	M8 x 60
33	Lock Nut	9098506	10	M8 x 1.25
34	U Taper Washer	9043418	10	M16

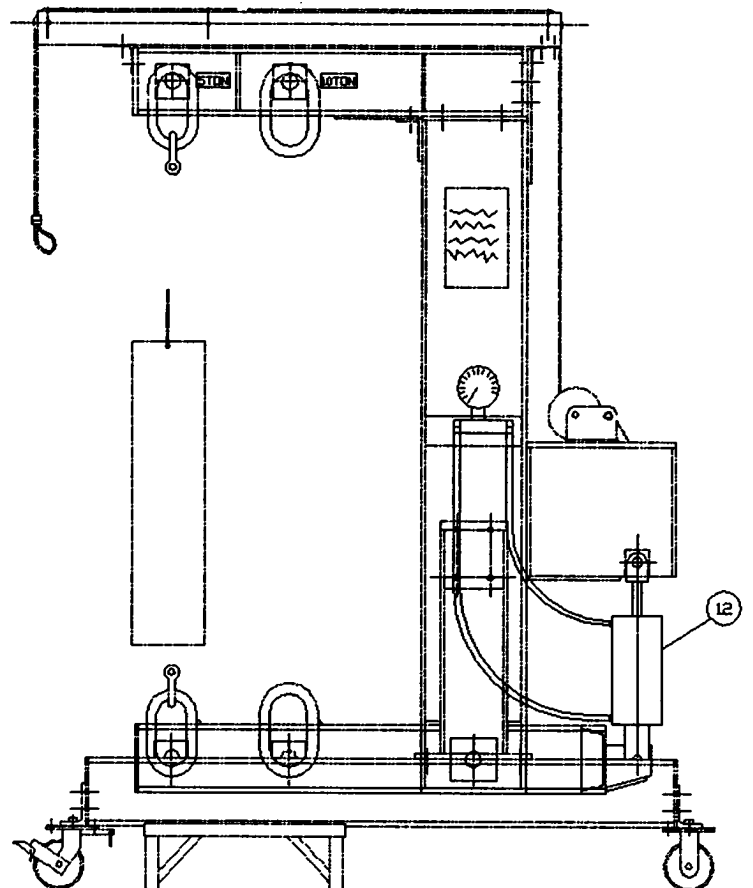
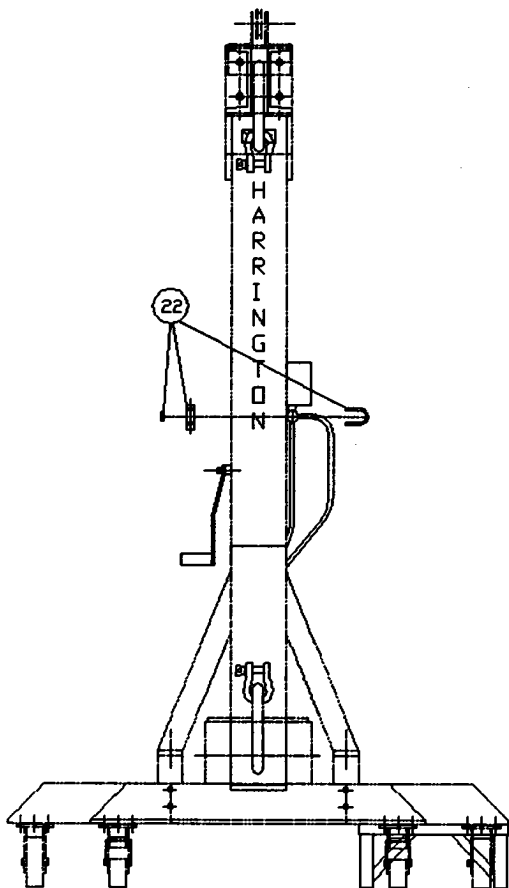
Fig. No.	Name	Dwg. No.	Qty. per Assy.	Notes
0	Tester Frame Assy. cont.	50979	1	
35	Link Support	50614	2	
36	Hose Clamp	9009901	2	
37	Winch	9010701	1	
38	Serial Number Plate	80049	1	
39	Shackles	9010301	2	
40	Chain Particle Restraint Assy.	50788	1	
41	Bolt	9093349	2	M10 x 25
42	Bolt	9093124	12	M10 x 40
43	Lock Washer	9012712	12	M10
44	Nut	9093427	12	M10 x 1.5
45	Hook for Chain Particle Rest.	50790	1	
46	Nut	9093433	3	M12 x 1.75
47	Lock Washer	9012713	3	M12
48	Pulley Spacer	5099907	6	
49	Pulley Bushing	5099906	3	
50	Bolt	9093151	3	M12 x 70
51	Pulley Mount R. H.	5099904	1	
52	Pulley Mount L. H.	5099901	1	
53	Step Assembly	50767	1	
54	Washer	9005212	12	3/4
55	Shackle	9010303	1	



English/Metric Tester Frame Assembly
(50979)

4.7 Hydraulic Cylinder Assembly Static Option

Fig. No.	Name	Dwg. No.	Qty. per Assy.
12	Hydraulic Cylinder Assembly Static Option	9410201	1
22	U Bolt Assembly	9010401	2

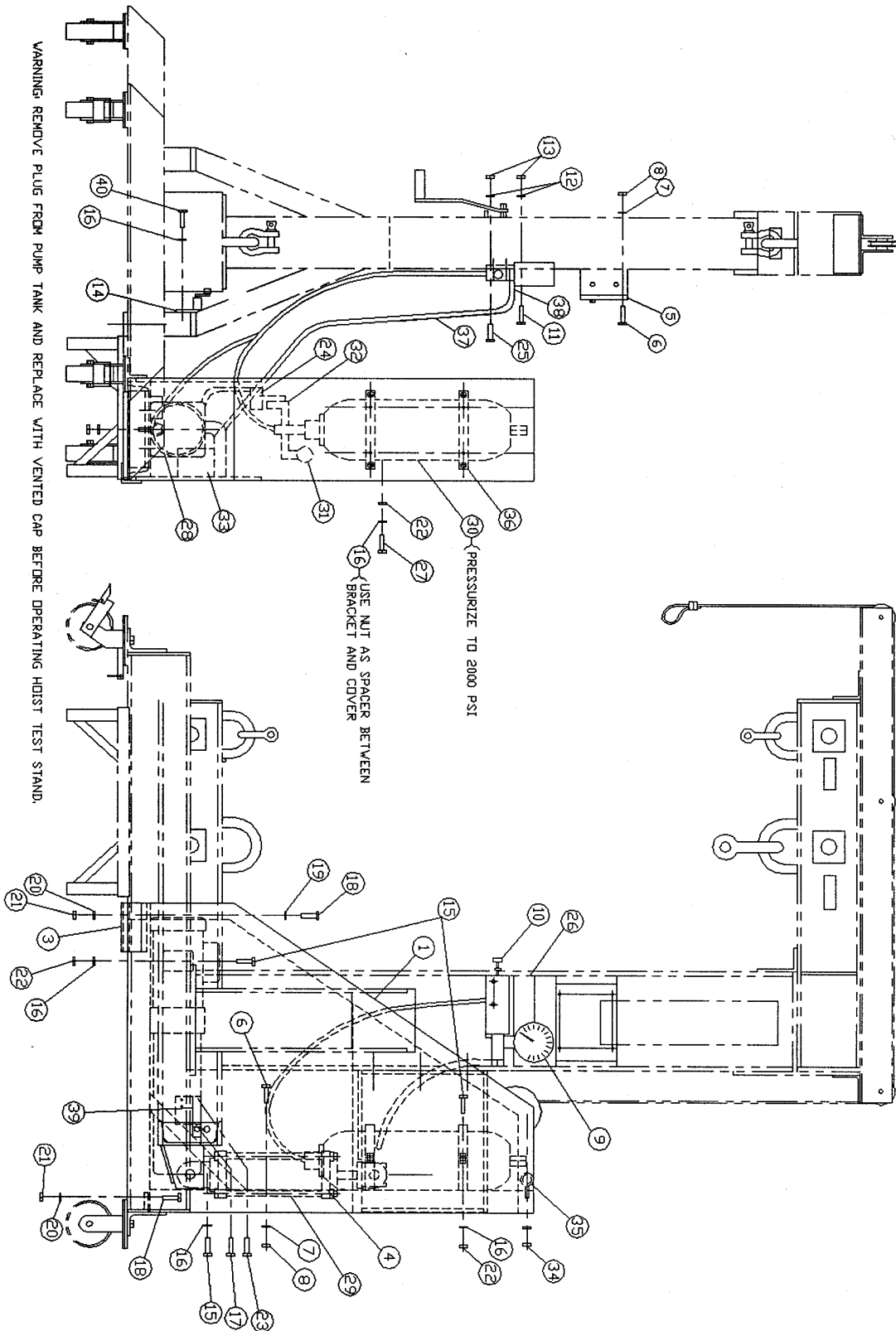


**English/Metric Tester - Static Option
(50979-1)**

4.8 English/Metric Tester Dynamic Option

Fig. No.	Name	Dwg. No.	Qty. per Assy.	Material
0	English/Metric Tester Dynamic Option	50924	1	
1	Electro-Hydraulic Assy. Cover	50923	1	
3	Front Support Assembly	5092102	1	
4	Electro-Hyd. Base Assy.	5092101	1	
5	Elect. Enclosure Sub Assembly	51624-6	1	
6	Bolt	9004706	10	1/4 - 20 - 1 1/4" long
7	Flat Washer	9005205	10	1/4"
8	Lock Nut	9004505	10	1/4 - 20
11	Bolt	9093369	2	M10 x 25
12	Lock Washer	9012712	4	M10
13	Nut	9093427	4	M10 x 1.5
14	Limit Switch Bracket	509207	1	
15	Bolt	9093328	10	M8 x 25
16	Lock Washer	9012711	18	M8
17	Socket Hd. Cap Screw		1	10 - 24 x 1" long
18	Bolt	9093145	4	M12 x 40
19	"U" Taper Washer	9043414	2	M12
20	Lock Washer	9012713	4	M12
21	Nut	9093433	4	M12 x 1.75
22	Nut	9093424	8	M8 x 1.25
23	Socket Hd. Cap Screw		1	10 - 24 x 2" long
25	Bolt	9093131	2	M10 x 75 x 26
27	Socket Hd. Cap Screw	9091276	8	M8 x 40
34	Nut	9003903	4	3/8 - 16
35	Eye Bolt	9010002	2	3/8 - 16 x 1 1/4 long
39	Limit Switch Assembly	-----	1	

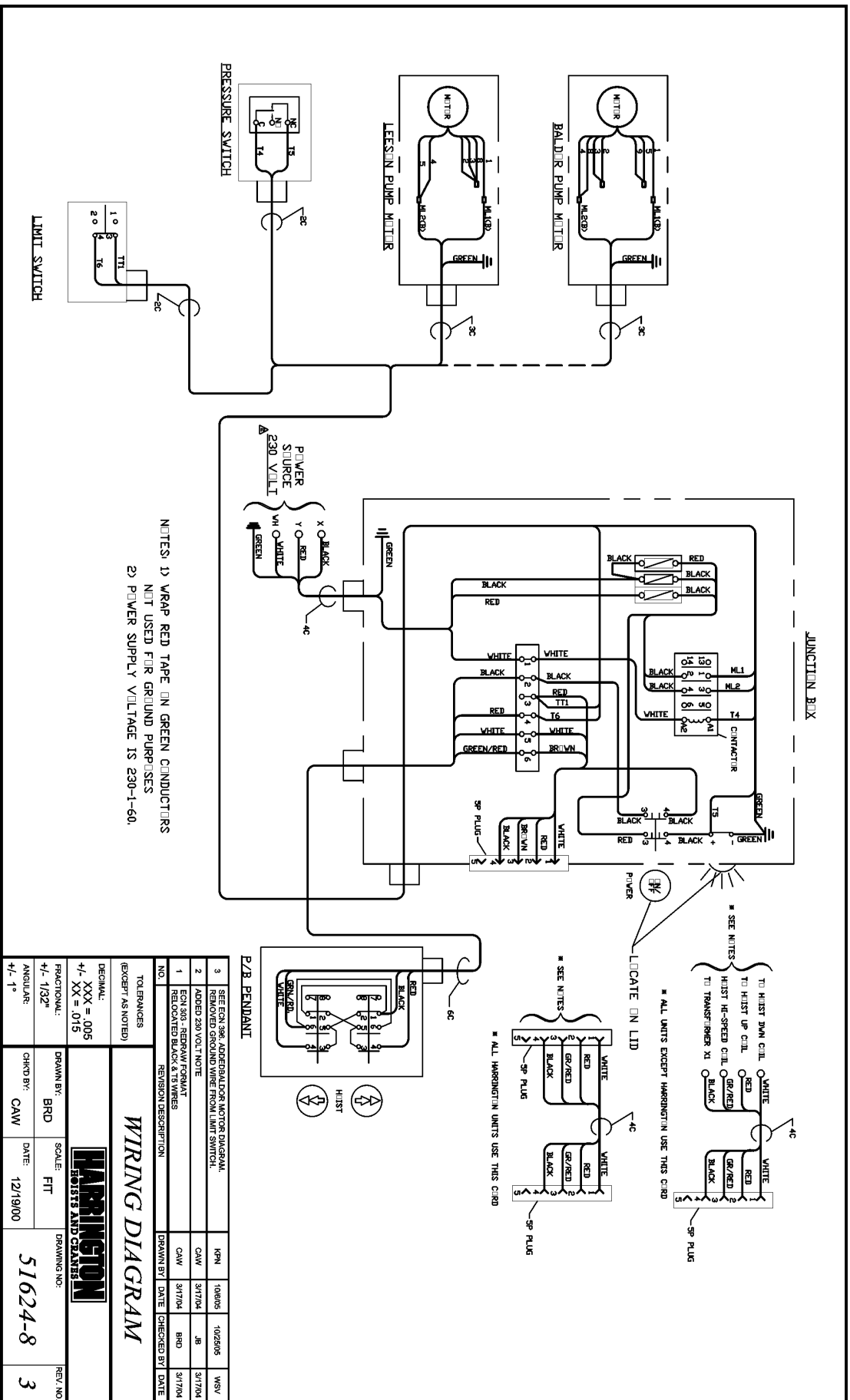
Fig. No.	Name	Dwg. No.	Qty. per Assy.	Material
0	Dynamic Option Electric Hydraulic Subassembly	9010502	1	
9	4" Pressure Gauge	-----	1	
10	Pressure Setting Valve	-----	1	
24	Pressure Switch	-----	1	
28	Pump	-----	1	
29	Cylinder with Cushion	-----	1	
30	Accumulator	-----	1	
31	2" Pressure Gauge	-----	1	
32	Ball Valve	-----	1	
33	Filter	-----	1	
36	Accumulator Mtg. Brackets	-----	2	
37	Hoses	-----	----	
38	Fittings	-----	----	
40	Socket Head Cap Screw	9091272	2	M8 x 20
41	Lock Washer	9012711	2	M8



English/Metric Tester - Dynamic Option
(50924)

4.9 Electrical Components & Wiring Subassembly Dynamic Option

Name	Qty.	Harrington No.
Electrical Components & Wiring Subassembly Dynamic Option	1	51624-6
Junction Box	1	9006709
Panel	1	9006808
Push Button Operator	1	9009615
Early Close Contact Block	2	9009617
Alternate Action	1	9009621
Pilot Light Green	1	9009634
Legend Plate On/Off	1	9009635
Terminal Strip	1	MS518010
2 Push Button Cord Complete Set (new Kito cable)	1	ES1605D00310
1/2" Liquid Tight Connector	9	9008101
Socket 5P with 5 Leads	1	ES1614D015
Flat Head Machine Screw	4	E6FL558010
Flexible Conduit	20'	9008302
Cable 5C Complete Set	2	M7S1610010
1/2" Plastic Bushing	2	9008403
Contactor 110V	1	9006904
Limit Switch	1	9012201
Limit Lever	1	9012202
15 Amp Fuse	1	90062-25
Fuse Holder	1	90071-05
Philips Head Machine Screw (M5x12)	10	9798534
Nut (M5x0.8)	10	9093417
Spring Washer (M5)	10	9012708
S.O. Cord	30'	2 @7.5' & 1 @15'
4 Prong Plug Assembly	1	L1420P
S.O. Cord	7'	
1/2" "T" Outlet	2	9008701
1/2" "T" Outlet Cover	2	9008702
90° Liquid Tight Connector	2	9008901
Plug 5P	1	ES613003
Cable Holder 42 Assembly	1	E6F613003
Appleton Malleable Cover	1	9012101
5/10 AMP Fuse	1	90062-18



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