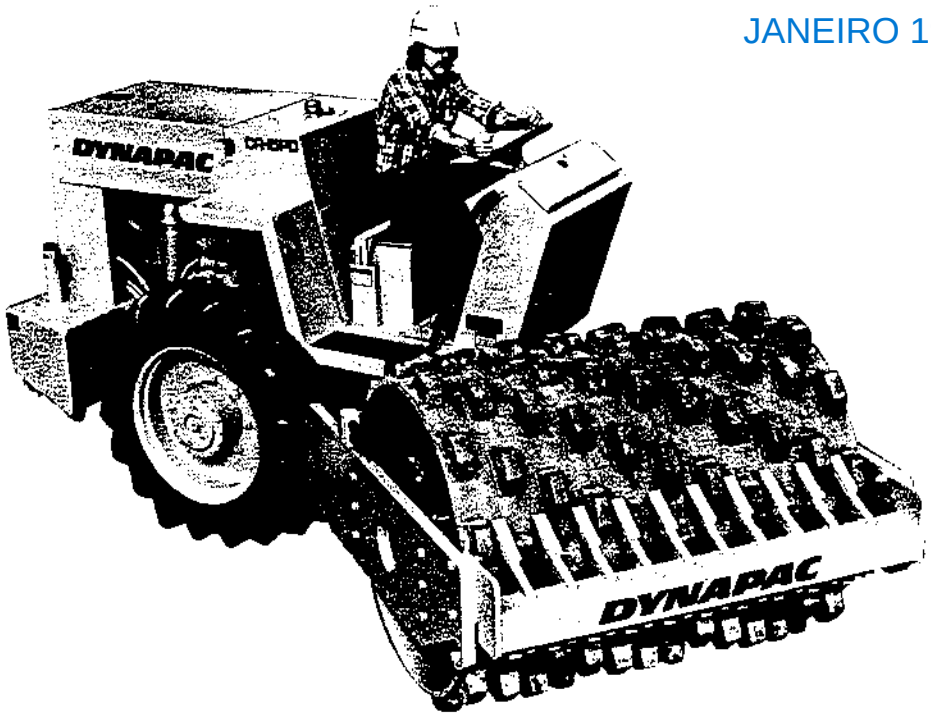
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DYNAPAC

JANEIRO 1982



MAINTENANCE MANUAL

MODEL CA-15 SERIES

VIBRATORY COMPACTORS

DYNAPAC MFG INC • KELLY PLACE • STANHOPE, N.J. 07874

SE-15-MM
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SAFETY PRECAUTIONS
READ CAREFULLY

1. READ AND UNDERSTAND OPERATOR'S MANUAL BEFORE START UP.
2. OBSERVE AND FOLLOW ALL MAINTENANCE AND SERVICE INSTRUCTIONS.
3. DO NOT OPERATE ROLLER UNLESS QUALIFIED BY TRAINING OR EXPERIENCE.
4. DO NOT OPERATE ROLLER IF IN NEED OF REPAIR OR ADJUSTMENT.
5. OBEY ALL SAFETY RULES.
6. VISUALLY INSPECT FOR GROUND HAZARDS.
7. TEST ALL CONTROLS, BRAKES AND STEERING BEFORE WORKING.
8. BEFORE START UP:
   - SET PARKING BRAKE
   - PLACE FORWARD/REVERSE CONTROL IN NEUTRAL
   - BE FIRMLY AND SECURELY SEATED AT CONTROLS.
9. ON A GRADE, DO NOT SHIFT TRANSMISSION UNLESS ROLLER IS FULLY STOPPED WITH EMERGENCY BRAKE ON.
10. USE CAUTION ON UNEVEN SURFACES AND ROUGH TERRAIN.
11. LOOK BOTH WAYS WHEN REVERSING.
12. NO RIDERS ALLOWED.
13. DO NOT GET ON OR OFF MOVING ROLLER; ALWAYS USE PROPER STEPS AND HAND GRIPS.
14. NEVER COAST OR FREE-WHEEL WITH ROLLER.
15. BEFORE LEAVING ROLLER, ADJUST AND SET PARKING BRAKE, ADJUST AND SET TRAVEL LEVER IN NEUTRAL, VIBRATION OFF, ENGINE OFF.
16. KEEP ROLLER CLEAN; AVOID DIRT AND GREASE ON OPERATOR PLATFORM.
17. KEEP ALL OPERATION PLATES AND DECALS CLEAN AND READABLE.
18. BLOCK ROLLS/TIRES AND FASTEN STEERING LOCK WHEN SERVICING OR REPAIRING ROLLER.
19. EXERCISE CAUTION WHEN FUELING MACHINE:
   - SHUT DOWN ENGINE
   - NO SMOKING
   - GROUND FILLER AGAINST TANK NECK TO AVOID A SPARK.
20. DO NOT MODIFY THIS ROLLER IN ANY WAY WHICH WILL AFFECT SAFETY WITHOUT DYNAPAC WRITTEN APPROVAL.

1. Introduction

This manual provides description, troubleshooting and maintenance instructions for the Dynapac Model CA-15 series Self-Propelled Vibratory Compactors. The compactors are designed and manufactured by Dynapac Mfg Inc, Kelly Place, Stanhope, New Jersey 07874 U.S.A.

The Model CA-15 Compactor Operator's Manual and the Illustrated Parts Manual are companion Dynapac publications.

Nomenclature in the Illustrated Parts Manual has been used throughout the manuals to maintain consistency and promote understanding. References to right hand (RH) and left hand (LH) are as seen facing forward from the operator's station. References to clockwise (CW) and counterclockwise (CCW) are as seen when facing the item as it is normally mounted on the compactor.

The text applies to all compactors unless differences are separately identified.

Included in the data package are maintenance and parts manuals by other manufacturer's for components installed on the machine which are not covered in Dynapac manuals.

The information in these publications should be closely followed in order to obtain maximum, dependable and economical service.

2. Product Support

This publication is part of the Dynapac Product Support Program; it is intended to provide the proper maintenance procedures applicable to the product at the time of publication. However, liability for personal injury or damage to equipment or property incident to use of this manual will not be assumed by Dynapac Mfg Inc, since the manual cannot account for all of the varying conditions to which the operator, serviceman or machine may be exposed.

WARNING: WHEREVER THIS SYMBOL IS DISPLAYED, BECOME ALERT. YOUR SAFETY AND THE SAFETY OF OTHERS DEPENDS LARGELY UPON YOUR KNOWLEDGE OF THE EQUIPMENT AND GOOD JUDGEMENT. DO NOT OPERATE OR SERVICE THE COMPACTOR UNLESS QUALIFIED BY TRAINING OR EXPERIENCE. READ AND UNDERSTAND THE OPERATOR'S MANUAL BEFORE START-UP.

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TECHNICAL DESCRIPTION

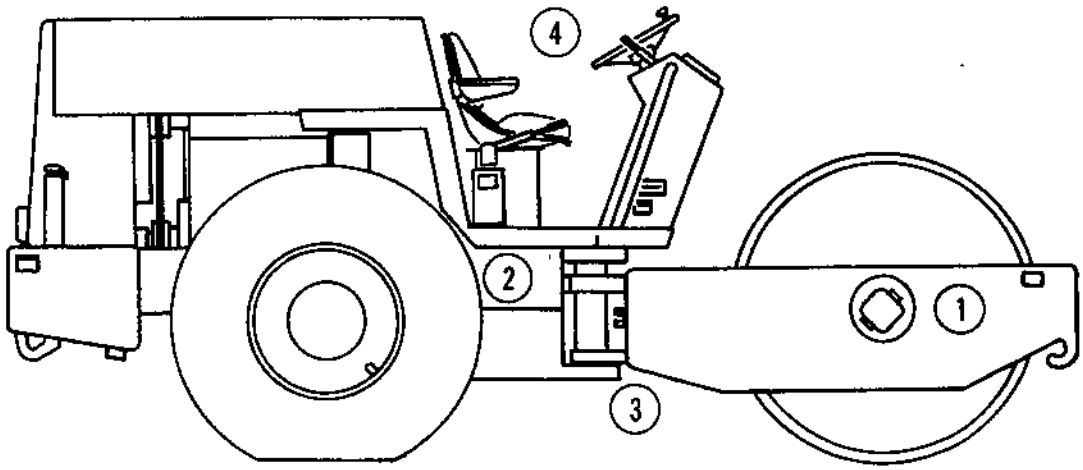
VIBRATORY COMPACTORS CA-15 SERIES

GM3-53 diesel engine

J. Deere 4239DF diesel engine

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1. Front Frame
2. Rear Frame
3. Steering Hitch
4. Operator's Station

FIGURE 3-1
Vibratory Soil Compactor
(For Model CA-15)

1. General Description

Dynapac Model CA-15 series compactors (Figure 3-1 through 3-3) are single drum self-propelled vibratory rollers for either soil or asphalt applications. The machines are divided into two groups: soil and asphalt machines with wheel drive summarized in specifications Table 3-1, and soil machines with wheel and drum drive summarized in Table 3-2. A two cycle or four cycle diesel engine supplies primary power. The compactor consists of three major assemblies; the steerable front frame, the rear or tractor frame, and the articulated steering hitch.

2. Front Frame Assembly

The drum is isolated from the frame by rubber shock absorbers. The vibrator eccentric shaft is mounted in bearings within the drum. An internal chamber between the drum heads provides oil bath lubrication for the vibrator shaft bearings. Drum bearings are maintenance free.

Single amplitude soil machines have one-piece eccentric shafts, asphalt dual amplitude models utilize a shaft having two eccentric weights which are free to rotate. The vibrator is driven by a fixed displacement hydraulic motor at the drum R.H. side; asphalt machine vibrator motors can be reversed to provide dual amplitude vibration as explained in Figure 3-4.

In addition to wheel drive, compactors having drum drive incorporate a fixed displacement reversible hydraulic motor (Figure 3-3) on the L.H. side driving the drum through a 57.8:1 ratio planetary reduction gearset in the torque hub. Either a smooth or pad drum is fitted in soil machines. Smooth drum machines have adjustable scraper bars, pad drum machines have adjustable cleaner bars (Figure 3-3) and may be equipped with a hydraulically controlled strike-off blade for leveling and spreading operations.

Asphalt machines (Figure 3-2) are equipped with a 115 gallon water tank connected to a spray bar having water nozzles adjustable for spray direction to prevent asphalt pickup on the drum. The tank includes a removable cover, filler cap and strainer, water level sight tube and a low water probe and audible warning device. These models also include replaceable and adjustable wiper assemblies at the front and rear of the drum and cocoa mats wetted from a 20 gallon solvent tank with special scrapers to prevent asphalt pickup on the tires.

3. Tractor Frame Assembly

The fuel tank is welded into the frame. The frame provides attachment for the following major components.

A water-cooled diesel engine drives the variable displacement hydraulic pump through a direct drive engine/pump adapter. A fixed displacement reversible axial piston hydraulic motor drives a two-speed transaxle with no-spin differential. In drum drive soil machines, this motor and the drum drive motor are connected in parallel with the variable displacement traction pump.

In all models except the CA-15A, the operator's station is composed of a battery box/floor plate with single seat and console subassemblies bolted to the frame. These assemblies contain the primary operating controls and indicators described in Operating Instructions. The hydraulic emergency brake system includes shoe/drum units at each wheel hub actuated by a master cylinder (foot pedal). The parking brake lever operates the same shoe/drum units by cable and mechanical linkage.

Model CA-15A compactors are similar except that dual seats and a pedestal assembly with water and dual amplitude controls are fitted.

4. Steering Hitch Assembly

The hitch connects the front and tractor frames. Vertical and horizontal pins mounted in self-centering bearings provide pivoting in two planes. Grease fittings are located at the bearings and at both steering cylinder attachment bearings. A safety lock bar is incorporated.

WARNING: THE LOCK BAR MUST BE CONNECTED TO THE LUG ON THE TRACTOR FRAME WHEN PERFORMING ANY MAINTENANCE IN THIS AREA OR WHEN TRANSPORTING COMPACTOR TO PREVENT ACCIDENTAL ARTICULATION AND PERSONAL INJURY.

5. Hydraulic Systems

The traction, vibration and steering systems share a common 34 gallon hydraulic reservoir having a manually operated gate valve, a 10 micron traction system suction line filter with a direct reading vacuum gauge, a fluid level sight gauge and a magnetic drain plug. The tank includes a large removable cover for cleaning purposes and a vented cap and strainer assembly.

6. Traction System (Figure 4-1)

The variable displacement axial piston pump is driven from the pump engine adapter. The pump is connected by high pressure hoses to a fixed displacement reversible motor driving a two-speed transaxle with no-spin differential.

Since only a fluid connection exists between pump and motor, control of fluid flow will determine performance of the system and of the compactor.

TABLE 3-1
Specifications - Wheel Drive Compactors

	MODEL CA-15 (SOIL)		MODEL CA-15A (ASPHALT)	
GENERAL				
Shipping Weight:	12,600 lbs	5,715 kg	14,100 lbs	6,396 kg
Operating Weight:	13,215 lbs	5,994 kg	15,215 lbs	6,902 kg
Tractor Module Weight:	7,015 lbs	3,182 kg	7,515 lbs	3,409 kg
Drum Module Weight:	6,200 lbs	2,812 kg	7,200 lbs	3,266 kg
Overall Length:	173 in.	4,390 mm	173 in.	4,390 mm
Overall Width:	73 in.	1,850 mm	73 in.	1,850 mm
Overall Height:	75 in.	1,910 mm	86 in.	2,184 mm
Drum Diameter x Width:	48x66 in.	1219x1676 mm	48x66 in.	1219x1676 mm
Wheelbase:	91-1/2 in.	2,324 mm	91-1/2 in.	2,324 mm
TRACTION SYSTEM				
Engine:				
GM3-53:@ 2400 rpm	85 hp	63 kw/40 Hz	85 hp	63 kw/40 Hz
Displacement	159 cu in.	2,606 cu cm	159 cu in.	2,606 cu cm
Bore	3.875 in.	98 mm	3.875 in.	98 mm
Stroke	4.5 in.	114 mm	4.5 in.	114 mm
J. Deere 4329 DF:@ 2400 rpm	73.5 hp	55 kw/40 Hz	73.5 hp	55 kw/40 Hz
Displacement	239 cu in.	3,917 cu cm	239 cu in.	3,917 cu cm
Bore	4.19 in.	106 mm	4.19 in.	106 mm
Stroke	4.33 in.	110 mm	4.33 in.	110 mm
ELECTRICAL				
Battery	12v, 180 amp hrs. 20 hr. rating		12v, 180 amp hrs. 20 hr. rating	
Alternator:				
GM3-53	25 amp		25 amp	
J.Deere 4239DF	35 amp		35 amp	
PROPULSION:	Hydrostatic, 2 speed transaxle with planetary no-spin differential.		Hydrostatic, 2 speed transaxle with planetary no-spin differential.	
Travel Speed:				
1st Gear	0-4 mph	6.4 km/hr	0-4 mph	6.4 km/hr
2nd Gear	0-12 mph	19.2 km/hr	0-12 mph	19.2 km/hr
Gradability (b):	30%		30%	
Tires:	13.6 x 28 6 ply, non-skid		14.00 x 24 6 ply, smooth	
Steel Wheels (Optional)	N/A		2, 46.5 dia. x 17 x 5/8 in.	

TABLE 3-1
Specifications - Wheel Drive Compactors (continued)

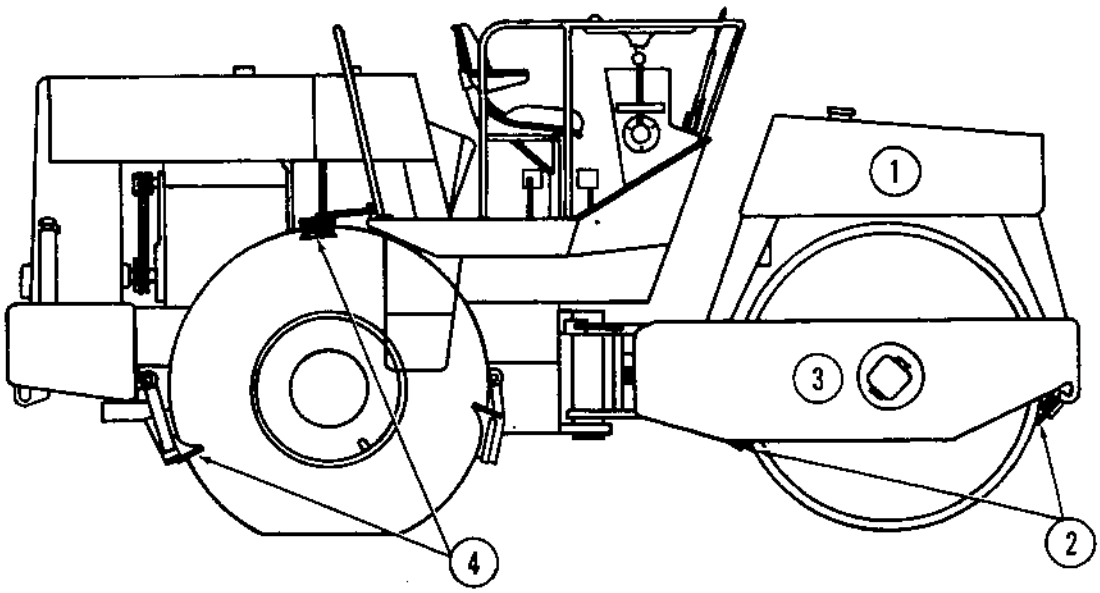
	MODEL CA-15 (Soil)		MODEL CA-15A (Asphalt)	
VIBRATION				
Vibration Drive:	Direct, hydraulic motor, control at operator station.		Direct, hydraulic motor, control at operator station with dual amplitude and quikstop auto cutoff.	
Frequency @ 2400 rpm:	1,750 vpm	29 Hz	2,500 vpm	42 Hz
Static Force:	6,200 lbs	27,578 N	7,200 lbs	32,026 N
Centrifugal Force/1,750 vpm:	22,000 lbs	97,856 N/29 Hz	N/A	
Centrifugal Force:				
High Amplitude	N/A		24,000 lbs @ 2,500 vpm 106,752 N @ 42 Hz	
Low Amplitude	N/A		12,000 lbs @ 2,500 vpm 53,376 N @ 42 Hz	
Centrifugal Force per linear inch of drum width (single amplitude):	333 pli		N/A	
Centrifugal Force per linear inch of drum width:				
High Amplitude	N/A		364 pli	
Low Amplitude	N/A		182 pli	
STEERING				
Steering:	Hydrostatic, centerpoint articulated		Hydrostatic, centerpoint articulated.	
Outside Turning Radius:	164 in.	4,165 mm	164 in.	4,165 mm
Steering Angle:	±40°		±40°	
Vertical Oscillation:	±12°		±12°	
BRAKES				
Service:	Hydrostatic/Dynamic		Hydrostatic/Dynamic	
Emergency:	Hydraulic (foot) to wheel drums.		Hydraulic (foot) to wheel drums.	
Parking:	Mechanical (hand) linkage to drums.		Mechanical (hand) linkage to drums.	
CAPACITIES				
Fuel Oil Tank:	60 U.S. gal	227 l	60 U.S. gal	227 l
Hydraulic Tank:	34 U.S. gal	129 l	34 U.S. gal	129 l
Engine Oil:				
GM3-53	13 U.S. qt	12.3 l	13 U.S. qt	12.3 l
J.Deere 4239DF	6 U.S. qt	5.68 l	6 U.S. qt	5.68 l
Water Sprinkler Tanks:	N/A	NA	115 U.S. gal	435 l
Engine Coolant:				
GM3-53	26 U.S. qt	24.6 l	26 U.S. qt	24.6 l
J.Deere 4239DF	18 U.S. qt	17 l	18 U.S. qt	17 l
Transmission:	3-1/2 U.S. pt	16.56 m^3	3-1/2 U.S. pt	16.56 m^3
Axle Hubs:	6-1/2 U.S. pt	30.75 m^3	6-1/2 U.S. pt	30.75 m^3
Differential:	11-1/4 U.S. pt	53.2 m^3	11-1/4 U.S. pt	53.2 m^3
Torque Hub:	3 U.S. qt	2.8 l	3 U.S. qt	2.8 l
Eccentric Shaft Reservoir:	4 U.S.gal	15 l	4 U.S. gal	15 l

TABLE 3-1
Specifications - Wheel Drive Compactors (continued)

	MODEL CA-15 (Soil)		MODEL CA-15A (Asphalt)	
HYDRAULIC PRESSURES				
Traction System:				
Inlet Suction (Maximum)	10 in. Hg.	254 mm	10 in. Hg.	254 mm
Charge Pressure (PSI)	220 Neut. 190 Stroke	15.4 kg/cm² 13.6 kg/cm²	220 Neut. 190 Stroke	15.4 kg/cm² 13.6 kg/cm²
Closed Loop Relief Pressures (PSI)	5,000	352 kg/cm²	5,000	352 kg/cm²
Traction Case Pressure (PSI)	40 max.	2.8 kg/cm²	40 max.	2.8 kg/cm²
Vibration System:				
Average Working Pressure (PSI)	1,500-1,600	105-112 kg/cm²	1,500-1,600	105-112 kg/cm²
Relief Pressure (PSI)	2,000	141 kg/cm²	2,000	141 kg/cm²
Vibration per Minute at 2400 Engine rpm:	1,750	29 Hz	2,500	42 Hz
Steering System:				
Relief Pressure (PSI)	1,500	105 kg/cm²	1,500	105 kg/cm²
THROTTLE ADJUSTMENTS				
	GM3-53	**J. Deere 4239DF**	**GM3-53**	**J. Deere 4239DF**
Low Idle; Closed Throttle	800 rpm	1,000 rpm	800 rpm	1,000 rpm
High Idle; Full Throttle (no load)	2,585 rpm	2,450 rpm	2,585 rpm	2,450 rpm

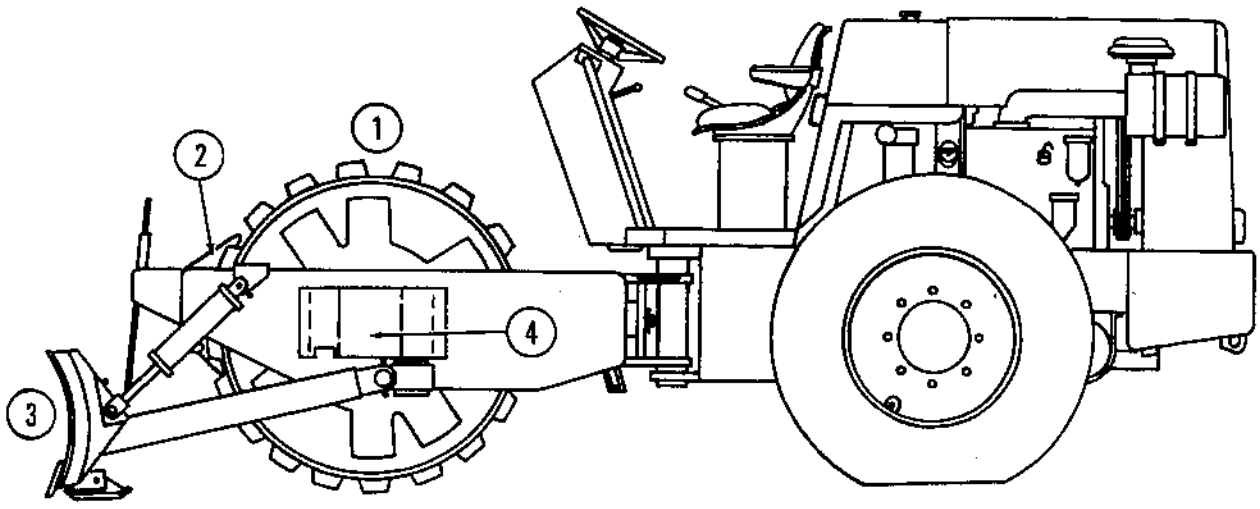
(a) Includes weights of full fuel, 1/2 water, plus 175 lbs operator (CIMA Spec.).

(b) Gradability is determined by the traction and rolling resistance of the material.



1. Water Tank
2. Drum Wipers
3. Vibration Motor
4. Tire Scraper & Mat

FIGURE 3-2
Vibratory Asphalt Compactor
(For Model CA-15A)



1. Pad Drum
2. Cleaner Bar
3. Strike-Off Blade
4. Drum Drive Motor

FIGURE 3-3
Vibratory Drum Drive Compactor with Strikeoff Blade
(For Model CA-15PDB)

TABLE 3-2
Specifications Wheel and Drum Drive Compactors

	MODEL CA-15D (SOIL)	MODEL CA-15PD (SOIL)	MODEL CA-15PDB (SOIL)
GENERAL			
Shipping Weight:	13,200 lbs 5,988 kg	15,400 lbs 6,985 kg	16,400 lbs 7,439 kg
Operating Weight:	13,815 lbs 6,266 kg	16,015 lbs 7,264 kg	17,015 lbs 7,718 kg
Tractor Module Weight:	7,015 lbs 3,182 kg	7,515 lbs 3,409 lg	7,515 lbs 3,409 kg
Drum Module Weight:	6,800 lbs 3,085 kg	8,500 lbs 3,856 kg	9,500 lbs 4,309 kg
Overall Length:	173 in. 4394 mm	184 in. 4674 mm	196 in. 4978 mm
Overall Width:	78-1/2 in. 1994 mm	78-1/2 in. 1994 mm	88 in. (c) 2235 mm
Overall Height:	75 in. 1905 mm	75 in. 1905 mm	75 in. 1905 mm
Drum Diameter x Width:	48x66 in. 1219x1676mm	54x66 in. 1372x1676mm	54x66 in. 1372x1676mm
Wheelbase:	91-1/2 in. 2324 mm	91-1/2 in. 2324 mm	112 in. 2845 mm
TRACTION SYSTEM			
GM3-53: @ 2400 rpm	85 hp 63kw/40hz	85 63kw/40hz	85 hp 63kw/40hz
Displacement	159 cu in. 2606 cu cm	159 cu in. 2606 cu cm	159 cu in. 2606 cu cm
Bore	3.875 in. 98 mm	3.875 in. 98 mm	3.875 in. 98 mm
Stroke	4.5 in. 114 mm	4.5 in. 114 mm	4.5 in. 114 mm
J. Deere 4239DF: @2400 rpm	73.5 55kw/40hz	73.5 hp 55kw/40hz	73.5 hp 55kw/40hz
Displacement	239 cu in. 3917 cu cm	239 cu in. 3917 cu cm	239 cu in. 3917 cu cm
Bore	4.19 in. 106 mm	4.19 in. 106 mm	4.19 in. 106 mm
Stroke	4.33 in. 110 mm	4.33 in. 110 mm	4.33 in. 110 mm
ELECTRICAL			
Battery:	12v, 180 amp hrs.	12v, 180 amp hrs.	12v, 180 amp hrs.
Alternator:			
GM3-53	25 amp	25 amp	25 amp
J.Deere 4239DF	35 amp	35 amp	35 amp
PROPULSION			
Propulsion:	Hydrostatic, torque hub drum drive in parallel with 2-speed transmission to planetary no-spin axle.	Hydrostatic, torque hub drum drive in parallel with 2-speed transmission to planetary no-spin axle.	Hydrostatic, torque hub drum drive in parallel with 2-speed transmission to planetary no-spin axle.
Travel Speed:			
1st Gear	0-2.5 mph (4.0 km/hr)	0-2.5 mph (4.0 km/hr)	0-2.5 mph (4.0 km/hr)
2nd Gear	0-4.0 mph (6.4 km/hr)	0-4.0 mph (6.4 km/hr)	0-4.0 mph (6.4 km/hr)
Gradability: (b)	40%	40%	40%
Tires:	13.6 x 28 6 ply, ANS	13.6 x 28 6 ply, cleated	13.6 x 28 6 ply, cleated

TABLE 3-2
Specifications - Wheel and Drum Drive Compactors (continued)

	MODEL CA-15D (Soil)	MODEL CA-15PD (Soil)	MODEL CA-15PDB (Soil)
VIBRATION			
Vibration Drive:	Direct drive hydraulic motor, control at operator station.	Direct drive hydraulic motor, control at operator station.	Direct drive hydraulic motor, control at operator station.
Frequency @ 2,400 engine rpm:	1,750 vpm (29.1 Hz)	1,750 vpm (29.1 Hz)	1,750 vpm (29.1 Hz)
Static Force:	11,000 lbs 48,928 N	14,650 lbs 65,163 N	15,750 lbs 70,050 N
Centrifugal Force/1,750 vpm::	22,000 lbs 97,856N/29Hz	26,000 lbs 115,648N/29Hz	(blade up) 26,000 lbs 115,648N/29Hz
Centrifugal Force per linear inch of drum width:	333 lbs	N/A	N/A
Pad Contact Area:	N/A	13.5 sq in. 87 Sq Cm	13.5 sq in. 87 Sq Cm
Pad Contact Pressure:	N/A	232-464 psi 16.3-32.7Kg/Cm	260-520 psi 18.3-36.6 Kg/Cm
STEERING			
Steering:	Hydraulic, center-pivot articulated	Hydraulic, center-pivot articulated	Hydraulic, center-pivot articulated
Outside Turning Radius:	164 in. (4,165 mm)	164 in. (4,165 mm)	164 in. (4,165 mm)
Steering Angle:	±40°	±40°	±40°
Vertical Oscillation:	±12°	±12°	±12°
BRAKES			
Service:	Hydrostatic/Dynamic	Hydrostatic/Dynamic	Hydrostatic/Dynamic
Emergency:	Hydraulic (foot)-to wheel drums	Hydraulic (foot)-to wheel drums	Hydraulic (foot)-to wheel drums
Parking:	Mechanical linkage to drums	Mechanical linkage to drums	Mechanical linkage to drums
CAPACITIES			
Fuel Oil Tank:	60 U.S. gal 227 l	60 U.S. gal 227 l	60 U.S. gal 227 l
Hydraulic Tank:	34 U.S. gal 129 l	34 U.S. gal 129 l	34 U.S. gal 129 l
Engine Oil:			
GM3-53	13 U.S. qt 12.30 l	13 U.S. qt 12.30 l	13 U.S. qt 12.30 l
J.Deere 4239DF	6 U.S. qt 5.68 l	6 U.S. qt 5.68 l	6 U.S. qt 5.68 l
Engine Coolant:			
GM3-53	26 U.S. qt 24.6 l	26 U.S. qt 24.6 l	26 U.S. qt 24.6 l
J.Deere 4239DF	18 U.S. qt 17 l	18 U.S. qt 17 l	18 U.S. qt 17 l
Transmission:	3½ U.S. pt 16.56 m^3	3½ U.S. pt 16.56 m^3	3½ U.S. pt 16.56 m^3
Axle Hubs:	6½ U.S. pt 30.75 m^3	6½ U.S. pt 30.75 m^3	6½ U.S. pt 30.75 m^3
Differential:	11¼ U.S. pt 53.2 m^3	11¼ U.S. pt 53.2 m^3	11¼ U.S. pt 53.2 m^3
Torque Hub:	3 U.S. qt 2.8 l	3 U.S. qt 2.8 l	3 U.S. qt 2.8 l
Eccentric Shaft Reservoir:	4 U.S. gal 15 l	4 U.S. gal 15 l	4 U.S. gal 15 l

TABLE 3-2
Specifications - Wheel and Drum Drive Compactors (continued)

	MODEL CA-15D (Soil)	MODEL CA-15PD (Soil)	MODEL CA-15PDB (Soil)
HYDRAULIC PRESSURES			
Traction System:			
Inlet Suction	10 in. Hg max. 254 mm	10 in. Hg max. 254 mm	10 in. Hg max. 254 mm
Charge Pressure (PSI)	220 Neut. 15.4 kg/cm² 190 Stroke 13.6 kg/cm²	220 Neut. 15.4 kg/cm² 190 Stroke 13.6 kg/cm²	220 Neut. 15.4 kg/cm² 190 Stroke 13.6 kg/cm²
Closed Loop Relief Pressures (PSI)	5,000 352 kg/cm²	5,000 352 kg/cm²	5,000 352 kg/cm²
Case Pressure (PSI)	40 max. 28 kg/cm²	40 max. 28 kg/cm²	40 max. 28 kg/cm²
Vibration System:			
Average Working Pressure (PSI)	1,500-1,600 105-113 kg/cm²	1,500-1,600 105-113 kg/cm²	1,500-1,600 105-113 kg/cm²
Relief Pressure (PSI)	2,000 141 kg/cm²	2,000 141 kg/cm²	2,000 141 kg/cm²
Vibration Per Minute at 2,400 Engine rpm:	1750 (29Hz)	1750 (29Hz)	1750 (29Hz)
Steering System:			
Relief Pressure (PSI)	1,500 105 kg/cm²	1,500 105 kg/cm²	1,500 105 kg/cm²
Strikeoff Blade Circuit:			
Relief Pressure (PSI)			3,000 210 kg/cm²

THROTTLE ADJUSTMENTS	GM3-53	J.Deere 4239DF	GM3-53	J.Deere 4239DF	GM3-53	J.Deere 4239DF
Low Idle; Closed Throttle	800 rpm	1,000 rpm	800rpm	1,000 rpm	800 rpm	1,000 rpm
High Idle; Full Throttle (no load)	2,585 rpm	2,450 rpm	2,585 rpm	2,450 rpm	2,585 rpm	2,450 rpm

(a) Includes weights of full fuel, 1/2 water, plus 175 lbs. operator (CIMA Spec).
(b) Gradability is determined by the traction and rolling resistance of the material.
(c) At blade.

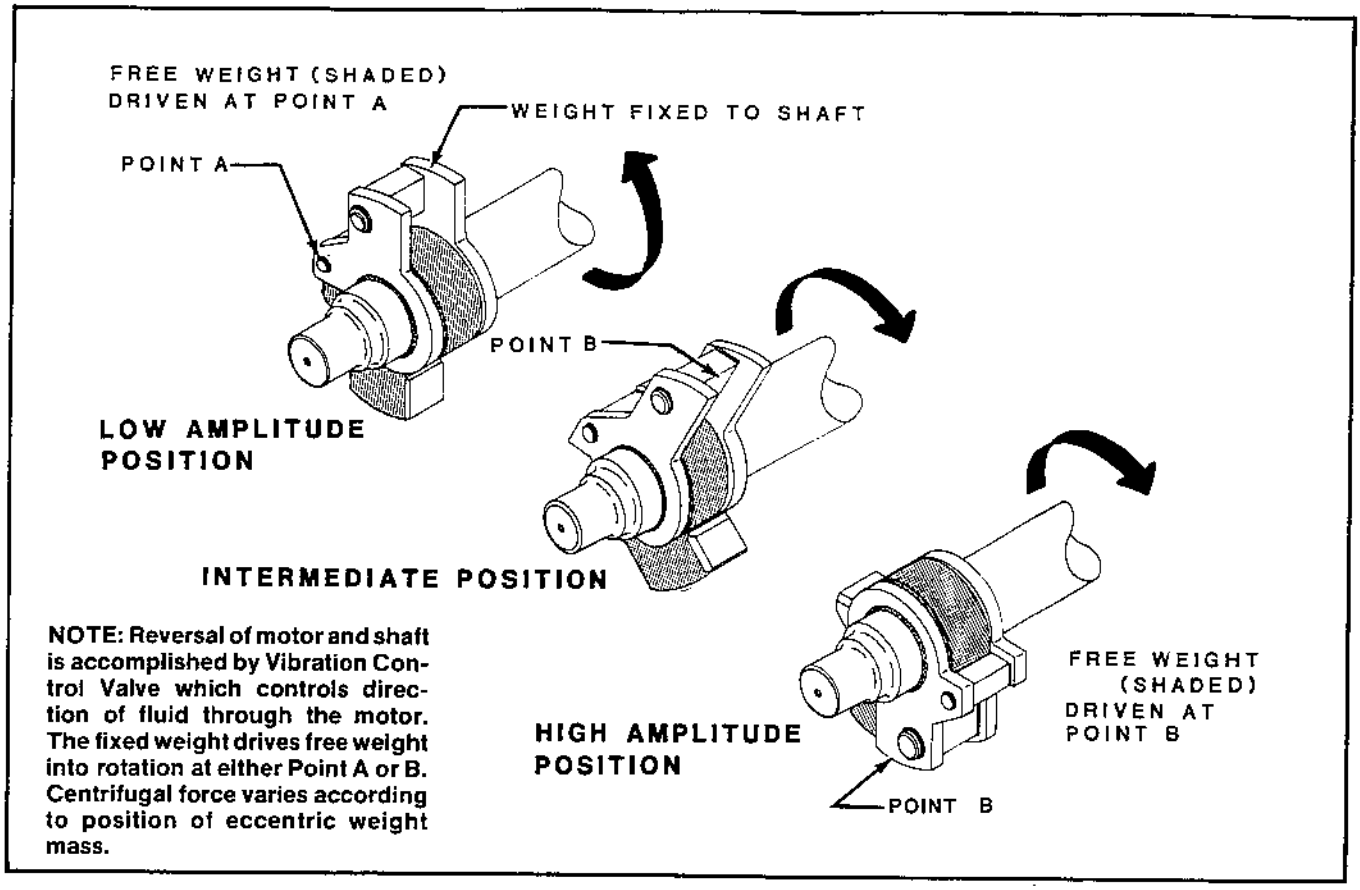


FIGURE 3-4
Dual Amplitude Vibration Shaft Operation

FLOW is controlled by engine RPM, and by stroking the pump. The displacement control valve, located on the pump, is connected by a cable to the forward reverse control lever at the operator's station. Positioning the lever determines both the direction and flow of fluid delivered from the pump through the motor. *SPEED* of the motor, and thus compactor speed, increases as flow increases, and decreases as flow decreases. Dynamic braking occurs when the forward reverse control lever is moved into the neutral position.

Traction system *WORKING PRESSURE* is determined by external conditions such as grade and rolling resistance. Pressure is limited by two high pressure relief valves located in the manifold assembly on the transmission drive motor. On compactors with drum drive, an additional circuit, in parallel with the closed loop transmission/wheel drive circuit, supplies fluid to the fixed displacement drum drive motor. This motor is coupled to a 57.8:1 ratio planetary torque hub which turns the drum.

CAUTION: TOW OR PUSH FOR SHORTEST POSSIBLE DISTANCE AT SPEED NOT TO EXCEED 1-1/2 MPH.

7. Vibration System

The two-section fixed displacement gear pump is driven from the engine front power takeoff. Since the pump is normally driven at a constant (2400 engine) RPM, Hydraulic *FLOW* through the system is constant, resulting in constant frequency or vibrations per minute (VPM).

A. In single amplitude soil machines (Figure 4-2), the vibration (forward) section of the pump is connected to a two-position manual control valve. The valve either directs oil flow through the vibration motor causing the single piece eccentric weights to rotate and produce vibration, or by-passes the motor, routing the oil through the oil cooler and back to the reservoir, producing no vibration. A replaceable relief valve within the vibration control valve limits system pressure to 2000 psi.

B. In dual amplitude machines (Figure 4-3), the pump is connected to an electrically positioned vibration control valve. The valve includes a relief valve connected to a return circuit through the oil cooler and into the reservoir. The cooler is equipped with a bypass valve to protect it against pressure

surge. A hydraulic pilot circuit conducts filtered oil from the traction charge pump to the solenoid/pilot ends of the vibration control valve. Two solenoids on the valve use hydraulic pilot circuit pressure to shift the valve spool to control flow direction to the motor. The solenoids (Figures 4-6, 4-7) are electrically positioned by manually setting the AMPLITUDE CONTROL switch under the operator's station to HI or LO.

WARNING: DO NOT CHANGE AMPLITUDE SETTING WHILE VIBRATING.

Direction of fluid flow to the reversible motor determines direction of eccentric shaft rotation, and as a result, the *AMPLITUDE* and amount of centrifugal force produced by the vibrator eccentric shaft as explained in Figure 3-4.

A vibration switch at the operator's station can be placed in MAN (manual), OFF or AUTO positions. A cam-operated micro switch opens whenever the forward reverse control is returned to the neutral position. With the vibration switch in AUTO, voltage to the vibration control valve is interrupted when the micro switch opens; this causes fluid flow to the motor to be by-passed. Without fluid flow to the motor, vibration stops. The micro switch cam can be adjusted to determine the travel speed at which the switch will open and close. In MAN, the micro switch is bypassed and is not part of the vibrator automatic control circuit; vibration continues until switch is set to OFF. In OFF, fluid flow from the pump is bypassed through the control valve to the reservoir; the vibrator motor receives no flow and there is no vibration. When using the MAN position, it is important to turn vibration OFF before coming to a stop or compaction will be concentrated in areas under the drum resulting in damage to the compacted surface.

On compactors from S/N 838, and automatic non-adjustable vibration quikstop valve (Figure 4-3) is located in the hydraulic circuit between the vibration control valve and motor. A piston exposed to pump pressure within the valve opens a pilot check valve to provide unrestricted flow through the motor during either high or low amplitude operation. When flow is diverted from the motor by the vibration control valve (using either OFF or AUTO mode), reduced pressure causes the piston to shift, closing the pilot check valve. The resulting back pressure then opens a relief valve with restricted outlet which applies a braking affect on the motor, stopping it within three seconds. The valve reduces the time during which the vibrator is within its natural vibration frequency range.

8. Steering System (Figure 4-4)

The steering section of the fixed displacement pump receives hydraulic oil through internal porting from the vibration pump. Except in CA-15PDB models with strike off blades (see note figure 4-4), fluid flow from the steering pump then passes through a (system) pressure relief valve to the steering valve. The steering valve directs hydraulic fluid to opposite ends of two steering cylinders attached between the rear frame and steering hitch assemblies. Extending one cylinder rod while retracting the other steers the roller.

9. Model CA-15PDB Strike-Off Blade Control Circuit (Figure 4-4)

The strike-off blade control valve is installed in the steering circuit upstream of the relief valve and steering valve. The blade control valve receives pressure from the steering section of the fixed displacement pump. The valve handle, located to the right of center beneath the instrument panel, has four positions. UP and DOWN positions are spring-loaded to return to HOLD position. The blade will stop and remain fixed when the handle is released. FLOAT is a detent position which allows the blade to drop and follow ground contours.

10. Model CA-15A Drum Water/Tire Wetting Systems (Figure 4-5)

Water system components are corrosion resistant and include a sight gauge, clear tubing connections, 115 gallon tank with low water level probe, manual shutoff valves, an impeller type pump, a filter with a 60 mesh screen and a drum spray bar with nozzles adjustable for spray direction.

The water system is interconnected with a 20 gallon tank which distributes a wetting agent/water mixture by gravity to cocoa mats at each tire. A solenoid valve, strainer and three manual valves are included in this system. Water may be transferred from the drum tank to the tire wetting tank.

CAUTION: DRAIN DRUM AND TIRE SYSTEMS AT TEMPERATURES OF 32°F (0°C) OR BELOW OR FREEZE DAMAGE MAY OCCUR.

Both systems are controlled by individual two-position (ON, OFF) switches (Figures 4-6, 4-7) at the operator's station pedestal.

Model CA-15A compactors from S/N 838 incorporate drum water sprinkler systems which give audible pulsating warning and shut off the pump when two minutes of water remains in the tank. A reset button will turn off the warning buzzer and restart the pump. Two minutes after reset, the automatic (solid state) control module will shut off the pump, sound a continuous warning signal and make the reset switch incapable of restarting the pump; the system must then be shut off and refilled with water to regain normal operation of the pump.

reset switch and signal. This allows the operator to vacate the mat before water runs out and provides protection for the pump.

CAUTION: DO NOT ATTEMPT TO RUN PUMP WITHOUT WATER OR DAMAGE TO IMPELLER WILL OCCUR.

Compactors to S/N 837 are not equipped with control module, reset switch, signal or probe. Instead, a low water cutoff switch in the tank turns off the pump.

11. Electrical System (Figures 4-6 through 4-9)

A 12 volt negative ground battery of at least 180 amp/hr, 20 hour rating, and a 35 amp (J. Deere) or 25 amp (GM), engine-driven alternator with solid state regulation provide current for the system.

The system is controlled from the operator's station by a three-position ignition switch located on the instrument panel. In the STOP position, the electrical circuit is open. In the ON position, voltage is supplied to the fuel pump solenoid (J. Deere), oil pressure light, the ammeter/charging circuit, and the main fuse block. In the START position (spring loaded return to ON), the starter solenoid engages the starter only if the forward/reverse control lever is in the neutral position. In this position, the netural start cam on the lever closes the micro switch which completes the starter circuit. This safety feature prevents accidental movement of the compactor and possible injury to personnel when starting the engine. Proper adjustment of this switch is essential for safe operation.

WARNING: DO NOT BY-PASS THIS SYSTEM.



1. General Information

A. Troubleshooting: Procedures for the traction, vibration, steering and water/tire wetting systems are presented in Tables 4-1 through 4-6. The tables may be used in conjunction with Figures 4-1 through 4-5 in order to quickly identify and remedy troubles which may develop under operating conditions.

Problems not covered in the procedures or which cannot be identified by analysis should be referred to your authorized Dynapac distributor for assistance.

B. Leak Checks: When checking for suspected fluid leaks, use wood or other suitable material, not the hands.

WARNING: ESCAPING FLUID UNDER PRESSURE CAN PENETRATE THE SKIN. IF SO INJURED, GET MEDICAL ATTENTION IMMEDIATELY.

2. Traction System

In order to function properly, a hydrostatic transmission must maintain certain pressures at specific locations in the system. Any deviation from normal pressures will be reflected in abnormal or inefficient operation.

The troubleshooting gauges and fittings listed in Table 4-7 are necessary for diagnosis and evaluation of the system. The test gauges are connected into the system at the locations shown in Figure 4-1 and are used with the engine warmed up and at full load operating speed as follows:

A. Traction Pump Inlet Suction. Vacuum at the charge pump inlet during normal operation should not exceed 10 Hg. It is acceptable, however, for the inlet vacuum to exceed this figure during cold start-up. Install vacuum test gauge C (Table 4-7) in place of the system vacuum gauge on the filter; see Figure 4-1.

NOTE: System vacuum gauge should not be used for troubleshooting.

B. Traction Pump Charge Pressure. Normal charge pressure is 160-190 psi when pump is driving motors, and 190-220 psi when pump is in neutral. Install Gauge A (Table 4-7) in place of charge test plug on pump.

C. System or Relief Pressure. The maximum traction system pressure is controlled by the transmission motor manifold high pressure relief valves. The relief valves are stamped with a two digit number stating valve setting. For example: "50" on CA-15 valves represents 5000 psi. Install Gauge B (Table 4-7) in place of FWD and REV test plugs at motor manifold.

D. Traction Case Pressure. The case pressures should not exceed 40 psi under normal operating conditions. Install Gauge D (Table 4-7) in place of plug opposite drain line on motor.

E. Failure of Traction System Motors or Pump. When motor and/or pump failure is suspected, examine the suction line filter element:

(1) Large pieces of brass or other metal particles indicates a major failure has occurred and that contamination is present throughout the traction circuit. To *PREVENT RECURRENT FAILURES*, replace filter, pump and both motors, drain flush and clean all hoses and the reservoir. Hydraulic oil otherwise in good condition with no evidence of burning or breakdown can be filtered and reused.

(2) Minute flecks of metal widely dispersed is normal.

F. Use Table 4-1 in conjuction with Figure 4-1 for additional troubleshooting information on the traction system.

3. Vibration System

Test connections for troubleshooting the vibration systems are shown in Figures 4-2 and 4-3. The model CA-15/15D/15PD/15PDB manual control valve (Figure 4-2) is fitted with a 1/8 inch pipe plug at the inlet tee in the pressure line from the pump. The model CA-15A vibration control valve (Figure 4-3) is fitted with two 1/8 inch pipe plugs at the outlet elbows in the pressure lines to the vibration motor.

A. Install troubleshooting gauge B and the appropriate equipment from Table 4-7 to make the connections.

B. Average working pressure with the engine warmed up and at full load operating speed is approximately 1200-1400 psi for Model CA-15/15D/15PD/15PDB machines, and 1000-1100 psi for Model CA-15A machines.

C. System relief pressure at full load operating speed is 2000 psi for all models.

D. Use Table 4-2 or 4-3 in conjunction with Figure 4-2 or 4-3 as applicable for additional troubleshooting information on the vibration systems.

4. Steering System

The test connection point for troubleshooting the steering system is shown in Figure 4-4. The relief valve is located at the "IN" port on steering valve.

A. Install troubleshooting gauge B and the appropriate equipment from Table 4-7 between the pressure line from the pump and the relief valve to make the connection.

B. Hydraulic pressure can be verified as follows:

(1) Start and warm up engine and run at full load operating speed.

(2) Turn steering wheel momentarily to one end of its travel (steering hitch ear aginst stop pad on frame) just long enough to read the test gauge. The relief pressure should be 1500 psi.

CAUTION: DO NOT HOLD SYSTEM AT RELIEF VALVE PRESSURE FOR MORE THAN A FEW SECONDS AT A TIME OR RAPID OVERHEATING OF THE FLUID AND COMPONENTS WILL OCCUR.

NOTE: The pressure relief valve is a protection for all parts in the steering system; there is no pressure relief valve in the power steering valve itself.

C. Use Table 4-4 in conjunction with Figure 4-4 for additional troubleshooting information on the steering system.

5. Model/CA-15PDB Strike-Off Blade Circuit

The test connection point for troubleshooting the strike-off blade circuit is shown in Figure 4-4. The strike-off blade circuit is connected in series with the steering system, between the pump and relief valve. The blade control valve incorporates an adjustable relief valve set at 3000 psi.

A. Install troubleshooting gauge B and the appropriate hardware from Table 4-7 between the pressure line from the steering pump and the "IN" port of the blade control valve.

B. Hydraulic pressure can be verified as follows:

(1) Start and warm up engine and run at full load operating speed.

(2) Set selector handle momentarily to UP position and hold just long enough to read test gauge. Relief pressure should be 3000 psi.

CAUTION: DO NOT HOLD CIRCUIT AT RELIEF VALVE PRESSURE FOR MORE THAN A FEW SECONDS AS RAPID OVERHEATING OF FLUID AND COMPONENTS WILL OCCUR.

C. Use Table 4-5 in conjunotion with Figure 4-4 for additional troubleshooting information on the blade control circuit.

6. Model CA-15A Water/Solvent Sprinkler System

Use Troubleshooting Table 4-6 in conjunction with the water/solvent sprinkler system schematic Figure 4-5 and the electrical system schematic in Figure 4-6 or 4-7 as applicable.

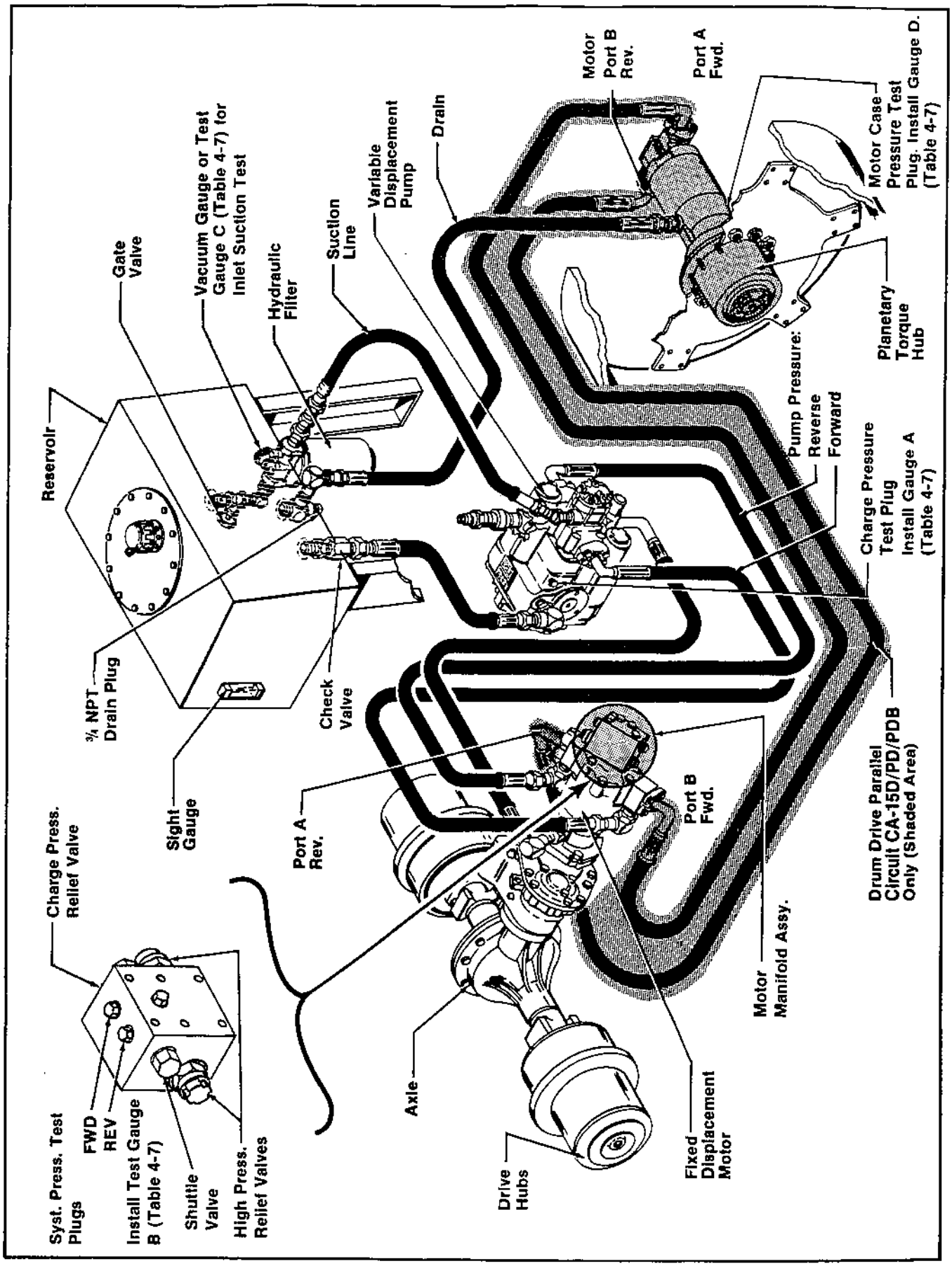


FIGURE 4-1
Traction System Schematic

TABLE 4-1
Traction System Troubleshooting*

TROUBLE	PROBABLE CAUSE	REMEDY
1. Compactor will not operate in either direction.	a. Gate valve in closed position.	a. Open gate valve.
	b. Reservoir low on fluid due to leaks indicated by low or zero charge pressure.	b. Locate and fix leaks. Replenish reservoir with recommended fluid.
	c. Faulty forward reverse control linkage.	c. Check cable between FWD/REV control lever and traction pump arm for free travel, security, adjustment or damage. Adjust as required, however, DO NOT move pump arm to meet cable clevis.
	d. Filter or suction line from reservoir to charge pump of traction pump plugged or collapsed. Indicated by high vacuum and low charge pressure.	d. Replace filter and/or clean or replace suction line.
	e. Charge pressure relief valve in charge pump of traction pump or transmission motor manifold valve damaged or stuck open. Indicated by low or zero charge pressure. NOTE: If problem is in charge pump of traction pump, pressure will be low or zero when pump is in neutral. If problem is in manifold valve, pressure will be low when in stroke.	e. Replace faulty assembly.
	f. Charge pump drive key or shaft is broken. Indicated by zero charge pressure when pump is in neutral or when trying to stroke.	f. Replace charge pump assembly and/or key. NOTE: Malfunction in charge pump will affect CA-15A vibration system operation. See Table 4-3, item 6g.
	g. Plugged control orifice on traction pump. Indicated by normal charge pressure in neutral but pump will not go into stroke.	g. Remove bolts holding control housing on traction pump and check the orifice. See Sundstrand Bulletin 9630, page 16. **CAUTION: DO NOT ALLOW THE ORIFICE OR O-RING TO FALL INTO THE PUMP CASE.**
	h. Disconnected internal control valve linkage on traction pump. Indicated by normal charge pressure in neutral but pump will not go into stroke. Control handle may move freely.	h. Disconnect fwd/rev control cable clevis at arm. Move control arm back and forth by hand. If it moves freely with no resistance, the control valve assembly should be removed and checked for broken or missing parts.

TABLE 4-1
Traction System Troubleshooting* (contiunued)

TROUBLE	PROBABLE CAUSE	REMEDY
1. (continued)	i. Internal damage to traction pump, motor(s), or both. Indicated by low or zero charge pressure. Charge pressure may also fluctuate rapidly or fall to or near zero when maximum high pressure is reached. Other indications may be as follows:	i. Check filter per paragraph 2E** If no contamination is evident, proceed as follows: Check for individual unit leakage to determine whether damage is in pump or motor(s),before replacing either pump or motor(s).
	- Maximum system pressure capability in both forward and reverse is less than normal high pressure relief valve setting.	CHECK TRACTION MOTOR: 1. Remove charge pressure relief valve cap in transmission motor manifold. Remove charge relief spring, insert solid shim of sufficient length in place of spring and reinstall cap. This will block relief valve in fully closed position.
	- Pieces or flakes of brass in reservoir or filter.	2. Remove traction motor case drain line (s), at the port; seal with a threaded plug.
	- Noisy pump or motor(s).	3. Insert a flow measuring device of at least 8 GPM capacity (charge pump flow) in the motor case drain line. Complete circuit by discharging the line to the reservoir. 4. Start and warm up engine and run pump at 2400 RPM with fwd/rev control lever in the (N) position. 5. Slowly move the fwd/rev control lever toward fwd. Maintain the highest possible system pressure. 6. Record the flow in gallons per minute out the motor case drain line. 7. If flow is more than 50% of charge pump flow, the motor(s) is damaged and must be replaced. If motor is damaged, it is recommended that the pump also be replaced. Refer to paragraph 2E** 8. If motor is not damaged, the pump is faulty and must be replaced. Refer to paragraph 2E**

TABLE 4-1
Traction System Troubleshooting* (continued)

TROUBLE	PROBABLE CAUSE	REMEDY
2. Compactor operates in one direction only.	a. Faulty control linkage.	a. See item 1c.
	b. Faulty high pressure relief valve on transmission motor manifold valve. Indicated by loss of or lower than normal system pressure in one direction only.	b. Switch the two high pressure relief valves on the manifold valve. If the operative and non-operative directions are now reversed, one of the relief valves is inoperative; replace damaged valve. Retest system.
	c. One check valve faulty. Indicated by loss of system pressure in one direction only. Charge pressure may be higher than normal. NOTE: Switch the two valves; the non-operative direction will be reversed, thus identifying the faulty valve.	c. Remove both check valves located in the pump end cap under the charge pump and check the following: 1. Poppet or ball is missing. 2. Valve seat is eroded or deformed. NOTE: If condition 1 exists, replace the pump. If condition 2 exists, replace both check valves
	d. Traction pump control valve spool jammed or sticking in one direction or misadjusted. Indicated by pump will not return to neutral.	d. Replace control valve.
	e. Manifold assembly shuttle valve spool jammed. Indicated by loss of or lower than normal system pressure in one direction.	e. Remove and replace manifold assembly.
3. (N) position on FWD/REV control lever difficult or impossible to find.	a. Faulty linkage	a. Disconnect control linkage at directional control arm. If system now returns to neutral, the linkage to the control is out of adjustment or binding.
	b. Control valve on traction pump out of adjustment.	b. Replace control valve.
	c. Traction pump servo cylinder out of adjustment.	c. Remove pump and return to factory for adjustment.
4. Hydraulic fluid temperature gauge indicates above 180°F.	a. Hydraulic fluid level low. Indicated by low charge pressure.	a. Replenish fluid supply.
	b. Faulty gauge.	b. Replace gauge.
	c. Fluid cooler passages clogged.	c. Clean cooler core air passages.

TABLE 4-1
Traction System Troubleshooting* (continued)

TROUBLE	PROBABLE CAUSE	REMEDY
4. (continued)	d. CA-15A only - fluid in cooler being bypassed (cooler by-pass valve stuck open).	d. Repair or replace valve.
	e. Clogged filter or suction line. Indicated by high vacuum and low charge pressure.	e. Replace filter. Clean or replace suction lines.
	f. Excessive internal leakage. Indicated by lower than normal system pressure in one or both directions, loss of acceleration and power, or lower than normal charge pressure may drop to or near zero when maximum obtainable system pressure is reached.	f. Check high pressure relief valves in the manifold assembly. Valve may be stuck partially open. Also refer to 1i.
	g. Variable displacement pump drain lines improperly plumbed.	g. Check plumbing. Reinstall to proper arrangement.
	h. Continued operation at high pressure relief valve setting.	h. See OPERATING INSTRUCTIONS for proper compactor operating procedure.
5. Noisy Operation.	a. Air in system. Indicated by considerable foam in reservoir, low and fluctuating charge pressure, and spongy control.	a. Check: 1. For low fluid level. 2. Inlet system filter, suction line, etc., for leaks allowing air to be drawn into system. 3. End of pump case return within reservoir not submerged in fluid.
	b. Plumbing not properly insulated.	b. Ensure hose or tubing is not touching metal that can act as a sounding board. Ensure hose and tube clamps with rubber are reinstalled after maintenance to absorb noise and vibration.
6. Acceleration and Deceleration sluggish.	a. Air in system.	a. Refer to item 5a.
	b. Control orifice plug on traction pump partially blocked.	b. Remove bolts holding control housing to pump and check the orifice. **CAUTION: DO NOT ALLOW O-RINGS TO FALL INTO PUMP CASE.** If orifice is clean, remove charge pump and the plug at the charge pressure gauge port; blow clean air through passages between charge pump and control orifice port.

TABLE 4-1
Traction System Troubleshooting* (continued)

TROUBLE	PROBABLE CAUSE	REMEDY
6. (continued)	c. Internal wear or damage in in pump or motor(s) or both. d. Engine lugs down. e. Clogged filter or suction line. Indicated by high vacuum and low charge pressure.	c. Refer to item 1. d. Refer to Engine Manual. e. Replace filter. Clean or replace suction lines.

* Courtesy of Sundstrand Corp.

** Page 400, 2, E Failure of Traction System Motors or Pump.

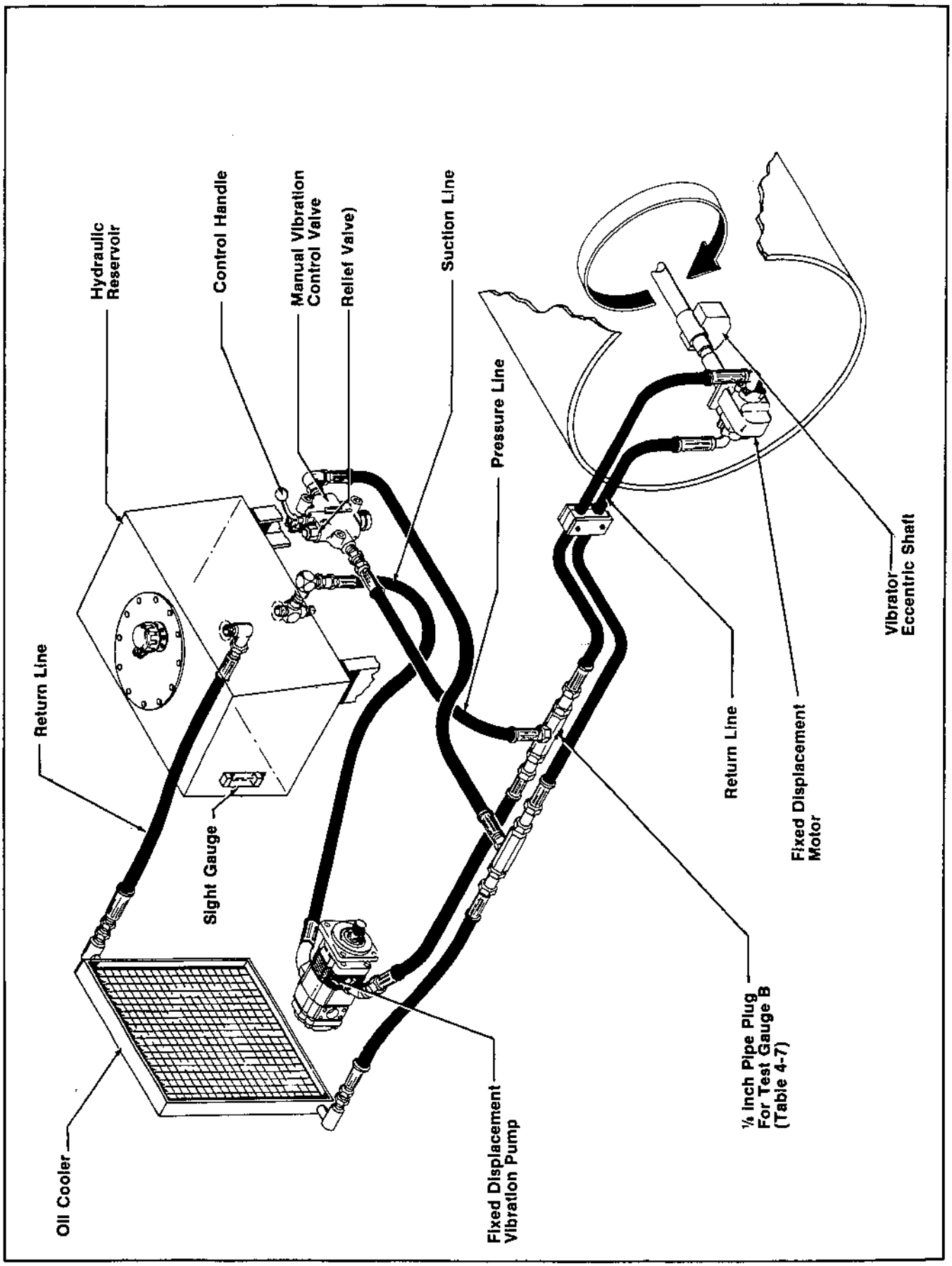


FIGURE 4-2
Single Amplitude Vibration System Schematic
(For Models CA-15/15D/15PD/15PDB)

TABLE 4-2
Vibration System Troubleshooting
(For Models CA-15/15D/15PD/15PDB)

TROUBLE	PROBABLE CAUSE	REMEDY
1. No vibration (low pressure).	a. Low hydraulic oil level.	a. Fill reservoir to sight gauge. Check for leaks.
	b. Vibration control valve linkage broken.	b. Repair or replace linkage.
	c. Vibration control valve relief valve stuck open.	c. Replace relief valve cartridge. Refer to Maintenance Instructions. **CAUTION: DO NOT ATTEMPT TO ADJUST OR REPAIR VALVE.**
	d. Sheared motor/vibration shaft coupling.	d. Replace coupling. Refer to Maintenance Instructions. Check: -motor shaft and operation. -vibration shaft and bearings.
2. No vibration (high pressure)	a. Seized vibration motor.	a. Replace motor, determine cause Refer to Maintenance Instructions.
	b. Seized vibration shaft.	b. Replace bearings, flush and replace lubricant. Refer to Maintenance Instructions. Check vibration motor. Check -vibrator shaft -coupling -motor shaft and operation.
3. Low vibration frequency.	a. Hydraulic oil too heavy.	a. Fill reservoir with proper oil. Refer to Lubrication and Maintenance Schedule.
	b. Engine speed too low.	b. Refer to Operating Instructions for proper procedure.
	c. Engine lugs down.	c. Refer to Engine Manual.
	d. Too much lubricating oil in drum.	d. Drain to proper level. Refer to Lubrication and Maintenance Schedule.
	e. Worn pump, motors or vibration control valve (high internal leakage).	e. Replace worn component. Refer to Maintenance Instructions.
	f. Vibration control valve relief valve stuck partially open.	f. Replace relief valve cartridge. Refer to Maintenance Instructions. **CAUTION: DO NOT ATTEMPT TO ADJUST OR REPAIR VALVE.**
4. Hydraulic fluid overheating.	a. Hydraulic fluid level low.	a. Fill reservoir to sight gauge.
	b. Hydraulic cooler passages clogged.	b. Clean cooler core air or water passages.
	c. Clogged suction line	c. Clean or replace suction line.
	d. Heavily worn pump, motors or vibration control valve (high internal leakage).	d. Replace worn component. Refer to Maintenance Instructions.

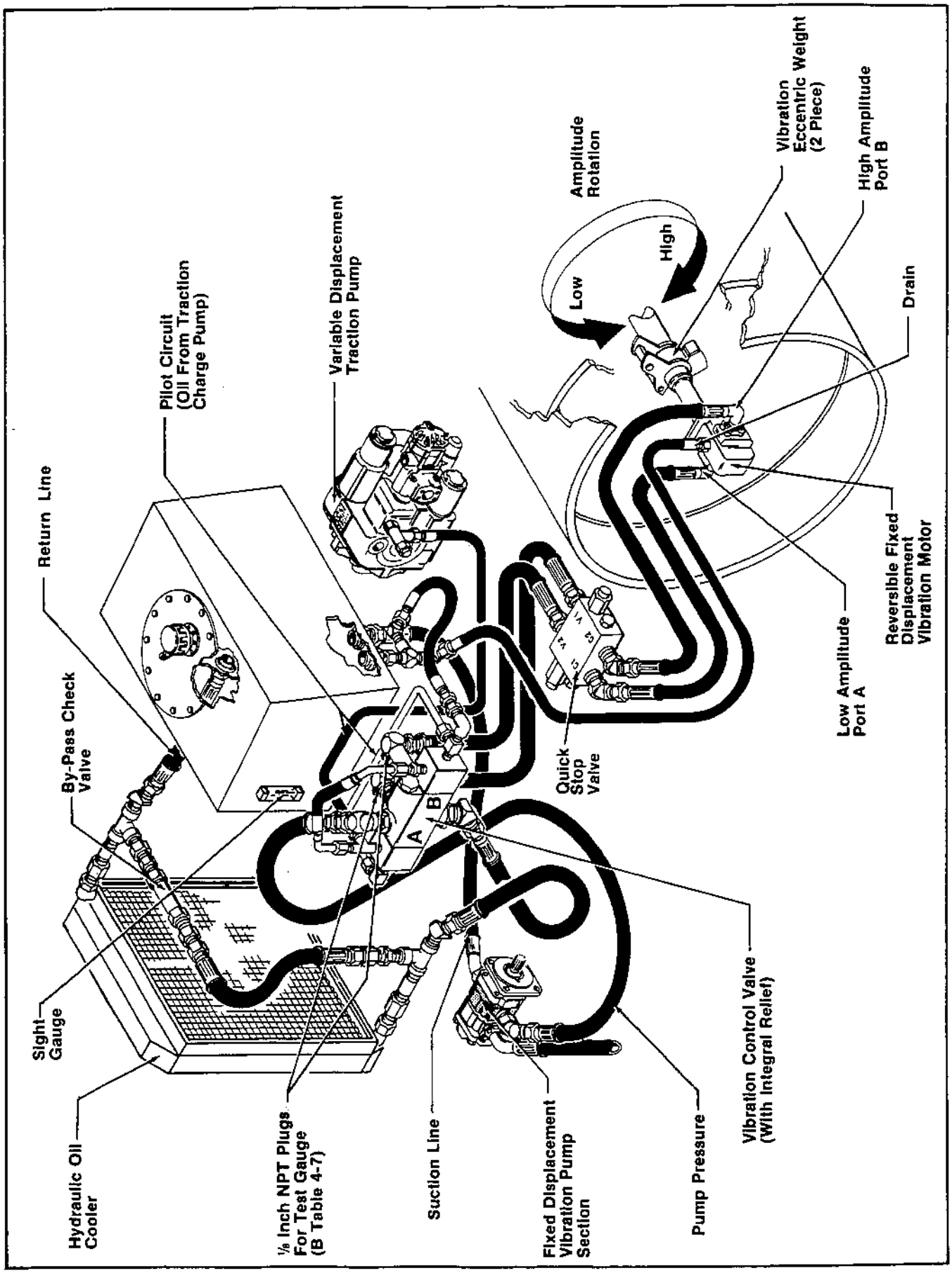


FIGURE 4-3
Dual Amplitude Vibratory System Schematic
(For Model CA-15A)

TABLE 4-3
Vibration System Troubleshooting
(For Model CA-15A)

TROUBLE	PROBABLE CAUSE	REMEDY
1. No vibration in AUTO position in either FWD or REV.	a. Loose, bent, broken or improper adjustment of vibration control cam, bracket or micro-switch.	a. Replace or adjust faulty item.
	b. Broken connection in 'hot' line between: 1. Fuse block and vibration micro-switch, or 2. Micro-switch and vibration selector switch, or 3. Vibration selector switch and amplitude selector switch.	b. Repair wiring.
	c. Faulty: 1. Fuse 2. Micro-switch 3. Vibration selector switch 4. Amplitude selector switch.	c. Replace faulty component.
2. Vibration comes on at too slow a travel speed in AUTO.	Vibration control cams at fwd/rev control out of adjustment.	Adjust cams further apart. Refer to Maintenance Instructions.
3. Vibration comes on at too fast a travel speed in AUTO.	Vibration control cams at fwd/rev control out of adjustment.	Adjust cams closer together. Refer to Maintenance Instructions
4. Vibration inoperative in HI amplitude mode; operative in LO amplitude mode.	Defective: a. Amplitude switch	a. Replace amplitude switch.
	b. Wiring between amplitude switch and vibration control valve.	b. Repair wiring.
	c. High amplitude coil on vibration control valve.	c. Replace coil. Refer to Maintenance Instructions.
5. Vibration inoperative in LO amplitude mode; operative in HI amplitude mode.	Defective: a. Amplitude switch.	a. Replace amplitude switch.
	b. Wiring between amplitude switch and control valve.	b. Repair wiring.
	c. LO amplitude coil on vibration control valve.	c. Replace coil. Refer to Maintenance Instructions.
6. Vibration inoperative (HI or LO amplitude) in AUTO position.	a. Defective or brown fuse.	a. Replace fuse, determine cause.
	b. Open circuit between vibration switch and amplitude selector switch.	b. Perform continuity check using Figure 4-7 through 4-10 as applicable.
	c. Defective vibration control valve.	c. Replace control valve.
	d. Defective vibration motor.	d. Replace motor.
	e. Defective fixed displacement pump.	e. Replace fixed displacement pump.

TABLE 4-3
Vibration System Troubleshooting (continued)
(For Model CA-15A)

TROUBLE	PROBABLE CAUSE	REMEDY
6. (continued)	f. Defective vibration switch.	f. Replace switch.
	g. Low pressure in pilot circuit.	g. Replace charge pump on traction pump.
	h. Defective quik-stop valve.	h. Replace quik-stop valve.
7. Vibration inoperative (HI or LO amplitude) in MAN position.	a. Defective or blown fuse.	a. Replace fuse, determine cause.
	b. Defective wire connection between fuse and vibration switch	b. Perform continuity check using Figure 4-7 through 4-10 as applicable.
	c. Amplitude switch set to OFF position.	c. Set amplitude switch to HI or LO position.
	d. Defective vibration switch.	d. Replace defective switch.
	e. Low pressure in pilot circuit. f. Defective vibration control valve. g. Defective vibration motor. h. Defective quik-stop valve.	e. Replace charge pump section of traction pump. f. Replace valve g. Replace motor h. Replace valve.
8. Vibration does not stop within 3 seconds.	Defective quik-stop valve.	Replace quik-stop valve.

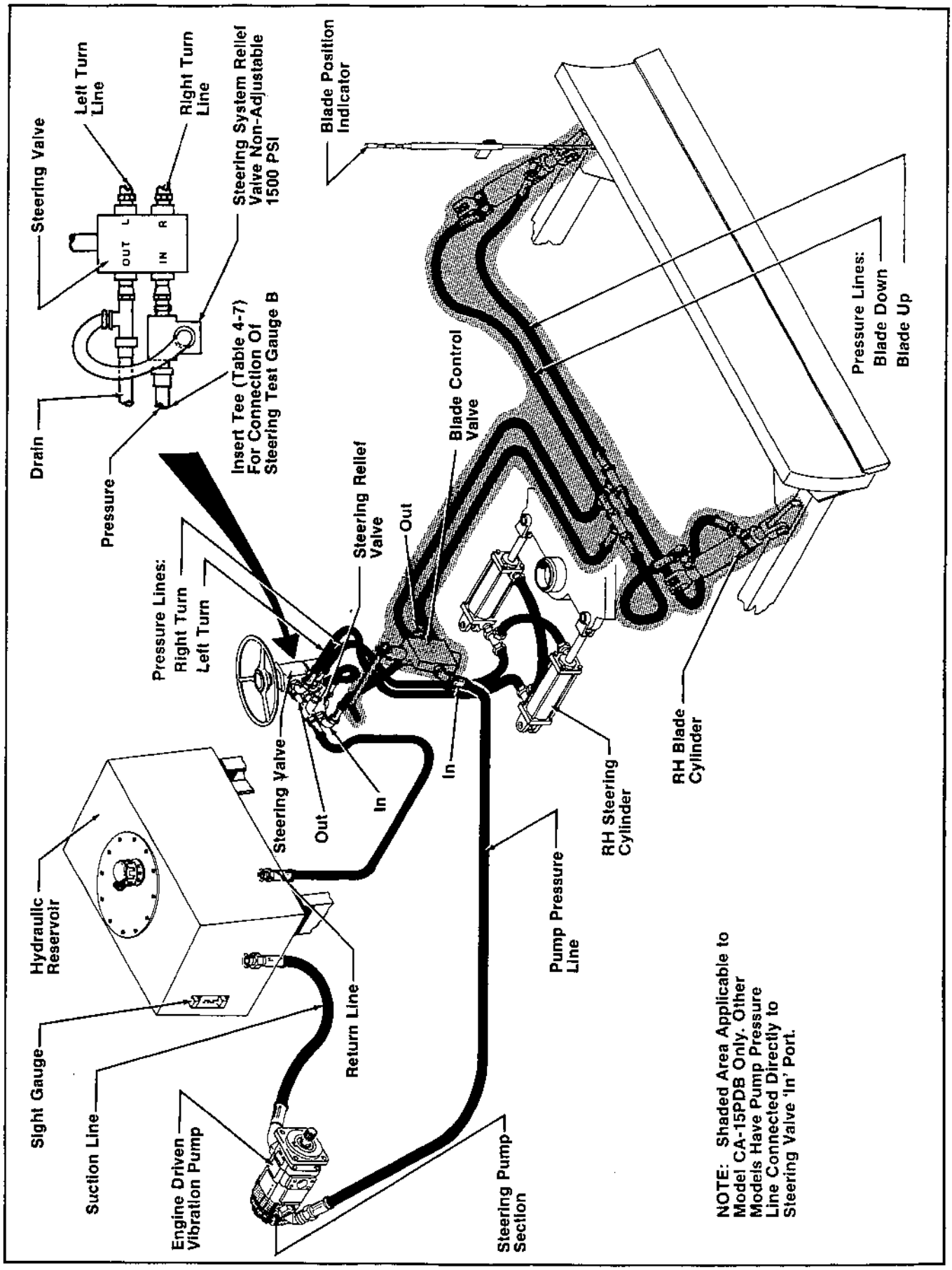


FIGURE 4-4
Steering System and Blade Control Circuit Schematic
(For Model CA-15PDB)

TABLE 4-4
Steering System Troubleshooting

TROUBLE	PROBABLE CAUSE	REMEDY
1. Slow or hard steering.	a. Reservoir fluid level low.	a. Fill to FULL level.
	b. Low system pressure due to worn steering pump.	b. Replace steering pump.
	c. Dirt in steering system.	c. Disassemble, clean steering valve.
	d. Steering valve sleeve and spool worn.	d. Replace steering valve.
	e. Steering cylinder(s) bent or leaking.	e. Rebuild cylinder(s). Determine cause.
	f. Relief valve (at steering valve) stuck partially open.	f. Replace relief valve.
2. Machine will not steer.	a. Steering valve sleeve and spool locked.	a. Disassemble valve, repair and replace as required per Char-Lynn Service Manual.
	b. Failure of steering section of vibration/steering pump.	b. Check/replace pump.
	c. Hose obstruction.	c. Remove obstruction or replace hose.
	d. Relief valve (at steering valve) stuck open.	d. Replace valve.
	e. Steering cylinder(s) bent or leaking.	e. Rebuild cylinder(s). Determine the cause.
3. Continuous rotation of steering wheel (motoring).	a. Dirty fluid.	a. Drain, flush, refill reservoir and replace filter.
	b. Broken centering springs in steering valve.	b. Disassemble valve, replace springs per Char-Lynn Service Manual.
	c. Binding in steering column.	c. Disassemble and check.
	d. Burr on steering valve sleeve or spool.	d. Disassemble valve and repair per Char-Lynn Service Manual.
4. Opposite response to steering wheel at front drum.	a. Hydraulic hoses connected to wrong port fittings.	a. Check Figure 4-4 and reconnect properly.
	b. Steering valve gear set(s) misaligned.	b. Disassemble steering valve and realign per Char-Lynn Service Manual.

TABLE 4-5
Strike-Off Blade Circuit Troubleshooting
(For Model CA-15PDB)

TROUBLE	PROBABLE CAUSE	REMEDY
1. Slow blade movement.	a. Hydraulic fluid level low.	a. Fill to FULL level.
	b. Wrong oil in reservoir (high oil viscosity).	b. Drain and refill with proper fluid, refer to Lubrication and Maintenance Schedule.
	c. Dirt in blade circuit.	c. Disassemble valve and cylinders, clean and flush. Check steering system operation.
	d. Blade cylinder or components bent, leaking or corroded.	d. Rebuild cylinder. Determine cause
	e. Relief valve in blade control valve stuck partially open, or set too low.	e. Remove, clean and replace; adjust relief pressure to 3000 psi.
	f. Low blade circuit pressure due to worn steering pump section (steering and probably vibration system affected).	f. Replace steering pump section.
	g. Blade control valve spool and body worn.	g. Replace valve.
2. Blade operates erratically	a. Oil viscosity too high due to improper warm-up (cold weather).	a. Warm up properly per Operating Instructions.
	b. Air in system (vibration and steering possibly affected).	b. Check for leaks, particularly at suction line to vibration pump.
	c. Dirt in blade circuit.	c. See 1c
	d. Blade cylinder bent, leaking or corroded.	d. See 1d.
3. Blade inoperative.	a. Steering pump section damaged or coupling from vibration pump sheared.	a. Replace steering pump section. Check vibration pump section.
	b. Internal oil passage from vibration pump plugged.	b. Disassemble, clean and check for damage to steering and vibration pump sections.
4. Blade drops when control handle is released (to HOLD position).	a. Blade control valve spool worn (internal leakage).	a. Replace valve.
	b. Cylinder packings worn (internal leakage)	b. Disassemble, clean cylinder, replace packings.
	c. Centering springs broken (spool won't return to HOLD)	c. Replace valve.
	d. Blade control valve relief valve leaking or set too low.	d. Check circuit relief pressure; replace valve or adjust relief pressure to 3000 psi.

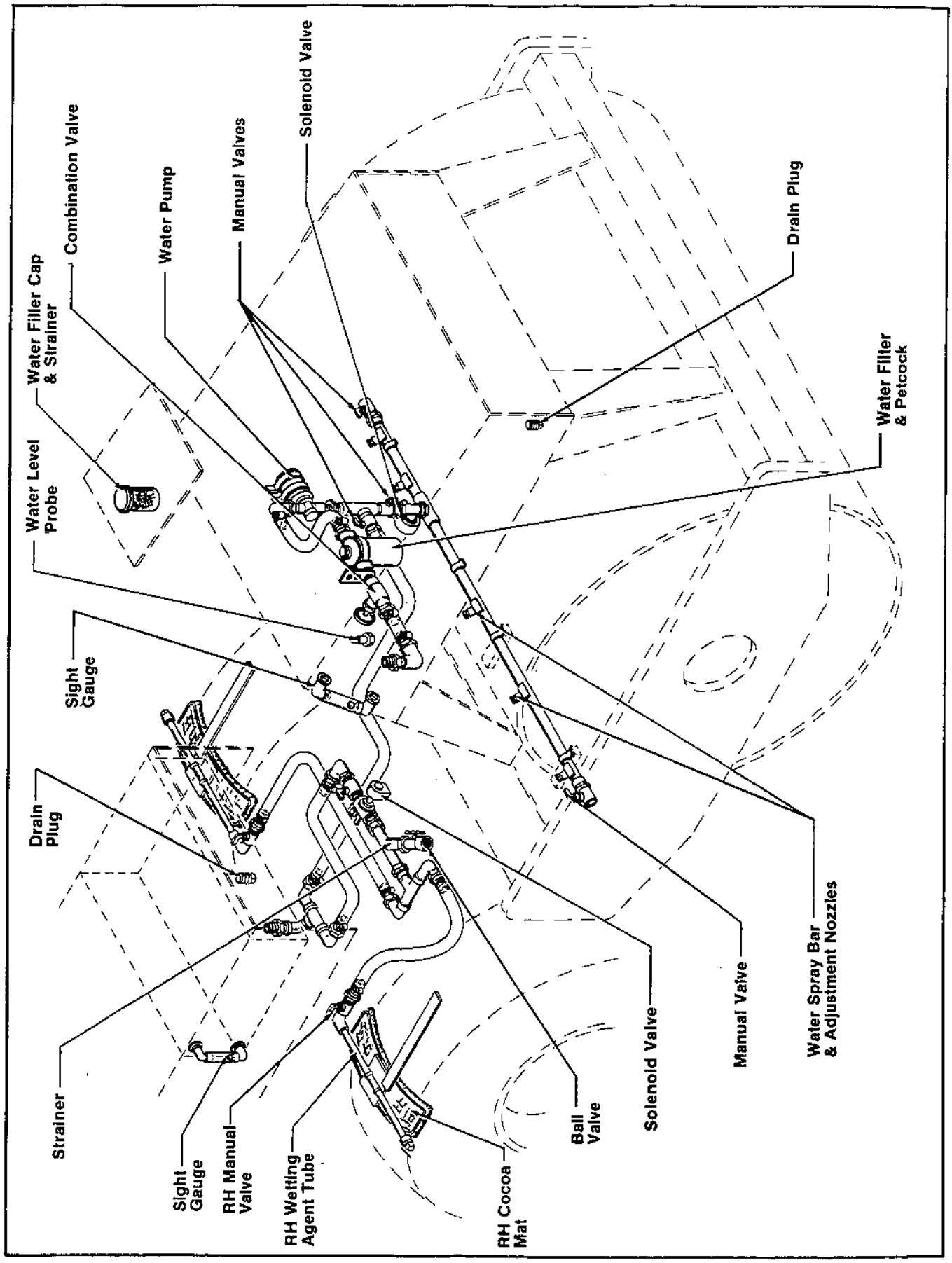


FIGURE 4-5
Water/Solvent Sprinkler Systems
(For Model CA-15A)

TABLE 4-6
Water/Solvent Sprinkler System Troubleshooting
(For Model CA-15A)

TROUBLE	PROBABLE CAUSE	REMEDY
1. Drum water sprinkler system inoperative.	a. Low water in tank. (warning buzzer ON, pump OFF, reset button has no affect).	a. Turn water switch OFF, fill tank with clean water.
	b. Plugged filter.	b. Clean filter and replace element.
	c. Manual valve closed.	c. Open valve.
	d. Defective fuse.	d. Replace fuse.
	e. Defective water ON/OFF switch.	e. Replace switch.
	f. Defective water pump impeller or pump motor.	f. Replace pump impeller or pump.
	g. Defective wiring or connections.	g. Perform continuity checks using Figures 1-12 or 1-13 as applicable. NOTE: All electrical connections (plug, ground, etc.) must be tight and clean as the control module operates by measuring resistance from the probe to ground.
	h. Defective low water probe or water control module.	h. If system indicates low or no water when tank is full: (1) Ensure tank water probe is free of foreign material. If cleaning is required and proper operation is not restored; (2) Remove wire at probe and "ground" it securely. If system now indicates full tank, replace probe. If system still indicates low or no water, replace control module. NOTE: Probe and control module are sealed, non-serviceable solid state components.
2. Tire Solvent system inoperative	a. No solvent in tire tank.	a. Fill tank with solvent/water mixture per Operating Instructions.
	b. Manual (tank) valve closed.	b. Open valve.
	c. "Y" strainer plugged.	c. Remove strainer and clean or replace.
	d. Mat petcocks closed.	d. Open petcocks and adjust for full tire coverage.
	e. Mat water tube holes clogged.	e. Clean water holes using soft wire.
	f. Solenoid inoperative.	f. Check fuse, wiring or solenoid and replace as necessary.

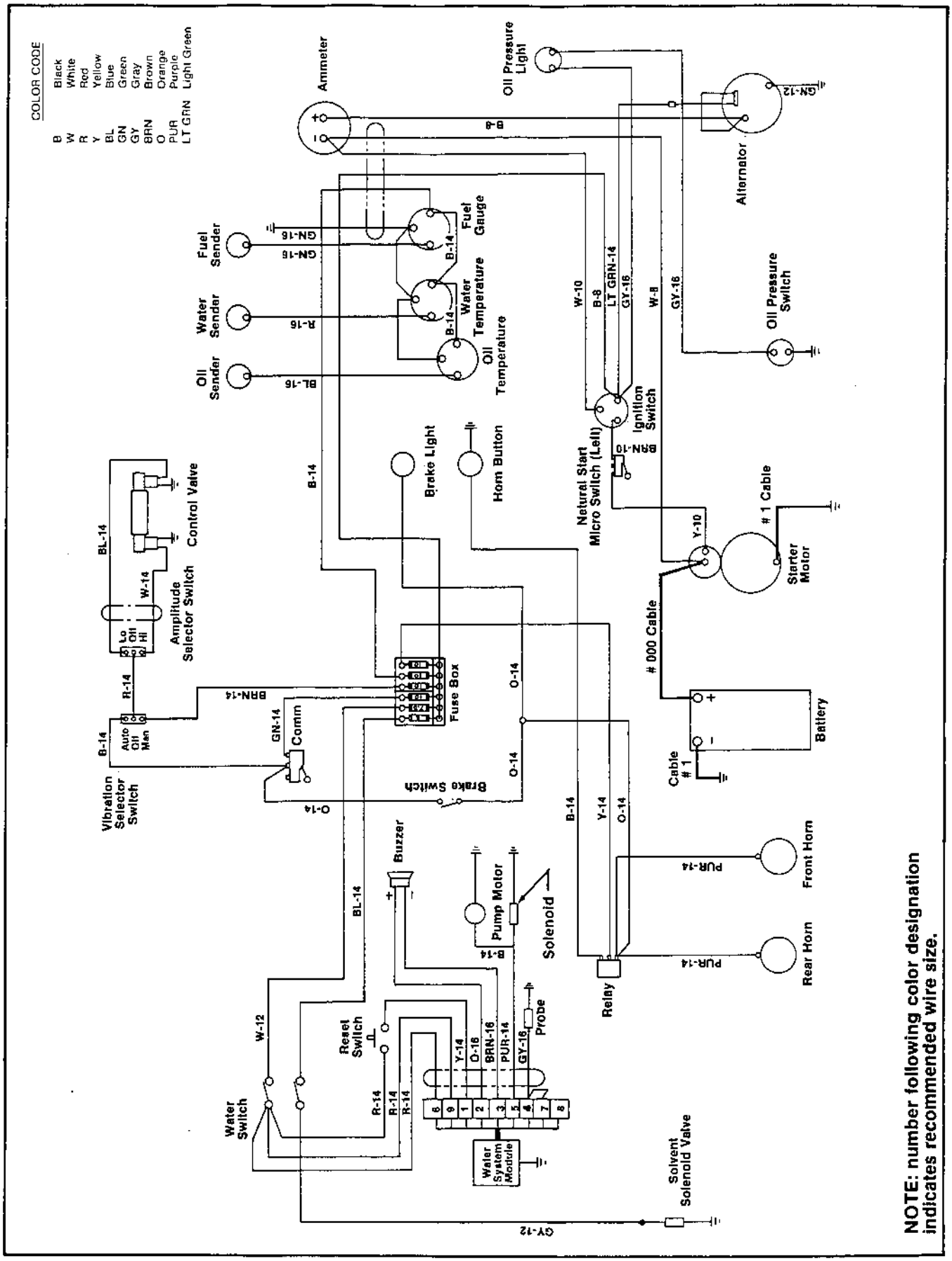


FIGURE 4-6
Electrical Schematic, GM3-53 Engine
(For Model CA-15A)

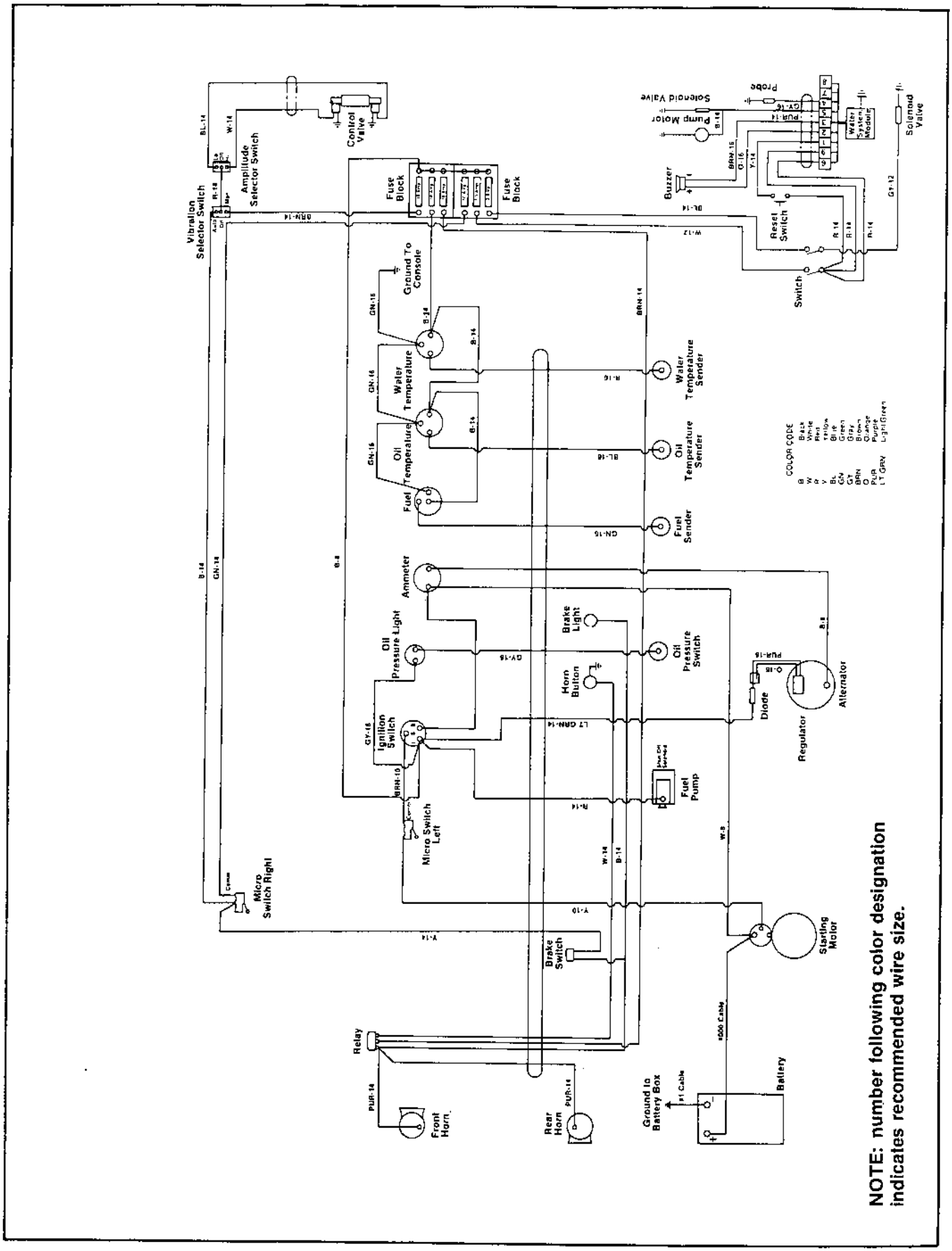


FIGURE 4-7
Electrical Schematic, J. Deere Engine
(For Model CA-15A)

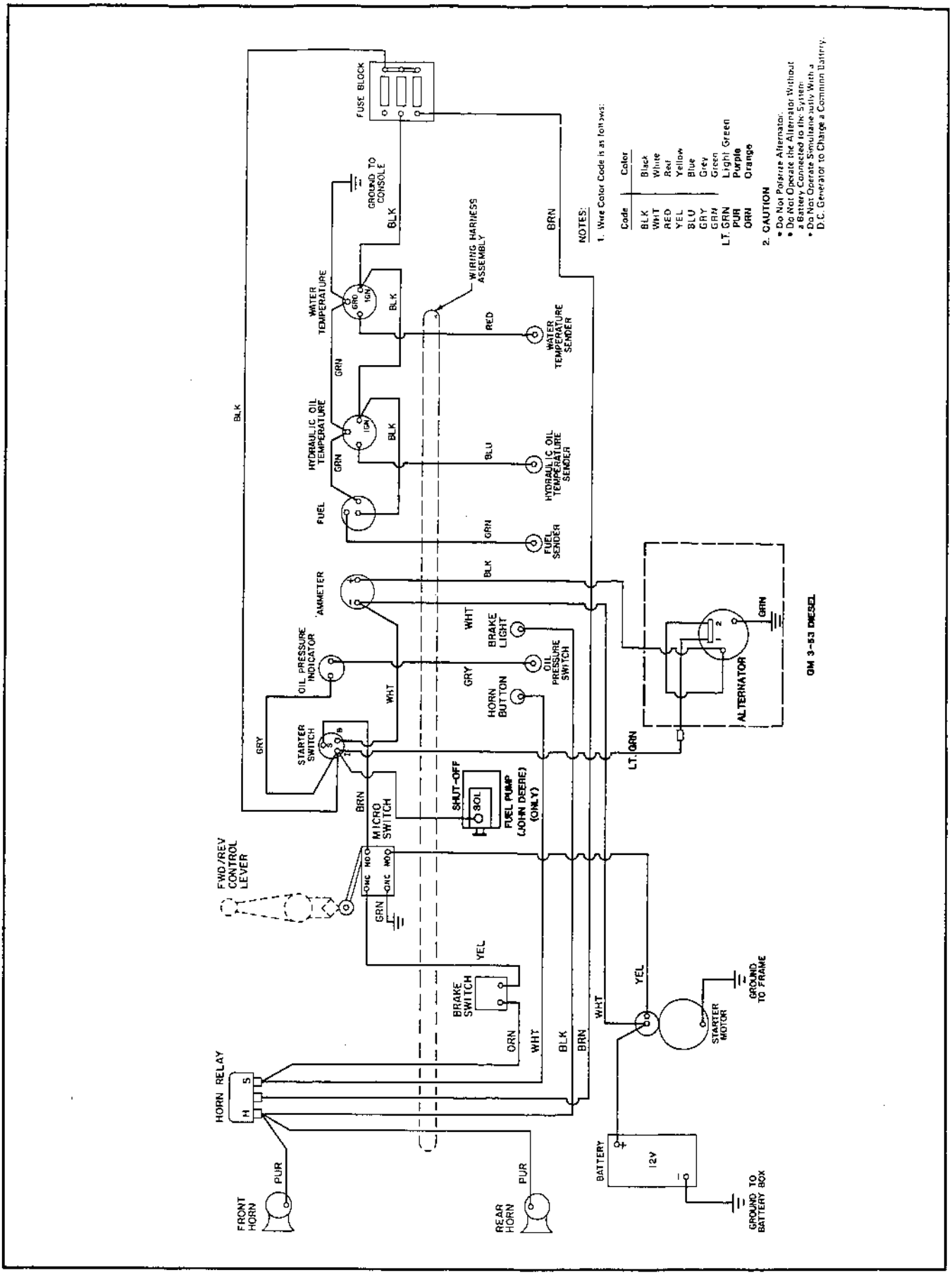


FIGURE 4-8
Electrical Schematic, GM3-53 Engine
(For Models CA-15/15D/15PD/15PDB)

DYNAPAC

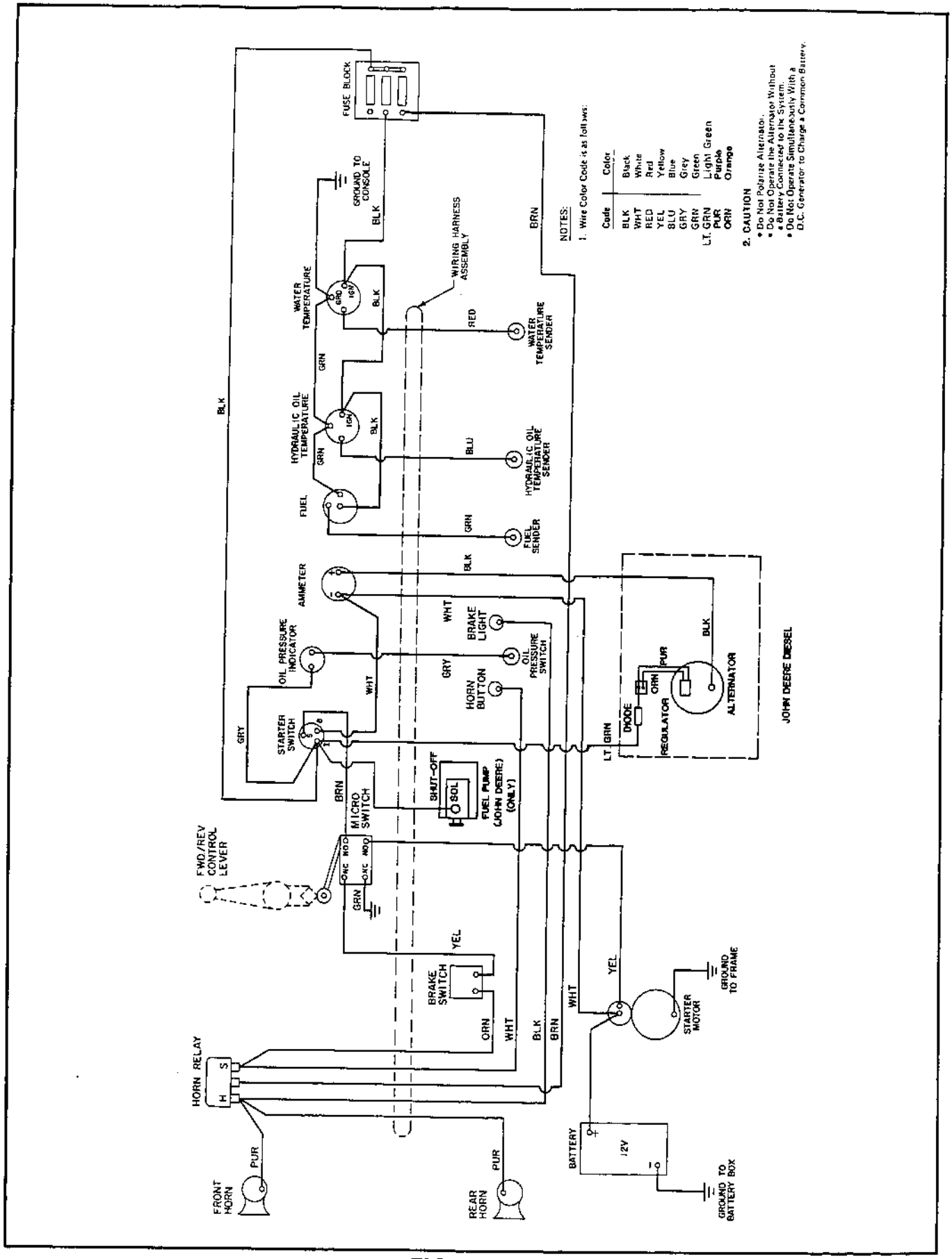


FIGURE 4-9
Electrical Schematic, J. Deere Engine
(For Models CA-15/15D/15PD/15PDB)

TABLE 4-7
Troubleshooting Equipment

1. The following are installed at the locations specified:

FIGURE 4-1

	Traction Pump Charge Pressure	Traction System High Pressure	Traction System Inlet Suction	Traction Motor Case Pressure
Gauge	A, 0-600 psi	B, 0-10,000 psi	C, 0-30 psi	D, 0-400 psi
Male Connector	----------	C5315 x 4	C5205 x 4	----------
Reducer	----------	----------	----------	C3269 x 10 x 4
Elbow, 90° Male	----------	----------	----------	C5405 x 4 x 4

	FIGURE 4-2 & 4-3	FIGURE 4-4		
	Vibration System Pressure	**Steering System Pressure**	**Strike-Off Blade Circuit Pressure**	
Gauge	B, 0-10,000 psi	B, 0-10,000 psi	B, 0-10,000 psi	
Male Connector	C5205 x 4	C5205 x 4	C5205 x 4	
Tee	----------	C5706 x 8	C5706 x 8	
Capnut *	----------	C5219 x 8	C5129 x 8	

*Modified: Drill and tap for 1/8 NPT & assemble with plug.

2. The following are installed at each location specified above:

Test hose SAE R2A 1/4 x 60 in. lg. with 2 No. 4 JIC swivel nuts.
Female connector C5255 x 4 x 4 (between gauge and hose).

The Weatherhead Company catalog numbers or equivalent.
Gauges A, B, C, D to have 1/4 in. O.D. NPT fittings.

1. Safety Precautions

A. Whenever the safety symbol and the word warning as shown below are displayed, become alert, a message for your protection is offered.

WARNING: YOUR SAFETY AND THE SAFETY OF OTHERS DEPENDS LARGELY UPON YOUR KNOWLEDGE OF THE EQUIPMENT AND GOOD JUDGEMENT. DO NOT OPERATE OR SERVICE THE COMPACTOR UNLESS QUALIFIED BY TRAINING OR EXPERIENCE.

B. To ensure against injury to personnel and/or damage to equipment when maintenance is to be carried out:

(1) PARK ON LEVEL GROUND WITH FRONT DRUM IN THE STRAIGHT FORWARD POSITION; ENGAGE HITCH LOCK BAR.

(2) SET PARKING BRAKE.

(3) IF POSSIBLE, TURN ENGINE OFF.

(4) BLOCK THE DRUM AND WHEELS, FRONT AND REAR, TO PREVENT MOVEMENT.

(5) DISCONNECT THE BATTERY.

(6) ATTACH A WARNING TAG TO STEERING WHEEL INDICATING NATURE OF WORK BEING PERFORMED.

2. General Information

A. The decision to disassemble components should be based on visible evidence of malfunction or after applying the appropriate troubleshooting procedures. Unnecessary disassembly should be avoided.

B. Take extreme care to prevent foreign material from entering engine or hydraulic components. Before removing any components, wipe surrounding area free of loose dirt and clean with a suitable non-flammable solvent.

C. During disassembly, discard all packings, O-rings, or gaskets which are removed; do not reuse unless specified otherwise. Replacement of other items should be guided by sound inspection criteria. Lubricate new O-rings with engine oil or hydraulic fluid prior to installation.

D. Use lubricants for reassembly of the parts as specified. Use Locktite No. 262 or equivalent on threaded fasteners when specified. Substitute only products known to be equivalent from reputable manufacturers.

E. Standard torque values for fasteners are listed in Table 5-1. Special torques are given directly in the text.

F. The adjustments covered in this section of the manual are either necessary due to the replacement of components, or require relatively detailed procedures. Other less complex adjustments, or those to be done on a periodic basis are covered in the Lubrication and Maintenance Schedule (Operator's Manual).

3. Drum Assembly

A. Removal (Figures 5-1, 5-2)

(1) Observe safety precautions in paragraph 1.

(2) CA-15PDB only:

(a) Lower blade to contact ground and block up blade support arms to relieve pressure on attachment pins and bearings.

(b) At R. and L.H. strikeoff blade cylinders, remove hairpin clip, washer and pin at rod yoke-to-blade attachment bracket. Retract cylinder piston by hand.

(c) Disconnect blade position indicator guide from frame bracket. Remove cotter pin and clevis pin at blade bracket.

(d) With support arms blocked-up, remove hair pin clips, washers, and pins securing blade support arm yokes to frame mounts (R. & L.H. sides). Remove blade assembly from frame.

WARNING: BLADE ASSEMBLY WEIGHS APPROXIMATELY 1,000 LBS. PROCEED WITH CAUTION OR PERSONAL INJURY MAY OCCUR.

(3) Block up front frame at sides and at box section to relieve tension on the shock mounts (shock mounts not deflected).

WARNING: TO PREVENT INJURY TO PERSONNEL ENSURE THAT STEPS A(1) AND (2) ARE FULLY ACCOMPLISHED.

(4) CA-15A only: Empty water tank.

(a) Disconnect water lines to tire tank and sprinkler bar.

(b) Disconnect wire leads to low water probe, water pump and solenoid valve.

(c) Remove water tank.

(5) Remove front scraper bar assembly; retain and identify any shims removed.

(6) CA-15D/15PD/15PDB only:

(a) Remove motor guard from frame L.H. side. Release traction motor hoses from frame clamp. Remove drain hose at motor fitting.

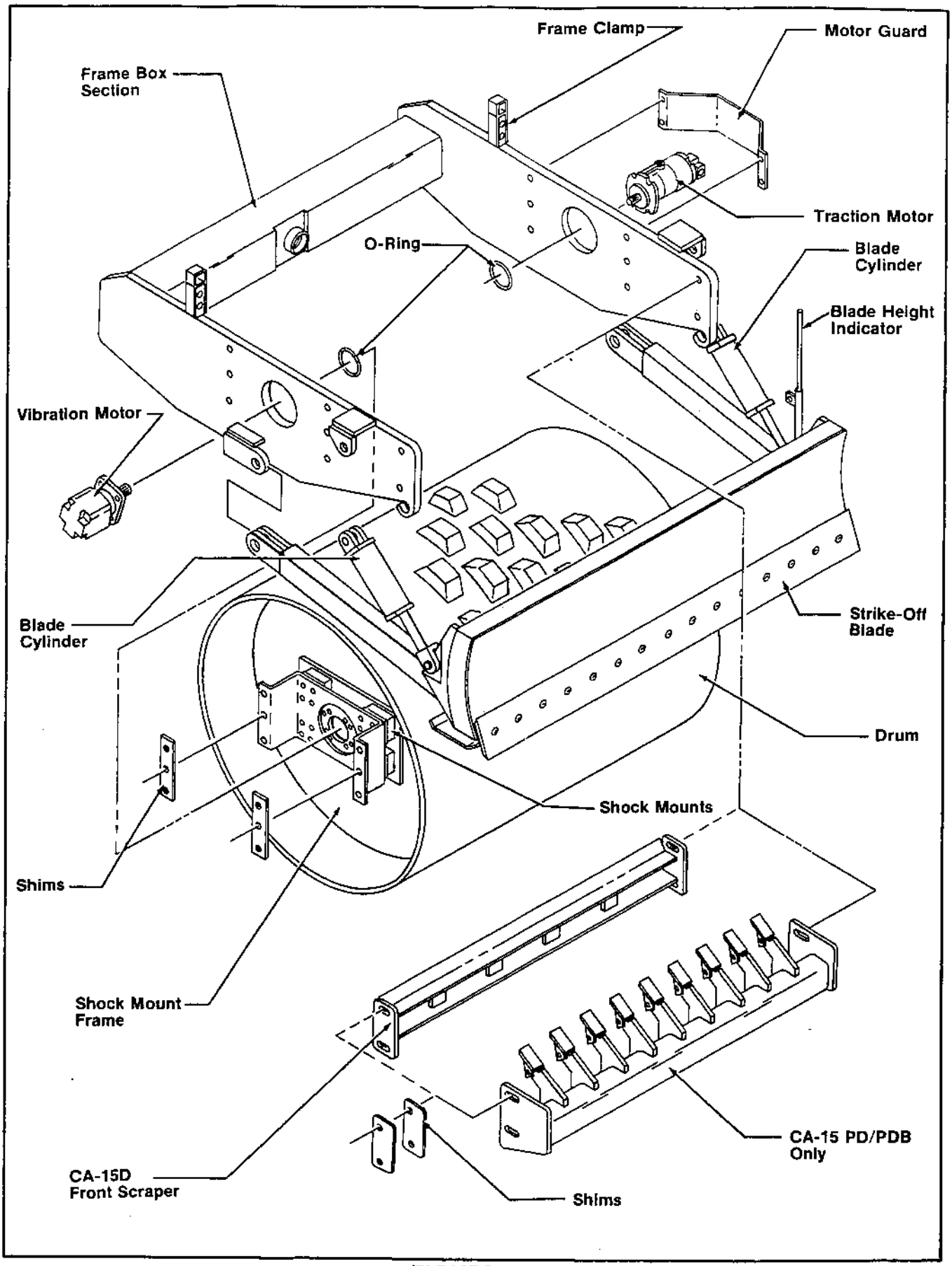


FIGURE 5-1
Replacement of Drum Assembly
(For Models CA-15D/15PD/15PDB)

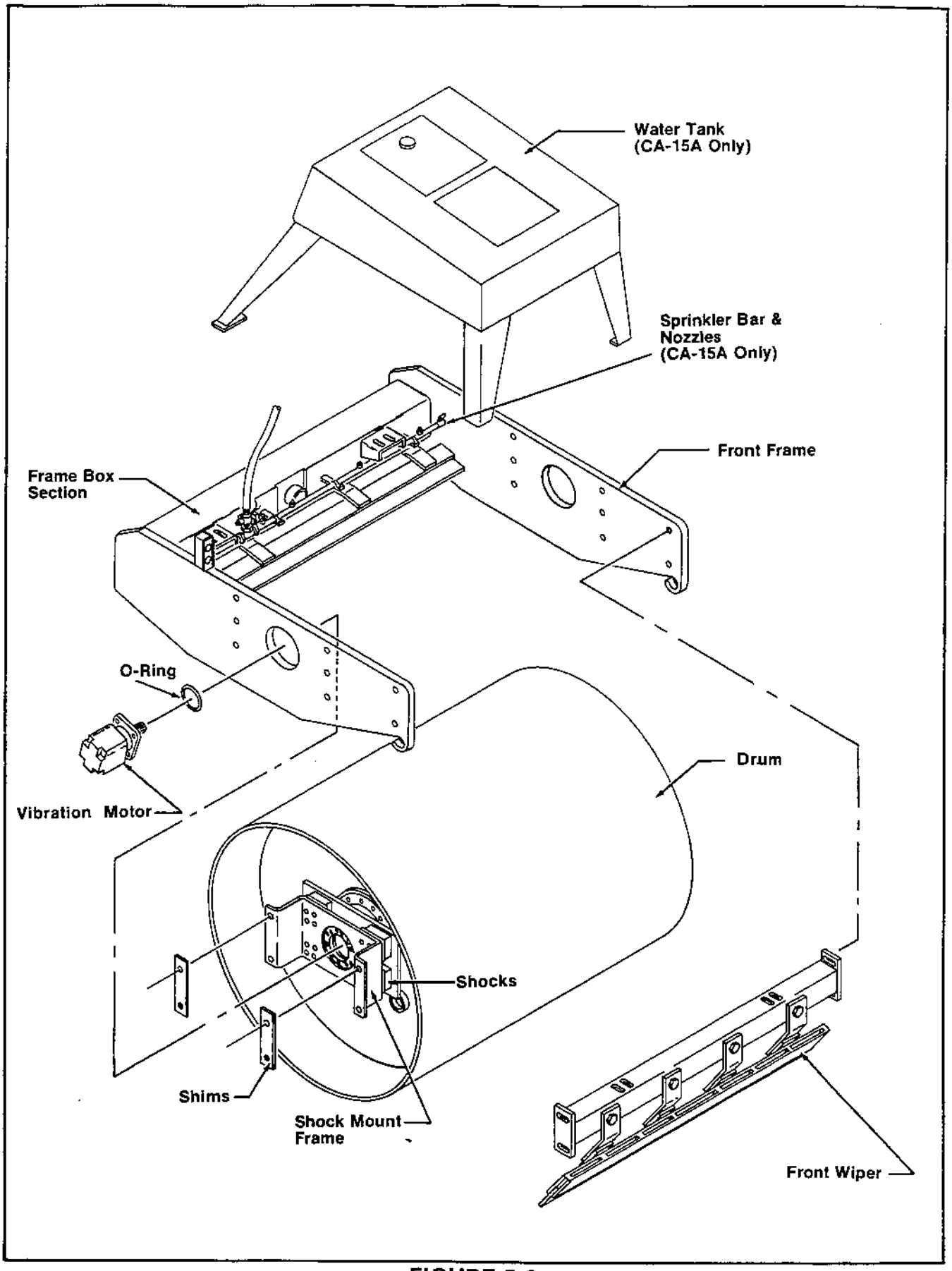


FIGURE 5-2
Replacement of Drum Assembly
(For Models CA-15/15A)

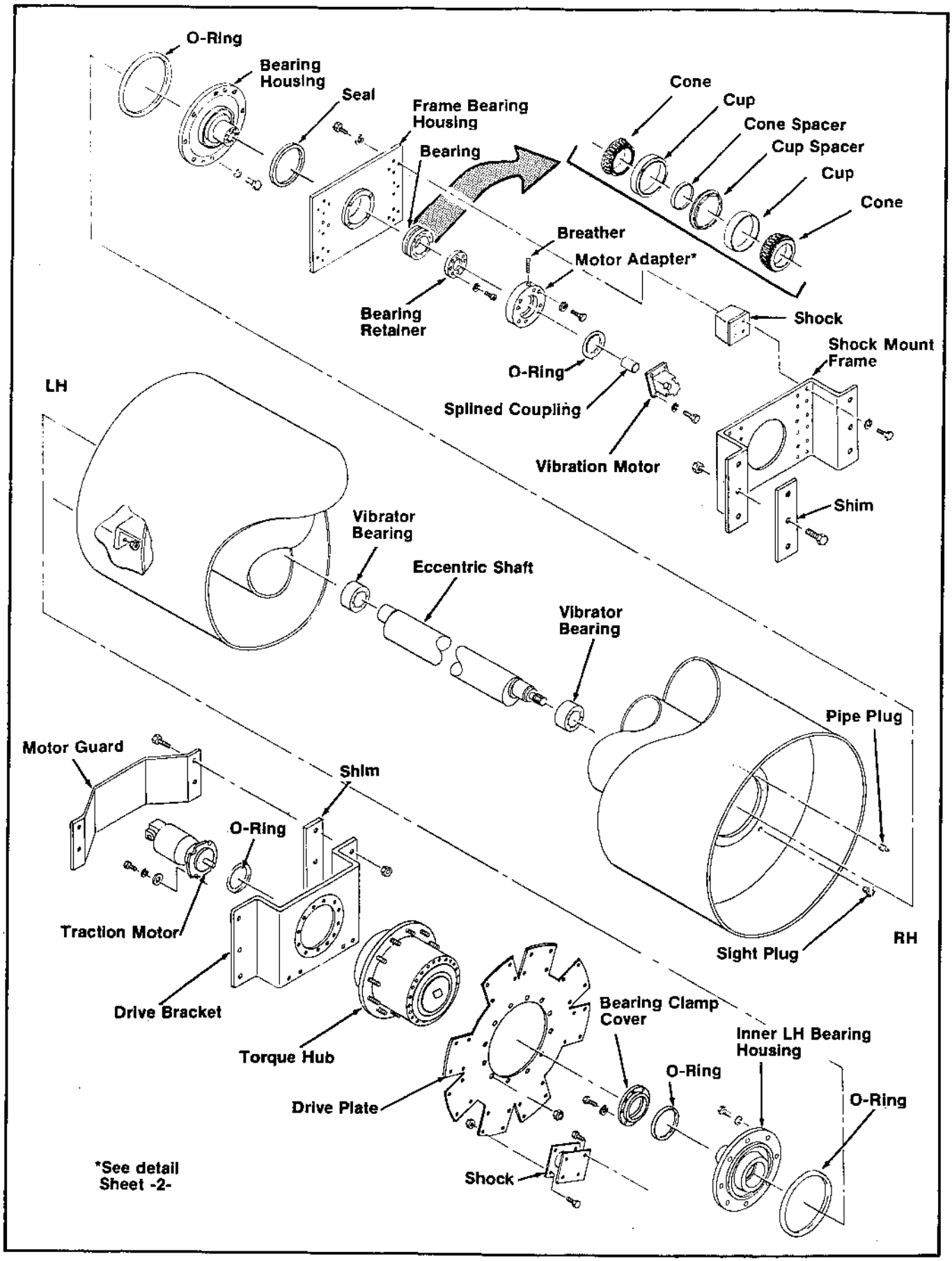


FIGURE 5-3
Drum Exploded View (Sheet 1 of 2)
(For Models CA-15D/15PD/15PDB)

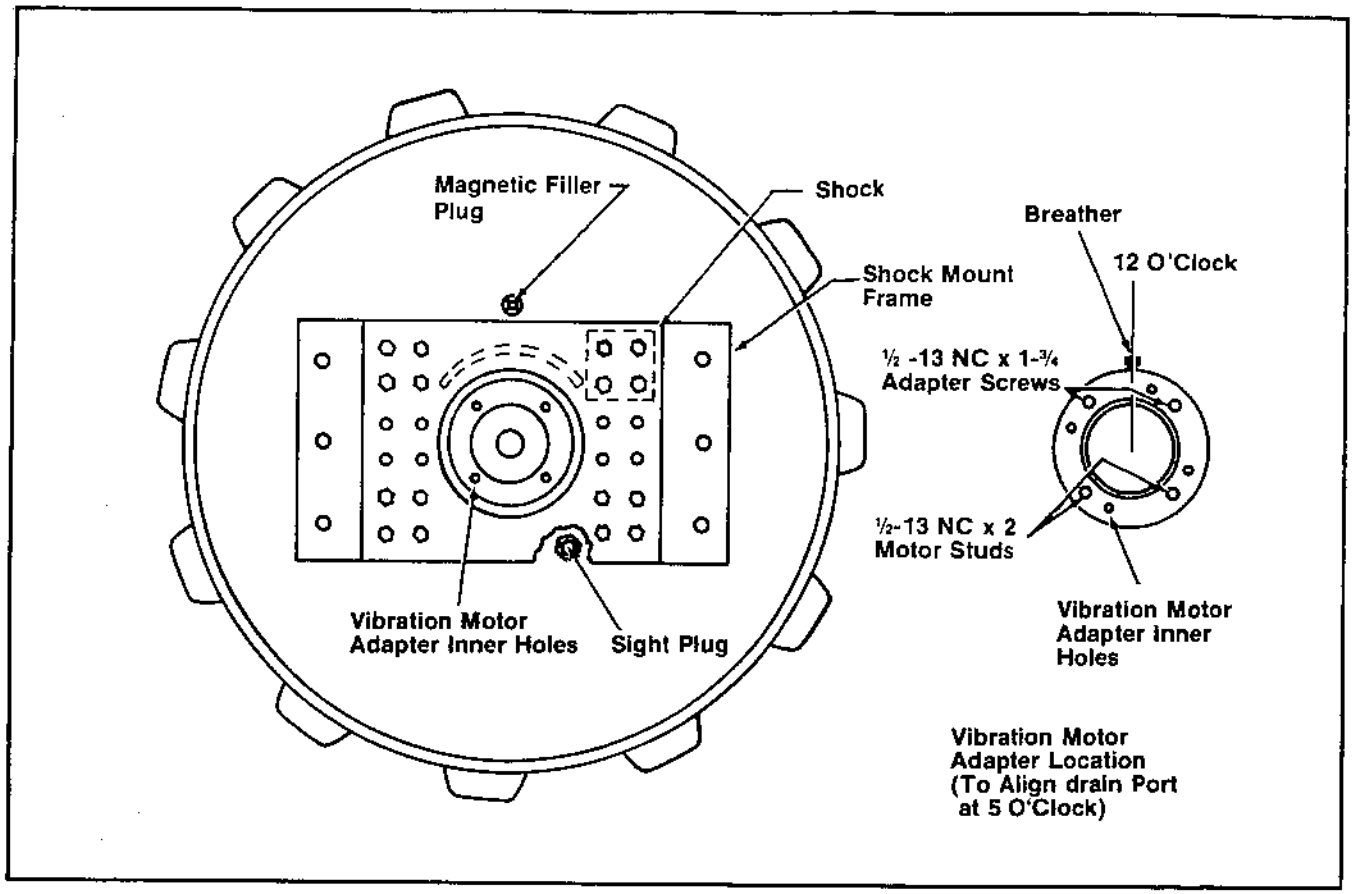


FIGURE 5-3
Drum Exploded View (Sheet 2 of 2)
(For Models CA15D/15PD/15PDB)

(b) Remove four screws, pull traction motor out and hang motor over frame side; it is not necessary to remove pressure hoses from motor; reconnect drain hose to prevent contamination.

(7) At frame R.H. side: release vibration motor hoses from frame clamp.

(8) Without removing the hoses, remove vibration motor. Ensure spline coupling is not lost if withdrawn with motor.

(9) Remove shock mount frames from R.H. and L.H. sides of frame; retain and mark any shims removed for proper reassembly.

WARNING: DRUM ASSEMBLY WEIGHS APPROXIMATELY 5,000 LBS. TAKE ADEQUATE PRECAUTION TO CONTROL THIS MASS OR PERSONAL INJURY MAY OCCUR.

(10) Carefully roll entire drum assembly out of the frame.

8. Disassembly, CA-15D/15PD/15PDB (Figure 5-3)

(1) Position drum with R.H. filler plug at 6 o'clock and drain oil.

(2) Drum L.H. side: Remove shock mount frame from torque hub.

WARNING: DRIVE PLATE/TORQUE HUB ASSEMBLY WEIGHS APPROXIMATELY 750 LBS. PROCEED WITH CAUTION.

(3) Attach overhead winch or other means of supporting drive plate/torque hub assembly; remove capscrews and locknuts securing this assembly to eight shock absorbers on drum head brackets. Lift assembly and remove.

(4) Remove spherical hex nuts (R.H. threads) securing drive hub to drive plate and separate these components. If necessary, drain and disassemble torque hub per paragraph 4A.

(5) Remove eight shock absorbers from drum head brackets.

(6) Drum R.H. side: Withdraw vibration motor coupling from vibration shaft if not previously removed with vibration motor.

(7) Remove shock mount frame from four shock absorbers on frame bearing housing. Remove shock units from frame bearing housing.

(8) Note position of vibration motor adapter, then remove it from frame bearing housing.

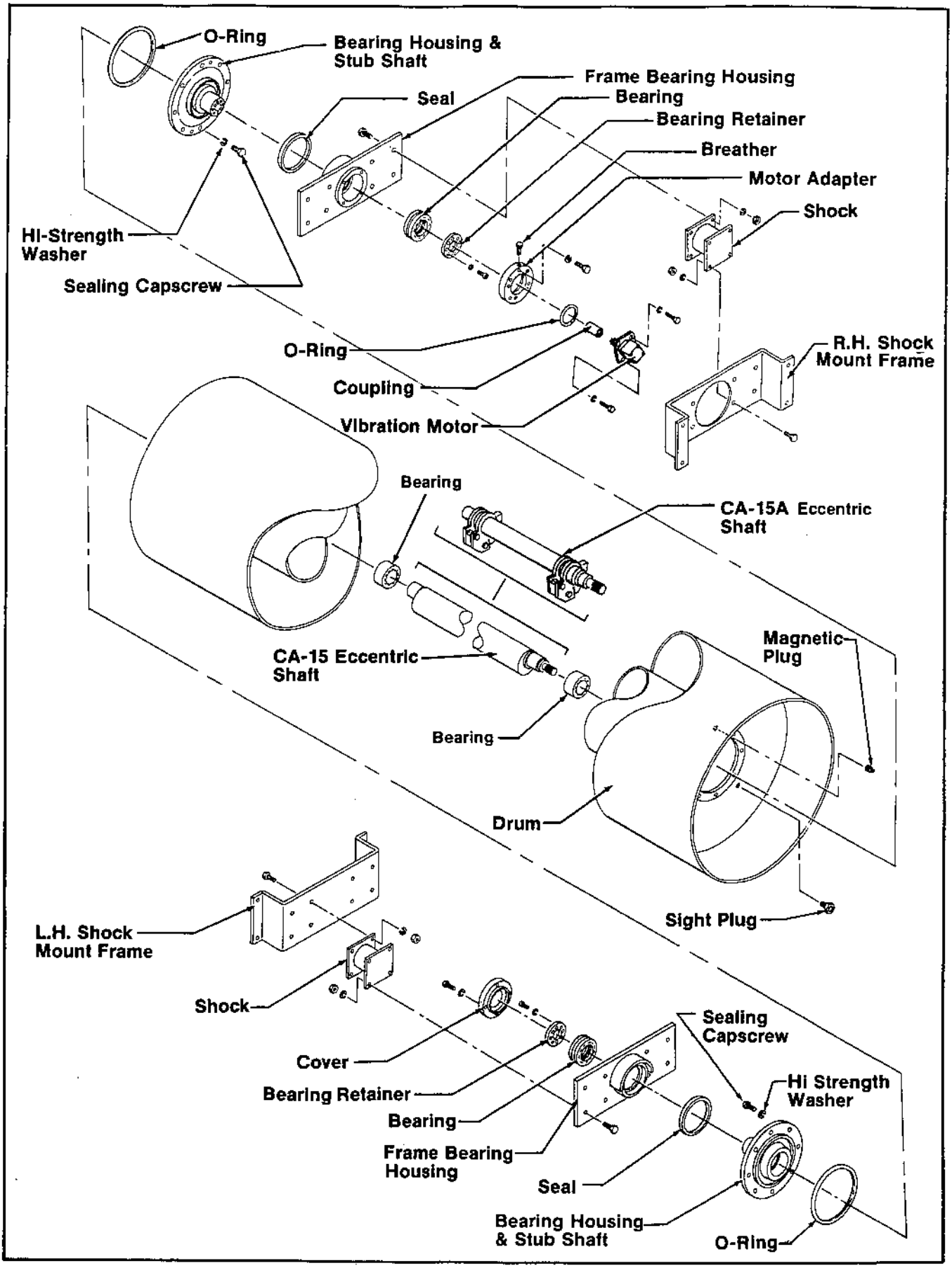


FIGURE 5-4
Drum Exploded View (Sheet 1 of 2)
(For Models CA-15/15A)

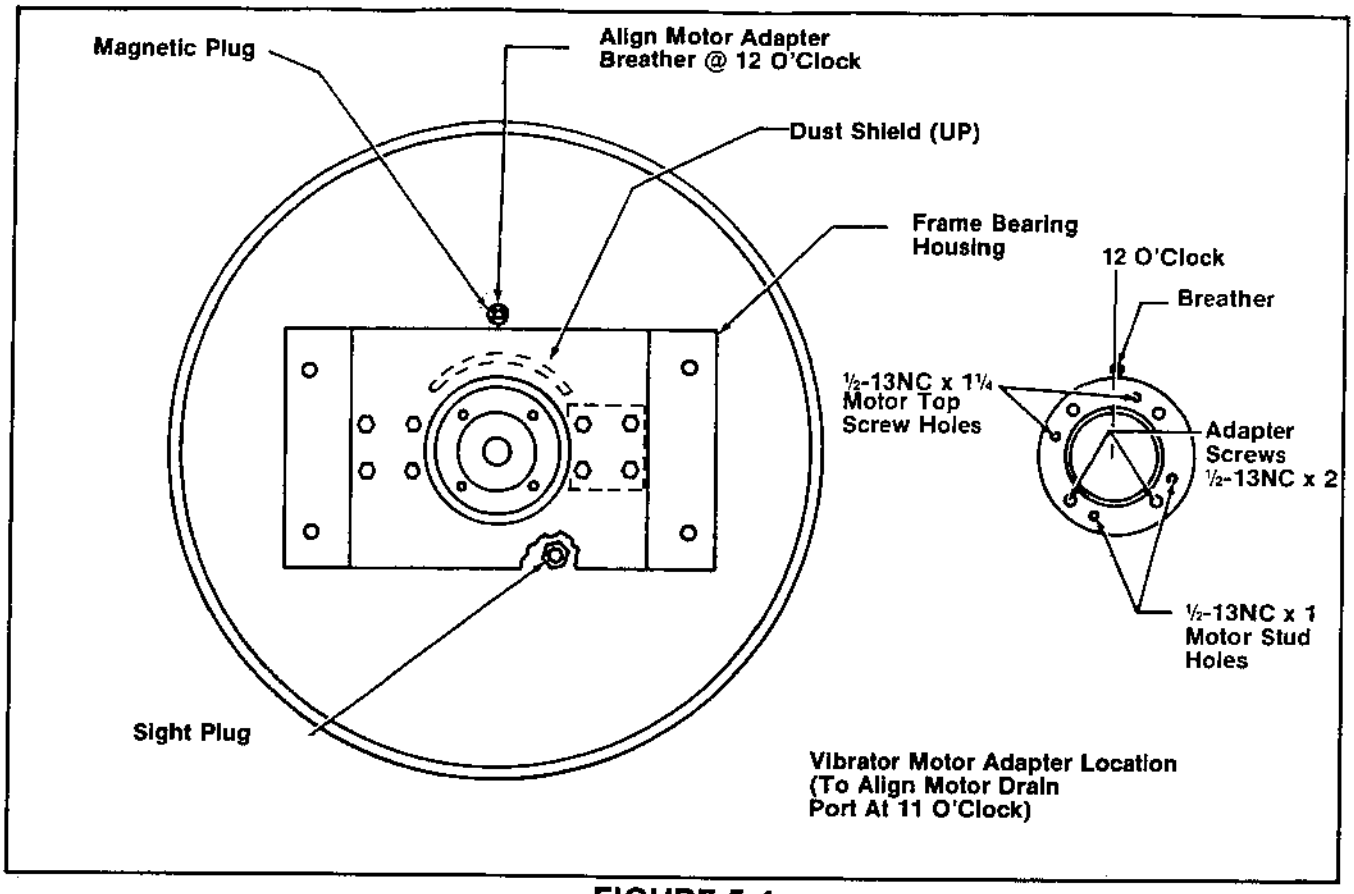


FIGURE 5-4
Drum Exploded View (Sheet 2 of 2)
(For Models CA-15/15A)

(9) Remove bearing retainer from R.H. inner bearing housing spindle.

(10) Carefully remove frame bearing housing and bearing assembly using suitable jacking tool. Remove bearing seal, and press bearing cones from frame bearing housing.

(11) Install pipe on eccentric shaft R.H. spline so shaft does not drop. Remove inner bearing housing screws. Install three 4 inch long 5/8-11 NC screws in puller holes 120° apart and pull inner bearing housing from drum head. Press vibrator bearing from bearing housing I.D. using suitable driver.

(12) Drum L.H. side: Remove bearing clamp cover and O-ring from bearing housing.

(13) Remove eccentric shaft through drum head R.H. side. Use pipes at L.H. side and at R.H. side of shaft to facilitate removal.

CAUTION: USE CARE TO PREVENT DAMAGE TO SHAFT SPLINES DURING AND AFTER REMOVAL.

(14) Remove L.H. inner bearing housing from drum head per paragraph B(11).

C. Disassembly, CA-15/15A (Figure 5-4)

(1) Position drum with R.H. filler plug at 6 o'clock and drain oil.

(2) Drum L.H. side: Attach hoist and remove L.H. shock mount frame from two shocks on frame bearing housing.

(3) Repeat step (2) at R.H. side. Lift assembly and remove.

(4) Remove two shock absorbers from R. & L.H. frame bearing housings.

(5) Drum R.H. side: Withdraw vibration motor coupling from eccentric shaft if not previously removed with vibration motor.

(6) Note position of vibration motor adapter, then remove it from frame bearing housing.

(7) Remove bearing retainer from R.H. bearing housing spindle.

(8) Carefully remove frame bearing housing and bearing assembly using suitable jacking tool. Remove bearing seal, and press bearing cones from frame bearing housing.

(9) Install pipe on eccentric shaft R.H. spline so shaft does not drop. Remove bearing housing screws. Install three 4 inch long 5/8-11 NC screws in puller holes 120° apart and pull bearing housing from drum head. Press vibrator bearing from bearing housing I.D. using suitable driver.

(10) Drum L.H. Side: Remove bearing cover from frame bearing housing.

(11) Remove eccentric shaft through drum head R.H. side. Use pipes at L.H. side and at R.H. side of shaft to facilitate removal.

CAUTION: USE CARE TO PREVENT DAMAGE TO SHAFT SPLINES DURING AND AFTER REMOVAL.

(12) Remove L.H. bearing housing from drum head per paragraph B(9).

D. Reassembly, CA-15D/15PD/15PDB (Figure 5-3)

(1) Clean all parts thoroughly. Position drum R.H. side so that magnetic plug hole is at 12 o'clock.

(2) R.H. inner bearing housing: Turn housing spindle side up; press frame bearing cone, taper side up, onto spindle O.D. Turn housing over; press eccentric bearing assembly into I.D. Lubricate and install O-ring on housing shoulder O.D.

(3) L.H. bearing housing: Press eccentric bearing assembly into housing I.D. Lubricate and install O-ring on shoulder O.D.

(4) Check that drum oil chamber and mounting surfaces are clean.

(5) Check R.H. and L.H. eccentric shaft bearing O.D. surfaces for slide fit in bearing I.D.'s. Polish shaft if necessary. Clean and lubricate the surfaces.

(6) Drum L.H. side: Apply Locktite Plastigasket to drum head mounting surface. Install two 5/8-11 NC guide pins 180° apart. With soft driver, seat L.H. bearing housing in drum head. Remove guide pins. Install eight 5/8-11 NC x 1-3/4" Nylock screws with lockwashers dry; tighten 180° apart using crisscross pattern at 175 ft-lbs of torque.

(7) Install pipes on eccentric shaft L.H. side; and on shaft R.H. splines.

WARNING: ECCENTRIC SHAFT ASSEMBLY WEIGHS APPROXIMATELY 250 LBS. PROCEED WITH CAUTION.

(8) Drum R.H. side: Coat threads with Locktite 262 and install sight plug in drum head at location shown.

(9) Using a hoist, insert eccentric shaft, unsplined end, through drum head. Center shaft in L.H. bearing I.D. and seat shaft in bearing using soft driver.

(10) Repeat step (6) except install R.H. bearing housing over pipe and engage with eccentric shaft bearing journal O.D.

(11) Important: Before proceeding SLOWLY rotate lifting bar 90° CW and CCW using torque wrench. Maximum allowable torque is 50 ft-lbs. If shaft is not free, bump lifting bar sharply with soft driver to loosen components, then recheck torque. If maximum torque is still exceeded, disassemble to determine cause. Eccentric shaft axial play should be 0.023-0.080 in. Remove lifting pipes.

(12) Drum L.H. side: Install O-ring on bearing clamp cover. Install cover in inner bearing recess with six 3/8-16 NC x 1" capscrews and lockwashers; tighten 180° apart using crisscross pattern at 38 ft-lbs of torque.

(13) Frame bearing housing: Ensure that it is clean. Fill grease seal I.D. groove with Molykote N. Seat seal uniformly in housing recess (dust shield side) with open (spring) side facing outboard, then coat seal with same lubricant.

(14) Turn frame bearing housing dust shield side down. Press frame bearing cup, tapered side down, into housing. Install cup spacer, stepped side down against cup.

(15) Install four shock absorbers on frame bearing housing; use lockwashers and Locktite 262 sparingly on 16 1/2-20 x 1-1/4" screws and tighten to 90 ft-lbs torque.

(16) Install shock mount frame on frame bearing housing/shocks and align all holes. Install lockwashers and 1/2-20 NC x 1-1/4" screws using Locktite 262 on threads; tighten to 90 ft-lbs torque.

(17) Drum R.H. side: Install bearing cone spacer on O.D. of inner bearing housing. Pack bearing rollers and spacer with Alvania No. 2 lubricant.

(18) Hoist shock mount frame/frame bearing housing assembly and place on R.H. inner bearing housing, centered on bearing O.D. Press bearing cup tapered side up against cup spacer. Seat the assemblies with soft driver. Rotate assembly so that frame bearing housing dust shield is at 12 o'clock.

(19) Install bearing retainer with eight 5/16-18 NC x 3/4" socket head capscrews and high collar lockwashers dry; tighten at 21 ft-lbs torque.

(20) Apply Locktite 262 on threads and locate breather and two 1/2-13 NC x 2" studs in motor adapter as shown in Figure 5-3. Install O-ring on motor adapter and adapter on frame bearing housing with four 1/2-13 NC x 3/4" capscrews located as shown.

CAUTION: LOCATE MOTOR ADAPTER AS SHOWN (Figure 5-3) OR VIBRATION MOTOR CANNOT BE PROPERLY POSITIONED.

(21) Install O-ring on vibration motor flange and coupling on motor shaft splines.

(22) Engage coupling on vibration shaft splines and install motor on adapter studs with drain port at 10 o'clock position. Install two 1/2 x 13 nuts and two 1/2-13 x 1-1/4" screws/ lockwashers and tighten.

(23) Drum L.H. side: Clean bolt holes and mating surfaces with solvent degreaser and install eight shock units on drum head brackets. Use 1/2-13 x 1-3/4" bolts (head facing outboard), lockwashers and elastic stopnuts; tighten to 85 ft-lbs torque.

(24) Fill torque hub SLOWLY with 3-1/2 quarts EP90 lubricant. Ensure fill and drain plugs are tightened.

(25) Turn torque hub with studs facing up. Place drive plate, conical holes up, on hub studs. Install conical hex nuts (R.H. threads) and tighten at 450 ft-lbs torque, 180° apart using a crisscross pattern.

WARNING: DRIVE PLATE TORQUE HUB ASSEMBLY WEIGHS APPROXIMATELY 750 LBS. PROCEED WITH CAUTION.

(26) Turn drive plate/torque hub assembly over. With suitable hoist, raise and install assembly on drum shock mounts. Use 1/2-13 x 1-3/4" bolts, lockwashers, with elastic stopnut on outboard side; tighten to 90 ft-lbs torque.

(27) Install L.H. shock mount frame on torque hub with top traction motor screw hole aligned at 11 o'clock as shown. Install 12 3/4-16 x 1-3/4 screws and lockwashers and tighten.

(28) Drum R.H. side: With drum magnetic fill plug hole at 12 o'clock, fill drum with 4 gallons of SAE 90 GL5 oil. Install magnetic pipe plug dry.

E. Reassembly, CA-15/15A, (Figure 5-4)

(1) Clean all parts thoroughly. Position drum R.H. side so that magnetic plug hole is at 12 o'clock.

(2) R.H. bearing housing: Turn housing spindle side up; press frame bearing cone, taper side up onto spindle O.D. Turn housing over; press eccentric bearing assembly into I.D. Lubricate and install O-ring on housing shoulder O.D.

(3) L.H. bearing housing: Repeat step (2).

(4) Check that drum oil chamber and drum head mounting surfaces are clean.

(5) Check R.H. & L.H. eccentric shaft bearing O.D. surfaces for slide fit in bearing I.D.'s. Polish shaft if necessary. Clean and lubricate these surfaces.

(6) Drum L.H. side: Apply Locktite Plastigasket to drum head mounting surface. Install two 5/8-11 NC guide pins 180° apart. With soft driver, seat bearing housing in drum head. Remove guide pins. Install eight 5/8-11 x 1-3/4" Nylok screws with lockwashers dry; tighten 180° apart using crisscross pattern at 130 ft-lbs of torque.

(7) Install pipes on eccentric shaft L.H. side; and on shaft R.H. splines.

WARNING: ECCENTRIC SHAFT WEIGHS APPROXIMATELY 250 LBS. PROCEED WITH CAUTION.

(8) Drum R.H. side:

(a) Coat sight plug threads with Locktite 262 and install in drum head at location shown. Using a suitable hoist, insert eccentric shaft, unsplined end through drum head. Center shaft in L.H. bearing I.D. and seat shaft in bearing with soft driver.

(b) Repeat step (6) except install the R.H. bearing housing over lifting bar and engage with eccentric shaft bearing journal O.D.

(9) Important: Before proceeding, SLOWLY rotate lifting bar 90° CW & CCW with torque wrench. Maximum allowable torque is 50 ft-lbs. If this value is exceeded, bump lifting bar sharply with soft driver to loosen components, then recheck torque. If maximum torque is still exceeded, disassemble to determine cause. Eccentric shaft axial play should be .038-.090 in. Remove guide and lifting bars.

(10) Apply suitable metal primer to R. & L.H. bearing housing and screws.

(11) R. & L.H. Frame Bearing Housing:

(a) Ensure that housings are clean. Turn dust shield sides down. Press frame bearing cups, tapered sides down, into housings. Install cup spacers, stepped sides down, against cups.

(b) Install two shocks on each housing with 1/2-13 NC x 1-1/2" capscrews, lockwashers and nuts; tighten to 57 ft-lbs torque.

(c) Turn housings over. Fill grease seal I.D. grooves with Molykote N. Seat seals uniformly in housing recesses with open (spring) sides facing outboard, then coat seal with same lubricant.

(12) Drum R. & L.H. sides: Install frame bearing cone spacer on O.D. of both bearing housing spindles. Pack bearing rollers and coat spacer with Alvania No. 2 lubricant.

(13) Drum R.H. side:

(a) Hoist frame bearing housing and center bearing I.D. on O.D. of bearing housing spindle. Seat assembly with soft driver and rotate dust shield to top (12 o'clock).

(b) Install bearing retainer with eight 5/16-18 NC x 3/4 socket head capscrews and high collar lockwashers dry; tighten to 13 ft-lbs torque.

(14) Drum L.H. side:

(a) Repeat step (13).

(b) Install bearing cover with four 1/2-13 NC x 2" capscrews and lockwashers; tighten to 57 ft-lbs torque.

(15) Apply Locktite 262 on threads and locate breather and two 1/2-13NC x 2" studs in motor adapter as shown in Figure 5-4.

(16) Drum R.H. side: Install motor adapter on frame bearing housing located as shown with four 1/2-13NC capscrews and lockwashers; tighten to 57 ft-lbs torque.

CAUTION: LOCATE ADAPTER AS SHOWN (Figure 5-4) OR VIBRATION MOTOR CANNOT BE PROPERLY POSITIONED.

(17) Lubricate and install O-ring on vibration motor flange, and coupling on motor shaft splines. Engage coupling with splines on eccentric shaft and motor on two adapter studs with drain line port at the 10 o'clock position. Install two 1/2-13 NC x 1-1/2" capscrews, four lockwashers and two nuts; tighten to 57 ft-lbs torque.

(18) Hoist and install R.H. shock mount frame on two shocks on frame bearing housing with eight 1/2-13 NC x 1-1/2" capscrews, lockwashers and nuts; tighten to 57 ft-lbs torque.

(19) Drum L.H. side: Repeat step (18).

(20) Drum R.H. side: With magnetic fill plug hole at 12 o'clock position, fill drum with 4 gallons of SAE 90 GL5 oil. Install magnetic fill plug dry.

F. Replacement (Figures 5-1, 5-2)

(1) Carefully roll the entire drum assembly between the frame sides.

WARNING: DRUM ASSEMBLY WEIGHS APPROXIMATELY 4,000 LBS. TAKE ADEQUATE PRECAUTION TO CONTROL THIS MASS OR PERSONAL INJURY MAY OCCUR.

(2) Secure drum R.H./L.H. shock mount frames to frame sides; replace shims (or equivalent replacement) at the location identified during disassembly.

(3) Install front scraper bar assembly with any shims in original position; adjust top/bottom edge to drum face clearance to 1/2".

(4) If not previously accomplished, install vibration motor per paragraphs 3C (21, 22).

(5) Install vibration motor hoses in frame clamp.

(6) CA15D/15PD/15PDB only:

(a) Lubricate and install O-ring on traction motor flange. At frame L.H. side, engage motor splines in torque hub; install and tighten screws.

(b) Install hoses on motor if previously removed. Install hoses in frame clamp.

(c) Install motor guard on frame and tighten screws.

(7) CA-15PDB only:

(a) Place strikeoff blade assembly in position at front frame.

WARNING: BLADE ASSEMBLY WEIGHS APPROXIMATELY 1,000 LBS. PROCEED WITH CAUTION OR PERSONAL INJURY MAY OCCUR.

(b) Align blade support arm yokes with frame mount bearings. Install clevis pins, washers and hairpin clips.

(c) Install blade position indicator guide to frame bracket. Install indicator yoke at blade lug and secure with clevis pin and cotter pin. Lubricate six grease fittings per Lubrication and Maintenance Schedule, Operator's Manual.

(8) CA-15A only: Install water tank on front frame and tighten screws.

(a) Reconnect wire leads to low water probe, water pump and solenoid valve.

(b) Reconnect water lines to tire wetting tank and sprinkler bar.

(9) Remove blocks at frame sides and box section.

4. CA15D/15PD/15PDB Torque Hub P/N 801150 (Figure 5-5)

A. Disassemble Torque Hub

(1) Remove fill plug and drain lubricant.

(2) Remove coupling (40) from input shaft (29) splines (through I.D. of spindle).

(3) Remove retaining rings (42, 41) from I.D. and O.D. grooves of coupling (40).

(4) Remove four shoulder bolts (38) and lockwashers (37) from counterbored holes in hub and sixteen bolts (39) with lockwasher (37) from remaining holes. Remove cover (36), "O" ring (34) from ring gear (35).

(5) Remove two thrust washers (32), and thrust bearing (33), from cover (36) pilot diameter and/or carrier (18) counterbore.

(6) Remove two thrust washers (26), thrust bearing (27), from end of input shaft (29).

(7) Remove ring gear (35) from hub and from mesh with cluster gears of carrier sub-assembly.

(8) Raise carrier sub-assembly and disengage small ends of cluster gears from mesh with the internal gear (10) and from input gear (30) of hub/spindle sub-assembly.

(9) Remove "O" ring (34) from counterbore of hub/spindle sub-assembly.

(10) Remove input shaft (29), thrust spacer (31), and input gear (30) from hub/spindle sub-assembly.

(11) Slide thrust spacer (31) from input shaft (29) spline.

(12) Slide input gear (30) from input shaft (29) spline.

(13) Remove retaining ring (28) from groove on input shaft (29).

(14) Remove two thrust washers (32) and one thrust bearing (33) from bearing plate (12).

B. Diassemble Carrier Sub-Assembly

(1) Remove retaining ring (25) from planet shaft groove.

(2) Remove spacer (19) from small end of planet shaft (23).

(3) Remove planet shaft (23) through roll pin hole side of carrier (18) hole and from bearing cones (20).

(4) If required, remove roll pin (24) from hole in carrier wall.

(5) Remove cluster gear (22) from carrier (18).

(6) Remove bearing cones (20) from bearing cups (21) in cluster gear.

(7) Pull two bearing cups (21) from I.D. of cluster gear (22).

(8) Mark parts removed as a set (matched cluster gear and spacer) and repeat steps (1) through (7) for two remaining cluster gears.

C. Disassemble Hub/Spindle Sub-Assembly

(1) Remove two magnetic pipe plugs (3) from hub (2).

(2) Remove safety wire and six bolts (13) securing bearing plate (12) to spindle (17).

(3) Remove shim stock (11) from spindle (17).

NOTE: Retain shim stock for reference/use during reassembly.

(4) Remove internal gear/gear hub assembly from spindle (17) spline through hub (2).

(5) Remove safety wire, eight bolts (9) with four plates (8) from internal gear (10).

(6) Separate internal gear (10) from internal gear hub (7).

(7) Pull bearing cone (6) from internal gear hub (7).

NOTE: Bearing cone may be heated to 200-250°F for easy removal.

(8) Remove spindle (17) from bearing cone (15) I.D. Carefully remove half of face seal (16) from spindle (17) groove.

(9) Carefully remove face seal (16) from hub (2).

NOTE: Seals in good condition may be reused; protect seal from damage.

(10) Remove bearing cone (15) from bearing cup (14).

(11) Pull bearing cups (14) and (5) from hub (2). If required, remove studs (4) from hub (2) flange.

D. Reassemble Torque Hub: Determine Shim Stock Thickness.

Use this procedure *only* if a new hub (2), spindle (17), internal gear hub (7), bearing cups (14), (5), or bearing cones (15), (6), will be used in reassembly. If no new parts will be used, disregard this procedure and use original shim stock thickness.

NOTE: Shim stock thickness must be determined without the face seal (16) installed.

(1) Press bearing cups (14) and (5) into hub (2).

(2) Press bearing cone (6) onto the internal gear hub (7).

NOTE: Bearing cone may be heated to 200-250°F for easy assembly.

(3) With spindle (17) spline up, install bearing cone (15) (slip fit).

(4) Place hub (2) on spindle (17).

(5) Place internal gear hub (7) onto spindle (17) spline.

(6) Measure thickness of bearing plate (12) at several locations; average the thickness.

(7) Install two bolts (13) 180° apart next to the two small holes in bearing plate (12). Torque bolts to 200 in.-lbs, in 40-50 in.-lb increments, alternating between bolts. Rotate the hub clockwise and counterclockwise at each torque increment to properly seat bearing.

(8) Using a depth gauge, measure from top of bearing plate to the spindle face. Use the two small holes next to the bolts. Average the two readings. From the average, subtract the bearing plate thickness found in step (6); the result is the gap.

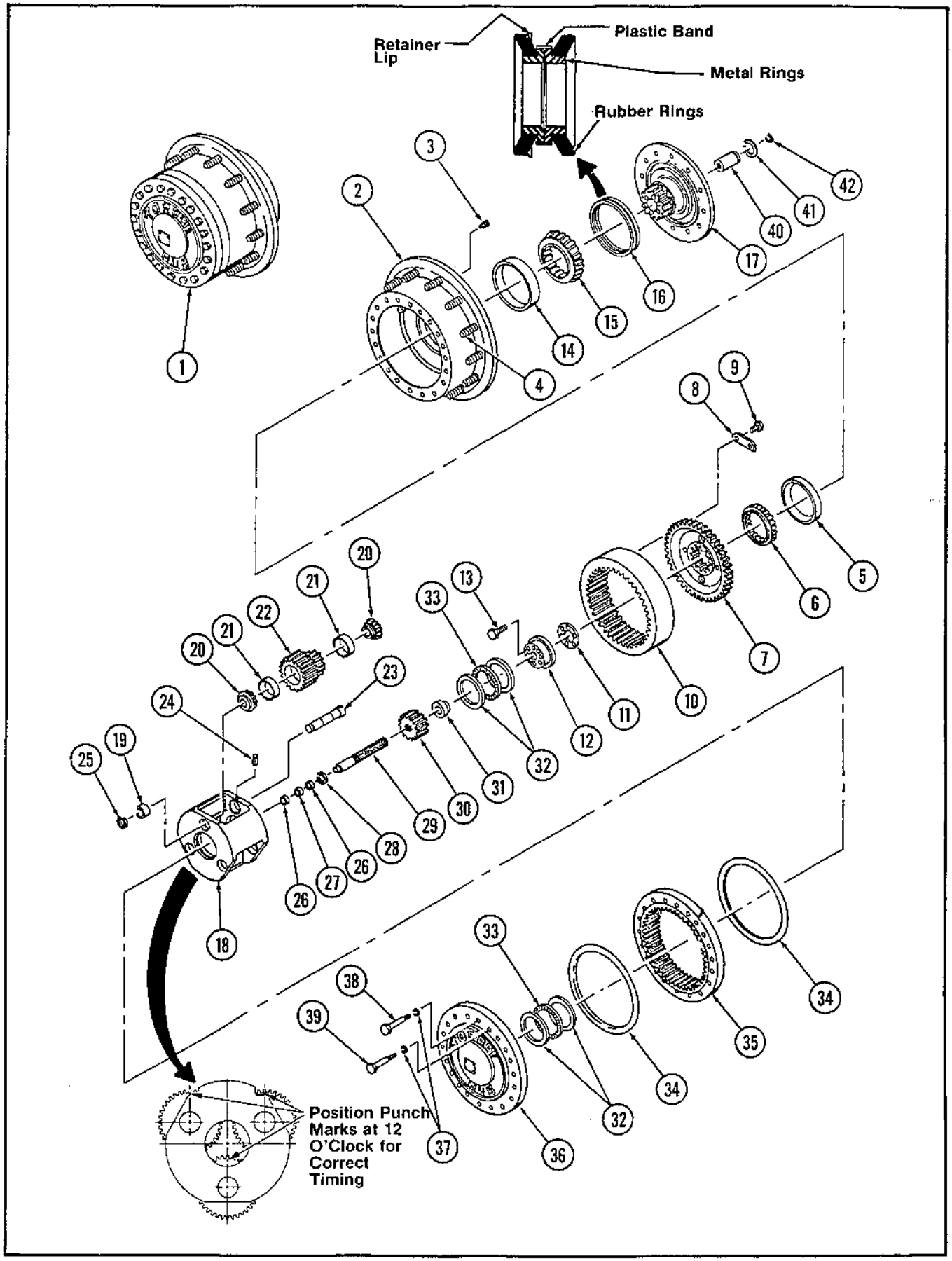


FIGURE 5-5
Torque Hub Assembly (Sheet 1 of 2)

FIGURE 5-5
Torque Hub Assembly (Sheet 2 of 2)

INDEX NUMBER	DESCRIPTION	QUANTITY
*1	Hub Assembly, Drive	1
--	Hub Sub-Assembly, Spindle	1
2	Hub	1
3	Plug, Magnetic Pipe	2
4	Stud	12
5	Bearing Cup	1
6	Bearing Cone	1
7	Gear, Internal	1
8	Plate, Retainer	4
9	Bolt	8
10	Gear, Internal Hub	1
11	Shim Set	1
12	Plate, Bearing	1
13	Bolt	6
14	Bearing Cup	1
15	Bearing Cone	1
16	Seal, Face	1
17	Spindle	1
--	Carrier Sub-Assembly	1
18	Carrier	1
19	Spacer	3
20	Bearing, Cone	6
21	Bearing, Cup	6
22	Gear, Cluster	3
23	Shaft, Planet	3
24	Pin, Roll	3
25	Ring, Retaining	3
26	Washer, Thrust	2
27	Bearing, Thrust	1
28	Ring, Retaining	1
29	Shaft, Input	1
30	Gear, Input	1
31	Spacer, Thrust	1
32	Washer, Thrust	4
33	Bearing, Thrust	2
34	O-Ring	2
35	Gear, Ring	1
36	Cover	1
37	Washer, Lock	20
38	Bolt, Shoulder	4
39	Bolt	16
40	Coupling	1
41	Ring, Retaining	1
42	Ring, Retaining	1

* S/N 741 and up

TABLE 5-1
Shim Stock Thickness

COLUMN 1		COLUMN 2
GAP		
OVER	INCL.	SHIM THICKNESS
.006	.008	.014
.008	.010	.016
.010	.012	.018
.012	.014	.020
.014	.016	.022
.016	.018	.024
.018	.020	.026
.020	.022	.028
.022	.024	.030
.024	.026	.032
.026	.028	.034
.028	.030	.036
.030	.032	.038
.032	.034	.040
.034	.036	.042
.036	.038	.044
.038	.040	.046
.040	.042	.048
.042	.044	.050
.044	.046	.052
.046	.048	.054
.048	.050	.056
.050	.052	.058
.052	.054	.060
.054	.056	.062
.056	.058	.064
.058	.060	.066
.060	.062	.068
.062	.064	.070
.064	.066	.072
.066	.068	.074
.068	.070	.076
.070	.072	.078
.072	.074	.080
.074	.076	.082
.076	.078	.084
.078	.080	.086

(9) Determine shim stock (11) thickness from Table 5-1. In column 1, find the gap measurement found in step (8); the shim stock thickness to be used is found opposite in column 2.

(10) Disassemble bolts (13), bearing plate (12), internal gear hub (7), and hub (2).

E. Assemble Hub/Spindle Sub-Assembly

(1) *Press bearing cups (14) and (5) into hub (2). If required, press studs (4) into hub flange.

(2) Place hub (2) on a flat surface with the large open end down.

(3) Place bearing cone (15) into bearing cup (14).

(4) Clean face seal bore in hub (2) with non-flammable cleaning solvent.

NOTE: REUSABLE FACE SEALS: Face seal halves (inset Figure 5-5) accidentally separated (plastic band destroyed) during disassembly, but otherwise in good condition may be reused. To aid reassembly, install half with retainer lip in spindle bore, remaining half in hub.

NEW FACE SEALS: Face seals with retainer band intact should be installed as one complete unit per step (5).

(5) Check that face seal (16) and rubber rings are completely free of oil and dirt and assembled per inset in Figure 5-5. Press "retainer lip" side of face seal into hub (2). Check that seal is not cocked and evenly seated.

(6) Clean seal bore in spindle (17) with non-flammable cleaning solvent.

(7) Carefully insert spindle (17) into bearing cone (15) I.D., and locate over face seal O.D. projecting from hub groove.

(8) Clamp spindle (17) rigidly to hub (2) to hold alignment and prevent damage to face seal. Turn spindle/hub assembly over so that large open end of hub is up.

(9) *Press bearing cone (6) onto internal gear hub (7).

NOTE: Bearing cone may be heated to 200-250° F for easy assembly.

(10) Slide internal gear (10) onto internal gear hub (7).

(11) Secure internal gear to internal gear hub with four plates (8) and eight bolts (9). Torque bolts to 20-25 ft-lbs. Safety wire the bolts in sets of two.

(12) Insert internal gear/gear hub assembly through hub (2) and onto spindle (17) spline. Bearing cone (6) will mate with bearing cup (5).

(13) Place proper shim stock (11) (Paragraph D) onto end of spindle (17).

(14) Insert bearing plate (12) lip through shim stock and spindle (17) I.D.'s and align bolt holes. Secure plate and shim with eight bolts (13) torqued to 25-30 ft-lbs; coat threads with Locktite 271. Safety wire in sets of two.

(15) Install two magnetic pipe plugs (3) in hub (2).

(16) This completes the hub/spindle sub-assembly; check that hub (2) turns smoothly with respect to spindle (17).

* Disregard this step if new parts are used per paragraph D.

F. Assemble Carrier Sub-Assembly

NOTE: Cluster gears procurable as matched set with complete set (3 sizes) of spacers. Spacer sets also separately procurable.

(1) Press two bearing cups (21) into I.D. of cluster gear (22). Repeat for remaining two cluster gears.

(2) Position carrier (18) so that six small holes and two center holes are in a horizontal plane.

(3) Place bearing cones (20) into bearing cups (21) in cluster gear and hold in place.

(4) Place cluster gear between two off-center holes in carrier (18) with the small gear end on same side as the roll pin hole in carrier wall.

(5) With cluster gear (22) in place, insert planet shaft (23) through carrier holes and bearing cones (20). Large end of planet shaft must be on roll pin hole side of carrier (18).

(6) Insert spacer (19) on small end of planet shaft (23).

NOTE: If new bearings or cluster gears are to be used in sets marked during disassembly, select spacer (3 sizes) to achieve smallest end play which will just allow insertion of retaining ring.

(7) Install retaining ring (25) in planet shaft groove and against spacer (19).

(8) Install roll pin (24) through pin hole in carrier wall and into slot in planet shaft (23) to prevent planet shaft rotation.

(9) Repeat steps (3) through (8) for two remaining cluster gears to complete carrier sub-assembly.

G. Final Assembly of Torque Hub Sub-Assemblies

(1) Turn hub/spindle sub-assembly large open end up.

(2) Place one thrust washer (32), one thrust bearing (33), and one thrust washer (32), respectively, onto bearing plate (12).

(3) Secure retaining ring (28) into groove on input shaft (29).

(4) Install input gear (30) on input shaft (29) spline and slide against retaining ring (28). Input gear counterbore must face away from retaining ring.

(5) Slide thrust spacer (31) over input shaft (29) spline with large O.D. side locating against input gear (30).

(6) While holding thrust spacer (31) and input gear (30) on input shaft (29), place splined end of input shaft on hub/spindle sub-assembly with thrust spacer locating against bearing plate (12) of hub/spindle sub-assembly.

(7) Slightly stretch, then coat "O" ring (34) with petroleum jelly or grease and place in hub counterbore of hub/spindle sub-assembly.

(8) Place carrier sub-assembly on a flat surface with large end of cluster gears facing up. Rotate cluster gears (22) until the punch marks are at twelve o'clock position as shown.

(9) Place ring gear (35) shoulder facing down (side marked "X" up), into mesh with large ends of cluster gears of carrier sub-assembly.

CAUTION: MARKED TEETH MUST BE AT TWELVE O'CLOCK WHEN RING GEAR (4) IS MESHED TO MAINTAIN PROPER TIMING.

(10) While holding ring gear in mesh, raise carrier sub-assembly and place small ends of cluster gears into mesh with internal gear (10) and with input gear (30) of hub/spindle sub-assembly. Rotation of carrier and ring gear may be necessary; timing will not be disturbed if parts remain together.

(11) Rotate ring gear (35) by turning carrier (18) until the hole marked "X" is located over one of the four equally spaced counterbored holes in hub of hub/spindle sub-assembly.

NOTE: The carrier sub-assembly must rotate smoothly. If gears do not turn freely, check timing.

(12) Place thrust washer (26), thrust bearing (27), and thrust washer (26), respectively, onto end of input shaft (29).

(13) Coat thrust washer (32), thrust bearing (33), and thrust washer (32), respectively with petroleum jelly and install in carrier I.D. counterbore.

(14) Slightly stretch, then coat "O" ring (34) with petroleum jelly and place into cover (36) counterbore.

(15) Check "O" ring for proper location in hub counterbore. Install and secure cover (36) and ring gear (35) to hub (2) with four shoulder bolts (38) and lockwashers (37) in counterbored holes in hub; torque to 43-45 ft-lbs. Use sixteen bolts (39) with lockwashers (37) for remaining holes; torque to 100-110 ft-lbs. Recheck torque on shoulder bolts.

(16) Install retaining rings (42, 41) into I.D. and O.D. grooves of coupling (40).

(17) Install coupling (40) into spindle of hub/spindle sub-assembly and into mesh with input shaft (29).

(18) Fill unit with 3 U.S. quarts of EP90 lubricant, install fill plug.

5. CA-15A Drum Front and Rear Wiper Adjustment

A. Adjust wiper assemblies so that they bear against drum with sufficient pressure to cause moderate deflection/curvature of the rubber wiper. See Figure 5-6.

B. When no further adjustment remains at the slots in the wiper mounting brackets, loosen screws at the wiper bracket and clamp and extend rubber wiper to achieve proper drum contact. Replace the rubber wiper as necessary.

NOTE: Rear wiper is similar except that spacers are assembled between mounting bracket and frame box section.

6. CA-15A Asphalt Tire or Steel Wheel Scraper Adjustment/Replacement (Figure 5-7)

A. Using a 0-30 lb scale attached at the scraper bracket arm as shown, check pull required to lift scraper from contact with tire or steel wheel surface; it should be 15-20 lbs. If it is not:

B. With hairpin clip removed from bracket bar, allow spring to push scraper against tire or wheel.

C. Loosen torque arm "U" bolt and reposition arm to obtain the pressure specified; tighten "U" bolt.

D. Replace nylon or steel scrapers when worn to within 1/4 inch of scraper clamp.

E. With bracket collars loose on torque rod, install new scraper and clamp loosely on scraper bracket. Allow scraper to center itself on tire or wheel, tighten clamp screws.

F. Position collars on torque rod to allow 1/16 inch clearance between collar and scraper bracket arms. Tighten collar setscrew.

7. Drum Scraper/Cleaner Bar Adjustment (Figure 5-8)

A. When necessary, adjust clearance between the drum and scraper lip or drum and cleaner bars to 1/2 inch as shown.

B. Replace cleaner bars or replaceable points as necessary.

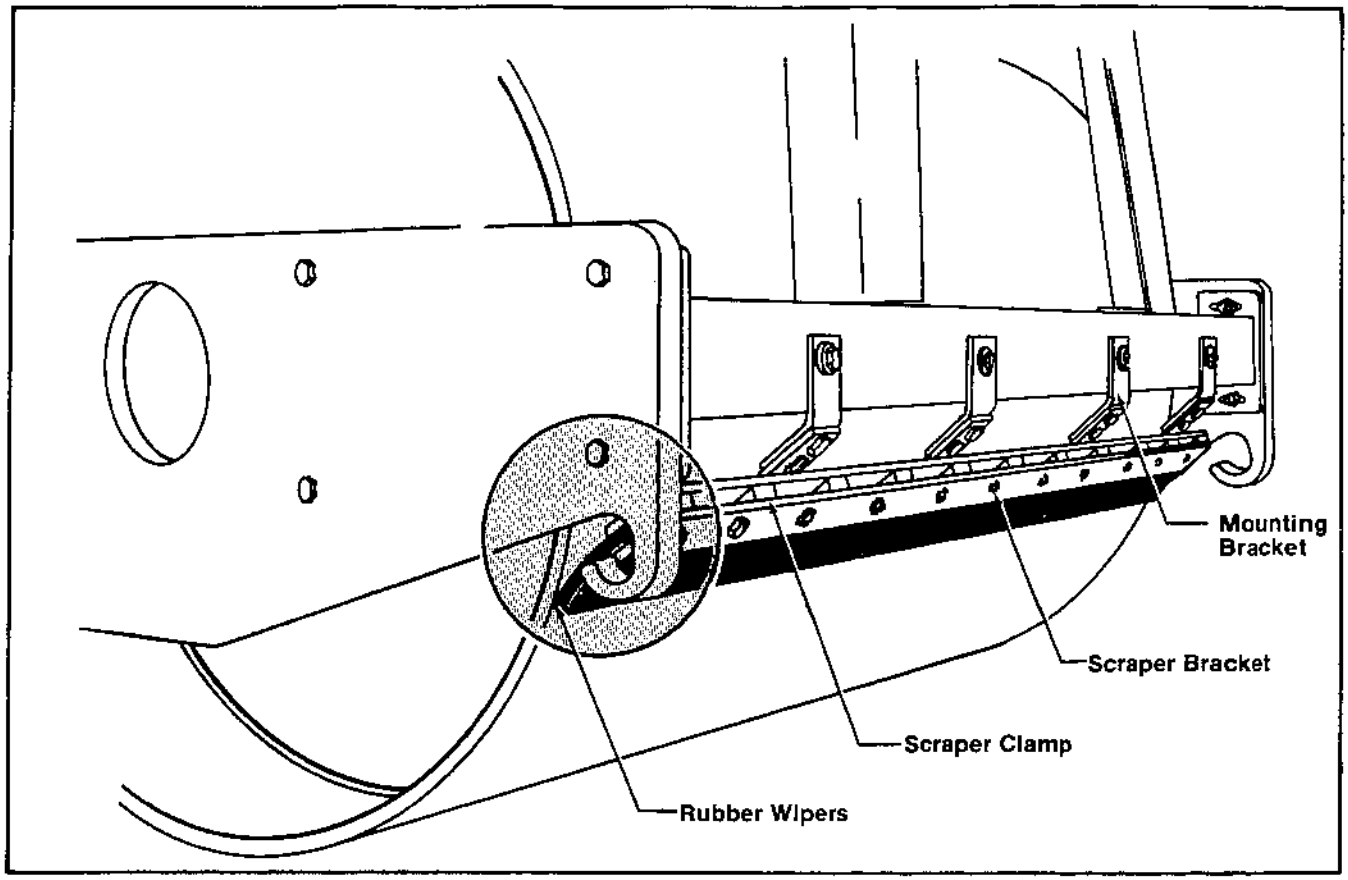


FIGURE 5-6
Adjusting Drum Front and Rear Wipers
(For Model CA-15A)

C. If removal of the scraper mounting bracket from frame is necessary, mark and retain any shims for reinstallation to maintain proper clearance.

8. Parking Brake Handle and Warning Light Adjustment (Figure 5-9)

A. Replace wheel brake shoes when 1/32" (.792 mm) material remains at any point on the linings.

B. Release brake handle. For CA-15/15D/15PD/15PDB, remove brake lever cover. Check brake cable for secure attachment and lubricate fitting with MPG at brake drum end. Check brake light switch for security in bracket.

C. Using a 0-100 lb (0-45.3 kg) hand scale, adjust handle clockwise to tighten until a force of 45-50 lbs (20.38-22.65 kg) is required to raise handle into brake ON position. Ensure there is no brake drag in OFF position.

D. With handle in ON position, locate brake switch in bracket so light switch plunger is fully depressed; tighten jam nuts. Check for brake light ON. Replace brake cable cover, CA-15/15D/15PD/15PDB.

9. Wheel Drum Brake Adjustments (Figure 5-10)

A. Brake Lining Wear: Routine adjustment to compensate for lining wear is made at the eccentric cam bolts only. Refer to paragraph 8A.

(1) Release parking brake handle. Turn bolt until brake lining contacts drum.

(2) Loosen bolt only enough to allow free rotation of brake drum.

(3) Repeat (1) and (2) on remaining brake shoe.

B. New Brake Linings. Following installation of new linings, care must be taken to properly locate curvature of linings to drum I.D. AND obtain proper clearance.

(1) Turn cam bolt until brake lining contacts drum.

(2) Loosen locknut on corresponding anchor pin and rotate pin to relieve drag.

(3) Repeat (1) and (2) until anchor pin will not relieve drag; tighten locknut.

(4) Loosen eccentric bolt to allow free rotation of drum.

(5) Repeat (1) through (4) on remaining brake shoe.

C. Low Brake Pedal

(1) Check master cylinder fluid level and all fittings for leaks. Replenish fluid and fix leaks as necessary.

(2) Adjust wheel brake shoes per paragraph 9A.

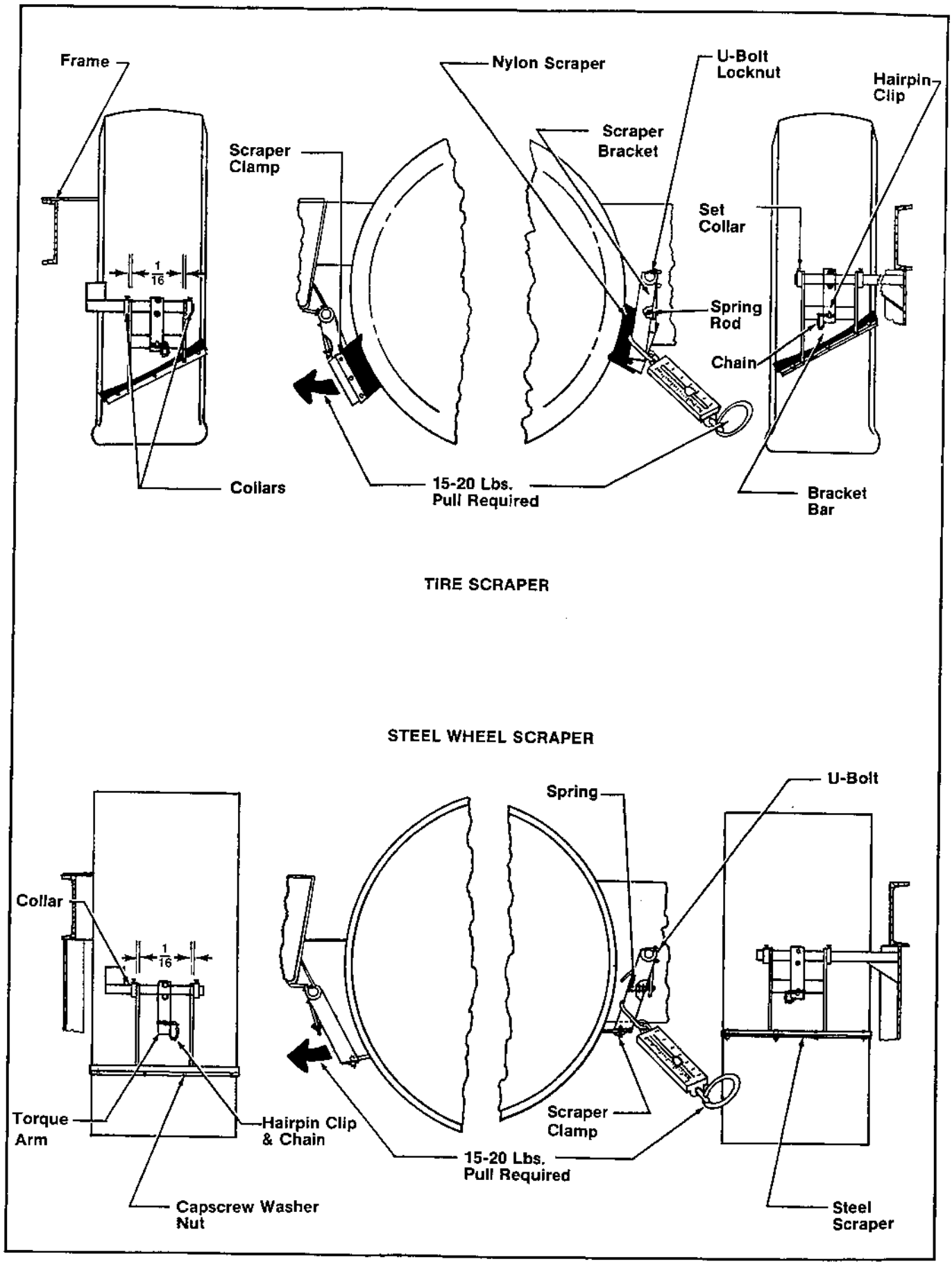


FIGURE 5-7
Adjusting Tire or Steel Wheel Wipers
(For Model CA-15A)

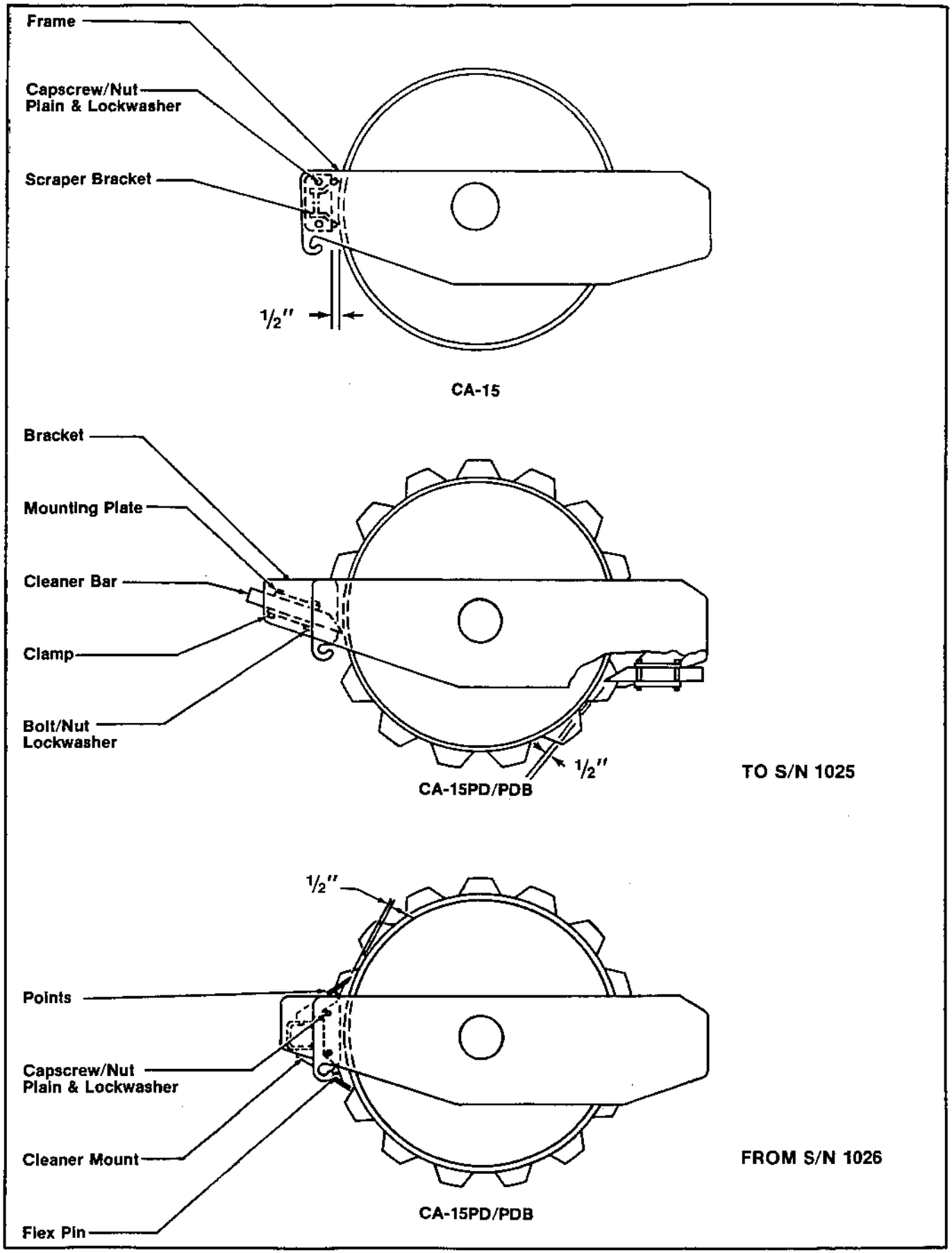


FIGURE 5-8
Drum Scraper or Cleaner Bar Adjustment

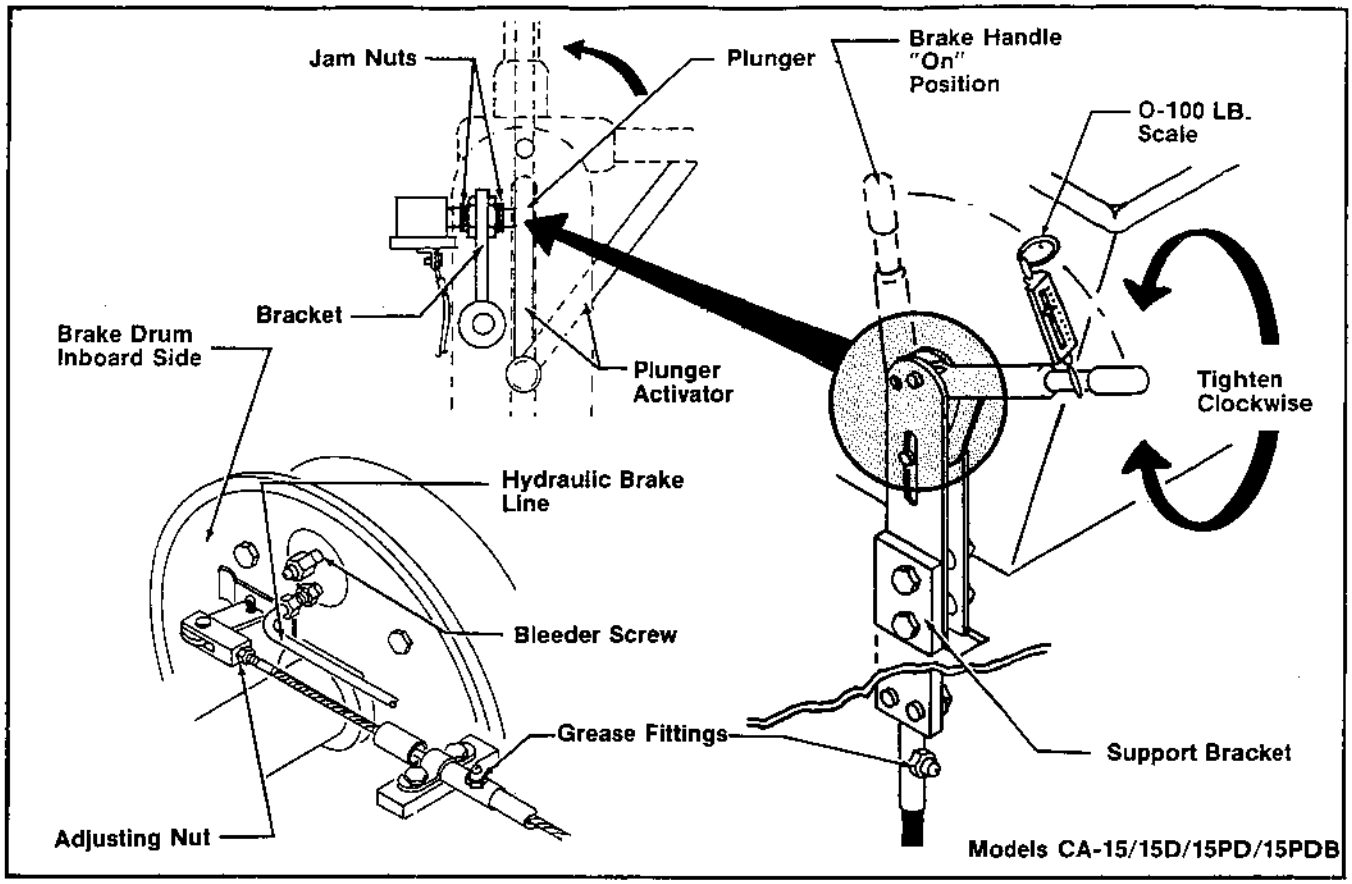


FIGURE 5-9
Parking Brake Handle and Warning Light Adjustment (Sheet 1 of 2)

(3) If brake pedal feels spongy, bleed air from system at both wheels simultaneously; then replenish master cylinder fluid. Ensure bleeder screws are tightened securely.

(4) With all air removed ("solid pedal"), check pedal free play. If excessive, check clearance between master cylinder rod end and cylinder piston. It should be 1/8 inch.

(5) Remove cotter pin and clevis from pedal lever and add washers between rod locknut and clevis yoke as necessary.

10. Steering Cylinder Assembly (Figure 5-11)

A. Removal

(1) Observe safety precautions in paragraph 1. Position the compactor with drum in the straight forward position.

(2) Mark hoses for proper installation and disconnect from cylinder; plug or cap all openings.

(3) At hitch end, remove hairpin clip and drive pin out of clevis.

(4) Retract cylinder rod by hand and remove remaining hairpin clip and clevis pin. Lift cylinder clear of machine.

B. Replacement

Steering hitch travel is limited by two stop pads welded to the tractor frame where contact is made with the steering hitch ears. The stop pads prevent internal bottoming of the steering cylinder pistons. Pad thickness thus determines (controls) the maximum extension and retraction of the cylinder rods.

(1) Install cylinder with piston rod end at the steering hitch attachment bearing location. Install clevis pins and hairpins.

(2) Install hydraulic hoses and tighten.

(3) Start and warm up engine in normal manner. Turn steering wheel from lock to lock several times to eliminate all air from system.

11. CA-15/15D/15PD/15PDB, Vibration Control Valve, Relief Valve Replacement (Figure 5-12)

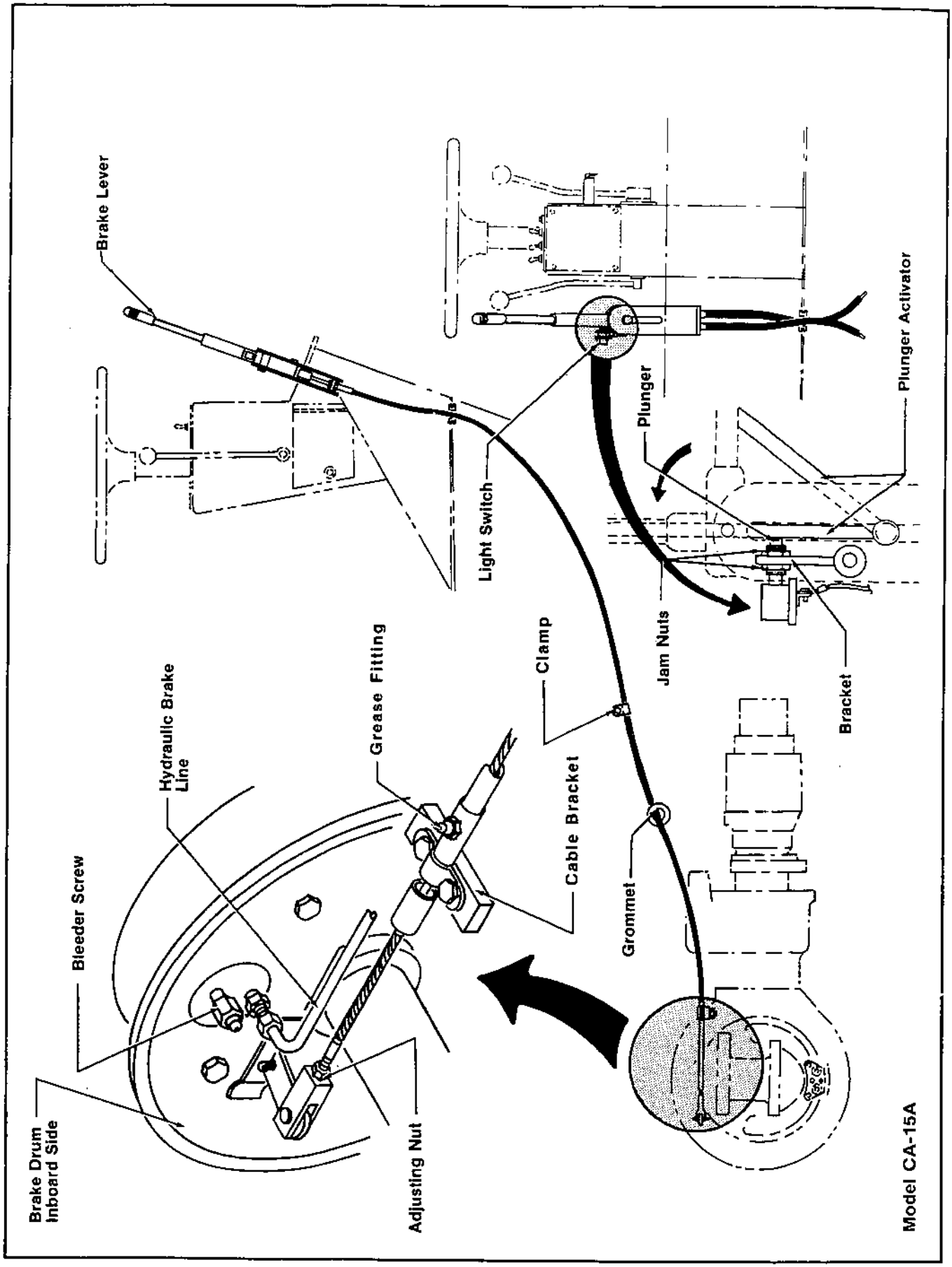


FIGURE 5-9
Parking Brake Handle and Warning Light Adjustment (Sheet 2 of 2)

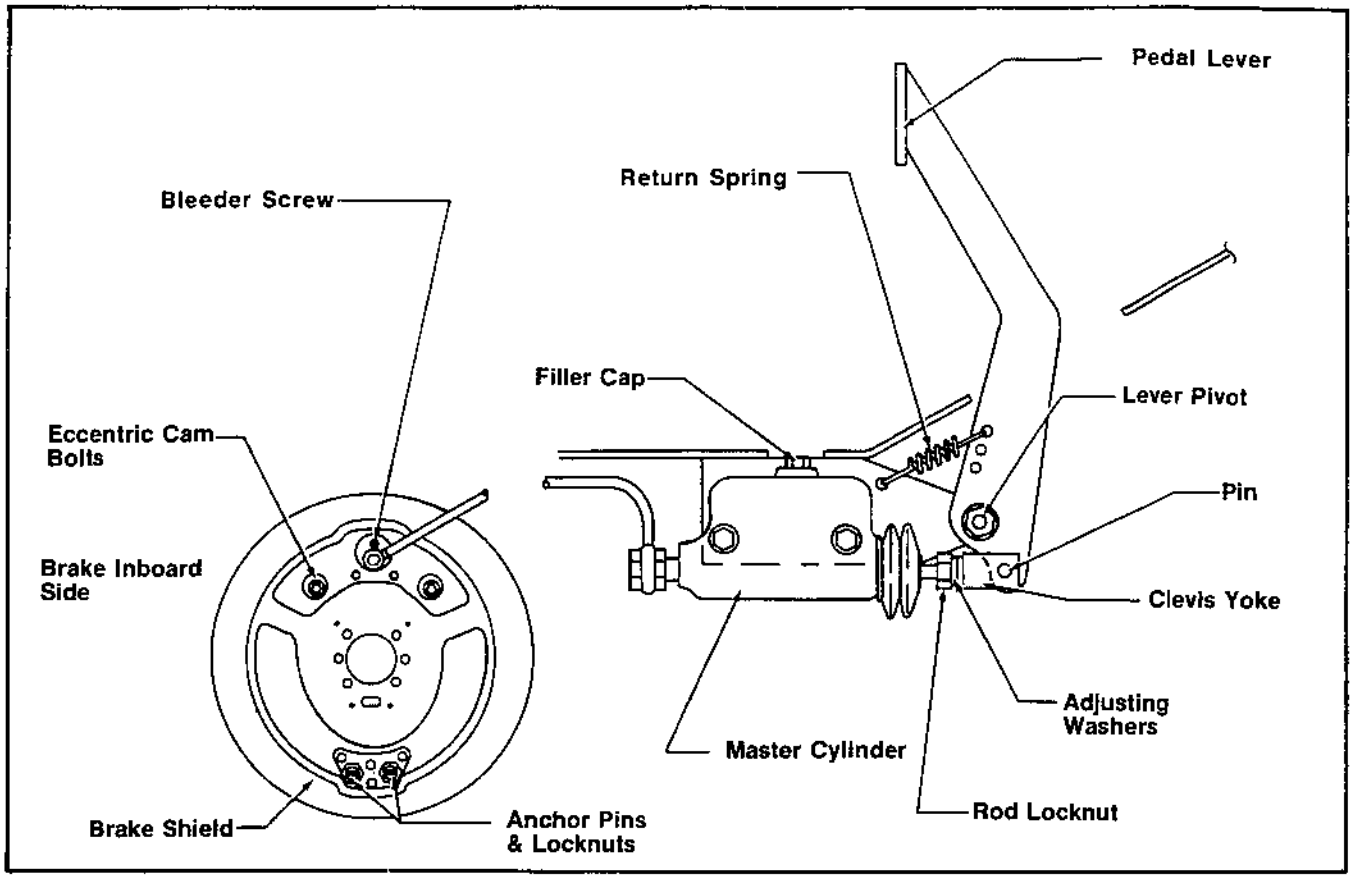


FIGURE 5-10
Wheel Brake Adjustment

A. Tilt operators seat forward; remove access panel behind seat.

B. Remove relief valve cartridge from control valve housing using wrench on body hex. Ensure that large and small O-rings do not remain in valve bore.

CAUTION: ADJUSTMENT OF RELIEF VALVE CARTRIDGE IS NOT RECOMMENDED AND NON-REPAIRABLE. REPLACE ENTIRE CARTRIDGE WHEN DEFECTIVE.

C. Ensure that large and small O-rings are properly located on replacement cartridge and cap O.D. as shown.

D. Install relief cartridge in control valve and tighten.

12. CA-15A Vibration Control Valve Components Replacement (Figure 5-13)

A. Removal of Solenoid Assembly

(1) Disconnect two solenoid wires at the crimped connectors.

(2) Remove nut on coil housing; lift off name plate, housing, coil, gasket and washer.

B. Removal of Sleeve and Piston/Pilot Spool

(1) Perform steps 12A (1) and (2).

(2) Engage removal tool in sleeve and remove sleeve and flange seal.

(3) Remove the piston/spool assembly and piston spring; flush assembly and inspect for freedom of movement in the sleeve and in the cartridge body.

NOTE: If there is foreign material on the piston/spool, remove and clean the solenoid cartridge body and solenoid housing.

C. Removal of Solenoid Cartridge Body

(1) Perform steps 12A and B. Remove spacer from recess in solenoid cartridge body to expose puller screw hole.

(2) Remove solenoid cartridge body from solenoid housing using a 4-40 NC machine screw in puller screw hole; discard two O-rings and two backup rings.

D. Remove Relief Valve Cartridge and Solenoid Block

(1) Remove pilot circuit hose(s) and hose adapter from (front) solenoid block.

(2) Using socket wrench, remove relief valve cartridge from control valve housing.

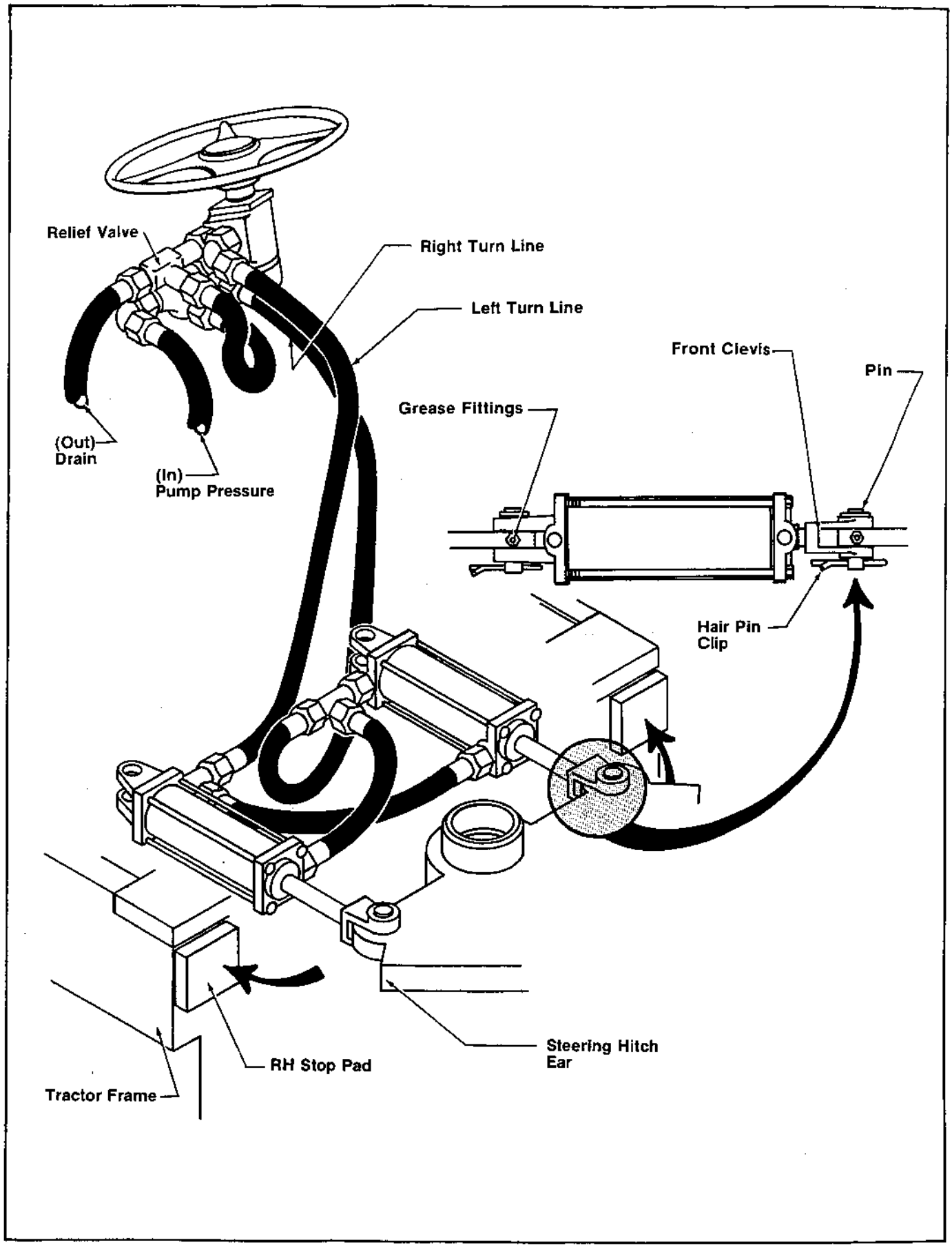


FIGURE 5-11
Steering Cylinder Replacement

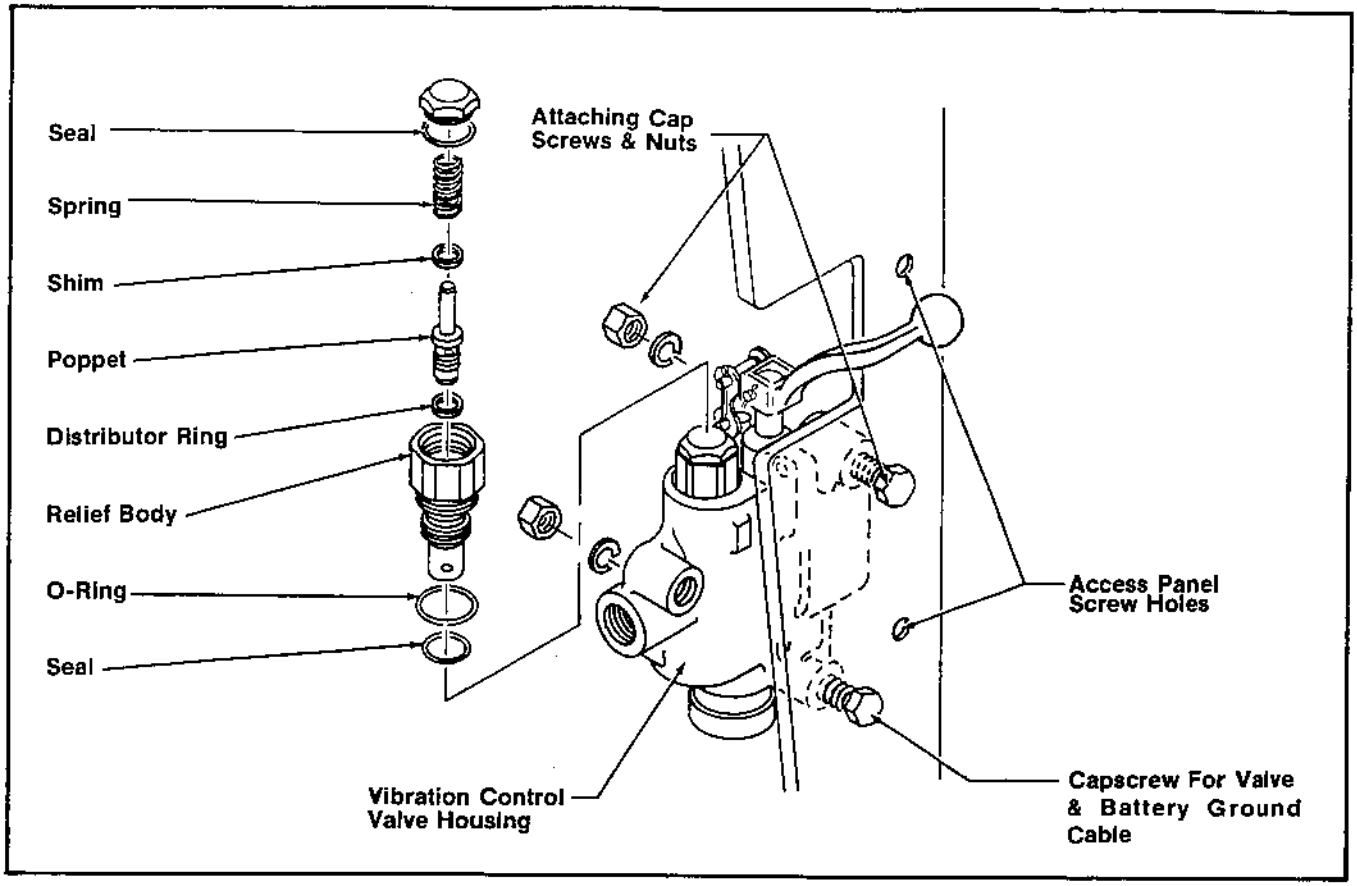


FIGURE 5-12
Vibration Control Relief Valve Replacement
(For Models CA-15/15D/15PD/15PDB)

(3) Ensure that small and large O-rings and backup washer do not remain in relief valve bore.

CAUTION: RELIEF VALVE CARTRIDGE IS NON-ADJUSTABLE AND NON-REPAIRABLE: REPLACE ENTIRE CARTRIDGE WHEN NECESSARY.

CAUTION: SOLENOID BLOCK IS UNDER LIGHT SPRING PRESSURE.

(4) Remove four capscrews from solenoid block. Remove centering spring and stop washer. Carefully remove O-ring from counterbore in block and discard.

(5) Flush block and passages thoroughly.

E. Replace Relief Valve Cartridge and Solenoid Block.

(1) Lubricate new O-ring and install in solenoid block counterbore.

(2) Install centering spring in block bore and stopwasher on (main) valve spool. Center all parts properly; install and torque capscrews to 6-12 ft-lbs.

(3) Ensure that small and large O-rings and backup washer are properly located on relief valve cartridge O.D. as shown.

(4) Install relief valve cartridge in control valve bore and tighten with socket wrench.

(5) Install hose adapter in solenoid block and connect pilot circuit hose.

F. Replace Solenoid Cartridge Body

NOTE: Sleeve assembly, solenoid cartridge body and piston spool assembly are matched parts. Cartridge O-rings and backup rings may be ordered separately.

(1) Lubricate new upper and lower O-rings and backup rings and install in center cartridge body O.D. lands. Install O-ring at recess at inner end per Figure 5-13. Install cartridge in solenoid housing.

(2) Install cartridge spacer in cartridge recess.

G. Replace Sleeve and Piston/Pilot Spool

(1) Insert piston/spool in I.D. of cartridge body and piston spring in piston.

(2) Place new sleeve flange seal in recess in solenoid block. Carefully install sleeve over piston. Using tightening tool, torque sleeve to 15-18 ft-lbs.

H. Replace solenoid assembly

(1) Install coil housing washer and gasket on O.D. of sleeve followed by coil and coil housing.

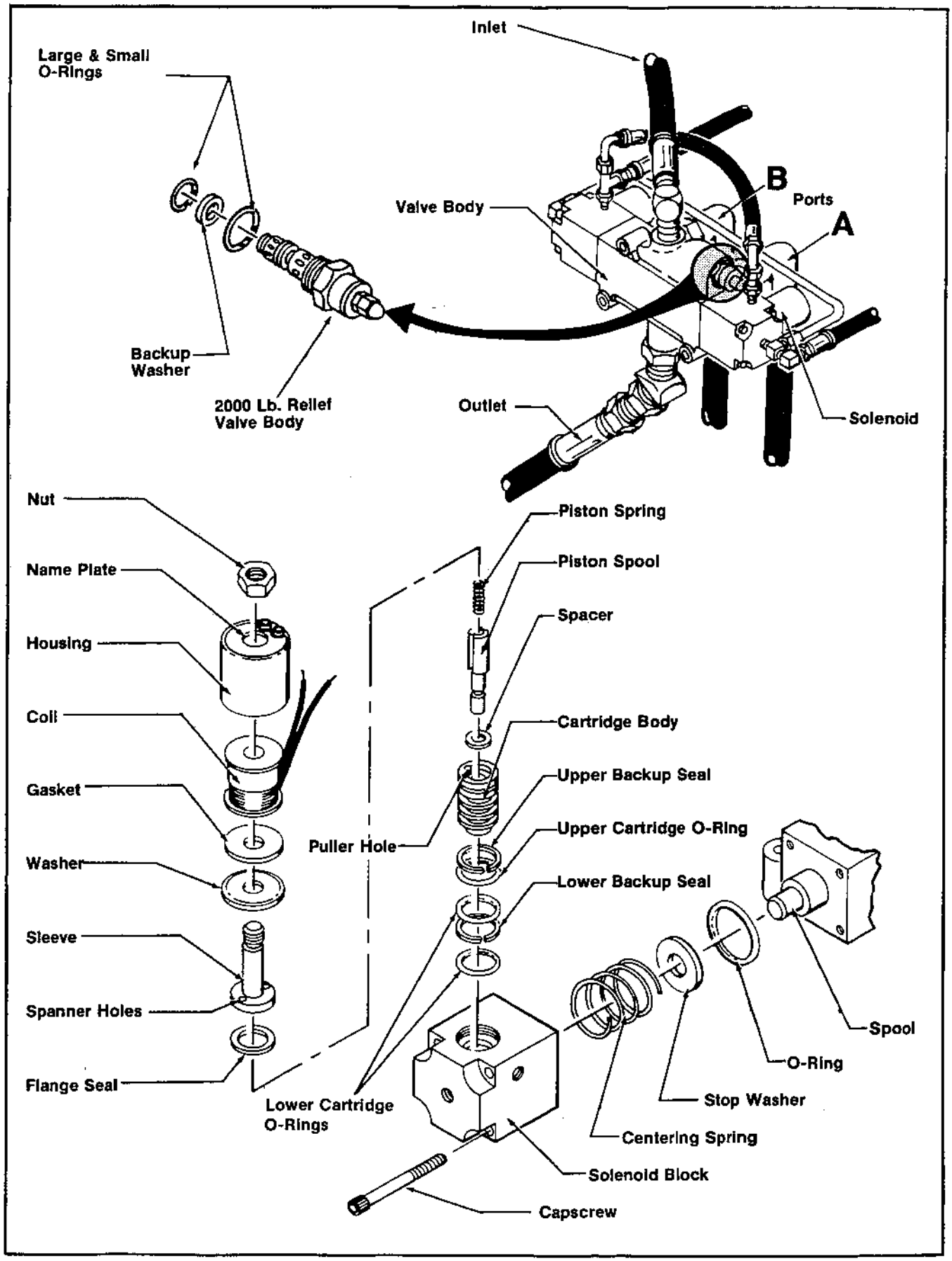


FIGURE 5-13
Vibration Control Component Replacement
(For Model CA-15A)

(2) Install nameplate and nut and tighten firmly.

(3) Reconnect solenoid wires with crimped connectors; refer to Figure 4-6 or 4-7 electrical system schematic if necessary.

13. Forward/Reverse Control Lever Tension Adjustment (Figure 5-14)

A. Basic lever (tension and detent) assembly for all models is shown in Figure 5-14.

B. CA-15A only: Open cover on rear of steering pedestal.

C. Check that bushing housing or lever drum attaching screws are tight.

D. Attach an 0-30 lb hand scale midway at handle grip as shown.

E. If necessary, loosen jam nut (CA-15A) or tension Setscrew in drum (remaining models) and adjust tension until a force of 15-20 lbs is required to move handle from the neutral detent position.

F. Tighten jam nut or tension setscrew and recheck with hand scale.

G. CA-15A only: Close cover on steering pedestal.

14. CA-15A Vibration Control Cam Adjustment (Figure 5-15)

A. Initial Static Adjustment

(1) Place FWD/REV control lever in (N) detent position. Open steering pedestal rear cover.

(2) Make sure that cam guide attaching screws and washers, vibration switch bracket and switch mounting screws are tight.

(3) Check FWD/REV control cable adjustment.

(a) Disconnect cable from pump arm. If pump arm recenters itself, readjust cable as follows:

(b) Check that FWD/REV lever is in (N) position.

(c) Adjust cable clevis so that clevis pin is a free fit in *pump arm*. DO NOT move arm to meet clevis.

(4) Adjust cams so that each is 1/8 inch either side of a line running through the center of the notch in the neutral start cam as shown.

B. Final Adjustment

(1) Start engine and allow to warm up normally. Engine should start ONLY when FWD/REV control lever is in (N) position. If engine starts in any other position, refer to paragraph 15 for adjustment.

(2) Place vibration control switch in AUTO.

WARNING: CLEAR THE AREA OF PERSONNEL PRIOR TO PUTTING MACHINE IN MOTION.

(3) Move FWD/REV control lever to either FWD or REV and note when vibration begins.

(4) Vibration should not begin until after the roller is in motion. The speed at which vibration begins is largely a matter of personal choice, but it should begin at the same speed for both FWD and REV.

(5) If further adjustment is necessary, shut down engine and reposition vibration control cams:

- Closer together causes vibration to start sooner (at lower speed).

- Further apart causes vibration to shut off sooner.

(6) Tighten vibration cam screws with wrench when final adjustment is obtained.

(7) If automatic vibration won't come on (with vibration switch in AUTO), adjust vibration micro-switch by loosening attaching screws; position switch to locate lever roller closer to cam.

(8) Close pedestal rear cover when adjustment is satisfactory.

15. CA-15A Neutral Start Adjustment

A. Adjust Neutral Start Switch as Follows:

(1) Place FWD/REV control lever in (N) position. Open steering pedestal rear cover. The one-piece notched neutral start cam is mounted as shown in Figure 5-15.

(2) Make sure that the neutral start cam screws and micro-switch mounting screws are tight.

(3) Adjust neutral start micro-switch by loosening attaching screws; position switch to locate lever roller closer to cam.

(4) Properly adjusted neutral start switch will allow the engine to be started ONLY when FWD/REV control lever is in (N) position.

(5) Close pedestal rear cover when adjustment is satisfactory.

NOTE: The neutral start cam cannot be adjusted.

16. Wheel Drive Motor, and Transmission Replacement (Figure 5-16)

A. Remove Drive Motor

(1) Observe safety precautions in paragraph 1.

(2) Mark all motor hoses for proper location.

(3) Disconnect pressure hoses from motor ports A and B and return hose at pump end; drain fluid into container.

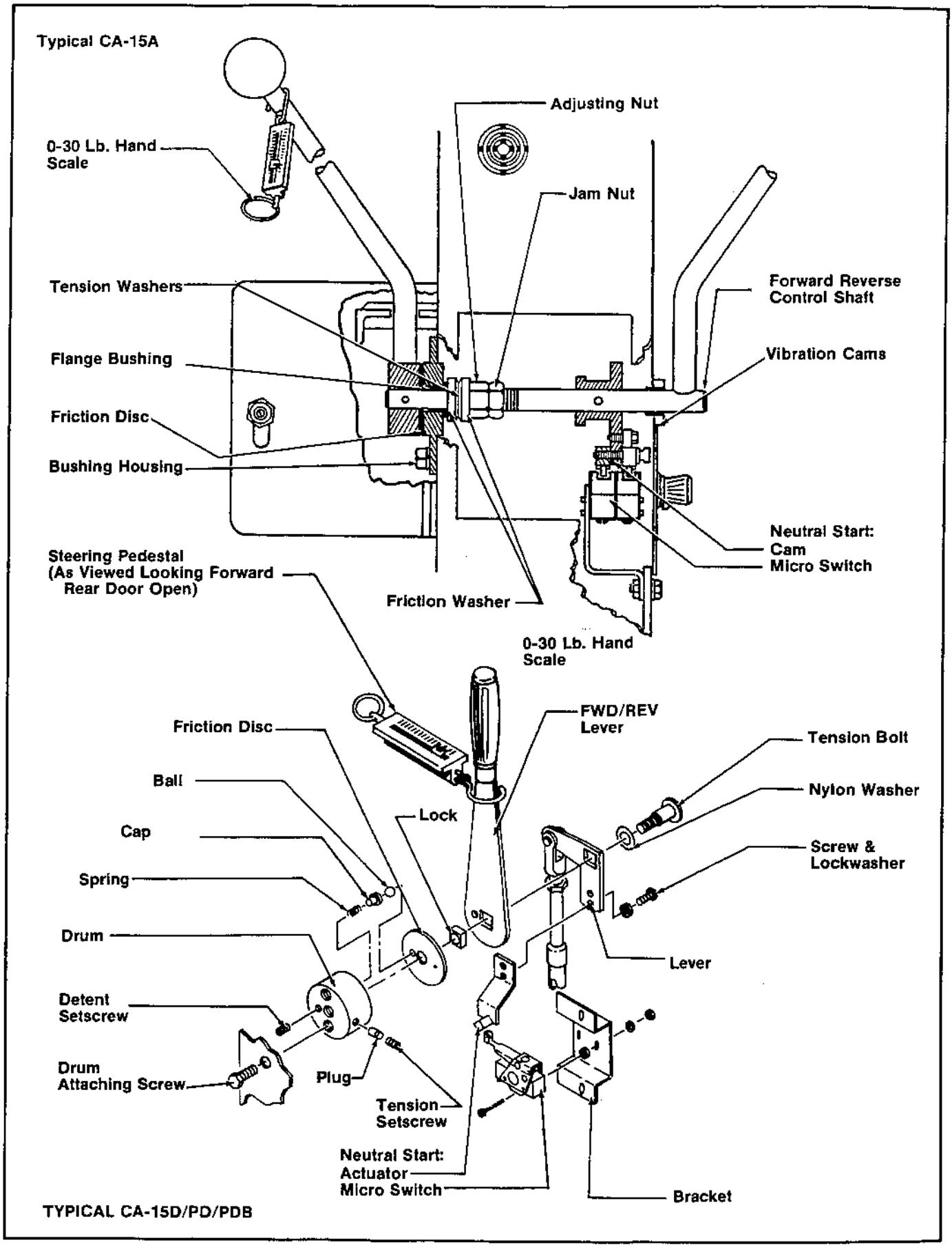
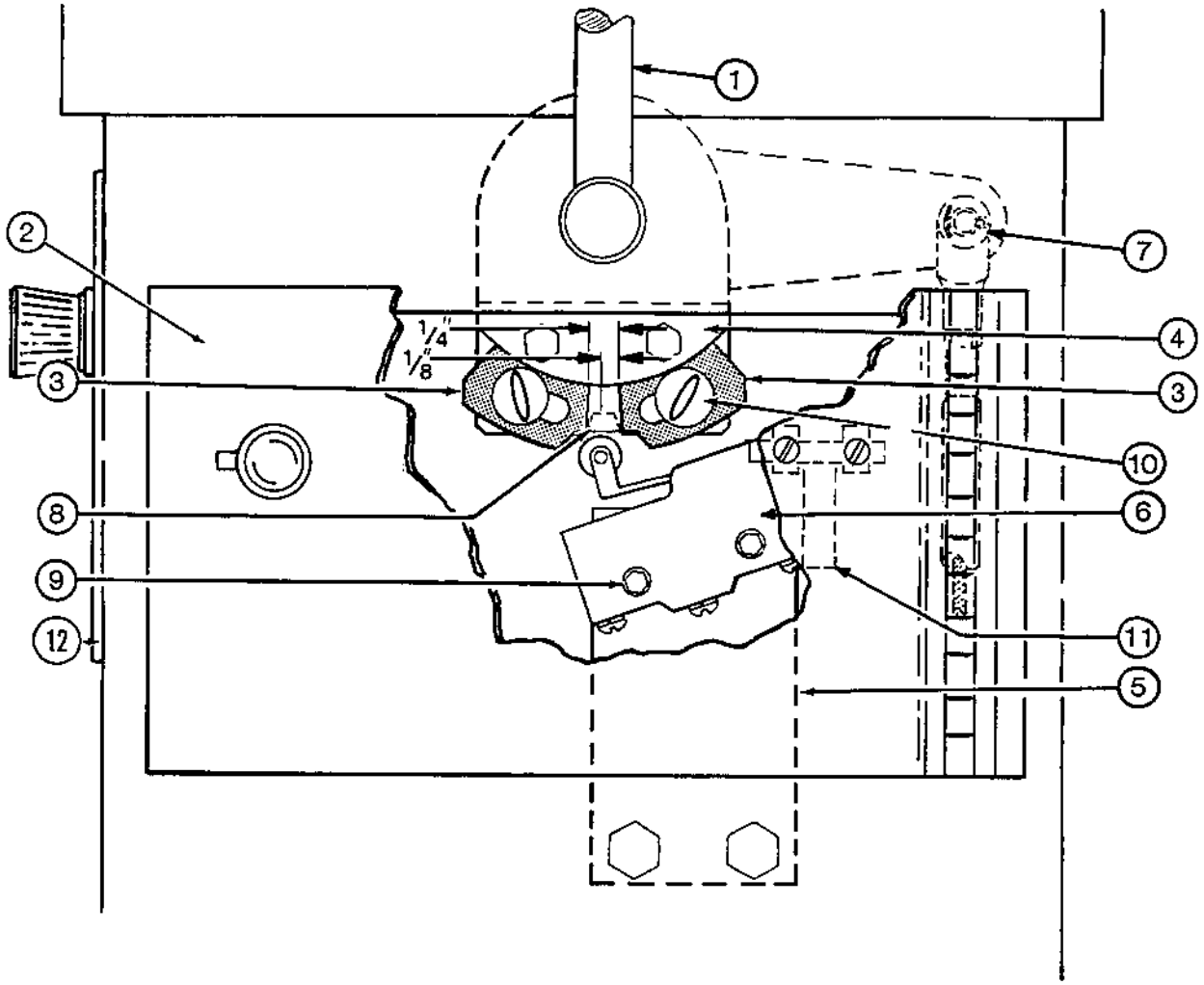


FIGURE 5-14
Forward/Reverse Control Lever Tension Adjustment



LEGEND

1. Forward Reverse Control Lever
2. Pedestal R.H. Door
3. Vibration Control Cams
4. Cam Guide
5. Switch Bracket
6. Micro-Switches (2):
   Vibration Control (visible)
   Neutral Start (behind)
7. Forward-Reverse Cable Clevis
8. Neutral Start Cam, Notch & Centerline
9. Micro-Switch Mount Screws Nut & Washers
10. Vibration Control Cam and Neutral Start Cam Thumbscrews
11. Thumbscrew Wrench
12. Pedestal Front Door

FIGURE 5-15
Vibration Control Cam and Neutral Start Switch Adjustment
(For Model CA-15A)

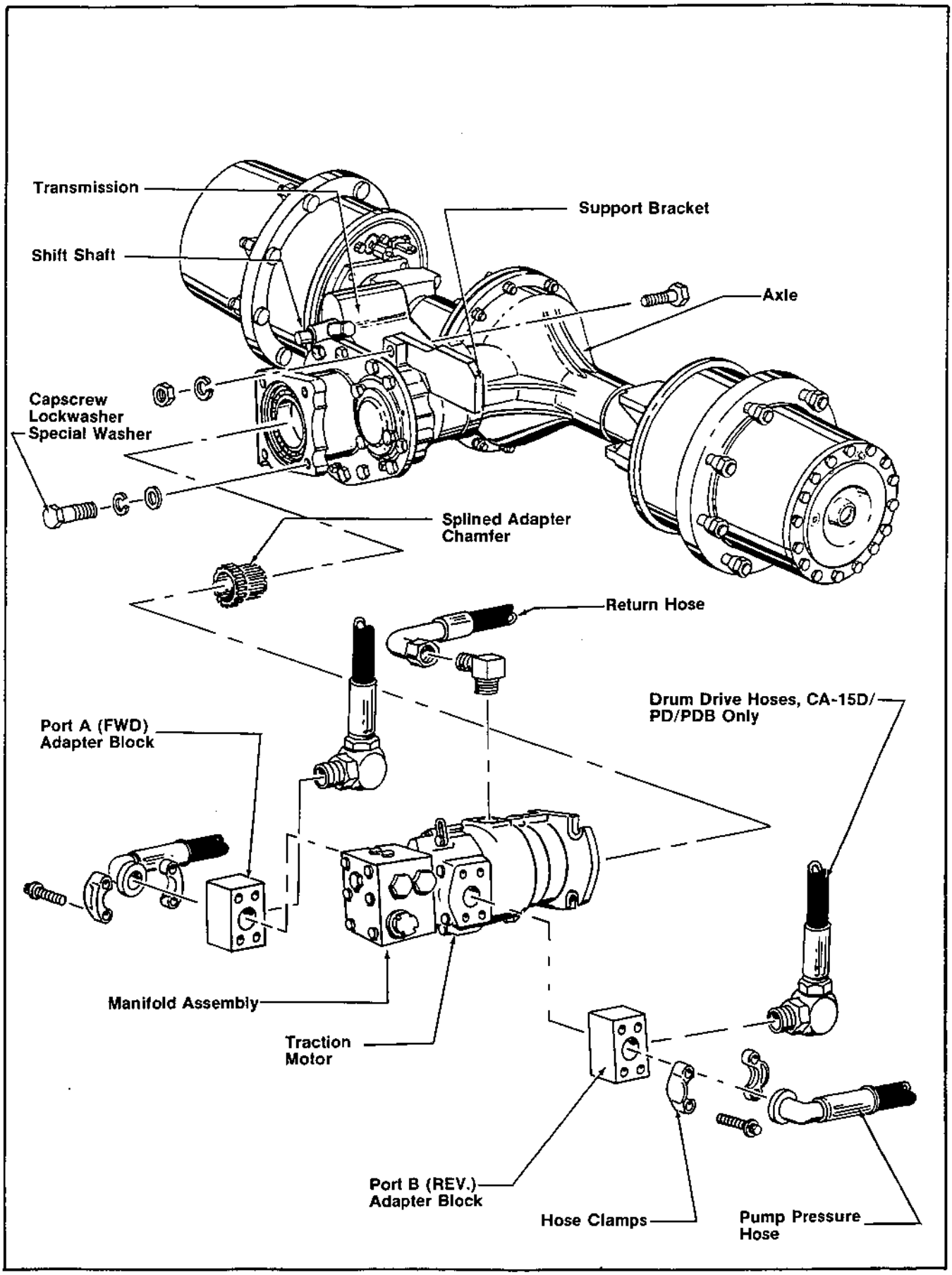


FIGURE 5-16
Wheel Drive Motor and Transmission Replacement

CA-15D/15PD/15PDB only: Disconnect two additional pressure hoses (to drum drive motor) from adapter blocks at motor ports A & B. Plug or cap all openings.

(4) Remove push rod from transmission shift shaft.

(5) Support motor and remove four capscrews, lockwashers and special washers. Pull motor straight from transmission and splined adapter. Lower motor beneath frame carefully; protect hoses as they are withdrawn. Discard O-ring.

(6) Remove, clean, and flush and inspect hoses for contamination.

B. Remove 2-speed Transmission

(1) Separate transmission from axle assembly per Rockwell International Field Maintenance Manual.

(2) Support transmission, remove capscrew nut and lockwasher securing transmission case to frame support.

C. Replace 2-speed Transmission

(1) Loosely assemble bolt, nut and lockwasher at case to frame support.

(2) Assemble transmission on axle housing per manual paragraph B(1).

(3) Final tighten case to frame support nut.

D. Replace Drive Motor

(1) Install hoses (as previously marked or per Figure 4-1) on replacement motor ports or on adapter blocks for CA-15D/15PD/15PDB models. Pack adapter splines with Molykote "N". Install adapter with small chamfer at transmission end.

(2) Clean motor and transmission mating flanges; lubricate and install O-ring on motor.

(3) Feed hoses up through frame, raise motor and engage spline in transmission adapter. Install four capscrews/lockwashers and special washers; tighten to 35 ft-lbs of torque.

(4) Install hoses at pump ports A, B and return port as previously marked.

(5) Install new filter; open gate valve at filter. Perform start-up procedure per *Sundstrand Bulletin 9630.*

(6) Replace wheel and remove blocks at frame. Check system operation per Operating Instructions.

17. Traction Pump Replacement (Figure 5-17)

A. Removal

(1) Observe safety precautions in paragraph 1. To speed removal, raise and block up frame sufficient to remove wheels.

(2) Close gate valve at hydraulic filter. Remove filter element. Drain hydraulic reservoir.

(3) Mark five hoses (for proper reinstallation) and disconnect from pump; plug or cap all openings. Remove wire at temperature sensor.

(4) Remove forward/reverse cable clevis at pump displacement control arm. Remove cable bracket from pump control housing (two capscrews and lockwashers).

(5) Remove four capscrews, lockwashers and special washers holding pump to pump adapter. Pull pump away from splined drive shaft coupling and pump adapter; discard O-ring. Cover pump adapter mounting pad.

CAUTION: DRIVE SHAFT COUPLING MAY BE WITHDRAWN WITH PUMP.

B. Replacement

(1) Clean pump flange; lubricate and install O-ring. Pack drive shaft coupling splines with Molykote "N" grease. Install coupling in drive plate through pump adapter opening.

(2) Engage pump shaft with coupling splines. Install four capscrews/lockwashers and special washers and tighten.

(3) Install five hydraulic hoses (marked previously). Reconnect wire at temperature sensor.

(4) Install new filter element; open gate valve.

(5) Reinstall wheel assemblies and remove blocks from frame.

(6) IMPORTANT: Perform start-up procedure per Sundstrand Bulletin 9630.

NOTE: Ensure that (a) forward/reverse cable bracket is installed on pump displacement control housing with two screws (with lockwashers between housing and bracket) and (b) forward/reverse cable clevis is connected and properly adjusted *to* displacement control arm at the designated point in above procedures.

18. Vibration and Steering Pump Assembly Replacement (Figure 5-18)

A. Removal

(1) Remove plug and drain hydraulic reservoir.

(2) Remove panel at bottom of radiator guard.

(3) Mark three hoses (for proper installation) and disconnect two from R.H. side. Remove frame clamps and large inlet hose at tank end and drain, then reconnect. Remove opposite end at pump. Plug or cap all openings.

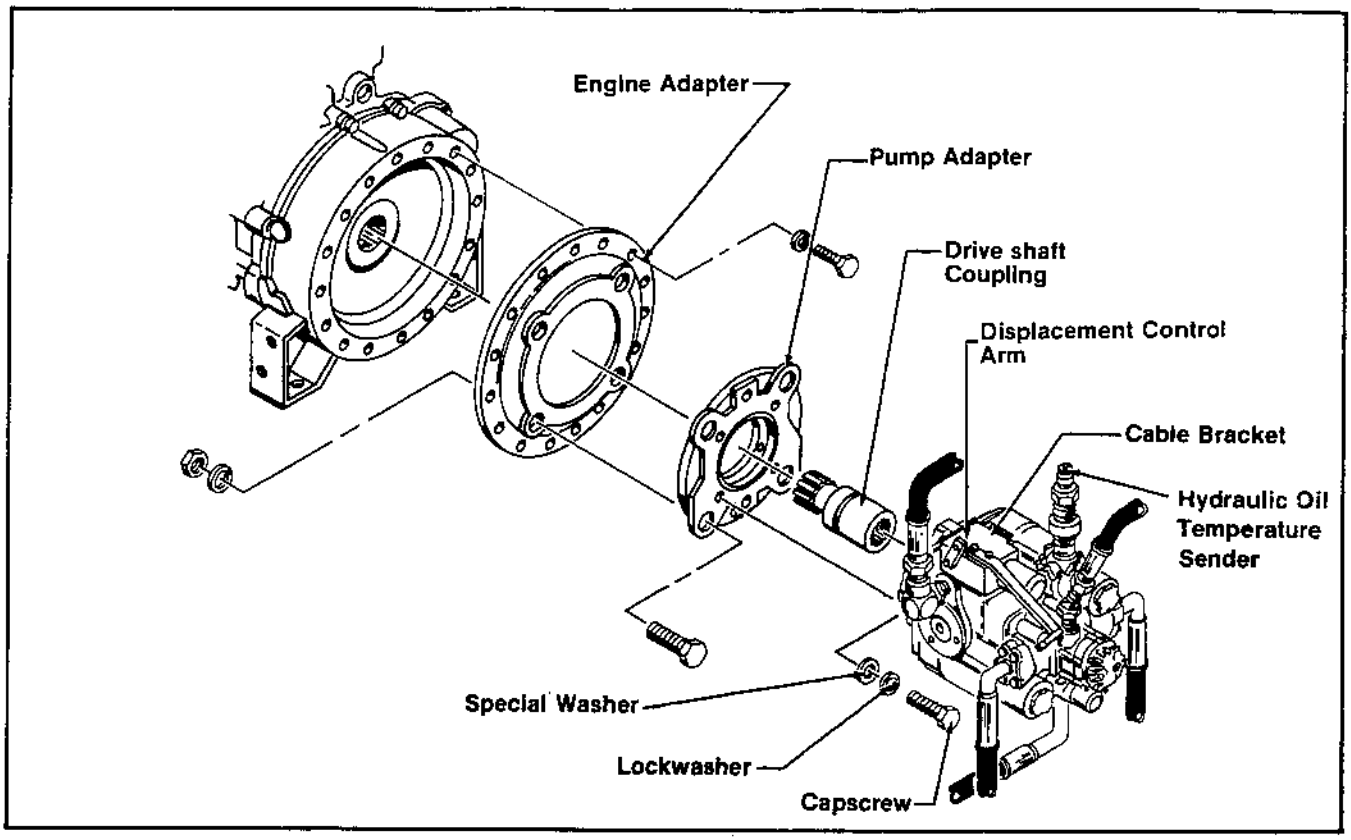


FIGURE 5-17
Traction Pump Replacement

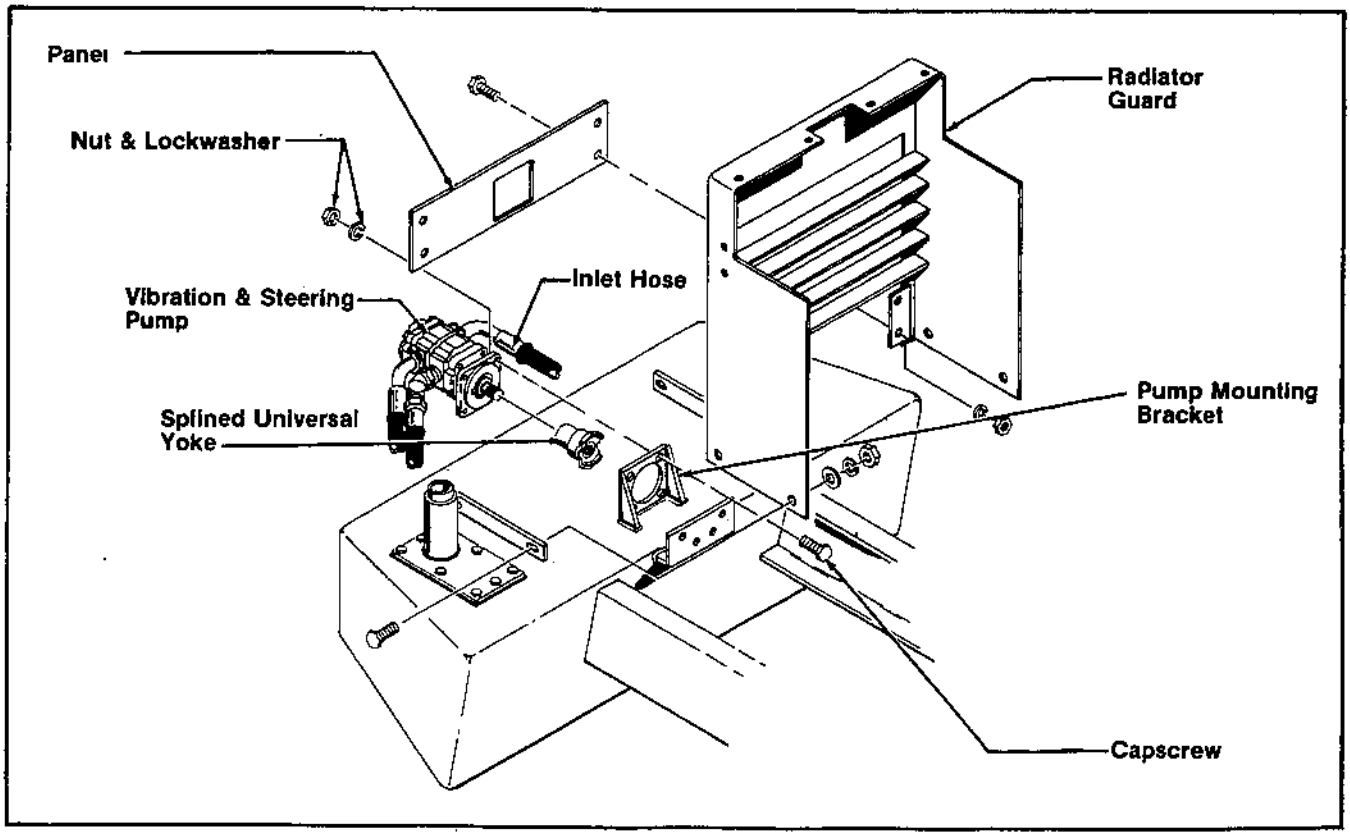


FIGURE 5-18
Vibration and Steering Pump Replacement

(4) Support the pump and remove four capscrews/flat washers/lockwashers and nuts holding pump to frame mounting bracket. Pull pump straight from splined universal yoke.

B. Replacement

(1) Clean pump flange and shaft. Clean and pack universal yoke splines with Molykote "N" grease. Lubricate universal per Lubrication and Maintenance Schedule.

(2) Engage pump shaft with yoke splines. Install four capscrews/lockwashers/nut and tighten.

(3) Install three hoses (marked previously or per Figure 4-2). Fill inlet hose with proper fluid and secure at tank.

(4) Refill hydraulic reservoir with proper fluid.

(5) Start and warm up engine in normal manner. Operate vibration and steering systems several times to eliminate all air.

19. Storage

When the compactor will not be in use for prolonged periods, proceed as follows:

A. During winter months, protect the machine from the weather, preferrably by storing in a dry enclosure. If the machine must be left outside, park it on planks to prevent freezing to the ground, and cover with a tarpaulin.

B. When extremes of temperature and/or humidity are unavoidable for extended periods, frequent inspections should be carried out.

C. Prepare Compactor

(1) Clean the machine thoroughly to remove dirt, mud and asphalt accumulation.

(2) For proper engine cleaning and fuel and oil system preservation procedures, refer to the applicable engine maintenance and operator's manual.

(3) Carefully clean the hydraulic oil cooler of all foreign material.

(4) Drain and flush the sprinkler system water tank and drain water from the mat sprinkler tubes, filter, and water pump. Lift drum mats from contact with tires and secure with hooks provided.

(5) Lubricate and check compactor in accordance with Daily and Weekly Lubrication and Maintenance Schedule (Operator's Manual).

(6) Apply a heavy coat of grease to exposed surfaces of steering cylinder piston rods.

(7) Remove the battery, and charge and store it in accordance with good battery maintenance practices.

(8) Place all controls in the engine shutdown position and install and lock instrument panel cover.

(9) Lock water fuel and hydraulic fluid tank caps. Cover operator's seat or remove and store. Lock battery compartment (under seat).

(10) Block up frame (Figure 3-1 or 3-2 Operator's Manual) to relieve tension on shock mounts (shock mounts not deflected).

(11) While not absolutely necessary, it is desirable to sand and touch up all breaks in painted surfaces to retard formation of rust. Aerosol spray cans of Dynapac yellow paint (p/n 485086) are available for this purpose.

(12) Check the compactor regularly during the storage period. Evidence of moisture should be dealt with immediately.

20. Shipping

A. Prior to loading compactor on transport vehicle, complete work indicated in paragraphs 19 C(1), (4), (5), (6), (8), (9).

B. With the compactor on the truck or railcar, secure it in the straight forward position. Use wood blocks (Figure 3-1, or 3-2 Operator's Manual) under the frame and wedges under the drum nailed to the flatbed. Install chain binders through tie-down holes in front and rear frame sides.

C. Set parking brake.

D. Engage the safety lock on the steering hitch and insert the lock pin to prevent articulation of frames.

NOTE: Fuel tank must not contain more than one gallon for shipment across state lines.

HEAVY *DYNAPAC* B LINE WARRANTY POLICY

1. Dynapac Mfg Inc warrants each new machine sold by it to be free from substantial defects of material and workmanship.

2. The period for which the warranty remains in force shall be as specified for the product group named below, and shall commence with the date of initial use in the field, whether by sale to the end user or the date of placement into the dealer's rental stock, whichever occurs first.

3. THIS WARRANTY IS APPLICABLE ONLY IF THE WARRANTY REGISTRATION CARD ATTACHED TO THE MACHINE IS COMPLETED AND RETURNED TO DYNAPAC MFG INC WITHIN FIVE (5) DAYS FOLLOWING THE FIRST SALE OR RENTAL OF THE PRODUCT FOR USE.

4. IN THE EVENT THE PRODUCT IS A "STILL EXHIBIT" in the dealer's stock and has not been used for any purpose for the warranty to be effective, the WARRANTY REGISTRATION CARD must be fully filled out and RETURNED TO Dynapac Mfg Inc WITHIN SIX (6) MONTHS FOLLOWING THE DATE OF SHIPMENT FROM THE FACTORY.

5. To come within the terms of the warranty, notice of defect shall be forwarded to and filed with Dynapac Mfg Inc by an authorized Dynapac dealer, utilizing the authorized Dynapac claim form, with the warranty period specified for the particular product group.

6. This warranty covers ONLY EQUIPMENT AND PARTS MANUFACTURED BY DYNAPAC MFG INC. IT DOES NOT APPLY TO TRADE ACCESSORIES OR MAJOR PURCHASED COMPONENTS which retain their identity, since these parts may be subject to warranty extended by the original manufacturer.

7. DYNAPAC MFG INC UNDERTAKES NO OBLIGATION UNDER THIS WARRANTY OTHER THAN TO REPLACE OR REPAIR AT ITS FACTORY OR OTHER PLACE DESIGNATED BY IT, PARTS MANUFACTURED BY IT WHICH IT DETERMINES ARE DEFECTIVE IN MATERIAL OR WORKMANSHIP.

8. Dynapac Mfg Inc makes no warranty in respect to damage or defects in any product resulting from misuse, misapplication, neglect, or accident, or as to any product which has been repaired or altered in any way which, in the sole judgement of Dynapac adversely affects the performance, stability, or purpose for which it was manufactured.

9. This warranty does not obligate Dynapac Mfg Inc to bear the cost of transportation charges in connection with any repairs or replacement of equipment or parts. Dynapac Mfg Inc as a condition precedent to any liability on its part shall have the right to require equipment manufactured by it, or parts thereof, alleged to be defective returned to its factory or to other points designated by it with transportation charges prepaid, for inspection and verification of such defects.

10. The terms of the warranty cannot be altered without the written advance consent of Dynapac Mfg Inc.

11. THIS WARRANTY IS EXPRESSLY IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING THE WARRANTIES OF MERCHANTABILITY AND FITNESS.

THIS WARRANTY APPLIES TO THE *DYNAPAC B PRODUCT GROUP.

EFFECTIVE WARRANTY PERIOD IS SIX (6) MONTHS OR 1000 HOURS, WHICHEVER OCCURS FIRST.

However, labor charges in connection with a warranty repair will be taken into consideration on the Dynapac B line only, provided that such labor charges were authorized in advance by Dynapac Mfg Inc. Labor reimbursement, if allowed, will be paid on the basis of the prevailing actual hourly rate of the mechanic performing the work and exclusive of profit mark-up. travel time, mileage, or expenses. A sufficient percentage of the said actual hourly rate will be added to cover the cost of employee fringe benefits. The total amount allowed for labor charges will be based solely on the judgement of Dynapac, taking into consideration its own actual time allowance for accomplishing the same or a similar repair.

*Trademark, B product line (tow-type and self-propelled vibratory rollers).

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