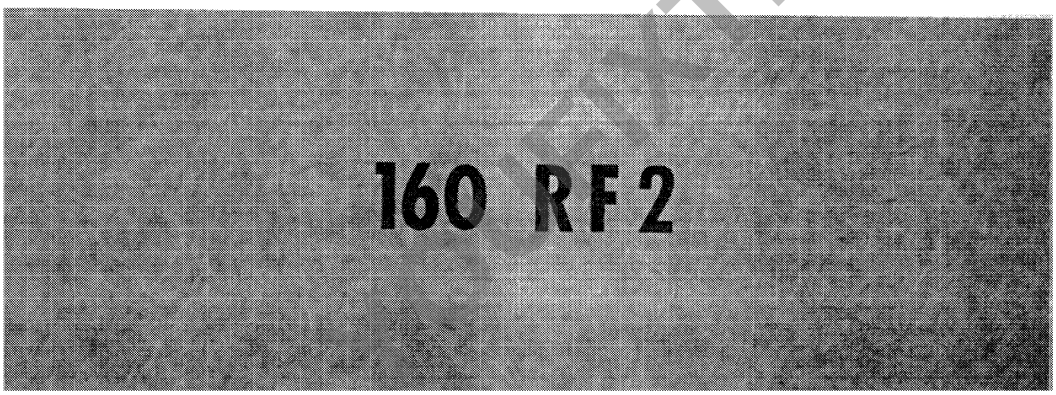
DROTT

EQUIPMENT

SERVICE MANUAL FOR



Go-Devil

PREVIEW - YOUFIXTHIS.COM

DROTT MANUFACTURING CORP.

FACTORY -- SERVICE -- PARTS
WAUSAU, WISCONSIN

SALES & GENERAL OFFICES
MILWAUKEE, WISCONSIN

406012M1

Download full manual at youfixthis.com

DROTT
160 RF 2

TABLE OF CONTENTS

LUBRICATION CHARTS

DIAGRAMS — I and II

ITEM LISTING — II thru IV

GREASE FITTING LIST — IV

MAINTENANCE SCHEDULE — V and VI

MECHANICAL COMPONENTS

ELECTRICAL SYSTEM — 1 thru 3

- Battery — 1
- Alternator — 1
- Fuses — 1
- Lights — 1

- Micro Switch Adjustment — 1 thru 3
- "Boom Approaching Cab" Warning — 2
- Steering Alignment Warning — 2
- "No Start" Safety — 2 and 3

ENGINE — 3

- Air Cleaner Scheduled Maintenance — 3
(For additional information, refer to Engine Owner's Manual).

TORQUE CONVERTER — 4 thru 8

- Description, care of unit — 4
- Maintenance — 5
- Performance Check — 5
- Trouble Shooting — 6 and 88
- Removal — 7 and 8

REVERS-O-MATIC — 4 thru 8

- Description, Care of Unit — 4
- Control Linkage Adjustment — 4 and 5
- Maintenance — 5
- Performance Check — 5
- Regulator Valve Pressure Check — 5 and 6
- Regulator Valve Cleaning — 6
- Trouble Shooting — 6 and 88
- Removal — 7 and 8

TRANSMISSION — 8 thru 9

- Description — 8
- Maintenance — 8 and 9
- Service and Overhaul — 9

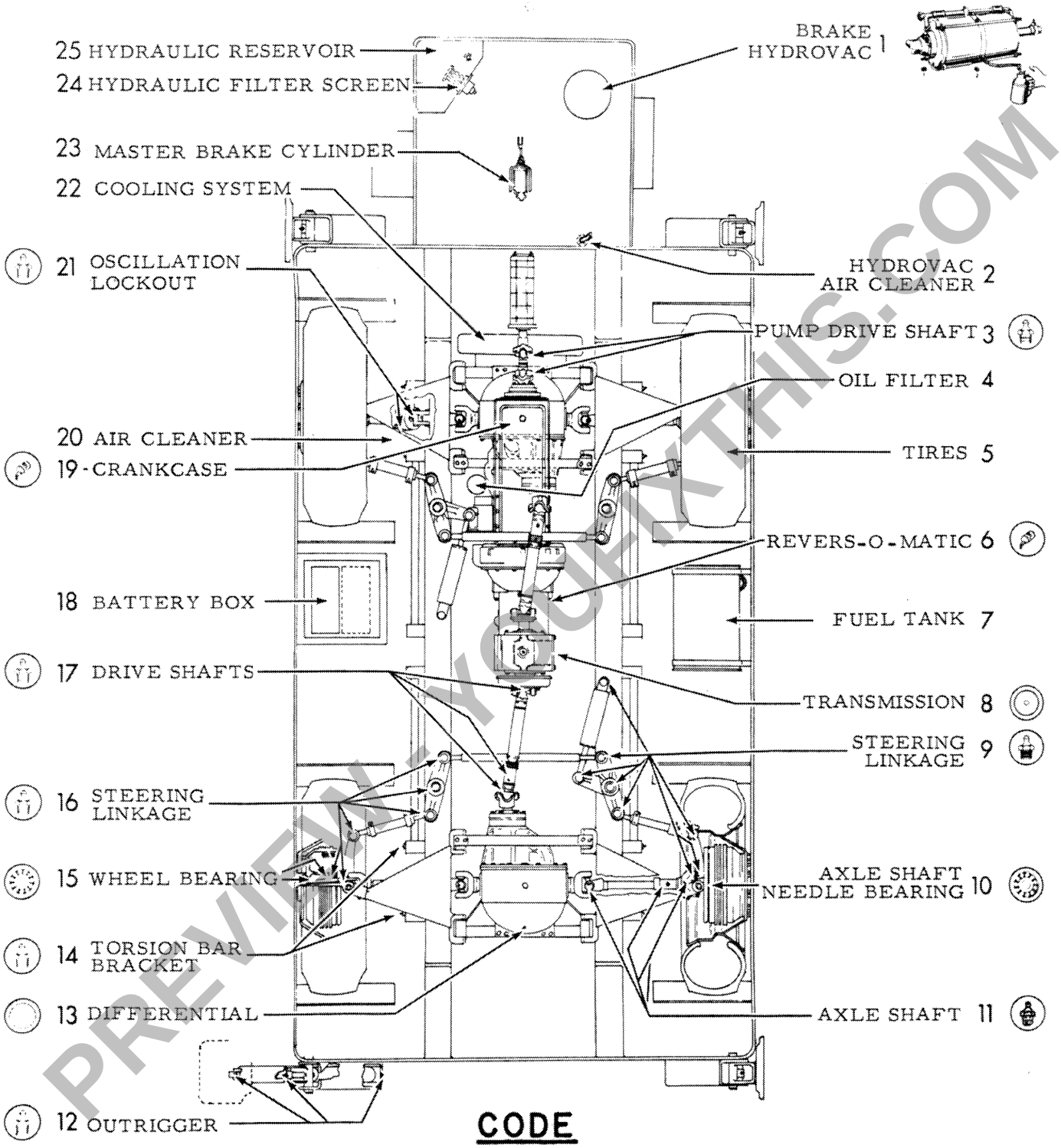
DRIVE SHAFTS — 10

- Maintenance — 10
- Inspection — 10

PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

160RF2 GO-DEVIL LUBRICATION AND SERVICE CHARTS



CODE

OIL — GUN GREASE — GEAR OIL — BEARING GREASE

PREVIEW - YOUFIXTHIS.COM
Download full manual at youfixthis.com

160RF2 GO-DEVIL LUBRICATION AND SERVICE CHARTS

MAINTENANCE SCHEDULE

NOTE:
Items in Service Schedule have same numbers as call-outs on Lube Chart.

DAILY OR EVERY 10 HOURS

	Wheel lugs	Check tightness
5.	Tires	Check pressure (100#)
7.	Gasoline or diesel fuel	Fill tank
19.	Crankcase	Check oil level -- see Engine Owner's Manual
22.	Radiator	Check coolant
25.	Hydraulic tank	Check oil level -- see page 35
	Lights	Check operation -- see page 1
	Hoist cable	Inspect -- see pages 21-23

WEEKLY OR EVERY 50 HOURS

2.	Hydrovac air cleaner	Check and Clean -- see page 14
6.	Revers-O-Matic	Check fluid level -- see page 5
8.	Transmission	Check oil level -- see page 8
13.	Differential	Check oil level -- see page 10
18.	Battery	Check electrolyte
19.	Engine crankcase	Change oil -- see Engine Owner's Manual
	Engine fan belts	Inspect -- see Engine Owner's Manual
20.	Engine air cleaner	Remove dust -- see page 3
22.	Engine cooling system	Check for leaks and clean radiator fins
23.	Master Cylinder	Check fluid -- see page 14
27.	Swing gearbox	Check oil level -- see page 19
28.	Hoist gearbox	Check oil level -- see page 19
30.	Boom wear plates	Lubricate -- see lube chart and page 23
	All grease fittings	Lubricate -- see lube chart items 3, 9, 11, 12, 14, 16, 17, 21, 29.

SEMI-MONTHLY OR EVERY 100 HOURS

26.	Turntable ring gear	Lubricate -- see page 19

PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

adjustment. To adjust the control, do the following:

1. With parking brake disengaged, start engine and put machine in gear (see operator's handbook)
2. Move forward-reverse control until machine does not creep.
3. Leave the control in this position, stop engine, set parking brake. Remove the clevis pin connecting control to yoke on end of control cable (This will be found under floor, just ahead of Hydrovac unit).
4. Move the control pedal to neutral, then loosen jam nut and turn yoke on threaded cable-end until it lines up with bell crank on control.
5. Tighten jam nut and re-assemble linkage.

Maintenance

The Revers-O-Matic Drive and the Torque converter share a common supply of Type "A" automatic transmission fluid. Fill-opening is located on right side of Revers-O-Matic housing, near the top (see figure 8).
Filler cap is equipped with a dipstick marked "full" and "low" for easy check of oil level. Check oil level weekly. Level should be checked either with engine idling, or immediately after stopping engine. BE SURE BOTH GEAR AND RANGE LEVERS ARE IN NEUTRAL AND THAT BRAKES ARE ON WHEN CHECKING FLUID LEVEL.

To drain the unit completely, follow these instructions:
Fluid is pumped into the torque converter from the Revers-O-Matic, but all of it will not drain back, so the torque converter must be drained separately.

Turn engine over until impeller drain is visible through the handhole on the bottom of the torque converter housing. Remove the impeller drain to drain fluid from the torque converter. Remove the drain plug from the Revers-O-Matic housing.

To fill, begin pumping fluid into fill-opening (described above), start engine, and continue filling until unit is full. Ten (10) quarts will be enough to fill both housings: the torque converter holds about six quarts and the Revers-O-Matic holds about four. DO NOT OVERFILL.

Maintenance tips:
1. Always use clean oil and clean containers.
2. Clean around oil fill port before removing filler cap to check level or add oil.
3. Change lubricating oil and oil filter after the first 20 hours of operation. Filter case is on line between the unit and the oil cooler (engine radiator).
4. Thereafter (under normal conditions) change oil and filter every 1500 hours or every six months. Oil filter: AC type PF-2, or functional equivalent.
5. Always clean the magnetic drain plug before re-installing.
   Metallic particles in the oil or clinging to magnet indicate the failure of some internal part. See Service and Overhaul Instructions.
6. Keep all joints in the control linkage lubricated with heavy grease.

Service and Overhaul Information

Performance Check:

Attach a tachometer to the engine with the transmission in neutral. Press toe of forward-reverse control and give the engine full throttle. The engine should turn up to the top governed rpm (2200). If rpm is less than this, check the control and governor linkage to make sure that they are adjusted properly, or tune up the engine.

Press heel of forward-reverse control and give the engine full throttle. Tachometer reading should be the same as above.

Next, place the transmission in high gear and lock the brakes. Press toe of forward-reverse control and give the engine full throttle. Engine should turn up to the minimum static rpm (IHC engine, 1300 rpm. GMC engine, 1350 rpm). If tachometer reading is lower than this, tune up the engine. If tachometer reading is over the maximum static rpm (IHC engine, 1380 rpm. GMC engine, 1430 rpm), the torque convertor or the hydraulic clutches in the Revers-O-Matic are slipping.

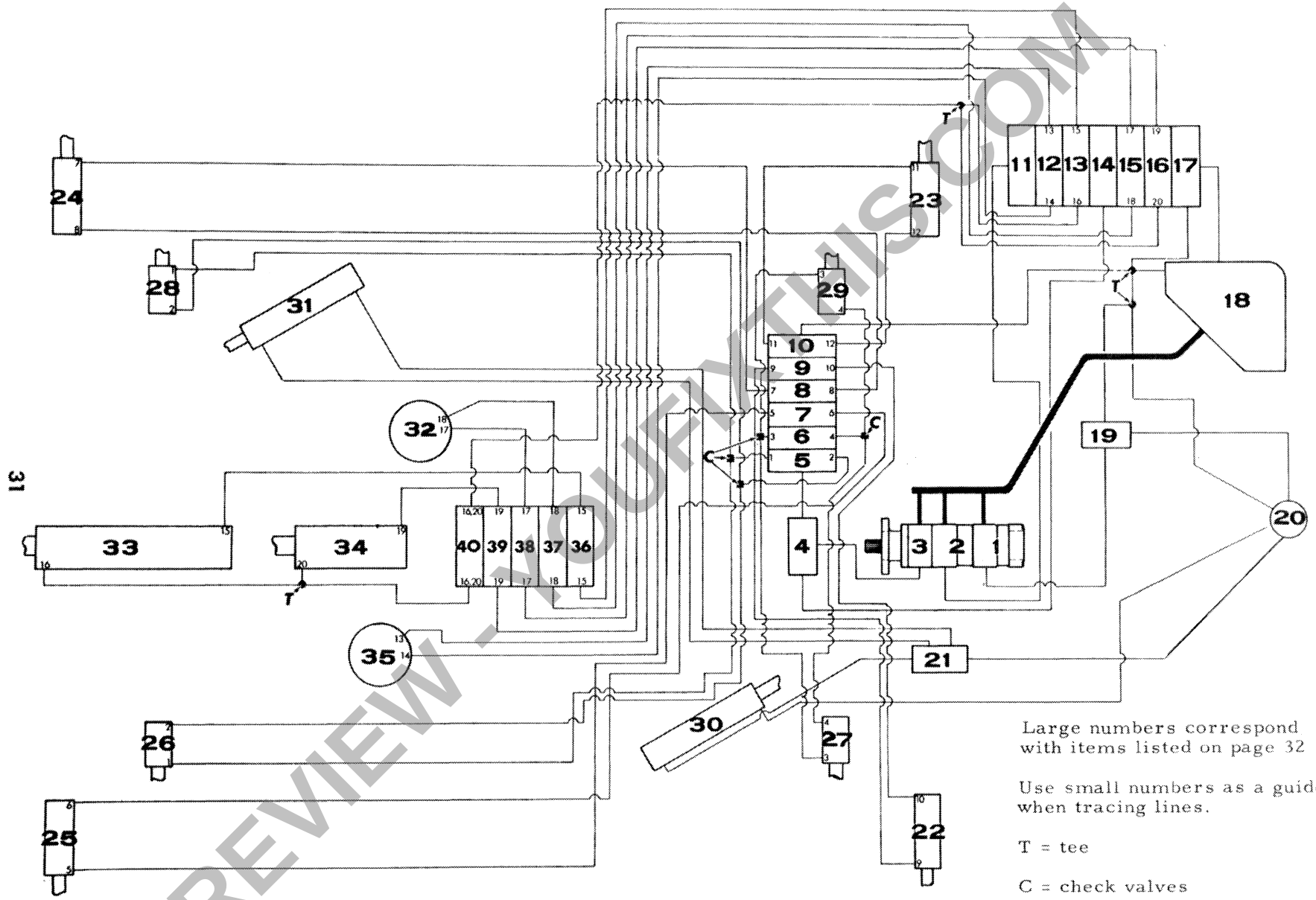
Repeat the same test, pressing the heel of the forward-reverse control.

Service and Overhaul Information

If a check indicates that the converter or the Revers-O-Matic is at fault, first check the oil level as described in section headed "Maintenance", above. Next, check the control oil pressures. Insert a 90° elbow in the pipe fitting located on top at the front end of the Revers-O-Matic housing (see figures 7 & 8). To this attach a 200# gauge with a long enough line so that it can be seen from below. With the engine running at 1500 rpm the pressure should read 150 psi minimum. If it is less than this, remove and clean the pressure

PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com



Large numbers correspond with items listed on page 32

Use small numbers as a guide when tracing lines.

T = tee

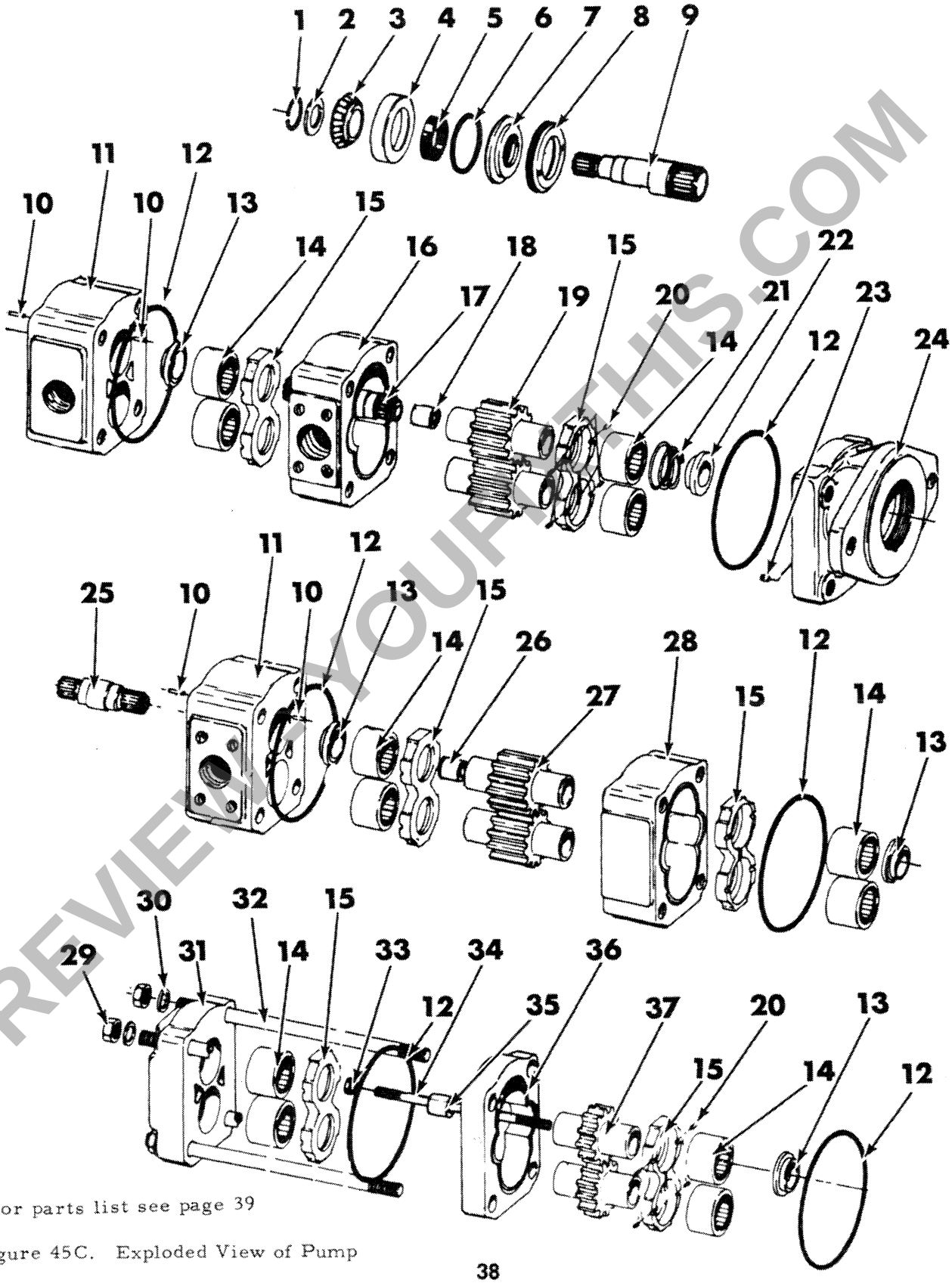
C = check valves

DIAGRAM OF HYDRAULIC SYSTEM

PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

PUMP



For parts list see page 39

Figure 45C. Exploded View of Pump

PREVIEW BY YOUFIXTHIS.COM

Download full manual at youfixthis.com

TROUBLE SHOOTING

TROUBLE	CAUSE	REMEDY
NOISY OPERATION	A. Air in system.	A. Bleed hydraulic system
	B. Insufficient oil supply.	B. Check level of oil in oil tank, add oil if necessary.
	C. Pump bearings worn out.	C. Replace.
	D. Pump and coupling worn out.	D. Replace.
	E. Partially blocked pump inlet.	E. Drain hydraulic system and clean strainer.
	F. Pump squealing caused by A, B, and E.	F. Either A, B, or E.
	G. Chattering relief valve spring.	G. Replace.
	H. Broken flow control plunger spring	H. Replace.
	I. Dirty oil screen in tank.	I. Clean oil screen and reservoir
	J. Insufficient lubrication of machine.	J. Grease machine.
	K. Dirty oil filter.	K. Replace filter.
SLOW MOTION	A. Pump wearing out.	A. Repair
	B. Partially clogged pump inlet. (Pump squealing.)	B. Clean hydraulic system.
	C. Air leak in pump inlet.	C. Replace "O" ring seal.
	D. Pressure relief valve plunger leaking.	D. Check for foreign matter on valve seat. Clean and replace if necessary.
	E. Badly scored relief valve plunger seat.	E. Replace.
	F. Aerated oil supply. (Foam in tank).	F. Check hydraulic system for leaks.
	G. Worn or scored piston packing.	G. Replace.
	H. Linkage to valve plunger bent or out of adjustment, thereby restricting length of travel of valve plunger to full open position.	H. Adust valve control linkage.
	I. Clogged hydraulic oil screen in tank.	I. Clean screen.

(CONTINUED)

PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

Check all structural bolts thirty (30) days after machine has been in operation, per specifications on torque chart. (See torque chart.)

When replacing any bolts on your Travelift, always torque as per 'Tension Data Chart'.

TENSION DATA CHART
Ft. Lbs.

Bolt Size	SAE 8 Type - 4		SAE 6 Type - 3		SAE 5 Type - 2		SAE 1 and 2 Type - 1	
	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.
1/4	14	16	13	15	10	11	6	7
5/16	30	33	27	31	20	23	12	14
3/8	52	59	49	55	35	40	21	24
7/16	84	95	78	88	56	63	34	38
1/2	130	145	120	135	85	95	52	59
9/16	185	210	170	190	125	140	75	84
	LEAVE OFF LOCKWASHERS ON THE FOLLOWING SIZES:							
5/8	250	290	240	260	170	190	105	120
3/4	420	470	390	440	280	320	170	190
7/8	670	750	620	700	440	490	270	300
1	1010	1130	940	1050	660	740	400	450
1-1/8	1480	1645			890	1005	595	670
1-1/4	2070	2320			1260	1420	875	945

SELF LOCKING NUTS

1-1/4	12 N.F.	750-800
1-1/2	12 N.F.	833
1-3/4	12 N.F.	1500

BOLT HEAD MARKINGS


Grades 0, 1 and 2 -- No marking.


Grade 3 -- 2 radial dashes 180 degrees apart.


Grade 5 -- 3 radial dashes 120 degrees apart.


Grade 6 -- 4 radial dashes 90 degrees apart.


Grade 7 -- 5 radial dashes 72 degrees apart.


Grade 8 -- 6 radial dashes 60 degrees apart.

PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

TABLE OF CONTENTS

DIFFERENTIAL ..... 10 and 11

Description 10
Maintenance 10
Service and Overhaul ..... 10 and 11
Thrust Block Adjustment ..... 10 and 11

DRIVE WHEEL AND AXLE ILLUSTRATION 11

WHEELS ..... 12 and 13

Removal of Drive Wheel Bearings 12
Removal of Non-Drive Wheel Bearings 13

BRAKES ..... 13 thru 15

Description 13
Maintenance ..... 13 and 14
Bleeding 14
Brake Shoe Adjustment 15

STEERING LINKAGE ..... 15 thru 18

Maintenance 15
Adjustment ..... 15 thru 17
Alignment ..... 17 and 18

BOOM AND MAST ..... 19 thru 30

SWING ASSEMBLY ..... 19 and 20
Maintenance 19
Overhaul of Gearbox 20

HOIST ASSEMBLY ..... 21 thru 23
Maintenance 21
Cable Care and Replacement ..... 21 thru 23
Overhaul of Gearbox 23

SEQUENCING BOOM AND CROWD CYLINDER ..... 23 thru 26
Description 24
Maintenance 23
Removal of Counterweight ..... 24 and 25
Removal of Sequencing Boom & Crowd Cylinder ..... 24 thru 26
Overhaul of Crowd Cylinder ..... 77 thru 79
Installation of Sequencing Boom & Crowd Cylinder 26

BOOM ASSEMBLY ..... 27 thru 29
When to Overhaul Boom 27
Disassembly of Boom 27
Assembly of Boom ..... 27 thru 29

MAST ASSEMBLY 30
Removal, Installation Procedure 30

PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

Hoist Maintenance: See "Hoist Gearbox" section of this manual.

Information About the Boom

The boom of the Go-Devil is built in three sections called the main boom, the intermediate boom, and the end boom, which can be "telescoped" one inside the other. At the core of this assembly is a fourth section, called the sequencing boom, which is fastened to the end of the Crowd cylinder outer ram, and to the rear of the intermediate boom.

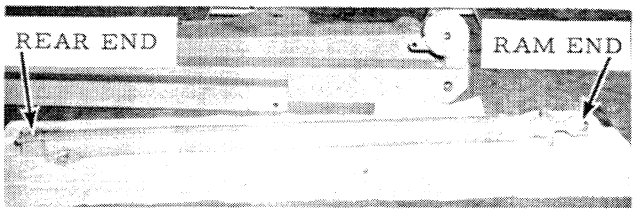


Figure 32A. Overall view of Crowd Cylinder.

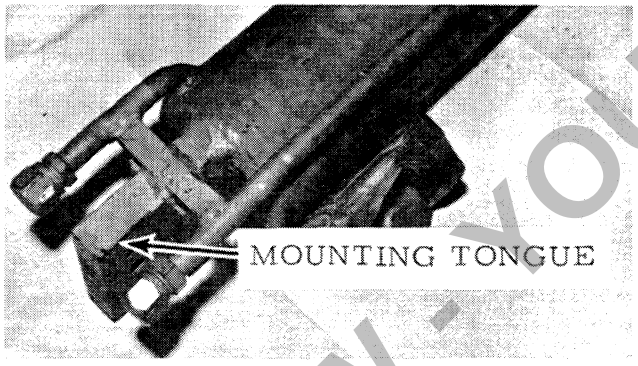


Figure 32B. Rear end of Crowd Cylinder.

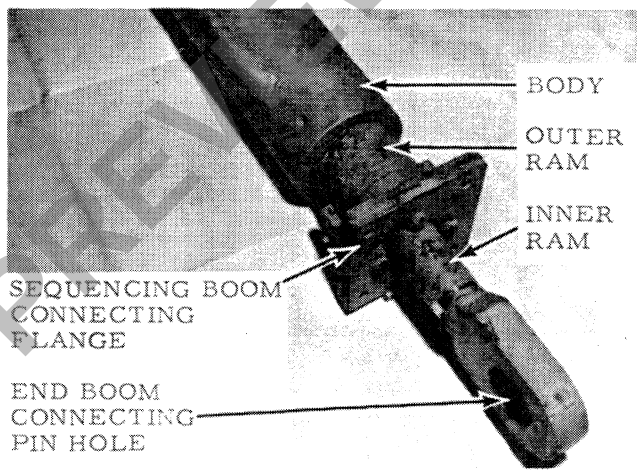


Figure 32C. Front (Ram) end of Crowd Cylinder.

The crowd cylinder contains two rams, one inside the other. The inner ram is fastened to the end boom; the outer ram is bolted to the sequencing boom which in turn is fastened to the intermediate boom.

Removal of Sequencing Boom & Crowd Cylinder

Should it be necessary to overhaul or repair the crowd cylinder. It is not necessary to dismantle the entire boom. The sequencing boom and crowd cylinder can be removed from the boom in the following manner.

1. Retract the boom fully. If the boom cannot be retracted by the crowd cylinder, we suggest using the hoist control:
   (a) Move the Crowd control to "crowd in" position.
   (b) Raise the hook until the block touches the boom sheave guard.
   (c) Continue to pull with the hoist, slowly, until the boom is fully retracted.

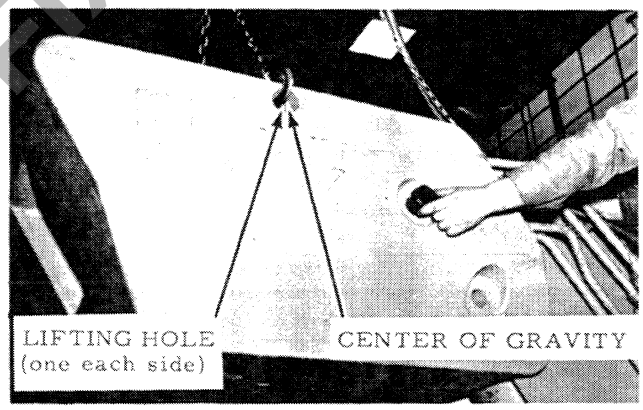


Figure 33. Counterweight Removal: Secure counterweight to hoist (4000 lb. capacity) before removing capscrews.
Counterweight Mounting: Torque mounting capscrews to 2180 ft/lbs.

2. Remove the Counterweight

CAUTION:
The hoist must be capable of handling 4,000 lbs.

   (a) Attach a hoist to the counterweight.
   (b) Remove the two capscrews that hold the counterweight to the mast.
   (c) Lower the counterweight until tube lines at rear of boom are in the clear. Then move the counterweight away from the machine and set it down. BE CAREFUL OF THE HYDRAULIC LINES ON THE BOOM WHEN REMOVING OR INSTALLING THE COUNTERWEIGHT.

PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

stall the spool in its bore (14). Remember that a spool must be returned to the bore it was taken from. New valve spools and bodies are mated and must be ordered together (see parts book).

5. Sleeve and Retainer - Each section: Install a new "O" ring (11) in the retainer (13). Slip the sleeve (12) over the end of the spool, and the retainer and "O" ring over the sleeve. Insert and tighten the mounting screws.

6. Following your index marks, put the valve sections together in their proper order.

   BE SURE the mating surfaces of the valve bodies are free of burrs and paint, and that all the through-port "O" rings and seals (item 6) are in place before assembling.

Coat the stud threads with "Locktite" or an equivalent sealing compound, and install the studs. Tighten the nuts to a torque value of 15 ft/lb.

Install the valve bank on the machine, using three mounting bolts.
Connect and tighten the tube lines, using pipe-seal compound or Teflon tape. Refer to "Torque Value Chart for Hydraulic Fittings" when tightening.
Insert a pin in the control end of each spool and slip the six control levers (through the opening in the rear wall of the cab) over the pins. Line up fulcrum pin holes, insert fulcrum pin and install retaining "E" washer.

NOTE:
The relief valve is pre-set, and can not be adjusted externally. See "Relief Valve Adjustment" in this manual.

Lockout Hold Valve

General

The first two sections (from the inlet end) of the Secondary Valve Bank divert hydraulic oil into the machine's Axle Oscillation Lockout Circuits. The two lines from each valve section lead to two ports on the Lockout Hold Valve. One of these valves is located at each axle (see Overall View, page 32). From the two remaining ports of the lockout hold valve (see figure 83) hoses and lines lead to the heel and rod end ports of the Lockout Cylinders.
The valve is a double acting pilot operated check valve, designed to lock when pressure from cylinder becomes greater than pressure from pump. The valve opens automatically when the pump pressurizes the lockout circuit.

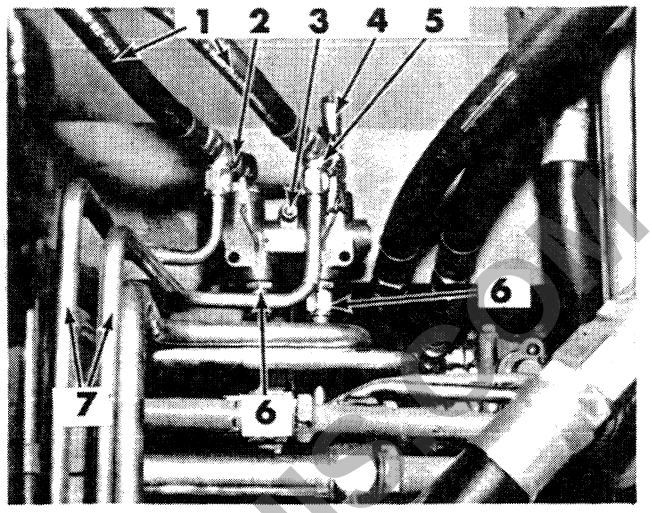


Figure 83 Front Axle Oscillation Lockout Hold Valve

1. LINES TO RIGHT CYLINDERS
2. OUTLET TO ROD END OF BOTH CYLINDERS
3. MOUNTING BOLTS
4. PRESSURE GAUGE FITTING
5. OUTLET TO HEEL END OF BOTH CYLINDERS
6. INLET LINE FROM CONTROL VALVE
7. LINES TO LEFT CYLINDER

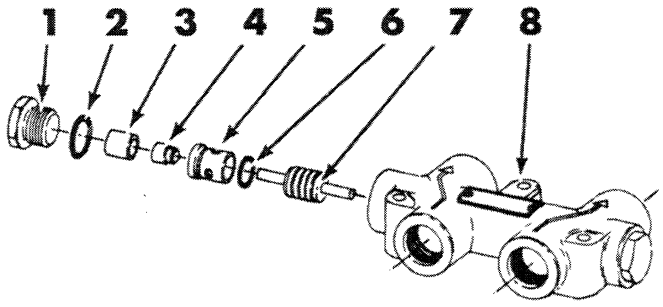


Figure 84 Parts Breakdown of Oscillation Lockout Hold Valve

1. PLUG
2. "O" RING
3. SPRING
4. POPPET
5. SLEEVE
6. "O" RING
7. SHUTTLE
8. BODY

NOTE:
There are two of every item 1 thru 6.

PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

PREVIEW ONLY

You're viewing 12 of 106 pages

The full manual includes:

- All 106 pages, complete
- Searchable PDF (find any keyword)
- No watermarks
- Instant download
- Print-ready quality

GET FULL MANUAL NOW

Drott 160 RF 2 Service Manual

Scan or click anywhere
youfixthis.com

Click anywhere on this page to get the full manual