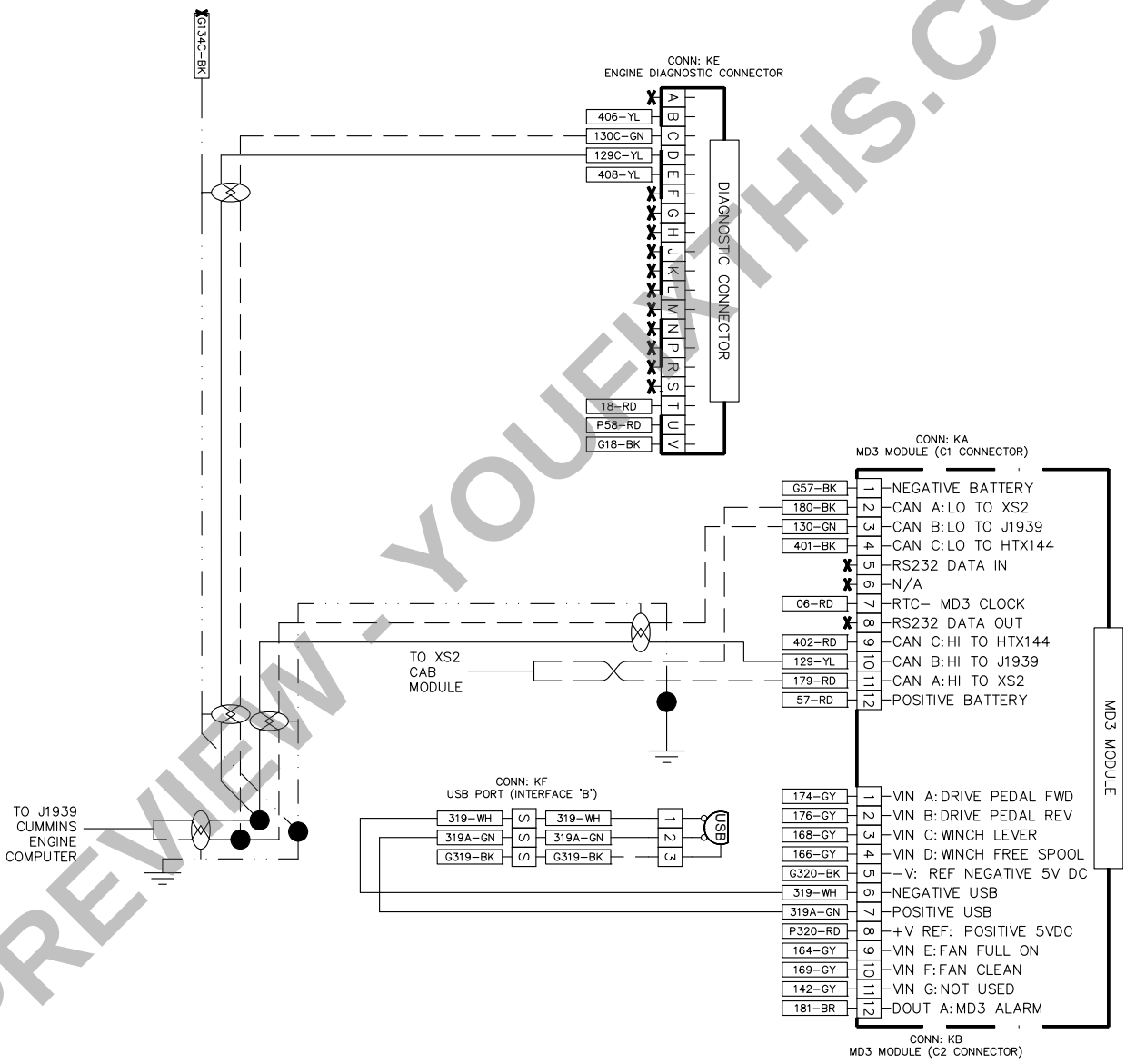
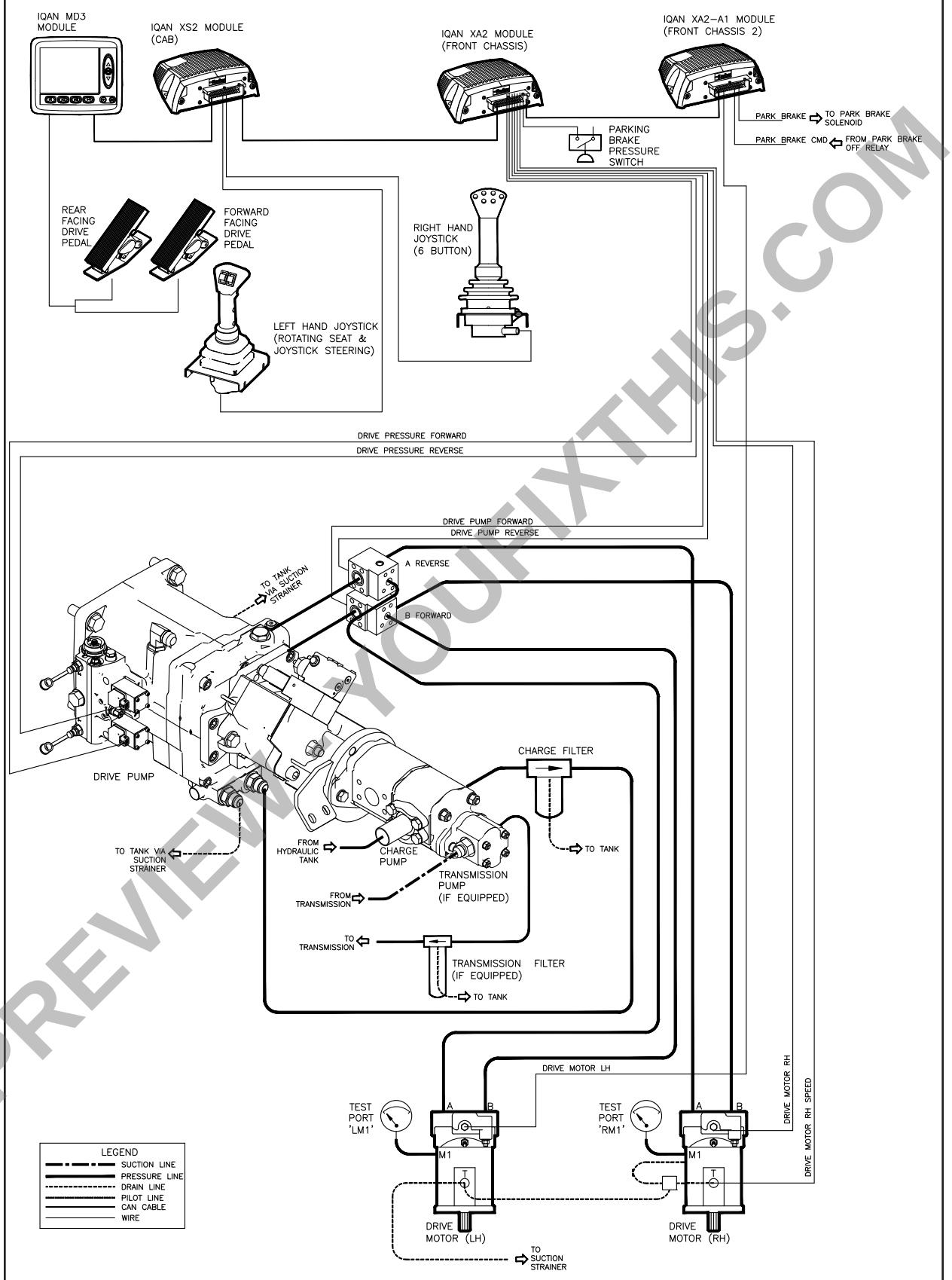


630E-012

MD3 MODULE SCHEMATIC

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DRIVE CIRCUIT DIAGRAM - JOYSTICK STEERING (SINGLE SPEED MECHANICAL TRANSMISSION)

630E-088

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TORQUE CHART

LOCATION	DIAMETER	TORQUE (LUBRICATED)	
		lbf-ft	Nm
Cylinders			
Piston nut, steer cylinder (38087B)	1 3/8" UNF	1260	1708
Piston nut, arch/boom cylinder	1 1/2" UNF	1640	2224
Piston nut, dozer cylinder	1 3/8" UNF	1260	1708
Gland, steer cylinder (36597B)	-	550	745
Keeper plate bolts	3/4" UNC	282	382
Keeper plate bolts	5/8" UNC	159	215
Cab pin keeper plate bolts	3/4" UNC	282	393
Center joint bearing			
Bearing retaining bolts	1/2" UNC	80	108
Pin retaining bolts	3/4" UNC	282	382
Engine mounting			
To Chassis	7/8" UNC	364	493
To Engine	M12	73	99
Pump Mounting			
Drive pump to flywheel adapter plate	3/4" UNC	282	382
Flywheel adapter plate to flywheel housing	M10	40	54
Torsional drive coupler to flywheel	3/8" UNC	37	50
Main pump to drive pump	5/8" UNC	159	215
Coolant pump to main pump	M12	73	99
Drive shafts			
Yoke retaining nut, rear shaft	1 1/4" x 18 UNEF	500	677
Pillow block retaining bolts	3/4" UNC	282	382
Rear drive shaft universal joint bolts	1/2" UNF	90	122
Rear axle input universal joint bolts	M12	70	95
Mid. drive shaft universal joint bolts	1/2" UNF	90	122
Front drive shaft universal joint bolts	1/2" UNF	90	122
Front axle input universal joint bolts	M12	70	95
Axle mounting bolts			
Front Axle	3/4" UNC	226	306
Rear Axle 620E/630E	7/8" UNC	364	493
Rear (Bogie) Axle 625E	M30	1350	1850
Rear (Bogie) Axle 635E	M18	310	420
	M20	413	560
	5/8" UNC	225	306
Wheel bolts	7/8" UNF	501	679
Transmission			
Housing to Mounting Bracket	5/8"UNC	159	215
Mounting Bracket to Frame	7/8" UNC	364	493

Torque values pertaining to the engine and attachment are provided in the appropriate manuals.

620E625E630E635ETORQUECHARTR2.XLS 04/16

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SCHEDULED MAINTENANCE

FREQUENTLY:

- **Check engine cooling air intake screens for possible restriction.**

EVERY 8 HOURS (EVERY SHIFT):

- **Perform "frequently" maintenance check, and in addition:**
- Check engine coolant level
- Check engine oil level
- Drain the fuel filter/water separator
- Check air intake precleaner, clean as required
- Check air cleaner unloader valve
- Check air intake filter restriction indicator.

  Replace primary filter if indicator is in red zone.

  Replace secondary (safety) filter every third primary filter change to guarantee maximum performance and reliability.
- Check hydraulic oil level with grapple head fully open, grapple head and dozer blade on the ground.
- Check winch sump oil level
- Check transmission oil level with dipstick
- Lubricate front axle pivot, 2-fittings, purge
- Lubricate mid drive shaft 1-fitting, purge

  NOTE: *Lubrication of mid drive shaft slip joint should be done with machine fully articulated and locked.* Refer also to ARTICULATION LOCK – ARTICULATED LOCKED POSITION in THIS SECTION.
- On 620E/630E machines lubricate rear drive shaft bearing 1-fitting, purge
- On 625E/635E machines lubricate rear drive shaft bearings, 2-fittings, purge
- Lubricate centre joint bearings, 2-fittings, purge
- Lubricate steering cylinder ends, 4-fittings, purge
- Lubricate arch cylinders and pivots, 6 or 12-fittings, purge
- Lubricate dozer blade cylinders and pivots, 6-fittings, purge
- Lubricate grapple snubbers, 2-fittings, purge
- Lubricate grapple, 8-fittings, purge
- Lubricate grapple yoke, 8-fittings, purge

Clean:

- Potentially damaging limbs or sticks from machine
- A/C condenser, oil cooler, radiator refer to CLEANING A/C CONDENSER AND COOLER PACKAGE in THIS SECTION.

Check:

- Service brake for proper operation. Refer to SERVICE BRAKE – CHECKING BRAKE AND ACCUMULATOR FOR PROPER OPERATION in THIS SECTION.
- All engine air intake system components (including charge air cooler) rubber elbows, connector hoses, tubes and clamps for damage, hardening, wear, cracks, leaks, loose clamps or loose hanger bracket hardware and repair immediately.
- Charge Air Cooler for damage, wear, cracks, or leaks and repair immediately.
- For leakage around hydraulic components and flexible hoses. *See "Oil lost from leakage" chart*.
- For loose nuts, bolts and fittings
- Condition and tension of fan belts.
- Exhaust system for leaks.
- Water pressure (60 psi [4 bar]) for pressurized water system.

  If the water system has been operated, refer to PRESSURIZED WATER SYSTEM MAINTENANCE in THIS SECTION for refilling and charging instructions.
- Conduct an overall visual inspection.

Refer to engine OPERATION AND MAINTENANCE MANUAL for additional required maintenance.

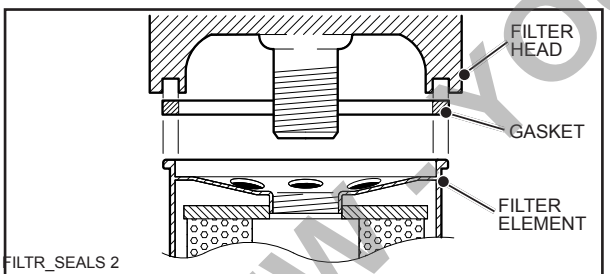
EVERY 48 HOURS

- Check the centre joint for looseness. Refer to CENTRE JOINT MAINTENANCE in THIS SECTION for instructions. If a problem is found corrective action should be taken immediately. Refer also to CENTRE JOINT in SECTION 11 of the SERVICE MANUAL for more detailed checking and adjustment procedures.

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Changing the filters:

1. Park the machine on level ground.
2. Lower the grapple and dozer blade to rest firmly on the ground.
3. Engage the parking brake.
4. Turn OFF the engine.
5. Remove the ignition key.
6. Turn OFF the battery disconnect switch
7. Block wheels
8. Install the articulation lock bar.
9. Wipe clean the area around the filter and head.
10. Place rags below to catch the spillage of oil.
11. Wearing face protection (in case of an oil squirt), unscrew the old filter. Dispose of old filter and any oil properly.
12. The new **Tigercat** filter is supplied with two gaskets enclosed, examine the filter head closely to determine which gasket should be used and follow the instructions to ensure proper installation.



SQUARE SECTION GASKET INSTALLATION

■ Square Section Gasket

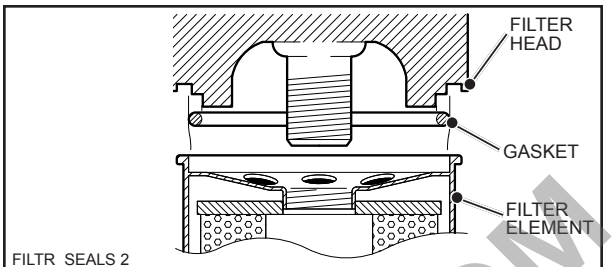
Remove used gasket and clean groove in head.

Apply clean oil to new gasket surfaces.

Install new gasket into groove in filter head.

Screw on new filter until gasket makes contact.

Tighten filter an additional 3/4 turn.



O-RING GASKET INSTALLATION

● **O-Ring Gasket**

Remove used gasket and clean gasket seat in head.

Apply clean oil to new gasket surfaces.

Install new gasket on inside lip of filter.

Screw on new filter until gasket makes contact.

Tighten filter until top edge makes metal to metal contact with filter head. (approximately 1 1/2 additional turns after gasket contact)

13. Turn ON the battery disconnect switch.
14. Check that all personnel are clear of the machine before starting the engine.
15. Insert the ignition key and turn to the RUN position.
16. Sound horn to warn personnel of machine start-up.
17. Start the engine.
18. Check for leaks.

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CRITICAL MESSAGES (RED)

Critical messages advise the operator that a critical machine fault is about to occur or a system fault has occurred.

Critical messages have the highest level of priority and are used to alert operator that immediate action must be taken to prevent damage to machine or to ensure operator safety.

When a critical message is displayed, the master alarm and alarm light will sound and flash continuously. The message remains on the screen until the operator hides it.

The message will give brief details of the fault and advise what action is necessary.

In some instances the machine requires immediate action to correct the problem which requires the operator to STOP machine operation, TURN THE ENGINE OFF and service the machine to correct the problem.

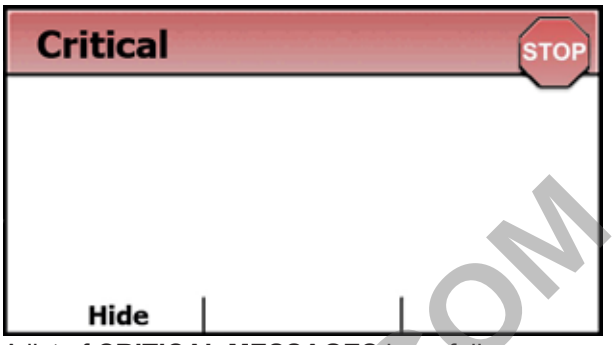
However, if the machine cannot be stopped immediately for safety reasons, the operator can hide the message. In this instance the machine should only be operated long enough to move the machine to a safe location then STOP machine operation and TURN THE ENGINE OFF before serious machine damage can occur!

Messages can be hidden by pressing the F2 button (Hide).

Critical messages flash the critical symbol STOP above the F4 button when active messages are hidden. The symbol will continue to flash until the problem is resolved and the fault becomes inactive.

Active messages that have been hidden can be reviewed by pressing the F4 button.





A list of **CRITICAL MESSAGES** is as follows:

Hydraulic Oil Level Low
Drive Motor Clutch Pressure Low
Drive Motor Overspeed
Transmission Oil Temperature High
Interlock System
Hydraulic Oil Temperature High
LH Drive Motor Speed Sensor Fault
RH Drive Motor Speed Sensor Fault or Clutch Slip
Drive Motor Clutch Slow Response
Drive Motor Clutch Pressure High
Main Fuel Filter Clogged Engine Derate
Hardware Fault - MD3
Hardware Fault - Engine
Hardware Fault - XS2
Hardware Fault - XA2
Engine Coolant Temperature High
Engine Coolant Temperature High - Engine Derate
Engine Coolant Level low
Aftertreatment System Technical Failure*
Aftertreatment System Engine Idle Too Long*
Engine Locked Out*
Engine Restarts Remaining Until Engine Lockout*
Engine Oil Pressure Low
Engine Oil Pressure Low - Engine Derate
Engine Overspeed
Engine Overspeed Max
Engine Oil Temperature High
Engine Fault Code Messages - Critical

***NOTE:** The aftertreatment system and its related components are applicable to Tier 4f machines only.

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Tigercat 620E/625E/630E/635E SKIDDER

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CALIFORNIA

Proposition 65 Warning

Diesel engine exhaust and some of its constituents are known to the State of California to cause cancer, birth defects and other reproductive harm.

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620E/625E/630E/635E Available Literature

Operator's Manual	Part No. 42836AENG
Service Manual (This Manual)	Part No. 42837AENG
620E Parts Catalog	Part No. 41337A
625E Parts Catalog	Part No. 47767A
630E Parts Catalog	Part No. 41338A
635E Parts Catalog	Part No. 41933A
Vehicle Moving and Transporting Instructions	Part No. 41604AMUL
Engine Operation and Maintenance Manual, N67 Tier 2	Part No. 45045AMUL
Engine Operation and Maintenance Manual, N67 Tier 4f	Part No. 42939AMUL

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Tigercat 620E/625E/630E/635E Skidder

SECTION 1 - SAFETY

Read and understand this Safety section prior to operating any equipment.
Read and understand all manuals for any attachments or accessories.

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Tigercat 620E/625E/630E/635E Skidder

INTRODUCTION

An Operator's manual, Service manual and a Parts catalog are provided by **Tigercat** to assist the dealer, customer and operator in becoming familiar with the features of the 620E/625E/630E/635E Skidder.

Serial numbers:-

620E 6206401 to 6209000
625E 6250501 to 6250800
630E 6304201 to 6306000
635E 6352001 to 6353000

The 620E/625E/630E/635E Skidder is designed for skidding trees in selective felling and clear felling applications in plantations and natural stands.

The operator's manual will assist the operator with the techniques of proper and safe operation of the 620E/625E/630E/635E Skidder. The service manual contains safety and servicing procedures and a preventive maintenance schedule to assist in repair and to ensure optimum machine performance. For manual part numbers, see the title page in each manual.

Section 1 in both the operator's manual and the service manual contains safety information that must be followed. As well, throughout the rest of the manuals WARNING and CAUTION notices are displayed where necessary, drawing attention to possible hazards when performing certain procedures.

Only trained personnel should be allowed to operate or work on the machine.

The information contained in this manual is current at time of printing. Improvements to the machine are on-going and may not be covered, therefore in these cases contact your **Tigercat** dealer for the appropriate information.

The phrase **"and up"** appearing in this manual after the serial number implies that the related information is current for any machine serial number HIGHER than the serial number preceding the **"and up"**.

Tigercat reserves the right to make changes to the machine after this manual release date that may not immediately appear in this manual.

Every effort is made to send out updates on a regular basis. If the machine in question was built after the release date of this manual and there is a discrepancy, call Tigercat service department. The release date appears on the first page.

The Company reserves the right to change information contained herein at any time without prior notice.

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USE SEAT BELT



USE SEAT BELT. The seat belt supplied with this seat must be used at all times when operating this machine.

READ OPERATOR'S MANUAL



READ OPERATOR'S MANUAL. Always read the operator's manual before operating the machine. Pay close attention to WARNINGS and HAZARD identifications.

Study all the safety messages in this manual and on the labels on the machine carefully.

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OPERATOR'S SEAT - AIR RIDE ADJUSTMENTS

WARNING

The seat belt supplied with this seat must be used at all times when operating this machine.

AIR RIDE ADJUSTMENT PROCEDURES

The ride adjustment can be made by pulling or pushing the air ride control valve knob.

To stiffen the air ride

For a **stiffer** ride **push** on the **air ride adjustment knob** to increase the air pressure in the suspension air bag.

To soften the air ride

For a **softer** ride, **pull** on the **air ride adjustment knob** to decrease the air pressure in the suspension air bag.

2-WAY ADJUSTABLE LUMBAR

To increase lumbar support pressure, turn lumbar adjustment control clockwise. To decrease lumbar support pressure, turn lumbar adjustment lever counterclockwise

BACKREST - ANGLE ADJUSTMENT

Rotate backrest angle adjustment control to place backrest at the desired angle.

SEAT - HORIZONTAL POSITION

Move and hold fore/aft slide lever. Roll seat forwards or backward to the desired position relative to the foot pedal controls.

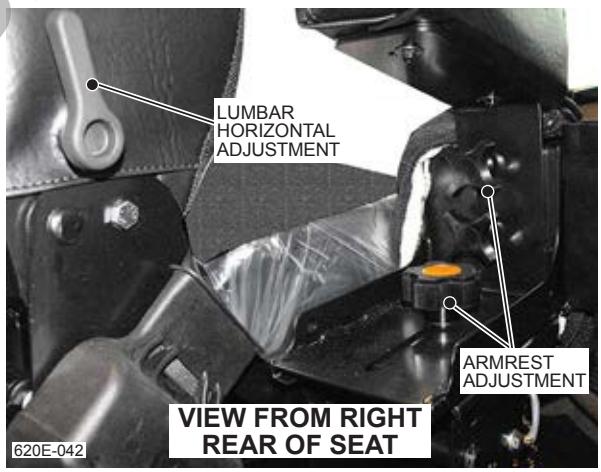
ARMREST ADJUSTMENT

Each armrest has 2 adjustments to place it in the desired position. Loosen adjustment knobs to reposition armrest height and fore/aft position.

HEIGHT ADJUSTMENT PROCEDURES

This seat is equipped with a fixed (bolted) two position height adjustment. The second position provides a total height increase of 1". Four bolts are used to reposition the seat for height adjustment.

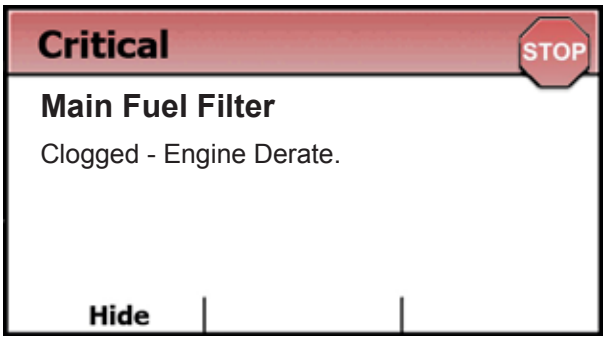






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MAIN FUEL FILTER CLOGGED
ENGINE DERATE

This message will be displayed, alarm light will flash and alarm will sound when an engine derate is triggered due to a clogged main fuel filter. This message may be accompanied by Engine Fault Code Messages.

When a main fuel filter clog is detected a message is displayed to alert the operator.

This message results in the following derate sequence:

- When a fuel filter clog continues for more than 5 minutes this message will be shown and the engine will immediately begin to derate at 50 rpm/s to a set creep speed allowing the operator to safely stop the machine (creep speed setting is programmed to suit each machine type/model).

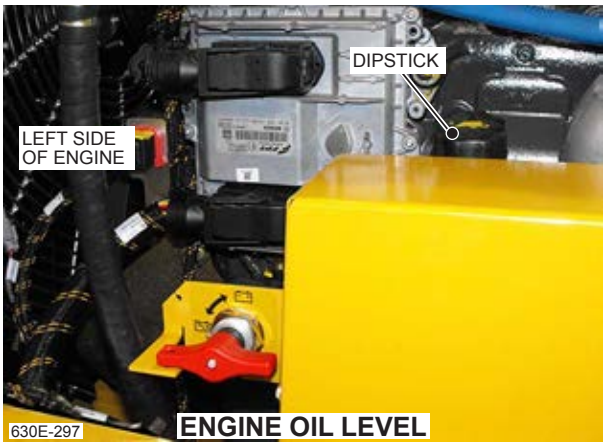
  Change engine filter as soon as possible to correct. Refer to ENGINE OPERATION AND MAINTENANCE MANUAL for engine fuel filter replacement instructions. If the problem continues contact dealer for service.

- When a fuel filter clog condition is no longer detected for more than 5 seconds this message will be turned off and the engine will automatically ramp up engine speed at 50 rpm/s to full operating speed.

NOTE: An Engine Torque Derate Active message will also be triggered as the engine begins to derate. Refer to COMPUTER – MESSAGES - CRITICAL – ENGINE TORQUE DERATE ACTIVE in THIS SECTION.

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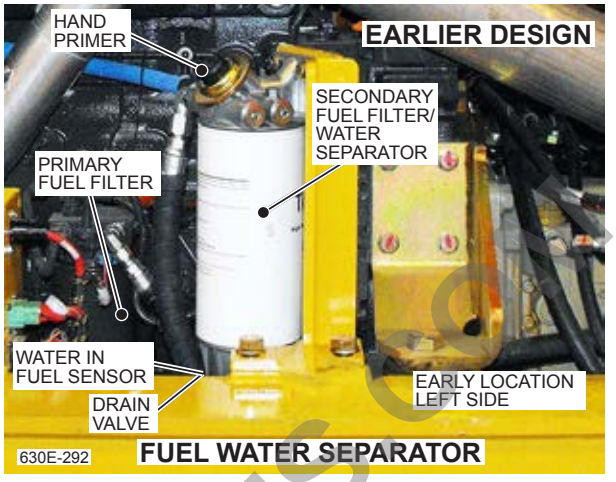
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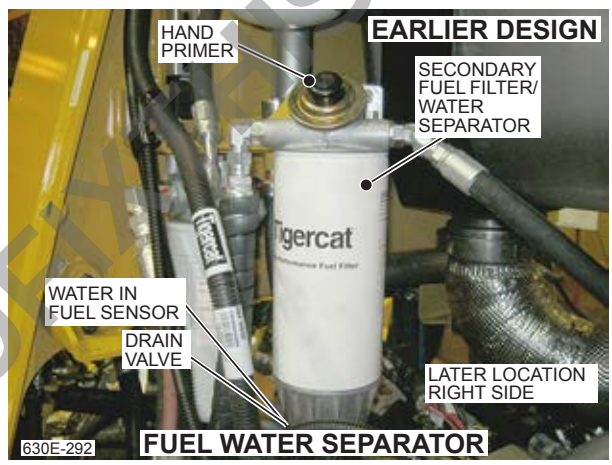


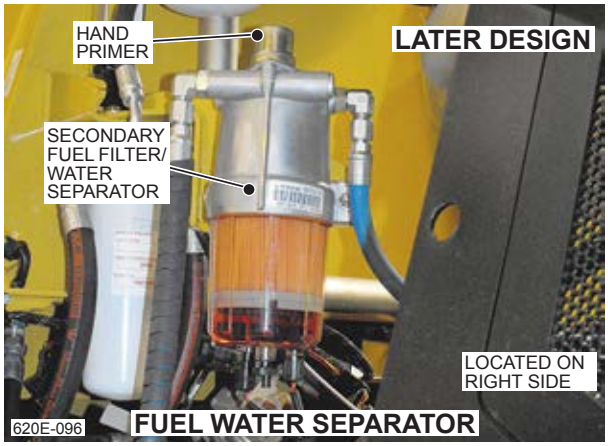
7. Check the engine oil level. The level of the oil must be between the ADD and the FULL marks on the dipstick.



8. Check transmission oil level. The level of the oil must be between the ADD and the FULL marks on the dipstick.







9. Drain water from fuel line water separator. Refer to FILTERS, FUEL/WATER SEPARATOR in SECTION 3.

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SCHEDULED MAINTENANCE

Refer to FLUID ANALYSIS PROGRAM in THIS SECTION for details.

- Drain and refill pressurized water system. Refer to PRESSURIZED WATER SYSTEM MAINTENANCE in THIS SECTION.
- For 635E machines lubricate bogie axle slewing rings, 2-fittings; 2-places . Refer to AXLE – REAR (BOGIE) AXLE – SLEW BEARING LUBRICATION in THIS SECTION.
- Lubricate front axle pinion grease seal.
- Lubricate rear axle pinion grease seal.

Refer to engine OPERATION AND MAINTENANCE MANUAL for additional required maintenance.

2000 HOURS:

- **Perform "frequently" maintenance**
- **Perform 8 hour maintenance**
- **Perform 125 hour maintenance**
- **Perform 250 hour maintenance**
- **Perform 500 hour maintenance**
- **Perform 1000 hour maintenance**

And in addition:

- For machines equipped with dual fuel filters (6207106- 6209000, 6250510-6250800, 6304685-6306000, PSB2524 installed) replace engine fuel filter.

  NOTE: This replacement interval supersedes the one shown in the engine manufacturer's operation and maintenance manual due to the dual fuel filters also used on this machine.

  NOTE: PSB2524 when installed updates earlier machines to include dual fuel filters. When equipped with dual fuel filters some maintenance intervals change.

- Replace all air intake rubber components such as elbows and connectors.

  High temperatures in this area can cause the rubber to harden.

  NOTE: High-temperature silicone connectors do not need to be replaced unless they are damaged.

  Refer to AIR CLEANER MAINTENANCE in THIS SECTION

- Replace hydraulic tank breather
- Check all air intake tubing, rubber couplings and band clamps for signs of wear and leakage

Refer to engine OPERATION AND MAINTENANCE MANUAL for additional required maintenance.

2 YEARS:

- Replace engine coolant.

Refer to engine OPERATION AND MAINTENANCE MANUAL for additional required maintenance.

* Use of filters other than genuine Tigercat replacement filters is not recommended.

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AIR CLEANER MAINTENANCE

AIR PRECLEANER



ENGINE AIR PRECLEANER

The engine air precleaner cleans engine air before it reaches the air cleaner filter elements. It removes contaminants such as dust, powder, insects, rain and snow. The air precleaner should be checked every 8 hours to make sure that foreign materials have not plugged the intake area or the discharge louver area. Clean as required.

IMPORTANT !
The air precleaner must be check every 8 hours and cleaned as required.

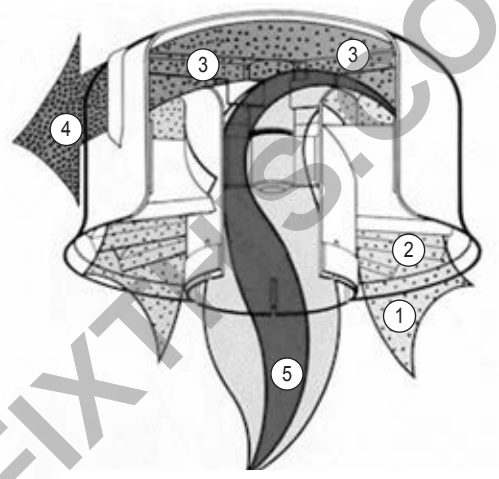
If the inlet/precleaner is plugged causing a restriction to airflow, reduced engine performance and increased fuel consumption may result.

If a plugged inlet/precleaner is left too long excessive air intake restriction may damage the rubber air intake tube. A damaged air intake tube will lead to ingestion of dirt into the engine which may result in engine failure.

Note that the air filter restriction indicator may not function properly if the air intake tube is damaged.

Engine failures due to improper maintenance are not covered by Tigercat or Engine Manufacturer's Warranty and any such claim will be denied.

IMPORTANT !
For peak engine performance and maximum fuel economy, please ensure that the air precleaner is regularly checked and cleaned as required. All intake air tubes and clamps should be thoroughly inspected on a regular basis and any damaged or missing components should be replaced immediately.



CENTRI® PRECLEANER OPERATION

OPERATION:

1. Air enters the precleaner.
2. Specially designed vanes move dirty air toward the impeller.
3. The spinning impeller spins the air creating centrifugal force to separate contaminants from the clean air.
4. Contaminants are blown out the discharge louver.
5. Clean air enters the intake to the air cleaner.

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WINCH MAINTENANCE - CARCO

WINCH OPERATION

The winch is controlled through the winch select switch and the winch control lever. The winch select switch is used to activate/deactivate the winch control lever and to activate the winch freespool function. The winch control lever when activate is used to wind in the winch.

The Carco winch functions differently than other winches operators may be familiar with. The following are notes for Carco winch operators to remember:

- Do not use freespool (mechanical jaw clutch) to drop a suspended load or if there is tension on the cable
- Use drive away (dynamic brake clutch) to lower a load, drive away from a load, to release tension in a cable.
- After using freespool or drive away allow the clutches to fully re-engage before winching in. This is especially important when the oil is cold.
- Use freespool only when pulling cable off the winch by hand
- Both drive away and freespool clutches are spring applied hydraulic release
- Read the operator's manual for complete winch operating instructions.

Refer to CAB CONTROLS – WINCH CONTROL LEVER , CAB CONTROLS – WINCH SELECT SWITCH in SECTION 2.

Refer also to OPERATING MACHINE – OPERATING WINCH and SKIDDING – CABLE SKIDDING in SECTION 2.

Refer to SECTION 13 of the SERVICE MANUAL and the winch manufacturer's service manual for additional service information.

WINCH SPECIFICATIONS CARCO STANDARD (GEAR MOTOR)

Maximum rated line pull
bare drum .....40000 lbs (18180 kg)
full drum.....21700 lbs (9840 kg)

Maximum cable size.....1 in (25.4 mm)

Drum Size and Capacities

Barrel Diameter ..... 9.0 in (228 mm)

Barrel Width..... 8.31 in (211 mm)

Cable Capacity
3/4 in (19.1 mm) .....275 ft (83.8 m)
7/8 in (22.2 mm) .....202 ft (61.6 m)
1 in (25mm) .....169 ft (51 m)

Winch Ratio 118.65:1

Dry Weight .....1430 lbs (649 kg)

Maximum pressure
to motor .....3300 psi (228 bar)

Maximum flow to motor .....46 USgpm(176 L/min)

WINCH SPECIFICATIONS CARCO HIGH SPEED (PISTON MOTOR)

Maximum rated line pull
bare drum .....40000 lbs (18180 kg)
full drum.....20000 lbs (9070 kg)

Maximum cable size.....1 in (25.4 mm)

Drum Size and Capacities

Barrel Diameter ..... 9.0 in (228 mm)

Barrel Width..... 8.31 in (211 mm)

Cable Capacity
3/4 in (19.1 mm) .....275 ft (83.8 m)
7/8 in (22.2 mm) .....202 ft (61.6 m)
1 in (25mm) .....169 ft (51 m)

Winch Ratio 66.98:1

Dry Weight .....1475 lbs (669 kg)

Maximum pressure
to motor .....4500 psi (310 bar)

Maximum flow to motor .....46 USgpm(176 L/min)

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ADJUST MENU



From the main menu page press the F1 button (Adjust) to access the adjust menu.



The following menu items can be selected:

- Engine Adjust Group*
- Fan Adjust Group* (if equipped)
- Service Adjust Group*

Use the Arrow Up or Arrow Down to select the menu item. Press OK to confirm the selection.

***NOTE:** Marked menu items can also be accessed from the main menu. Refer to COMPUTER – ADJUSTMENT MENU in SECTION 2 for more information.

Press the back button (or F1) to return to the main menu page.

ENGINE ADJUST GROUP*



FAN ADJUST GROUP* (IF EQUIPPED)



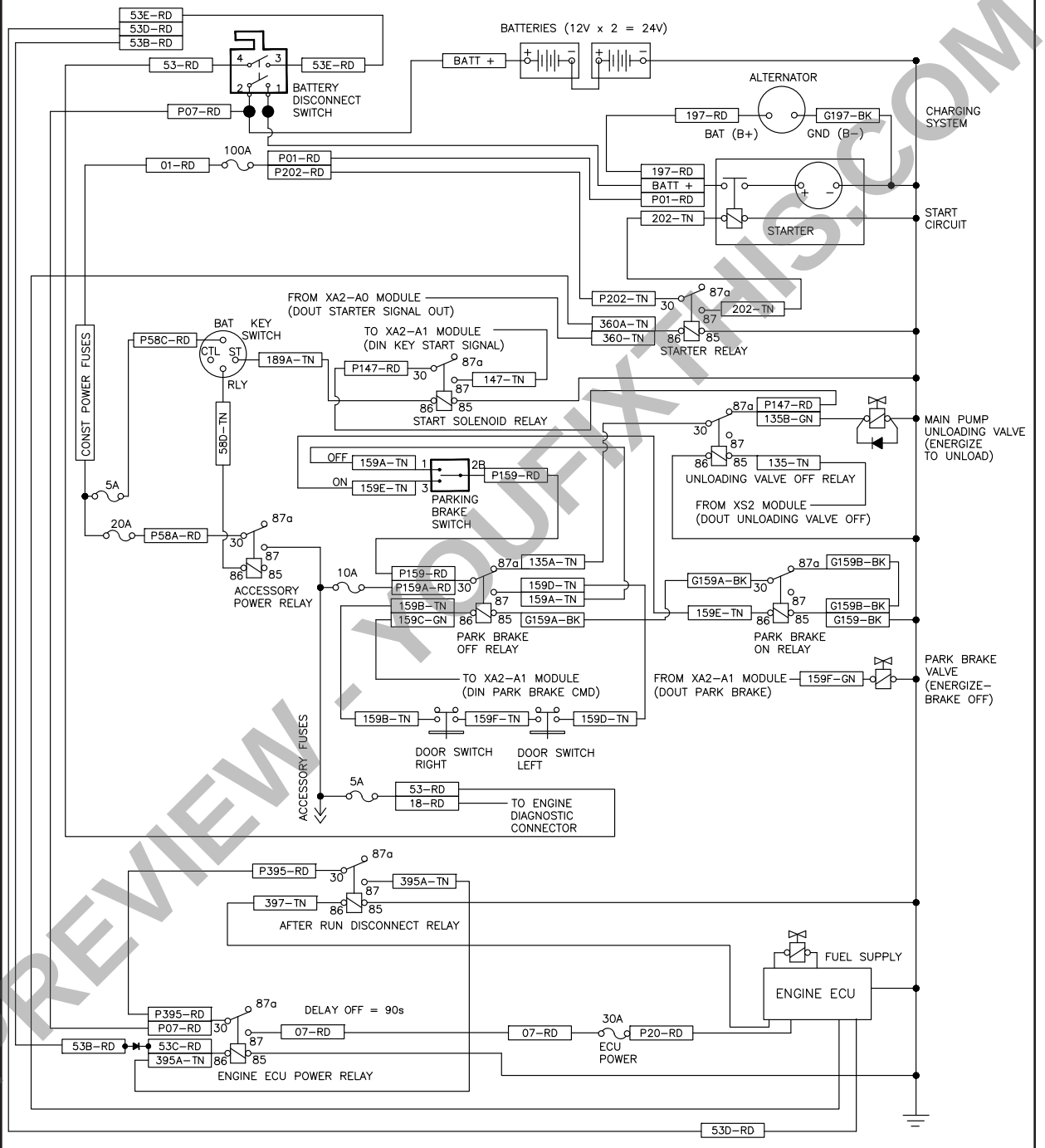
SERVICE ADJUST GROUP*



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START CIRCUIT -AT REST



620E-026

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HYDROSTATIC SETUP SHEET – SINGLE SPEED MECHANICAL TRANSMISSION

Make copies to use as a guide and a record of each setup.

Date	
Serial Number	
Technician	

Setup Preparation

- □ Ensure orifices have been removed from M1 ports in both motors
- □ Ensure drive motor minimum displacement set screws on the left and right drive motors are set correctly.
- □ Turn in the Pressure Override Screw fully and back out ¼ turn on both drive motors
- □ Ensure latest IQAN program is installed on the MD3
- □ Use IQANrun to login to the MD3. (Use IQANrun2 for Tier 3 and Tier 4i. Use IQANrun3 for Tier 2/Tier 4F)
- □ Maximize pump and motor currents (Hydrostatic Drive adjust group)
- □ Set RH mA Motor Reg Setup channel to 0 mA
- □ Set LH mA Motor Reg Setup channel to 0 mA
- □ Ensure Engine High Idle is set to 2200 rpm (Tier 2 set to 2100 rpm)
- □ Ensure Auto rpm is set to Max rpm
- □ Check maximum speed control readings (Travel Speed Control MAC 0% to 100%)

A. Drive pump charge pressure

	psi or bar
Drive Pump Charge Pressure	

B. Drive pump Hydraulic neutral

	psi or bar
Drive Pressure Forward	
Drive Pressure Reverse	

C. Drive pump beginning of displacement Forward/Reverse

	mA
Drive Pressure Fwd VIN start to increase	
Drive Pressure Rev VIN start to increase	

D. Drive pump maximum displacement Forward/Reverse

	rpm
Drive Motor RH Speed Forward	
Drive Motor RH Speed Reverse	

E. Drive pump high pressure relief

	psi or bar
Drive Pressure Fwd VIN	
Drive Pressure Rev VIN	

F. Drive motor beginning of displacement

METHOD A	mA	
Right Motor shifting point		
Left Motor shifting point		
METHOD B	psi or bar	mA
Left Motor M1 port pressure		
Right Motor M1 port pressure		
Drive Pressure VIN		

G. Drive motor maximum speed/minimum

	Right Drive Motor	Left Drive Motor
Drive Motor Speed (rpm)		
Exposed length(mm)		

H. Drive Motor Max Current

Right Drive Motor Max Current		
RH Motor Max Current (165cc)	RH Motor Max Current (210cc)	RH Drive Motor Speed (rpm)
1100 mA	1100 mA	
1030 mA	960 mA	
1020 mA	950 mA	
1010 mA	940 mA	
1000 mA	930 mA	
990 mA	920 mA	
980 mA	910 mA	
970 mA	900 mA	
960 mA	890 mA	
950 mA	880 mA	
940 mA	870 mA	
930 mA	860 mA	
920 mA	850 mA	
910 mA	840 mA	
Final should be: **940-1010 mA**	Final should be: **870-940 mA**	

I. Drive pump Max Current

	Drive Pump Max Current	
	Pump Max Current	RH Drive Motor Speed (rpm)
	600 mA	
	590 mA	
	580 mA	
	570 mA	
	560 mA	
	550 mA	
	540 mA	
	530 mA	
	520 mA	
	510 mA	
EARLIER PUMP COILS	Final should be: **535-560 mA**	
LATER PUMP COILS	Final should be: **560-600 mA**	

J. Parking Brake Release Time

Maximum Release Time [ms]	
Parking Brake Release Time	

COMMENTS:

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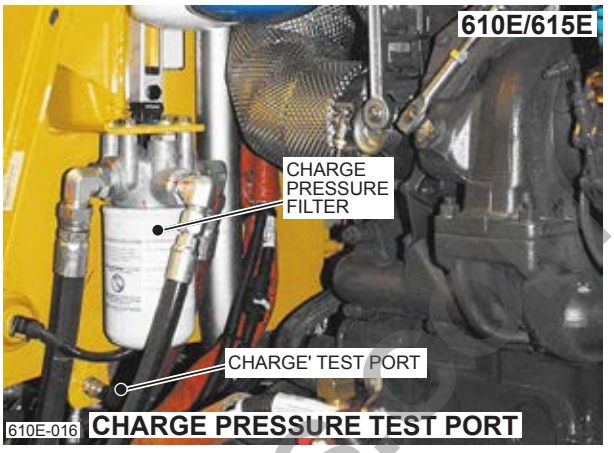
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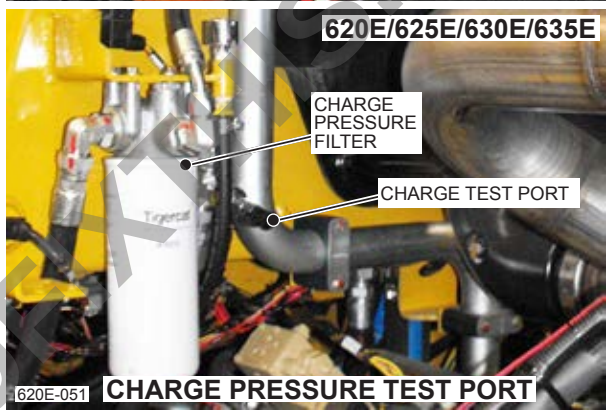
A. DRIVE PUMP CHARGE PRESSURE

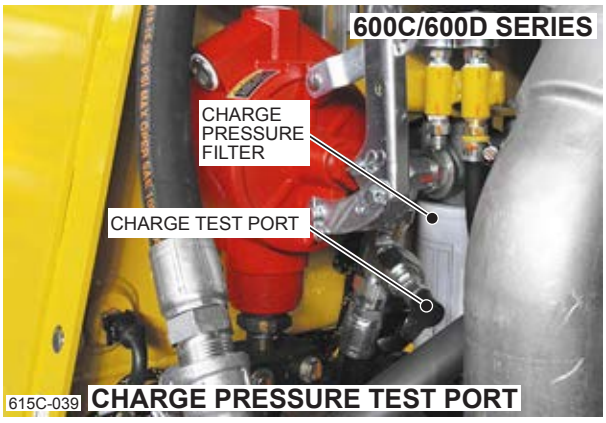
1. Connect a 0-1000 psi (0 -70 bar) gauge to the CHARGE test port.
2. Turn ON the battery disconnect switch.
3. Check that all personnel are clear of the machine before starting the engine.
4. Sound horn to warn personnel of machine start-up.
5. Insert the ignition key
6. Start the engine and allow to idle.
7. Check charge pressure.

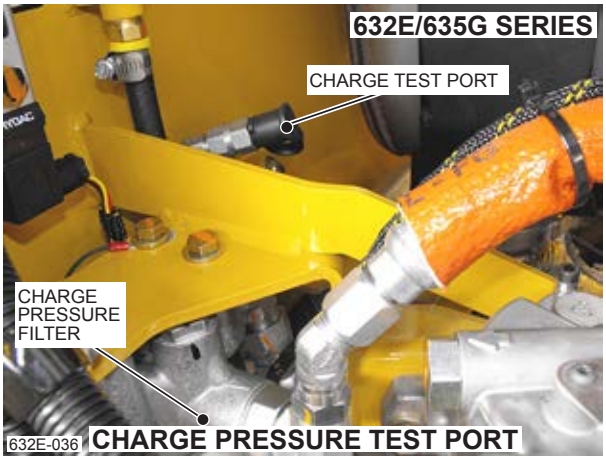
   Reading should be 300-400 psi (21-28 bar) @ low idle.
8. If charge pressure readings are not correct check the charge filter for proper operation.

   The charge pressure is non-adjustable.
9. Turn OFF the engine.
10. Remove the ignition key.
11. Turn OFF the battery disconnect switch
12. Remove the gauge from the charge pressure test port.









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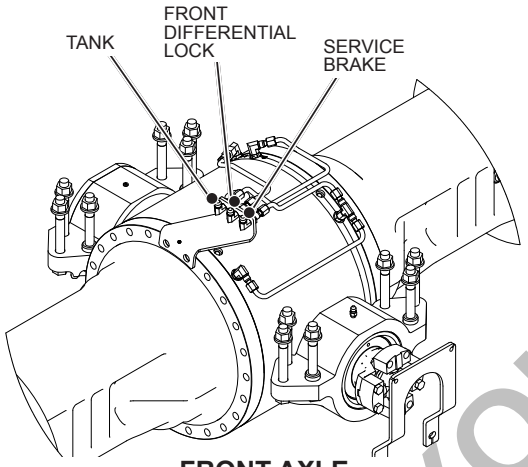
NOTE: This machine is equipped with a 10 minute AUTO-OFF feature which automatically deactivates the differential lock(s) after 10 minutes have passed.

IMPORTANT !

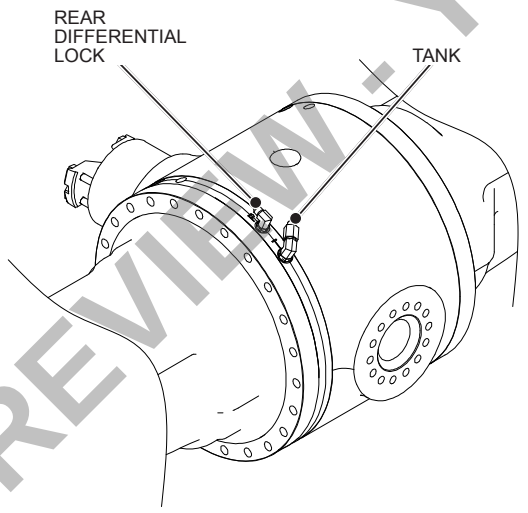
Use differential locks sparingly and for brief periods and only when additional traction is needed or serious damage may occur.

AXLE LUBRICATION

Refer to SCHEDULED MAINTENANCE and SERVICE AND LUBRICATION POINTS in SECTION 3 for more information.



E620C-47 **FRONT AXLE**



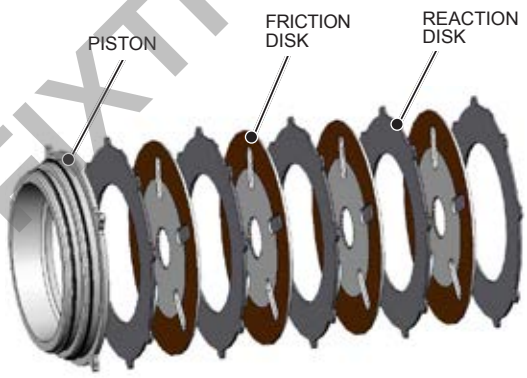
E620C-46 **REAR AXLE 620E/630E HYDRAULIC CONNECTIONS**

SERVICE BRAKES (FRONT AXLE ONLY)

The wet disk type service brakes (3) consist of a piston, reaction disks and friction brake disks with brake facing material. One brake assembly is located on each side of the differential within the housing.

The reaction disks are tanged to the housing interior, the friction disks are splined to the axle shaft and the piston is attached to the differential.

When the brake foot control is depressed, brake pressure oil moves the piston applying force to the brake friction and reaction disks, generating brake torque at the axle shaft. Maximum operating pressure is 1000 psi. For information on the brake hydraulic circuit refer to SECTION 9 of THIS MANUAL.

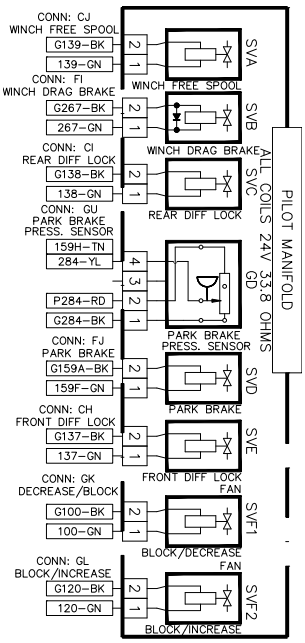


E620C-42 **SERVICE BRAKE**

Refer also to SERVICE BRAKE ~ CHECKING BRAKE AND ACCUMULATOR FOR PROPER OPERATION in SECTION3 of THIS MANUAL.

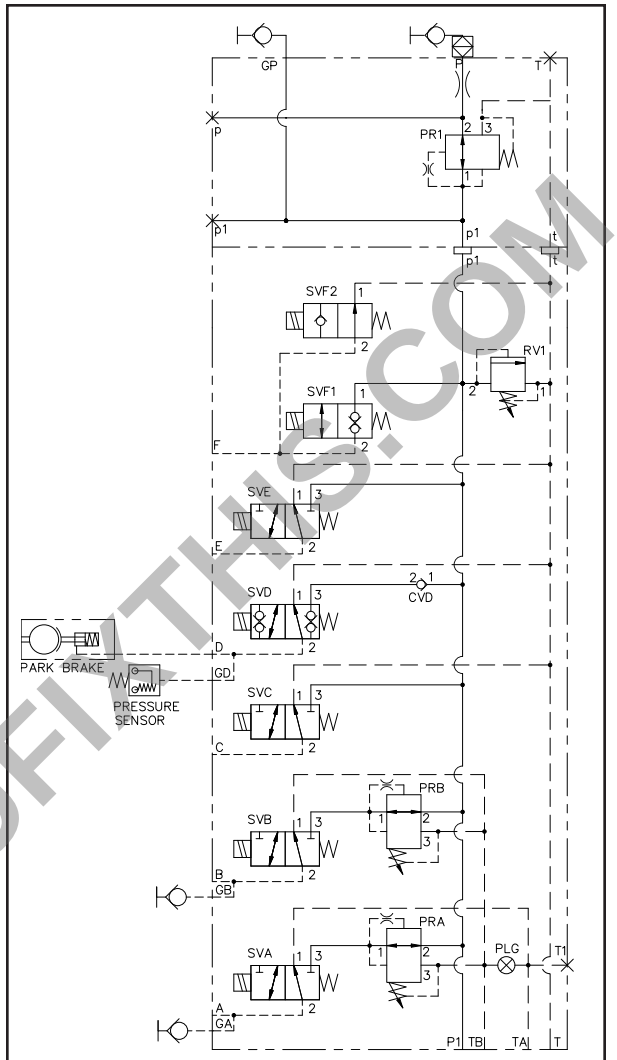
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MULTIFUNCTION MANIFOLD ELECTRICAL SCHEMATIC (LATER DESIGN)

630E-033

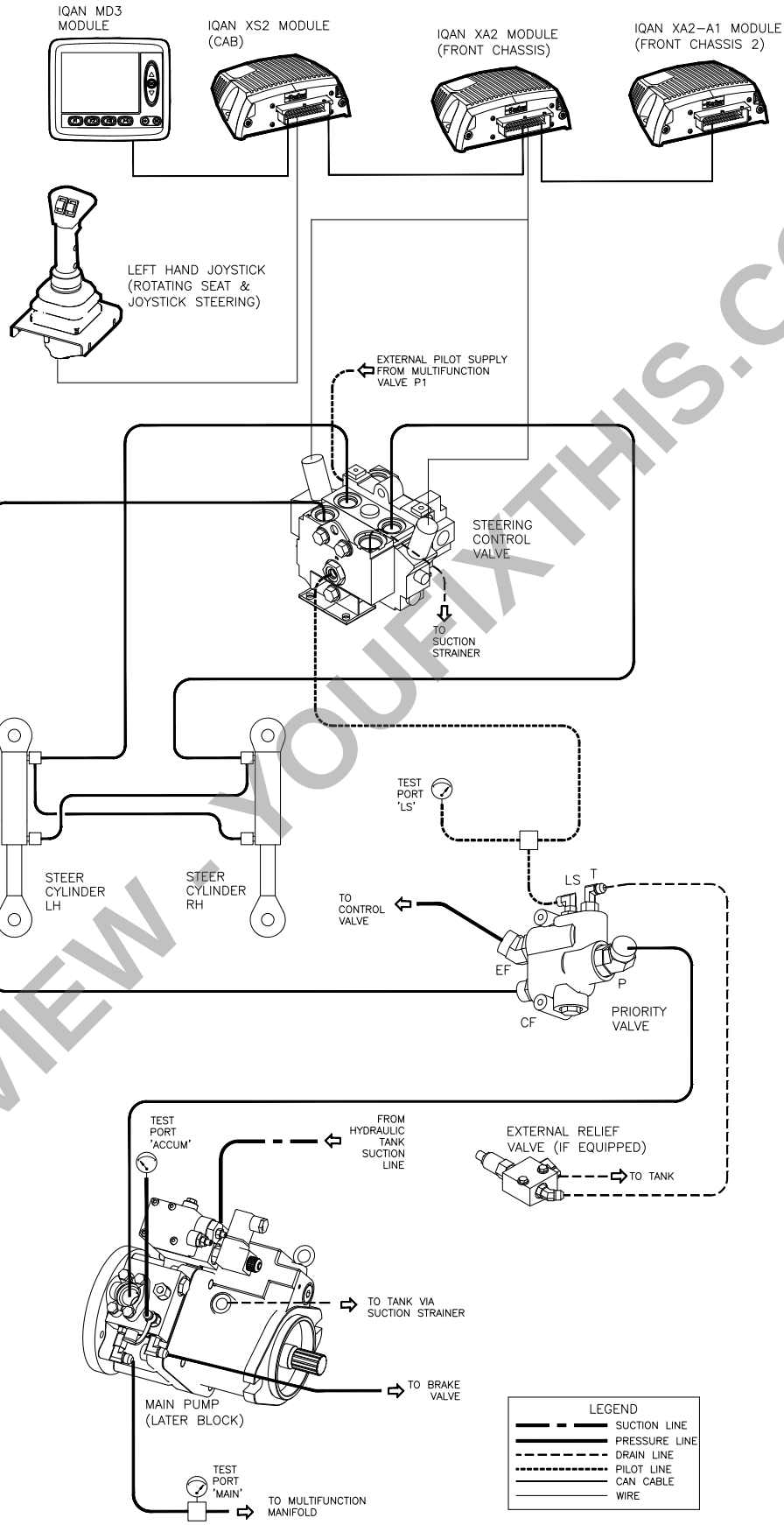


MULTIFUNCTION MANIFOLD HYDRAULIC SCHEMATIC (LATER DESIGN)

630E-032

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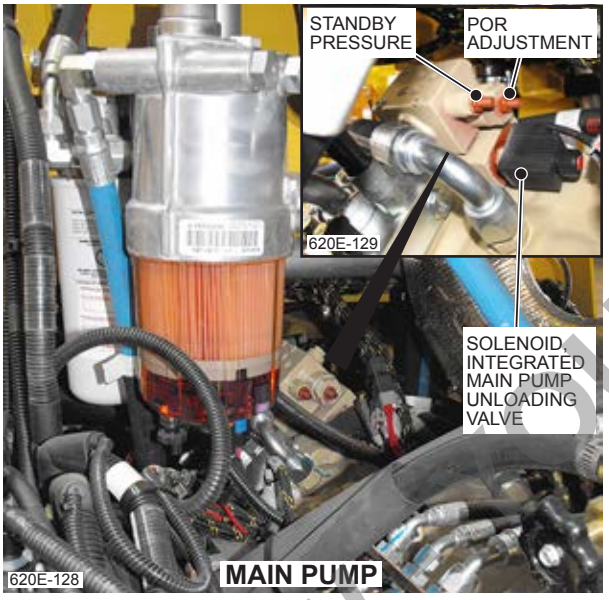


630E-046 **STEER CIRCUIT - ROTATING SEAT & JOYSTICK STEERING (LATER DESIGN)**

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a. Turn the main relief valve (located in control valve inlet) IN all the way until lightly seated.



b. Set the main pump POR to **4500 (310 bar) @high idle.**

NOTE: The (%) (Engine % Torque) reading, on the ENGINE FUNCTIONS (F1 from the main menu) screen, should be monitored while main pump POR is raised. If Engine Torque % readings jump by 15-30 % oil is flowing over the main relief. Main pump POR will need to be turned back to a pressure below this jump point in order to accurately set pressures.



20. Change the program mode from NORMAL to FUNCTION SETUP and press OK.

In this mode the main pump will always be loaded and the foot pedals will be deactivated.

Using the computer from the main menu navigate to ADJUSTMENT MENU (F2) – SERVICE SETTINGS – Program Mode – Function Setup Mode. Refer to COMPUTER – ADJUSTMENT MENU in SECTION 6 of THIS MANUAL.

IMPORTANT !
When setup program modes are chosen an information message is shown on the electronic display until the message is acknowledged.

In each program mode some controls are deactivated for safety during setup procedures. Attempting to use these controls will reactivate the information message.





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CIRCUIT DESCRIPTION - CARCO WINCH STANDARD (EARLIER DESIGN)

Oil is supplied to the winch hydraulic system by a variable displacement piston pump (main pump) via the priority valve. The priority valve directs oil to the control valve (winch, arch, dozer, grapple, boom). The control valve is equipped with an inlet relief valve which acts as a main relief.

Oil enters the inlet section of the control valve and is allowed to pass through the closed centre spool sections to the end section. Each electro-hydraulically controlled spool section has a closed centred 3-position spool with spring centring. Oil is prevented from returning to tank by plugs in the T1, T3 and TP ports. Internal pilot pressure supply, which is used to operate the spool sections, is generated by a pressure reducing valve located at the end section of the control valve.

A hydraulic winch motor is used to drive the winch during the winding IN of the cable. The hydraulic winch motor receives oil from the main pump via the winch spool section in the control valve.

When the winch select switch is placed in the I (ON) position the winch lever is activated and the computer control system illuminates the winch icon . When the operator pulls the winch control lever back a signal (VOLTAGE IN - Winch Lever) is sent to the computer control system. The computer control system generates a signal (CURRENT OUT - Winch In) which is sent to the winch in solenoid on the winch section of the control valve activating the WINCH IN function.

When the WINCH IN function is activated, an electrical current from the computer control system creates a magnetic force proportional to the current supplied within the solenoid. The corresponding solenoid shifts the actuator and allows the spool to be shifted by internal pilot pressure applied to the end of the spool. Shifting the spool directs oil from the main pump to the winch motor. Return oil is directed through the control valve to the inlet section T2 port where it returns to tank. The winch section of the control valve is equipped with a cartridge style relief valve on the A side to protect the winch circuit from over pressurizing.

When the winch select switch is placed in the O (OFF) position the winch lever is de-activated to prevent accidental operation of the winch.

Oil is supplied to the multifunction manifold from the main pump. The multifunction manifold is equipped with a pressure reducing valve and pressure relief valve which provide pilot oil to all functions.

Winch freespool is controlled by the winch select switch. When the winch select switch is placed in the (FREESPOOL) position a signal (DIGITAL IN - Winch Freespool) is sent to the computer control system. The computer control system illuminates the Winch Freespool On icon and generates a signal (DIGITAL OUT - Winch Freespool) which is sent to the winch freespool solenoid on the multifunction manifold. The pilot signal from the multifunction manifold releases the freespool clutch, allowing the cable to unwind freely. The freespool function is intended for use in pulling the cable by hand only and must not be used when the cable is loaded. Improper use of the freespool function will result in damage to the winch.

⚠ WARNING

When operating Carco winches the load MUST be removed from the cable before placing the winch control in the freespool position to avoid damage to the winch which could cause a safety hazard. Attempting to engage or disengage the freespool function with a load on the cable will cause damage to clutch halves, piston, final planetary gearing and/or output shaft. Damage to freespool components can cause a sudden loss of load control which could result in death or serious injury.

When the winch select switch is placed in the I (ON) position the winch lever is activated and the computer control system illuminates the winch icon . When the operator pushes and holds the winch control lever FORWARD to release the dynamic brake a signal (VOLTAGE IN - Winch Lever) is sent to the computer control system. The computer control system generates a signal (DIGITAL OUT - Winch Drag Brake) which is sent to the winch drive away solenoid valve. The winch driveaway solenoid valve is supplied by the multifunction manifold via a separate pressure reducing valve. The pilot signal from the driveaway solenoid valve releases the dynamic brake for dropping a load on the fly or drive away from a load with slight tension on the cable.

Refer also to SECTION 6 of THIS MANUAL for complete electrical schematics and more detailed information about the computer control system.

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