

Broce Broom

OPERATION & PARTS MANUAL

470 *Series*

Front-Mount Broom

SN: 601263+



www.brocebroom.com

BROCE MANUFACTURING COMPANY

BROCE BROOM LIMITED TWELVE-MONTH WARRANTY

For a period of twelve (12) months or 1,000 hours whichever comes first, from the date of delivery of product to the original user, Broce Manufacturing of Dodge City, Kansas warrants each product to be free from manufacturing defects, subject to the limitations contained in this policy. This limited warranty covers parts and labor.

This warranty does not apply to defect caused, in whole or in part, by unreasonable use while in the possession of the user, including, but not limited to, failure to properly set up product, failure to provide reasonable and necessary maintenance, normal wear, routine tune ups or adjustments, improper handling, accidents, operation at speed or load conditions contrary to published specifications, improper or insufficient lubrication, or improper storage. This warranty is not a guarantee that the performance of each product will meet the expectations of the purchaser.

Broce Manufacturing shall not be liable for consequential damage of any kind, including, but not limited to: consequential labor costs or transportation charges in connection with the replacement or repair of defective parts, lost time or expense which may have accrued because of said defects. In no event shall Broce Manufacturing's total liability hereunder exceed the product purchase price.

Many components used by Broce Manufacturing are subject to the warranties of their respective manufacturers. These warranties will be considered void if the product is modified or repaired in any way not expressly authorized, or if closed components are disassembled prior to return. Closed components include, but are not limited to gearboxes, hydraulic pumps, motors, cylinders and actuators.

Our obligation under the warranty is expressly limited, at our option, to the replacement or repair at Broce Manufacturing of Dodge City, KS or at a service facility designated by us. We are not responsible for unauthorized repairs or replacements. Any implied or statutory warranties, including any warranty of merchantability or fitness for a particular purpose, are expressly limited to duration of this written warranty. We make no other express warranty. This warranty cannot be extended, broadened, or changed except in writing by an authorized officer of Broce Manufacturing.

Broce Manufacturing Co. Inc.
201 West Oklahoma
Fairview, OK 73737
(580) 227-3711

Broce Manufacturing Company, Inc.

WARRANTY REGISTRATION

Purchased From (Dealership)

Company: _____
Address: _____
City: _____ State: _____ Zip: _____
Delivery Date to Dealer: ____/____/____ Unit Hours: _____
Model Number: _____ Serial Number: _____

Purchaser

Company: _____
Address: _____
City: _____ State: _____ Zip: _____
Delivery Date to Dealer: ____/____/____ Unit Hours: _____

Purchaser - Type of Business

Construction/Highway		Rental		Asphalt Contractor	
Equipment Dealer		Municipality		Other	

1. *The Purchaser has been instructed and/or has read the manual and understands proper preventive maintenance, operation and safety precautions.*
2. *The Warranty and Limitations of Liability are found in the Warranty pages enclosed in the Parts and Operators Manuals.*
3. *Broce Manufacturing Co. Inc. reserves the right to make design changes or modifications to Broce products at any time without incurring any obligation to make similar changes or modifications to previously sold units.*
4. *If this Document is not signed and returned to Broce Manufacturing Co. Inc., the warranty begins at the date of delivery to the Dealership.*

I hereby acknowledge acceptance of above and conditions in the Warranty Policy

Purchaser/Owner: _____

Dealer Representative: _____

**NOTICE: THIS VEHICLE DOES NOT CONFORM TO ALL
SAFETY AND EMISSIONS STANDARDS APPLICABLE TO
ON-ROAD VEHICLES IN THE UNITED STATES.**

OPERATOR QUALIFICATIONS

Operation of this equipment shall be limited to competent and experienced persons. In addition, anyone who will operate or work around this equipment must use good common sense. In order to be qualified, he or she must also know and meet all other requirements, such as:

1. Some regulations specify that no one under the age of 16 may operate power machinery. It is your responsibility to know what these regulations are in your area or situation.
2. Current OSHA regulations state in part: "At the time of initial assignment and at least annually thereafter the employer shall instruct EVERY employee in the safe operation of servicing of all equipment with which the employee is or will be involved."
3. Unqualified persons are to STAY OUT of the work area.
4. A person who has not read and understood all operating and safety instructions is not qualified to operate the machinery.

**FAILURE TO READ THIS MANUAL AND ITS SAFETY INSTRUCTIONS
IS A MISUSE OF THE EQUIPMENT AND WILL VOID FACTORY WARRANTY.**

SIGN OFF SHEET

As a requirement of OSHA, it is necessary for the employer to train the employee in the safe operation and safety procedures with this equipment. We include this sign off sheet for your convenience and personal record keeping.

Date	Employer's Signature	Employee's Signature

SAFETY PRECAUTIONS	11-13
MACHINE SPECIFICATIONS	15-16

OPERATIONS & MAINTENANCE

MACHINE OPERATIONS

CONTROLS	17
INSPECTION	18
STARTUP PROCEDURE	19
SWEEPING CORE	20
BROOM.....	21
UNIVERSAL WHEEL SPACERS	22

DISPLAY SCREEN

BUTTON NAVIGATION	23
DISPLAY SCREEN.....	24-25
HYDRAULIC TEMP SCREEN	26-27

HYDRAULIC SYSTEM DETAILS	28-31
--------------------------------	-------

MAINTENANCE

ENGINE AIR CLEANER	32
CABIN AIR CLEANER.....	33
SERVICE SCHEDULE.....	34
RADIATOR & HEAT EXCHANGER	35
LUBRICATION.....	36
LUBRICATION CHART.....	37
FASTENERS, CORE DRIVE, ETC.	38
ENGINE & TIRE.....	39
AIR CONDITIONER PREVENTIVE	40
TROUBLESHOOTING - A/C SYSTEM	41
A/C WARRANTY.....	43
BROOM WAFER REPLACEMENT	45-46
TROUBLESHOOTING.....	47-50

TABLE OF CONTENTS

PARTS CATALOG

CAB ASSEMBLY	52-53
CAB FAIRING ASSEMBLY	54
CAB GLASS.....	55
ROOF WITH FAIRING	56
CABIN DOOR ASSEMBLY.....	57
SEAT BASE ASSEMBLY	58
OPERATOR COMPARTMENT	59
RAM DISPLAY ASSEMBLY	60
FOOT PEDAL & BRACKET ASSEMBLY	61
RH CONSOLE ASSEMBLY	62-63
HYDRAULIC FILTER MOUNT.....	64
FUEL TANK ASSEMBLY	65
HYDRAULIC TANK ASSEMBLY.....	66
CHASSIS	67
ENGINE HOUSING ASSEMBLY.....	69
JOHN DEERE ENGINE ASSEMBLY	70-71
JOHN DEERE DOC	73
CUMMINS ENGINE ASSEMBLY	74-77
RELKO ENGINE ASSEMBLY	78-81
CABIN AIR ASSEMBLY	83
NON-SIDE SHIFT LIFT ASSEMBLY	84-85
SIDE SHIFT LIFT ASSEMBLY.....	86-87
QUICK CHANGE ASSEMBLY.....	88
BROOM CORE WAFER & SPACER	89
BROOM CORE SHEILD ASSEMBLY	90-91
HYDROSTATIC CONTOL ASSEMBLIES.....	92
WINDSHIELD WIPER	93
BRAKE CONTROL.....	94
REAR WHEEL HUB ASSEMBLY	95
REAR AXLE ASSEMBLY & TIRES	96-97

TABLE OF CONTENTS

HYDRAULIC & FUEL TANK CABINET ASSEMBLY	98-99
WATER SYSTEM	100-101
FRONT AXLE ASSEMBLY.....	102-105

HYDRAULIC SYSTEM

HYDRAULIC SYSTEM COMPONENTS	107
HYDRAULIC SYSTEM SCHEMATICS (FRONT SECTION).....	108
HYDRAULIC SYSTEM JOHN DEERE (MID SECTION A)	109
HYDRAULIC SYSTEM CUMMINS (MID SECTION A).....	110
HYDRAULIC SYSTEM REHLKO (MID SECTION A).....	111
HYDRAULIC SYSTEM SCHEMATICS (MID SECTION B).....	112
HYDRAULIC SYSTEM SCHEMATICS JOHN DEERE (BACK)	113
HYDRAULIC SYSTEM SCHEMATICS CUMMINS (BACK)	114
HYDRAULIC SYSTEM REHLKO (BACK)	115
HYDRAULIC SYSTEM COMPONENTS (SHEETS).....	116-117

WIRING SYSTEM

BROOM SPEED CONTROL HARNESS.....	119
CONSOLE FRAME HARNESS.....	120-121
ENGINE TO CAB HARNESS.....	122
GPS HARNESS.....	123
MONITOR HARNESS	124
REAR TAIL LIGHT HARNESS	125
STEERING TO CAB HARNESS	126
STEERING COLUMN HARNESS.....	127
MAIN FUSE HARNESS.....	128

NOTES	129
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SAFETY PRECAUTIONS



CAUTION



1. Keep all shields in place.
2. Stop machine, turn off engine and remove key to repair or clean.
3. Keep hands, feet, and clothing away from power driven parts.
4. Keep off of machinery unless a platform is provided.
Do not crawl on equipment.
5. When equipment becomes disabled, shut off power before attempting repairs.
6. Check for hydraulic leaks with a piece of paper and not your hands.
Hydraulic oil under pressure can cause serious injury!

**BE A SAFE OPERATOR BY
THINKING BEFORE ACTING AND
BY READING YOUR OPERATORS
MANUAL.**

AVOID ACCIDENTS

Most accidents, whether they occur in industry, on the farm, at home, or on the highway, are caused by the failure of some individual to follow simple and fundamental safety rules or precautions. For this reason, most accidents can be prevented by recognizing the real cause and doing something about it before the accident occurs. Regardless of the care used in the design and construction of any type of equipment, there are many conditions that cannot be completely safe guarded against without interfering with reasonable accessibility and efficient operation.

A careful operator is the best insurance against an accident.

The complete observance of one simple rule would prevent many thousand serious injuries each year.

Never attempt to clean, oil, or adjust a machine while it is in motion!



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SAFETY PRECAUTIONS

BEFORE OPERATING THIS MACHINE

Read this manual completely. It contains information on safety and maintenance procedures which must be followed to insure years of trouble free service.

WARNING STATEMENTS

READ AND UNDERSTAND THE FOLLOWING
WARNING LABELS BEFORE OPERATING THIS MACHINE



WARNING

**OPERATOR MUST BE SEATED WITH SAFETY BELT ADJUSTED
PROPERLY & SECURE WHEN ENGINE IS RUNNING.**

The seat belt and roll over protection structure were designed to be used together to prevent operator injury in the event of an accident. The seat belt must be worn at all times in order to hold the operator in place so that the roll bar can protect the operator. Adjust the slack out of the seat belt by pulling the unused portion of the belt to the left. The belt should fit snug over the operator's hips.



WARNING

**TRAVEL SPEED MUST BE GOVERNED BY
GOOD JUDGMENT. DO NOT OVERSPEED**

Although a high travel speed is available with the Broce Broom, we caution all operators to use good judgment, especially on rough terrain.



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SAFETY PRECAUTIONS



WARNING

The operator must be aware at all times of any people, vehicles, or any other objects which might be in the path of flying debris from the sweeper. The sweeper can throw small rocks and other objects several feet. This debris can cause serious injury to people and damage to property. Always check that the area around, and in front of the broom core is free of obstructions before adjusting the broom angle or activating the core.



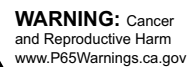
WARNING

NO RIDERS!

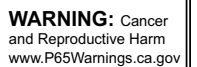
**UNDER NO CIRCUMSTANCES SHOULD PASSENGERS BE
ALLOWED TO RIDE ON THIS MACHINE.**



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Engine Horsepower	74 HP
Machine Length	18'6"
Machine Height	8' 6"
Machine Shipping Width Side Shift	8' 6"
Machine Shipping Width Non-Side Shift	8' 8"
Machine Weight	8,750 lbs
Machine Weight w/ Water	9,452 lbs
Brush Diameter	10-1/4" ID x 32" OD
Broom Length	8'
Broom Drive Motor	2 Speed Hydraulic
Broom Angle	35° Degrees
Steering	Hydraulic Orbital
Fuel Capacity	30 Gallons
Hydraulic Oil Capacity	25 Gallons
Speed	18 mph
Water Capacity	145 Gallons



MACHINE SPECIFICATIONS (FLUID CAPACITIES)

Fluid Capacities

Component	Fluid Type	Quantity
Hydraulic Tank	DYNA-PLEX 21C Cursa Hydraulic Oil Multifunctional Medium	25 Gal.
Fuel	#2 Diesel	30 Gal.
Radiator	ETHYLENE GLYCOL 50/50 MIX	2.5 Gal.
Engine Crankcase	API Classification CI-4, CE or CD CCMC Specification D4 or D5	10 Qts.
Front Axle	85/140 Gear Lube	5.9 Qts. *

* 2 Quarts is approximate. Fill to the level of the filler plug.

ATTENTION

R-134a A/C Refrigerant Factory Charge:
John Deere = 3.0 lb (1.36kg)

Ester Oil Change:
Compressor = 8.0 oz
System = 4.0 oz



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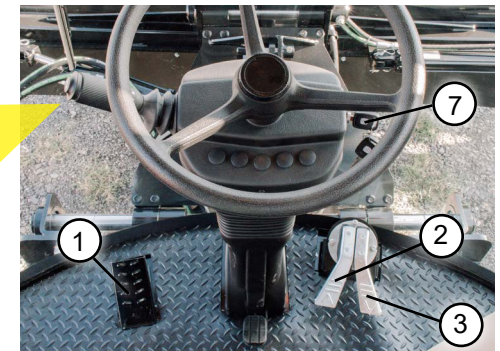
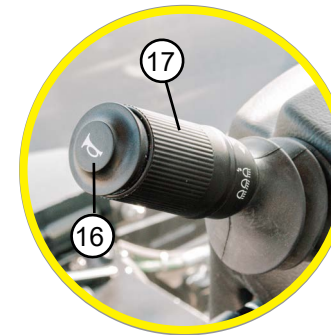
« 16 »

MACHINE OPERATION (CONTROLS)

The Broce Broom is hydro-statically driven. The directional control is achieved through the use of the Forward & Reverse pedal, located near the operator's foot. Arrows on the pedals indicate direction of travel. Rate of travel is governed by the distance the pedal is depressed and the throttle position. The pedal will return to neutral when the pressure is released.

Familiarize yourself with the following controls before operating this machine.

- | | |
|--|------------------------------|
| 1) Brake pedal | 12) Windshield Wiper Control |
| 2) Forward Pedal | 13) Heater & AC Controls |
| 3) Reverse Pedal | 14) USB Ports |
| 4) Broom on/off | 15) Radio |
| 5) Throttle | 16) Horn |
| 6) Parking brake (lower left side of seat) | 17) Headlights |
| 7) Ignition switch | 18) Water Spray |
| 8) Two speed switch | 19) Work Lights |
| 9) Broom position Joystick | 20) Rear Lights |
| 10) Side Shift Joystick | 21) Caution Lights |
| 11) Broom Control Dial | 22) Quick Change |



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« 17 »

MACHINE OPERATION (INSPECTION)

Prior to initial startup of the machine each day, the following inspection checks must be performed:

1. Visually inspect the entire machine for damage and fluid leaks. Repair critical items before machine is used.
2. Check all fluid levels; engine oil, radiator, and hydraulic reservoir, etc. Fill fluid reservoirs if necessary.
3. Check wheels and tires for excessive wear or damage; also check air pressure and lug nut tightness.
4. Seat belt, core cover, and rubber rock guard should be installed and serviceable.
5. Lights, windshield wipers, reverse alarm, horn, etc. must be in operating condition.
6. Test brakes before operating this machine. Refer to BRAKES area in the MAINTENANCE Section in this manual for details.
7. Check water system filters, nozzle screens and cycle system.

Any defects or damage found during this inspection must be repaired before operating this machine.

MACHINE STARTUP



CAUTION



1. Before starting the engine, be sure the parking brake is set (pull handle up to vertical position). The brake pedal should be depressed and the right foot is not on a control pedal.
2. Turn the key switch to the starting position (all the way forward). Add fuel as necessary using the hand operated throttle near the operator's right hand. Release the key switch when the engine starts.



IMPORTANT



Do not exceed 1500 RPM until the hydraulic fluid has warmed up.



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MACHINE OPERATION (STARTUP PROCEDURE)

1. Choose the desired gear using the two-speed switch located on the right-hand side of the dashboard. Low gear is normally used while sweeping in order to maintain sufficient RPM, to run the hydraulics. Leave the two-speed in Low gear until the operator is familiar with the machine. High gear is used for travel only. Shifting from Low to High can be accomplished at any speed; however, shifting from High to Low should be done at a speed lower than 5 mph. Shifting at higher speeds can damage the drive motor. Optimal sweeping is normally achieved at manufacturer's recommended engine speed of 1800-2000 rpm in Low gear with forward travel speed of 2 ½ -5 mph.
2. After gear selection, raise engine RPM to about half throttle. Release parking brake. Slowly depress a control pedal in the desired direction. Engine speed may be adjusted to obtain desired travel speed.



IMPORTANT



**Do not propel this machine with the parking brake engaged.
This will damage the rear brake assemblies**

3. Do not over speed! Although a high rate of travel is available with a Broce Broom, we caution all operators to use good judgment, especially on rough terrain.
4. If the control pedal is released while traveling, the machine will slow down rapidly. This is called "Dynamic Braking". Using Dynamic Braking at low speeds is fine as long as the operator is ready to use the brake pedal if needed.
5. Do not reverse the direction of travel while the broom is in motion. This could damage the drive motor and cause brush distortion and imbalance.
6. The core should be in the raised position and the lift cylinder safety collar should be placed on the lift cylinder. This prevents the core from drifting down to the ground and creating a "flat spot" in the brushes while the machine is parked. These flat spots can cause the broom to bounce or hop while sweeping.
7. To stop the engine, turn the key back to the center position. The parking brake must be set prior to leaving the operator's seat.



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MACHINE OPERATION (SWEEPING CORE)

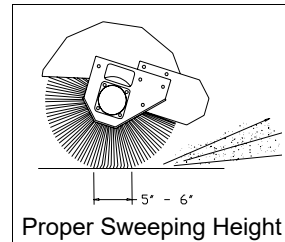
SWEEPING CORE OPERATION

RAISE/LOWER

To raise the sweeping core, position and pull the joystick to the “UP” position until the core is raised all the way. The joystick will return to the center position and core height will be maintained.

To lower the core during normal sweeping conditions, push the joystick to the “DOWN” position until the core reaches the desired position.

The figure shows the optimum broom height for most sweeping conditions. Using the proper height will also extend the life of the broom.



ANGLE OPERATION OF BROOM

The broom core may be set at any angle from 37° left to 37° right, simply moving the handle in the corresponding direction. Release the handle when the desired angle is achieved.

BROOM ON/OFF

The Broom Core motor is activated when the switch is moved to the “BROOM ON” position.

SIDE TO SIDE OPERATION OF BROOM

The sweeper is equipped with a side shift mechanism which allows the broom to move 14” to the left or right. This function is activated with the side shift joystick.



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MACHINE OPERATION (BROOM)

SWEEPING TIPS

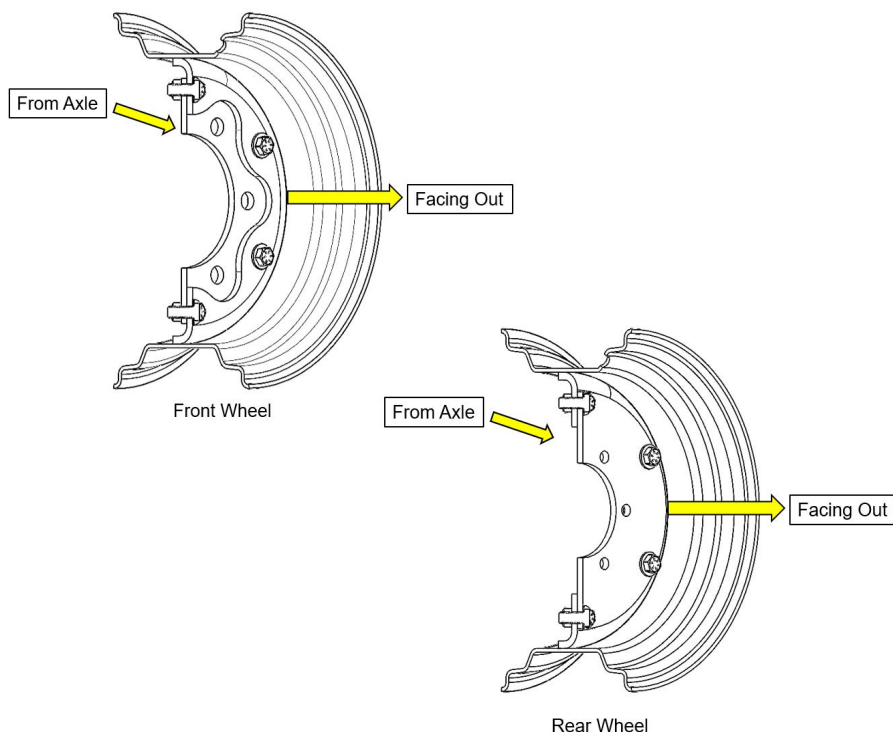
Optimal sweeping is normally achieved at manufacturer's recommended engine speed of 1800-2000 rpm in Low gear with forward travel of 2 ½ - 5 mph.

1. If the broom starts to “hop” or “bounce”, the propelling speed is too high, reduce the forward travel speed, but maintain high engine speed. Slowing the forward travel speed of the machine down will help prevent you from having to make a second pass over the sweeping area with the broom.
2. In areas where the dirt is “caked”, try to clean it by going over it a second or third time.
 - When changing the direction of travel, allow the machine to come to a complete stop before moving the directional control pedals. Failure to completely stop the machine before changing direction can cause premature failure of the drive components.
 - If the dust cloud becomes so thick that it obscures your vision, use the water sprinkling system or stop the machine until the dust clears. If possible, angle the sweeper so that the dust and debris is swept downwind.
 - Ensure that the operator of the machine is properly trained and follows all safety procedures described in this manual.



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MACHINE OPERATION (UNIVERSAL WHEEL SPACERS)



Wheel Change and Maintenance

If needed to change the wheel on the unit for replacement or maintenance, note that the wheels are the same but there are different spacer plates for the bolt patterns of the front and rear axles.

Wheel Change

To change the wheel, make sure to take off the current spacer and bolt it on the new wheel. The front wheel spacer would be placed in the inside of the wheel mounting plate, and the rear wheel spacer should be placed on the outside of the wheel mounting plate.

NOTE

Make sure to use the current bolts or the ones we provided.



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DISPLAY SCREEN (NAVIGATION)



Soft Key Commands

Columns of vertical commands may be located to the left and/or right of the display. They will change according to the options available for the screen being displayed.

Function Keys

The function keys correspond to the soft key commands and allow selections to be made accordingly.

MENU Key

Pressing the MENU key at any time displays the list of menu options.

ENTER Key

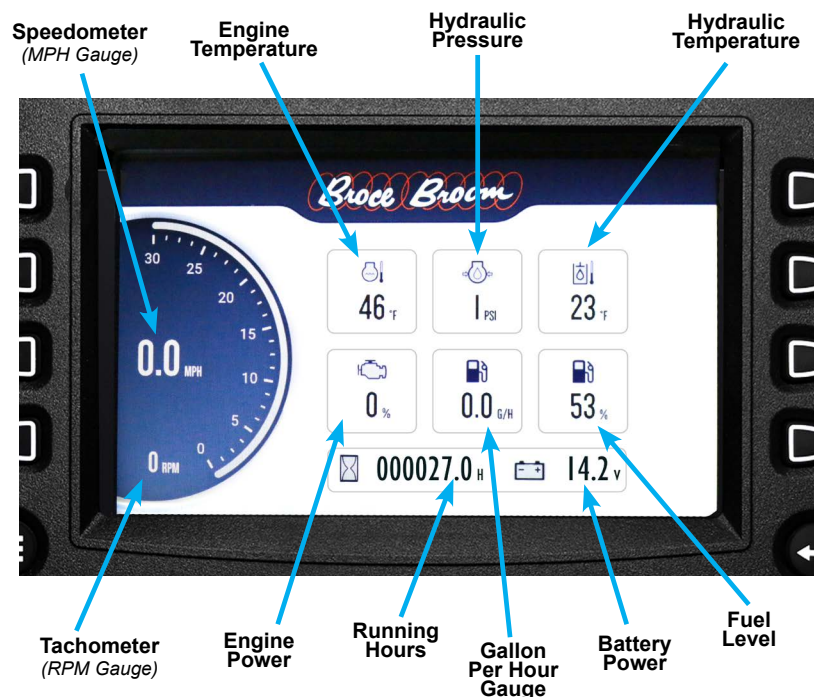
Pressing the ENTER key will select the option displayed much like the ENTER key on a keyboard. The ENTER key also brings up the soft keys. Press once to display the left and right arrows. Press twice to display all the soft keys. Press three times to hide all the soft keys.



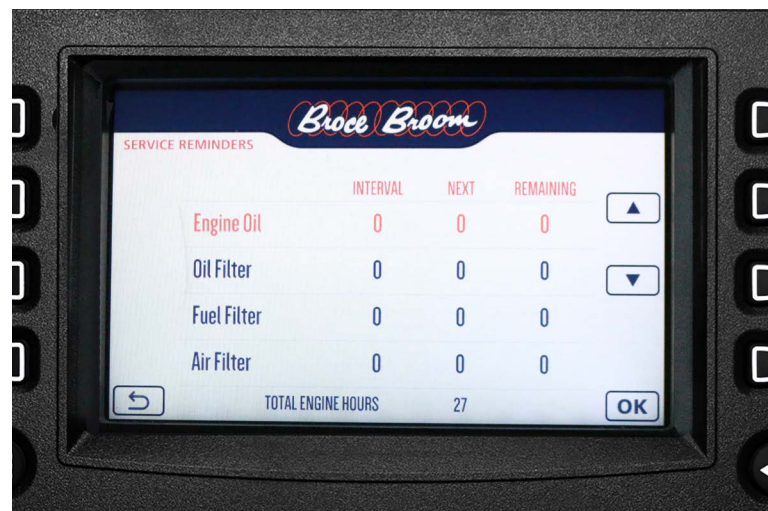
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DISPLAY SCREEN

Main Screen



Service Reminder Screen



This screen show how many hour each filter has been used. Please reference the manual when to change each one.



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DISPLAY SCREEN

Active Faults Screen



This screen shows all current active faults and how many times the fault has been shown.

Historic Faults Screen



This screen shows the history of all faults that have been displayed since the machine has been running and how many times the fault has been shown.



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DISPLAY SCREEN

Hydraulic Temperature Screen



Hydraulic Temperature

The hydraulic temperature should not exceed 210°F.

If the temperature exceeds 210°F you will receive a warning message shown on Fig.1.2 below.

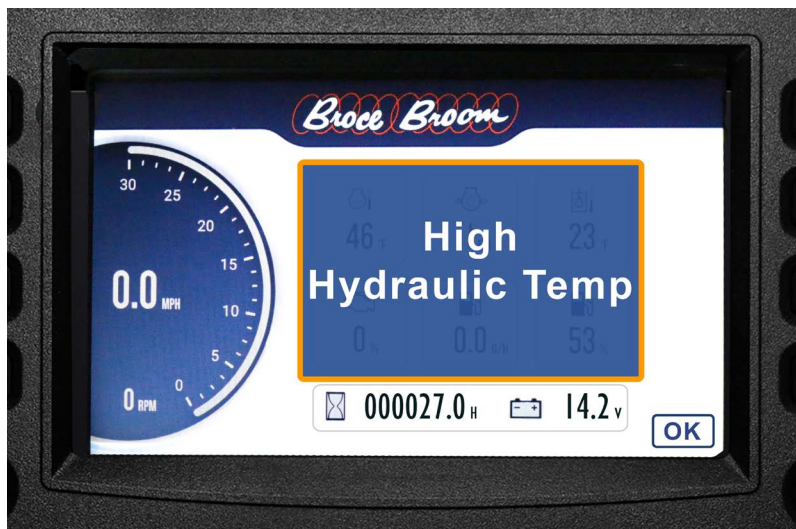


Fig. 1.2



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DISPLAY SCREEN

When receiving this message please turn the machine off and let it cool down or it can cause permanent damage to the machine. After your machine has cooled down check your hydraulic fluid level, then inspect all the hydraulic hoses and make sure there are no leaks.



! WARNING !

Hydraulic system parts and connections can contain high pressures which, if suddenly and unexpectedly released, can cause serious injury or death.



! WARNING !

Hydraulic fluid under pressure can cause skin injection injury.

If you suspect an injury, no matter how minor it may seem, get medical attention immediately. Failure to do so can lead to gangrene and loss of limb.



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HYDRAULIC SYSTEM DETAILS

The Hydraulic System on this machine operates the hydrostatic drive, steering circuit, brush functions, and brush rotation. It employs two supply pumps sharing the same reservoir. In order to simplify the description of this system, it will be separated into five parts.

Hydrostatic Drive:

The current production machines are equipped with Rexroth drives. A current schematic and trouble-shooting guide are included in this manual.

This system utilizes a Rexroth variable displacement piston pump and a fixed displacement piston motor. Oil, supplied from the reservoir, passes through a 10-micron filter with a bypass setting of 3 psi, before entering the pump. Pressurized oil from the pump is delivered to the motor by high pressure hoses.

Steering Circuit:

Oil from the reservoir supplied to the auxiliary pump is pulled through the suction filter with a 10 micron filter. The circuit has a flow divider, which delivers priority oil to the steering circuit and the to the broom circuit. The priority flow is 4 gpm. The steering unit is an orbital type metering valve that supplies oil to the steering cylinders and also has power beyond capabilities that are used to control the brush functions.



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HYDRAULIC SYSTEM DETAILS

Brush Functions:

Forward movement of the joystick lever will lower the core. Pulling the lever back will raise the core.

Movement to the right will angle the core to the right, and movement to the left will angle the core to the left.

Brush Rotation:

The Broom Switch must first be turned on. The Broom Control Dial can be adjusted to rotate the broom in either the forward or reverse directions.

Placement of the dial will also determine speed of the broom rotation.

Side Shift Function:

Actuation of the side shift joystick will move the broom from left to right.



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SYSTEM DESCRIPTION:

Pump:

The hydraulic system operates on a 2.48 cubic inch gear pump that is mounted on the rear of the hydrostatic pump. This pump produces flow for the steering, broom functions, and broom rotation.

Steering Unit:

The steering unit is an open center type motor that has power beyond and dead steering capabilities. The power beyond capability is used to power the brush functions.

Steering Cylinder: Two 2" X 6" double acting cylinders

Brush Function Valve: The brush function valve is a five-spool mono block design that receives its oil supply from the steering unit power beyond port.

Lift Cylinder: 3" X 8" double acting cylinder

Shift Cylinder: 2" X 16" double acting cylinder

Brush Rotation Valve: The brush control valve is a single spool.

Core Motors: SAE styles mount with a splined shaft used on the internal drive cores.

Return Filters: The return filter is a 10-micron, spin-on type, with a 25 psi bypass attached to the return hydraulic hose.

Suction Filter: There are two suction filters. The main pump suction filter is a 7 micron spin-on filter. The auxiliary pump suction filter is a 100 mesh with a 5psi bypass.



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Reservoir: The hydraulic reservoir has a 25 US gallon capacity, lockable cap, sight level indicator with thermometer. The reservoir outlet feeds two suction filters.

Hoses & Adapters: All hose adapters are boss O-ring/flat face in the cylinders, valves, steering unit, pumps, and motors. All the hoses are flat-face type design.

System Plumping: The system plumbing diagrams can be found in the Hydraulic Section of the parts manual.



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MAINTENANCE (ENGINE AIR CLEANER)

The manufacturer has endeavored to build the Broce Broom as maintenance free as possible. The service points are easily accessible and are similar to those on many types of construction equipment. This section will cover many of these points in some detail and will briefly mention those which should be standard on all equipment.

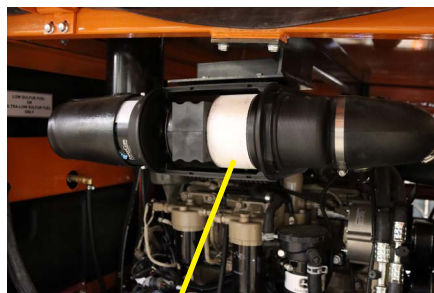
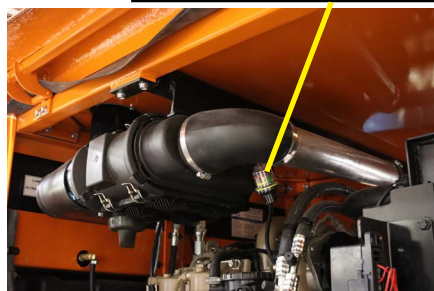
! IMPORTANT !

The air cleaner is one of the most important components of this machine. Due to the extremely dusty conditions in which this machine operates, the air cleaner must be maintained constantly. If the air cleaner is not serviced properly, the machine's engine life will be reduced. This machine is equipped with a dry type air cleaner.

When the clear ring on the Service Indicator turns red, the air filter must be replaced immediately.

Inspect the service indicator daily.

Clamp



Engine Air Filter

Safety Filter



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« 32 »

MAINTENANCE (CABIN AIR CLEANER)

! IMPORTANT !

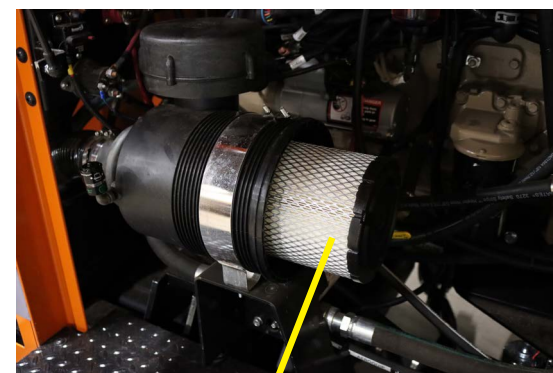
The air cleaner provides clean air to the air cleaner system.

Inspect the service indicator daily. When the clear ring on the service indicator turns red, the air filter must be replaced immediately.

Inspect the service indicator daily.



Clamp



Cabin Air Filter



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« 33 »

MAINTENANCE (SERVICE SCHEDULE)

Service Schedule:

250 Hours: Replace both service element and safety element every 250 hours or sooner if needed or damaged.

Hydraulic System

Replace the disposable filter elements after the first 50 hours of service, and every 500 hours thereafter. Always maintain sufficient hydraulic oil in the reservoir as indicated in the level sight glass on the left side of the hydraulic tank. When it is time to add or replace oil in the system, refer to the Machine Specifications section for recommended hydraulic oil specifications.

Periodically check all hydraulic hoses. As a general guide, if unsure of the condition of a hose for any reason, it should be replaced before the machine is sent out on a job. This will minimize downtime and expense associated with this type of failure.

Again, cleanliness must be stressed during this type of maintenance. Contamination of this system will cause pump and/or motor failure. Avoid servicing hydraulic system components in the field where cleanliness of the environment cannot be controlled.



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MAINTENANCE (RADIATOR & HEAT EXCHANGER)



CAUTION



Do not attempt to clean the radiator or heat exchanger while the engine is running. If hands or equipment come in contact with spinning fan blades, serious injury will result. Engine must be completely stopped.

Due to the dusty conditions in which this machine operates, the heat exchanger and radiator must be cleaned every 4 to 8 hours of service, depending upon sweeping conditions. If either one becomes clogged with dirt, it will overload the cooling capacity of the other, causing both the engine and hydraulic system to operate at higher than acceptable temperatures.

Use water or compressed air directed from the engine side of the radiator to remove dirt build up. The engine must be completely stopped while performing this maintenance. Inspect radiator and heat exchanger for dirt deposits and/or damage before resuming operation.



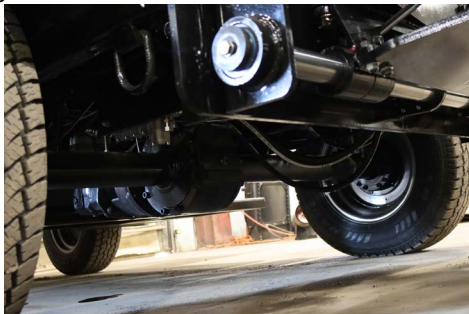
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MAINTENANCE (LUBRICATION)

Differential

The axle bearings do not receive lubrication from the gear oil. Periodically remove the axle shafts and repack the bearings.

Check the level every 210 hours of operation. Change oil every 1000 hours of operation.



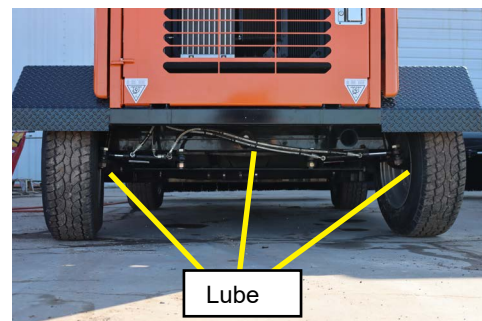
Core/Brush Bearing

This is a sealed bearing and may require no lubrication throughout its service life. If lubrication is deemed necessary however, no more than “one-shot” of grease at 250 hour intervals is recommended. Seals are often destroyed by over-greasing sealed bearings.



Spindles:

Lube upper and lower mounts steering shaft tie rod ends on both on both steering cylinders, and the axle pivot every 10 hours of operation.



Rear Axle Assembly

Engine Lubrication

Refer to the Engine Manufacturer's manual (included) for recommendation and procedures for servicing the engine.



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MAINTENANCE (LUBRICATION CHART)

BROCE BROOM LUBRICATION CHART

ITEM	QTY	ReMARKS	Initial (Hours)			Thereafter (Hours)			
			25	50	100	100	250	500	1000
Engine Oil	1	Change Oil			O		O		
Differential	1	Change Oil	O				Check		O
Hydraulic Disposable Filter	1	Replace		O				O	
Hydraulic Oil	1	Replace					O		

GREASE ZERKS

Tie Rod End	2	Lubricate					O		
Steering Cylinder Mount	1	Lubricate					O		
Core/Brush Bearing	1	Lubricate					O		

Brakes:

This machine is equipped with self-adjusting front-wheel hydraulic brakes with a mechanical parking brake. The operation of the brakes should be tested daily. If the pedal feels “spongy”, there may be air in one or more of the brake lines and must be serviced prior to operating this machine.

Inspect brake lines every 50 hours of operation for leaks and/or damage. Inspect mechanical parking brake linkage for proper adjustment, routing and/or damage ever 50 hours.



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CAUTION



DO NOT ALLOW THIS MACHINE TO BE OPERATED WITH FAULTY BRAKES. THIS WILL PUT THE OPERATOR IN EXTREME DANGER AND COULD CAUSE BODILY INJURY AND PROPERTY DAMAGE.

Fasteners:

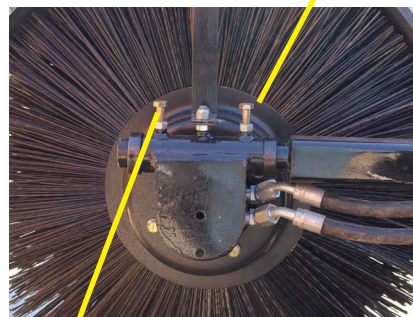
Like any construction equipment, this machine requires periodic tightening of fasteners. During normal engine service intervals, check all nuts and bolts, clevis pins, and clamps and tighten as needed.

Frame, Gussets, and Welds:

The frame on this machine was designed to withstand normal operating conditions, however under abuse components and welds can fail. Periodically check all frame welds and gussets for development of fatigue and stress cracks.

Core Drive:

The direct drive uses a core motor with a splined shaft that fits a hub fastened inside the broom core mandrel. The direct drive core is preset at the factory and does not normally need adjusting unless the drive hub begins to show uneven or excessive wear. To adjust, remove the broom from the machine and remove all of the wafers from the core frame (see Broom Wafer Replacement Section for details on removing the broom core and wafers).



Hub

Set-Screws

Loosen the lock bolts and lock collars slightly. Install the core mandrel and position the motor so that the core will slide on and off of the splined shaft easily. After alignment, tighten both set-screws and jam nuts as well as the lock collar on the pillow block bearing at the other end of the broom core.



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Engine:

The normal engine operation and maintenance procedures are covered in a separate manual, which is furnished by the engine manufacturer.

Tires:

Inflate tires to manufacturer's recommended pressure as specified on the tire sidewall. This will provide the longest tire life. A lower pressure will provide a more comfortable ride, and make rough off-highway conditions easier to negotiate, but is not recommended.



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MAINTENANCE (AIR CONDITIONER PREVENTIVE)

A well maintained A/C system would save on downtime and premature component failures.

Weekly inspections or every 2 days in severe environments should include:

1. Inspect compressor clutch drive belts (tightness, wear).
2. Inspect compressor-mounting brackets (bolts, alignment).
3. Inspect mounting hardware on evaporator unit and condensers.
4. Check Air Filter Service Indicator Replace filter if necessary.
5. Inspect evaporator and condenser coils. Clean using air pressure.
(DO NOT USE WATER OR PRESSURE WASHER).
6. Inspect hose and wire harness for proper routing. Leaks and wear.
7. Cabin return air filter is located on the left hand side of the seat base.
Inspect the filter and replace if necessary.

Broce thanks you for purchasing our unit/s. It is our endeavor to provide you with a quality A/C unit with trouble-free service.



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MAINTENANCE (TROUBLESHOOTING - A/C SYSTEM)

Troubleshooting Chart

The following chart lists some of the common problems that plague A/C systems and refer them to the pressure readings on your test gauges. They are referred to as "low" or "high" due to the fact that different systems and conditions have different normal readings.

SUCTION	DISCHARGE	POSSIBLE PROBLEM
LOW	HIGH	1. Restriction between the discharge of the compressor and inlet of receiver drier. Check condenser and condenser lines for a point of restriction that may create flashing. Condition indicated by an extreme differential in temperature at the point of restriction.
LOW	LOW	1. Possible restriction between drier and suction side of compressor. 2. Low refrigerant charge _ bubbles in sight glass. 3. Restriction at drier or expansion valve _ sight glass usually clear.
HIGH	HIGH	1. Air in system. 2. Overcharged system (oil or refrigerant). 3. Condenser fan not working. 4. Air flow restriction on condenser
HIGH	LOW	1. Weak compressor _ indicated by accelerating the engine and watching the suction and discharge readings. Normally, suction moves lower and discharge side should rise. 2. Expansion valve flooding or stuck open _ this would cause high and low sides to become less distinguishable.

ATTENTION

R-134a A/C Refrigerant Factory Charge:
John Deere = 3.0 lb (1.36kg)

Ester Oil Change:
Compressor = 8.0 oz
System = 4.0 oz



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Warranty Claim Form for Broce A/C Systems and Components

Ambient temperature before repairs were made: _____

Static Pressure before repair is made: High: _____ Low: _____

Running Pressure before repair is made: _____

Any odd or unusual noises before repairs are made: _____

How much refrigerant was recovered: _____ lbs.

Automated flush of system (by flush mechanic) Yes: _____ No: _____

Manual flush (by tech changing oil and/or drier) Yes: _____ No: _____

Repairs made and parts replaced: _____

Ambient temperature after repairs are made: _____

How much refrigerant was charged: _____ lbs. _____ oz. (Virgin or Recovered)

Static Pressure: High: _____ Low: _____

Running Pressure: High: _____ Low: _____

Vent Temperature: _____

Cab Temperature: _____

Broom S/N: _____

Hr.: _____ Date: _____

Company or Facility who made repairs: _____

Technicians initials: _____

BROOM WAFER REPLACEMENT

The standard Broce Broom core uses 10" x 32" flat wafers and metal spacers. The standard eight-foot core requires approximately 54 wafers and 53 metal spacers (this will vary by wafer manufacturer and type of end-caps ordered on broom). Replacement wafer kits can be ordered from Broce Manufacturing at www.brocebroomparts.com or call 1-580-227-3711.

DIRECT DRIVE CORES (Standard Equipment):

- With the core resting on or near the ground, remove the bolts securing the pillow block bearing to the core support frame.
- Pull the core to the right side of the machine until you feel the splined hub come off the shaft. At this time, the core will be close to or touching the right support arm.
- Angle the core toward the rear of the machine and slide it out from under the sweeper.
- Clean the spindle from the lock ring out using an emery cloth or sandpaper.
- Loosen the setscrew and remove the lock ring and pillow block bearing.
- Remove the spindle and install the Broce Core Service Ring in its place.
- Remove the end cap from the drive end of the core.
- Raise the core support frame and slide the rebuilt core under the sweeper. The core will have to come in from an angle in order for it to be started over the motor mount. Once the core has been started onto the motor mount, swing the right side under the right support frame.
- Lower the support frame slowly until the motor mount is centered in the core.
- Using a back and forth twisting motion, pull the core onto the splined shaft.
- Install the pillow block bearing on the right side of the core using the original mounting bolts.
- Raise the core. Slide the core to the left as far as it will go. Using a pry bar, slide it back to the right until the bolts on the end cap will clear the hydraulic hose fittings.
- Install the lock ring on the spindle securely. This lock ring is all that maintains core alignment.

Do not try to readjust the motor mount unless it becomes damaged or otherwise unserviceable. The alignment of this mount is preset at the factory. If it does become necessary, refer to the alignment procedures in the MAINTENANCE section of this manual.

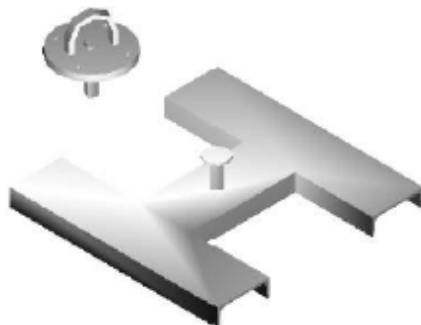


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MAINTENANCE (BROOM WAFER REPLACEMENT CONT.)

- Install the end cap using two (2) 1/2" x 3" all thread bolts in two of the holes which are 180° apart. Slowly and evenly tighten these until the end cap is close enough to the core to install the standard mounting bolts. Start two of the standard bolts with lock washers in the two remaining holes. Remove the two long bolts and install the other two standard mounting bolts. Tighten all four bolts evenly in a diagonal fashion until the end cap is tightly secured to the core.
- The core must now be tipped over onto the ground so that the core comes to rest laterally on the bristles. Clear an area fifteen feet in all directions of the core of personnel and property before tipping the core. Always tip the core by pushing it over. Once the core begins to fall, get away from it in case the stand falls off. Carelessness in this procedure could result in serious bodily injury and/or property damage.
- With the core resting on the ground, slide the stand off of the spindle and tighten the end cap in the same fashion as before.
- Using emery cloth or sandpaper, clean both spindles to remove any burs or tar which may interfere with sprocket or bearing installation.
- Install the sprocket as using the flat washers as spacers. The sprocket must be installed in this manner in order to ensure proper chain alignment.
- Slide the rebuilt core back under the sweeper.
- Slide the pillow block bearings on the spindles until they roughly line up with the core support frame. With the flat part of the bearing up, slowly lower the core support frame until it is close enough to line up and secure the bearings with the original mounting bolts. When the bearings are secure, raise the core, and align the chain drive. Once the chain drive alignment has been achieved, recheck the lock rings to ensure that they are secure and reinstall the chain guard.

If you have any questions regarding these procedures or would like to obtain the core service ring and stand, please contact your nearest dealer or call us direct at (620) 227-8811.



Core Service Ring and Stand



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TROUBLESHOOTING

Before troubleshooting can be done, characteristics of normal operation of this machine must be understood. As discussed earlier in this manual, this system uses an open center control valve. This can lead to the belief that a problem may exist when in fact, the system is operating normally.

Normal Operation

With the engine running approximately 1/2 throttle and the core motor turned off, the lift and shift cylinders will actuate quickly and smoothly. Once the core motor is started, the cylinder action will slow down dramatically. In fact, if the core is not contacting the ground, the shift cylinder may not move at all unless the engine is at full throttle. The lift cylinder should be able to lift the core slowly off the ground but will probably not reach its full stroke. When slight positive down pressure is applied to the broom core, the shift cylinder performance should improve slightly but the lift cylinder performance will remain basically unchanged. As more down pressure is added, the core will eventually stop spinning. The system will be "relieving."

Although these characteristics may sound less than adequate, in real working applications they are almost unnoticeable. Most of the time that small angle adjustments are made, the brush is in use and the cylinder operation is adequate. Most full swing left to right angle adjustments are made while turning the machine around or while lining the machine up for sweeping. It is best at these times to not have the brush spinning in order to prevent throwing debris in an unwanted direction. There is generally no reason to lift the brush while sweeping. Most lifting is done when the sweep has been completed and the sweeper is ready to be repositioned. The brush is normally turned off at this time.

MAINTENANCE (TROUBLESHOOTING)

COMMON PROBLEMS

PROBLEM	PROBABLE CAUSE	SOLUTION
Brush stalls while sweeping	1. Too much positive down pressure	1. Raise Broom. Make two passes
	2. Too much material to move	2. Raise Broom. Make two passes
Brush bounces or "hops" while sweeping	3. Weak Pump	3. Check system pressure
	4. Relief valve stuck open	4. Check relief valve
	5. Worn hub or shaft (Broken key on chain drive core motor)	5. Replace hub and/or motor
	6. Internal leakage in motor	6. Follow steps 1-5. If all checks out, replace motor.
	1. Worn/loose core mount pins and/or worn mount bushings	1. Drill out and replace bushings and pins that mount the lift cylinder and the core hanger. These must be extremely tight (zero tolerance). Any gaps whatsoever can cause bouncing.
	2. Loose circle bearings	2. Tighten circle bearings underneath the circle.



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MAINTENANCE (TROUBLESHOOTING)

PROBLEM	PROBABLE CAUSE	SOLUTION
Broom Core drifts from preset angle while sweeping	1. Too much material to sweep	1. Raise Broom. Make 2 passes.
	2. Leakage in shift cylinder	2. Test system pressure. If pressure OK, rebuild or replace cylinder.
Core motor shaft seal leak	1. String line wrapped around shaft	1. Remove string line and reseal motor
	2. Over use of positive down pressure feature (Too much side load)	2. Reseal motor. Instruct operator to use down pressure only when necessary.
	3. Core misaligned	3. Re-align motor mount. Refer to Maintenance section for procedures.
Core motor shaft broken	1. Over use of positive down pressure feature (Too much side load)	1. Replace motor.
	2. Core misaligned	2. Replace motor. Re-align motor mount. Refer to Maintenance section for procedures.



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MAINTENANCE (TROUBLESHOOTING)

PROBLEM	PROBABLE CAUSE	SOLUTION
Hydraulic System has very little power. Power steering operates OK.	1. Relief valve stuck open 2. Weak pump	1. Check relief valve. 2. Check system pressure.
No hydraulic power including steering but hydrostatic system seems OK.	1. Bad gear pump	1. Replace gear pump.
No hydraulic power including steering and hydrostatic drive.	1. Broken shaft or coupler in hydrostatic pump	1. Refer to hydrostatic trouble shooting section in Sauer-Danfoss Manual.



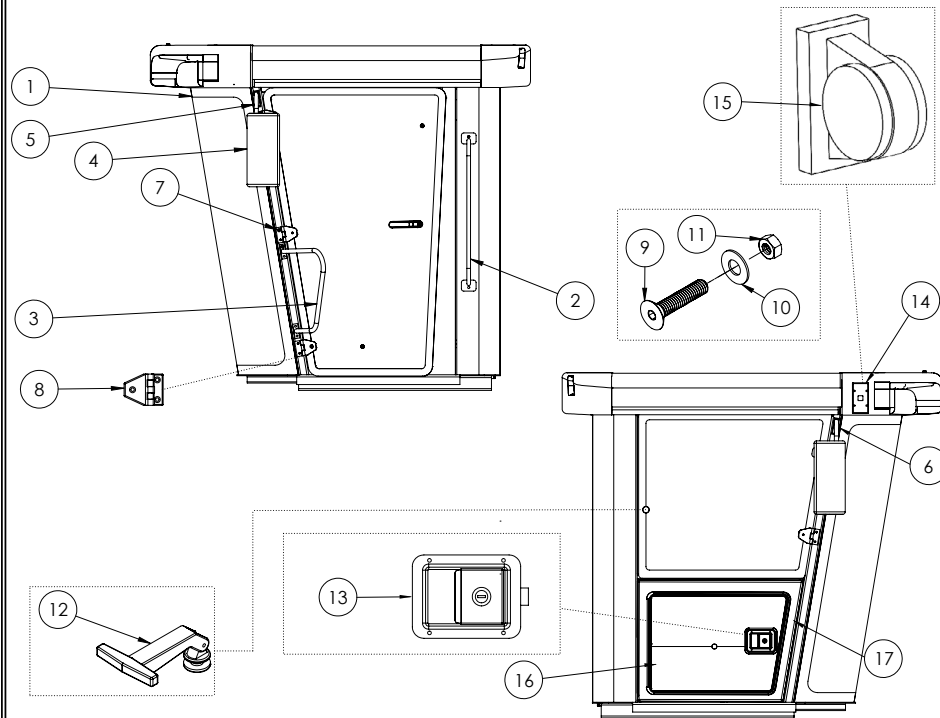
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PARTS CATALOG



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CAB ASSEMBLY



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« 52 »

CAB ASSEMBLY CONT.

ITEM #	PARTS #	DESCRIPTION	QTY.
1	512350	Cab Assembly	1
2	512453	Cab Grab Handle	1
3	512367	Forward Cabin Door Stop	1
4	512126	Sideview Mirror	2
5	513142	RH Mirror Mount	1
6	513137	LH Mirror Mount	1
7	461038	5/16" -18 x 1.5 Flat Soc SS	10
8	442269	Hinge	5
9	464842	5/16"-18 x 1.5 Flat Soc SS	5
10	10579	5/16" Flat Washer	5
11	512794	#8 - 32 Stainless Hex Nuts	5
12	442251	Window Latch	1
13	512533	Paddle Latch	1
14	386586	Turn Signal Bracket	2
15	513501	Turn Signal	2
N/S	512515	Rubber Door Bumper	1
N/S	512781	3/8"-16 X 5/8" Button Head Cap Screw	1
N/S	512552	Window Latch Spacer	1
16	512525	HVAC Door	1
17	512523	HVAC Door Frame	1
N/S	512522	HVAC Door Hinge	1
N/S* = Not Shown			

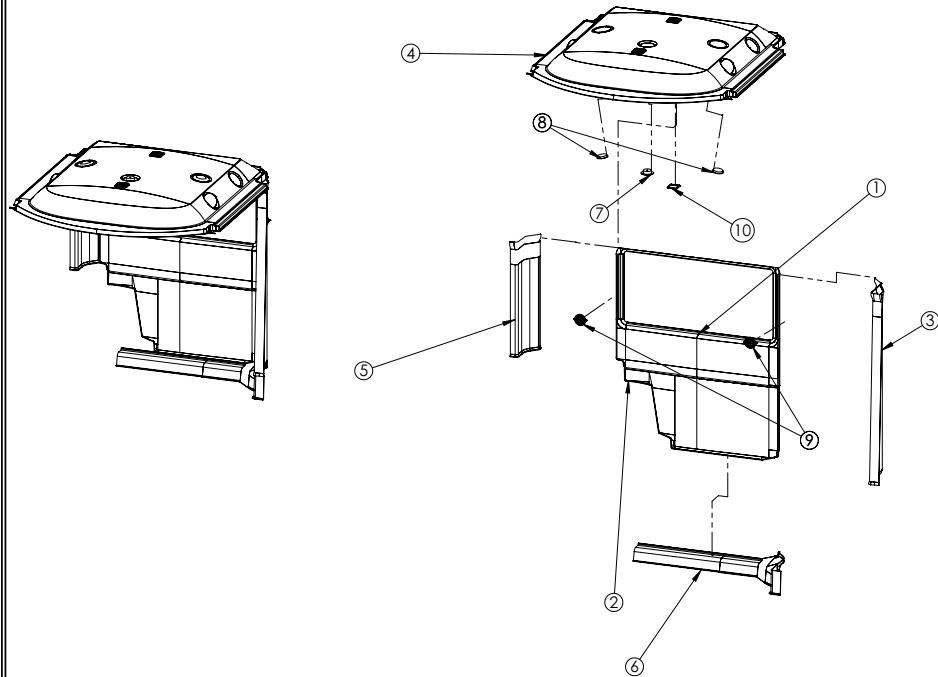


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BROCE 470 - Series

« 53 »

CAB FAIRING ASSEMBLY



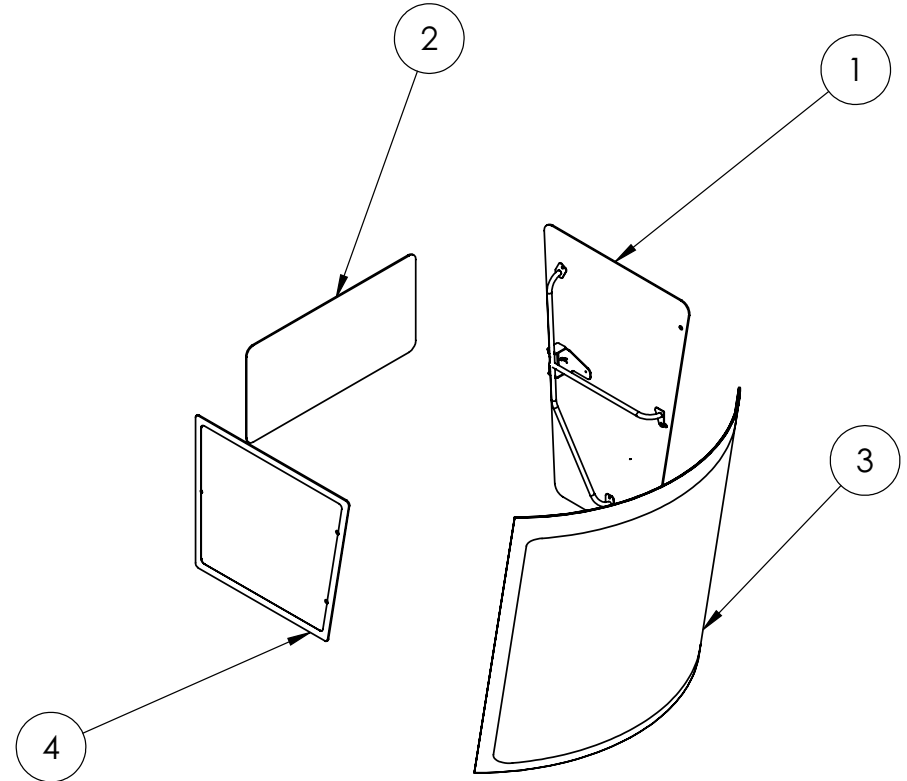
ITEM #	PARTS #	DESCRIPTION	QTY.
1	512422	Rear Wall Window Fairing	1
2	512424	Rear Wall Lower Fairing	1
3	512426	LH Rear Corner Closeout	1
4	512430	Headliner	1
5	512428	RH Rear Corner Closeout	1
6	512420	Rear A/C Duct Cover	1
7	512403	3" Dome Light	1
8	512132	Heavy Duty Speakers	2
9	512408	Air Vent 2.5	2
10	512438	Fastener Cover	2
N/S	513630	Dome Light Switch	1

N/S* = Not Shown



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CAB GLASS

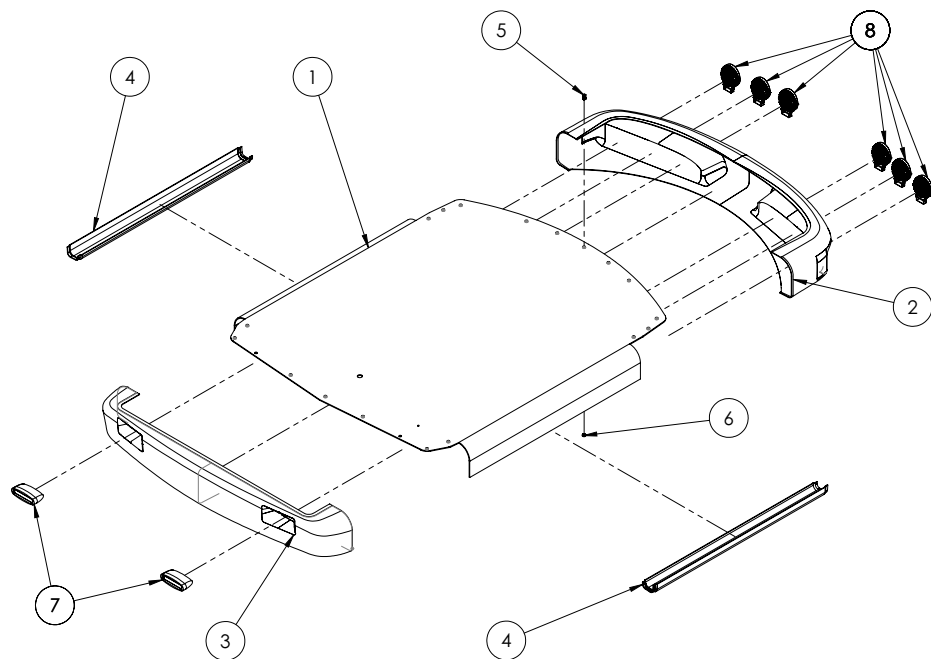


ITEM #	PARTS #	DESCRIPTION	QTY.
1	512541	Cabin Door Assembly	1
2	512553	Rear Window Glass	1
3	512105	Windshield	1
4	512557	RH Window Glass	1



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ROOF WITH FAIRING

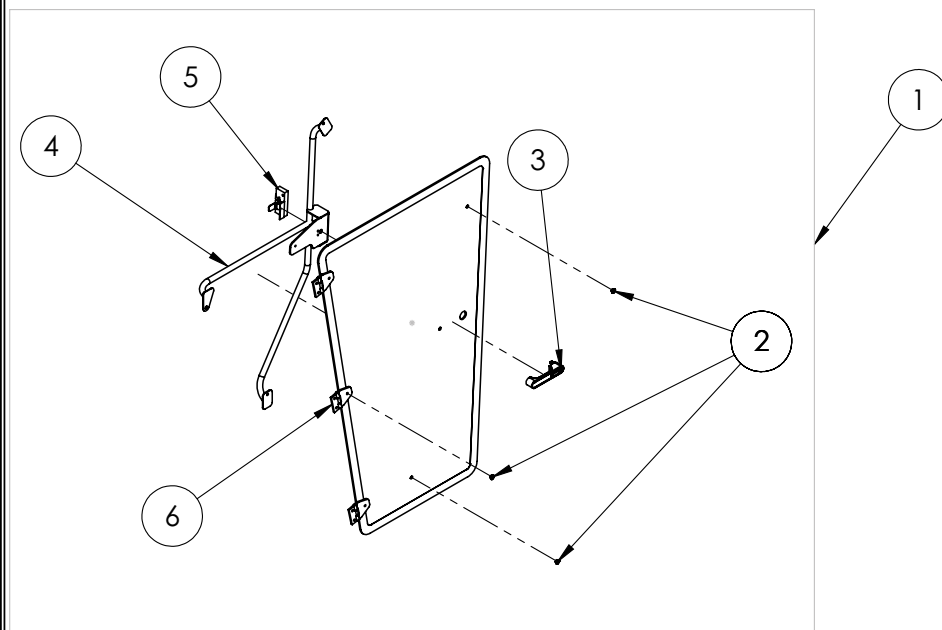


ITEM #	PARTS #	DESCRIPTION	QTY.
1	512395	Roof Assembly	1
2	512529	Upper Fairing - Front	1
3	512527	Upper Fairing - Rear	1
4	512531	Upper Side Rail	2
5	512256	3/8" - 16 x 3/4" 12-Point Screw	22
6	512787	3/8" - 16 Steel Weld Nut	22
7	513505	LED Rear Work Light	2
8	307011W	LED Front Work Light	6
N/S	512960	Rear Light Mount Bushing	2
N/S	513268	Front Ligth Bushing	6
N/S	513752	32" LED Light Bar	2
N/S* = Not Shown			



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CABIN DOOR ASSEMBLY

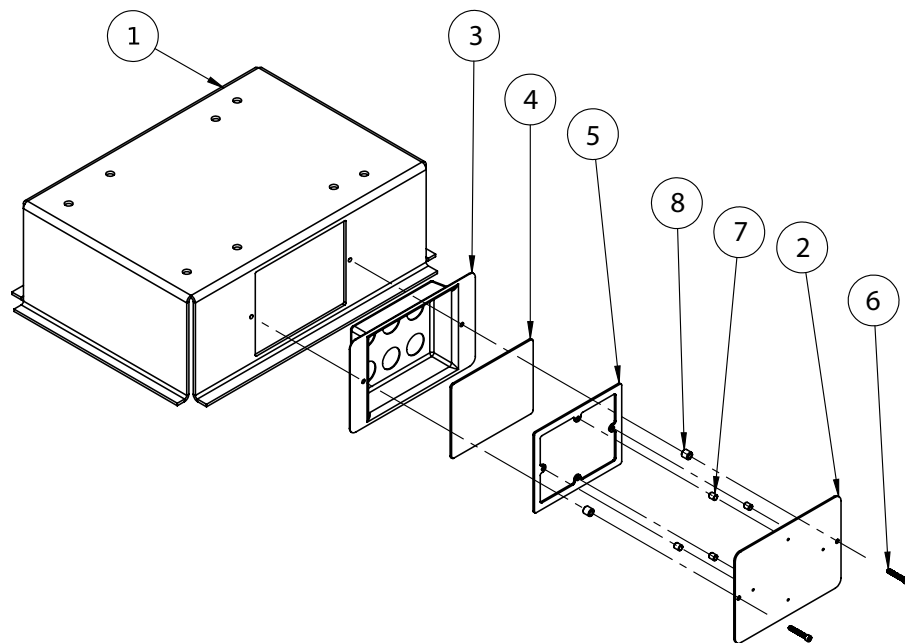


ITEM #	PARTS #	DESCRIPTION	QTY.
1	512541	Cabin Door Assembly	1
2	512543	Cabin Door Frame Mount Bushing	3
3	446138	Door Handle & Keys	1
4	512544	Cabin Door Frame	1
5	446120	Door Latch	1
6	442269	Hinge, W/Grommet & Bushing	3



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SEAT BASE ASSEMBLY



ITEM #	PARTS #	DESCRIPTION	QTY.
1	512141	Seat Base Assembly	1
2	512144	Cabin Air Filter Cover	1
3	512456	Air Filter Plenum	1
4	512161	Cabin Air Filter - Under Seat	1
5	512146	Cabin Air Filter Outer Retainer	1
6	512154	1/4" - 20 x 1-1/2" Stainless Socket Head Cap Screw	2
7	512155	Outer Retainer Spacer	4
8	512156	Cabin Air Filter Cover Spacer	2
N/S	512192	3" Hose Coupler	1
N/S	512214	Air Filter	1

N/S* = Not Shown

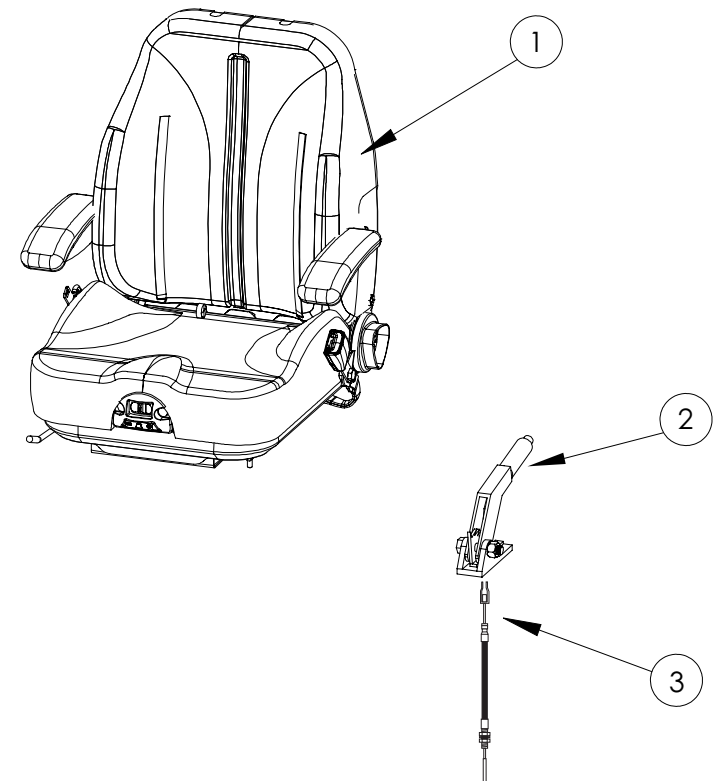


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◀ 58 ▶

OPERATOR COMPARTMENT



ITEM #	PARTS #	DESCRIPTION	QTY.
1	BS-1050W	Standard Seat	1
1.1	512104	Air Ride Seat	1
2	513114	Parking Brake	1
3	386932	Parking Brake Cable	1

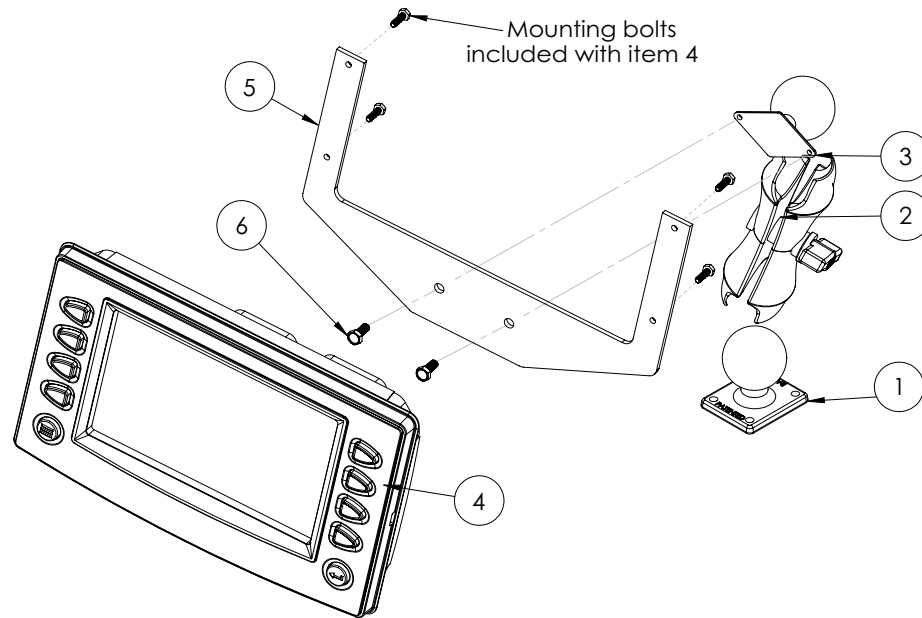


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BROCE 470 - Series

◀ 59 ▶

RAM DISPLAY ASSEMBLY

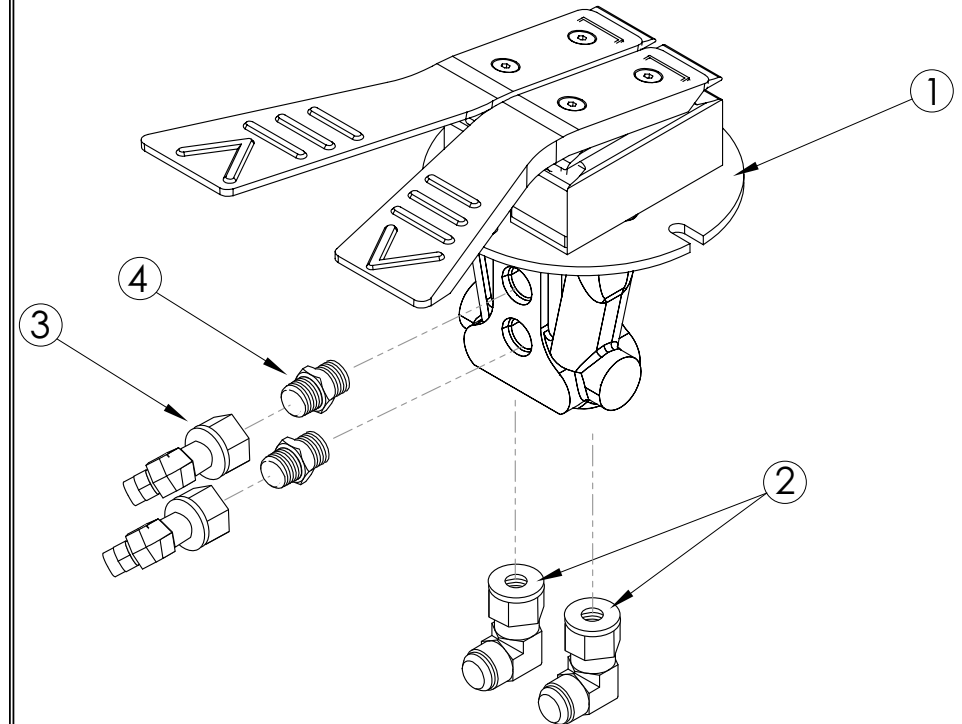


ITEM #	PARTS #	DESCRIPTION	QTY.
1	513813	Ram 1.5" Ball Base	1
2	513817	Ram 1.5" Double Socket Arm	1
3	513815	Ram 1.5" Diamond Ball Base	1
4	513802	PV780B Display & Mounting Bolts	1
5	513829	Ram Display Mount	1
6	512976	Screw	2
N/S	513806	GPS Puck	1
N/S	513714	Monitor Harness	1
N/S	513716	GPS Harness	1
N/S	513808	Backup Camara	1
N/S	512134	Antenna	1
N/S* = Not Shown			



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FOOT PEDAL & BRACKET ASSEMBLY

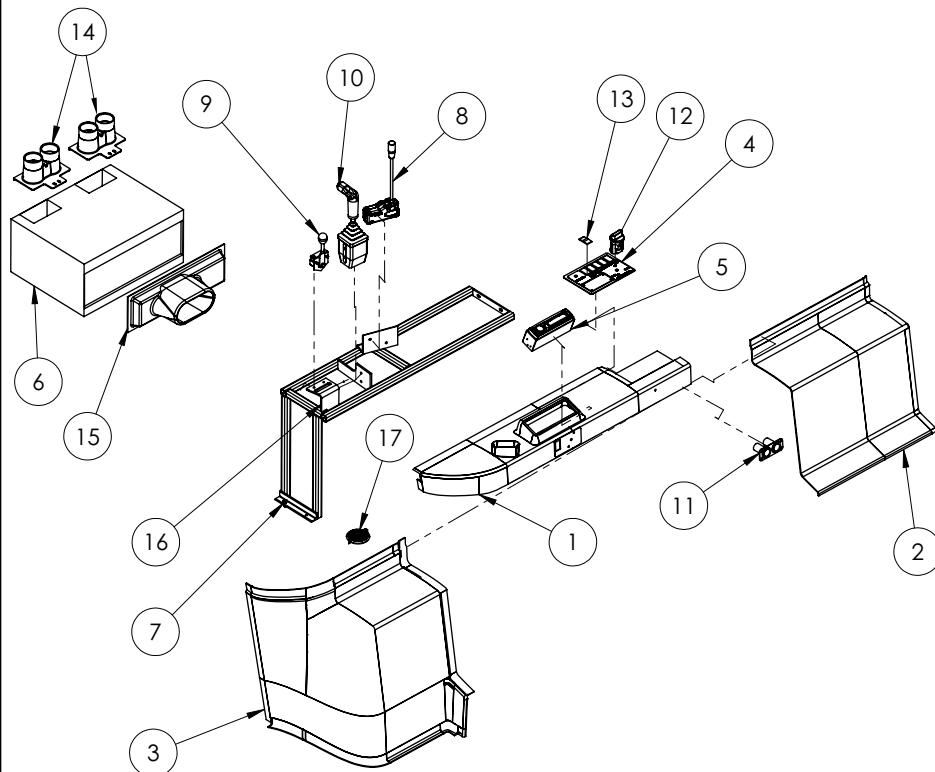


ITEM #	PARTS #	DESCRIPTION	QTY.
1	389775-1	Double Foot Pedal Assembly- Forward, Reverse	1
2	386635	Pedal Hydraulic Fitting	2
3	389840	45 Deg. Elbow, #6NPT - #6JIC	2
4	386556	Straight Fitting	2



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RH CONSOLE ASSEMBLY



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« 62 »

RH CONSOLE ASSEMBLY (CONT.)

ITEM #	PARTS #	DESCRIPTION	QTY.
1	512436	RH Console Upper Fairing	1
2	512432	RH Console AFT Fairing	1
3	512434	RH Console Forward Fairing	1
4	512472	Control Plate	1
5	512130	Heavy Duty Radio - Option	1
6	512176	Heat and A/C Kit	1
7	513450	Control Mount Frame Assembly	1
8	513346	Cable Control Block	1
9	513537	Electronic Throttle Control	1
10	513348	HD Joystick with On/Off Switch	1
11	512137	12v USB Dual Charger	1
12	513535	Broom Control Dial	1
13	460113	On/Off Way Switch	6+
14	512270	2.5 AC Plenum	2
15	512459	AC Fresh Air Plenum	1
16	513452	Throttle Bracket	1
17	512408	Air Vent 2.5	1
N/S	512140	Cup Holder	1
N/S	512132	Speakers	2
N/S	512199	AC Control Panel	1
N/S	512472-1	Control Panel Decal	1
N/S	513350	35.4" Valve Control Cable	2
N/S	513352	47.2" Valve Control Cable	1
N/S* = Not Shown			

+5-8 Switches Depending on Options

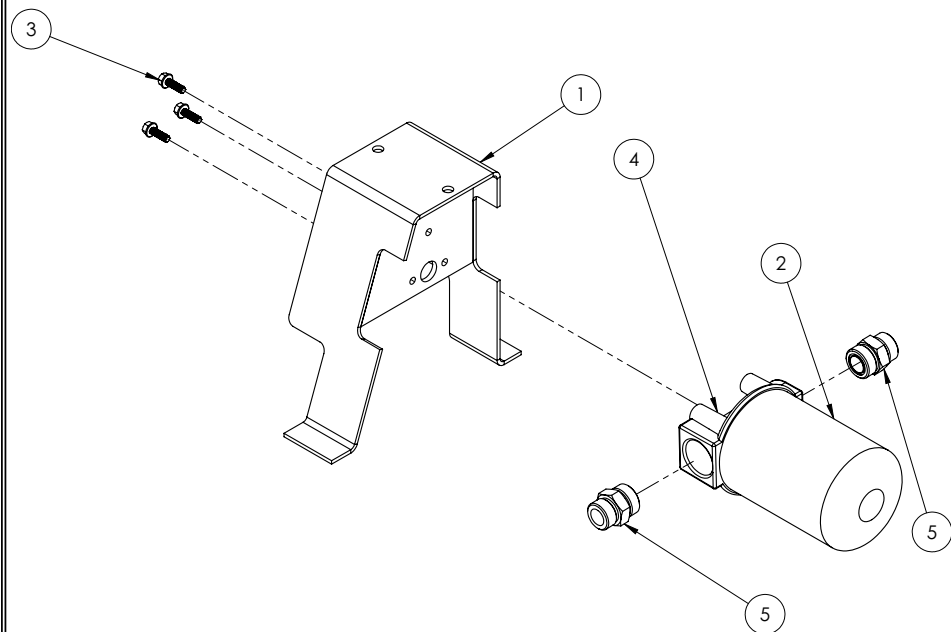


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BROCE 470 - Series

« 63 »

HYDRAULIC FILTER MOUNT

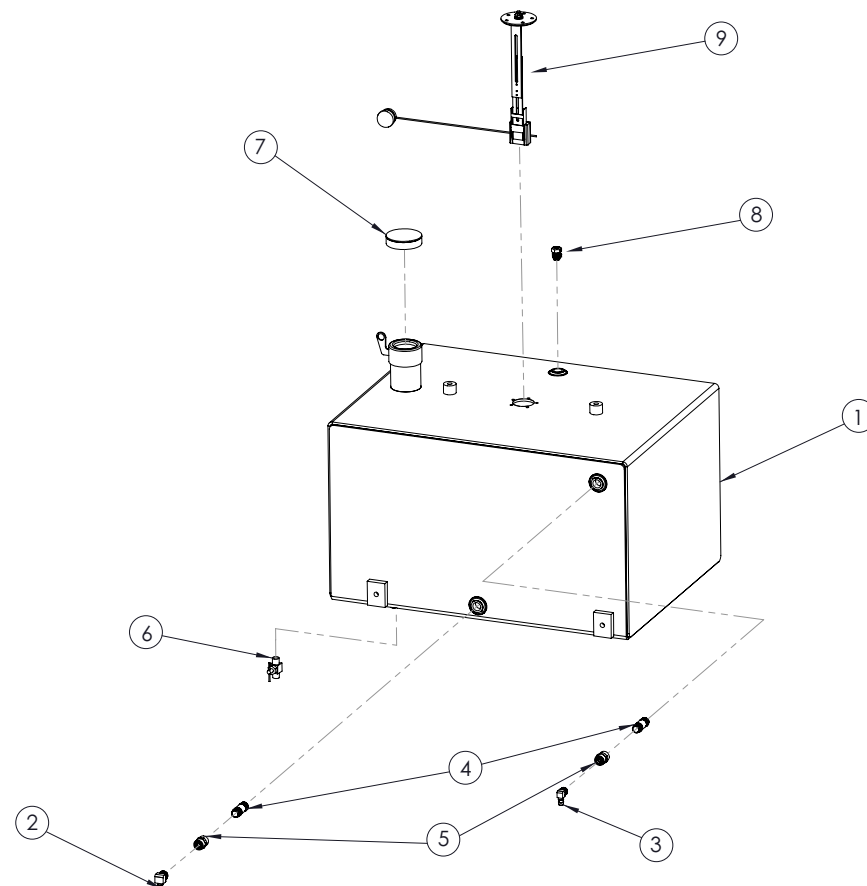


ITEM #	PARTS #	DESCRIPTION	QTY.
1	512252	Cabin Air Filter Housing Mount Bracket Weldment	1
2	442822	Hydraulic Filter	1
3	441600	5/16" - 18 x 1" Flanged Hex Screw	3
4	420349	Filter Head	1
5	389497	Straight Hydraulic Fitting	2
N/S	804716	Cabin Air Filter Cracket Assembly	1



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FUEL TANK ASSEMBLY

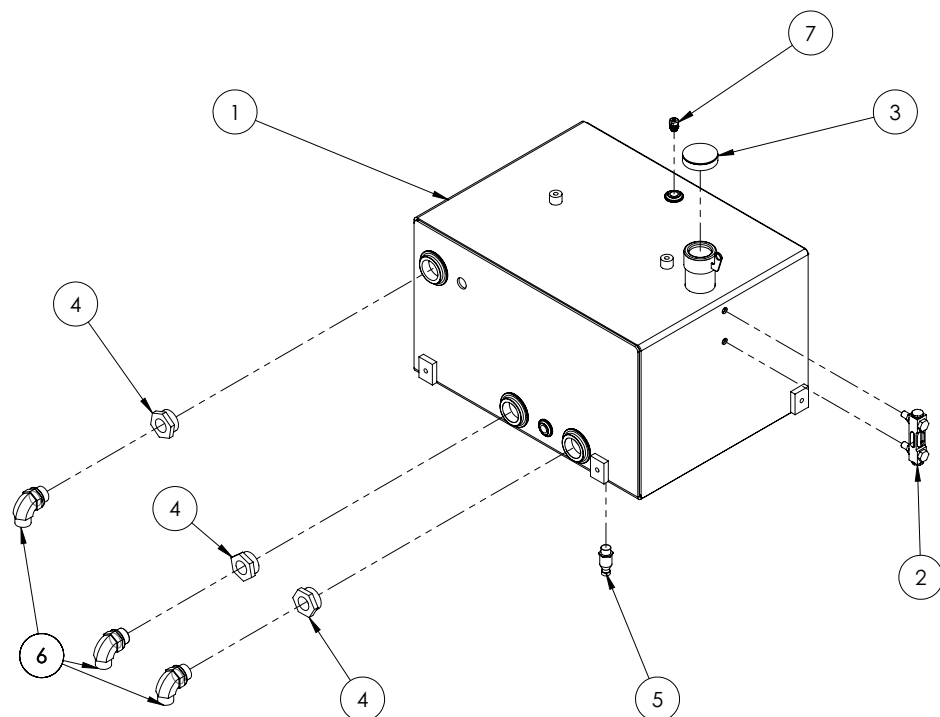


ITEM #	PARTS #	DESCRIPTION	QTY.
1	512800	Fuel Tank Assembly	1
2	512825	3/8" NPT to 3/8" Hose Barb 90 Degree Elbow	1
3	512823	3/8" NPT to 1/4" Hose Barb 90 Degree Elbow	1
4	512832	3/8" NPT x 2" Pipe Nipple	2
5	512834	3/8" NPT Pipe Coupler	2
6	512872	Needle Valve	1
7	439182	Green Fuel Cap	1
8	512817	3/8" NPT Breather Valve	1
9	307142	Fuel Sender Assembly	1



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HYDRAULIC TANK ASSEMBLY



ITEM #	PARTS #	DESCRIPTION	QTY.
1	512850	Hydraulic Tank Assembly	1
2	512866	3" Aluminum Sight Gauge	1
3	439182	Red Hydraulic Cap	1
4	513329	Morse-Forb Straight Reducer	3
5	512870	Oil Drain Valve	1
6	513341	90 Degree Fitting	3
7	512817	3/8" NPT Breather Valve	1

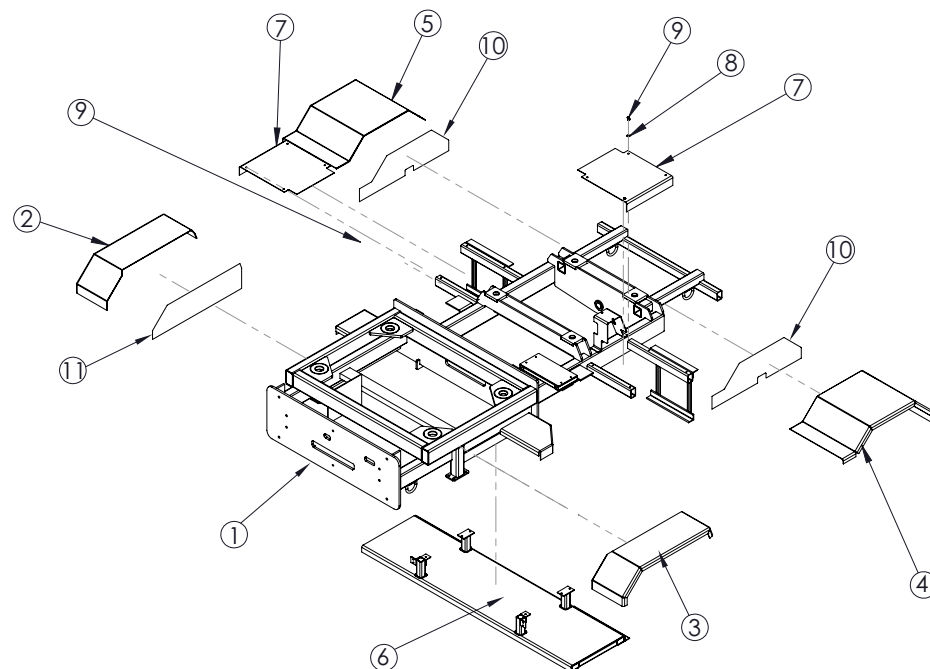


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« 66 »

CHASSIS



ITEM #	PARTS #	DESCRIPTION	QTY.
1	513001	Main Frame Assembly	1
2	513074	RH Front Fender Assembly	1
3	513072	LH Front Fender Assembly	1
4	513024	LH Rear Fender Assembly	1
5	513026	RH Rear Fender Assembly	1
6	513040	Lower Step Assembly	2
7	513039	Rear Step	2
8	512783	3/8" Black Oxide Stainless Washer	10
9	512788	3/8 - 16x3/4" Stainless Button Head Cap Screw	10
10	512702	Rear Inner Fender	2
11	513079	RH Forward Inner Fender	1
N/S	513077	LH Forward Inner Fender	1
N/S* = Not Shown			



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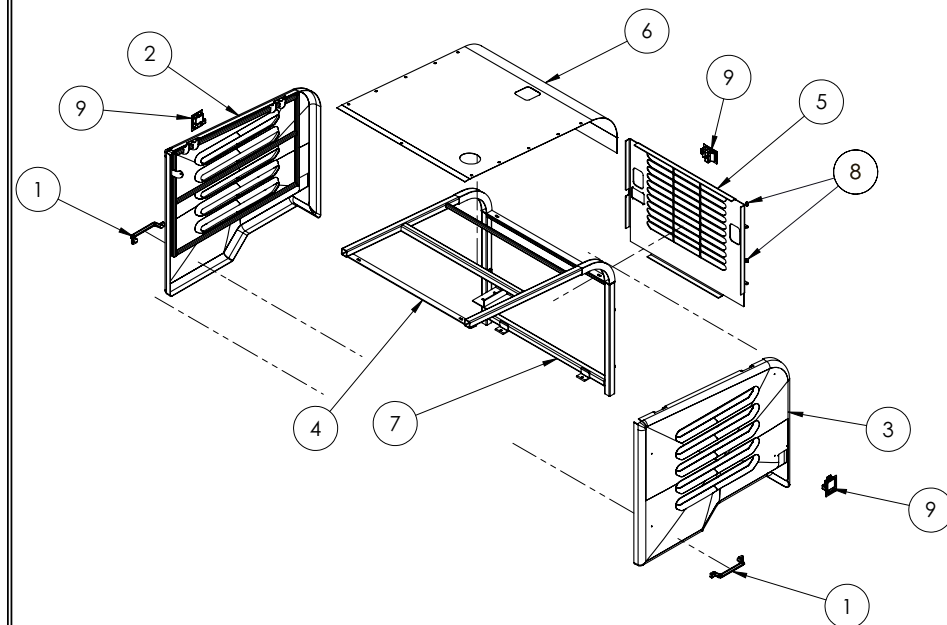
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« 67 »



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ENGINE HOUSING ASSEMBLY

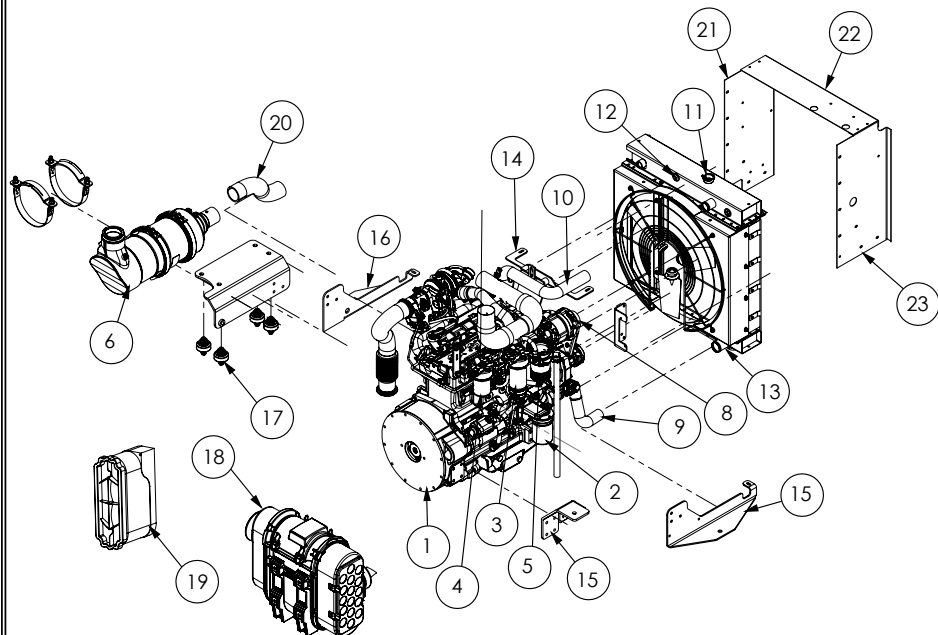


ITEM #	PARTS #	DESCRIPTION	QTY.
1	390212	Grab Handle	3
2	512578	RH Engine Sidewall Assembly	1
3	512565	LH Engine Sidewall Assembly	1
4	512675	Engine Housing Upper Assembly	1
5	804722	Rear Door Assembly	1
6	512726	Engine Housing Cover	1
7	804685	Rear Door Frame Assembly	1
8	402408	Bolt Shoulder 5/16-18 X 3/8D X 3/8L	2
9	512533	Paddle Latch	3
N/S	512792	#8-32 x 1/2" Stainless BHCS Black Oxide	12
N/S	512796	#8 Stainless Washer Black Oxide	12
N/S	512794	#8-32 Stainless Hex Nut Black Oxide	12
N/S	512587	Gas Lift Cylinders	2
N/S* = Not Shown			



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JOHN DEERE ENGINE ASSEMBLY



ITEM #	PARTS #	DESCRIPTION	QTY.
1	512610	Engine	1
2	512615	Engine Oil Filter	1
3	512611	Fuel Filter- Primary	1
4	512613	Fuel Filter- Secondary	1
5	514040	Filter Element, Open Crankcase Ventilation	1
6	N/A	See Page 73	1
N/S	514042	Filter Element, Outer	1
N/S	514043	Filter Element, Inner	1
N/S	512244	Air Cleaner Elbow	1
N/S	514051	Air Filter Minder	1
8	514052	Belt, JD 96.85" x 1.097 x 8 Rib	1
9	514053	Hose, Lower Radiator	1



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◀70▶

JOHN DEERE ENGINE ASSEMBLY (CONT.)

ITEM #	PARTS #	DESCRIPTION	QTY.
10	514054	Hose, Upper Radiator	1
N/S	514055	Relay, Starter Circuit	1
N/S	514056	Mount Fuse Block	1
N/S	512659	Coolant Level Switch	1
11	514062	Radiator Cap	1
12	512659	Coolant Level Switch	1
13	514063	Isolator, Cooling	1
14	514064	Cantilever Mount, Radiator	1
15	850580	Cantilever Mount, Right Front	1
16	850584	Cantilever Mount, Left Front	1
17	399130	Isolator	4
18	512605	Engine Air Filter	1
19	514044	Engine Air Filter Element Corrugated	1
20	512650	John Deere Tailpipe	1
21	512738	Radiator Shroud Panel, RH Side	1
22	512732	Radiator Shroud Panel, Top	1
23	512736	Radiator Shroud Panel, LH Side	1
N/S	512734	Radiator Shroud Panel, Bottom	1
N/S	514067	Wire Harness, Broce 4045TFC03	1
N/S	514068	Analog Throttle W/Jumper	1
N/S	514069	Battery Cables, JD 36 Long, 2/0	1
N/S	512605	Engine Air Assembly	1
N/S	514052	Fan Belt	1
N/S	512632	Air Filter Cover	1
N/S	344297F	Alternator	1
N/S	512627	5" Rain Cap	1
N/S	512642	Secondary Oil Cooler	1

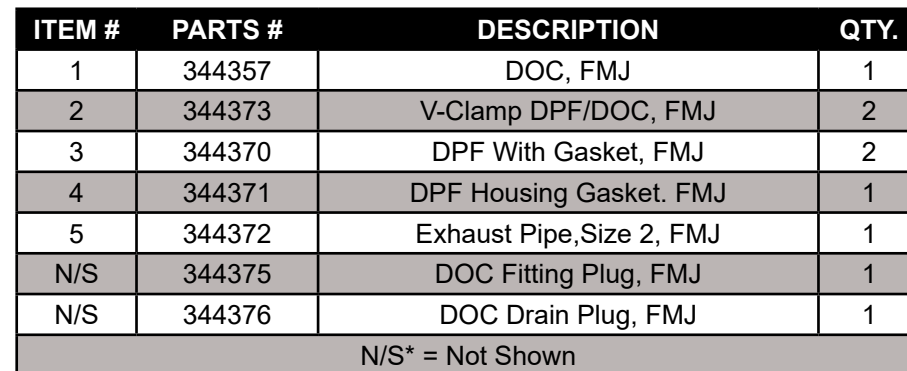
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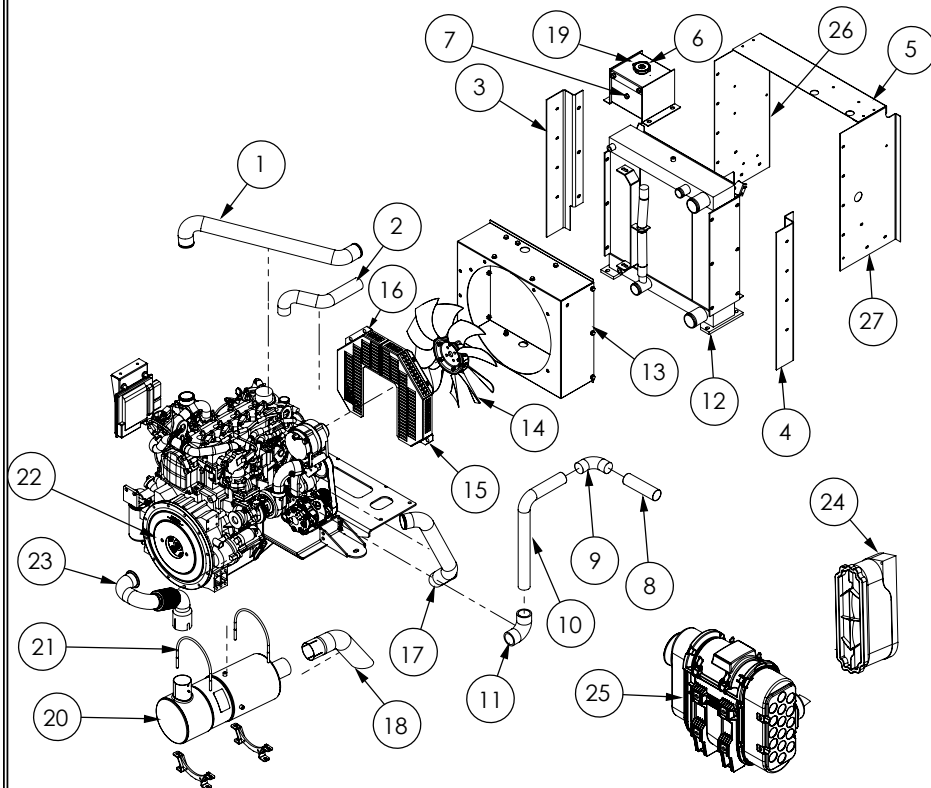
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◀71▶



CUMMINS ENGINE ASSEMBLY



ITEM #	PARTS #	DESCRIPTION	QTY.
1	344335	Tube, Cold CAC	1
2	344336	Hose, Upper Radiator	1
3	204706F	LH Tunnel Adapter	1
4	204707F	RH Tunnel Adapter	1
5	512732	Radiator Shroud Panle, Top	1
6	344337	Cap, Radiator	1
7	344338	Coolant Level Sensor	1
8	512649	Cummins Air Intake Pipe	1
9	304110F	2" x 2.5" ruber 90	1
10	344339	Radiator, CAC, HOC	1



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◀74▶

CUMMINS ENGINE ASSEMBLY (CONT.)

ITEM #	PARTS #	DESCRIPTION	QTY.
11	344343	Shroud, Fan	1
12	344001	Fan, Engine Cooling	1
13	344346	Guard, Fan, Right	1
14	344347	Guard, Fan, Left	1
15	344348	Tube, Hot CAC	1
16	344313	Cummins Exhaust Tube	1
17	344354	Base, CCC Mounting	1
18	344382	Downpipe, Exhaust	1
19	344381	Reservoir, Coolant	1
20	344355	DOC, Exhaust	1
21	344356	U-Bolt	1
22	344282	Drive Plate	1
23	344282	Pump Drive/Mount Plate	1
24	514044	Engine Air Filter Element Corrgated	1
25	512605	Engine Air Filter	1
26	512738	Radiator Shroud Panle, RH Side	1
27	512736	Radiator Shroud Panle,LH Side	1
N/S	512734	Radiator Shroud Panle, Bottom	1
N/S	204710	Mass Airflow Mount	1
N/S	204709	Charge Intake Tube Bracket	1
N/S	804716	Cummins Air Filter Bracket Assembly	1
N/S	804708	A/C Filter Adapter	1
N/S	344322	Intake Pipe Gasket	1
N/S	344323	Sensor Mount Gasket	1
N/S	344324	3" x 36" Titanium Knit Sleeve Kit	1
N/S	204710	Mass Airflow Sensor Mount	1
N/S	513038	FWD Engine Mount Assembly, Cummins	1
N/S	204705F	Cummins Muffler Mount	1
N/S	204715F	Filter to Filter Bracket	1
N/S	204713F	Cummins Shroud Top	1

N/S* = Not Shown



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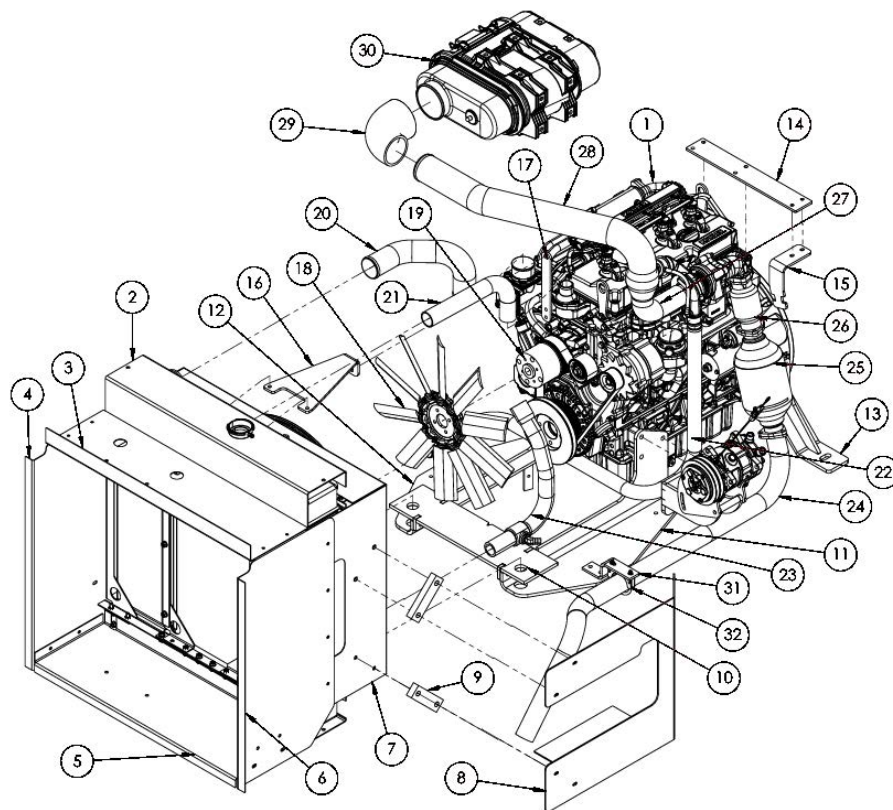
◀75▶



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RELKO ENGINE ASSEMBLY



ITEM #	PARTS #	DESCRIPTION	QTY.
1	204760	Relko 2504 Base Engine	1
2	344826F	Cooling Package	1
3	204768F	FMR Top Rad Panel	1
4	204767	FMR LH Rad Shroud	1
5	204769F	FMR Bottom Rad Panel	1
6	204766F	FMR RH Rad Shroud	1
N/S	204770F	FMR Rad Spacer	2
7	204765F	FMR Fan Shroud	1
8	804763	Starter Air Shield	1



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78

RELKO ENGINE ASSEMBLY (CONT.)

ITEM #	PARTS #	DESCRIPTION	QTY.
9	204773	Starter Shield Spacer	2
10	850826F	Cooling Package Mount Assy	1
11	203824F	Left Front Motor Mount	1
12	203825F	Right Front Motor Mount	1
13	804762	FMR Rear Motor Mount Assy	2
14	204780F	FMR DOC Mount	1
15	204779F	FMR Bent DOC Bracket	1
16	203834F	Upper Radiator Mount (Radiator Side)	1
17	203835F	Upper Radiator Mount (Engine Side)	1
18	344825F	Engine Fan	1
19	344821	Fan Spacer	1
20	344819F	Upper CAC Tube	1
21	344816F	Upper Rad Hose	1
22	344818F	Lower CAC Tube	1
23	344817F	Lower Rad Hose	1
24	204782	FMR Exhaust Tail Pipe	1
25	344859F	Exhaust DOC	1
26	344811F	FMR Exhaust Bellow	1
N/S	344823F	Exhaust DOC Blanket	1
N/S	344835F	Exhaust Bellow Blanket	1
27	204762	90 Turbo Inlet	1
28	204781	FMR Intake Pipe	1
29	512244	4 to 3 Reducer Elbow	1
30	512605	Engine Air Cleaner	1
31	203823F	Lower Exhaust Mount	1
32	344099F	2" Exhaust Clamp	1
N/S* = Not Shown			

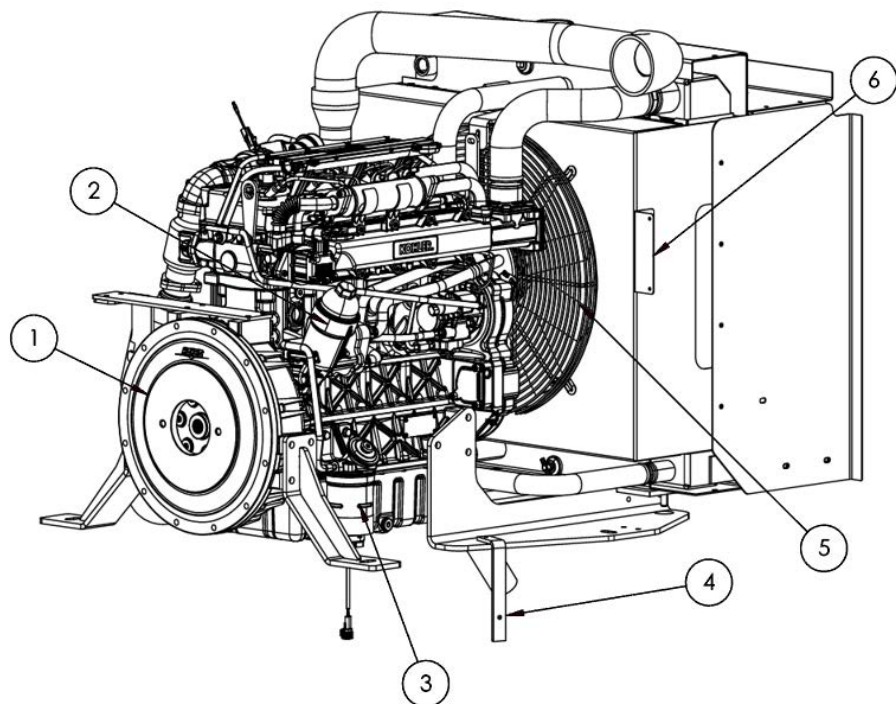


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79

RELKO ENGINE ASSEMBLY (CONT.)



ITEM #	PARTS #	DESCRIPTION	QTY.
1	204761	Drive Plate	1
2	344844F	Oil Filter	1
3	344843F	Fuel Filter	1
4	204787	Hose Control Bracket	1
5	344822F	Fan Finger Guard	1
6	203818F	Fuse Box Mount	1

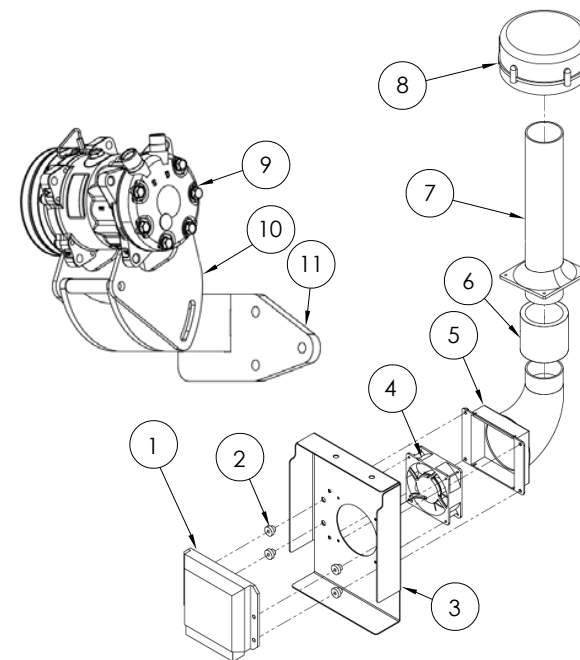


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« 80 »

RELKO ENGINE ASSEMBLY (CONT.)



ITEM #	PARTS #	DESCRIPTION	QTY.
1	NA	ECU	1
2	304311F	ISOLATOR BUSHING	4
3	204774F	ECU Mount	1
4	204777	ECU Fan	1
5	204775	ECU Cooler Duct	1
6	204776	ECU Air Intake	1
7	304163	3in Rubber Coupler	1
8	388425	3" Precleaner	1
9	403170F	Compressor	1
10	203655F	Compressor Adjustment Plates	2
11	850832F	Compressor Mount	1
N/S	344824F	Compressor V Belt	1
N/S	344836F	Serpentine Belt	
N/S	344815F	A/C Pulley	1
N/S	344832F	Throttle	1
N/S	204789	Throttle Spacer	2

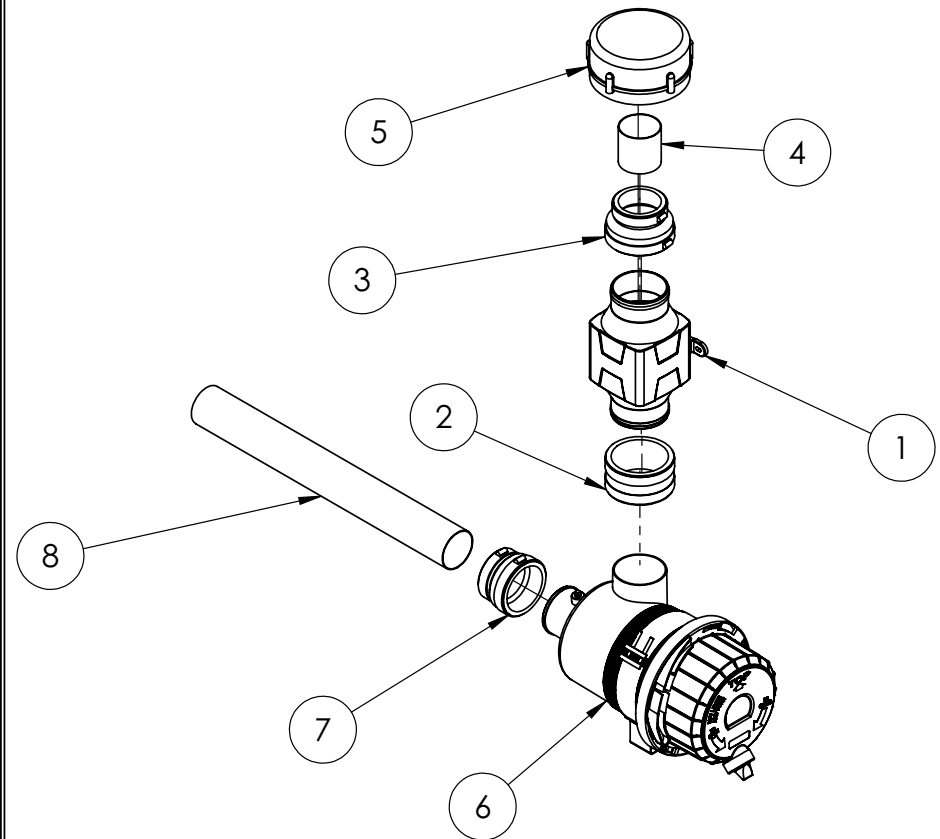
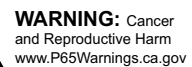
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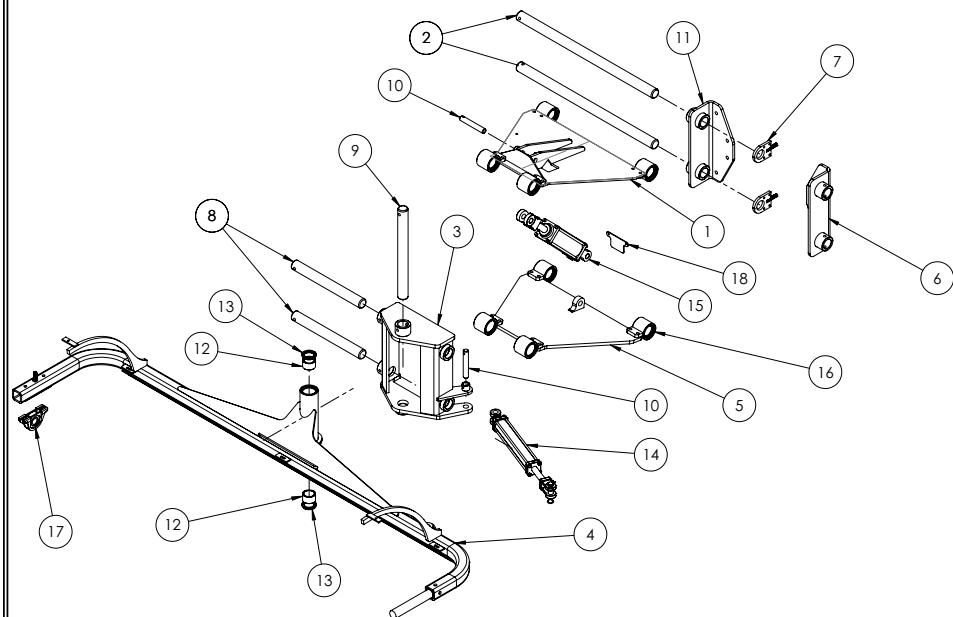
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« 81 »



ITEM #	PARTS #	DESCRIPTION	QTY.
1	512276	In-Line Blower	1
2	512272	4" Rubber Coupler	1
3	512274	4"-3" Rubber Reducer	1
4	387101	3.00 x 16 x 3.00 Tube	1
5	388426	Precleaner	1
6	512202	Cabin Air Filter Housing	1
7	512207	3 1/2" - 3" Rubber Reducer	1
8	512194	3" Flex Tube	3.125'
N/S	512214	Air Filter Element	1
N/S* = Not Shown			

NON-SIDE SHIFT LIFT ASSEMBLY



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◀ 84 ▶

NON-SIDE SHIFT LIFT ASSEMBLY (CONT.)

ITEM #	PARTS #	DESCRIPTION	QTY.
1	513210	Broom Assembly Arm Lower	1
2	514018	Pin, 2.00 x 37	2
3	513292	Weldment, Broom Rotate	1
4	513144	Broom Frame Assembly	1
5	513199	Broom Arm Lower Assembly	1
6	514020	Non-Side Shift Weldment, Slide Mount LH	1
7	513261	Shaft Collar	2
8	513271	Pin, 2.00 x 17.75	2
9	513232	Pin, 2.00 x 21.00	1
10	378604	Pin, 1.00 x 6.00	1
11	514019	Non-Side Shift Weldment, Slide Mount RH	1
12	501601	Bushing, 2.00 x 2.50 x 1.5	10
13	513237	Seal, 2.00 x 2.75 x .34	18
14	513252	2" x 12" Cylinder	1
15	513255	3" x 8" Cylinder	1
16	513195	Pivot Boss	8
17	513235	Pillow Block Bearing	1
18	514410	Hose Anticrush Plate	1

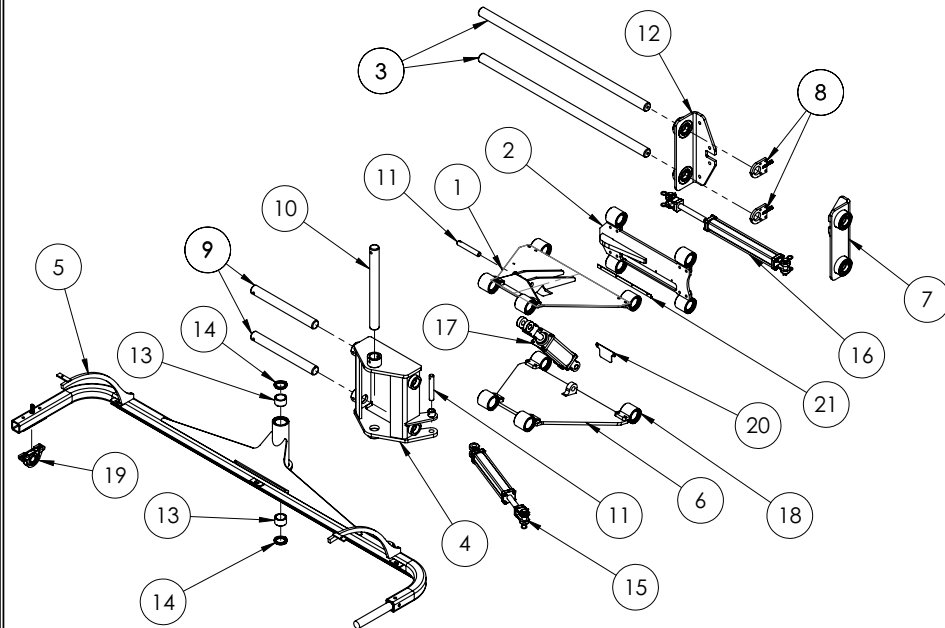


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◀ 85 ▶

SIDE SHIFT LIFT ASSEMBLY



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◀ 86 ▶

SIDE SHIFT LIFT ASSEMBLY (CONT.)

ITEM #	PARTS #	DESCRIPTION	QTY.
1	513210	Broom Assembly Arm Lower	1
2	513230	Broom Slider Assembly	1
3	513198	Pin, 2.00 x 50	2
4	513292	Weldment, Broom Rotate	1
5	513144	Broom Frame Assembly	1
6	513199	Side Shift Broom Arm Lower Assembly	1
7	513225	Weldment, Slide Mount LH	1
8	513261	Shaft Collar	2
9	513294	Pin, 2.00 x 17.75	2
10	513232	Pin, 2.00 x 21.00	1
11	378604	Pin, 1.00 x 6.00	1
12	513296	Side Shift Weldment, Slide Mount RH	1
13	501601	Bushing, 2.00 x 2.50 x 1.5	14
14	513237	Seal, 2.00 x 2.75 x .34	26
15	513252	2" x 12" Cylinder	1
16	513254	2" x 16" Cylinder	1
17	513285	3" x 8" Cylinder	1
18	513195	Pivot Boss	12
19	513235	Pillow Block Bearing	1
20	514410	Hose Anticrush Plate	1
21	512209	Wear Angle	1

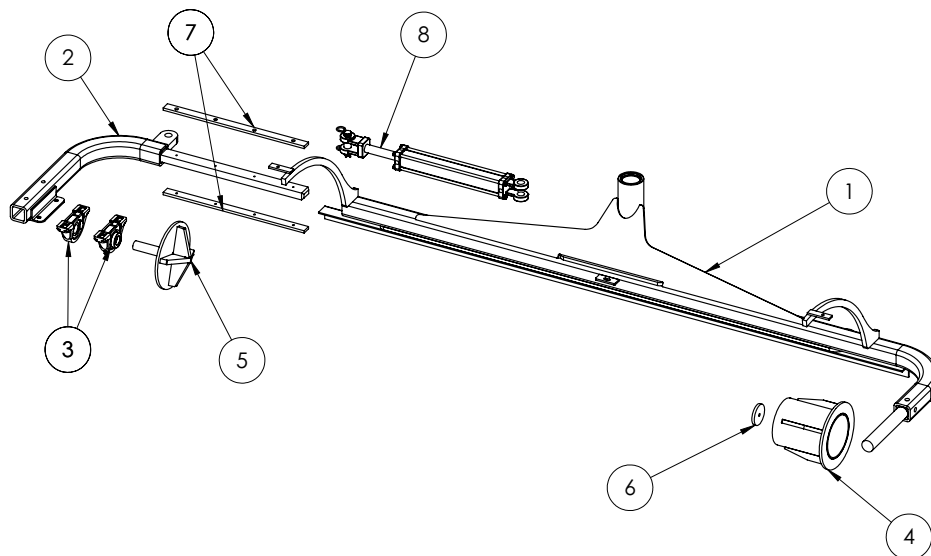


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◀ 87 ▶

QUICK CHANGE ASSEMBLY

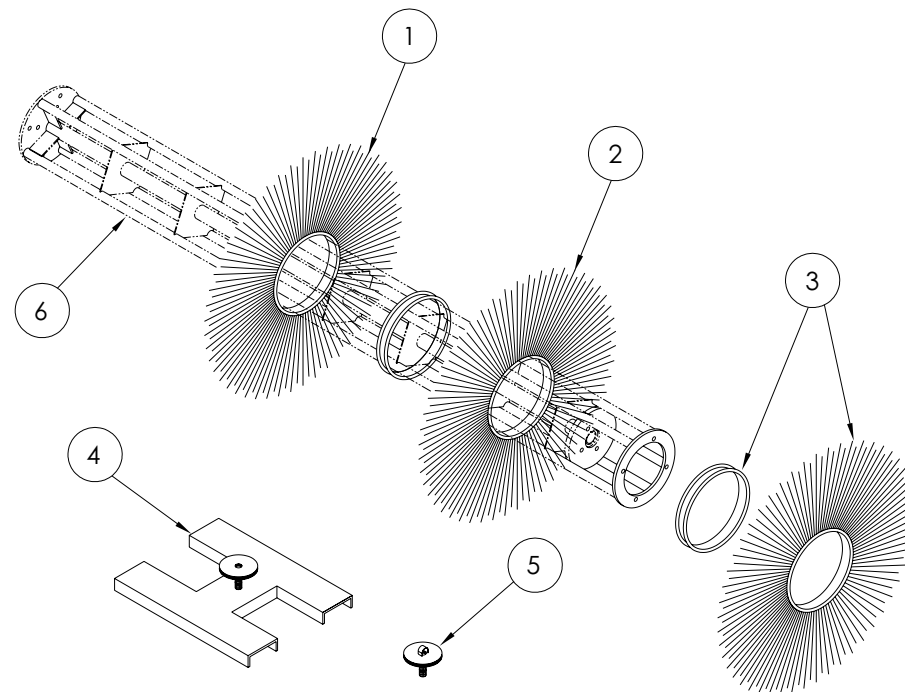


ITEM #	PARTS #	DESCRIPTION	QTY.
1	513926	Quick Change Frame Motor Side Weldment	1
2	513928	Quick Change Frame Shaft Side Weldment	1
3	513235	Pillow Block Bearing	1
4	513910	Quick Change Motor Hub Weldment Assembly	1
5	513917	Quick Change Idler Hub Weldment	1
6	513929	Quick Change Motor Hub Washer	1
7	513932	Quick Change Wear Plate	2
8	513254	Quick Change Shift Cylinder	1
N/S	64931	Screw, Countersunk, 1/4-20 x 3/4	8
N/S* = Not Shown			



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BROOM CORE WAFER & SPACER

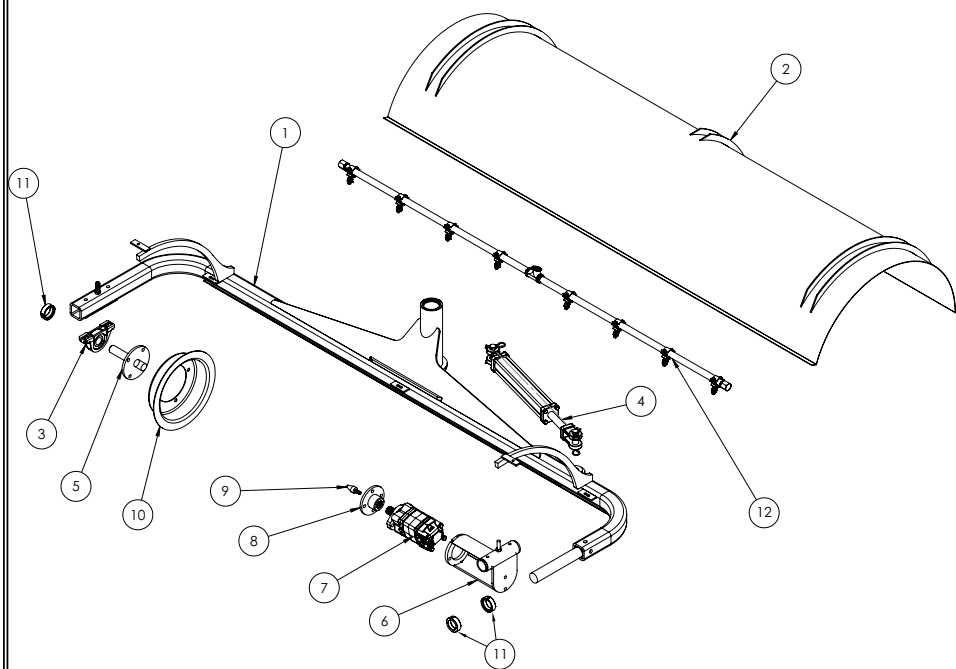


ITEM #	PARTS #	DESCRIPTION	QTY.
1	514010	10" x 32" Poly Wafer	1
2	514024	10" x 32" Wire Wafer	1
3	KF0003	8' Set, Poly Wafer w Spacers	1
3.1	KF0004	8' Set, 1/2 Poly 1/2 Wire w/Spacers	1
3.2	513925	Poly Quick Change Core	1
3.3	513916	1/2 Poly 1/2 Wire Quick Chnage Core	1
4	514027	Core Service Stand	1
5	514030	Core Service Ring	1
6	850029F	Core Mandrel	1



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BROOM CORE SHEILD ASSEMBLY



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« 90 »

BROOM CORE SHIELD ASSEMBLY (CONT.)

ITEM #	PARTS #	DESCRIPTION	QTY.
1	513144	Broom Frame Assembly	1
2	514208	Core Cover 8'	1
3	513235	Bearing - Concentric	1
4	513252	Cylinder 2" x 12"	1
5	514209	Spindle	1
6	514217	Motor Mount	2
7	514215	Core Motor	1
8	514219	Drive Hub Spline	1
9	514227	Rod Cone Guide	1
10	202144W	Core End Cap	2
11	514221	Lock Ring, Motor Mount	3
12	390442	Spray Bar Assembly	1
N/S	512957	Spray Bar Mount	2
N/S	389873	Spray Bar U-Bolts	2
N/S	514223	Rock Guard Strips	2
N/S	514401	Rear Rock Guard Support Angle	1
N/S	514402	Front Rock Guard Support Angle	1
N/S	514403	Rock Guard Supports	4
N/S	442203	Rock Guard Bolts	24
N/S	305972	Core Motor Seal Kit	-
N/S* = Not Shown			

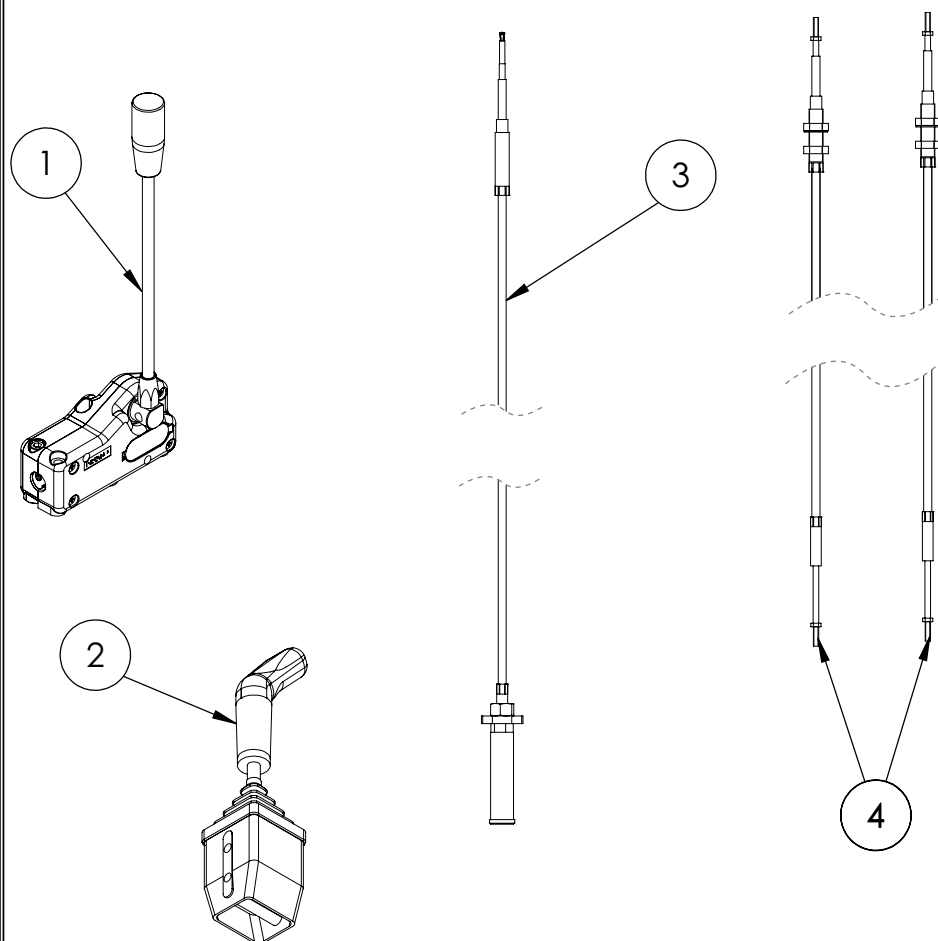


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« 91 »

HYDROSTATIC CONTROL ASSEMBLIES



ITEM #	PARTS #	DESCRIPTION	QTY.
1	513346	Single Axis Lever Cable Control Block	1
2	513348	HD Joystick with ON/OFF Switch	1
3	513350	35.4" Push-Pull Cable	2
4	513352	47.2" Push-Pull Cable	1

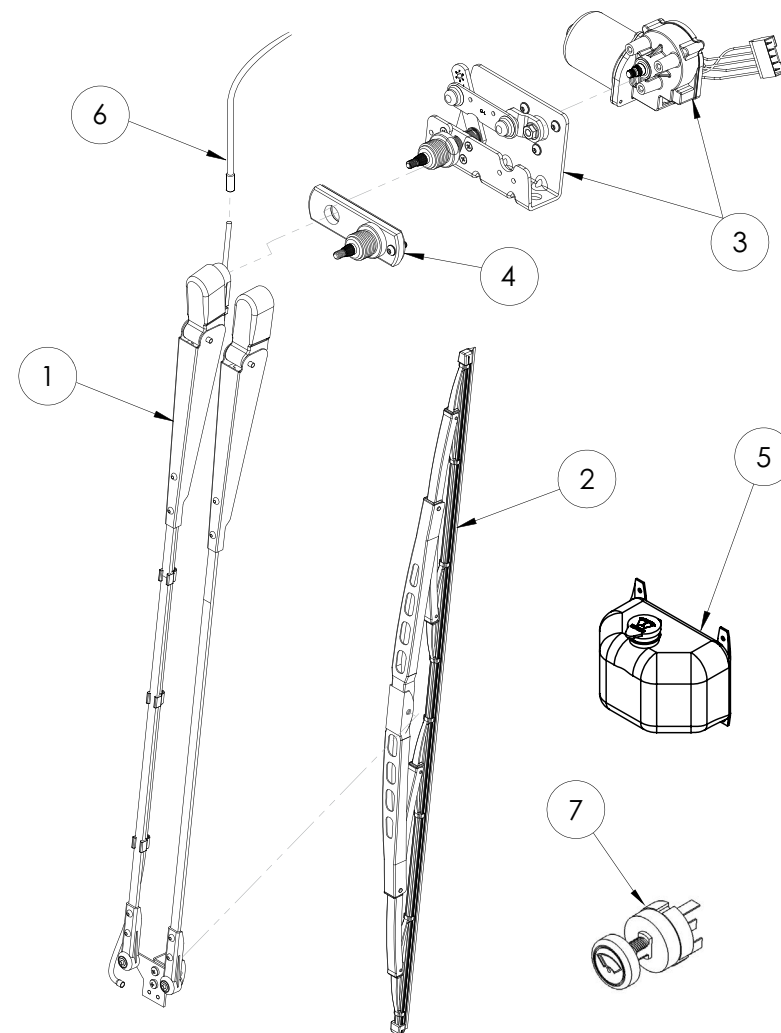


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◀ 92 ▶

WINDSHIELD WIPER



ITEM #	PARTS #	DESCRIPTION	QTY.
1	512117	Wiper Arm	1
2	512119	Wiper Blade	1
3	512113	Wiper Motor	1
4	512115	Slave Pivot	1
5	512121	Washer Pump and Reservoir	1
6	512122	Washer Hose	12 ft
7	513565	Wiper Switch	1

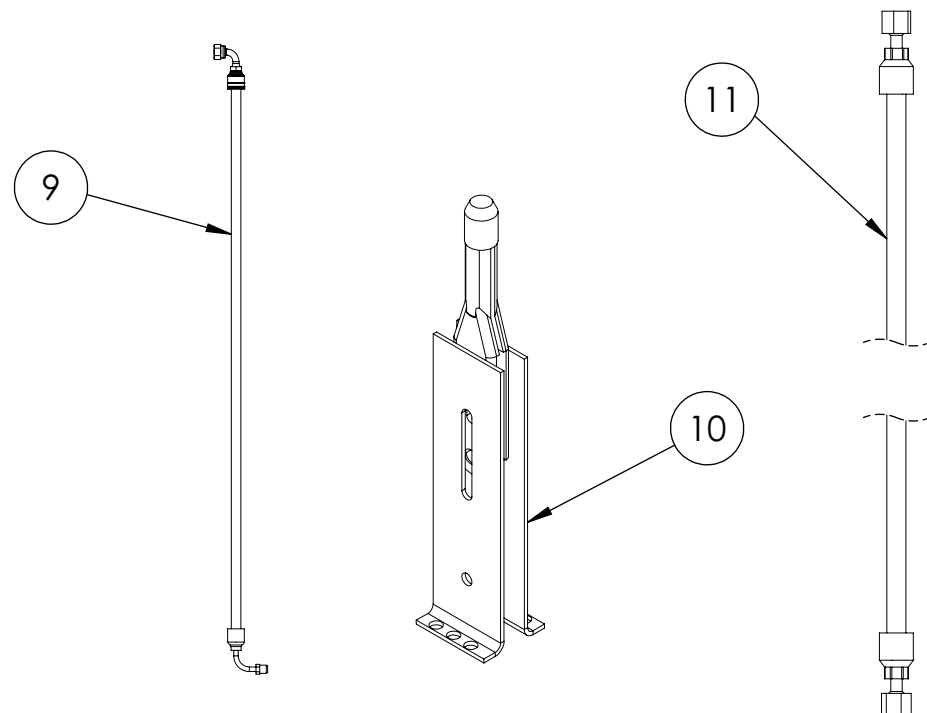


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◀ 93 ▶

BRAKE CONTROL

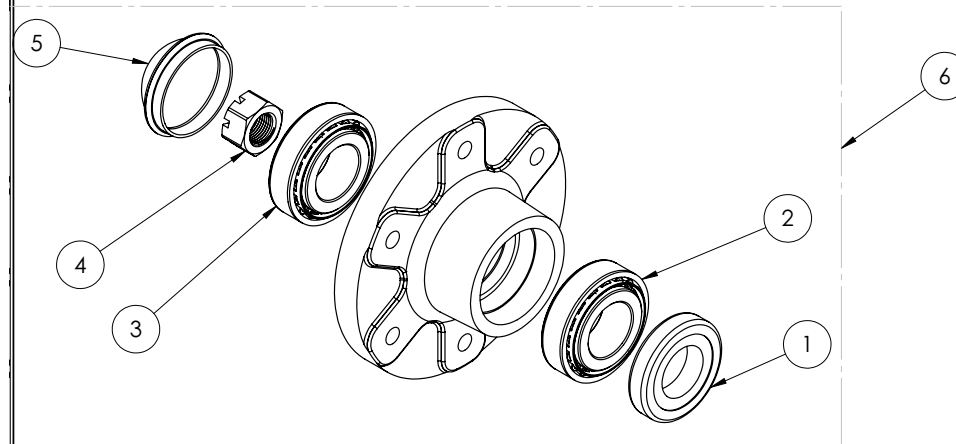


ITEM #	PARTS #	DESCRIPTION	QTY.
9	513414	Brake Line Hose Assembly	1
10	513114	Emergency Brake	1
11	513410	Brake Valve Hose Assembly	1



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REAR WHEEL HUB ASSEMBLY



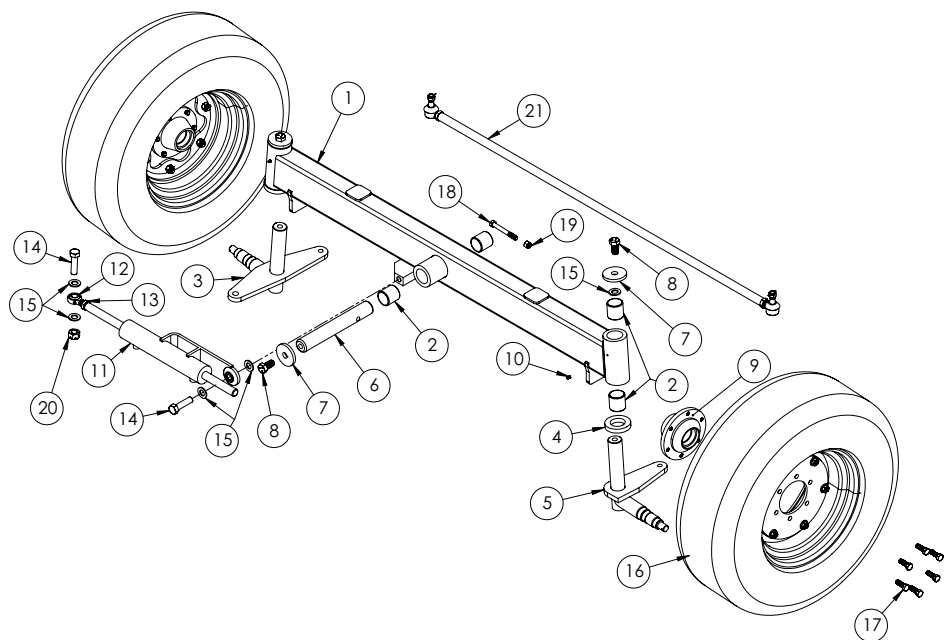
ITEM #	PARTS #	DESCRIPTION	QTY.
1	513174	Grease Seal	1
2	513165	Inner Taper Bearing	1
3	513158	Outer Taper Bearing	1
4	513152	Castle Nut	1
5	513151	Grease Cap	1
6	513155	Complete Rear Hub Assembly	1
N/S	513154	Washer	1

N/S* = Not Shown



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REAR AXLE ASSEMBLY & TIRES



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BROCE 470 - Series

◀ 96 ▶

REAR AXLE ASSEMBLY & TIRES (CONT.)

ITEM #	PARTS #	DESCRIPTION	QTY.
1	31401	Grease Zerk, .25-20 STR	3
2	V63023100	Thrust Washer, Lower	2
3	804726	Weldment, Axle	1
4	804729	Weldment, Spindle, Right	1
5	804727	Weldment, Spindle, Left	1
6	513165	Hub, 6 on 6	2
7	513166	Rear Wheel and Tire	2
N/S	513156	Front Wheel and Tire	2
N/S	513157	Rear Wheel	2
N/S	513902	Front Wheel	2
N/S	513159	Tire	4
8	513176	Axle Pivot Pin	1
9	513175	Washer, 3/4" x 3 1/2" x 3/8"	3
10	513176	Pin, Axle Pivot 1.75 x 12.06	1
11	203526F	Cylinder 2 x 6, Bailey 400-511	2
12	63023100	Brass Bushing, 1.75 ID x 2 OD x 2 Long	6
13	13276	Hex Lock Nut 1.00 - 8 UNC	4
14	12385	Hex Head Bolts, .75 x 1.5	3
15	V00609200	Hex Head Bolts, 1.00 x 3.50	2
16	512260	Lug Bolts, .50-20	12
17	11783	Bolts, .50 x 4.00	1
18	11981	Nylon Lock Nut .50-13	1
19	407908	Kit, Tie Rod End - LH	1
20	407916	Kit, Tie Rod End - RH	1
N/S	513201	3/4" - 16 Thin Hex Nut LH Thread	1
N/S	513203	3/4" - 16 Thin Hex Nut RH Thread	1
N/S	12005	Washer .56 Flat	1
21	804730	Tie Rod Assembly	1
N/S	804806	Wheel + Rear Spacer + Tire	2
N/S	804807	Wheel + Front Spacer + Tire	2

N/S* = Not Shown

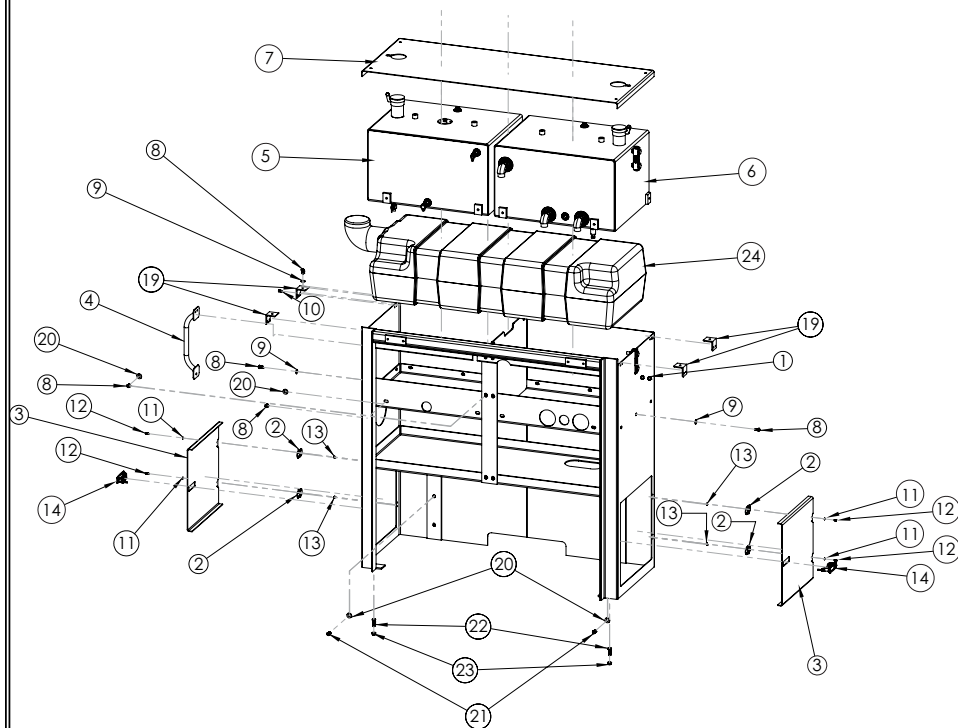


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BROCE 470 - Series

◀ 97 ▶

HYDRAULIC & FUEL TANK CABINET ASSEMBLY



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BROCE 470 - Series

◀ 98 ▶

HYDRAULIC & FUEL TANK CABINET ASSEMBLY (CONT.)

ITEM #	PARTS #	DESCRIPTION	QTY.
1	512787	Hex Weld Nut	2
2	512885	Surface Mount Hinge	4
3	512772	Cabinet Door	2
4	512457	Cabinet Grab Handle Assembly	1
5	512800	Fuel Tank Assembly	1
6	512850	Hydraulic Tank Assembly	1
7	512766	Tank Cabinet Top Panel	1
8	512788	3/8" - 16 x 3/4" Stainless Button Head Cap Screw	22
9	512783	3/8" Stainless Washer	6
10	512779	1/4" - 20 x 1/2" Stainless Button Head Cap Screw	8
11	512796	#8 Stainless Washer	4
12	512792	#8 - 32 x 1/2" Stainless Socket Head Cap Screw	16
13	512785	1/4" Stainless Washer	16
14	512775	Black Lever Latch	2
19	512768	Cover Support Bracket	4
20	512783	3/8" Stainless Washer	16
21	441659	3/8" - 16 x 1" Lock Bolt	4
22	83527	3/8" - 16 x 1 1/4" Lock Bolt	2
23	83501	Lock Nut	2
24	512914	Cabinet Poly Tank	1

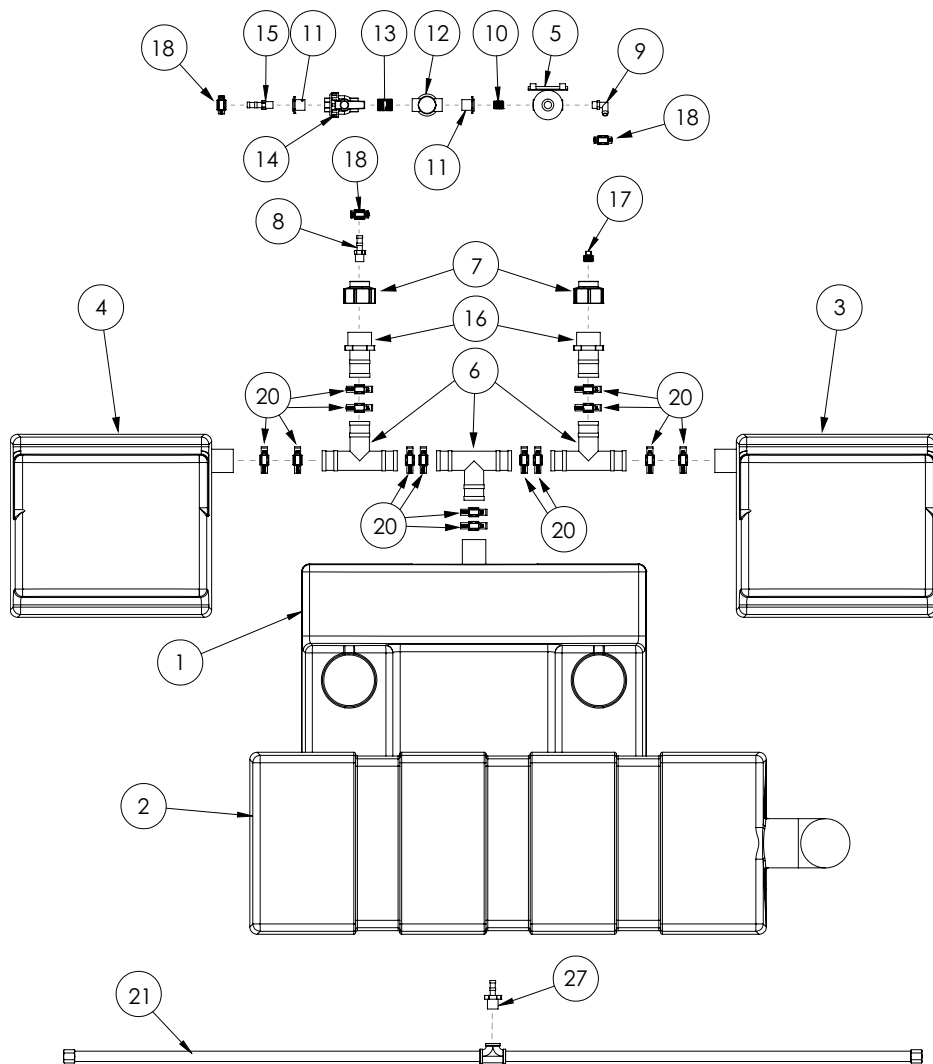


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BROCE 470 - Series

◀ 99 ▶

WATER SYSTEM



WARNING: Cancer
and Reproductive Harm
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BROCE 470 - Series

«100»

WATER SYSTEM (CONT.)

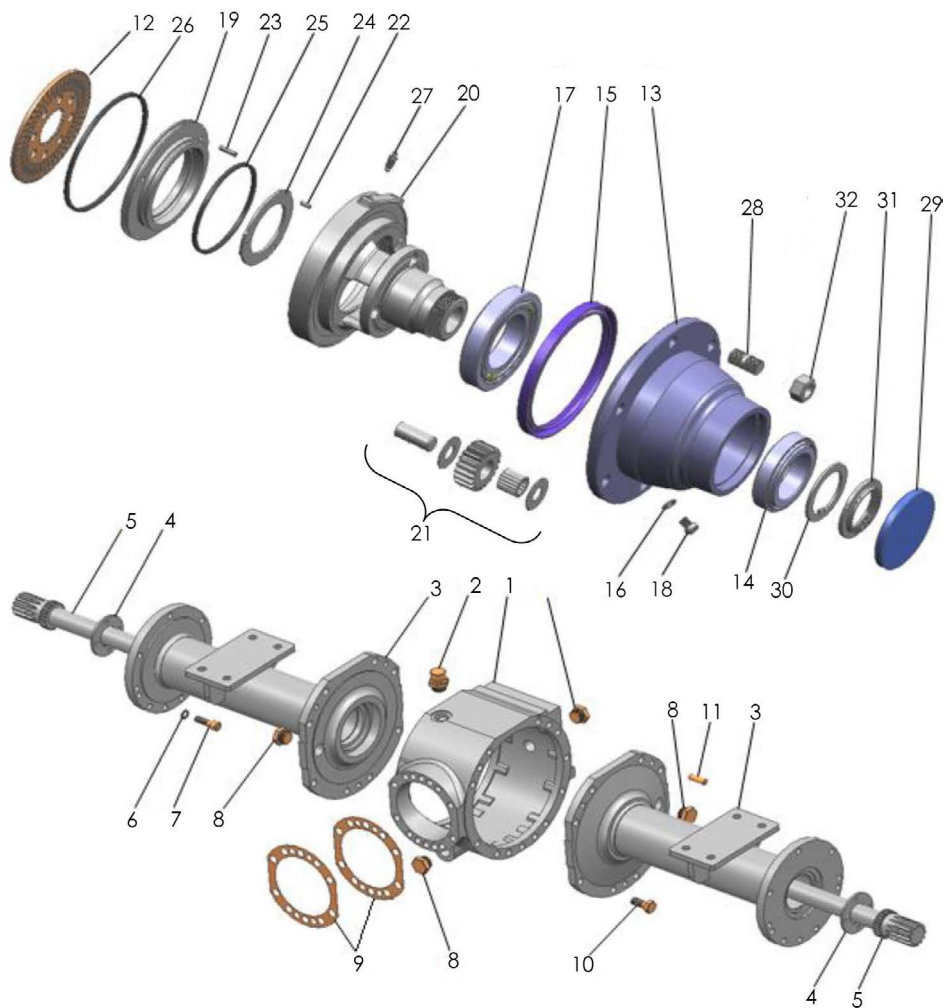
ITEM #	PARTS #	DESCRIPTION	QTY.
1	512916	Belly Tank	1
2	512914	Cabinet Tank	1
3	512920	LH Side Tank	1
4	512918	RH Side Tank	1
5	512844	Spray Pump	1
6	512923	2" Hose Barb Tee	3
7	512933	2" FPT - 1/2" FPT Reducer	2
8	389810	1/2" MPT - 1/2" Hose Barb	1
9	389818	3/8" NPT - 1/2" Hose Barb Elbow	1
10	389811	3/8" NPT Nipple	1
11	389813	3/4" - 3/8" Reducer	2
12	389802	Inline Strainer	1
13	389812	3/4" NPT Nipple	1
14	389809	3/4" Ball Valve	1
15	389483	3/8" MPT - 1/2" Hose Barb	1
16	512925	2" Hose Barb - 2" MPT	2
17	26195	1/2" NPT Plug	1
18	V01445200	#8 Hose Clamp	3
N/S	512231	3" Hose Clamp	2
20	389987	2" Hose Clamp	14
21	390441	Spray Bar (no Nozzels)	1
N/S	390442	Spray Bar with Nozzles	
N/S	67884	3" Hose	1
N/S	81794	2" Hose	3
N/S	512937	1" Vent Hose	12ft
N/S	83782	1/2" Hose	16ft
N/S	390443	Spray Tips Nozzle Assembly	8
27	389789	3/4" MPT - 1/2" Hose Barb	1
N/S	389803	Spray Nozzle Assembly Clamp and Body Only	8
N/S	389804	Nozzle Screen	8
N/S	389801	Spray Tip	8
N/S	389800	Spray Cap	8
N/S	307143	Water Sender	1

N/S* = Not Shown

«101»

BROCE 470 - Series

FRONT AXLE ASSEMBLY



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BROCE 470 - Series

«102»

FRONT AXLE ASSEMBLY (CONT.)

ITEM #	PARTS #	DESCRIPTION	QTY.
1	514450	Central Housing	1
2	514451	Tappo Sfiato M22x1.5	1
3	514452	Side Housing 326.5	1
4	514453	Shim	2
5	514454	Drive Shaft L.740,5	1
6	514455	Shnorr Washer D.10	18
7	514456	Socket Head Screw M10x30	18
8	514457	Cap M22x1,5 DIN 909	4
9	514458	Paper Gasket0,2	2
10	514459	Socket Head Screw M12x35	16
11	514460	Cylindric Pin Ø10x30	6
12	514430	Brake Disc	1
13	514431	Wheel Hub	1
14	514432	Bearing 32012X	1
15	514433	Oil Seal BASL 145x170x12	1
16	514434	Washer 10x16x1,5	1
17	514435	Bearing 30214	1
18	514436	Cap M10x1 DIN908	1
19	514437	Brake Piston	1
20	514438	Spindle	1
21	514439	Planetary Gears	3
22	514440	Parallel Pin 5x12	1
23	514441	Parallel Pin 6x20	3
24	514442	Brake Ring	1
25	514443	Square Ring 237-993-9780	1
26	514444	Square Ring 238-956-9707	1
27	514445	Brake Bleeder M10x1	1
28	514446	Stud Bolt M18x1,5 10.9	6
29	514447	Cap	1
30	514448	Lock Washer	1
31	514449	Locknut M55x2	1
32	514506	Nut M18x1.5 MF	12

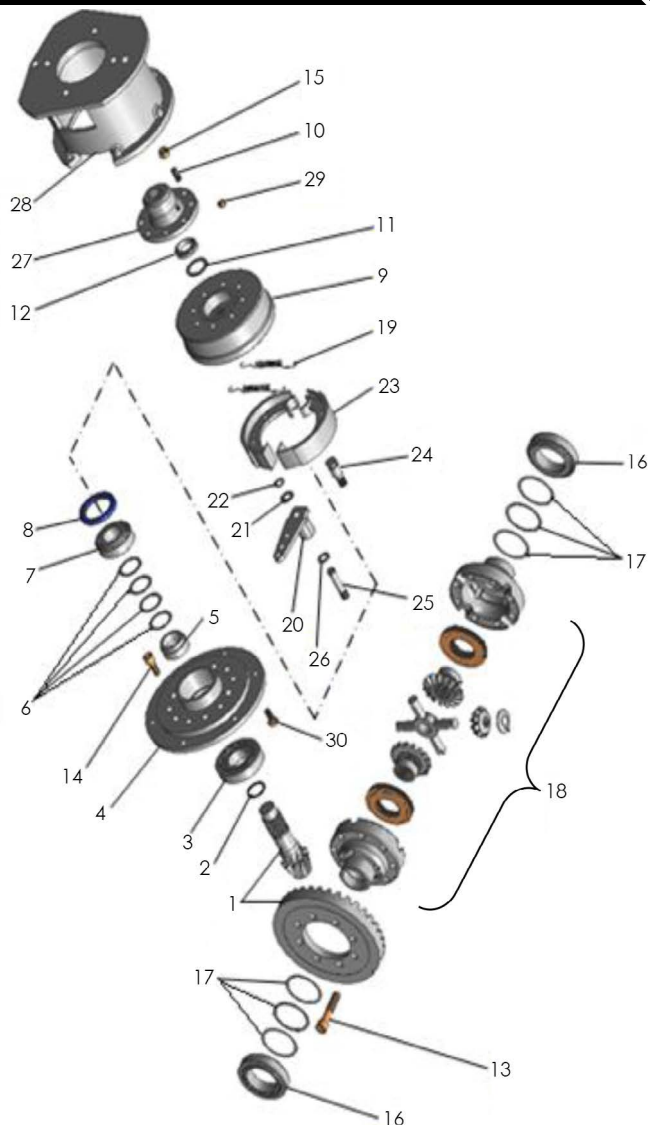


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BROCE 470 - Series

«103»

FRONT AXLE ASSEMBLY



ITEM #	PARTS #	DESCRIPTION	QTY.
N/S	513904	Front Axle	1
1	514461	Bevel gear R=4.11	1
2	514463	O-ring	1
3	514465	Taper rolling bearing	1
4	514467	Pinion Housing	11



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BROCE 470 - Series

«104»

FRONT AXLE ASSEMBLY (CONT.)

ITEM #	PARTS #	DESCRIPTION	QTY.
5	514469	Spacer	/
6	514471	Shim PS 35x45x0,1	/
6.1	514472	Shim PS 35x45x0,3	/
6.2	514473	Shim PS 35x45x0,5	/
6.3	514474	Shim PS 35x45x0,25	1
7	514475	Taper rolling bearing	1
8	514476	Oil seal BASL 50x72x8	1
9	514477	Flange with brake drum	8
10	514478	Stud bolt M10x25	1
11	514479	Shim AS 1528	1
12	514488	Ring Nut GP M30x1,5	8
13	514480	Socket Screw M14x70	1
14	514481	Socket Head Cap Screw M12x45 12.9	10
15	514482	Dado autoblok M10	8
16	514483	Front Wheel Bearing	2
17	514484	Spess. ø61x70x0,1	/
17.1	514485	Spess. ø61x70x0,3	/
17.2	514486	Spess. ø61x70x0,5	/
17.3	514487	Spess. ø61x70x0,35	/
18	514507	Differential Assembly LMS	1
19	514509	Spring	1
20	514511	Brake Lever	1
21	514513	Friction Washer	1
22	514515	Snap Ring E14 230-15H	6
23	514517	Brake Shoe Pair	1
24	514519	Brake Fulcrum	1
25	514521	Break Lever Pin	1
26	514523	Friction Washer	12
27	514525	Hydraulic Mot. Connection	12
28	514527	Hydraulic Mot. Mount	12
29	514528	Greaser M10x1	12
30	514529	Screw M10x25 8.8	12



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BROCE 470 - Series

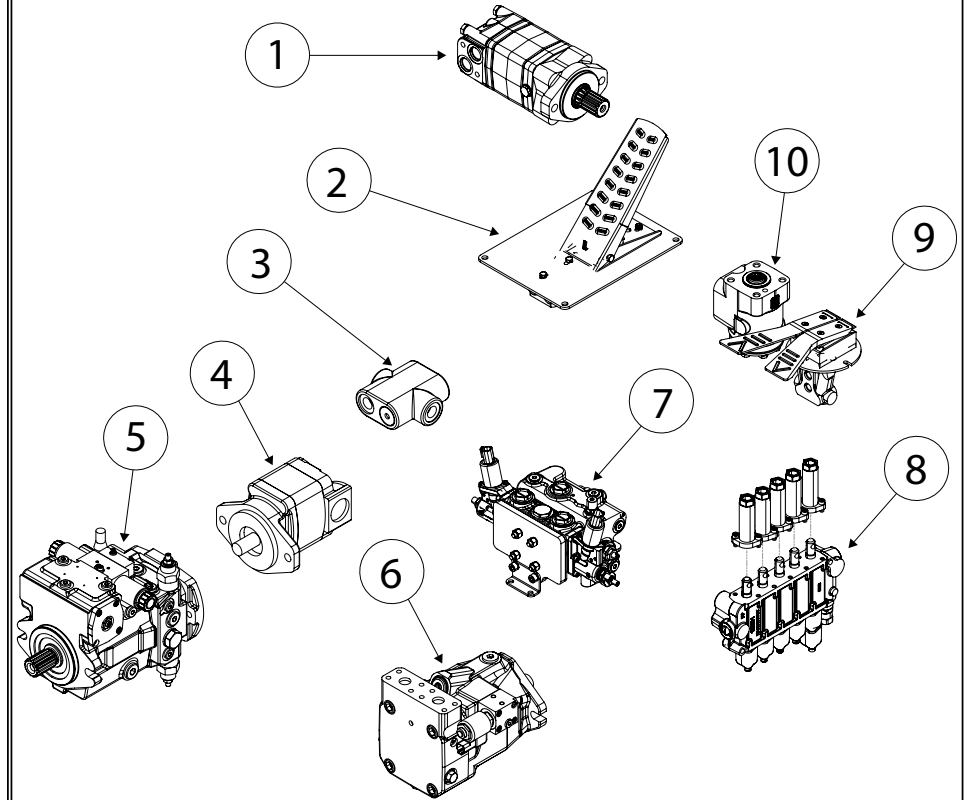
«105»

HYDRAULIC SYSTEM DETAILS



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HYDRAULIC SYSTEM COMPONENTS

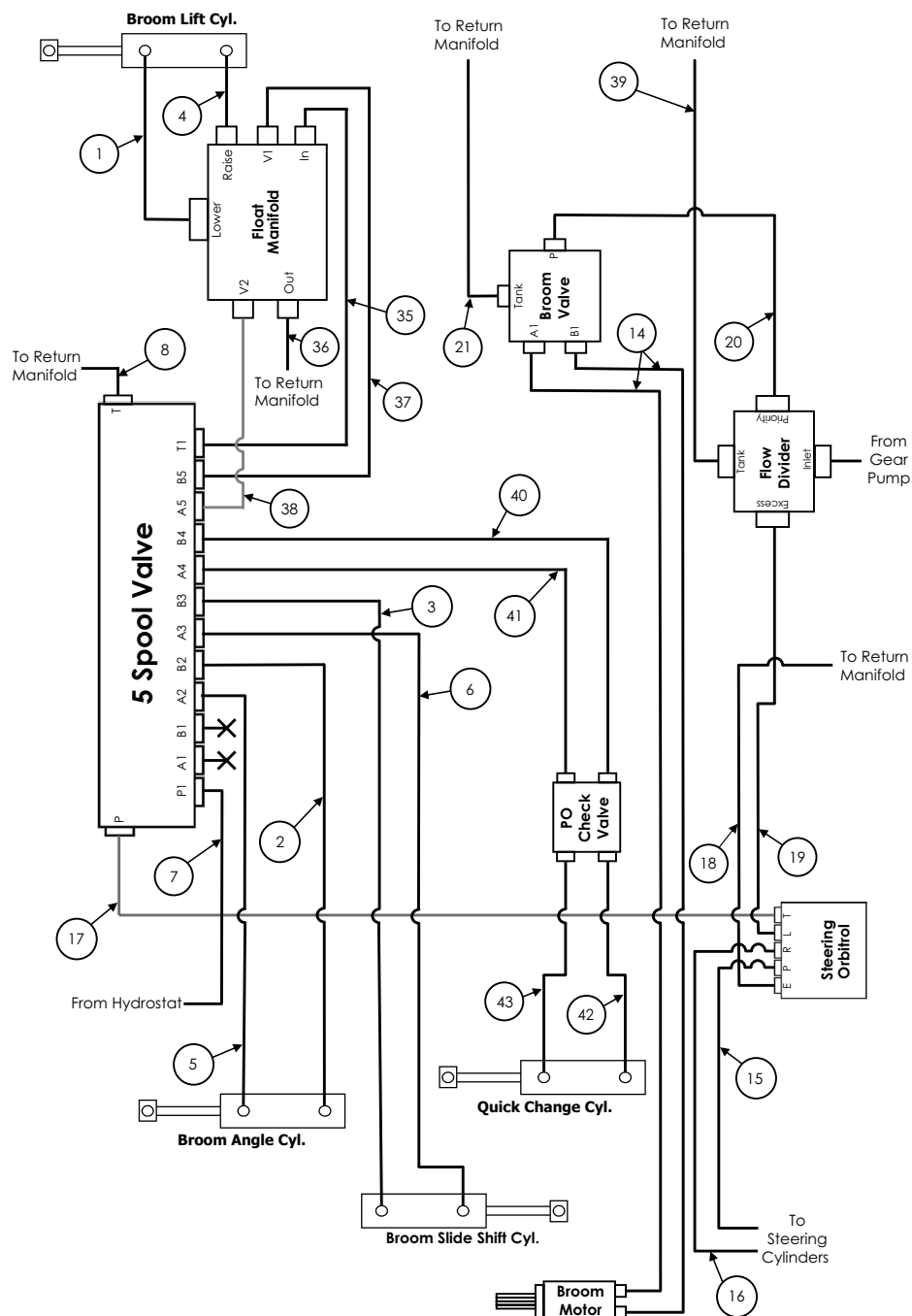


ITEM #	PARTS #	DESCRIPTION	QTY.
1	514215	Broom Core Hydraulic Motor	1
2	513270	Brake Valve	1
3	29553	Flow Divider	1
4	513474	Gear Pump	1
5	513253	Main Pump	1
6	513255	Drive Motor	1
7	513233	Broom Valve	1
8	513236	5 Spool Valve	1
9	389775-1	Foot Pedal and Bracket Assembly	1
10	305944W	Steering Orbital	1
N/S	513273	Pump O-Ring Kit	1
N/S* = Not Shown			



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HYDRAULIC SYSTEM SCHEMATICS (FRONT SECTION)

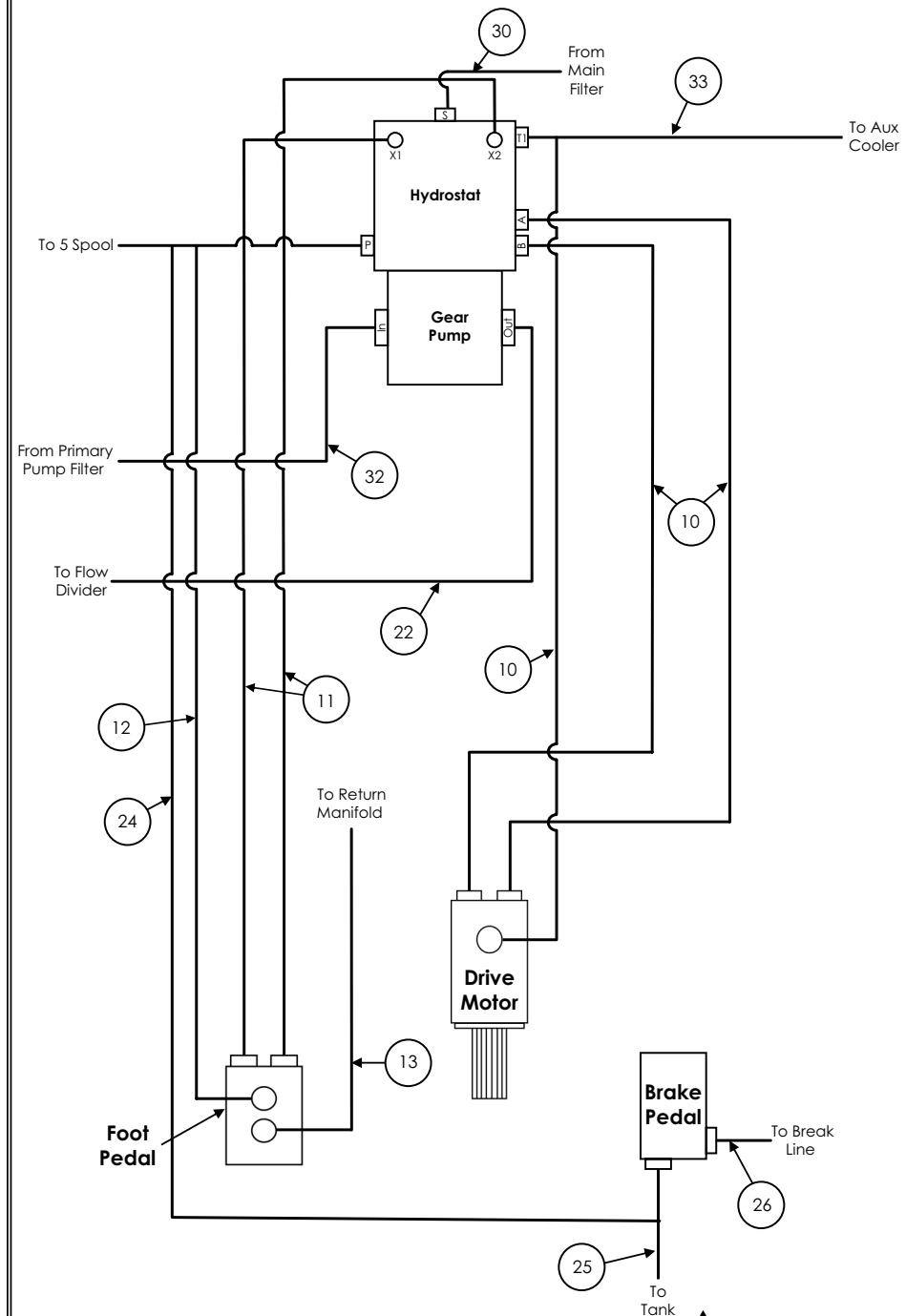


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BROCE 470 - Series

108

HYDRAULIC SYSTEM SCHEMATICS JOHN DEERE (MID SECTION A)

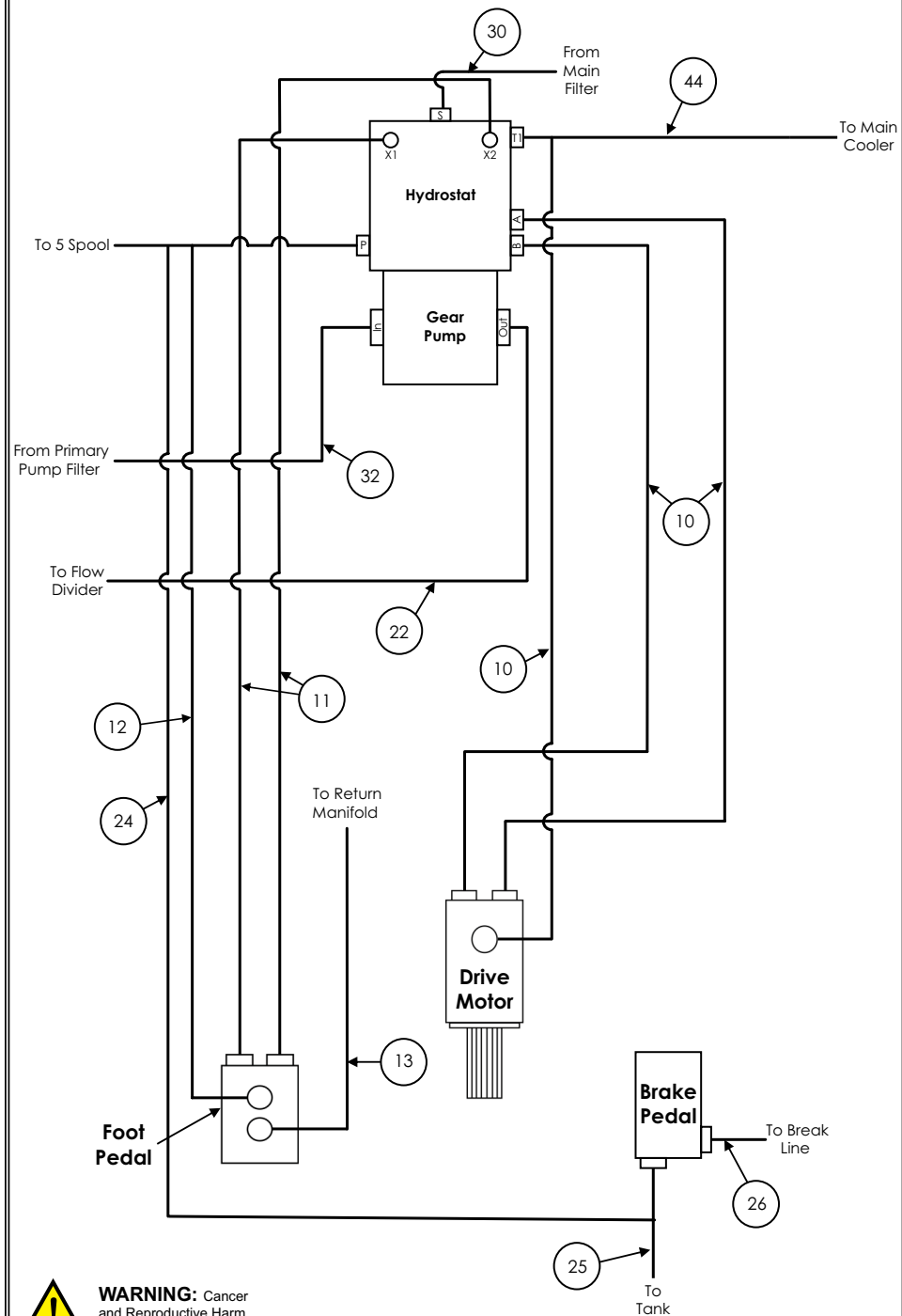


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BROCE 470 - Series

109

HYDRAULIC SYSTEM SCHEMATICS CUMMINS (MID SECTION A)

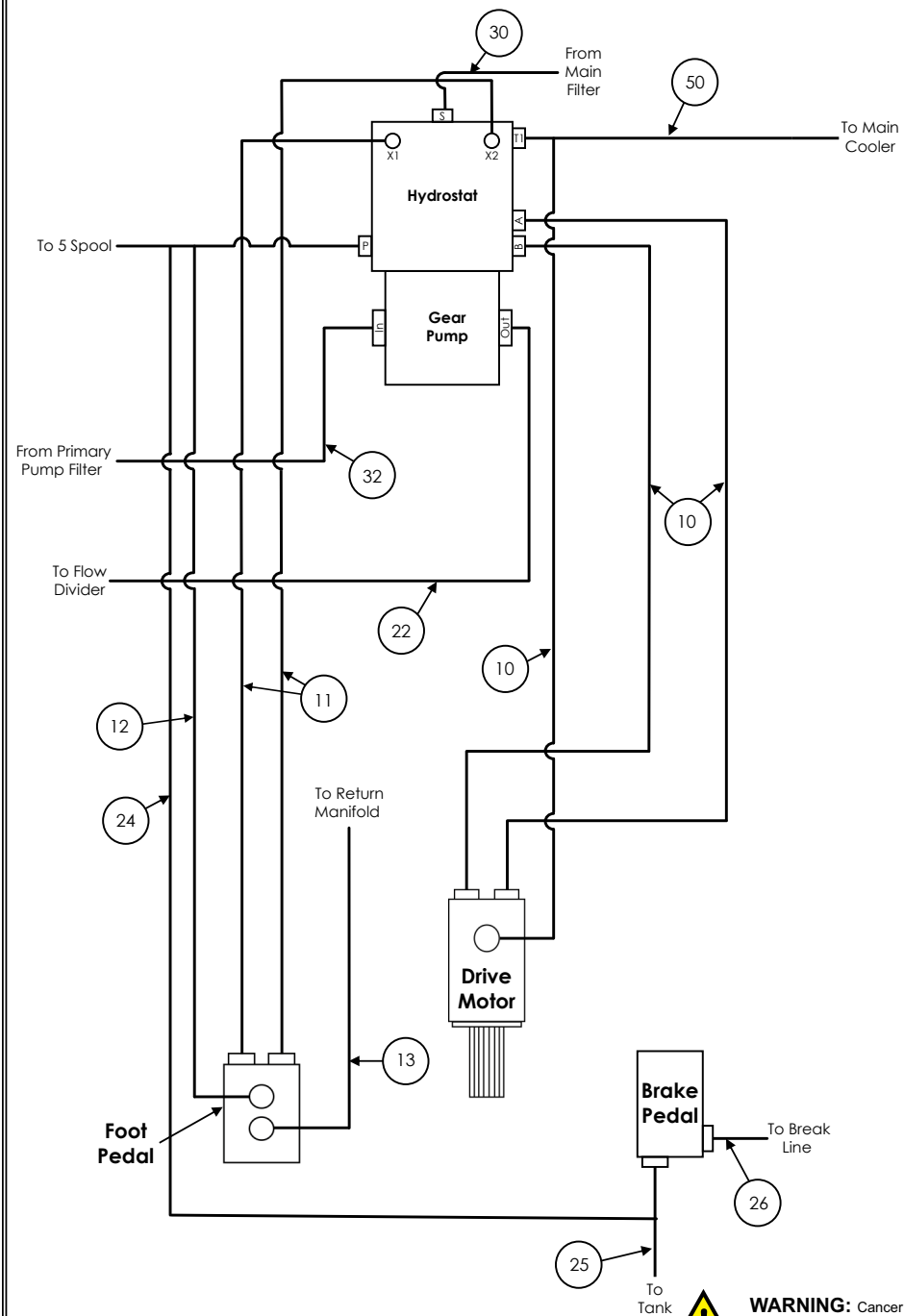


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BROCE 470 - Series

110

HYDRAULIC SYSTEM SCHEMATICS REHLKO (MID SECTION A)

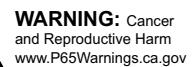
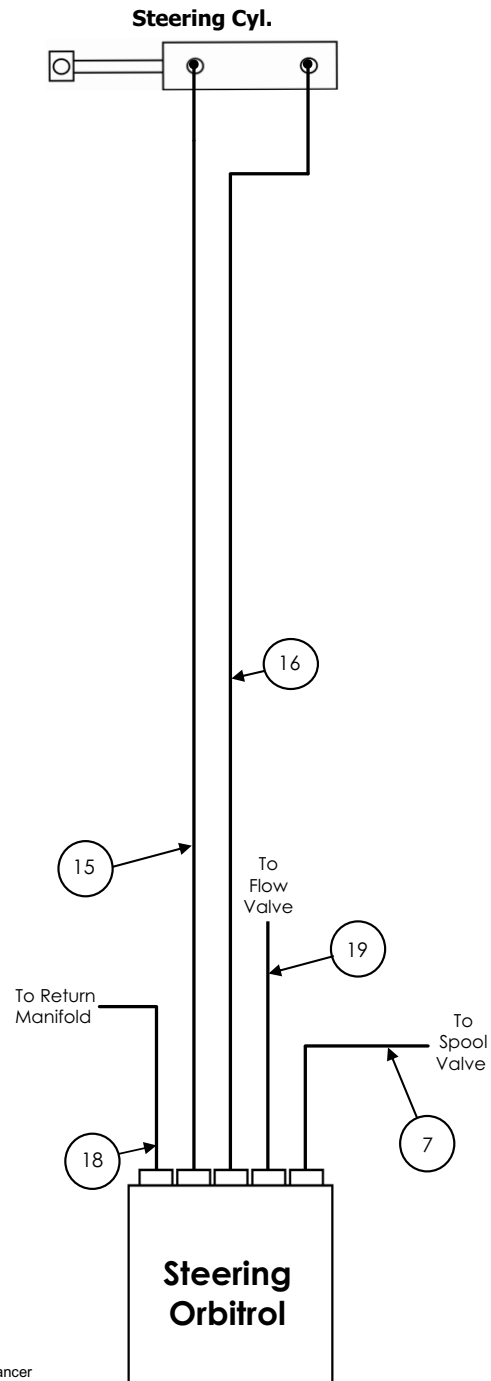


WARNING: Cancer and Reproductive Harm
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BROCE 470 - Series

111

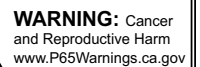
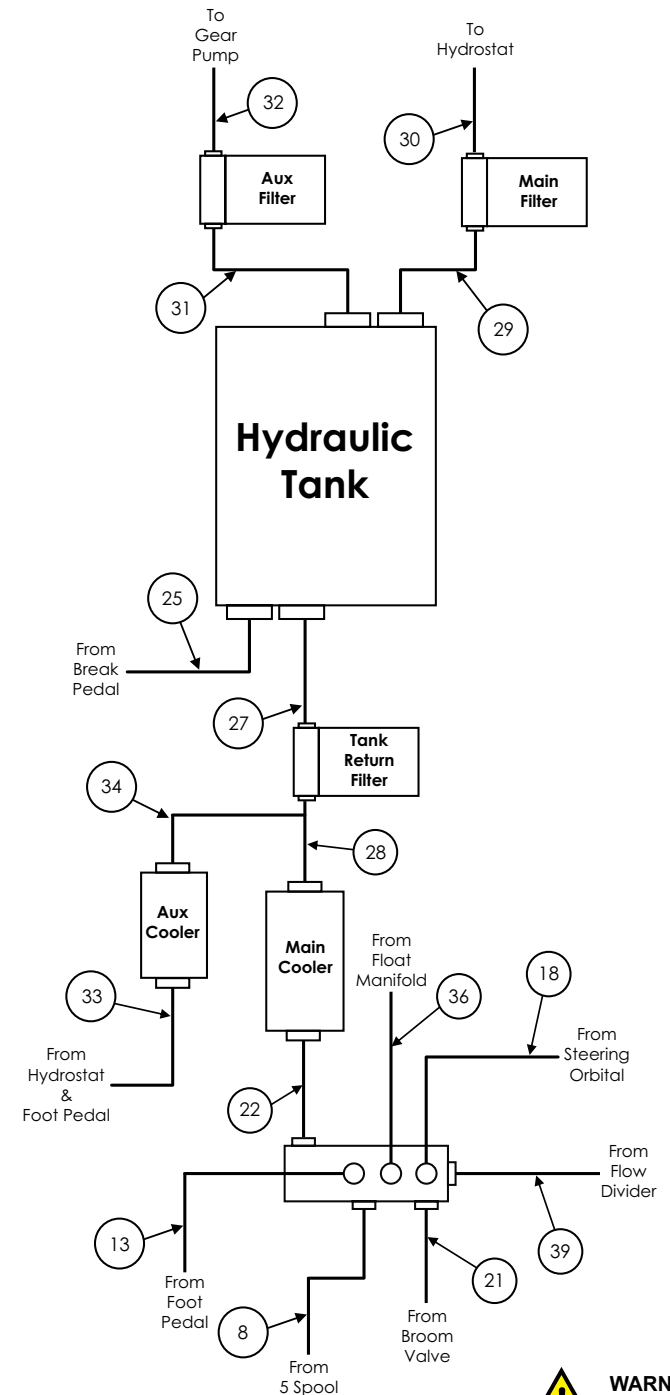
HYDRAULIC SYSTEM SCHEMATICS (MID SECTION B)



112

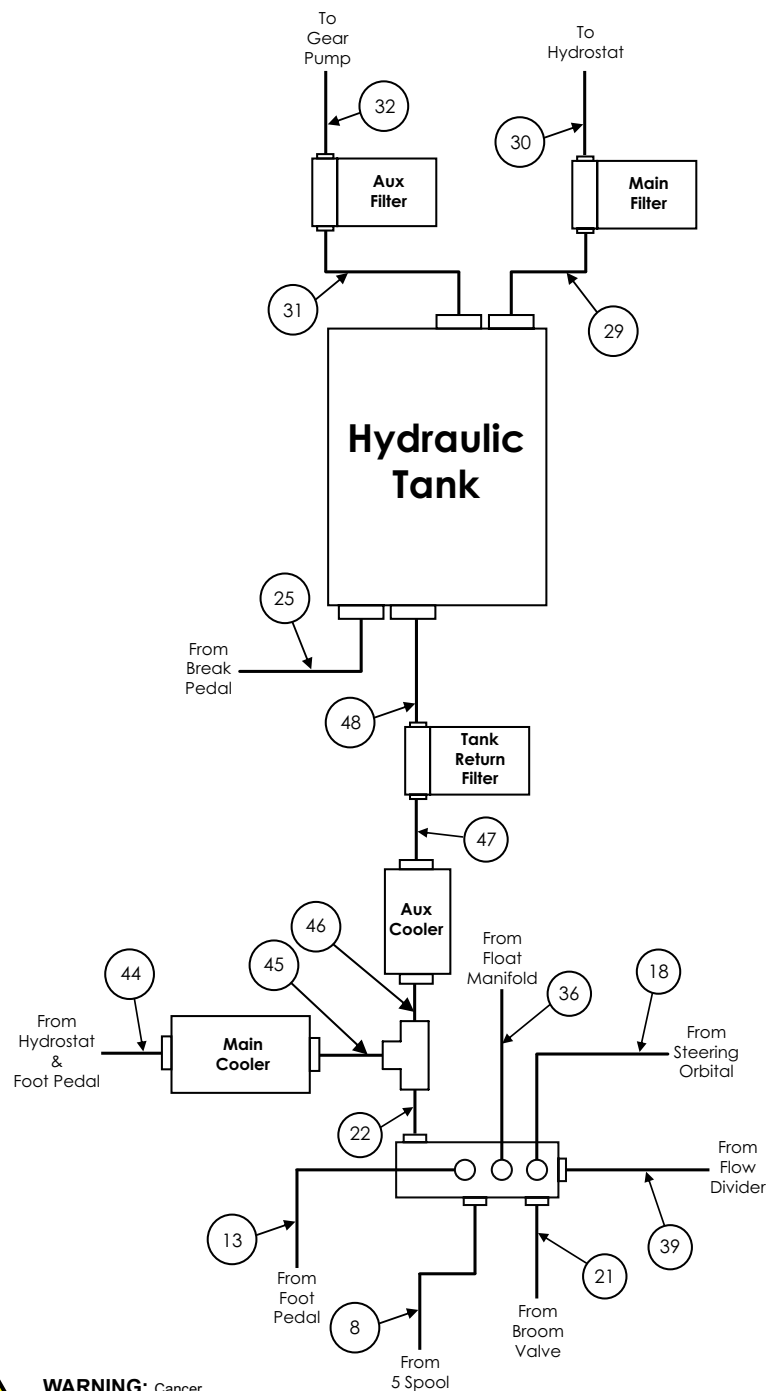
HYDRAULIC SYSTEM SCHEMATICS

JOHN DEERE (BACK SECTION)



BROCE 470 - Series

HYDRAULIC SYSTEM SCHEMATICS CUMMINS (BACK SECTION)

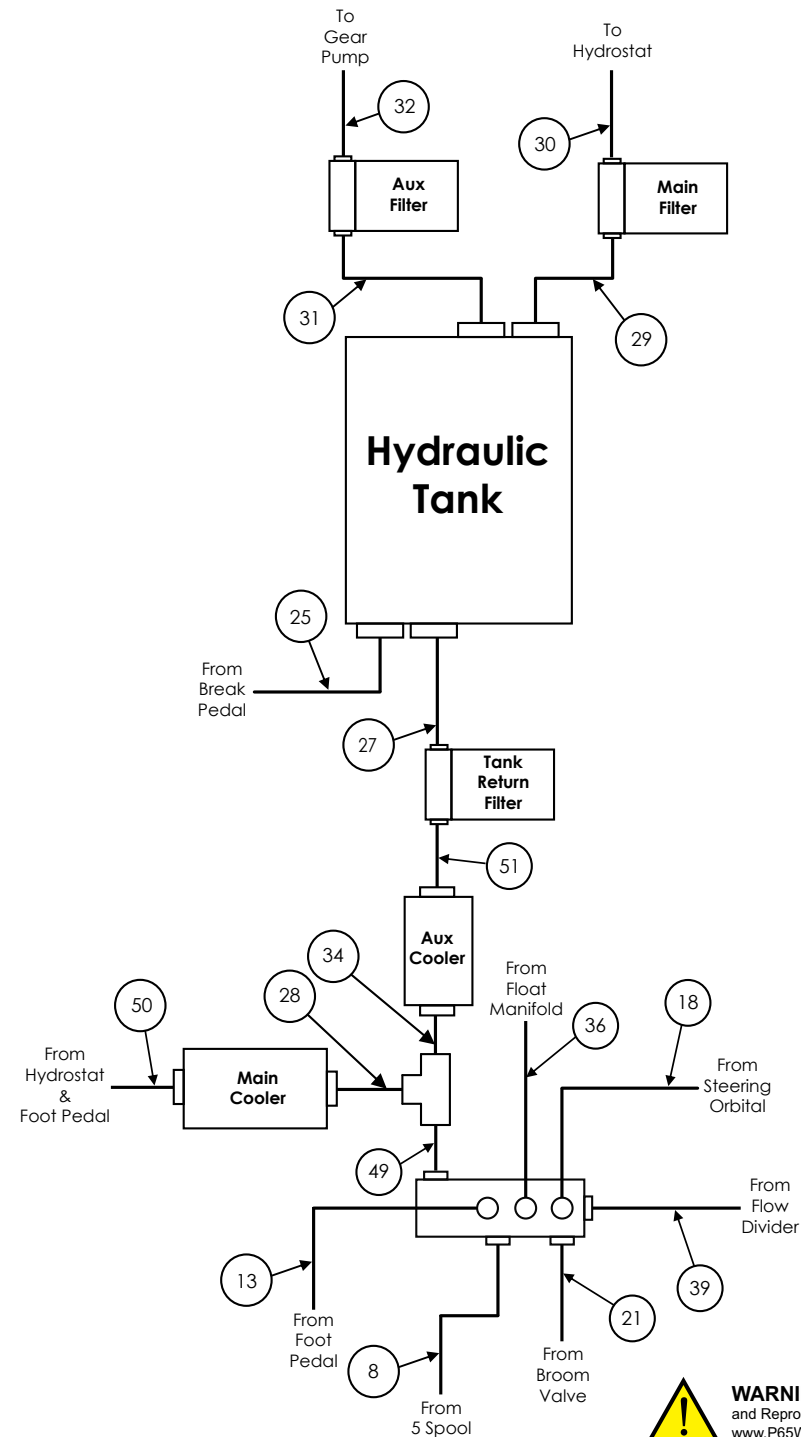


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BROCE 470 - Series

114

HYDRAULIC SYSTEM SCHEMATICS REHLKO (BACK SECTION)



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BROCE 470 - Series

115

HYDRAULIC SYSTEM COMPONENTS (SHEET)			
ITEM #	PARTS #	DESCRIPTION	QTY.
1	513364	Lift Cylinder Hose Assembly Rod Side	1
2	513366	Angle Cylinder Hose Assembly Piston Side	1
3	513370	Side Shift Hose Assembly Piston Side	1
4	513362	Lift Cylinder Hose Assembly Piston Side	1
5	513368	Angle Cylinder Hose Assembly Rod Side	1
6	513372	Side Shift Hose Assembly Rod Side	1
7	513374	5 Spool Valve Supply Hose Assembly	1
8	513376	5 Spool Valve Tank Return Hose Assembly	1
9	513360	Drive Motor Hose Assembly	2
10	513378	Drive Motor Tank Return Hose Assembly	1
11	513380	Forward/Reverse Pedal Hose Assembly	2
12	513384	Foot Valve Charge Pressure Hose Assembly	1
13	513386	Foot Valve Tank Return Hose Assembly	1
14	513388	Broom Motor Hose Assembly	2
15	513390	Steering Cylinder Hose Assembly Rod Side	1
16	513392	Steering Cylinder Hose Assembly Piston Side	1
18	513396	Orbitrol Tank Return Hose Assembly	1
19	513398	Orbitrol Hose Assembly	1
20	513402	Broom Valve Hose Assembly	1
21	513404	Broom Valve Tank Return Assembly	1
22	513406	Flow Divider Inlet Hose Assembly	1
23	513408	Main Oil Cooler Hose Assembly	1
24	513410	Brake Valve Hose Assembly	1
25	513412	Brake Valve Tank Return Hose Assembly	1
26	513414	Break Line Hose Assembly	1
27	513416	Filter Tank Return Hose Assembly	1
28	513418	Main Oil Cooler to Filter Hose Assembly	1
29	513420	Tank to Hydrostat Suction Filter Hose Assembly	1
30	513422	Hydrostat Pump Hose Assembly	1

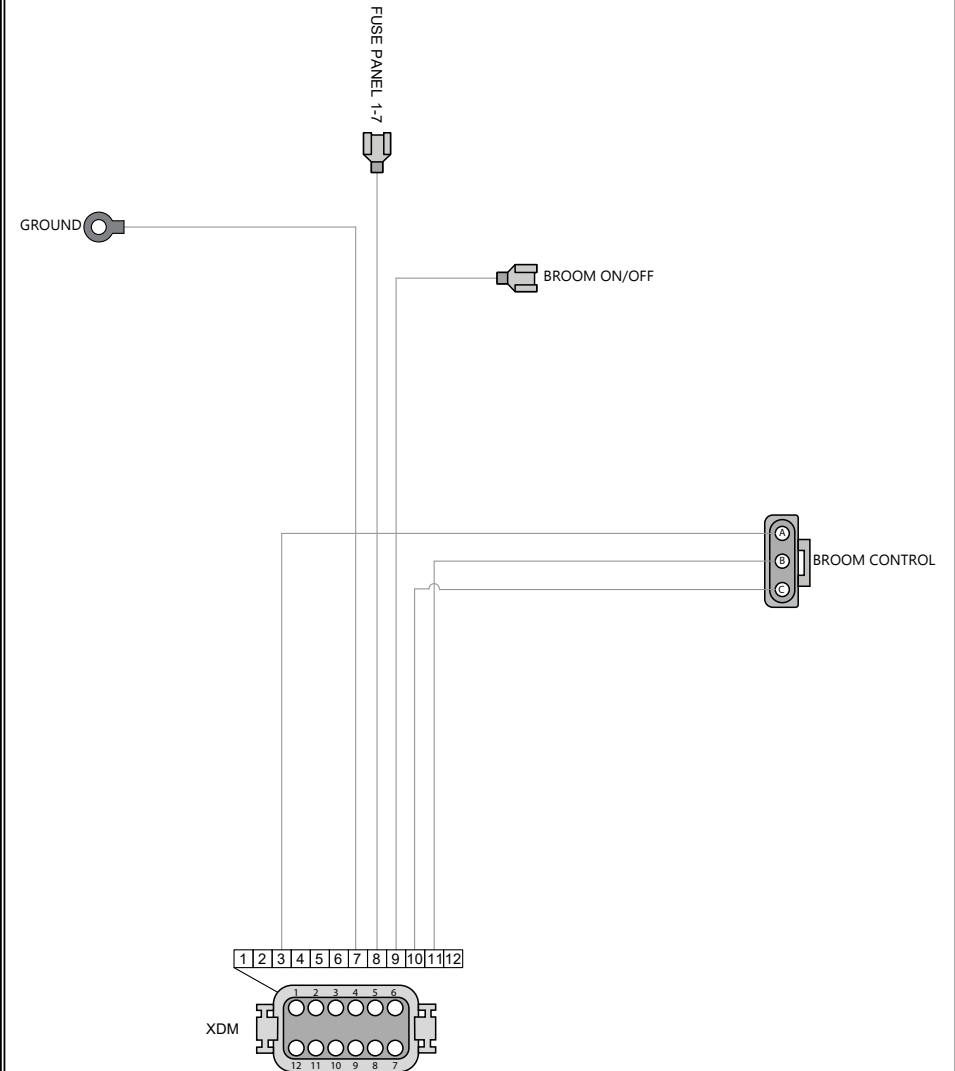
HYDRAULIC SYSTEM COMPONENTS (SHEET)			
ITEM #	PARTS #	DESCRIPTION	QTY.
31.1	513416	John Deer Tank to Gear Pump Hose Assembly	1
31.2	4FM003	Cummins Tank to Gear Pump Hose Assembly	1
32	389463	Gear Pump Hose Assembly	1
33	513428	Hydrostat Tank Return Hose Assembly	1
34	512647	Auxiliary Filter Tank Return Hose Assembly	1
35	513961	Float In Hose Assembly	1
36	513962	Float Out Hose Assembly	1
37	513963	Float V1 Hose Assembly	1
38	513964	Float V2 Hose Assembly	1
39	514074	Flow Divider Return Hose Assembly	1
40	513950	Quick Change Check Valve Hose Assembly Piston Side	1
41	513951	Quick Change Check Valve Hose Assembly Rod Side	1
42	513952	Quick Change Cylinder Hose Assembly Piston Side	1
43	513953	Quick Change Cylinder Hose Assembly Rod Side	1
44	4FM001	Cummins Case Drain To Return Hose	1
45	4FM004	Cummins Primary Cooler To Return Hose	1
46	4FM005	Cummins Return Tee To Cooler Hose	1
47	4FM002	Cummins Aux Cooler To Return Filter Hose	1
48	4FM003	Cummins Return Filter To Tank Hose	1
49	305740	FMR Return Manifold to Tee	1
50	305741	FMR Pump to Bottom Rad	1
51	305742	FMR AUX Cooler to Filter	1

WIRING SYSTEM DETAILS



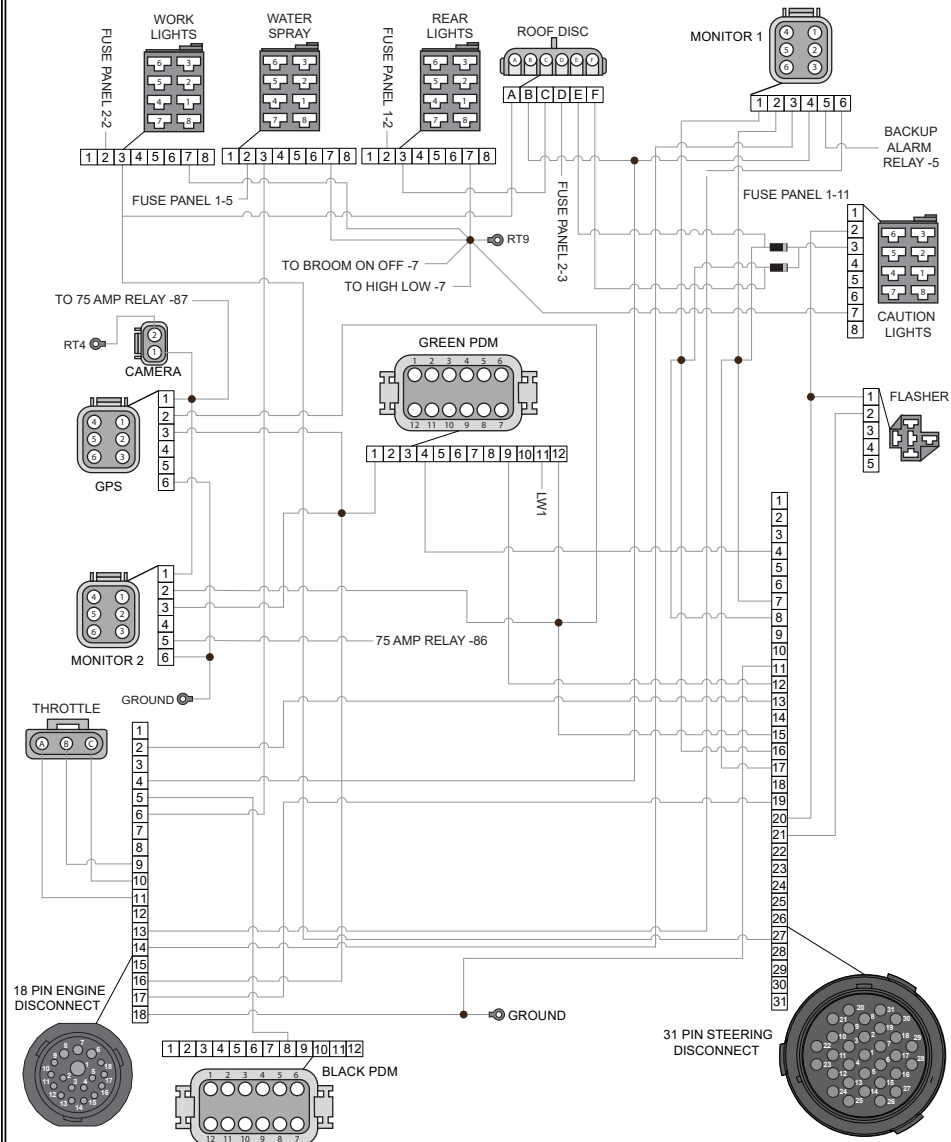
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and Reproductive Harm
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WIRING SYSTEM (BROOM SPEED CONTROL HARNESS)



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WIRING SYSTEM (CONSOLE FRAME HARNESS -1)

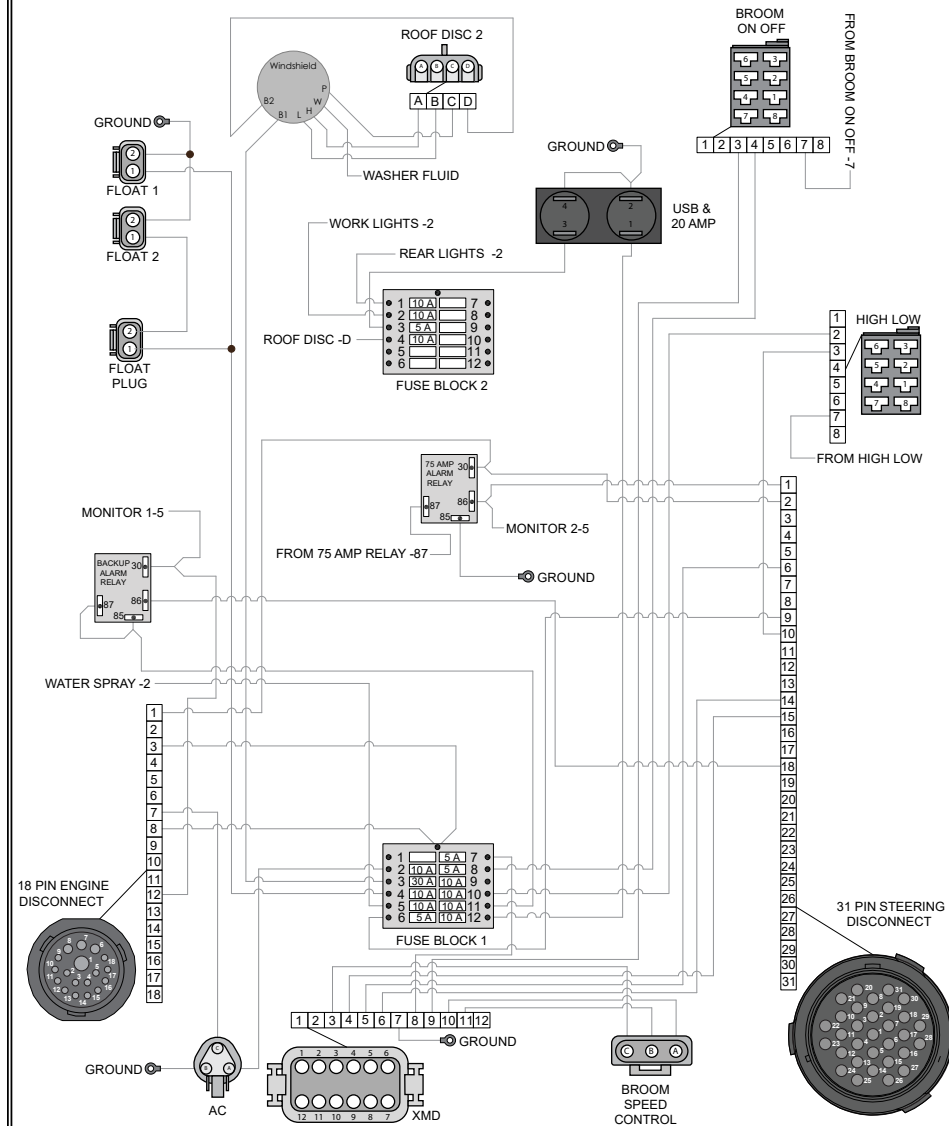


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«120»

WIRING SYSTEM (CONSOLE FRAME HARNESS - 2)

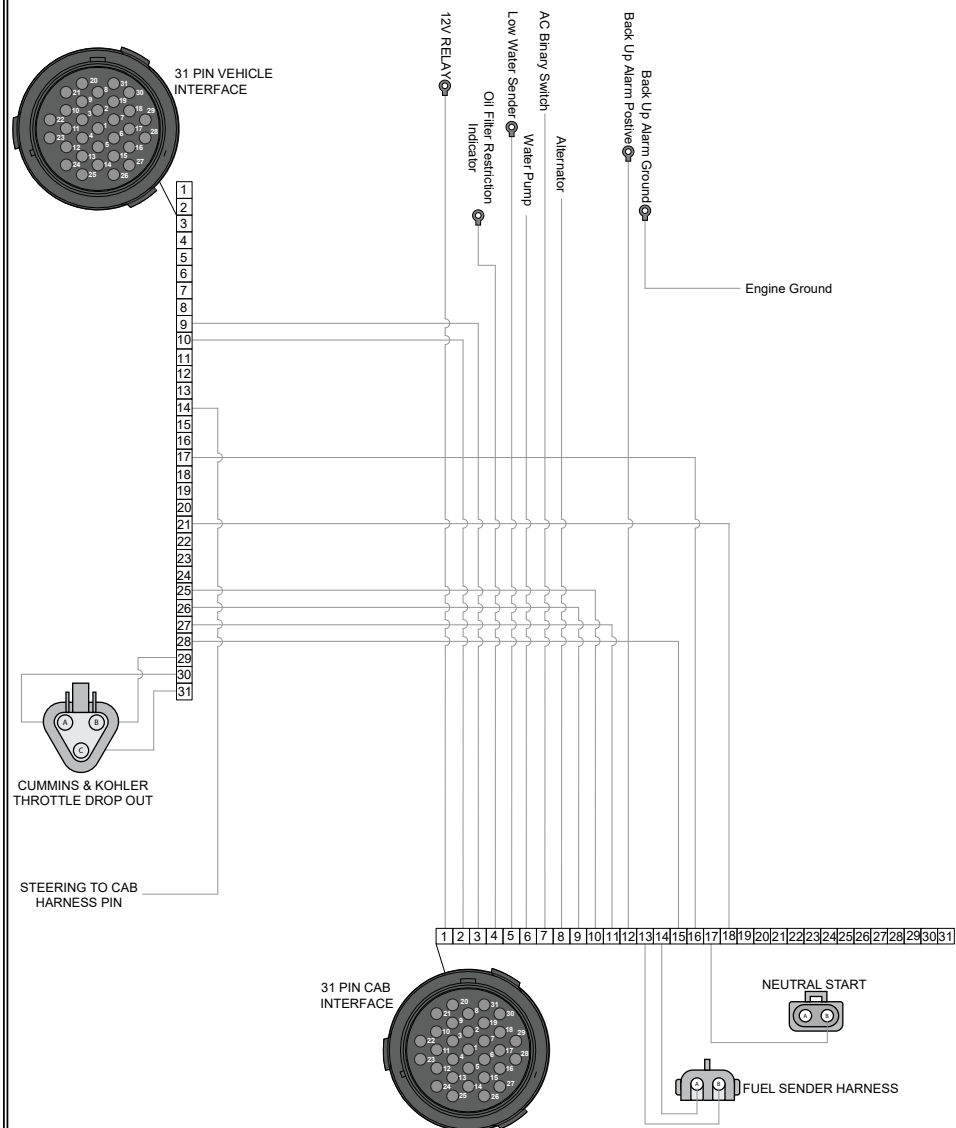


WARNING: Cancer
and Reproductive Harm
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BROCE 470 - Series

«121»

WIRING SYSTEM (ENGINE TO CAB HARNESS)

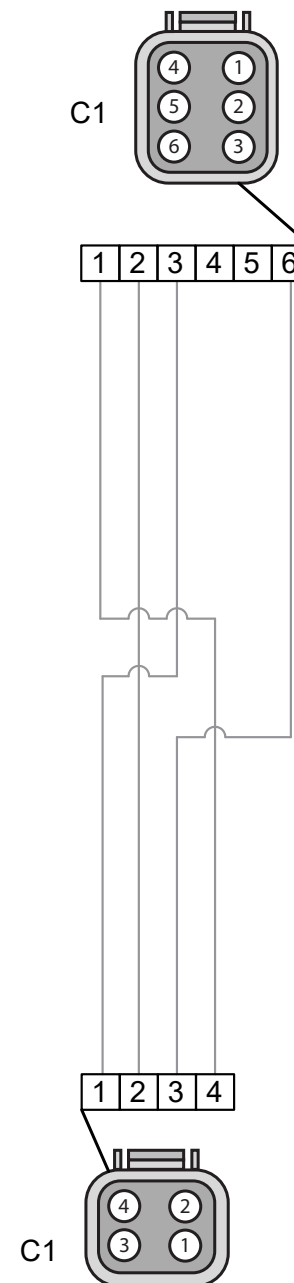


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BROCE 470 - Series

«122»

WIRING SYSTEM (GPS HARNESS)

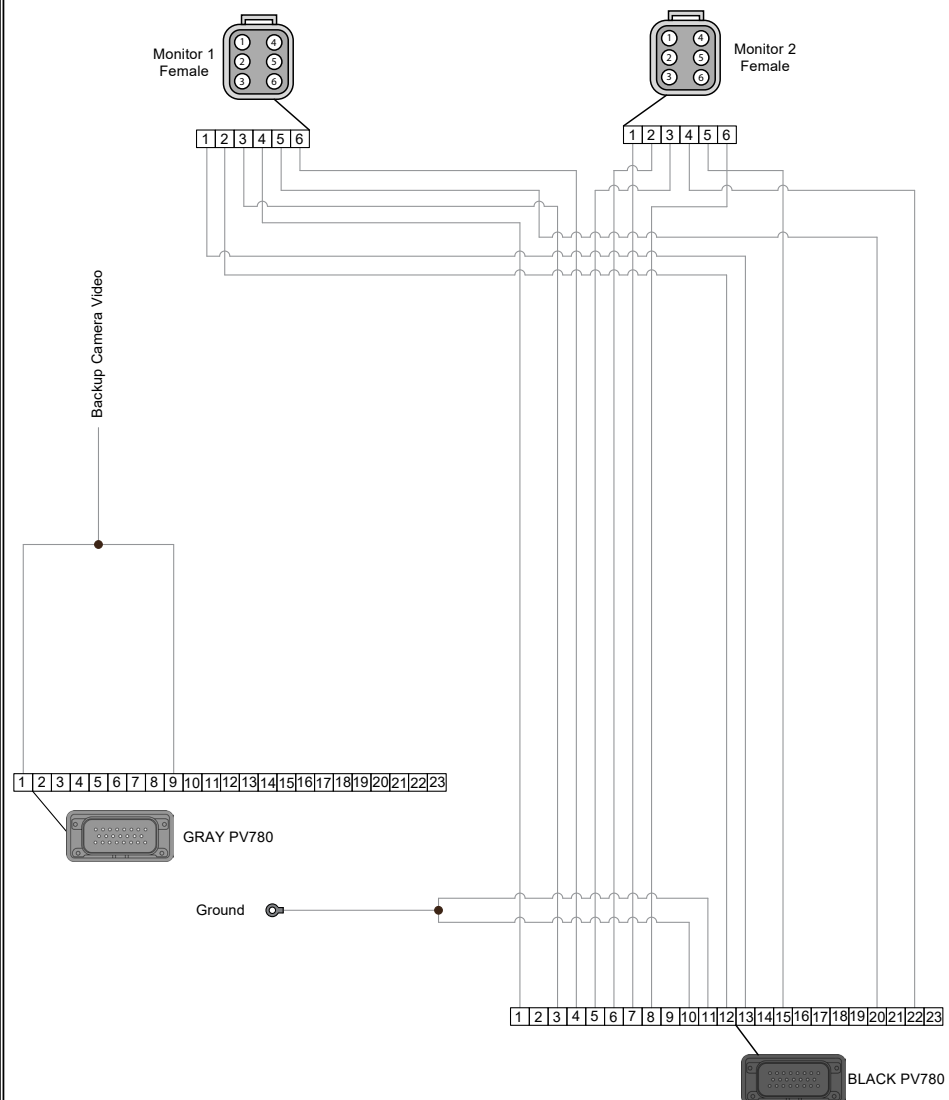


WARNING: Cancer and Reproductive Harm
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BROCE 470 - Series

«123»

WIRING SYSTEM (MONITOR HARNESS)

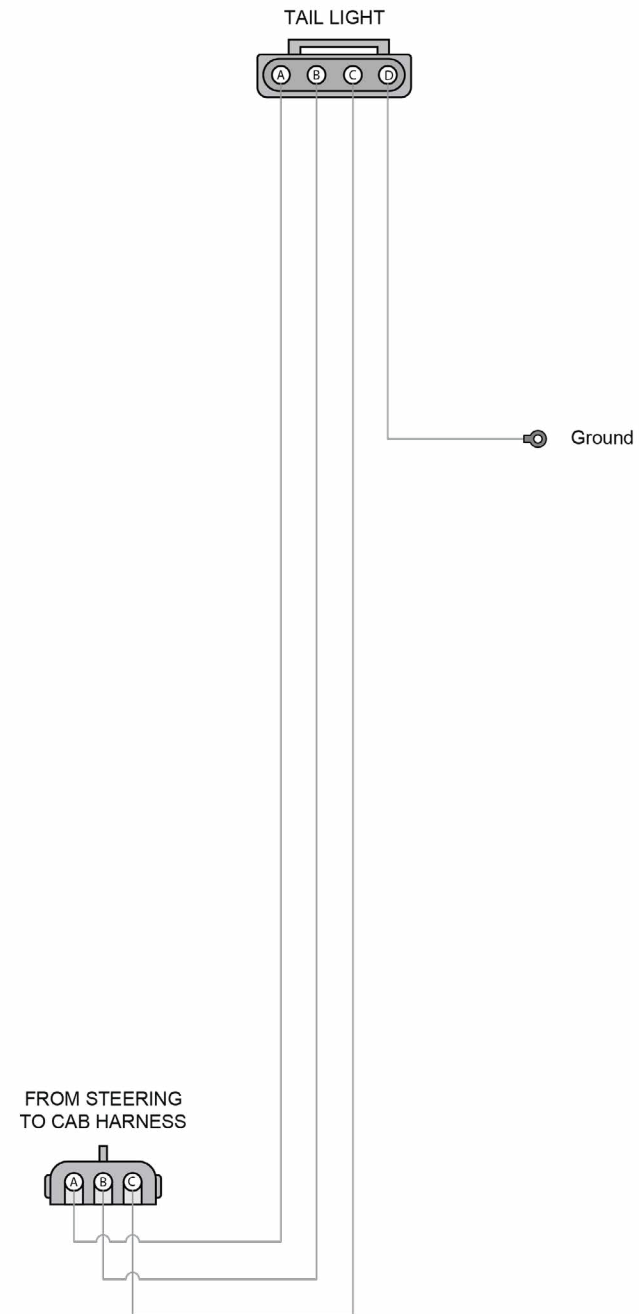


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BROCE 470 - Series

«124»

WIRING SYSTEM (REAR TAIL LIGHT HARNESS)

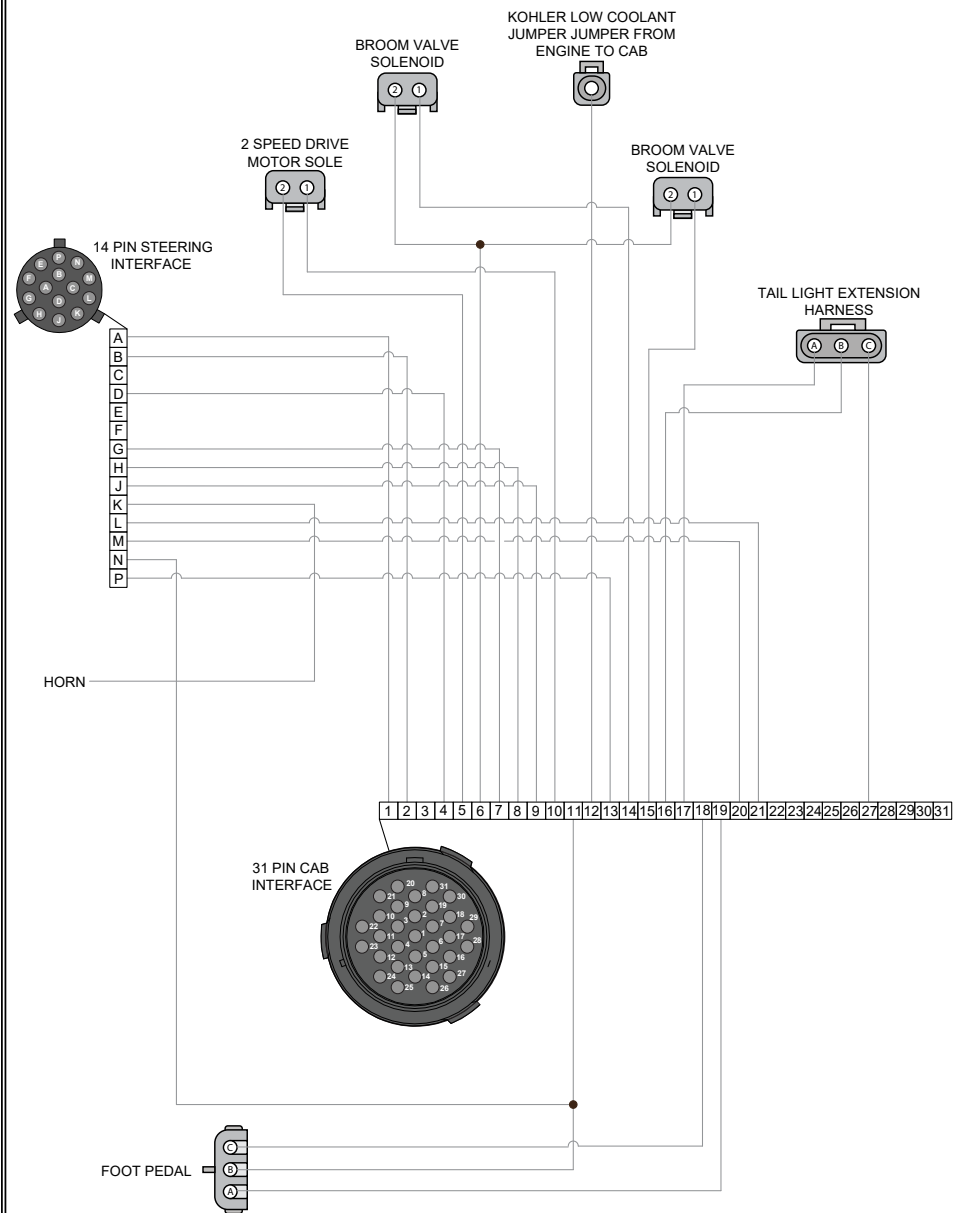


WARNING: Cancer
and Reproductive Harm
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BROCE 470 - Series

«125»

WIRING SYSTEM (STEERING TO CAB HARNESS)

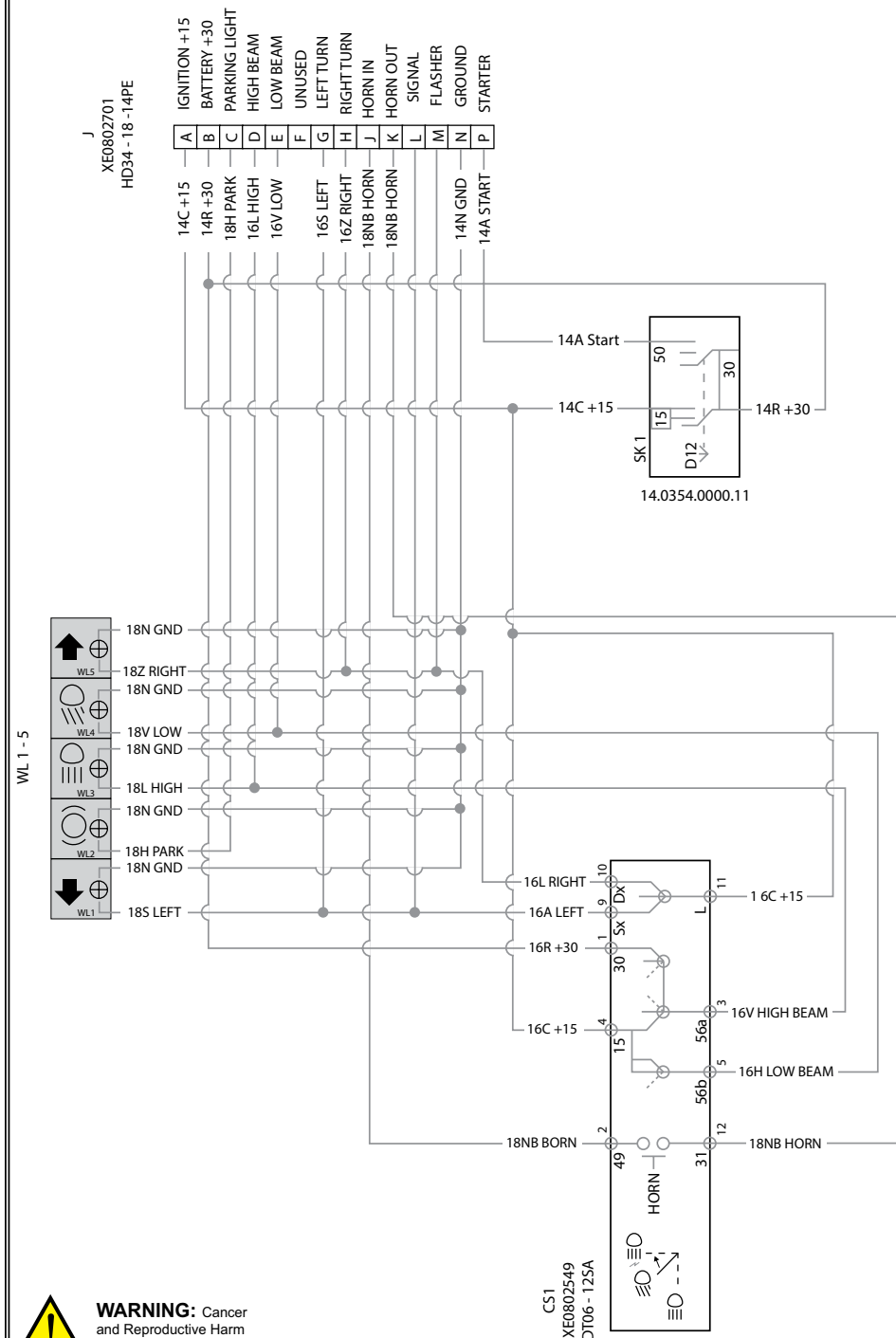


WARNING: Cancer and Reproductive Harm
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BROCE 470 - Series

126

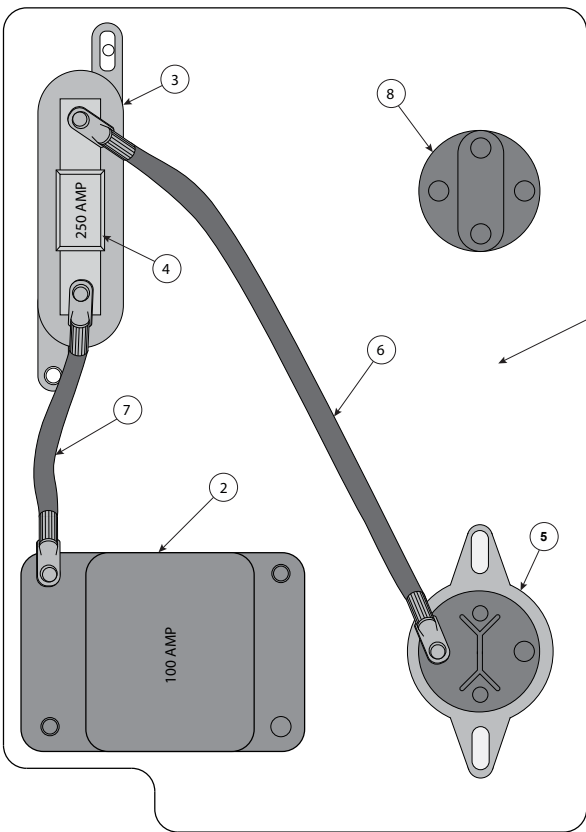
WIRING SYSTEM (STEERING COLUMN)



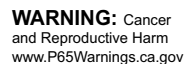
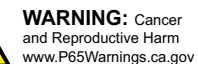
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127

BROCE 470 - Series



ITEM #	PARTS #	DESCRIPTION	QTY.
1	513583	Panel Electric	1
2	513544	Breaker 100 AMP	1
3	513542	Fuse Holder	1
4	513540	250 AMP Fuse	1
5	203670	Solenoid Control	1
6	752430	5" Main Fuse Wire	1
7	752431	4" Main Fuse Wire	1
8	344279	Engine Solenoid	1
N/S	460493	Relay, 12V 75A	1
N/S* = Not Shown			

This image shows a single page of white paper with horizontal blue or grey ruling lines. The lines are evenly spaced and run across the width of the page, leaving small margins at the top and bottom. There are no vertical margin lines, text, or other markings on the page.



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. For more information, visit: www.P65Warnings.ca.gov

WARNING: Battery posts, terminal and related accessories contain lead and lead compounds, chemicals known to the State of California to cause cancer, birth defects, and other reproductive harm. Wash hands after handling. For more information, visit: www.P65Warnings.ca.gov

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Service: (580) 227-3711
Parts: www.brocebroomparts.com
Email: fairviewparts@brocemfg.com

