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1. Safety Information

This manual contains DANGER, WARNING, CAUTION, and NOTE callouts which must be followed to reduce the possibility of personal injury, damage to the equipment, or improper service.



This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.



DANGER

DANGER indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.



WARNING

WARNING indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.



CAUTION

CAUTION indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.

CAUTION: Used without the safety alert symbol, CAUTION indicates a potentially hazardous situation which, if not avoided, may result in property damage.

Note: *Contains additional information important to a procedure*.

1.1 Laws Pertaining to Spark Arresters

Notice: State Health Safety Codes and Public Resources Codes specify that in certain locations spark arresters be used on internal combustion engines that use hydrocarbon fuels. A spark arrester is a device designed to prevent accidental discharge of sparks or flames from the engine exhaust. Spark arresters are qualified and rated by the United States Forest Service for this purpose.

In order to comply with local laws regarding spark arresters, consult the engine distributor or the local Health and Safety Administrator.

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2. Technical Data

2.1 Engine

Item No.:		RT 56-SC (0009026), RT 82-SC (0009025) Revisions 108 and lower	RT 56-SC (0009026), RT 82-SC (0009025) Revisions 109 and higher
Engine			
Engine Type		3-cylinder, 4-cycle, liquid-cooled, diesel engine	
Engine Make		Lombardini	
Engine Model		LDW 903	LDW 1003
Rated Power	kW (Hp)	15.6 (21.2) @ 3600 rpm	15.5 (20.8) @ 2600 rpm
Alternator	Amp / V	23.8 / 16.5 @ 2600 rpm	
Engine Speed - full load	rpm	2600	
Engine Speed - idle	rpm	1300	
Valve Clearance (cold) intake: exhaust:	mm (in.)	 0.15 (0.006) 0.20 (0.008)	
Air Cleaner	type	Dry pleated paper elements	
Battery	V / CCA	12V - Sealed / 800	
Fuel	type	No. 2 Diesel	
Fuel Tank Capacity	l (gal.)	18.9 (6.3)	
Fuel Consumption	l (gal.)/hr.	5.64 (0.67)	
Radiator Capacity	l (gal.)	4.75 (1.25)	

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3.2 Operation and Service Locations

See Graphic: wc_gr000234 and wc_gr000235

Ref.	Description	Ref.	Description
1	Oil dipstick	25	Exciter fill plug
2	Engine oil drain plug	26	Exciter drain plug
3	Tie-down lugs	27	Exciter oil level plug
4	Air cleaner	28	Display panel
5	Scraper bar	29	SmartControl™ transmitter
6	Drive case fill plug	30	Charge cable
7	Drive case drain plug	31	Receiving eye/light ring
8	Drive case oil level plug	32	Oil cooler
9	Exciter pump	33	Docking port
10	Drive pump	34	Steering cylinder
11	Radiator	35	Decoder module
12	Hood latch	36	Engine control module
13	Lifting eye	37	Latch
14	Articulated joint locking bar	38	Manual holder
15	Hydraulic tank	39	Hood locking tab
16	Hydraulic tank return line filter	40	System fuse - 20A
17	Hydraulic oil level sight gauge	41	Self-resetting circuit breaker - 50A
18	Hydraulic tank drain plug	42	Charge cord / Service box receptacle
19	Articulated joint grease fitting	43	Oil PSI switch
20	Steering cylinder grease fittings	44	Air filter restriction switch
21	Fuel tank	-	---
22	Radiator drain plug	46	High water temperature switch / Glow plug timer
23	Hydraulic manifold	47	Hood hinge grease fitting
24	Battery		

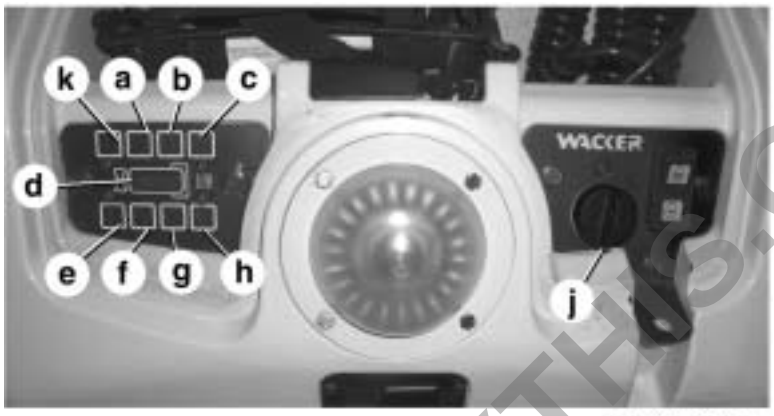
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3.3 Control Panel

See Graphic: wc_gr001728

The control panel is mounted to the dash under the back hood access cover of the machine. It contains the following features:



wc_gr001728

3.3.1 Charging System Light (a)

The engine is equipped with an alternator and voltage regulator to maintain the battery charge. The charging system warning light illuminates when there is a malfunction of the system. Although the machine will run with the light on for a short period of time, continued operation will drain the battery and eventually cause the machine to lose all operating functions.

CAUTION

If the system warning light illuminates while operating the machine in a narrow trench or other confined area, drive machine into a safer area as soon as possible to avoid stranding it in a hazardous or inaccessible location.

3.3.2 Glow Plug Light (b)

The engine is equipped with an automatic glow plug system that pre-heats the combustion chambers to improve normal and cold weather starts. The glow plug light illuminates when the keyswitch and the transmitter ON/OFF switch are placed in the **I** (ON) positions. It will go off when the combustion chambers are pre-heated.

Note: *Allow 5 minutes for the engine to warm up before operating the roller.*

3.3.3 Air Cleaner Light (c)

The air cleaner warning light illuminates when the air filter cartridge needs to be replaced.

3.3.4 Hour Meter (d)

The hour meter records the actual running time of the engine. Use the hour meter when planning scheduled maintenance.

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4.6 Periodic Maintenance Schedules

Roller	Daily before starting	Every 100 hrs.	Every 500 hrs.	Once A Year	Every 2 Years
Check hydraulic oil. Fill to correct level.	•				
Clean control box / transmitter.	•				
Grease articulated joint.		•			
Grease steering cylinder.		•			
Grease hood hinges.		•			
Change oil in drive gearcase.			•		
Change hydraulic system return line filter.				•	
Change hydraulic fluid.				•	
Change exciter oil.					•

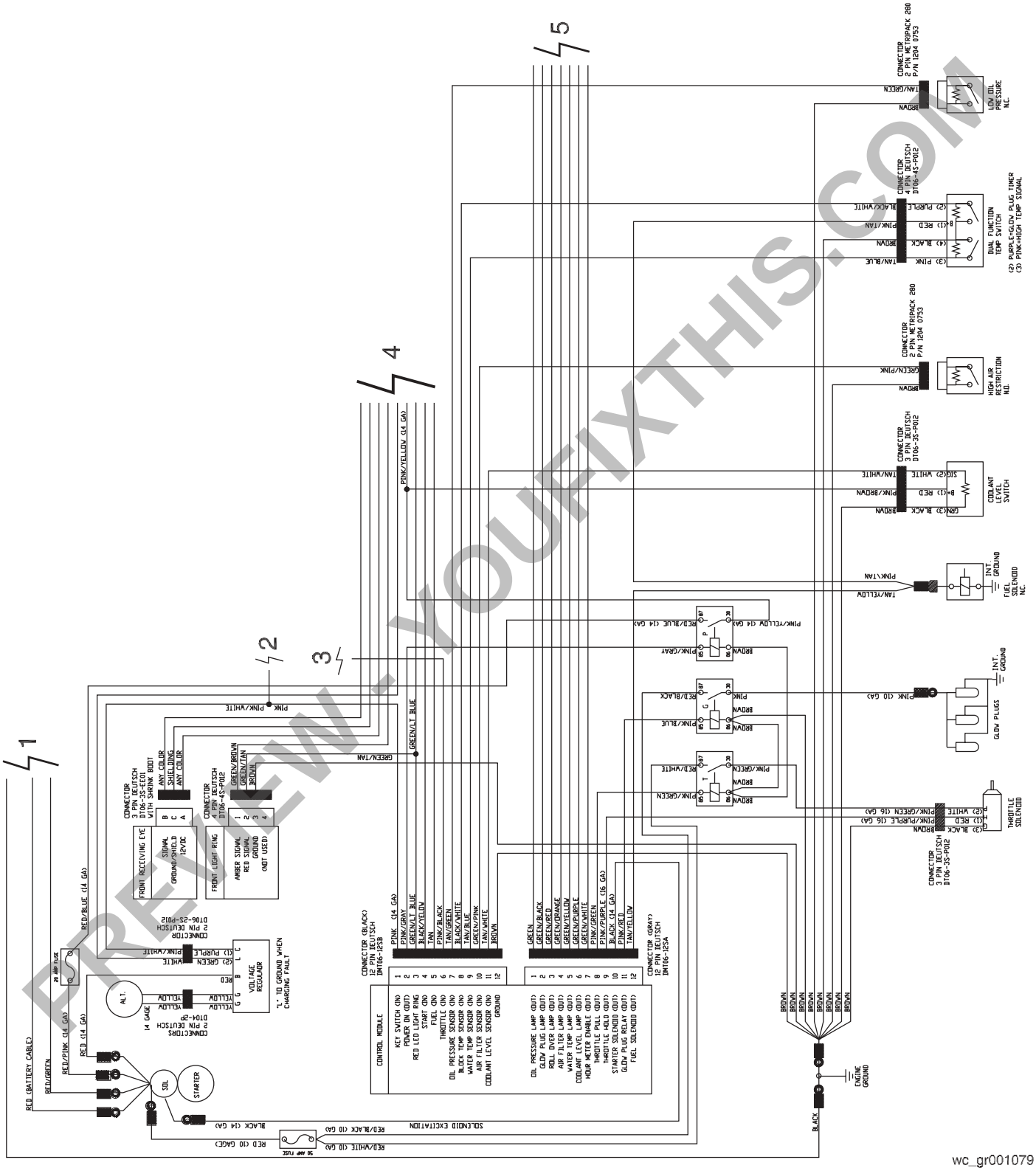
The chart below lists basic engine maintenance. Refer to the engine manufacturer's Operation Manual for additional information on engine maintenance.

Lombardini Engine	Daily before starting	Every 100 hrs.	Every 125 hrs.	Every 250 hrs.	Every 300 hrs.	Every 500 hrs.
Check engine oil. Fill to correct level.	•					
Replace air filter if indicator light is on.	•					
Check condition and tension on fan belt.	•					
Clean engine head and cylinder fins.		•				
Change oil in engine crankcase.			•			
Replace engine oil filter.				•		
Check and adjust fan belt.				•		
Replace fuel filter cartridge.				•		
Clean injectors and check injector pressure.					•	
Replace fan belt.						•
Check valve clearance.						•

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4.27 Wiring Schematic



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4.28 Basic Troubleshooting

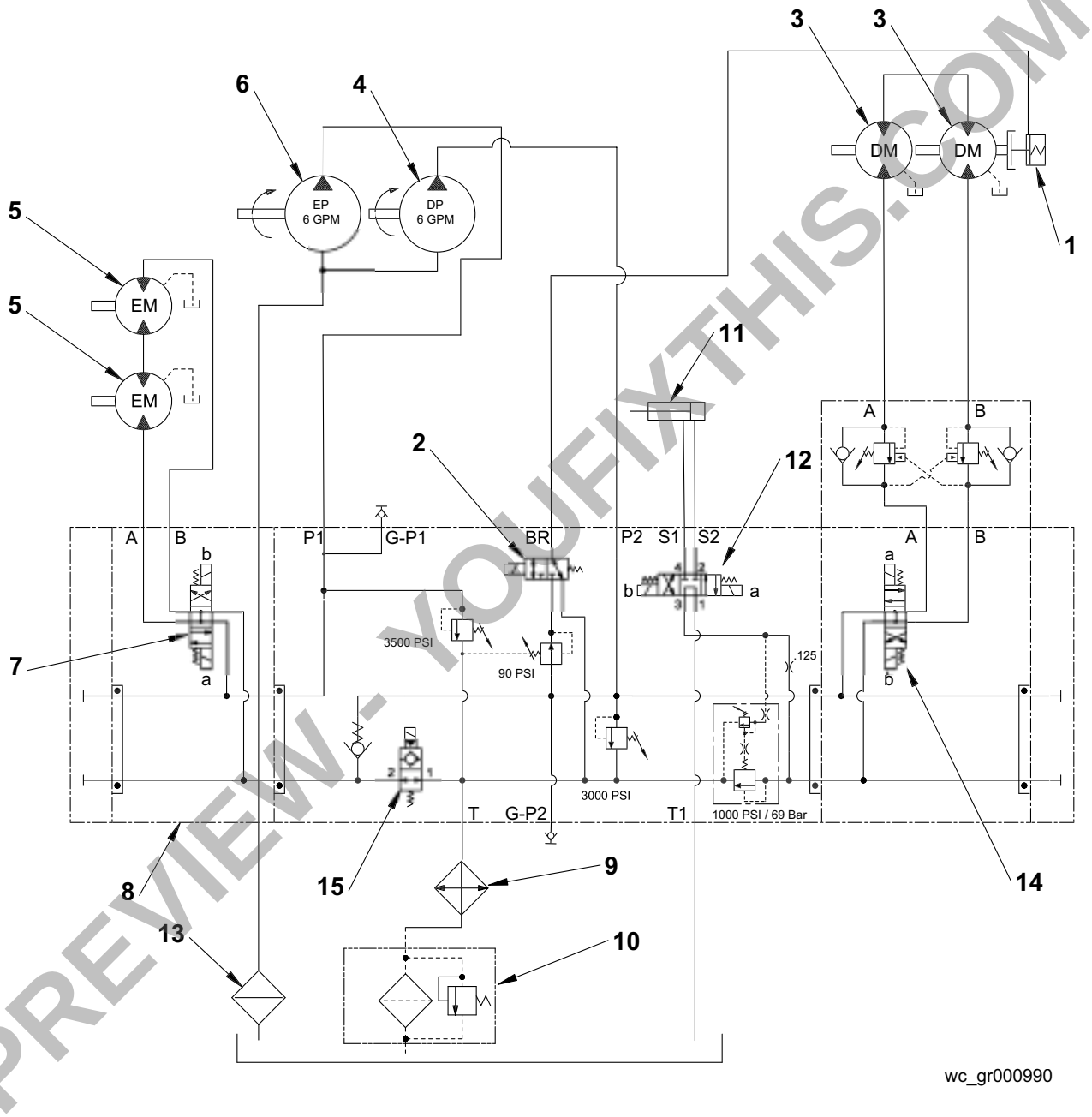
Problem / Symptom	Reason / Remedy
ENGINE DOES NOT START	• Fuel tank empty. Fill with No. 2 diesel fuel and prime fuel lines. • Wrong type of fuel. • Old fuel. Drain tank, change fuel filter and fill with fresh fuel. • Fuel system not primed. • Fuel filter restricted or plugged. Replace filter. • Battery connections loose or corroded. Battery dead. • Engine oil level too low. • Air cleaner element plugged. • Starter motor defective. • Starter button on control box or transmitter defective. • Fuel valve solenoids on engine inoperative. • Starter relay inoperative. • Electrical connections loose or broken. • Machine out of infrared signal range.
ENGINE STOPS BY ITSELF	• Fuel tank empty. • Fuel filter plugged. • Fuel lines broken or loose. • Machine out of infra-red range.
NO VIBRATION	• Machine in high speed travel mode. • Defective switch or poor connection in control box or transmitter. • Solenoid on vibration valve inoperative. • Exciter assembly damaged. • Exciter motor coupling damaged. • Exciter motor damaged. • Exciter pump damaged.

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6.4 Hydraulic Schematics

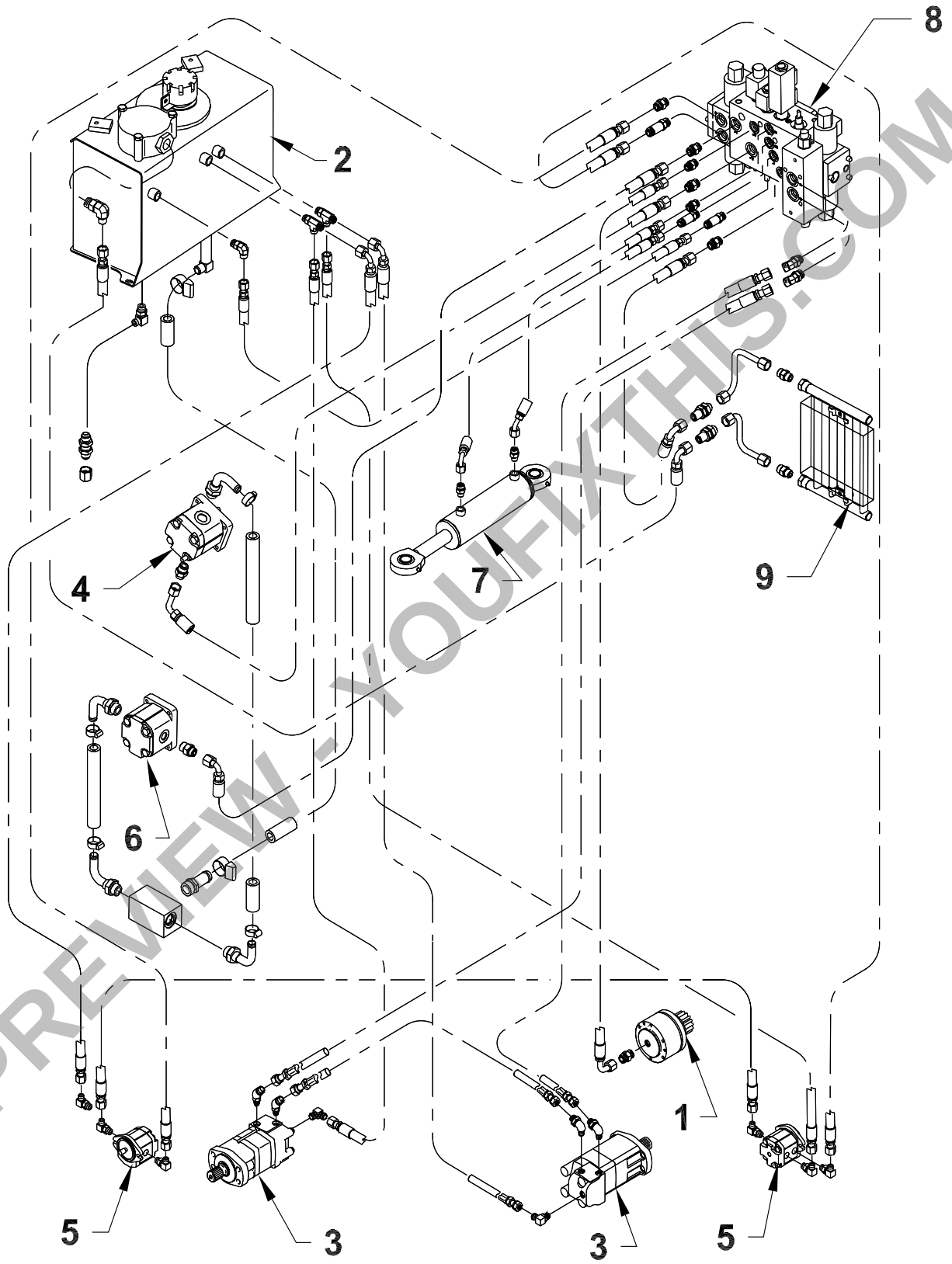
BOM 9026 SN 55461321 and lower; BOM 9025 SN 5549417 and lower



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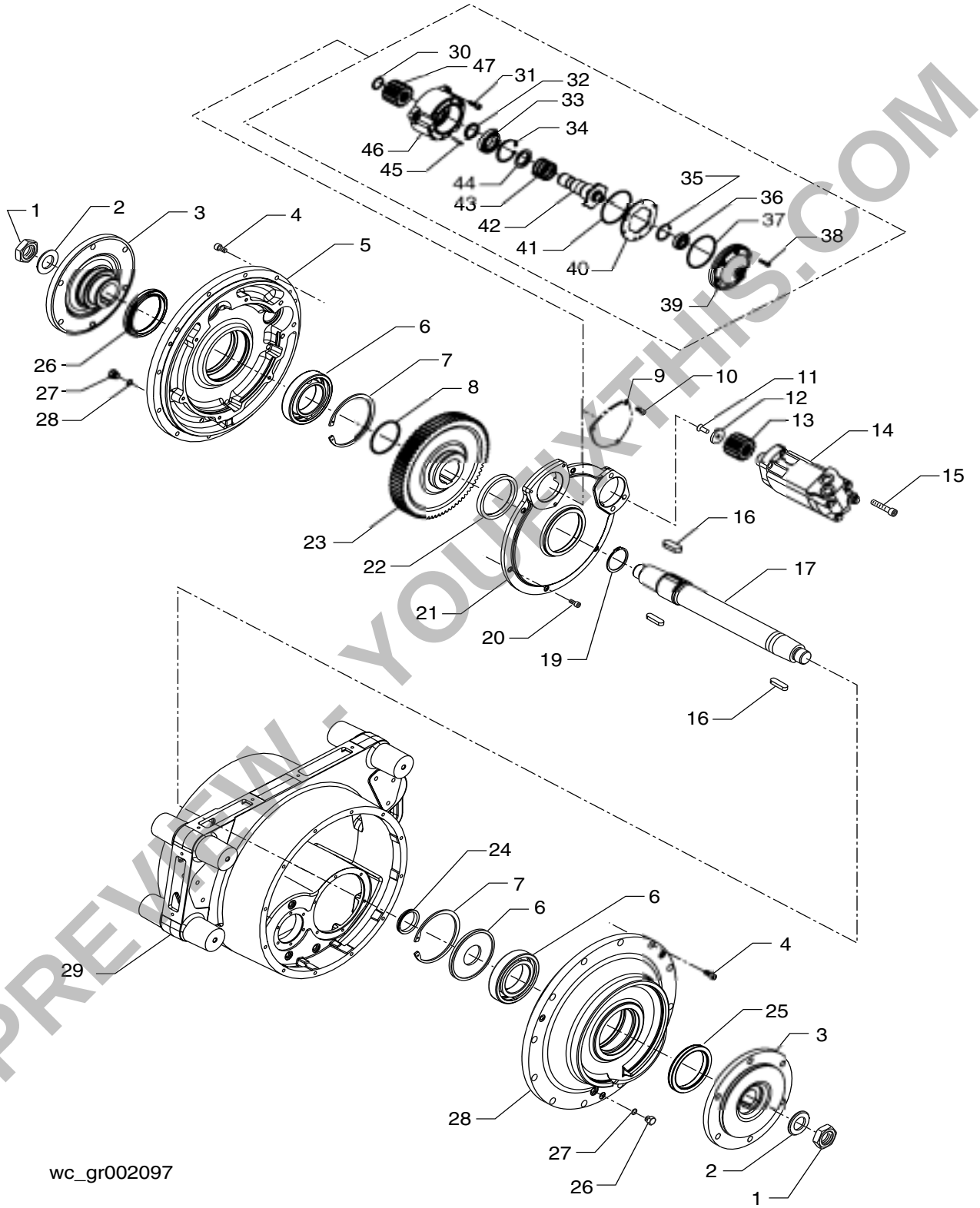
6.5 Hydraulic Diagram



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8.6 Drum Support Exploded View



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8.13 Disassembling Drive Hub

See Graphic: wc_gr002352 and wc_gr002097

8.13.1 Remove drum. See Section *Removing Drum.*

8.13.2 Open drum. See Section *Opening Drum.*

8.13.3 Remove drive motor **(a)** and brake **(b)** (on rear hubs).

8.13.4 Remove oil from drive hub. Dispose of oil properly.

8.13.5 Remove five screws **(c)** securing gear cover **(d)** and remove the gear cover.
Note: *Because gasket eliminator is applied to the mating surfaces of the hub and the gear cover during assembly, it may be necessary to tap the gear cover to break it loose.*

8.13.6 Press the shaft seal **(e)** from the gear cover.

8.13.7 Remove the retaining ring **(f)**.

8.13.8 Leave the hub nut **(g)** on the shaft and using three pusher bolts **(h)**, pull the gear off the shaft.

8.13.9 Pull the lip seal off the shaft.

8.13.10 With the hub nut loose but still on the shaft, tap the hub from the opposite side to break the hub loose from the taper on the shaft.
Note: *Leaving the hub nut threaded on the shaft prevents the hub from "popping" off the shaft when the hub releases from the taper on the shaft.*

8.13.11 Pull the key from the shaft.

8.13.12 Invert the hub as shown and using a propane torch heat the bearing inner race quickly. When heated to the proper temperature, the bearing race will slide off the hub. Pull it from the shaft if necessary.

8.13.13 Remove the retaining ring from the gear cover and remove the outer bearing race.

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