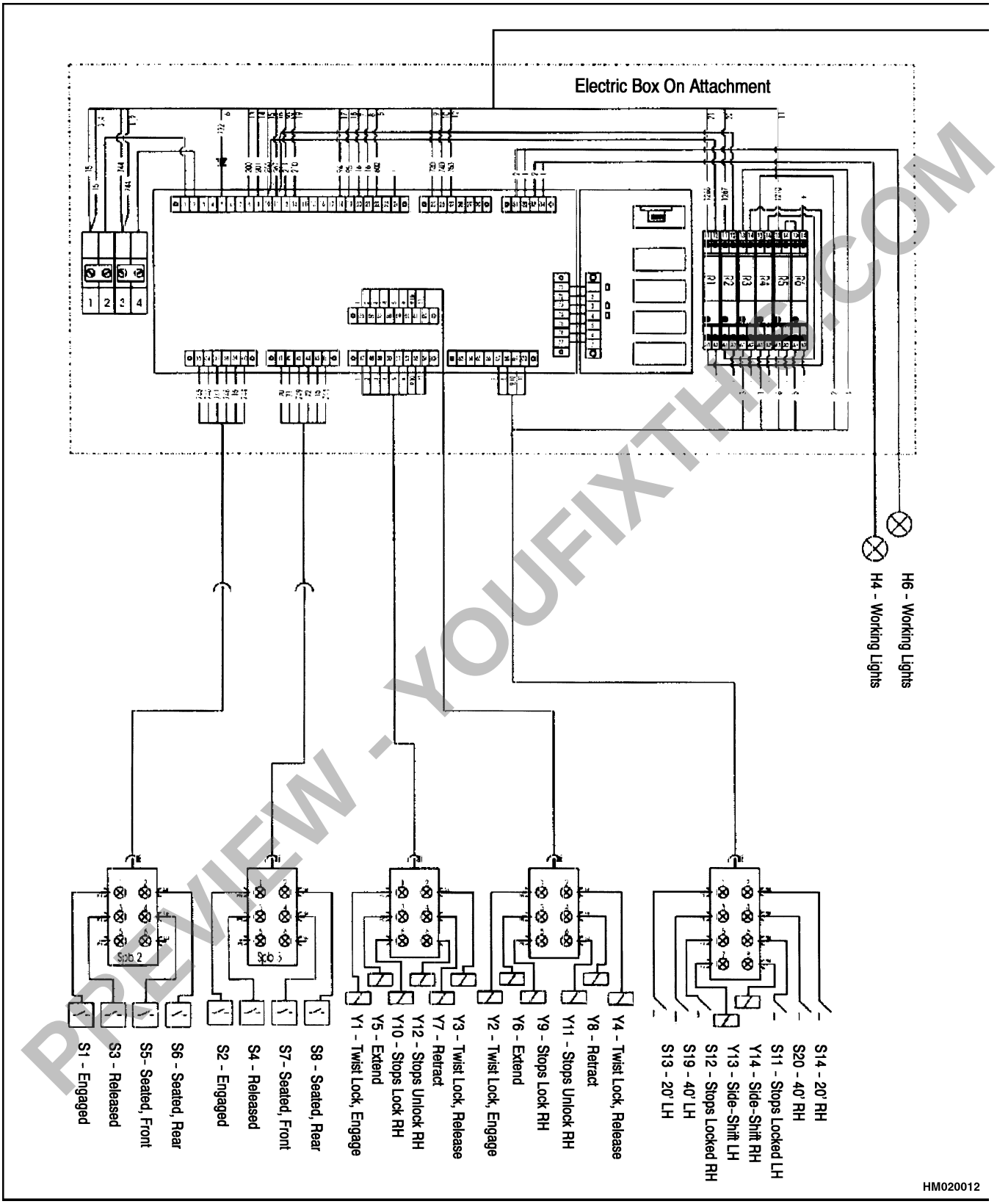


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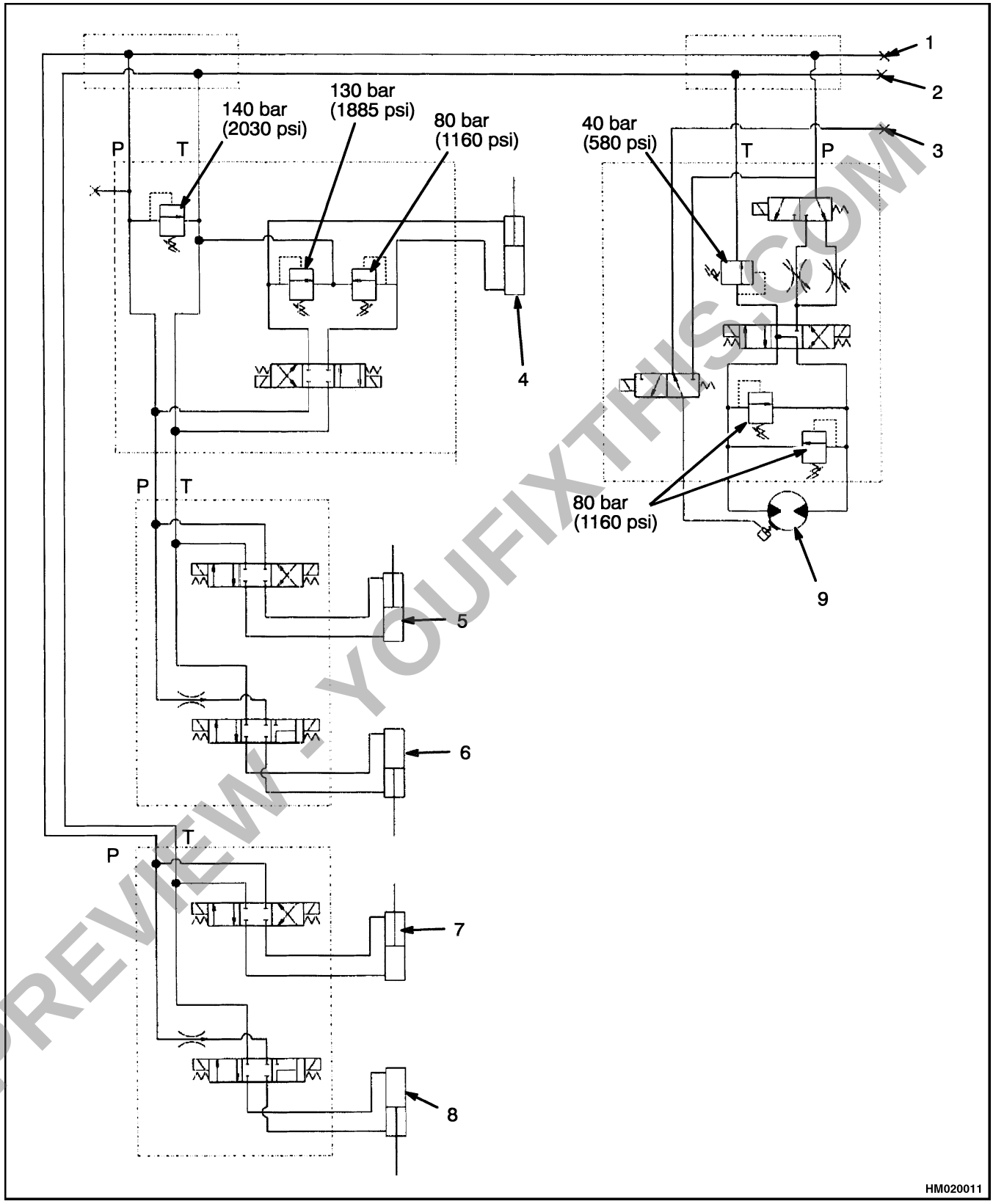


Figure 11. Container Attachment Hydraulic Schematic

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Table 7. Torque Specifications

Item No.	Location	Size	N•m*	lbf ft*
1	Bearing Cap Capscrews	9/16" - 12	156 to 190	115 to 140
		5/8" - 11	217 to 258	160 to 190
		3/4" - 10	393 to 475	290 to 350
		7/8" - 14	504 to 590	372 to 435
		7/8" - 9	637 to 746	470 to 550
2	Differential Case Capscrews**	3/8" - 16	41 to 68	30 to 50
		7/16" - 14	81 to 102	60 to 75
		1/2" - 13	122 to 163	90 to 120
		1/2" - 20	142 to 183	105 to 135
		5/8" - 11	251 to 319	185 to 235
		5/8" - 18	285 to 366	210 to 270
3	Ring Gear to Case Capscrews	1/2" - 13	122 to 163	90 to 120
		5/8" - 11	203 to 258	150 to 190
		5/8" - 18	258 to 285	190 to 210
4	Thrust Screw Jam Nut	3/4" - 16	197 to 258	145 to 190
		7/8" - 14	197 to 258	145 to 190
5	Pinion Carrier to Housing Capscrews	3/8" - 16	41 to 54	30 to 40
		7/16" - 14	68 to 88	50 to 65
		1/2" - 13	108 to 142	80 to 105
		5/8" - 11	176 to 230	130 to 170
6	Pinion Nut	7/8" - 20	271 to 373	200 to 275
		1" - 20	407 to 542	300 to 400
		1-1/4" - 12	949 to 1220	700 to 900
		1-1/4" - 18	949 to 1220	700 to 900
		1-1/2" - 12	1085 to 1492	800 to 1100
		1-1/2" - 18	1085 to 1492	800 to 1100
		1-3/4" - 12	1220 to 1627	900 to 1200
		2" - 12	1627 to 2034	1200 to 1500

See Figure 55 for Item Nos.
*Torque values are for threads lubricated with machine oil unless Loctite is used.
**Use Loctite No. 272 on the capscrews.

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Differential Repair

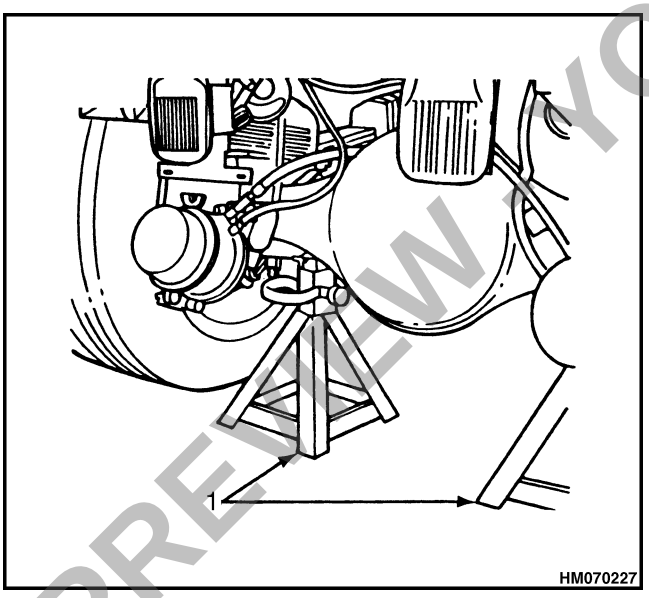
REMOVE

NOTE: The repair procedures cover all units unless otherwise indicated.

Differential Carrier From Axle Housing, Remove

NOTE: The differential assembly can normally be removed without removing the drive axle. On some trucks, including the H7.00-12.50H (H150-275H), the drive axle must be removed to remove the differential assembly. If removal of the drive axle is necessary, see the **Drive Axle** service manual for your lift truck model.

1. Remove the mast. See the **Mast** service manual for your lift truck model for the removal procedures.
2. Raise the end of the vehicle where the axle is mounted. Use a jack or other lifting tool, and place safety stands under each side of the axle. See Figure 2.



1. SAFETY STANDS

Figure 2. Lift Truck Support

WARNING

Block the wheels to prevent the lift truck from moving. Support the lift truck with safety stands. DO NOT work under a lift truck supported only by jacks. Jacks can slip and fall over. Serious personal injury can result.

3. Place jack stands under each spring seat of the axle, to hold the lift truck in the raised position.
4. Remove plug from the bottom of the axle housing and drain the oil from the axle assembly.
5. Disconnect the drive shaft at the differential. If a speed reducer or gear box is installed, remove the speed reducer or gear box.
6. Some units have a drum or disc brake attached to the output yoke. Disconnect any brake linkage or brake lines. See the **Brake** manual for your unit.
7. Disconnect the driveline universal joint from the pinion input yoke or flange on the differential carrier. See Figure 3.

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Troubleshooting

PROBLEM	POSSIBLE CAUSE	PROCEDURE OR ACTION
The lift truck will not move.	Ring and pinion gears are damaged.	Repair the damaged gears.
	Axle shaft(s) is damaged.	Replace axle shaft(s).
The differential makes noise.	The gears or shafts in the differential are damaged.	Repair the damaged gears.
	There is no oil in the axle housing.	Fill the axle with the correct oil.
	Parts of the brake assembly are damaged.	Repair the parts of the brakes.
	The mounting bolts for the differential housing are loose.	Tighten the capscrews.
	The ring and pinion are not adjusted correctly.	Check and adjust the gears.
	The nut for the input yoke is loose.	Tighten the nut.
	The thrust screw is not adjusted correctly.	Adjust and tighten the screw and jam nut.
The differential has leaks.	There is no sealant between the differential and drive axle housing.	Assemble the parts with the correct sealant.
	There are capscrews missing from the differential assembly.	Install the missing capscrews.
	There are plug(s) missing from the differential housing.	Install the missing plug(s).
	The seal for the yoke is damaged.	Install a new seal.

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Table 1. Daily Inspections - Condition Check

Item No.	Item	Procedure
1	Tires	See nameplate for pressure.
	Safety Labels	See parts manual for label replacement.
	Boom, Rotator, and Spreader	Inspect for damage, cracks and distortion.
6	Drive Belts	Check tension.
	Reservoirs, Hoses, Tubes, and Cylinders	Check condition and search for leaks.
25	Water Separator	Drain water and/or sediment.
	Engine Compartment	Remove combustible materials.
	Radiators for Engine, Transmission, and Brakes	Clean radiator when dirty.

Table 2. Daily Inspections - Fluid Level Check

Item No.	Item	Specification
23	Brake System Oil	SAE 10W, API CC, or CC/SE with 3 to 6% lubrisol 6279
14	Hydraulic System Oil	SAE 10W, API CC, or CC/SE
3	Battery Electrolyte	Distilled water
8	Engine Oil	API CE/SF or CE/SG 20W-40
9	Fuel Level	Diesel No. 2, 300 liter (79 gal)
26	Engine Coolant	50% Ethylene glycol, 50% water
16	Windshield Washer	Windshield washer fluid

Table 3. Daily Inspections - Checks With Engine Running

Item No.	Item	Procedure or Specification
	Horn, Gauges, Lights, Alarms, Mirrors, and Control System	Visual or audible verification
24	Transmission Oil Level	Add if necessary SAE 15W-40 API CC or CC/SE.
4	Air Filter Restriction Indicator	Replace filter element when indicator is on.
	Service Brakes and Parking Brake	Check operation.
	Boom, Rotator, Spreader, Signal from, Spreader, and Control System	Check operation.
	Steering System	Check operation.
	Control Levers and Pedals	Check operation as described in the operators manual.

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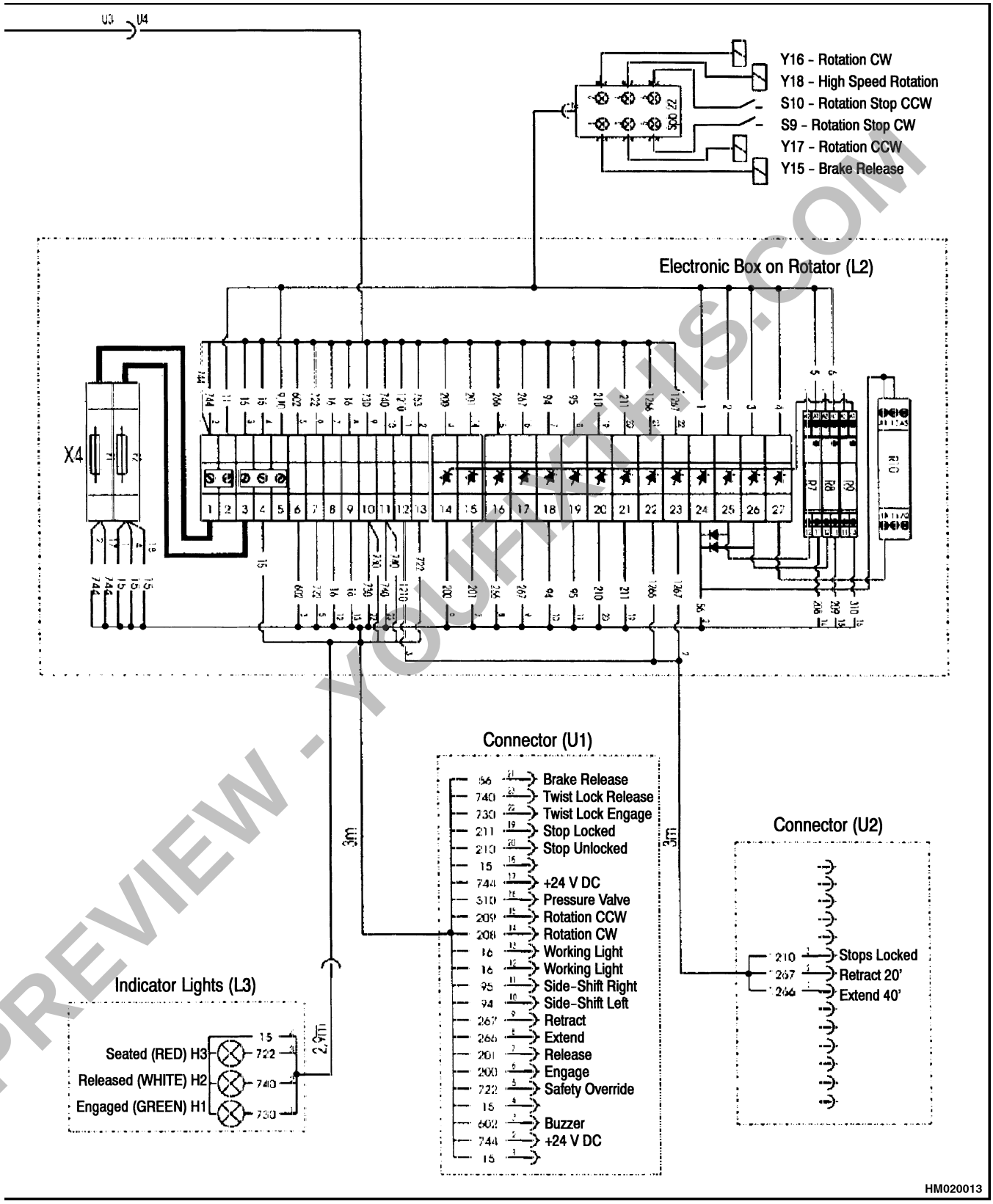


Figure 12. Electrical Wiring Diagram

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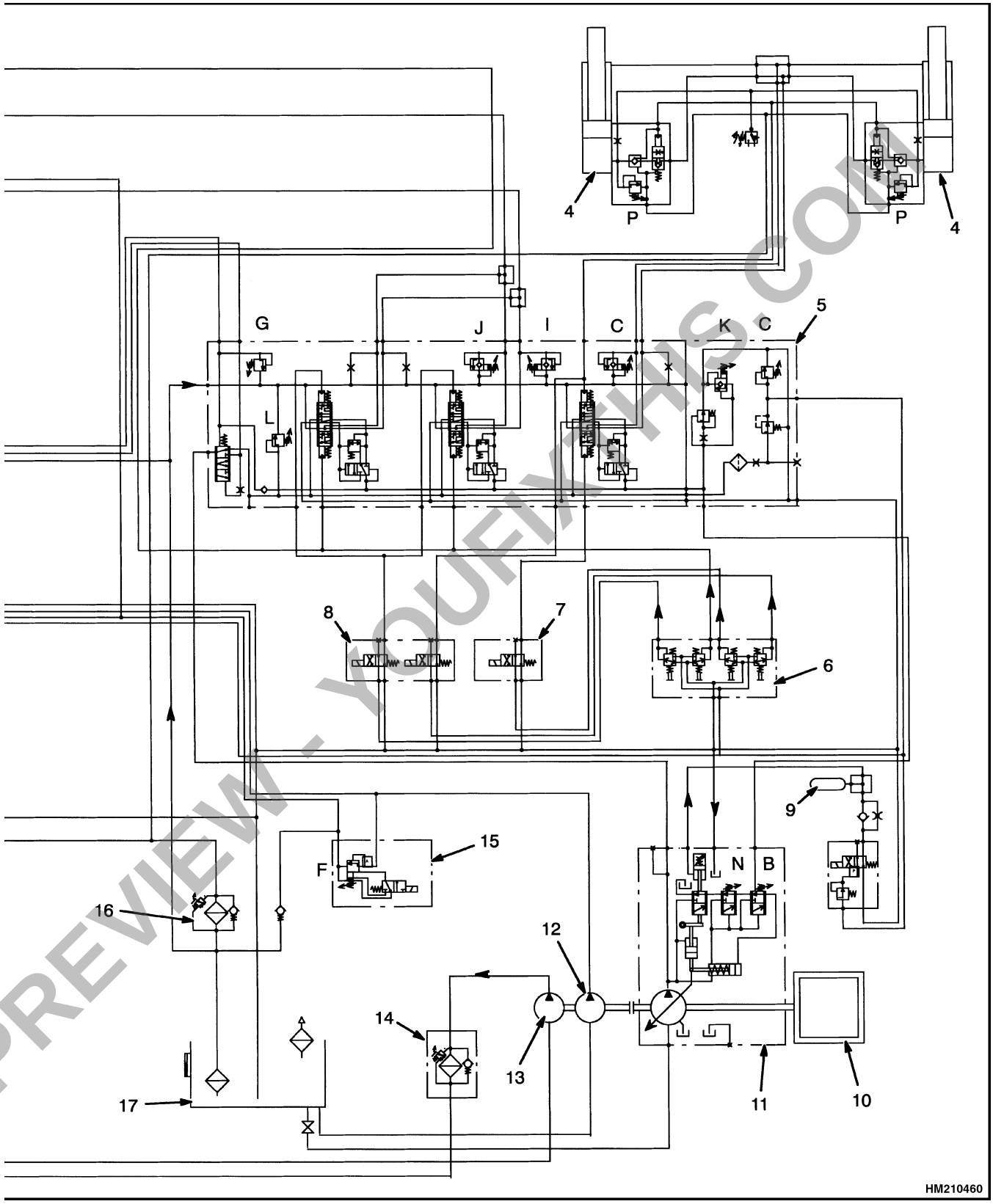


Figure 2. Hydraulic System Schematic

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Axle Hardware Torque

Table 1. Metric Standard Threads

Thread Size	8.8 Capscrews/8.0 Nuts		10.9 Capscrews/10.0 Nuts		12.9 Capscrews/12.0 Nuts	
	N•m	lbf ft	N•m	lbf ft	N•m	lbf ft
M4	3.0	2.2	4.4	3.2	5.1	3.8
M5	5.9	4.4	8.7	6.4	10	7
M6	10	7	15	11	18	13
M8	25	18	36	27	43	32
M10	49	36	72	53	84	62
M12	85	63	125	92	145	107
M14	135	100	200	148	235	173
M16	210	155	310	229	365	269
M18	300	221	430	317	500	369
M20	425	313	610	450	710	524
M22	580	428	830	612	970	715
M24	730	538	1050	774	1220	900
M27	1100	811	1550	1143	1800	1328
M30	1450	1069	2100	1549	2450	1807
*Torque values are for parts lubricated with lightweight oil.						

Table 2. Metric Fine Pitch Threads

Thread Size	8.8 Capscrews/8.0 Nuts		10.9 Capscrews/10.0 Nuts		12.9 Capscrews/12.0 Nuts	
	N•m	lbf ft	N•m	lbf ft	N•m	lbf ft
M8 × 1	27	20	39	29	46	34
M10 × 1	55	41	81	60	95	70
M10 × 1.25	52	38	76	56	90	66
M12 × 1.25	93	69	135	100	160	118
M12 × 1.5	89	66	130	96	155	114
M14 × 1.5	145	107	215	159	255	188
M16 × 1.5	225	166	330	243	390	288
M18 × 1.5	340	251	485	358	570	420
M20 × 1.5	475	350	680	502	790	583
M22 × 1.5	650	479	920	679	1050	774
*Torque values are for parts lubricated with lightweight oil.						

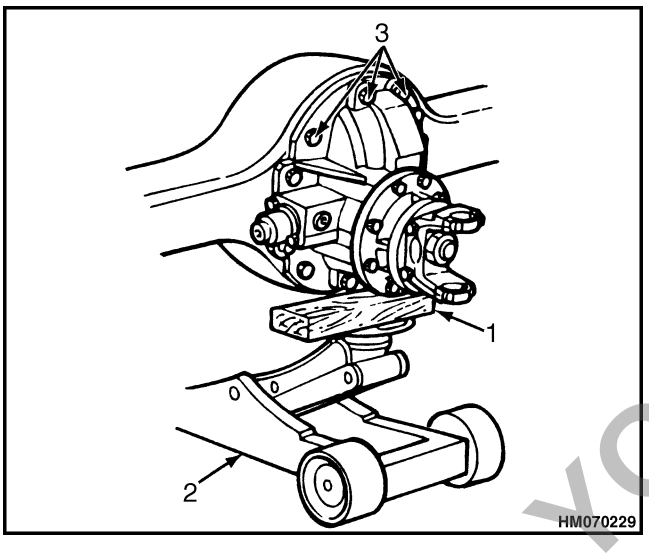
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8. Remove the axle shafts from the axle housing. See the **Drive Axle** manual for your model of lift truck for the procedures.

a. On Straddle Trucks™, disconnect the drive axle universal joints at the differential yokes. Remove the capscrews that fasten the bearing retainers to the differential housing. Pull the yoke, stub shaft and bearing retainer from the housing.

9. Place a transmission jack under the differential carrier for support. See Figure 4.



1. WOOD BLOCK
2. TRANSMISSION JACK
3. CAPSCREWS

Figure 4. Differential Carrier Support

10. Remove all but the top two differential carrier housing capscrews. See Figure 4.

11. Loosen the top two differential carrier housing capscrews and leave them attached to the assembly. The capscrews will hold the differential carrier in the housing.

12. Loosen the differential carrier in the axle housing. Use a leather mallet to hit the mounting flange of the differential carrier at several points.

13. After the differential carrier is loosened, remove the top two capscrews.

CAUTION

When using a pry bar, be careful not to damage the differential carrier or housing flange. Damage to these surfaces will cause oil leaks.

14. Remove the differential carrier from the axle housing. Use a pry bar with a round end, to help remove differential carrier from housing.

15. Remove the differential carrier assembly from under the lift truck.

16. Use a lifting device and lift the differential carrier by the input yoke or flange and place the assembly on a repair stand. See Figure 5.

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Troubleshooting

PROBLEM	POSSIBLE CAUSE	PROCEDURE OR ACTION
The vehicle will not move.	An axle shaft is broken.	Install new axle shaft.
	The drive shaft or transmission is damaged.	Repair or replace drive shaft or transmission.
	The gears in the planetary drive are damaged.	Repair planetary drive.
The final drive has leaks.	No sealant between the joints of the planetary assembly.	Install sealant between joints of planetary assembly.
	Capscrews missing from the cover of the planetary assembly.	Replace missing capscrews.
	Plugs missing from the cover or housing of the planetary axle.	Install missing plugs.
	The spindle oil seal is damaged.	Replace spindle oil seal.
The final drive makes noise.	The gears or shafts in the planetary drive are damaged.	Replace or repair planetary drive.
	No oil in the axle.	Fill axle with correct oil.

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Table 4. First Inspection After First 100 Hours of Operation

Item No.	Item	Procedure	Quantity	Specification
	Rotator Brake Oil. See Figure 3, item 2.	Change	2.6 liter (2.7 qt)	SAE 90 J360a specification with EP additives
	Rotator Transmission Oil. See Figure 3, item 4.	Change	2.8 liter (3.0 qt)	SAE 90 J360a specification with EP additives
15	Hydraulic Tank Return Screen	Clean		
24	Transmission Oil Transmission Oil Filter	Change Change	2.8 liter (3.0 qt) 1	SAE 15W-40 API CC or CC/SE See parts manual.
8	Engine Oil	Change	14 liter (14.8 qt)	API CE/SF or CE/SG 15W-40
7	Engine Oil Filter	Change	1	See parts manual.
13	Hydraulic System Filter	Change	1	See parts manual.
12	Brake System Filter	Change	1	See parts manual.

Table 5. Periodic Maintenance Schedule - Inspection and Adjustment

Item No.	Item	Interval	Procedure
1	Wheel Nuts	250 hr/6 wk	Check torque, 390 N•m (288 lbf ft).
27	Boom Wear Pads	500 hr/3 mo	Check clearance.
2	Drive Axle and Differential Oil	500 hr/3 mo	Check Level. SAE 85W-140
	Front Boom Stops	500 hr/3 mo	Check proper condition and fixation.
	Wear Pads	500 hr/3 mo	Check thickness and replace if wear mark has been reached.
	Wear Pads	500 hr/3 mo	Adjust play to 1 mm (0.04 in.) if play has increased to 1.5 mm (0.06 in.) or more.
	Telescoping Cylinder	500 hr/3 mo	Adjust alignment with top rear pads.
6	Drive Belts, Engine and Air Conditioner	1000 hr/6 mo	Check tension.
11	Fuel Pre-Filter Sight Glass	1000 hr/6 mo	Clean.
22	Brake Accumulator	1000 hr/6 mo	Check pressure.

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