



ABOVE PAR
TECH



RIVER300 PARTS AND SERVICE MANUAL

Rev. B

Thank you for purchasing a River300.

This manual gives operating and service information for the River300 sprayer. Please read and understand all instructional material included with the sprayer and its components before operating the equipment. For identification of replacement parts, see the Technical Manual.

SAFETY WARNING!

ALL SHIELDS AND GUARDS MUST BE IN PLACE FOR PROPER AND SAFE OPERATION OF THIS EQUIPMENT. WHERE THEY ARE SHOWN REMOVED IN THIS MANUAL, IT IS FOR PURPOSES OF ILLUSTRATION AND INSTRUCTION ONLY. DO NOT OPERATE THIS EQUIPMENT UNLESS ALL SHIELDS AND GUARDS ARE IN PLACE.

WARNING: Breathing diesel engine exhaust exposes you to chemicals known to the State of California to cause cancer and birth defects or other reproductive harm.

- Always start and operate the engine in a well-ventilated area.
- If in an enclosed area, vent the exhaust to the outside.
- Do not modify or tamper with the exhaust system.
- Do not idle the engine except as necessary.

For more information go to www.P65warnings.ca.gov/diesel

Above Par Tech of Iowa, LLC is continually striving to improve the design and performance of its products. We reserve the right to make changes in specifications and design without thereby incurring any obligation relative to previously manufactured products.

LIMITED WARRANTY

Above Par Tech of Iowa, LLC warrants to each purchaser of a new River300 from an authorized dealer or representative, that such equipment is free of manufacturer's defects in workmanship and materials which appear while in normal service for a period of TWO YEARS commencing with delivery to the original user.

The obligation of Above Par Tech of Iowa, LLC under this warranty is expressly limited, at our option, to replacement or repair at a service facility designated by Above Par Tech of Iowa or at the manufacturing facility in Waukeet, Iowa. A part will be replaced after inspection discloses it to have been defective. This warranty does not apply to defects caused by damage or unreasonable use (including failure to provide reasonable and necessary maintenance, or by performing functions without genuine Above Par Tech accessories) while in the possession of the consumer.

Warranty is limited to parts, labor, and ground freight delivery of replacement parts. APT shall not be liable for the consequential damages of any kind, including but not limited to consequential labor costs or transportation charges in connection with replacement or repair of defective parts.

This warranty does not apply to parts subjected to misuse, abuse, alteration, improper or inadequate maintenance, or normal wear (including belts, battery, chains, filters, paddles, and brush).

Engines are not covered under this warranty. Refer to manufacturer's warranty for specific warranty information. APT, its agents or representatives, make or imply no other warranties.

APT makes no warranty with respect to trade accessories. They are subject to the warranties of their respective manufacturers.

ANY IMPLIED OR STATUTORY WARRANTIES, INCLUDING ANY WARRANTY OR MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, ARE EXPRESSLY LIMITED TO THE DURATION OF THIS WRITTEN WARRANTY. APT makes no other express warranty, nor is anyone authorized to make any on behalf of HII.

For further information please contact your nearest River300 dealer.

RECORDS

Date of Purchase _____ / _____ / _____
Dealer's Name _____
Dealer's Phone _____
Serial Number Machine _____

Contents

Machine Specifications	5
Safety Guidelines	6
Switch Box Overview	8
Machine Display Identification	8
Maintenance	9
Maintenance Schedule.....	12
Machine Schematics	14
Wheel Motor & Axle Installation:	14
Front Axle Installation:.....	15
Wheel Motor Installation:	16
Edge Trim Placement:.....	17
Engine Assembly & Installation:	18
Engine Assembly:.....	18
Engine Installation:	21
Radiator Screen Assembly:	23
Fuel Tank Installation:	24
Propulsion Hydraulics:.....	26
Hydraulic Pump Assembly:.....	26
Propulsion Hydraulic Installation:	27
Valve Assemblies:	28
Tank, Filter, & Valve Installation:.....	29
Propulsion Suction & Drain Plumbing:	30
Rear Wheel Motor Plumbing:	31
Propulsion Pump Plumbing:	32
Machine Hydraulics:	33
Steering Plumbing:.....	33
Operator Station Assemblies:	34
Foot Pedal Assembly.....	34
Seat Assembly	35
Electrical Harnesses	36
Mirror, Tire, and Shield Assemblies:	37
Mirror, Tire, and Shield Installation:.....	37

Mirror Assembly:	38
Engine Shield Assembly:	39
Additional Hardware:.....	40
Canopy:	40
Work Lights:.....	41

Machine Specifications

Power	Diesel - Kubota V1505-E4B 24.8 HP @ 2300 RPM
Drive	Hydrostatic pump directly coupled to engine drive with two high-efficiency piston drive hydraulic motors on the rear wheels with two speed operation; foot operated pedal for forward and reverse drive.
Speed	Infinitely variable, 0-5 mph (0-8 km/h) low (operation), 0-10 mph (0-16 km/h) high (transport), 0-10 mph reverse; Dynamic braking through the hydrostatic drive system, mechanically applied and hydraulically released parking brake on rear wheels.
Main Frame	Welded and formed steel frame
Tire and Wheels	Front 24x9.50-12 Rear 24x13.00-12
Steering	Hydraulic Power Steering
Seat	Adjustable ride suspension, high back, and retractable seat belt
Electrical	12-volt, electronic key start
Dimensions	- Length – 144 in (366 cm) - Height – 79 in (201 cm) - Width – 79.5 in (202 cm) - Wheel Base – 80 in (203 cm)
Weight	2250 lbs (1021 kg)
Spray Boom	20 ft swath, Electric Actuators
Product Pump	Stainless Centrifugal Pump, Hydraulic PWM Controlled
Liquid Capacities	- Fuel – 12 gal (45 L) - Hydraulic Fluid – 2 gal (7.6 L) Tank - Engine Oil – 1.59 gal (6.0 L) - Coolant – 2.25 gal (8.5 L) - Product Tank – 300 gal (1136 L)
Safety and Hydraulic Oil	Includes Certified ROPS and seatbelt and Crown AW46; ISO 46 Hydraulic Oil
Safety	Certified ROPS: ISO 21299 ref Mass 2036 Kg Seatbelt Electrical Interlocks: - To start the machine: Must be in neutral & deck rotor/paddle must be OFF. - To turn deck rotor/paddle ON: Operator must be in the seat. - Park brake is applied when the operator is out of the seat.
Hydraulic Oil	Crown AW46; ISO 46 Hydraulic Oil
Optional Attachments	Canopy, Work Lights

Safety Guidelines

Equipment & Controls

- Read and understand this manual.
- Altering this equipment in any manner which adversely affects its operation, performance, durability, or use will void the warranty and may cause hazardous conditions.
- Know the location and function of all controls and how to stop this equipment quickly in an emergency before you operate the equipment.
- Keep all nuts, bolts and screws tight to help ensure safe operation of this equipment.
- Use genuine factory parts or parts with equivalent characteristics, including type, strength and material. Failure to do so may result in product malfunction and possible injury to the operator and/or others.
- If hardware is not secure, or if some of the hardware is over-tightened, equipment failure may result, posing possible safety hazards.
- To prevent possible eye injury, always wear SAFETY GLASSES while operating equipment.
- To prevent hearing loss, always wear hearing protection while operating equipment.
- Do not allow children to operate or ride on this machine.

Safety Decals

- All safety decals comply to the ISO Standard 11684: 1995(E).
- If safety related or instructional decals become illegible or are removed, replace them immediately. Decal locations and part numbers are identified in the parts manual.
- If you replace parts that have such decals attached to them, make sure the decals are replaced with current versions, and are on the replacement parts before the machine is operated again.

Diesel Fuel

- Always use an approved container for transporting diesel fuel.
- Do not allow open flames or sparks while performing maintenance or refueling.
- Never remove fuel tank cap or add fuel when engine is running or while it is hot.
- Only use ultra low sulfur diesel.
- Never fill fuel tank indoors. Fumes are heavy and will sink to the lowest point, collect and become hazardous.
- Wipe up spilled fuel immediately.
- Do not store fuel in a room with an appliance that has a gas pilot or electrical switch that may cause sparks.
- Always store diesel outside in a safety can (a can with flame arrestor and pressure relief valve in pour spout).
- Never store the equipment with fuel in the tank inside a building where fumes may reach an open flame or spark.
- Allow the engine to cool before storing in any enclosure.
- Be certain to provide adequate ventilation if an engine must be run indoors - exhaust fumes are dangerous.

SAFETY WARNING!

Diesel fuel is extremely flammable and can be highly explosive.

Guards & Shields

- Keep all safety devices in place.
- Replace all worn, damaged, unusable, missing or lost safety shields and guards before operating the equipment.
- Keep the equipment in good operating condition.

Battery

SAFETY WARNING!

Batteries can produce explosive gas.

Use extreme caution when working on the battery.

- Ventilate when charging battery or using in an enclosed space.
- DO NOT produce sparks from cable clamps, tools, or other sources; and DO NOT allow flames or smoking in the vicinity of the battery.
- Shield eyes when working near battery.

Hydraulics

SAFETY WARNING!

Escaping fluid under pressure can penetrate skin causing serious injury.

To prevent serious injury or death:

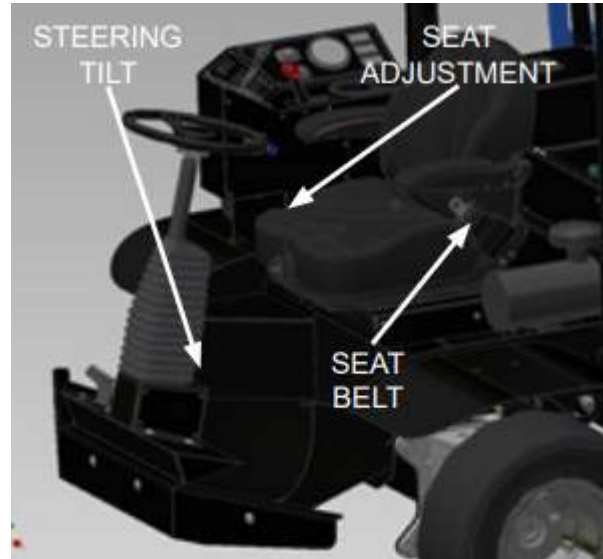
- Relieve pressure on system before repairing, adjusting or disconnecting.
- Wear proper hand and eye protection when searching for leaks.
- Use wood or cardboard instead of hands when looking for leaks.
- Keep all components in good repair.
- Do not use any type of heat (welding, soldering, cutting torch, etc) near pressurized lines.

Safety Interlocks/Wiring Logic

- To start the machine, it must be in neutral, and the deck rotor and paddle must be OFF.
- To turn the deck rotor and paddle ON, the operator must be in the seat, the hydraulic oil temperature must be below 190° F, and hydraulic oil must be present in the tank.
- There is a 2 second time delay added to the seat switch to account for bounce.
- The park brake is applied when the operator is out of the seat.

Operation

Adjust the seat and steering wheel as needed and wear seat belt during



Wear approved eye and ear protection during operation.

Starting the Machine

- Use the preheat position of the ignition switch until the glow plug indicator on the machine display turns OFF. (Preheating is not necessary if the engine is already warm).
- Turn the machine to the right to start. For the engine to start, it must be in neutral and the deck rotor/paddle must be OFF.
- During Operation
- In the event of an emergency, turn the key to the OFF position.
- Always keep a fire extinguisher near the River-300 during operation.
- Keep clothing and all body parts away from rotating parts.
- Keep the engine area clean from debris and other accumulations to lessen the possibility of fire.

Switch Box Overview



- A – Pump Enable
- B – Left Boom up/down
- C – Right Boom up/down
- D – Pump Master Switch
- E – Left section control
- F – Center section control
- G – Right section control
- H – Transmission Speed
- I – Park Break

Machine Display Identification



1. High Engine Temperature – illuminates when the engine temperature exceeds 221° F (105° C). If this indicator is illuminated, STOP operation immediately and turn machine OFF. Inspect the radiator screen and radiator for debris. If debris is found, remove debris and restart machine to allow the engine to cool properly. Do NOT operate machine until the temperature returns to normal operating temperature. If illuminates repeatedly, further technical troubleshooting is necessary.

2. Oil Pressure Indicator – illuminates when oil pressure is below 7 psi (48 kPa). Turn the machine OFF immediately if this indicator is illuminated.

3. Glow Plug Indicator – illuminates when the ignition switch is in the pre-heat position and the glow plugs are activated. The pre-heat electrical circuit includes a glow lamp timer that controls the indicator. Once the indicator turns off, the machine is ready to start.

4. Neutral Indicator – illuminates when the machine is in neutral.

5. Park Brake Indicator – illuminates when the park brake is applied.

6. Battery Indicator – illuminates when the battery has low voltage.

7. Low Hydraulic Oil Indicator – illuminates when hydraulic oil is low in the hydraulic tank. An alarm also sounds when the hydraulic oil is low. Turn the machine OFF immediately if this indicator is illuminated and alarm sounds. Ensure that there are no leaks and fill hydraulic tank with hydraulic oil before restarting machine.

8. High Temperature Hydraulic Oil Indicator – illuminates when the hydraulic oil temperature exceeds 190° F. If this light illuminates, STOP operation of machine and turn machine OFF. Clean debris from radiator/oil cooler and screen. Then restart machine to allow the hydraulic oil to cool properly. If this light illuminates repeatedly, further technical troubleshooting is necessary.

9. Fuel Gauge – displays fuel level in fuel tank.

10. Engine Temperature Gauge – displays engine coolant temperature.

11. Machine Hours – Records and displays machine hours.

12. Battery Gauge – displays level of battery voltage.

Maintenance

Hydraulic System

- The hydraulic system of the HK4200 is filled at the factory with Crown AW 46 hydraulic oil that has an ISO of 46.
- The HK4200 has a 3 micron, beta rated hydraulic oil filter designed for long life.
- Hydraulic reservoir capacity - 2 gal (7.6 L).

The following list of hydraulic fluids are compatible and can be mixed with Crown hydraulic fluid. MIXING OTHER OILS THAT ARE NOT INCLUDED ON THIS LIST COULD CAUSE GELLING AND DAMAGE TO THE HYDRAULIC COMPONENTS. If another type of oil is desired, then the system must be completely drained and flushed first.

Appropriate replacements: ISO 46:

Recommend for running in ambient air temperatures of 32°F-110°F, and it contains a kinematic viscosity rating around 46 cSt at 40°C. (1cSt = 1mm²/s)

- Mobil DTE 25
 - Mobil DTE 15M
 - Amoco Rykon Premium Oil ISO 46
 - Chevron Rykon Premium Oil ISO 46
 - Conoco Hydroclear AW MV 46
 - Exxon Univas N 46
 - Pennzoil AWX MV 46
 - Shell Tellus 52 M46
 - Shell Tellus 52 V46
 - Texaco Rando HDZ 46
-
- Monitor the needle in the filter indicator when the oil is at normal operating temperature every 100 hours.

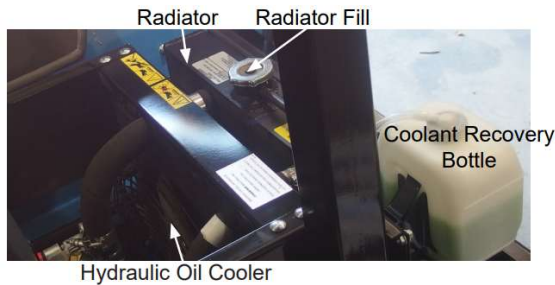
- The filter (part no. 822044) does not need replaced until the needle is in the red portion of the gauge. • To replace filter, twist the filter counter-clockwise. Replace with new filter by turning it clockwise until tight.



- The hydraulic oil level should be monitored daily with the hydraulic tank's sight glass on the right-hand side of the hydraulic tank.
- Keep the hydraulic oil near the top of the sight glass at all times. • Fill reservoir through the fill location on top of the reservoir.



Cooling System

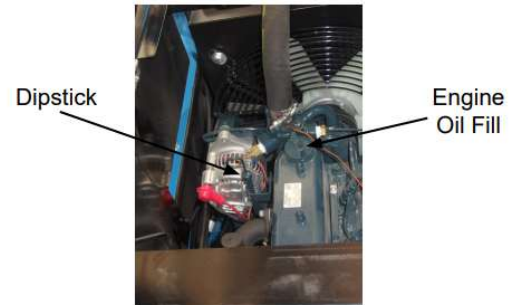


- The radiator and hydraulic oil cooler are located side by side in the same aluminum heat exchanger.
- Clear hydraulic oil cooler and radiator of debris with pressurized air daily or as needed.
- Check radiator level daily and only when engine is cool and not running.
- Remove cap (radiator fill) slowly to relieve any pressure that may be built up.
- Fill up radiator with coolant (50% water/ 50% antifreeze) until coolant is visible in neck of radiator.
- Coolant capacity - 2.25 gal (8.5 L).
- Make sure that the coolant recovery bottle has at least 1" of coolant in bottom. The presence of coolant in the recovery bottle does not mean radiator is full.
- Do NOT operate the machine if the engine temperature exceeds 230°F (110°C). Severe engine damage may occur if the machine is continuously operated above 221°F (105°C). If overheating does occur, diagnose the cooling system and ensuring proper coolant levels and proper air flow across the radiator. The high engine temperature indicator illuminates when the coolant reaches 221°F (105°C).

SAFETY WARNING

Hot Coolant and steam from the radiator can cause severe burns. Never open the radiator cap of a hot engine.

Engine Oil



- The dipstick and engine oil fill are located on the left-hand side of the engine compartment.
- The engine oil filter is located on the rear lower side of the engine, and it is accessible from the left hand side of the machine.
- To access engine oil fill or dipstick, open the LH shield by turning the latch counterclockwise.

PROCEDURE

- Check engine oil level only when engine is off.
- Keep engine oil level between the FULL and ADD marks on dipstick at all times. DO NOT OVER-FILL.

SAFETY WARNING

Keep dipstick and oil fill cap secured tightly. Engine oil may escape through these orifices when engine is running causing severe burns.

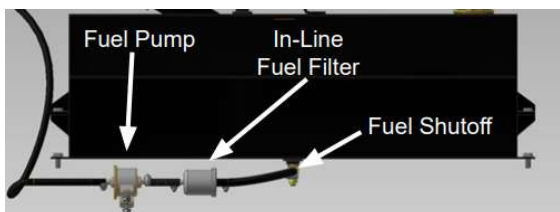
- Filled with SAE10W-30 from the factory, 6.0 L capacity, and change after the first 50 hours. Then change engine oil every 200 hrs.

Above 25°C (77°F)	SAE30 or SAE10W-30 SAE15W-40
-10°C - 25°C (14°F - 77°F)	SAE10W-30 SAEW15-40
Below -10°C (14°F)	SAE10W-30

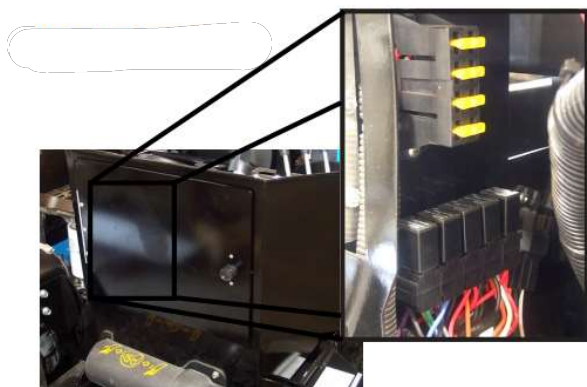
Fuel Components



- Fuel Filter (302057) is located on the left-hand side of the machine beside the radiator.
- The fuel pump, in-line fuel filter, and fuel shutoff are located below the fuel tank. These components can be accessed through the frame cutouts between the two rear tires.



Fuse/Relay Panel



- Located under operator's console, through the access door. • Refer to the parts section for electrical schematic and other electrical components. • All fuses are 20 amp.

Air Cleaner

Air Cleaner



- Make sure intake is always free of debris.
- When engine is turned off, remove the wing bolt.
- Replace the air filter according to the Maintenance Schedule.

Standard Torque Chart

SAFETY WARNING

Refer to the Standard Torque Chart whenever bolts, nuts or screws are tightened.

PRECAUTIONS

- When tightening two or more fasteners on the same part, DO NOT tighten the fasteners completely one at a time. To avoid distortion, first tighten all fasteners in sequence to one-third of torque value, then tighten to two-thirds of torque value, then tighten to full value.
- All lugnuts should be torqued to 147 ft-lbs (199 N-m).

Torque in foot-pounds

					
Diameter	Thread per inch	SAE 2	SAE 5	SAE 8	SHCS
1/4	20	4	8	12	14
1/4	28	6	10	14	16
5/16	18	9	17	25	29
5/16	24	12	19	29	33
3/8	16	16	30	45	49
3/8	24	22	35	50	54
7/16	14	24	50	70	76
7/16	20	34	55	80	85
1/2	13	38	75	110	113
1/2	20	52	90	120	126
9/16	12	52	110	150	163
9/16	18	71	120	170	181
5/8	11	98	150	220	230
5/8	18	115	180	240	255
3/4	10	157	260	380	400
3/4	16	180	300	420	440
7/8	9	210	430	600	640
7/8	14	230	470	660	700
1	8	320	640	900	980
1	12	350	710	990	1060

Baseline torque is calculated for a non-lubricated, un-plated bolt.

Maintenance Schedule

Daily or Before Starting the Engine

- Check Engine Oil Level..... SAE 10W30 or 15W40
 - (See Maintenance section for details)
- ☐ Check Hydraulic Oil Level..... Crown AW46
 - (See Maintenance section for details)
- ☐ Check Fuel Level..... Clean #2 Diesel Fuel
- ☐ Check Engine Coolant Level..... 50% anti-freeze, 50% water.
- ☐ Visually Inspect..... Fan belt, bolts, fittings, hoses (fluid leaks, or any damaged parts)
- ☐ Check Radiator & Oil Cooler..... Clean off debris as needed
- ☐ Check Engine Screens..... Clear debris as needed to ensure proper air flow
- ☐ Check Air Cleaner Intake..... Clear debris as needed.
- ☐ Grease..... As needed; see Maintenance section for locations and intervals
- ☐ Check Drive Tires..... Visually inspect tires to ensure proper inflation & no damage

Every 50 Hours

- ☐ Change Engine Oil & Filter..... After initial 50 hours, change engine oil
 - (every 200, thereafter)
- ☐ Change Inline Fuel Filter..... After initial 50 hours, change filter
 - (P/N: 302103, every 200 thereafter)
- ☐ Check Tire Pressure..... Inflate all tires to 20 psi (138 kPa)
- ☐ Check of Fuel Pipes & Clamps..... See Kubota Manual for details
- ☐ Check Lug nuts..... Torque to 147 ft-lbs (199 Nm)

Every 100 Hours

- ☐ Check Engine Air Filter..... Clean or replace as needed (P/N: 802064)
- ☐ Check Fan Belt Tightness..... Tighten as needed
- ☐ Check Hydraulic Oil Filter..... Replace when needed (P/N: 822044)

Every 200 Hours

- ☐ Change Engine Oil..... SAE 10W30 or 15W40
 - (See engine manual)
- ☐ Change Engine Oil Filter..... P/N: 302058
- ☐ Check Intake Air Lines..... Clear debris as needed
- ☐ Replace In-line Fuel Filter..... P/N: 302103
- ☐ Check Radiator Hoses & Clamps..... Repair or replace as necessary.

Every Year

- ☐ Replace Engine Air Filter..... P/N: 802064
 - ☐ Check Hydraulic Oil Condition..... Crown AW46
 - (See Maintenance section for details)
 - ☐ Check Battery..... Clean terminals if necessary

Every 500 Hours

- ☐ Replace Engine Fan Belt..... P/N: 802063
- ☐ Replace Cannister Fuel Filter.....P/N: 302057

Every 1500 Hours

- ☐ Check fuel injection nozzle injection pressure ...See Kubota Manual
- ☐ Change Hydraulic Oil..... Crown AW46
 - (See Maintenance section for details)

Every 3000 Hours

- ☐ Check Fuel Injection Pump

Every Two Years

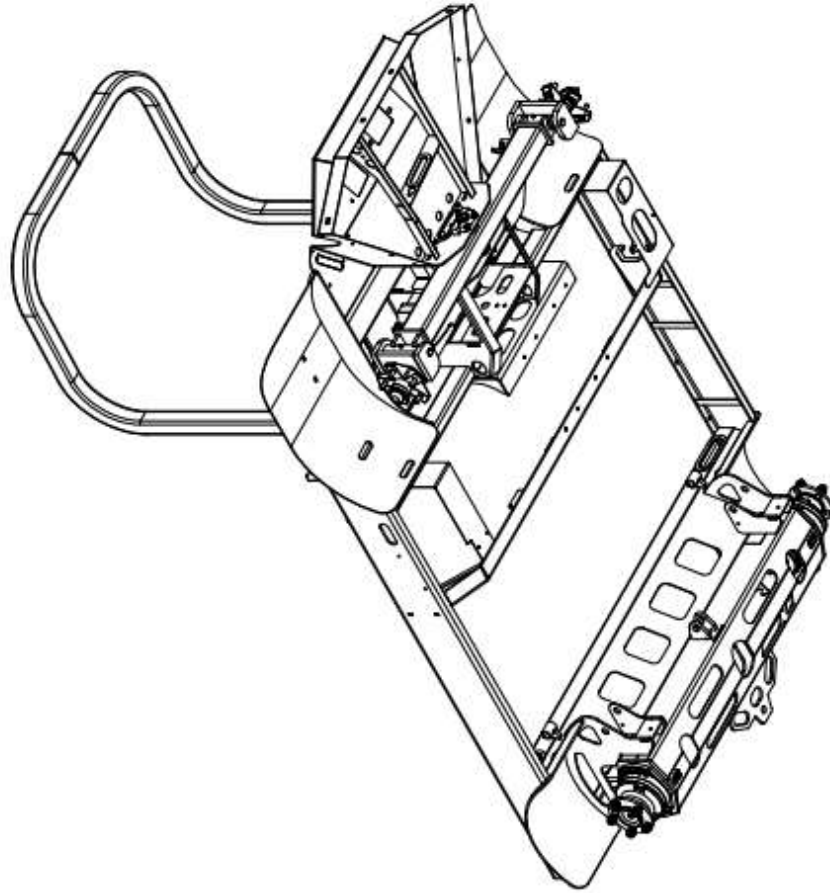
- ☐ Change Engine Coolant..... 50% anti-freeze, 50% water.
- ☐ Replace Battery..... P/N: 832011
- ☐ Replace radiator hoses and clamp bands..... See parts manual.
- ☐ Replace fuel hoses and clamp bands..... See parts manual.
- ☐ Replace air intake hose..... See parts manual.

Machine Schematics

Wheel Motor & Axle Installation:

WHEEL MOTOR & AXLE INSTALLATION

Parts List		
ITEM	QTY	PART # DESCRIPTION
1	7"	100365 MOLDING - EDGE GUARD, 5/32
2	2	102043 BEARING - THRUST, 1.0 ID X 5/8 T
3	1	102136 Clevis Pin, 5/8 x 1.5
4	4	110129 BOLT, 1/2-13 X 2.75 HEX
5	20	110244 BOLT, 1/2-13 X 1.5 SHCS
6	2	110425 BOLT, 3/8-16 X 1.25
7	2	110444 BOLT, 5/16-18 X 0.75, W/ Z FLANGE
8	1	110800 NUT, 5/16-18, UNITORQUE LOCK
9	4	110610 NUT, 1/2-13
10	1	110885 WASHER, 5/16" FLAT STANDARD
11	24	110666 WASHER, 1/2" LOCK
12	4	110826 NUT, 3/8-16 GR 5
13	1	110882 WASHER - THRUST, IGUS MTI-24
14	2	110888 SNAP RING - EXT, 1-1/2
15	1	111190 BOLT, 3/8 X 2.0 SHOULDER SHCS
16	11"	112084 Rubber Seal, 625 X .25
17	2	120027 ADAPTER, 4MB-4MJ 45
18	6	120249 ADAPTER, 4MJ-6MB
19	4	120446 ADAPTER, 8MJ-10MB
20	1	200029 COIL SPRING, 5/32 X 1
21	2	302129 NUT, 7/8-18 HEX JAM GR 2
22	1	305109 ASSY, LH SPINDLE & HUB
23	1	305110 ASSY, RH SPINDLE & HUB
24	2	311459 KEEPER - AXLE PIVOT, LOWER
25	2	312032 Tie Rod End, RH
26	1	315350 FRAME WELDMENT, SWEEPER
27	1	315394 WELDMENT, FRONT AXLE, 2WD
28	2	315397 WELDMENT, 2WD KINGPIN
29	1	315398 WELDMENT, ROUND STEERING LINK
30	1	317174 PIN, FRONT AXLE
31	1	323010 CYLINDER - STEERING, 1-3/4 X 6
32	1	323057 MOTOR, LH REAR WHEEL, 24.3 CI, 2-SPD
33	1	323058 MOTOR, RH REAR WHEEL, 24.3 CI, 2-SPD
34	2	500230 GREASE ZERK, 1/4-28 90deg
35	3	510174 GREASE ZERK, 1/4-28 ST



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Front Axle Installation:

FRONT AXLE INSTALLATION

ADJUSTING TIE ROD ENDS & SETTING ALIGNMENT
1. START BY ADJUSTING THE TIE ROD LOCATED ON THE RH SIDE OF THE MACHINE. EXTEND STEERING CYLINDER COMPLETELY AND ADJUST THE RH TIE ROD SO THAT THE SPINDLE CONTACTS THE STEERING STOP WHEN THE CYLINDER IS FULLY EXTENDED.
2. THEN ADJUST THE TIE ROD END LOCATED ON THE LH SIDE OF THE MACHINE SO THAT THE WHEEL HUB FACES ARE PARALLEL AS A STARTING POINT. THE APPROXIMATE DIMENSION IS 42.0" BETWEEN TIE ROD ENDS (CTR TO CTR).

SAME RETAINER AND HARDWARE USED TO SECURE REAR SIDE OF AXLE PIN

FRONT OF MACHINE

Hub Service Parts	
PART #	QTY
342068	1
312001	1
312002	1
312003	5
312005	1
312006	1
312007	1
312008	1
312038	1
310281	1
312009	1
510993	1

STEERING STOP INSTALLATION - INSTALL AS SHOWN BELOW

STEERING CYLINDER ADAPTER & ZERK ORIENTATION

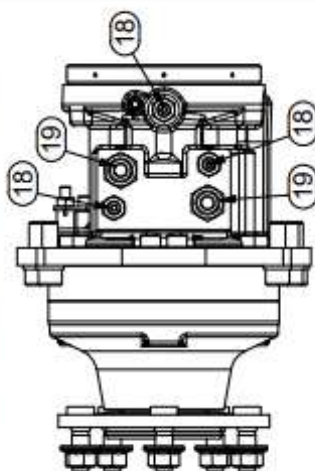
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Wheel Motor Installation:

WHEEL MOTOR INSTALLATION

LH Wheel Motor:

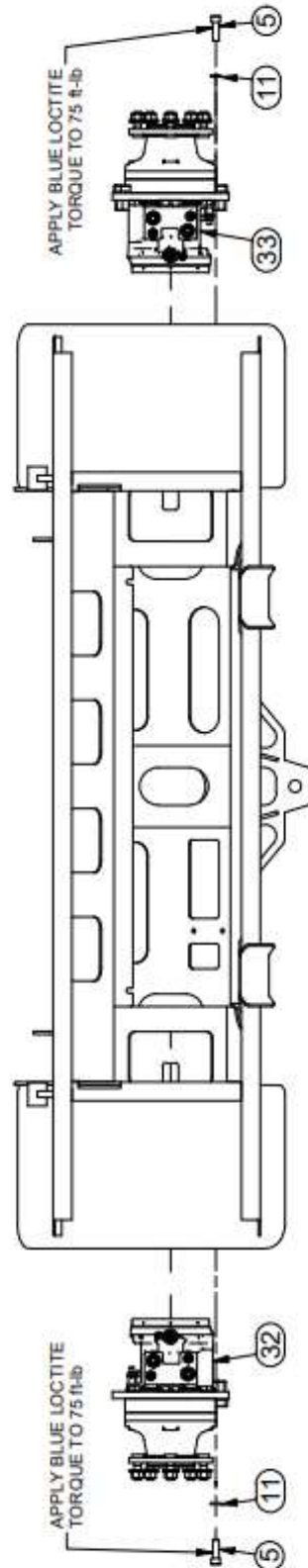
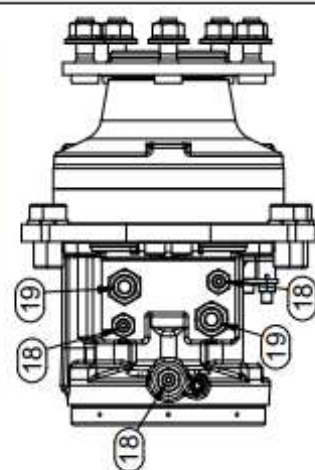
Model Code: MSE02-2-G2A-F03-1120-Y8JM



Parts List		
ITEM	QTY	DESCRIPTION
5	20	BOLT, 1/2-13 X 1.5 SHCS
11	24	WASHER, 1/2" LOCK
18	6	ADAPTER, 4MJ-6MB
19	4	ADAPTER, 8MJ-10MB
32	1	MOTOR, LH REAR WHEEL, 24.3 CI, 2-SPD
33	1	MOTOR, RH REAR WHEEL, 24.3 CI, 2-SPD
22	1	ASSY, LH SPINDLE & HUB
23	1	ASSY, RH SPINDLE & HUB

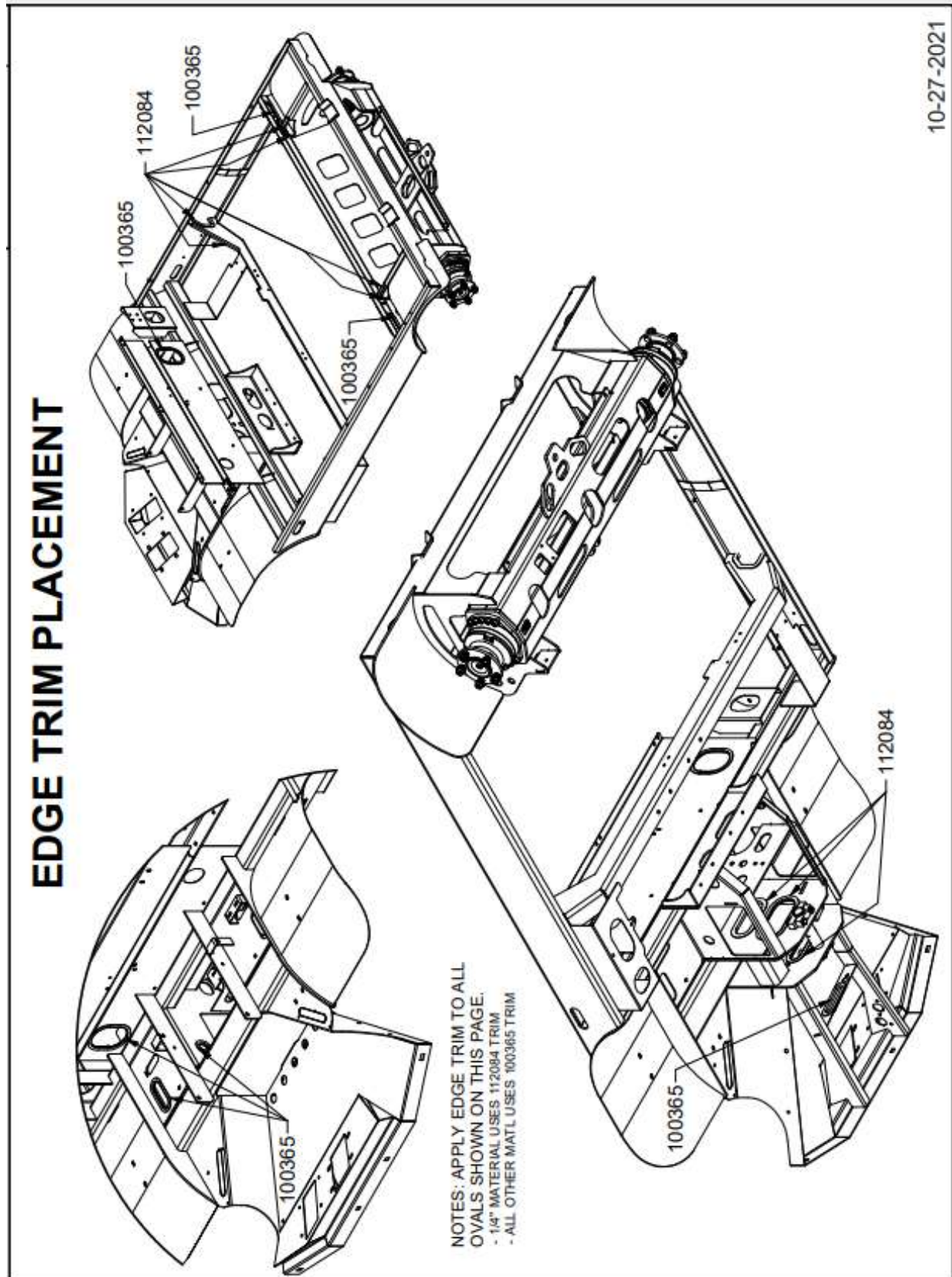
RH Wheel Motor:

Model Code: MSE02-2-D2A-F03-1120-Y8JM



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Edge Trim Placement:

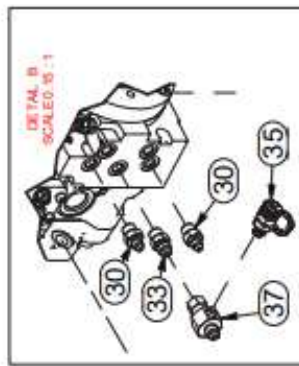
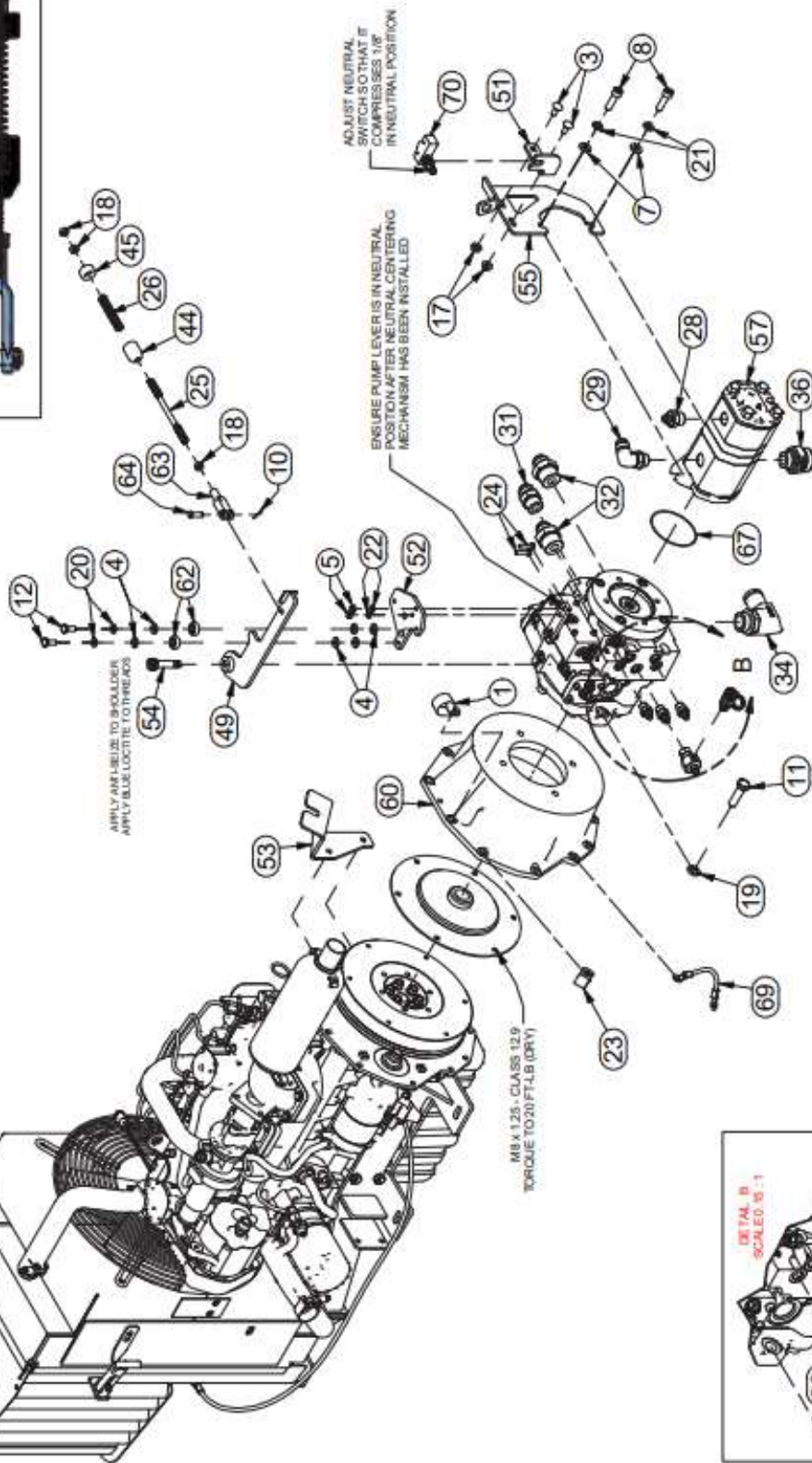


Engine Assembly:

843005 Engine - Service Parts	
PART #	DESCRIPTION
302058	FILTER, OIL
802063	BELT, ENGINE FAN
842018	FAN, ENGINE COOLING
842017	MUFFLER KIT, KUBOTA C31

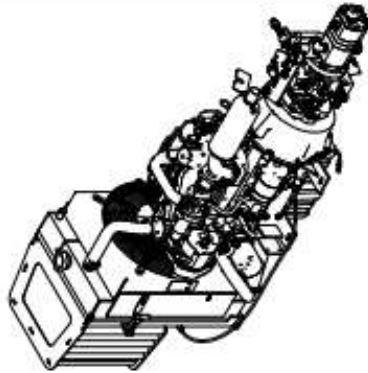
18

ENGINE ASSEMBLY



4-24-2023

ENGINE ASSEMBLY



(PARTS LIST CONTINUED
ON PAGE 2)

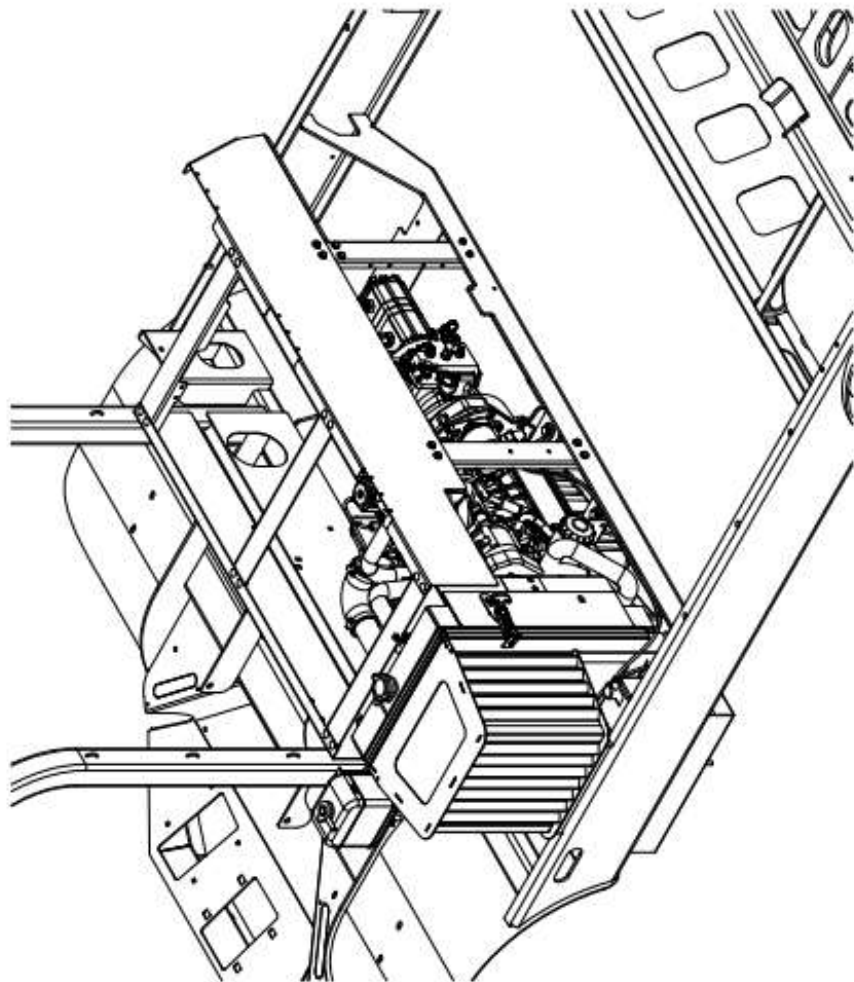
4-24-2023

Parts List			Parts List				
ITEM	QTY	PART #	DESCRIPTION	ITEM	QTY	PART #	DESCRIPTION
1	1	102074	Clamp, Adel .75w x 1.25d x .406 Hole	33	1	120319	ADAPTER, 6MJ-6MB
2	4	110001	BOLT, 1/2-13 X 1.25, WIZ FLANGE	34	1	120546	ADAPTER, 20BH-16MB90
3	2	110020	Bolt, 5/16-18 X 0.75 in Carriage	35	1	120705	STEP AP203
4	6	110069	WASHER, 5/16" FLAT SAE	36	1	120740	Adapter, 20mj-12mb
5	3	110074	Hex Nut M6 X 1.0 Thd	37	1	120754	Adapter, 65x-6mj, 4lb Gage Port
6	1	110141	NUT, M8 X 1.25 WIZ FLANGE	38	2	132014	INSULATOR CAP, (ALTERNATOR)
7	2	110155	WASHER, 3/8" FLAT SAE	39	1	132092	FUSE COVER, BUSS CFCOVER-1R
8	2	110176	BOLT, M10x1.5 x 35 SHCS	40	1	132093	FUSE HOLDER, BUSS CFBAR1-M8XSP
9	4	110220	BOLT, 1/2-13 X 1, WIZ FLANGE	41	1	132150	FUSE, 50 AMP
10	1	110300	COTTER PIN, 3/32 X 0.75	42	1	302151	Formed Hose, Radiator Bottom
11	2	110419	BOLT, 1/2-13 X 1.75	43	1	302152	Formed Hose, Radiator Top
12	2	110422	BOLT, 5/16-18 X .75	44	1	302161	COLLAR, TAPERED SPRING TENSIONER
13	1	110459	BOLT, 5/16-18 X 1, WIZ FLANGE	45	1	302162	COLLAR, SPRING TENSIONER
14	5	110469	BOLT, M8x1.25 x 20 Gr 10.9	46	1	305112	ASSY, RADIATOR SCREEN
15	9	110560	BOLT, M10-1.25 X 20 HHCS 8.8 PLAIN	47	1	315196	Weldment, Kubota Throttle Mnt
16	4	110588	NUT, 1/2-13 WIZ FLANGE	48	1	315379	WELDMENT, RADIATOR MOUNT
17	3	110606	NUT, 5/16-18 WIZ FLANGE	49	1	315417	WELDMENT, NEUTRAL CENTERING
18	3	110623	NUT, 5/16-24	50	2	317301	CATCH, LATCH
19	2	110666	WASHER, 1/2" LOCK	51	1	317303	BRKLT, NEUTRAL SAFETY SW
20	7	110674	WASHER, 5/16" LOCK	52	1	317304	LEVER, PROPULSION PUMP
21	11	110689	Washer, M10, Lock	53	1	317305	BRKLT, PUSH/PULL CABLE
22	2	110692	WASHER, 6mm LOCK	54	1	317316	BOLT, NEUTRAL CENTERING PIVOT
23	1	110728	CLAMP, ADEL DOUBLE .75WX.51DX.408HOLE	55	1	317421	BRKLT, NEUTRAL SPRING
24	2	110931	BOLT, M6x1 x 25 Gr 8.8	56	1	323054	Pump, PM30 Propulsion, 1.53 CI / 49 CI Charge
25	1	111196	Connecting Rod, 5/16-24 X 5/16-24 X 6.0, ZINC	57	1	323063	PUMP, DOUBLE GEAR 1.16 / 24 CI
26	1	111197	Spring, Compression 5.12 L X .54 OD X .049 Wire	58	1	332004	Sender, Water, 3/8 Npt
27	4	112101	CLAMP, 1.50", T-BOLT	59	1	332066	SWITCH, 221 F TEMP, 6MP, N.O. RISING
28	1	120144	ADAPTER, 6MJ-10MB	60	1	342011	ADAPTER - PUMP, KUBOTA 1505, KIT
29	1	120224	ADAPTER, 10MJ-10MB90	61	1	342067	MANIFOLD, TOP OUTLET EXHAUST
30	2	120249	ADAPTER, 4MJ-6MB	62	2	540079	BEARING, BALL, 1620RS
31	1	120254	ADAPTER, 12MJ-12MB	63	1	550046	CLEVIS, 5/16-24 X 1.5
32	2	120256	ADAPTER, 12MJ-16MB	64	1	550048	CLEVIS PIN, 5/16"

Engine Installation:

ENGINE INSTALLATION

Parts List			DESCRIPTION
ITEM	QTY	PART #	
1	12	110020	Bolt, 5/16-18 X 0.75 in Carriage
2	2	110290	NUT, 1/4-20 WIZ FLANGE
3	2	110362	U-BOLT, 5/16
4	1	110426	BOLT, 5/16-18 X 0.5, WIZ FLANGE
5	2	110434	BOLT, 1/4-20 X 0.5, WIZ FLANGE
6	8	110440	BOLT, 3/8-16 X 1, WIZ FLANGE
7	10	110444	BOLT, 5/16-18 X 0.75, WIZ FLANGE
8	2	110459	BOLT, 5/16-18 X 1, WIZ FLANGE
9	4	110577	BOLT, M12x1.75 x 45 Gr 10.9
10	31	110606	NUT, 5/16-18 WIZ FLANGE
11	8	110645	NUT, 3/8-16 WIZ FLANGE
12	4	110658	WASHER, 1/2" FLAT STANDARD
13	2	110665	WASHER, 5/16" FLAT STANDARD
14	4	110666	WASHER, 1/2" LOCK
15	1	110779	CLAMP, 1 1/2" EXHAUST
16	2	111198	BOLT, 5/16-18 X 9.5 Zinc Full Thread
17	1	132069	BATTERY TERMINAL COVER, POSITIVE
18	1	132070	BATTERY TERMINAL COVER, NEGATIVE
19	1	305072	ASSY, ENGINE
20	1	311603	BRACKET - HOLD DOWN, BATTERY
21	1	311941	TUBE, AIR INTAKE
22	1	312036	REDUCER, 2.0" TO 1.75"
23	2	312037	ELBOW, 2.0" 90 DEG
24	1	315389	WELDMENT, HAWK EXHAUST
25	1	317205	SUPPORT, REAR SHIELD
26	3	317206	SUPPORT, UPPER SHIELD
27	1	317235	SHIELD, REAR ENGINE
28	1	317236	SUPPORT, VERTICAL REAR SHIELD
29	1	317248	BRKT, EXHAUST SUPPORT
30	1	530051	CABLE, BATTERY/GND 16" BLACK
31	4	800021	MOTOR MOUNT
32	1	800195	DECAL, RECYCLE BATTERY
33	1	832011	BATTERY, SEALED GEL W/ L. TERMINAL



7-24-2023

ENGINE INSTALLATION

IF THIS PART IS REPLACED, REPLACE (1) 902231 & 902232 DECALS AS WELL

FLUID TYPE & CAPACITIES	
QTY	DESCRIPTION
1.59 GAL (6.0 L)	ENGINE OIL - SAE 10W/30 or 15W/40
2.25 GAL (8.5 L)	COOLANT - 50% GLYCOL / 50% WATER MIX

SERVICE PARTS	
Part #	DESCRIPTION
302057	FILTER, FUEL
302144	BOTTLE & BRKT, COOLANT RESERVE
802064	ELEMENT, AIR FILTER

FLUID TYPE & CAPACITIES	
QTY	DESCRIPTION
1.50 GAL (6.0 L)	ENGINE OIL - SAE 10W 30 or 15W-40
2.25 GAL (8.5 L)	COOLANT - 50% GLYCOL / 50% WATER MIX

Part #	DESCRIPTION
302057	FILTER, FUEL
302144	BOTTLE & BRKT, COOLANT RESERVE
802064	ELEMENT, AIR FILTER

Radiator Screen Assembly:

Exploded view diagram of the Radiator Screen Assembly. The diagram shows the radiator screen (1) being attached to the radiator frame (2) using screws (3), nuts (4), and a latch (5). The assembly is then secured with a weldment (6). Dimensions are provided for the frame (10.4 inches wide, 4.4 inches high) and the screen (10.4 inches wide, 4.4 inches high). A separate view shows the radiator screen (1) with a handle (1) and a latch (5) attached.

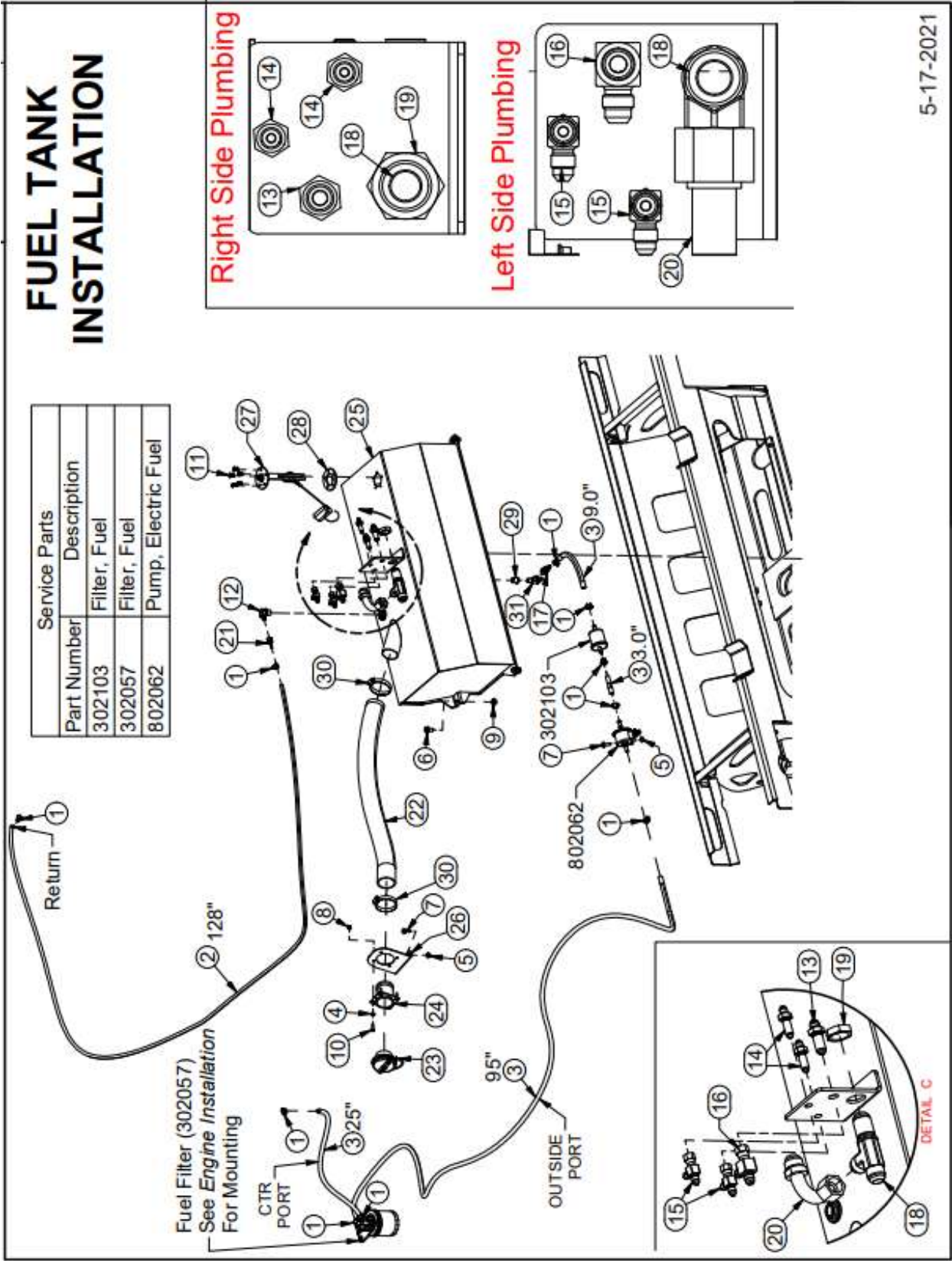
ITEM	QTY	PART #	DESCRIPTION
1	7"	100360	MOULDING, EDGE BULB
2	1'	102004	D-Seal, Rubber 1.00" x 1.00"
3	4	110339	SCREW, 10-24X1.25 PAN HEAD PHPS
4	4	110631	NUT, 10-24 LOCK NYLON INSERT
5	2	112105	LATCH, RUBBER T-HANDLE DRAW
6	1	315400	WELDMENT, RADIATOR SCREEN

REPLACES 305073

3-16-2021

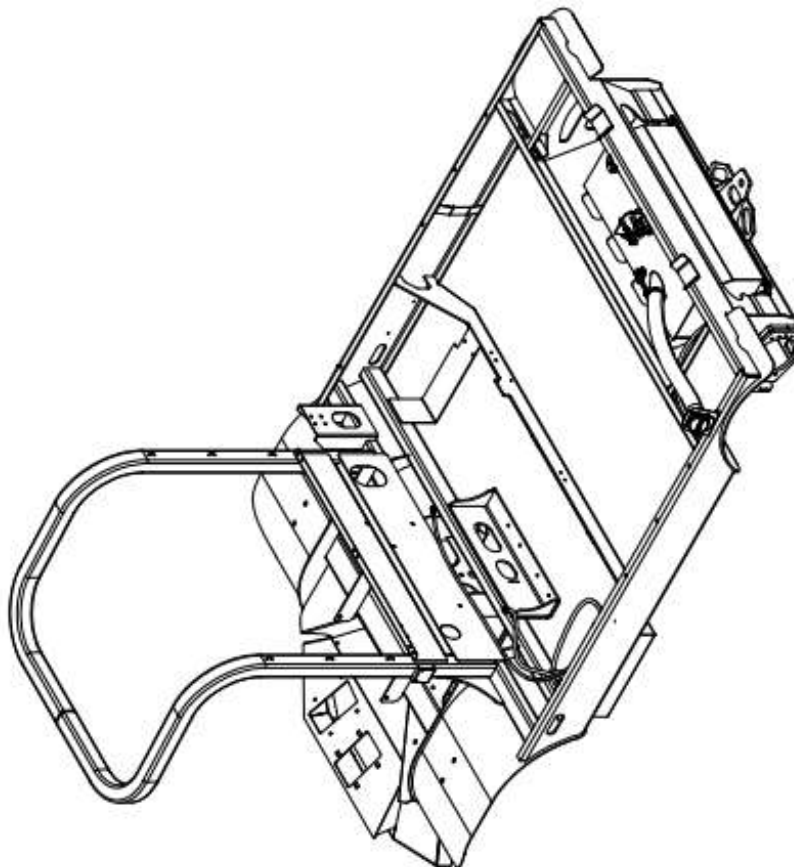
RADIATOR SCREEN ASSEMBLY

Fuel Tank Installation:



FUEL TANK INSTALLATION

Parts List			DESCRIPTION
ITEM	QTY	PART #	
1	10	100361	CLAMP, HOSE #4 25 MINI
2	128"	100708	Hose, 3/16 High Pressure Fuel
3	132"	100756	Hose, 5/16 High Pressure Fuel
4	1	110090	WASHER, #10 FLAT STANDARD
5	4	110290	NUT, 1/4-20 WIZ FLANGE
6	4	110437	BOLT, 3/8-16 X 0.75, WIZ FLANGE
7	4	110468	BOLT, 1/4-20 X 0.75, WIZ FLANGE
8	4	110631	NUT, 10-24 LOCK NYLON INSERT
9	4	110645	NUT, 3/8-16 WIZ FLANGE
10	4	110709	SCREW, 10-24 X 0.75, RHMS
11	5	112053	SCREW, 10-32 X 1/2 MACH SEAL
12	1	120040	ADAPTER, 4MJ-6MP90
13	1	120102	ADAPTER, BULKHEAD, 6MJ-6MJ
14	2	120126	ADAPTER, BULKHEAD, 4MJ-4MJ
15	2	120215	ADAPTER, 4MJ-4FJX-4MJ
16	1	120216	ADAPTER, 6MJ-6FJX-6MJ
17	1	120378	ADAPTER, 5HB-6FBX
18	1	120487	ADAPTER, 12MJ-12MJ-12MJ BULKHEAD
19	1	120495	Nut Lock, Bulkhead, -12
20	1	120516	Adapter, 12x-12m30tube
21	1	120655	Adapter, 3hb-4fj
22	1	301010	HOSE, FUEL FILL
23	1	302137	FUEL CAP, 2" DIESEL, GREEN
24	1	315301	WELDMENT, DIESEL FILLER NECK
25	1	315342	WELDMENT, FUEL TANK
26	1	317175	BRKT, FUEL FILL
27	1	332058	Fuel Level Sender, 9.5" Depth
28	1	500172	GASKET, FUEL SENDER
29	1	500209	FITTING, REDUCER 3/8 X 1/4 NPT
30	2	511003	CLAMP, HOSE #36 2.25"
31	1	802023	VALVE, FUEL SHUT OFF 6MB-4MP



5-17-2021

Propulsion Hydraulics:

Hydraulic Pump Assembly:

HYDRAULIC PUMP ASSEMBLY

Part #	DESCRIPTION
323054	PROPULSION PUMP - SERVICE PARTS
325013	SEAL KIT, PM30 SERVO CONTROL

Parts List	
ITEM	QTY
7	2
8	2
21	11
28	1
29	1
30	2
31	1
32	2
33	1

Parts List	
ITEM	QTY
34	1
35	1
36	1
37	1
56	1
57	1
67	1

1-08-2024

Propulsion Hydraulic Installation:

ITEM

QTY

PART #

DESCRIPTION

1

2

110845

BOLT, M12x1.75 x 60 Gr 10.9

2

6

110290

NUT, 1/4-20 WIZ FLANGE

3

2

110410

BOLT, 1/4-20 X 2.5

4

4

110434

BOLT, 1/4-20 X 0.5, WIZ FLANGE

5

4

110440

BOLT, 3/8-16 X 1, WIZ FLANGE

6

1

120728

PLUG, 6MB HEX

7

1

120291

CAP, 6FJ

8

2

111011

Bolt, M5-80 X 55, SHCS, Stainless

9

2

111012

STEP AP203

10

2

111013

WASHER, M5, Flat, Stainless

11

2

570483

TOOL, BRAKE RELEASE

12

3

112007

CLAMP, 1.75", T-BOLT

13

6

112008

CLAMP, 1.25", T-BOLT

14

2

112101

CLAMP, 1.50", T-BOLT

15

2

112137

CLAMP, 2.00", T-BOLT

16

2

120134

ADAPTER, 6MJ-8MB90

17

1

120187

ADAPTER, 12BH-8MB90

18

1

120216

ADAPTER, 6MJ-6FJX-8MJ

19

4

120222

ADAPTER, 6MJ-6MB90

20

2

120226

ADAPTER, 12BH-12MB90

21

2

120249

ADAPTER, 4MJ-8MB

22

1

120754

Adapter, 6FJ-8mj, -4lb Gage Port

23

1

120303

ADAPTER, 12MB-16HB

24

3

120319

ADAPTER, 6MJ-6MB

25

2

111101

STEP AP203

26

2

120739

ADAPTER, 4MJ-8MB

27

1

120742

ADAPTER, 12MB-12FB-12FB

28

2

110844

BOLT, 1/4-20 X 3

29

1

122016

ADAPTER, 12MJ-12MJ-12FJX

30

1

122034

HEAD, SPIN-ON FILTER, -12SAE

31

1

260265

MOUNTING BRACKET, FILTER

32

1

305087

Assy, Hydraulic Tank, ISO

33

1

322095

BLOCK, CASE DRAIN

34

1

322096

TEE, 1.5 x 1.25 x 1.25 BH

35

1

322098

GAUGE, PRESSURE, 600 PSI, 4MB

36

1

323060

VALVE, LOOP FLUSH

37

1

323061

VALVE, BRK RELEASE & HI GEAR

38

1

323068

HOSE KIT, 2WD HAWK GROUND DRIVE

39

2

110053

Hex Nut M12 X 1.75 Tnd

40

1

822044

FILTER, 3 MICRON

41

1

822045

GAUGE, OIL FILTER

Parts List

PROPULSION HYDRAULIC
INSTALLATION

HYDRAULIC
OIL FILTER

HYDRAULIC TANK

BRAKE RELEASE &
HIGH GEAR VALVE

CASE DRAIN BLOCK

DOUBLE
GEAR
PUMP

LOOP
FLUSH
VALVE

PROPULSION
PUMP

LH REAR
WHEEL MOTOR

RH REAR
WHEEL MOTOR

3-3-2022

27

Valve Assemblies:

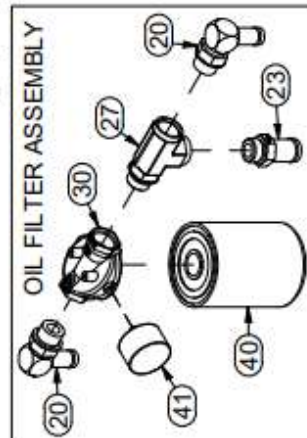
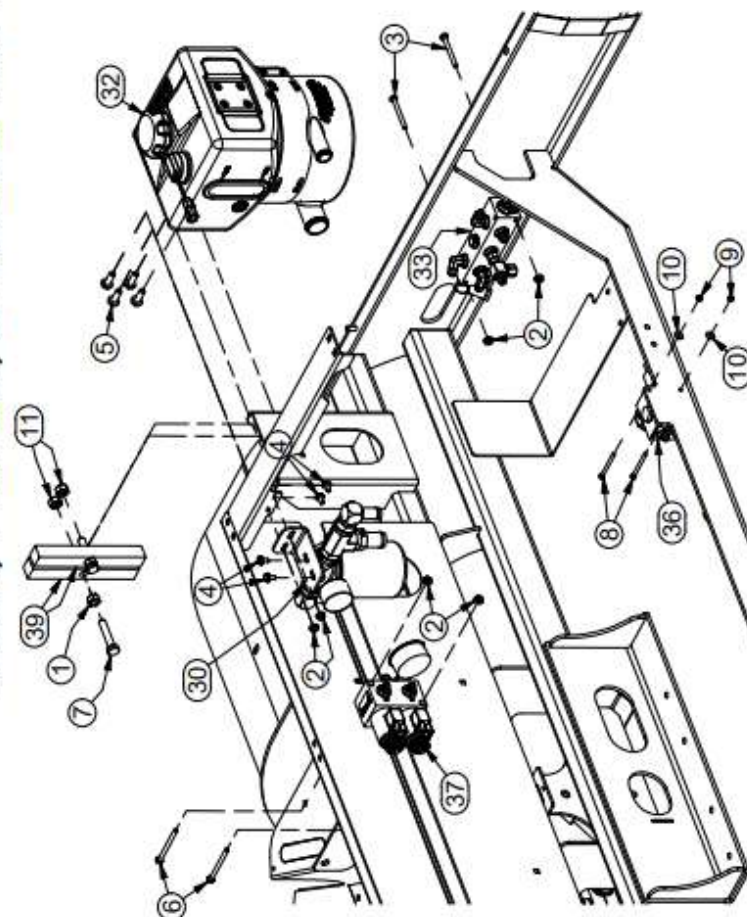
Steering Orbital Assembly

ITEM	QTY	PART #	DESCRIPTION
13	4	111055	STUD, M10 X 1.5 X 42 GRADE 8.8
20	2	120222	ADAPTER, 6MJ-6MB90
22	2	120249	ADAPTER, 4MJ-6MB
24	1	120319	ADAPTER, 6MJ-6MB
37	1	323046	MOTOR, STEERING ORBITAL

5-17-2021

Tank, Filter, & Valve Installation:

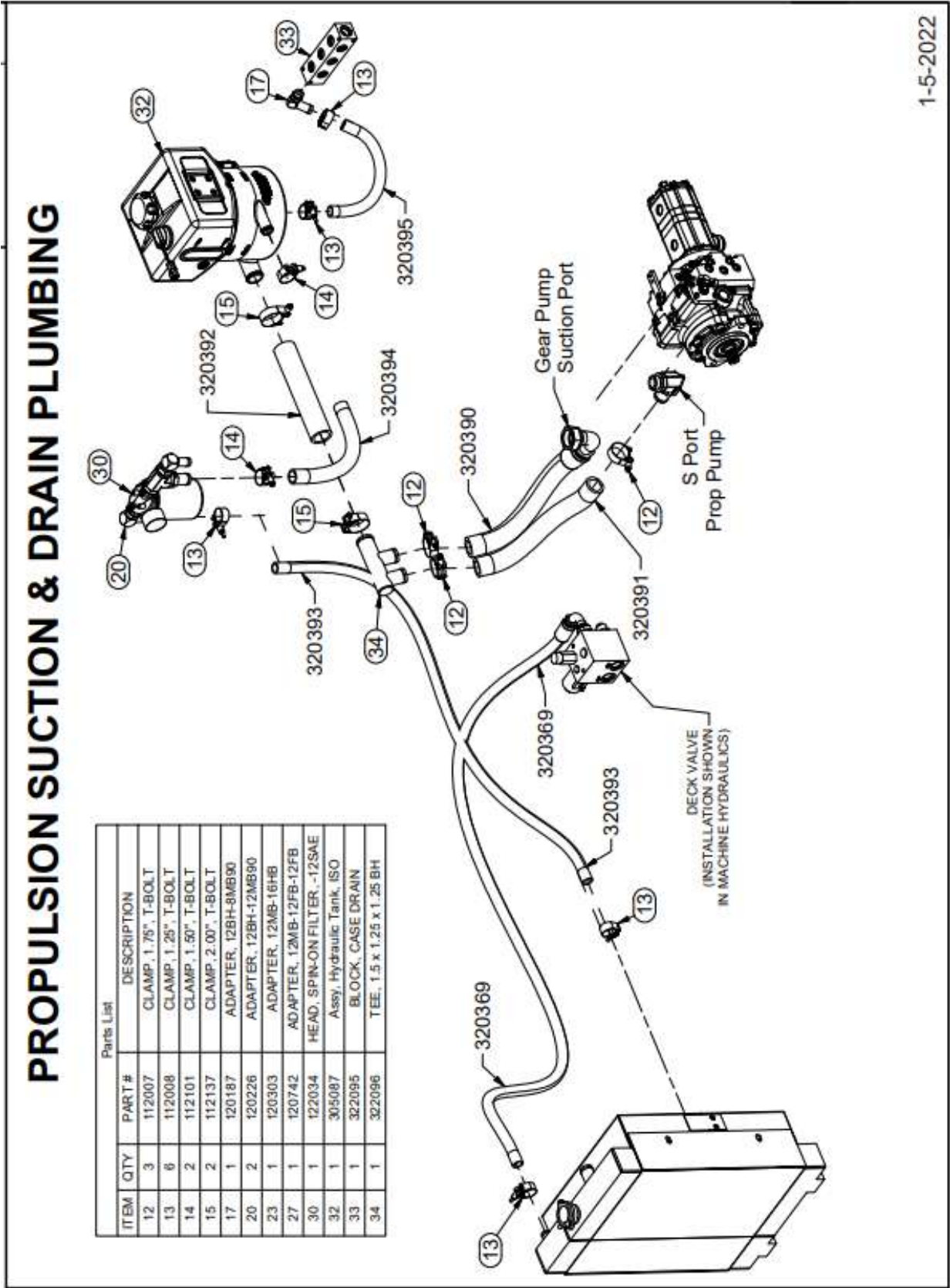
TANK, FILTER, & VALVE INSTALLATION



Parts List		
ITEM	QTY	PART # DESCRIPTION
1	2	110053 Hex Nut M12 X 1.75 Thd
2	6	110290 NUT, 1/4-20 WIZ FLANGE
3	2	110410 BOLT, 1/4-20 X 2.5
4	4	110434 BOLT, 1/4-20 X 0.5, WIZ FLANGE
5	4	110440 BOLT, 3/8-16 X 1, WIZ FLANGE
6	2	110844 BOLT, 1/4-20 X 3
7	2	110845 BOLT, M12x1.75 x 60 Gr 10.9
8	2	111011 Bolt, M5-80 X 55, SHCS, Stainless
9	2	111012 STEP AP203
10	2	111013 Washer, M5, Flat, Stainless
11	2	111101 STEP AP203
20	2	120226 ADAPTER, 12BH-12MB90
23	1	120303 ADAPTER, 12MB-16HB
25	1	120728 PLUG, 6MB HEX
26	2	120739 ADAPTER, 4MJ-3MB
27	1	120742 ADAPTER, 12MB-12FB-12FB
28	1	120744 ADAPTER, 6FJX-6MJ-4FB, GAGE PORT
30	1	122034 HEAD, SPIN-ON FILTER, -12SAE
32	1	305087 Assy, Hydraulic Tank, ISO
33	1	322095 BLOCK, CASE DRAIN
35	1	322098 GAUGE, PRESSURE, 600 PSI, 4MB
36	1	323060 VALVE, LOOP FLUSH
37	1	323061 VALVE, BRK RELEASE & HI GEAR
39	2	570483 TOOL, BRAKE RELEASE
40	1	822044 FILTER, 3 MICRON
41	1	822045 GAUGE, OIL FILTER

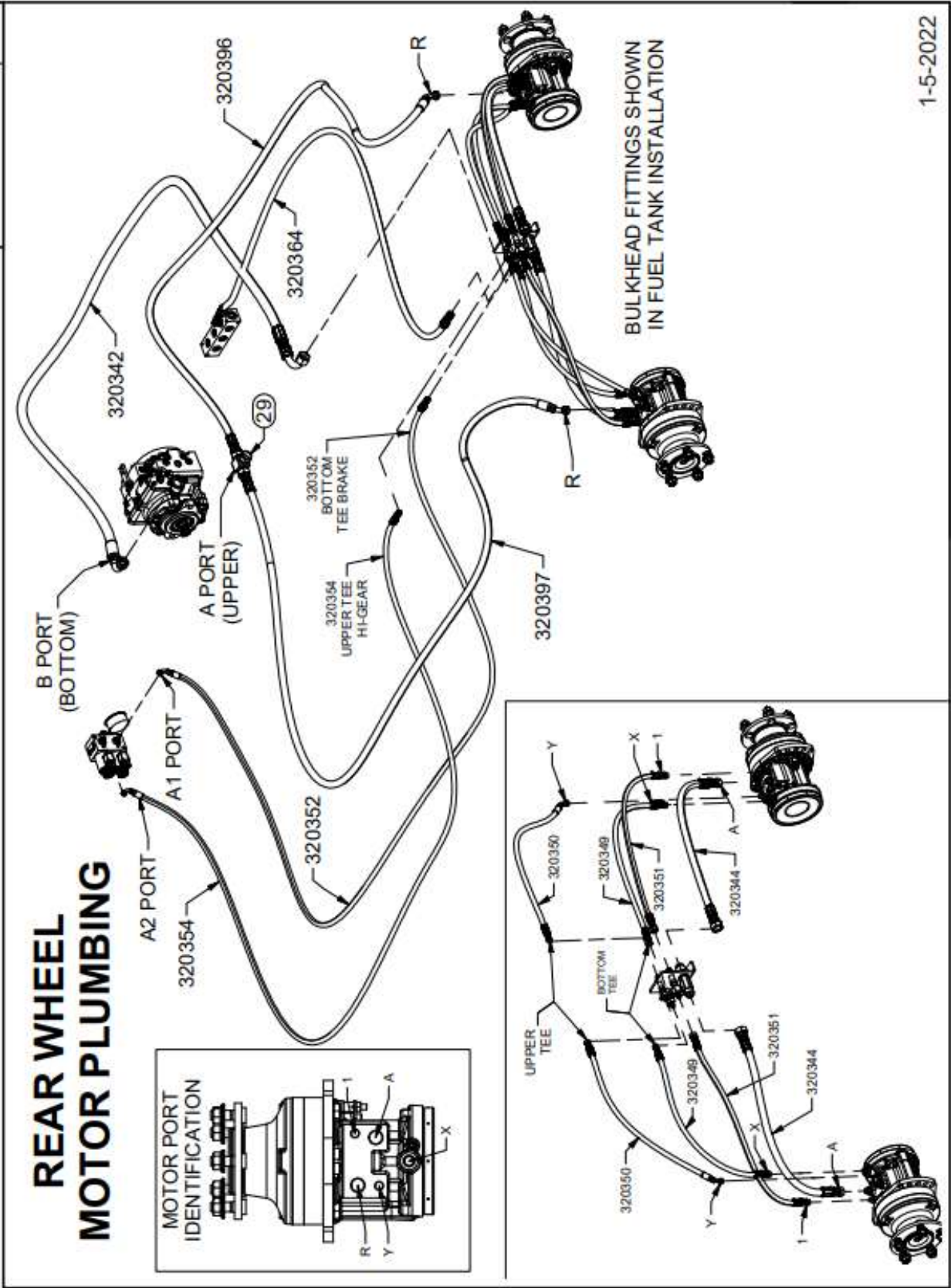
1-5-2022

Propulsion Suction & Drain Plumbing:



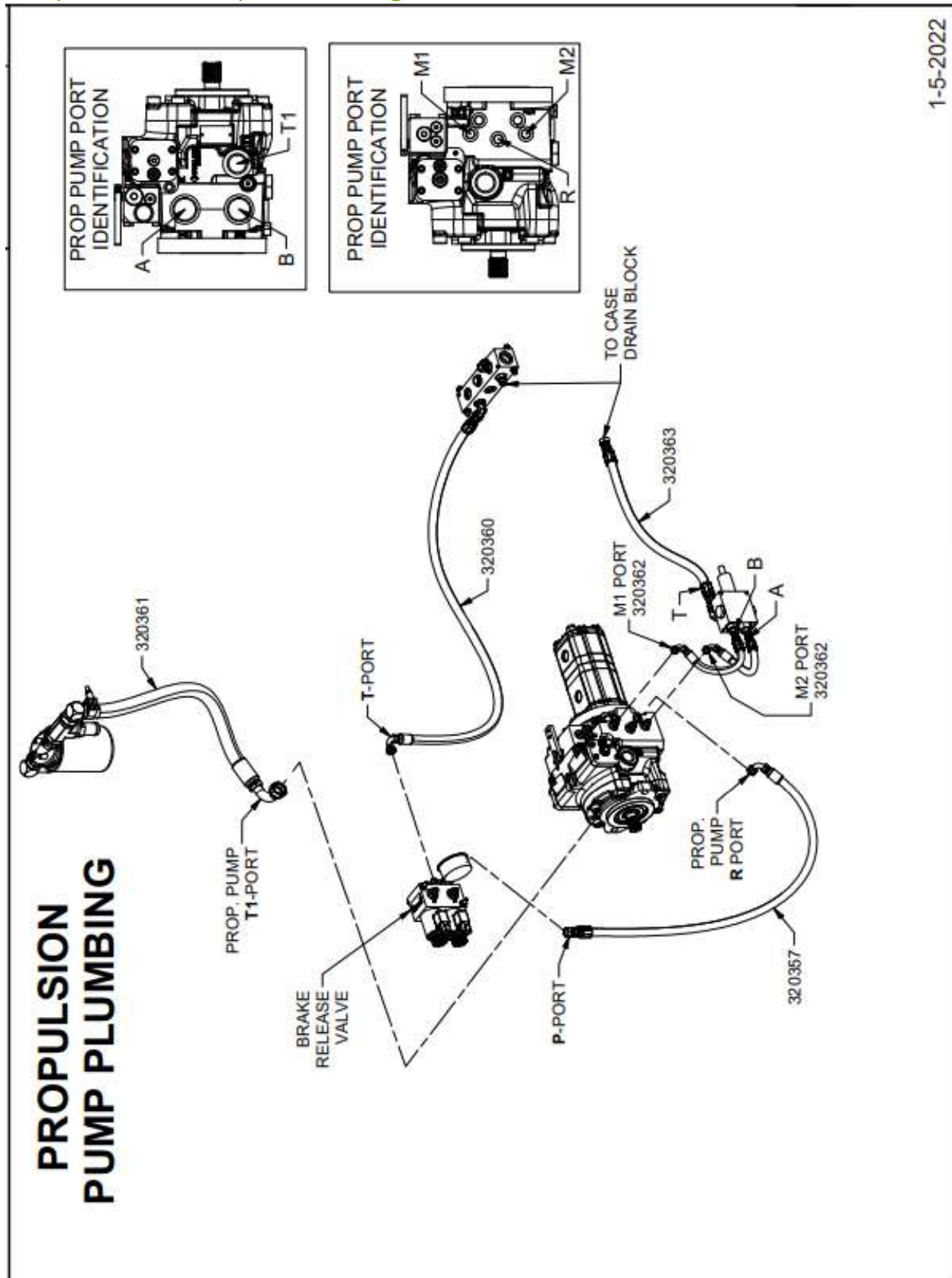
1-5-2022

Rear Wheel Motor Plumbing:



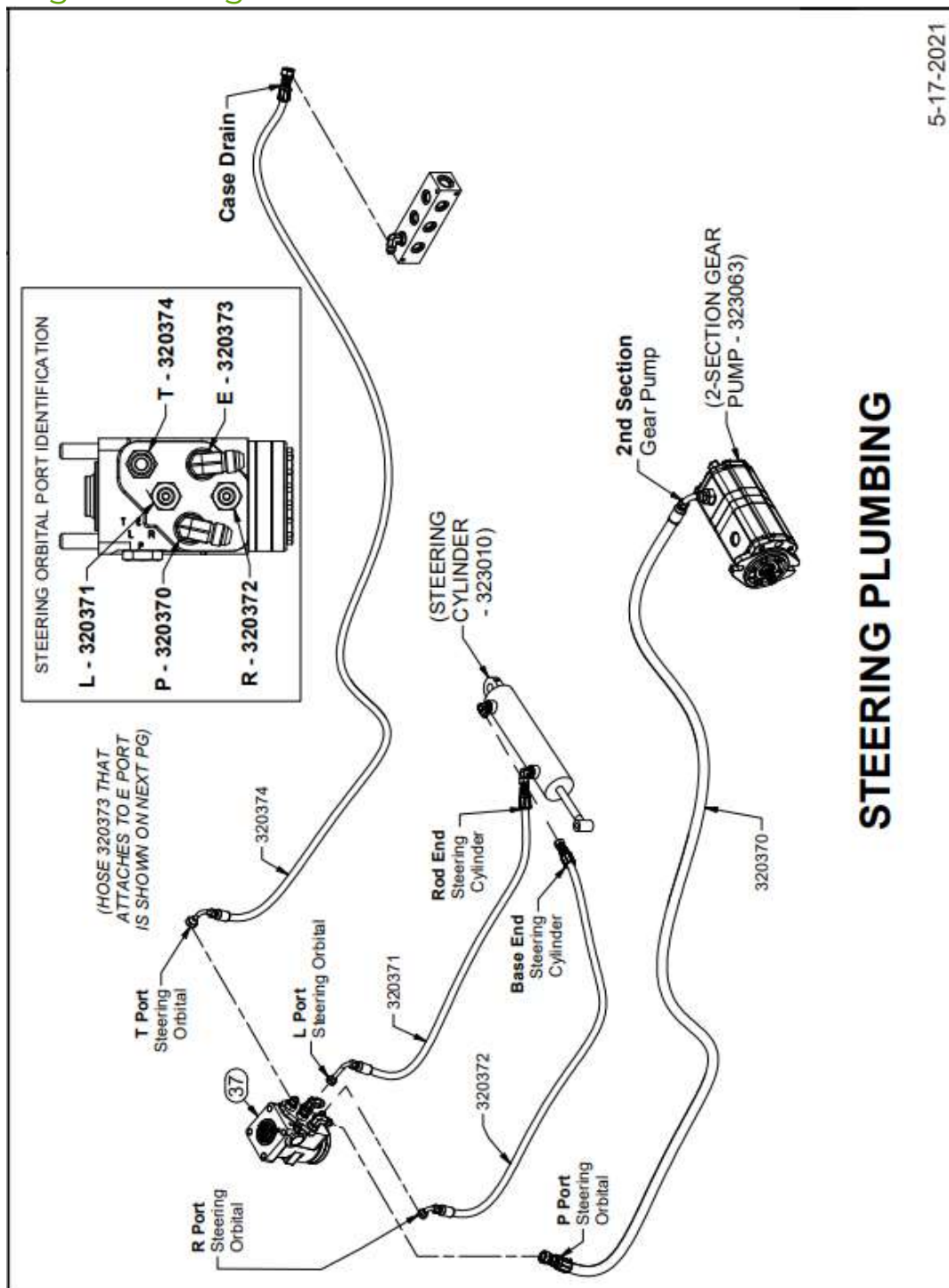
1-5-2022

Propulsion Pump Plumbing:



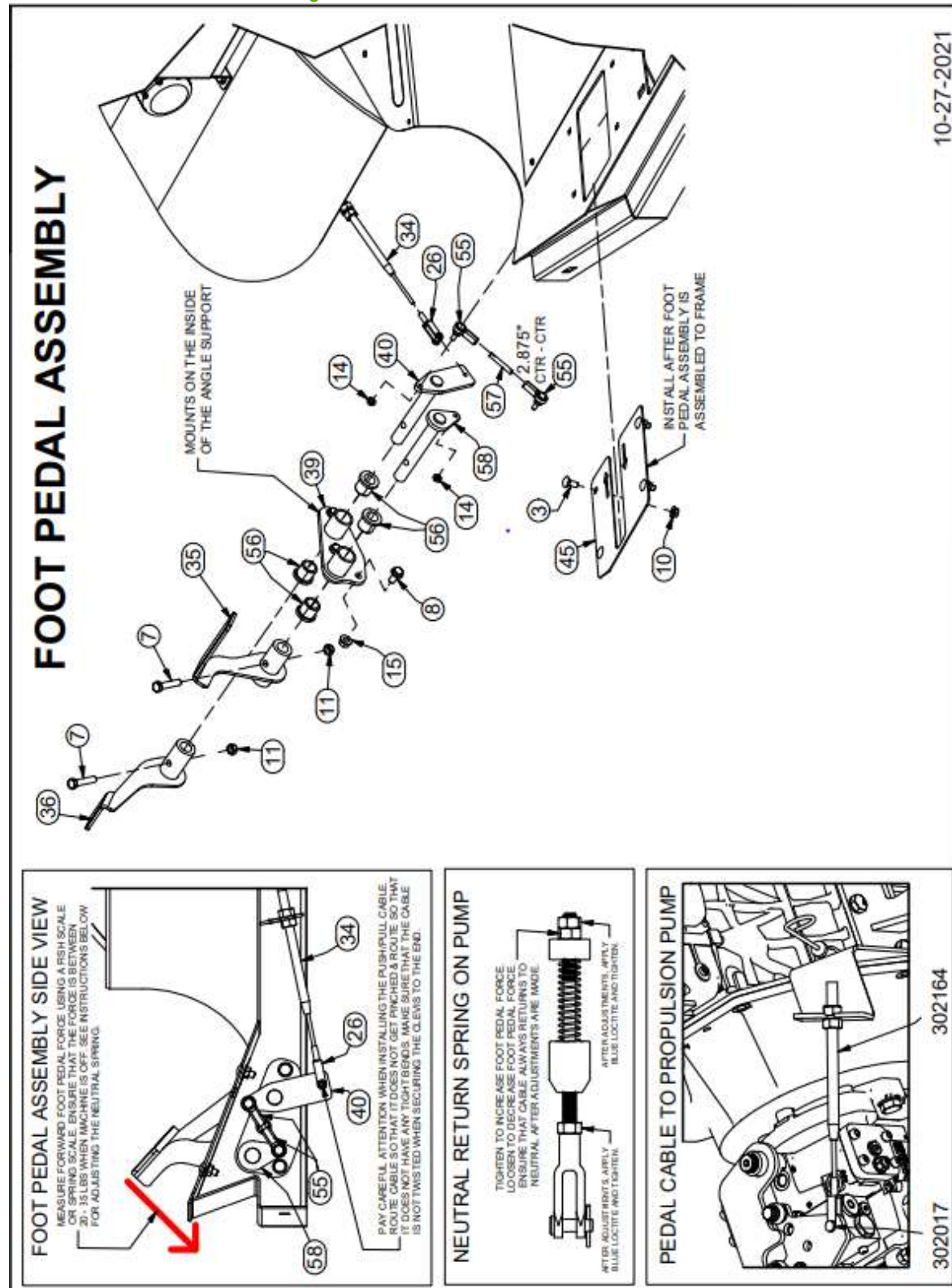
Machine Hydraulics:

Steering Plumbing:



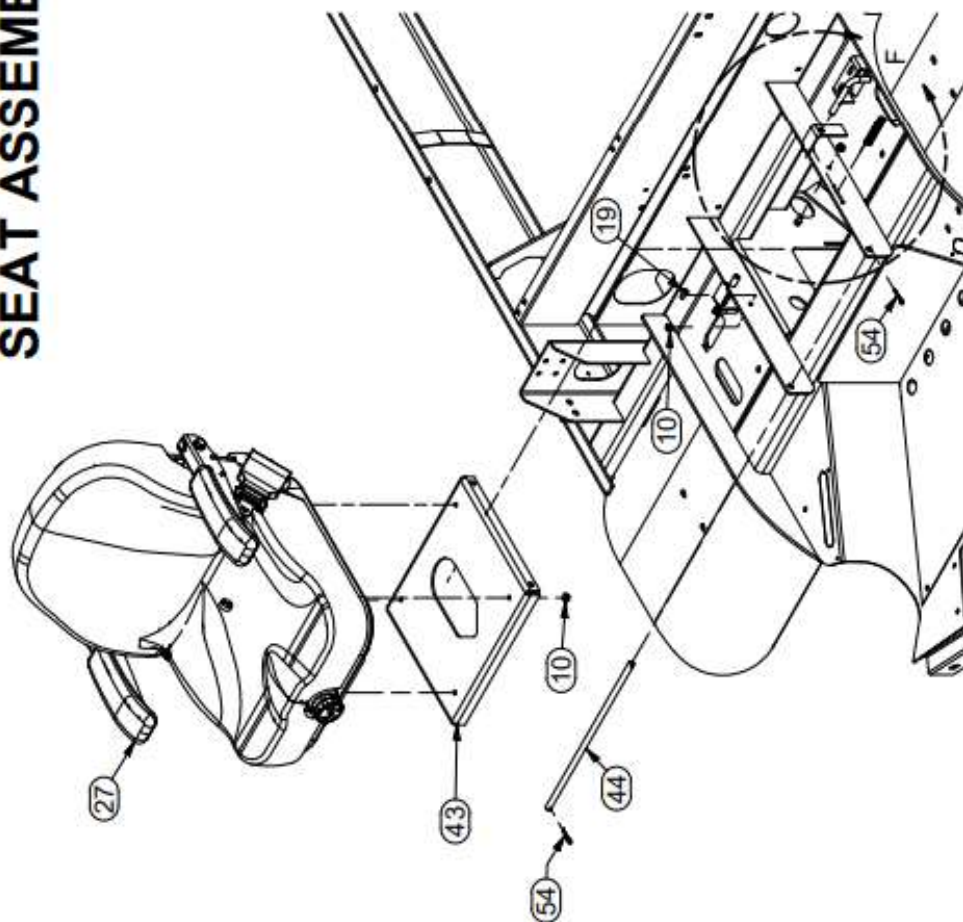
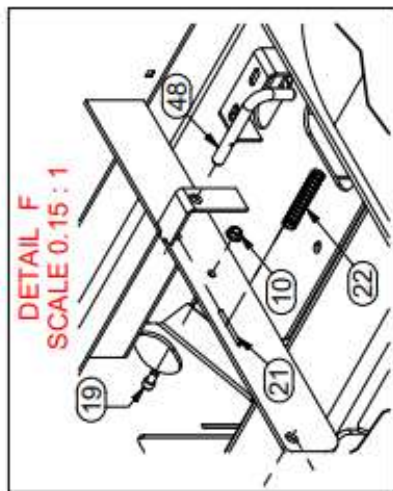
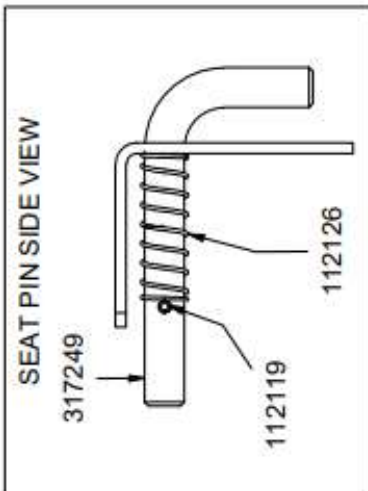
Operator Station Assemblies:

Foot Pedal Assembly



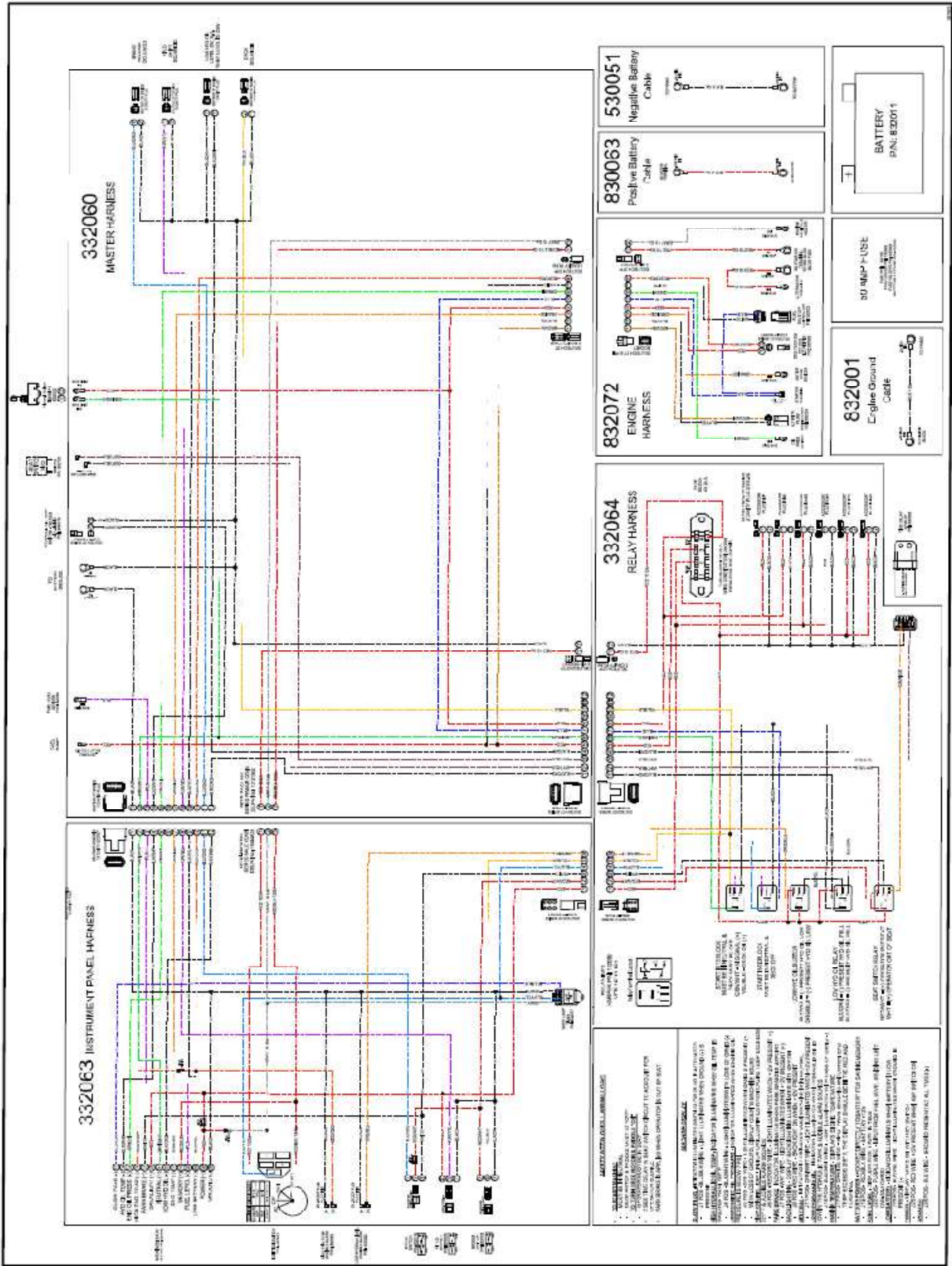
SEAT ASSEMBLY

Parts List			
ITEM	QTY	PART #	DESCRIPTION
10	6	110806	NUT, 5/16-18 W/2 FLANGE
19	2	110971	BOLT, 5/16-18 X .50 SHCS
21	2	112119	ROLL PIN, 5/32 X 2 ZP
22	2	112126	SPRING, COMP 3.0L x 0.6 OD x .045
27	1	302078	SEAT, 13M SUSPENSION
43	1	317172	BASE, SEAT MOUNT
44	1	317173	PIN, SEAT MOUNTING
48	2	317249	PIN, QUICK RELEASE
54	2	510112	COTTER PIN, 3/16 X 1



10-27-2021

Electrical Harnesses



Mirror, Tire, and Shield Assemblies:

Mirror, Tire, and Shield Installation:

ITEM

QTY

PART #

DESCRIPTION

3

2

110400

BOLT, 3/8-16 X 2.0

5

2

110474

BOLT, 1/4-20 X 1-1/2

8

4

110645

NUT, 3/8-16 W/IZ FLANGE

10

2

110667

WASHER, 1/4" LOCK

12

4

110626

NUT, 3/8-16 GR 5

13

2

111185

BOLT, SQUARE U, 3/8-16 x 2.50 x 4.0

16

4

211747

FRICTION WASHER 1.5"

18

2

302139

Convex Mirror, 8" Round, Offset Ball-Stud

19

4

302140

Plug, Snap-In Square, 3/4"

27

2

315385

WELDMENT, SWINGING MIRROR

28

2

315391

WELDMENT, MIRROR UBOLT MOUNT

Parts List

MIRROR ASSEMBLY

SAME PARTS USED ON OPPOSITE SIDE

13

18

19

10

5

27

16

8

12

28

2-2-2023

37

Mirror Assembly:

ITEM

QTY

PART #

DESCRIPTION

3	2	110400	BOLT, 3/8-16 X 2.0
5	2	110474	BOLT, 1/4-20 X 1-1/2
8	4	110645	NUT, 3/8-16 W/IZ FLANGE
10	2	110667	WASHER, 1/4" LOCK
12	4	110826	NUT, 3/8-16 GR 5
13	2	111185	BOLT, SQUARE U, 3/8-16 X 2.50 X 4.0
16	4	211747	FRICTION WASHER 1.5"
18	2	302139	Convex Mirror, 8" Round, Offset Ball-Stud
19	4	302140	Plug, Snap-In Square, 3/4"
27	2	315385	WELDMENT, SWINGING MIRROR
28	2	315391	WELDMENT, MIRROR UBOLT MOUNT

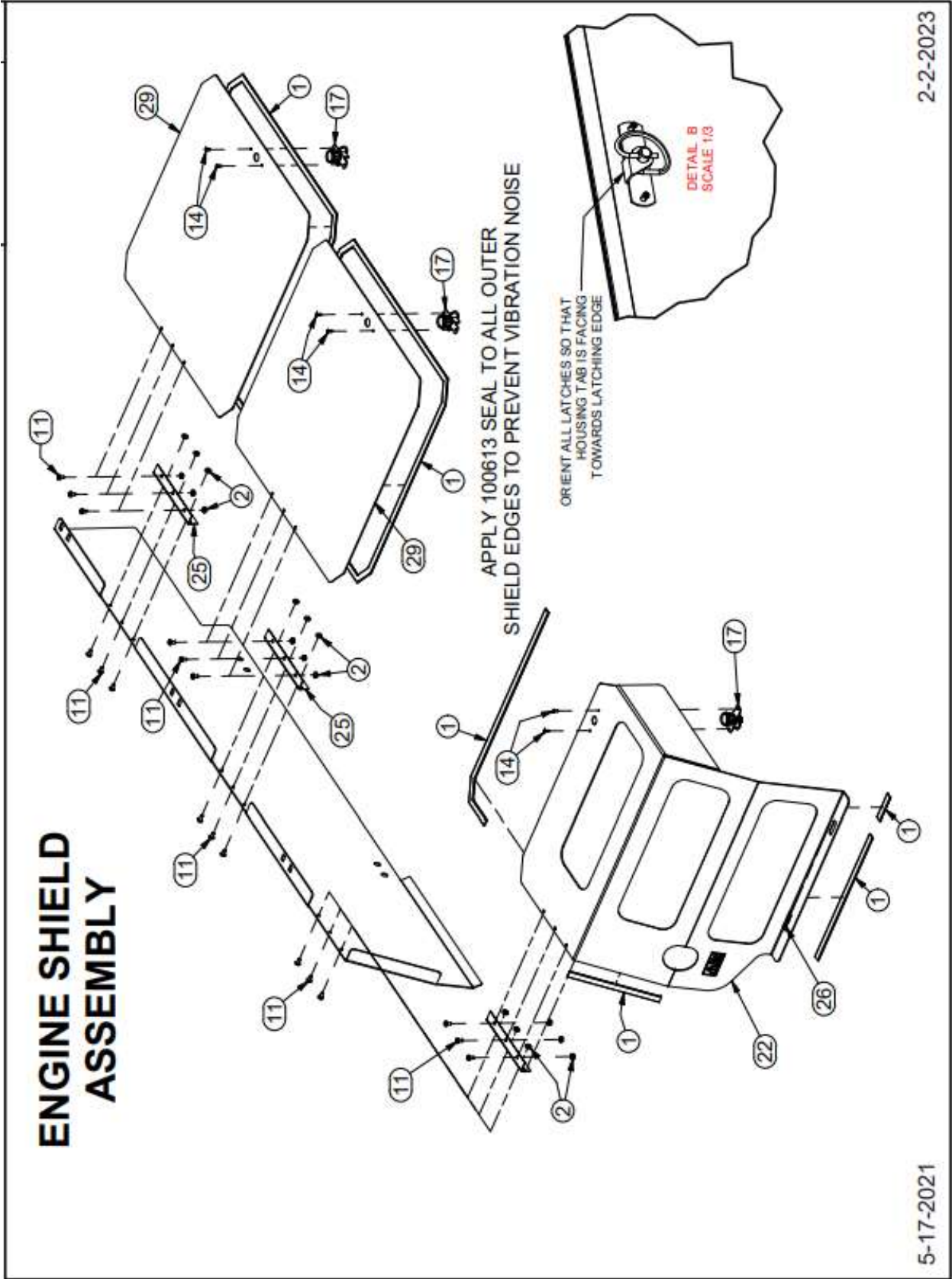
MIRROR ASSEMBLY

SAME PARTS USED ON OPPOSITE SIDE

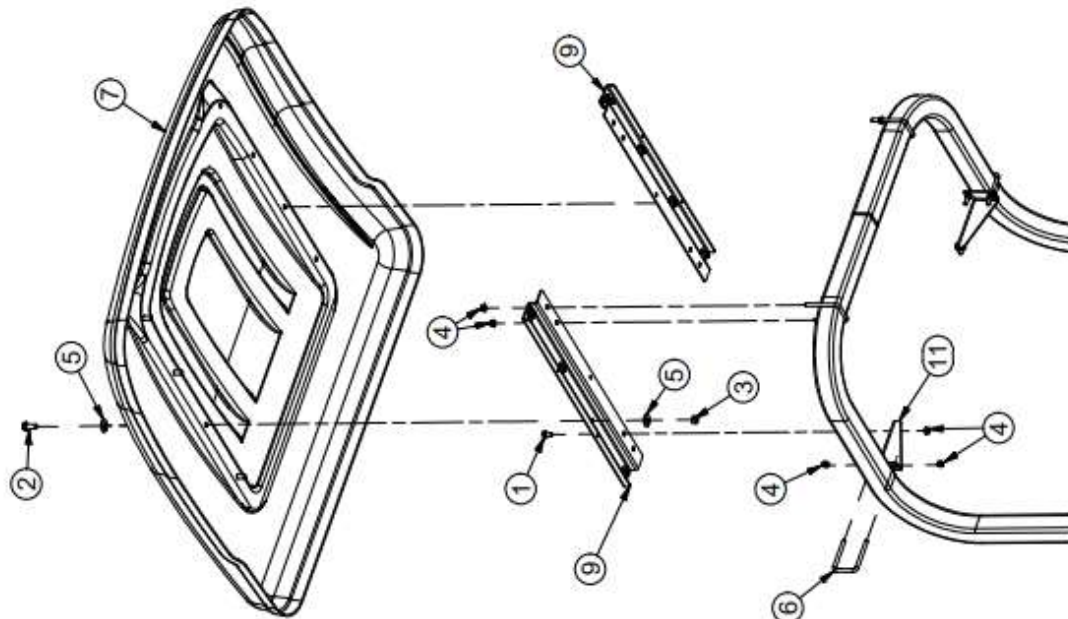
Technical drawing of a mirror assembly. The drawing includes a side view and a top-down view of the mounting mechanism. The side view shows a curved arm (13) with a mirror (18) at the end. The top-down view shows the internal components including bolts (3, 5, 8, 10, 12), washers (16), and weldments (27, 28). A note indicates that the same parts are used on the opposite side.

2-2-2023

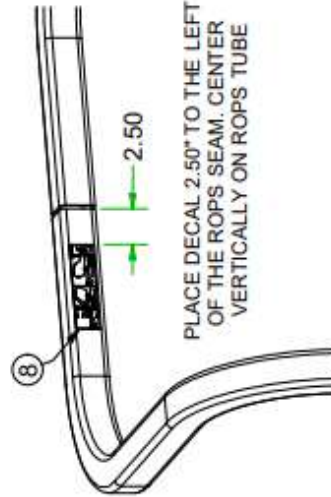
Engine Shield Assembly:



Canopy:



Parts List			
ITEM	QTY	PART #	DESCRIPTION
1	2	110437	BOLT, 3/8-16 X 0.75, WIZ FLANGE
2	8	110442	BOLT, 1/2-13 X 1.25
3	8	110615	NUT, 1/2-13, UNITORQUE LOCK
4	10	110645	NUT, 3/8-16 WIZ FLANGE
5	16	110658	WASHER, 1/2" FLAT STANDARD
6	4	111185	BOLT, SQUARE U, 3/8-16 X 2.50 X 4.0
7	1	302142	CANOPY, BLACK ABS PLASTIC
8	1	302173	DECAL, HAWK CANOPY TRANSPORT
9	2	317332	BRKT, CANOPY SUPPORT
10	1	317333	BRKT, LH CANOPY MOUNT
11	1	317334	BRKT, RH CANOPY MOUNT



PLACE DECAL 2.50" TO THE LEFT OF THE ROPS SEAM. CENTER VERTICALLY ON ROPS TUBE

4-29-2022

Work Lights:

WORK LIGHTS
FACTORY INSTALL P/N: 300085
CUSTOMER INSTALL P/N: 300084

ATTACH LIGHTS USING THE HARDWARE PROVIDED WITH THE LIGHTS. ADJUST LIGHTS TO A 10° DOWNWARD ANGLE.

ROUTE ELECTRICAL HARNESS DOWN THE REAR SIDE OF ROPS AS SHOWN BY BLUE ARROWS & SECURE WITH CABLE TIES

ITEM	QTY	PART #	DESCRIPTION
1	12	100578	CABLE TIE 14" BLACK 50 Lb Tens
2	4	110645	NUT, 3/8-16 W/2 FLANGE
3	2	111185	BOLT, SQUARE U, 3/8-16 x 2.50 x 4.0
4	4	232130	Light, 5" Rectangle, Flood w/Connector
5	1	302198	DECAL, WORK LIGHT SWITCH
6	2	317395	BRKT, FRONT WORK LIGHT
7	2	317412	BRKT, REAR WORK LIGHT
8	1	332088	HARNESS, WORK LIGHT
9	1	832005	SWITCH, PADDLE, CARLING (29253)

INSTALLATION

- MOUNT WORK LIGHTS TO ROPS AS SHOWN IN THE EXPLODED DIAGRAM TO THE RIGHT. WHEN MOUNTING FRONT LIGHTS, USE THE SAME SQUARE U-BOLT THAT IS USED TO ATTACH THE MIRROR BRACKETS. POSITION WORK LIGHTS AND MIRRORS SO THERE IS NO INTERFERENCE. IF A CANOPY IS INSTALLED, MOUNT THE WORK LIGHTS TO THE REAR SIDE OF THE REAR CANOPY BRACKETS.
- THE CONSOLE CONTAINS 3 OPEN POSITIONS TO INSTALL THE ROCKER SWITCH. REMOVE 1 OF THE PLUGS TO INSTALL THE SWITCH.
- THE MACHINE IS ALSO EQUIPPED WITH 3 EXTRA CONNECTORS BELOW THE CONSOLE THAT PROVIDE +12V POWER / GROUND FOR THIS KIT. SEE ELECTRICAL SCHEMATIC ON PAGE 2.
- ROUTE THE WIRING HARNESS DOWN THE BACKSIDE OF THE ROPS AND SECURE USING THE CABLE TIES. ROUTE THE HARNESS FROM THE LH ROPS TO THE CONSOLE BY ROUTING THROUGH THE ENGINE COMPARTMENT.

2-25-2021

41