

# LIMITED WARRANTY

COMPANY NAME: \_\_\_\_\_

COMPANY ADDRESS: \_\_\_\_\_

CITY: \_\_\_\_\_ STATE: \_\_\_\_\_ ZIP: \_\_\_\_\_

MODEL: \_\_\_\_\_

SERIAL NUMBER: \_\_\_\_\_

DATE PURCHASED: \_\_\_\_\_

DEALER NAME: \_\_\_\_\_

DATE WARRANTY CARD RETURNED: \_\_\_\_\_

VIA: \_\_\_\_\_ WEBSITE \_\_\_\_\_ MAIL

***FORCE UNLIMITED LLC***



# FORCE UNLIMITED LLC LIMITED WARRANTY

FORCE Unlimited LLC has manufactured or is distributing the Product or Parts to which this warranty is attached. It warrants that the Product or Parts will, under normal conditions of use and service, be free from material defects due to faulty manufacturing for a period of twelve (12) months from the date of delivery to the original user. If any Product or Part does not conform to this warranty, your Dealer will, at its option, repair or replace parts provided, and you will pay all labor costs and costs for materials other than warranty parts. If Product or Part is defective in materials or workmanship, you must promptly notify your Dealer and return to FORCE Unlimited or fax to 319-283-3086 the warranty registration card within 30 days from the date of delivery to original user. The installation of any Part that did not originate from FORCE Unlimited will void this limited warranty in its entirety. In the event of repair or replacement, the warranty period shall not be extended beyond the original warranty period.

**If you fail to return the warranty registration card (in parts manual) to FORCE Unlimited within thirty (30) days after the date of delivery, this warranty shall not apply and your remedy for any defects in the Product will be your responsibility.**

**The above warranty does not cover:**

- a. Product that is damaged by abuse, neglect, accident, or modification
- b. Fluids, towing, telephone, travel, loss of vehicle, inconvenience
- c. The product itself if parts are installed on the equipment that did not originate from FORCE Unlimited

**The above warranty does not apply under the following conditions:**

- a. When Product has been improperly used or installed, modified, or fails because of defects or inefficiency of components not furnished with the Product
- b. When Product is used for purposes for which it was not originally designed or intended, or is used under abnormal operating conditions
- c. When the Dealer or end-user fails to follow FORCE Unlimited instructions regarding the Product

**This warranty is extended only to the original user and is not transferable. In the event of a warranty claim, you should promptly notify your Dealer and provide the following:**

- a. Model & serial number of the Product
- b. Date of delivery to the original user
- c. Part number of the defective Part
- d. Description of the claim encountered

**FORCE Unlimited LLC will bear no other expense including labor and material costs, other than those specified above. Unless modified in writing and signed by both parties, this Limited Warranty is understood to be the complete and exclusive agreement between the parties. No third party has authority to change or modify this warranty in any aspect.**

## LIMITED WARRANTY

### 2 YRS

SHELL STRUCTURE, SPINNER FRAME (including inferior welds & cracking)  
CONVEYOR GEARBOX (including gears, bearings & seals)

### 1 YR

SPINNER MOTORS & ADAPTERS (including bearings & seals)  
CONVEYOR MOTORS (including bearings & seals)  
VALVE MOTORS & CARTRIDGES  
CONVEYOR CHAIN – BELT & FASTENERS  
CONVEYOR SPROCKETS & BEARINGS  
FAN & CONVEYOR RATE SENSORS

### WEAR ITEMS

SPINNER FINS  
SPINNER DISCS

**MANUFACTURER HAS THE RIGHT TO REPLACE DEFECTIVE OR DAMAGED PARTS  
WITH NEW OR REBUILT AT ITS OWN DISCRETION**

**PARTS DAMAGED FROM ABUSE OR IMPROPER MAINTENANCE NOT COVERED**

**FORCE UNLTD.** SPREADERS\*GPS EQUIPMENT\*CONVEYORS

<b><u>ITEM</u></b>	<b><u>PAGE NO.</u></b>
Final Assembly	1
Hopper Assembly	2
Hopper Carrier Assembly	3
Engine & Tank Skid Assembly	4
Conveyor Hydraulics	5
Undercarriage Assembly	6
Hydraulic Tank Assembly	7
Fuel Tank Assembly	8
Optional Conveyor Remote Control Hydraulics	9
Tail Light Assembly Wiring	10
Optional Wireless Control System	11
Decals	12
Gear Box	17

**SAFETY**

**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, RECOGNIZING THE REAL CAUSE AND DOING SOMETHING ABOUT IT BEFORE THE ACCIDENT OCCURS CAN PREVENT MOST ACCIDENTS.

REGARDLESS OF THE CARE USED IN THE DESIGN AND CONSTRUCTION OF ANY TYPE OF EQUIPMENT, THERE ARE MANY CONDITIONS THAT CANNOT BE COMPLETELY SAFEGUARDED 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. THAT RULE IS:

**NEVER ATTEMPT TO CLEAN, OIL OR ADJUST A MACHINE WHILE IT IS IN MOTION.**

NATIONAL SAFETY COUNCIL

**BELT TRACKING PROCEDURE FOR HPC-30A CONVEYOR**

1. SET HEAD AND TAIL ROLLERS APPROXIMATELY SQUARE WITH FRAME.
2. CONSIDER THE BELT TO BE TWO INDIVIDUAL BELTS. THE TOP BELT IS WHAT THE MATERIAL RIDES ON AND THE BOTTOM BELT IS UNDERNEATH IT AND RIDES ON THE RETURN ROLLERS. TRACK THE BOTTOM BELT FIRST USING THE RETURN ROLLER. LOOSEN THE ½" BOLTS AND SLIDE THE ROLLER IN THE DIRECTION YOU WANT THE BELT TO MOVE. (NOTE DIRECTION OF BELT TRAVEL ON BOTTOM BELT WILL BE FROM DRIVE ROLLER TOWARD THE HOPPER) ADJUST ALL ROLLERS AHEAD OF THE PROBLEM. MOVE THE ROLLERS A SMALL AMOUNT AT A TIME AND WAIT UNTIL THE BELT HAS MADE A COUPLE OF REVOLUTIONS. **DO NOT OVER ADJUST.**
3. AFTER THE RETURN ROLLERS ARE ADJUSTED, MAKE A FINAL ADJUSTMENT ON THE TAIL ROLLER. DO THIS BY TIGHTENING THE SIDE THAT THE BELT RUNS TOWARD, AGAIN MAKING SMALL ADJUSTMENTS AND LETTING THE BELT MAKE A COUPLE OF REVOLUTIONS.
4. ADJUST THE UPPERMOST AND LOWERMOST TROUGHING ROLLERS. IN MUCH THE SAME MANNER AS WAS DONE ON THE RETURN ROLLERS. START AT THE LOWER ROLLER AND ADJUST IT IN THE DIRECTION YOU WANT THE BELT TO GO. THEN GO TO THE TOP MOST TROUGHING ROLLER AND REPEAT THE ABOVE PROCEDURE. LET THE BELT MAKE A COUPLE OF REVOLUTIONS BETWEEN EACH ADJUSTMENT TO ALLOW IT TO TRACK PROPERLY. IF TRACKING IS NOT SATISFACTORY, ADJUST MORE AS NEEDED. AGAIN, **DO NOT OVER ADJUST.**
5. ADJUST DRIVE DRUM SIMILAR TO THE TAIL ROLLER.
6. DUMP LIME OR OTHER PRODUCT IN HOPPER. THIS WILL PROBABLY CAUSE THE BELT TO MOVE TO ONE SIDE OR THE OTHER AS THE BELT AND HOPPER ROLLERS COME IN CONTACT WITH EACH OTHER. ADJUST THEM IN THE SAME MANNER AS THE RETURN AND TROUGHING ROLLERS.
7. NOTE: IT MAY BE NECESSARY TO REPEAT THE ADJUSTING PROCEDURE MORE THAN ONCE AS SOME OF THE LATER ADJUSTMENTS MAY SHOW THAT THE BELT WAS OVER ADJUSTED IN THE EARLIER STEPS.
8. AFTER THE INITIAL ADJUSTMENTS HAVE BEEN MADE AND A FEW HUNDRED TON OF MATERIAL HAS GONE UP THE CONVEYOR, THE BELT SHOULD HAVE REACHED THE POINT AT WHICH THE BELT HAS STRETCHED TO ITS FINAL RUNNING LENGTH. VERY LITTLE ADJUSTMENT SHOULD BE NEEDED IN THE FUTURE AND THEN ONLY ONE OR TWO OF THE PRIOR STEPS WILL BE REQUIRED TO CORRECT IT. NOTE THAT THE BELT WILL RUN SLIGHTLY DIFFERENTLY EACH TIME THE UNIT IS MOVED. ADJUSTMENT OF THE BELT IS NOT NECESSARY AS LONG AS THERE IS NO DANGER OF DAMAGE TO THE BELT OR AS LONG AS NO EXCESS MATERIAL SPILLAGE OCCURS.

# FORCE UNLTD. HPC30A CONVEYOR INSTRUCTIONS

1/31/06

**TORQUEING THE BOLTS ABOVE THEIR RATING WILL FAIL THE BOLT -  
--DON'T OVER TORQUE THE BOLTS**

## U-BOLT TORQUE WITH ANTI-SEIZE

**(IMPORTANT)** CHECK THE SIZE OF THE U-BOLT

ENGINE SKID U-BOLTS, 1/2" Grade 2 U-BOLT = 50 FOOT POUNDS (alternate sides)

UNDERCARRIAGE U-BOLTS, 3/4" U-BOLT = 159 TO 199 FOOT POUNDS

## RIM LUG NUTS

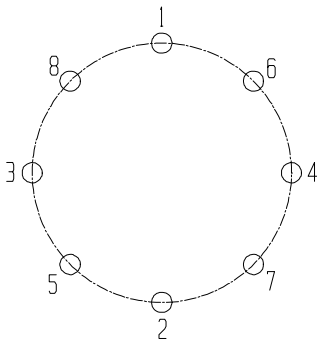
85 TO 100 FOOT POUNDS, RECHECK EVERY 500 REVOLUTIONS  
UNTIL NO CHANGE.

## TIRE PRESSURE

**ALWAYS CHECK WHAT IS ON THE TIRE**

385R225 = 70 PSI
425R225 = 70 PSI

## NUT TIGHTENING SEQUENCE



**FORCE UNLTD.** SPREADERS\*GPS EQUIPMENT\*CONVEYORS

FORCE Unltd. PT. #	TORQUE FOOT/LBS	COIL NUT TORQUE
1211-01 (Valve - Hyd Servo)	46-54	
1211-08 (Proportional Valve - 10 NC)	55-60	Hand Tighten
1211-011 (Proportional Valve - 16 NC)	95-100	Hand Tighten
1211-80 (Cartridge - PSI Compensator)	65-75	
1211-945 (3500 PSI Relief Valve)	45-50	9 Foot/LBS
1211-95 (4000 PSI Relief Valve)	45-50	9 Foot/LBS
1222-108 (Valve - Cartridge, Logic Element)	65-75	
1222-109 (Solenoid Valve)	18-20	4-5 Foot/LBS

Steel 37° JIC Adapters		
Dash Size	Flared Thread Size	Torque Foot/Lbs.
-6	9/16-18	18-20
-8	3/4-16	27-39
-10	7/8-14	36-63
-12	1 1/16-12	65-88
-14	1 3/16-12	75-103
-16	1 5/16-12	85-113
-20	1 5/8-12	115-133
-24	1 7/8-12	125-167

Steel Pipe Adapters		
DASH SIZE	NPSM THREAD SIZE	TORQUE FOOT/LBS
-4	1/4-18	25
-6	3/8-18	40
-8	1/2-14	54
-12	3/4-14	78
-16	1-11 1/2	112
-20	1 1/4-11 1/2	154
-24	1 1/2-11 1/2	211

STEEL SAE O-RING ADAPTERS J514 & J1926/3 TORQUE VALUES			
DASH SIZE	STRAIGHT THREAD SIZE	STRAIGHT STUD TORQUE FOOT/LBS	ADJUSTABLE STUD TORQUE FOOT/LBS
-6	9/16-18	18-24	12-16
-8	3/4-16	27-43	20-30
-10	7/8-14	36-48	30-36
-12	1 1/16-12	65-75	44-54
-14	1 3/16-12	75-99	53-70
-16	1 5/16-12	85-123	59-80
-20	1 5/8-12	115-161	75-100
-24	1 7/8-12	125-170	105-125



**FORCE UNLTD.** SPREADERS\*GPS EQUIPMENT\*CONVEYORS

<b><u>LOCATION</u></b>	<b><u>PLACES</u></b>	<b><u>LUBRICANT</u></b>	<b><u>FREQUENCY</u></b>
Reservoir	1	SAE 15W-40 System Fill Requires Approx. 25 gal. See Below	Check Daily, Change every 2-3 years
Filter	1		Weekly, See Below
Bearings - Drive	2	Multi-Purpose Grease NLGI No. 2	Weekly, See Below
Bearings - Idler	4	Multi-Purpose Grease NLGI No. 2	Weekly, See Below
Gear Box	1	Synthetic SAE 90 Requires Approx. 2 quarts	Check Monthly, Change Annually, See Below
Bolt, Take-Up	4	Never Seize	Annually
Conveyor Pivot Pin	2	Multi-Purpose Grease NLGI No. 2	Monthly, See Below

**CHECKING RESERVOIR FILTER:**

Check filter indicator with hydraulic system warm and equipment running at full RPM. Indicator will show RED if filter needs to be changed.

**RESERVOIR/SYSTEM FILL:**

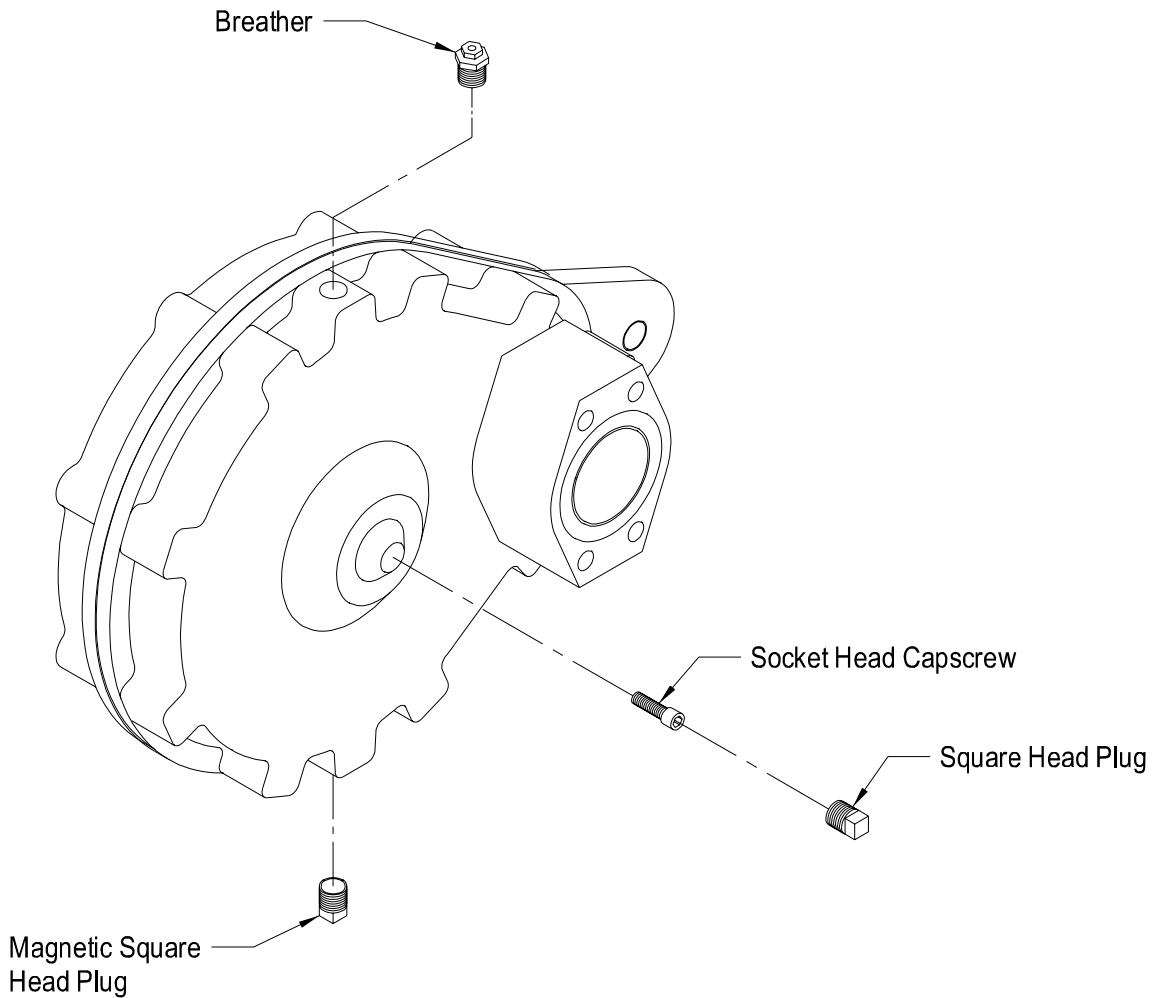
Fill reservoir to top bold black line on sight gauge with SAE 15W-40 or equivalent. Refill as required.

**CHANGING GEAR BOX OIL:**

Refer to Instructional Pg 12 for details.

**NOTE:** Grease Bearings & Pivot Pin until grease purges.

**NOTE:** Completely lubricate all locations and check oil levels at the end of the season.



## GEAR BOX REMOVAL

- 1) Remove Square Head Plug
- 2) Using 1/4" Allen wrench remove Socket Head Capscrew
- 3) Gear box should slide off with minimal resistance.

## CHANGING GEAR BOX OIL

- 1) Remove Magnetic Square Head Plug & Breather
- 2) Clean any metal shavings off of Magnetic Square Head Plug
- 3) After oil has drained replace Magnetic Square Head Plug
- 4) Remove Square Head Plug
- 5) Fill gear box through breather hole with Synthetic SAE 90 oil until it starts to run out of the hole the Square Head Plug was removed from.  
Approx. 2 quarts
- 6) Replace Square Head Plug & Breather





## ***Force Unlimited - RE3 RF Unit Instruction Manual Single Latched Configuration - On/Off (RE3-LPDL)***

The RE3 radio unit is designed to provide highly dependable, consistent wireless performance. The unit is virtually maintenance free, and is built with quality components geared towards durability, reliability, and a prolonged operational lifespan.

### ***Operation:***

The RE3 system provides a simple, cost effective solution to the inherent weaknesses associated with wired control systems. The table on the following pages details your system's exact operational behavior. The system can be used to drive actuators, open/close gates, drive hydraulic cylinders, open/close valves, etc. Virtually any application that requires an electrical input can be controlled by the RE3 unit, and our application specific firmware programming capabilities can yield countless variants of system behavior such as delayed on/of, system time-out auto off, momentary or latched output configurations, combined outputs, RF system on/off, etc. First, mount the unit in an area that offers as much protection as possible. (away from sources of high heat, moisture, vibration, electromagnetics, etc.) The unit is designed to perform effectively in harsh environments, but protecting the unit further guarantees proper performance and a lengthy operational lifespan. DO NOT mount the receiver unit with the plug facing upward. Mount the receiver with the plug facing downward where possible. The receiver's connector is IP rated, and offers a high level of ingress protection, but mounting the receiver with the plug facing downward further protects against corrosion, water damage, and electrical shorts. To operate the unit, connect the ground wire (black) to a ground source; be sure to connect to an effective ground source or your system will not operate properly. Next, connect the receiver to a main power source (either switched or direct) via its red power wire (pin 1). Where possible, you should incorporate a switch into the receiver's main power wire as it draws small amounts of current when it is stand-by mode, and may discharge your battery if left unattended for long periods of time. You may also use a trickle charger or battery tender on the battery to avoid potential battery drain. There is a 7.5 Amp fuse incorporated into the power lead. **DO NOT REPLACE WITH A HIGHER AMPERAGE FUSE – USE 7.5 AMP FUSE ONLY.** Next, connect the appropriate harness output wires to your device\devices. (IMPORTANT: see power management notes below) Finally, connect the wire harness plug into the receiver unit plug. - Apply power to the unit, (the red LED will flash four times on power-up) and you're ready to operate. Using the provided transmitter, the LED on the transmitter, and the LED on the receiver should illuminate each time an active button on the transmitter is depressed. Subsequently, via the transmitter, you should generate the desired output. For difficulties, first check the fuse in the main power wire. Check the device wiring, especially the power & ground connections, and also check the batteries in the transmitter. If all items are getting power, try the system "learn" & "memory clear" procedures. If all those efforts fail, feel free to contact our customer support center at 515-264-1808.

### ***Battery Replacement:***

During standard operation of the wireless unit, when you depress a button on the keyfob transmitter (any button assigned a function) the LED indicator on the keyfob will illuminate. Should the LED not illuminate, this is an indicator that battery voltage has dropped below 2.0 volts, and it is time to replace the battery. It is suggested that you change the battery (coin cell battery #CR2032) in the key fob

transmitter at least once annually, prior to each operational season. The key fob battery can be changed by simply removing the small screw on the back of the unit, and splitting the transmitter case. Once the case is open, slide the battery out of the battery holder, and replace. It is important to be delicate during battery replacement so no damage to the unit occurs; especially with regard to the solder points where the metal battery holder connects to the transmitter board. Electrostatic discharge and/or contacting internal electronic circuitry with metal tools can cause damage to components as well. For this reason, no screwdrivers or other hand tools should be used inside of the transmitter case. Upon reassembly, make certain that the gray keypad is seated securely in the sealing channel. If this is not done properly with care, the unit may be susceptible to water damage. To seat the pad properly, once the battery is changed, position the keypad over the transmitter board, and ensure proper alignment. Place the top half of the transmitter casing (the side with four button holes) down over the entire assembly. **VERY IMPORTANT: DO NOT PLACE THE RUBBER KEYPAD IN THE TOP HALF OF THE CASING BEFORE REJOINING THE TWO HALVES; PLACE THE RUBBER KEYPAD OVER THE BOARD, THEN PLACE THE TOP HALF DOWN OVER THE ENTIRE ASSEMBLY.** Following the above procedure will result in a proper seal and ensure quality protection against environmental forces

### ***Rx/Tx Communication/Learning:***

When purchased, the communication between the transmitter and the receiver unit will already be established. Once powered up, the unit should function properly with no further action required. (see the table below for the exact operational characteristics of your configuration) Occasionally during your period of ownership, there may be times when it is necessary to reestablish the wireless communication between the transmitter and the receiver unit. This process is accomplished by “learning” the transmitter into the receiver unit. It may be necessary to perform this action after extended periods of storage, long periods of inactivity, or after transmitter replacement. This action can also be used as a troubleshooting measure whenever communication between the transmitter and receiver unit has been lost. (Do this procedure only after the initial troubleshooting measure of transmitter battery replacement has been completed) Each transmitter generates a unique signal, and your receiver unit needs to be able to identify and respond to that signal in order to operate. The use of a unique signal for each transmitter prevents your receiver from being susceptible to outside interference, and protects against stray signals causing potentially undesirable operation. Some customers prefer to have multiple transmitter controls for their units. Each RE3 is capable of handling and responding to multiple (up to five) transmitters; you simply have to “learn” in each transmitter to your receiver unit. (additional transmitters are available through your provider, or through Rowe Electronics - 515-264-1808) To complete the learn procedure, simply do the following. Power up the unit. When you do so, the LED on the receiver unit will flash RED four times. This indicates that the unit has received power. There is magnetically controlled switching circuitry embedded into the receiver unit, and this magnetic circuitry switches the receiver into its “learn” mode. To operate, place a fairly powerful magnet over the receiver “learn” area (see the diagram below for the learn location) for a brief moment (3 seconds), and then remove it. (learn magnets are available through Rowe Electronics – (PN MAG100) Upon detecting the magnetic field, the LED will go to a constant RED state. Now immediately press any button on the transmitter you are attempting to learn in. The LED will go to a GREEN/YELLOW color. This confirms that the receiver has picked up a signal from the transmitter, and has subsequently decoded and memorized that signal. Communication has been established between the transmitter and receiver, and it is now be ready to function properly. Should the above procedure not complete successfully, wait until the LED light goes out, and repeat the procedure. If for any reason you experience a second failure of the learn procedure, do the following. Place the magnet on the learn area and the LED will go to a constant RED state. Leave\hold the magnet in place on the receiver learn area until the red LED light goes out. (approximately 12 seconds) This action completely clears the receiver’s memory. It’s akin to reformatting, or freeing up all of the space on a computer hard drive. Once you have cleared the memory, proceed with the standard learn procedure detailed above for

each of the transmitters you wish to use with the device. If, after all of the procedures detailed above are completed, the unit is still not functioning, check the batteries in the transmitter once again. (Occasionally, even new batteries fail, or are defective from the factory – If you have a voltage meter, confirm that battery voltage, from both AAA batteries combined, is at least 2.7 volts) If that still does not solve the problem, contact our wireless control customer service at (515) 264-1808 for assistance.

During standard operation, to confirm the receiver is picking up a signal from the transmitter, the RE3 receiver unit will respond to keypad inputs through illumination of the receiver LED (see diagram for location below)

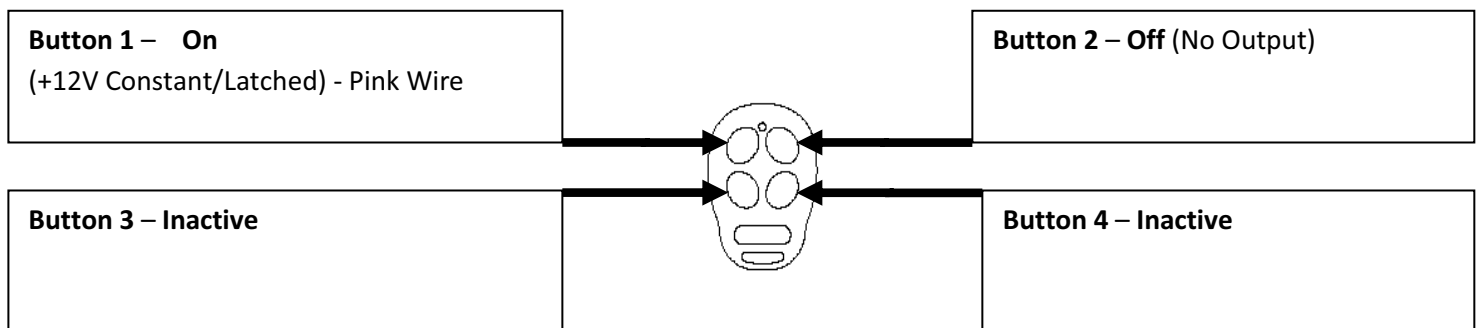
**Power Management/Restrictions:**

The RE3 may be used to directly control/provide power to applications, where the total Amperage draw, at any given instance, does not exceed 5.5 Amps. Trying to drive greater Amperage loads through the RF system will result in damage to the unit. For higher draw applications (5.5A and up), the RE3 RF system should be used in conjunction with a relay/solenoid that is rated to handle higher Amperage loads. You simply drive or switch the relay/solenoid with low Amperage inputs, with the low Amperage wireless receiver system outputs. In this type of configuration, the high Amperage load flows through the relay/solenoid, instead of flowing through the wireless unit. This type strategy protects the RF unit against overloading and potential damage. Should you have any questions regarding this type of configuration, feel free to contact the Rowe Electronics customer service department at 515-264-1808. Additionally, you should always be sure to keep the main battery on your implement fully charged and in good operating condition. Operating the wireless control system with the main battery disconnected, or severely discharged, can result in damage to your RF system.

The RE3 wireless control system is crafted using high quality components, with long term service life and superior performance being the ultimate goal. It is our commitment to provide products that not merely meet your needs and expectations, but exceed them. Thank you for choosing our product

**Force Unlimited – Single Output System Operational Parameters (PN: RE3-LPDL)**

This system has an On/Off configuration; the single output (Pink Wire) is controlled through operation of the remote. The control button configuration on the Force unlimited RE3-LPDL is as follows:

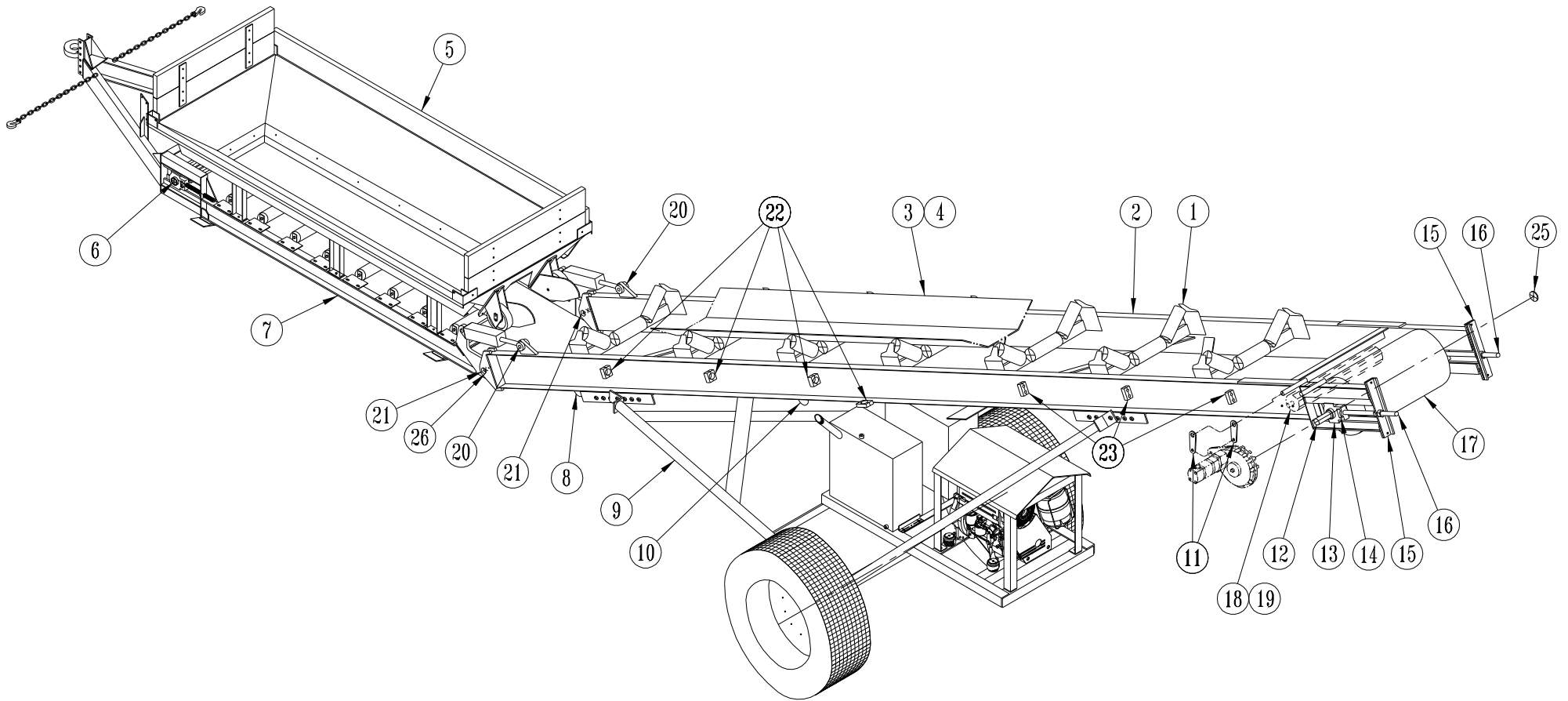


The wiring harness has four wires (24" length / fuse at 6" / Braided to 6") coming out of the RF receiver unit. The plug pin-out and wire colors are as follows:

Pin 1 – Red - Power Lead (+12V in)

Pin 5 – Pink – Output (+12V – constant/latched - once button 1 is depressed)

Pin 7 – Black – Ground Lead (connect to ground)

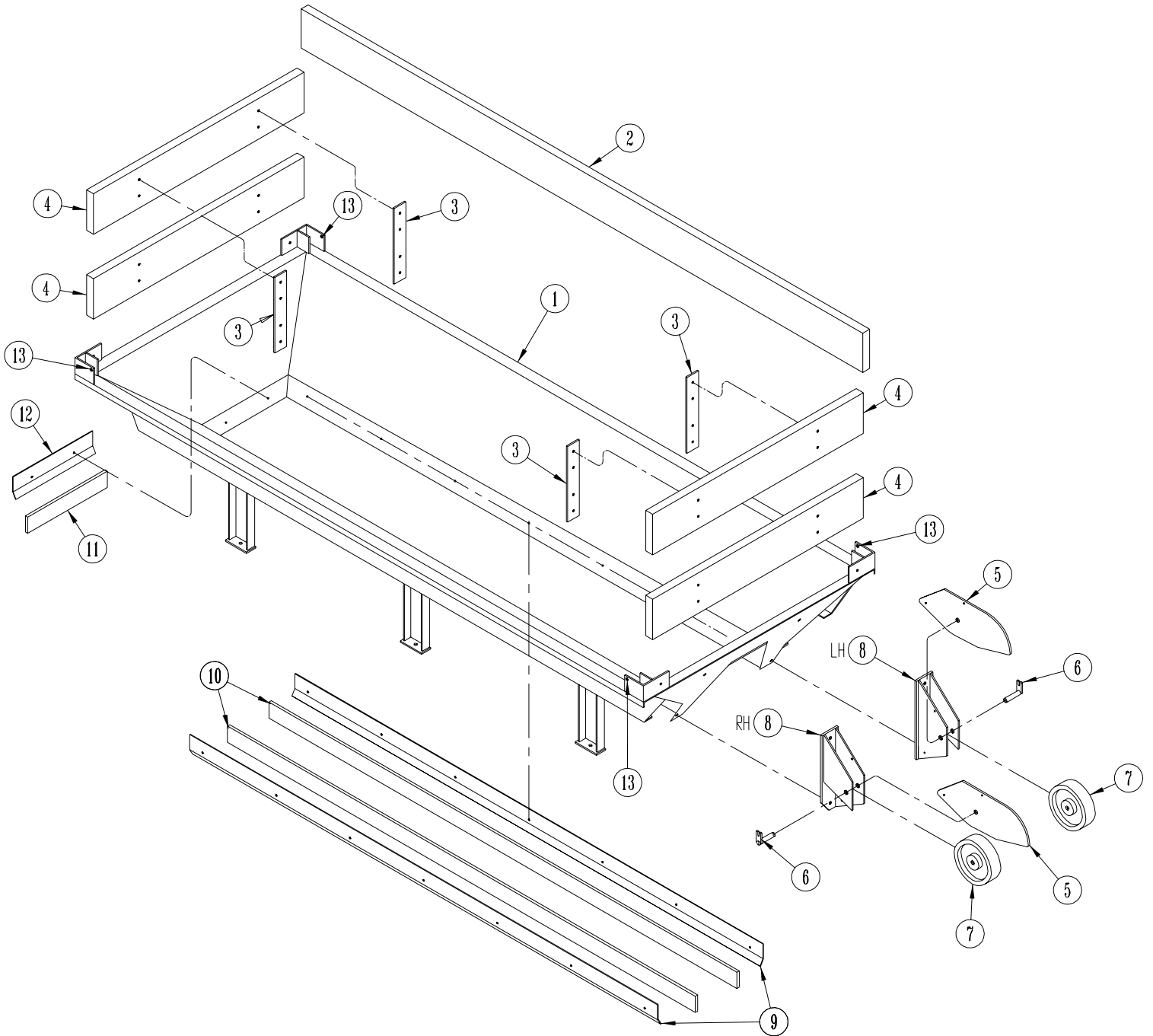


FINAL ASSEMBLY

**FORCE UNLTD.** SPREADERS\*GPS EQUIPMENT\*CONVEYORS

ITEM	PART NO.	DESCRIPTION	QTY
1	1220-43	Roller - Troughing Included: 1220-430 Center Roller 1220-431 Side Roller Requires: 1200-402 (4) Hex Head Capscrew - 1/2" UNC x 1-1/2" 1205-37 (4) Nut - 1/2" 1209-62 (4) Lock Washer - 1/2" Per Bolted In Roller	7
2	DC-282	Weldment - Incline Frame	1
3	1000-32	Belting - 30"	82' - 4"
4	1000-42	Belt Splice	1
5	DC-281	Assembly - Hopper (See Pg. 2)	1
6	FC DC-AA281	Idler Pulley, 2" Shaft	1
7	DC-A281	Weldment - Hopper Carrier	1
8	1220-41	Roller - Carrier Requires: 1200-402 (4) Hex Head Capscrew - 1/2" UNC x 1-1/2" 1205-37 (4) Nut - 1/2" 1209-15 (4) Bevel Washer - 1/2" 1209-62 (4) Lock Washer - 1/2" Per Roller	1
9	DC-283	Assembly - Undercarriage (See Pg. 6)	1
10	1220-44	Roller - Return Requires: 1200-402 (4) Hex Head Capscrew - 1/2" UNC x 1-1/2" 1205-37 (4) Nut - 1/2" 1209-15 (4) Bevel Washer - 1/2" 1209-62 (4) Lock Washer - 1/2" Per Roller	1
11	1234-101	Idler Arm Requires: 1200-605 (1) Hex Head Capscrew - 3/4" UNC x 3-1/2" 1205-57 (1) Lock Nut - 3/4"	2
12	1220-55	Shaft - Drive	1
13	1217-39	Bearing Requires: (2) Set Screw - 3/8"-24 x 3/8" Lg. Per Bearing	2
14	FC DC-M286	Weldment - Lock nut Requires: (2) Set Screw - 5/16" x 1/2" Lg. Per Weldment	2
15	FC DC-FF282	Weldment - End Cap Requires: 1200-405 (2) Hex Head Capscrew - 1/2" UNC x 2" 1205-37 (2) Nut - 1/2" 1209-62 (2) Lock Washer - 1/2" Per Weldment	1-RH, 1-LH
16	1225-17	Adjusting Rod Requires: 1205-82 (2) Nut - 1-1/4" Per Rod	2
17	1220-49	Drive Pulley - Lagged Requires: (2) Key - 5/8" x 1/2", 2-1/8" Lg. Per Pulley	1
18	FC DC-N286	Roller - Tension	1
19	1217-195	Bearing Requires: 1200-321 (2) Hex Head Capscrew - 7/16" UNC x 1-1/4" 1205-29 (2) Nut - 7/16" 1209-102 (2) Lock Washer - 7/16" (2) Set Screw - 1/4"-28 x 1/4" Lg. Per Bearing	2
20	1217-72	Bushing - Split	2
21	FC DC-A286	Pin - Hopper Pivot	2
22	1208-95	Clamp	4
23	1208-91	Clamp - Twin	3
24	FC 29868	Reflective Tape Red/White (Not Shown)	As Req'd
25	1209-30SP	Retainer Washer Requires: 1200-251 (1) Hex Head Capscrew - 5/16" UNC x 1" 1209-31 (1) Lock Washer - 5/16"	1
26	FC DC-HH282	Pivot Pin Lock Requires: 1200-251 (1) Hex Head Capscrew - 5/16" UNC x 1" 1209-31 (1) Lock Washer - 5/16" Per Lock	2



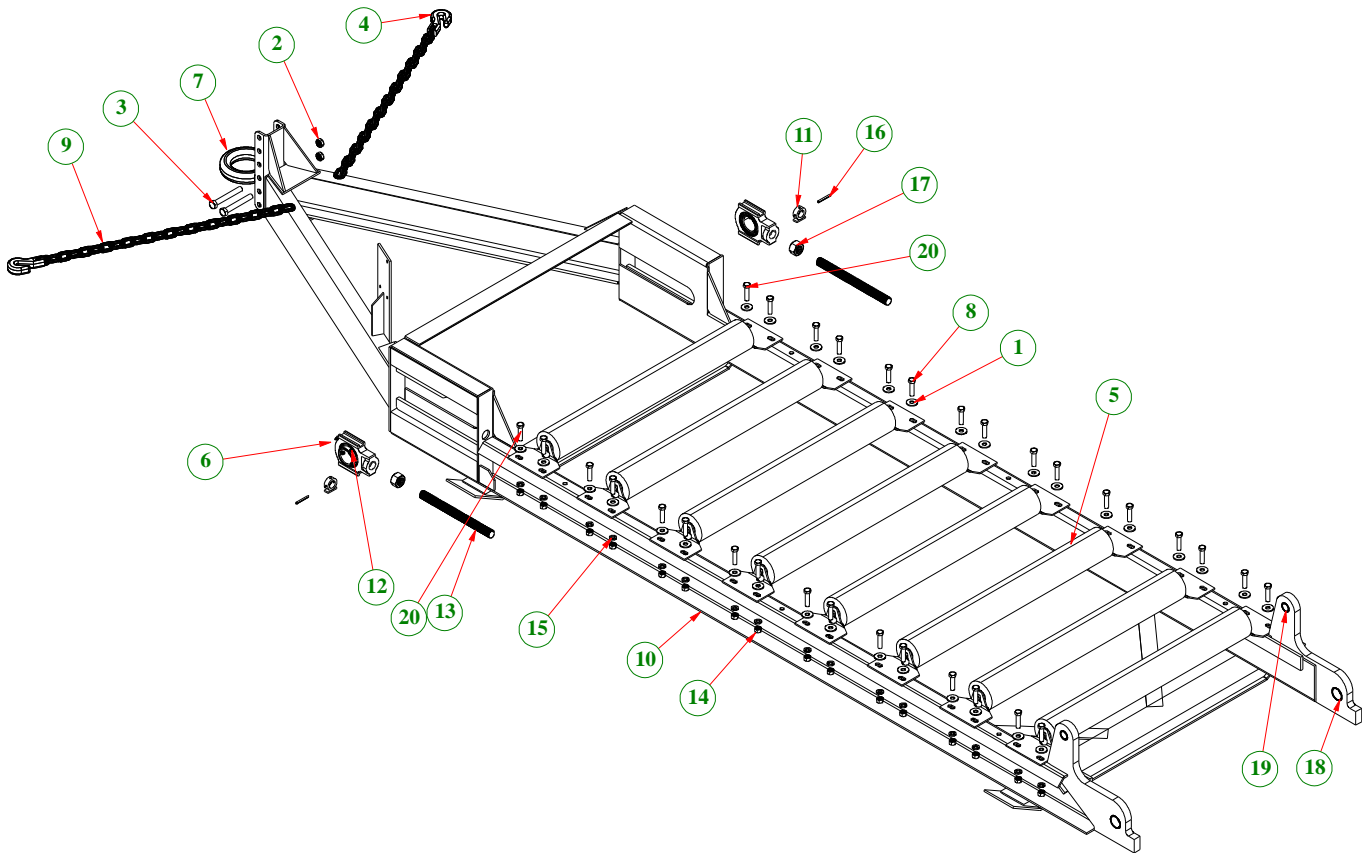


**HOPPER ASSEMBLY**

**FORCE UNLIMITED****SPREADERS\*CONVEYORS**

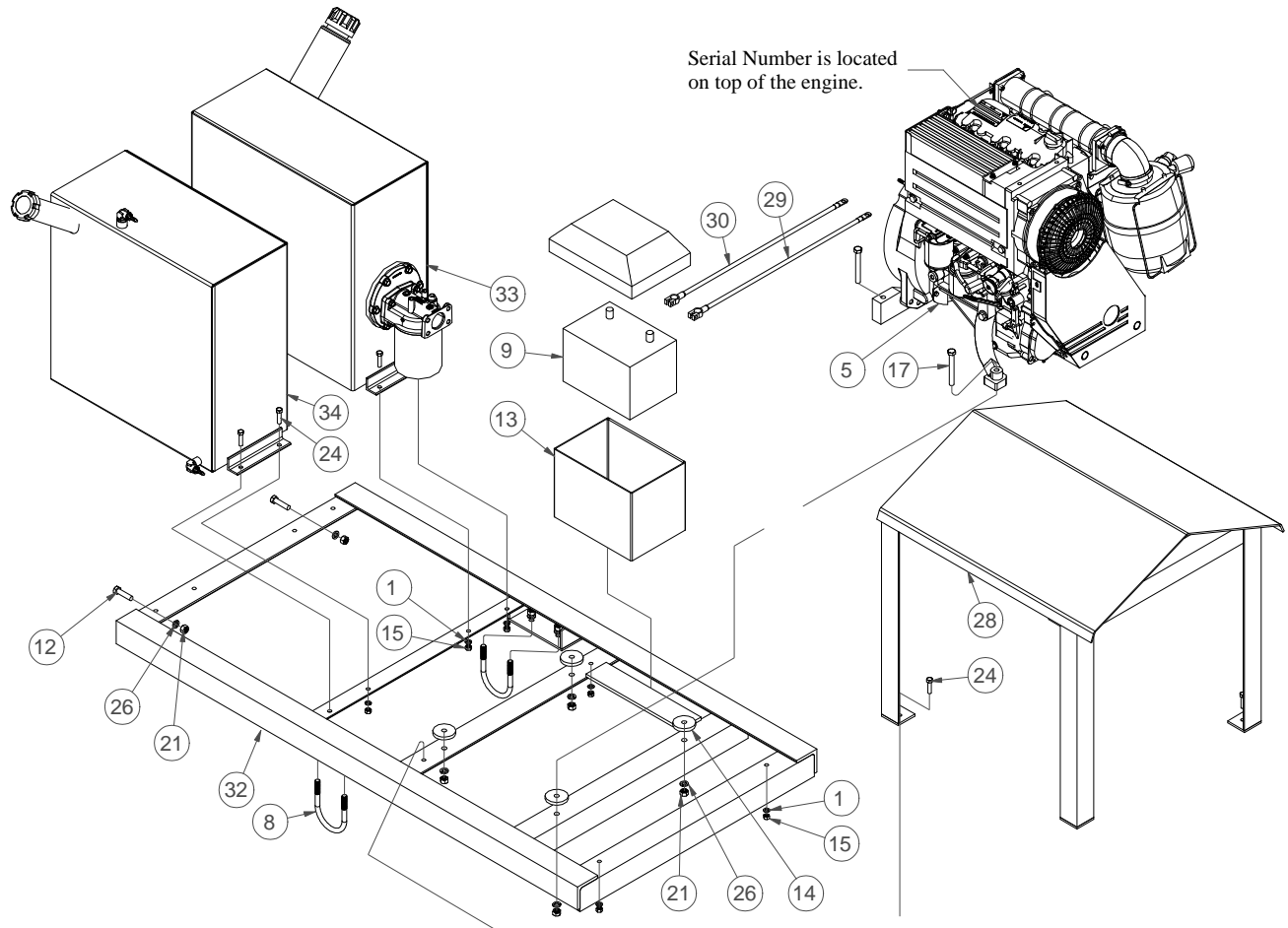
ITEM	PART NO.	DESCRIPTION	QTY
1	FC DC-276 1200-405 1210-6 1205-37 1209-15	Weldment - Hopper Requires: (6) Hex Head Capscrew - 1/2" UNC x 2" Lg. (6) Lockwasher - 1/2" (6) Nut - 1/2" UNC (6) Bevel Washer - 1/2"	1
2	FC 108	Board - Hopper (10 Ft. Lg.)	1
3	FC HBS-100 1200-309 1209-43 1205-27	Strap - Hopper Board Requires: (4) Carriage Bolt - 3/8" UNCx 2-3/4" Lg. SS (4) Lockwasher - 3/8" SS (4) Nut - 3/8" UNC SS Per Strap	4
4	FC 108	End Board - Hopper (45" Lg.)	4
5	FC DC-Y281 1200-203 1209-20 1205-10	Guide Material Requires: (2) Hex Head Capscrew - 1/4" UNC x 1" Lg. (2) Flatwasher - 1/4" (2) Locknut - 1/4" UNC Per Material Guide	2
6	FC DC-MM276 1200-200 1210-2	Weldment - Wheel Pin Requires: (1) Hex Head Capscrew - 1/4" UNC x 3/4" Lg. (1) Lockwasher - 1/4" Per Pin	2
7	1220-52	Wheel - Hold Down	2
8	FC DC-KK276 1200-402 1205-37 1210-6	Weldment - Hold Down Wheel Bracket Requires: (2) Hex Head Capscrew 1/2" UNC x 1-1/2" Lg. (2) Nut - 1/2" UNC (2) Lockwasher - 1/2" Per Bracket	1-RH,1-LH
9	FC DC-RR276 1200-255 1209-30 1205-17	Skirting Bracket Requires: (7) Hex Head Capscrew - 5/16" UNC x 2" Lg. (7) Flatwasher - 5/16" (7) Locknut - 5/16" UNC Per Bracket	2
10	1000-39	Rubber Skirting, 104" Lg.	2
11	1000-39	Rubber Skirting, 17" Lg.	1
12	FC DC-QQ276 1200-255 1209-30 1205-17	Skirting Bracket Requires: (2) Hex Head Capscrew - 5/16" UNC x 2" Lg. (2) Flatwasher - 5/16" (2) Locknut - 5/16" UNC Per Bracket	1
13	1208-02	Bent Hitch Pin	2

## HOPPER CARRIER ASSEMBLY

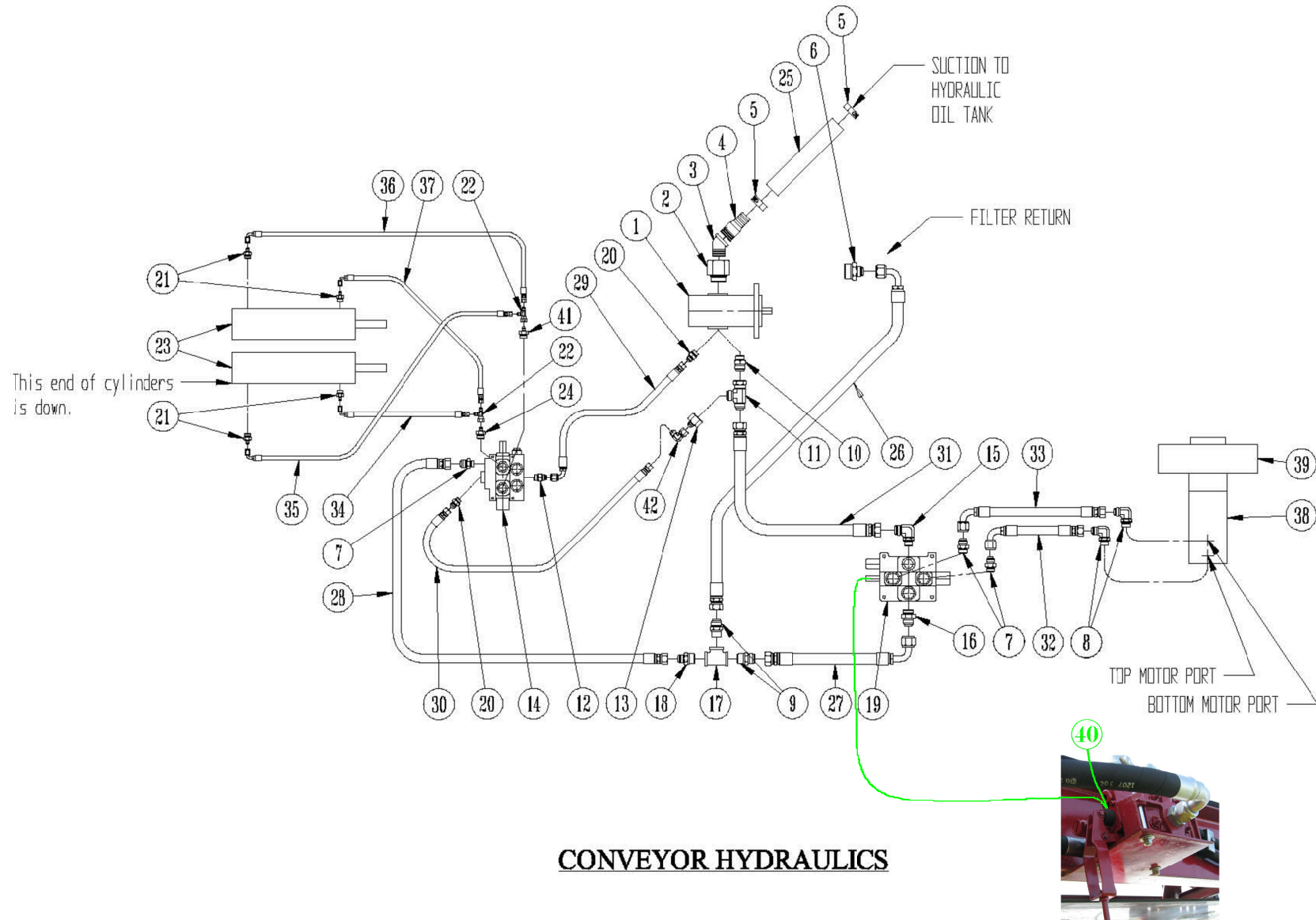


ITEM	PART NO.	DESCRIPTION	QTY
1	1209-60	Flat Washer - 1/2"	30
2	1205-47	Lock Nut - 5/8" UNC	2
3	1200-508	Hex Head Capscrew - 5/8" UNC x 4 1/2"	2
4	FC HOOK	Hook - Safety Chain 3/8"	2
5	1220-41	Roller - Carrier	8
6	1217-32	Bearing - 2" Take Up	2
7	1220-40	3" Tow Ring	1
8	1200-355	Bolt - 1/2" x 1-1/2"	30
9	FC Chain 3'	Chain - Safety, 3/8"	2
10	1237-DC-A281	Weldment - Hopper Base	1
11	1237-DC-GG281	Weldment - Adjuster Lock Collar	2
12		Set Screw - 3/8"-24 UNF x 3/8" Lg.	4
13	FC DC-Q281	Bolt - Take Up	2
14	1205-37	Nut - 1/2" UNC	32
15	1209-62	Lock Washer - 1/2"	32
16	1208-01	Pin - Roll 1/4" x 2"	2
17	1205-79	Nut - 1" UNC	2
18	1217-73	Split Bushing - 1 3/4" x 1 1/2" x 1"	2
19	1217-72	Split Bushing - 1 1/4" x 1" x 1"	2
20	1200-401	Carriage Bolt - 1/2" x 1-1/4"	2

## ENGINE & TANK SKID ASSEMBLY



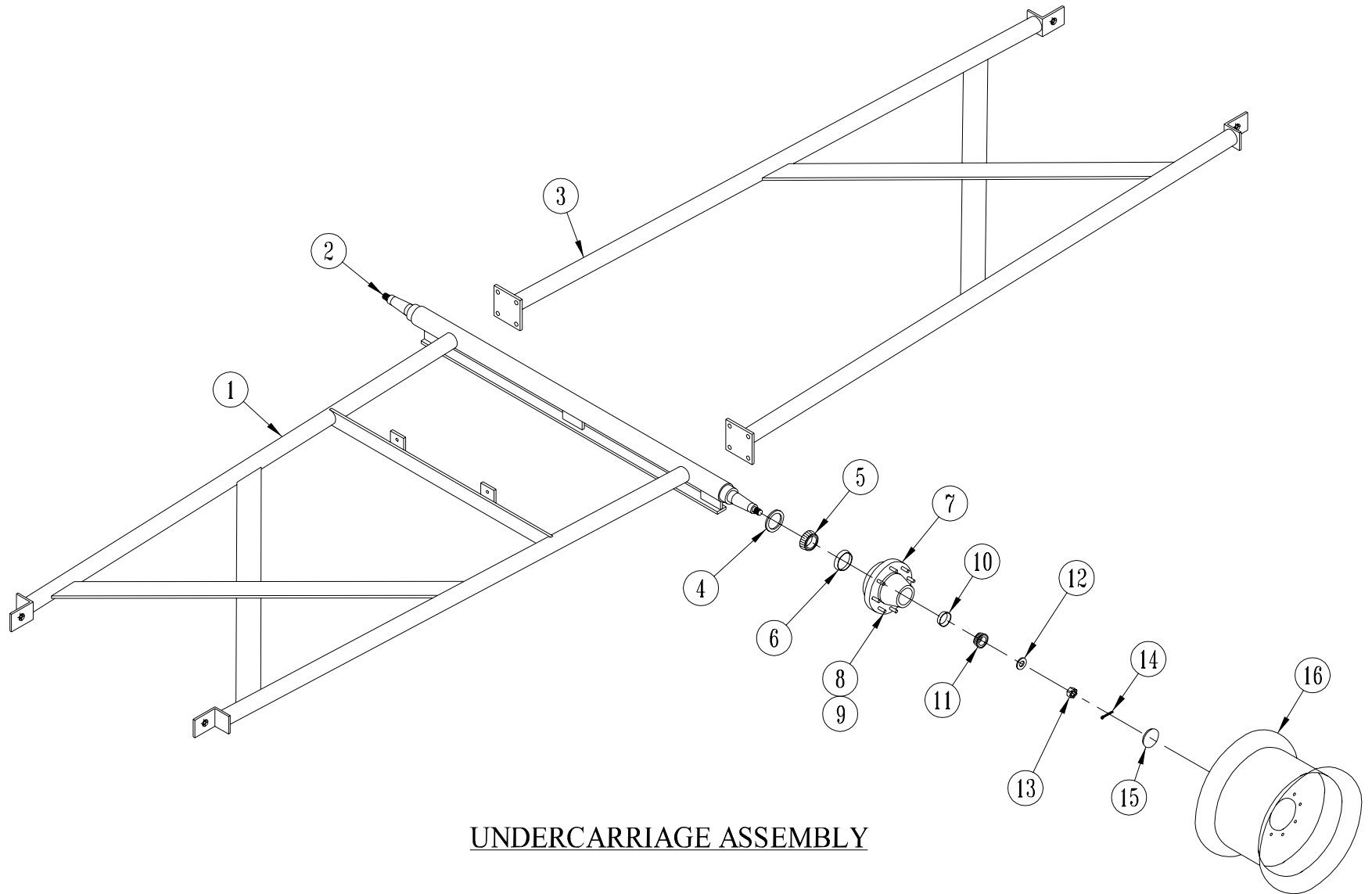
ITEM	PART NO.	DESCRIPTION	QTY
1	1209-42	Lock Washer - 3/8"	12
5	1220-56	Engine - 3 Cyl.	1
8	1220-445	U-Bolt - 1/2" x 3-1/2" x 5"	2
9	1214-43	Battery	1
12	1200-405	Hex Head Capscrew - 1/2" UNC x 2"	2
13	1214-40	Battery Box with Lid	1
14	1220-561	Spacer	4
15	1205-21	Nut - 3/8" UNC	12
17	1200-416	Hex Head Capscrew - 1/2" UNC x 4-1/2"	4
21	1205-37	Nut - 1/2" UNC	10
24	1200-304	Hex Head Capscrew - 3/8" UNC x 1-1/2"	12
26	1209-62	Lock Washer - 1/2"	10
28	FC DC-H294	Weldment - Engine Cover	1
29	1214-41	Red Cable	1
30	1214-42	Black Cable	1
32	FC DC-A288	Weldment - Engine & Tank Skid	1
33		Hydraulic Tank Assembly - See Pg. 7	1
34		Fuel Tank Assembly - See Pg. 8	1



## CONVEYOR HYDRAULICS

**FORCE UNLTD.** SPREADERS\*GPS EQUIPMENT\*CONVEYORS

ITEM	PART NO.	DESCRIPTION	QTY
1	1212-05 1200-402 1209-62	Pump Requires: (2) Hex Head Capscrew - 1/2" UNC x 1-1/2" Lg. (2) Lock Washer - 1/2"	1
2	1202-115	Adapter - Straight	1
3	1201-171	Elbow Street 45 Deg.	1
4	1201-118	Nipple - King	1
5	1208-2	Clamp - T Bolt	2
6	1202-1025	Adapter - Straight	1
7	1202-110	Adapter - Straight	3
8	1202-202	Adapter - Elbow	2
9	1202-102	Adapter - Straight	2
10	1202-111	Adapter - Straight	1
11	1202-3015	Adapter - Tee	1
12	1202-1080	Adapter - Straight	1
13	1202-1033	Adapter - Straight	1
14	1222-13 1222-13 SK	Valve - Hyd. Seal Kit	1
15	1202-204	Adapter - Elbow	1
16	1202-116	Adapter - Straight	1
17	1201-182	Tee	1
18	1202-101	Adapter - Straight	1
19	1222-11 1200-314 1209-42 1205-21 1222-11 SK-1 1222-11 SK-2 1222-11 SK-5	Valve - Hyd. Requires: (3) Hex Head Capscrew - 3/8" UNC x 4" Lg. (3) Lock Washer - 3/8" (3) Hex Nut - 3/8" UNC Seal Kit - Valve - Gasket for between Sections Seal Kit - Valve - Middle Section Only Seal Kit - Valve - Main Relief	1 2 1 1
20	1202-108	Adapter - Straight	2
21	1202-1067	Adapter - Straight	4
22	1202-301	Adapter - Tee	2
23	1220-46 FC DC-A295 1100-15P 1209-96	Cylinder Requires: (1) Spacer (2) 1" Clevis Pin (2) 3/16" x 2" Lg. Cotter Pin (2) 1" Machinery Washer Per Cylinder	2
24	1202-107S	Adapter - Straight	1
25	12117	Hose - Suction	3 ft
26	1207-301	Hose - Filter Return Line	1
27	1207-302	Hose - Conveyor Valve Return	1
28	1207-303	Hose - Hopper Valve Return	1
29	1207-304	Hose - Hopper Valve Pressure	1
30	1207-305	Hose - Hopper Valve Power Beyond	1
31	1207-306	Hose - Conveyor Valve Pressure	1
32	1207-307	Hose - Conveyor Motor Pressure	1
33	1207-308	Hose - Conveyor Motor Return	1
34	1207-309	Hose - Hopper Cylinder Return RH	1
35	1207-310	Hose - Hopper Cylinder Extend RH	1
36	1207-311	Hose - Hopper Cylinder Extend LH	1
37	1207-312	Hose - Hopper Cylinder Return LH	1
38	1213-19 1213-206 1220-145 1200-403 1209-62 1213-145 SK	Motor - Hydraulic Motor - Hydraulic (On Conveyors with Dual Gearbox) Requires: (1) Key - Square, 5/16" x 1-1/4" Lg. (4) Socket Head Capscrew - 1/2" x 1-1/2" Lg. (4) Lock Washer - 1/2" Seal Kit	1 2
39	1220-50	Gearbox Requires: (2) Key - Square, 1/2" x 2-1/4" Lg.	1
40	1222-11 S	Valve Stop	1
41	1202-107	Adapter - Straight	1
42	1202-185	Adapter - Elbow	1



UNDERCARRIAGE ASSEMBLY

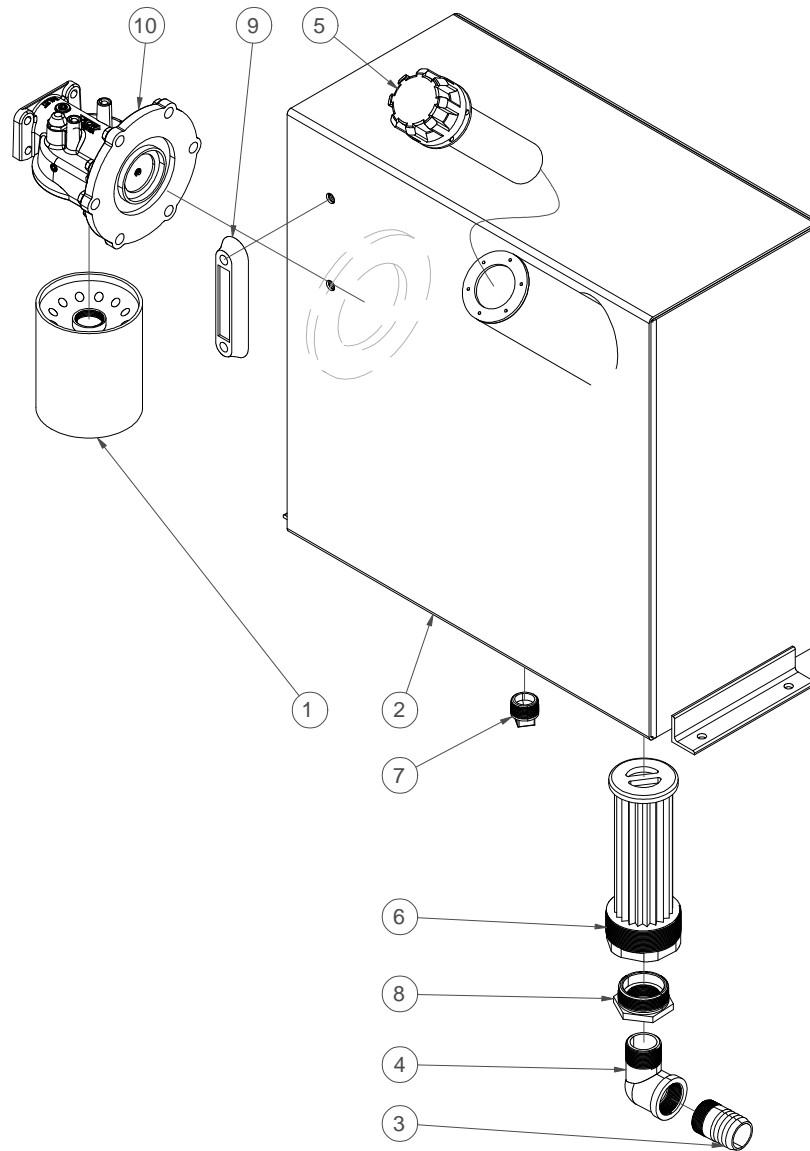
**FORCE UNLTD.** SPREADERS\*GPS EQUIPMENT\*CONVEYORS

<b><u>ITEM</u></b>	<b><u>PART NO.</u></b>	<b><u>DESCRIPTION</u></b>	<b><u>QTY</u></b>
1	DC-F283	Weldment - Undercarriage Horizontal Section Requires: (2) Hex Head Capscrew - 1-1/4" UNC x 2-1/2" (2) Lock Nut - 1-1/4" UNC	1
2	1229-9	Spindle (Welded into axle)	2
3	DC-G283	Weldment - Undercarriage Brace Section Requires: (2) Hex Head Capscrew - 1-1/4" UNC x 2-1/2" (2) Lock Nut - 1-1/4" UNC (4) U-Bolt w/washer & Hi Nut	1
4	1229-19	Seal	2
5	1229-17	Bearing - Inner	2
6	1229-12	Cup - Inner	2
7	1229-10	Hub Assembly (Includes Items 4 thru 11 & 15)	2
8	1229-14	Wheel Stud	16
9	1229-15	Wheel Nut	16
10	1229-13	Cup - Outer	2
11	1229-18	Bearing - Outer	2
12	1229-20	Washer - Spindle	2
13	1229-21	Nut - Spindle	2
14	1229-22	Pin - Cotter	2
15	1229-16	Cap	2
16	1229-95	Rim	2

Undercarriage Assembly

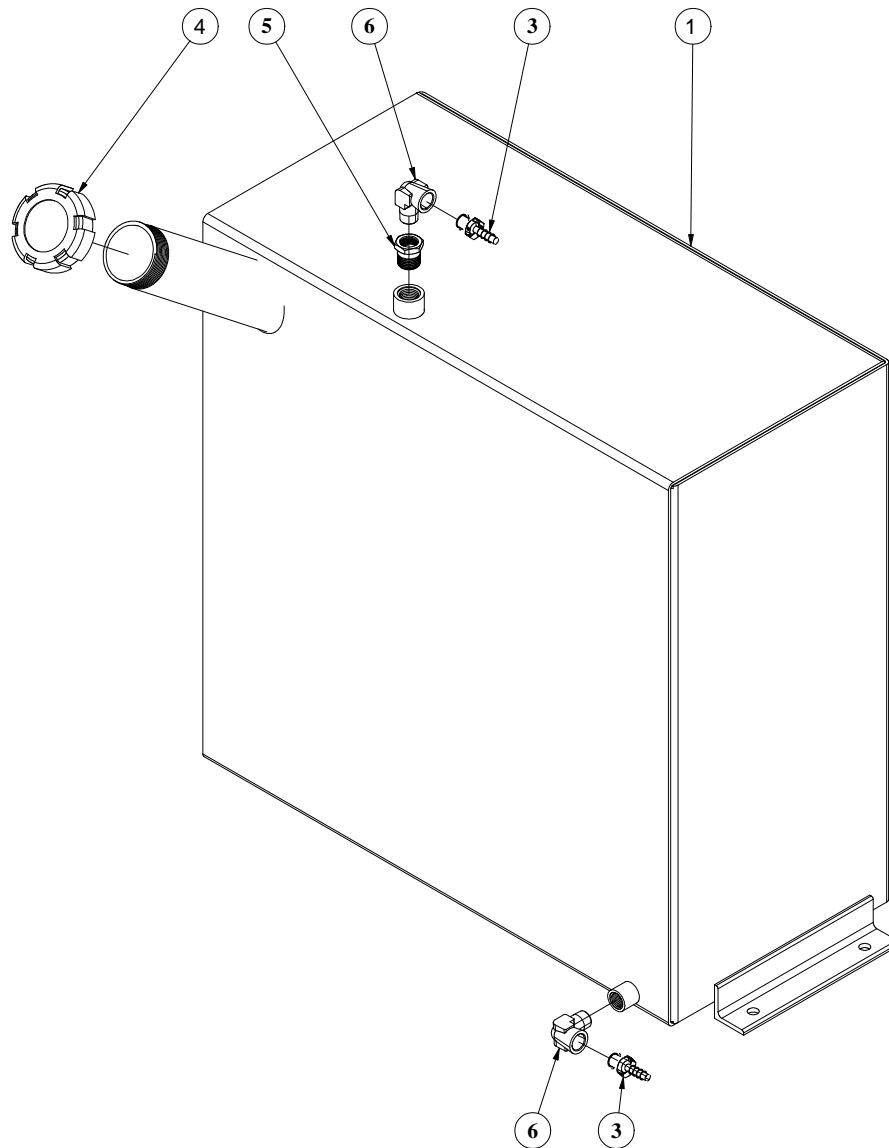


## **HYDRAULIC TANK ASSEMBLY**

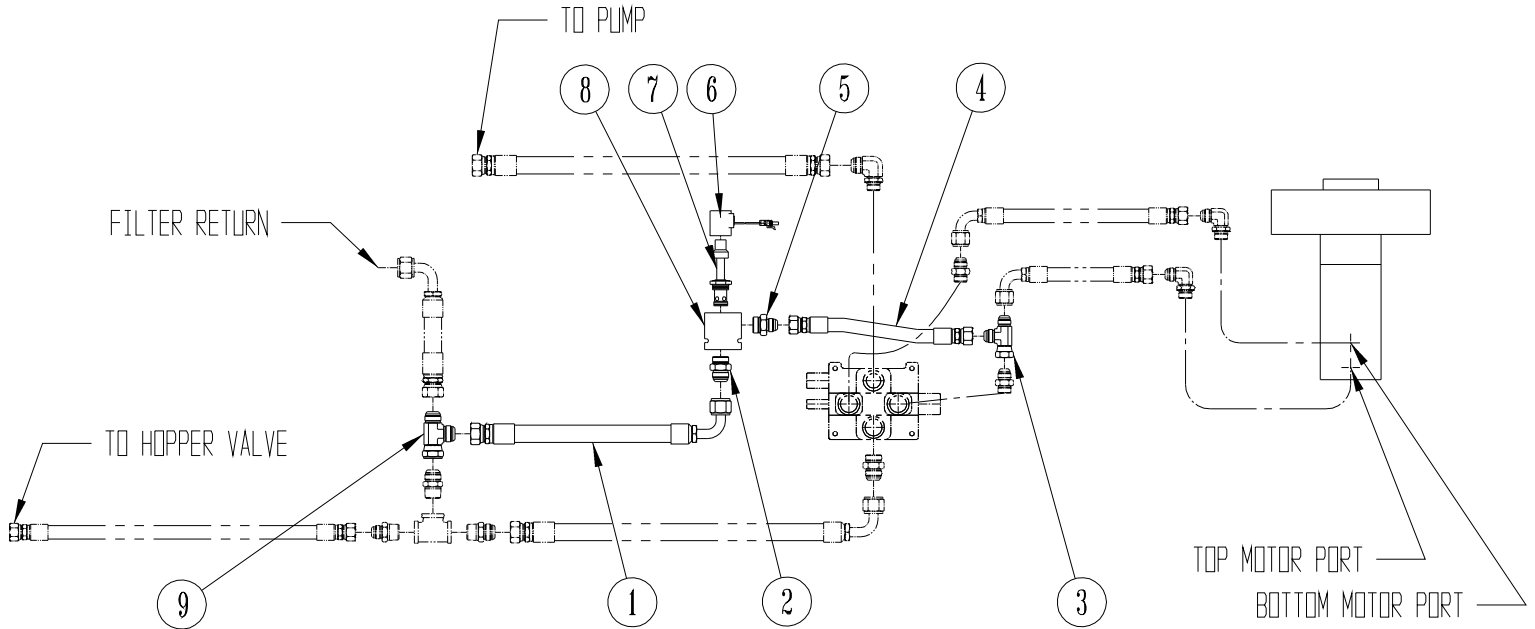


ITEM	PART NO.	DESCRIPTION	QTY
1	1100-185	Filter Element - Short	1
2	FC CC-291	Weldment - Hydraulic Tank	1
3	1201-118	King Nipple	1
4	1201-145	Elbow - Street	1
5	1220-35	Breather	1
6	1220-36	Suction Strainer	1
7	1201-240	Plug	1
8	1201-301	Reducer Bushing	1
9	1221-9	Sight Gauge	1
10	1100-195	Filter Housing	1

## FUEL TANK ASSEMBLY

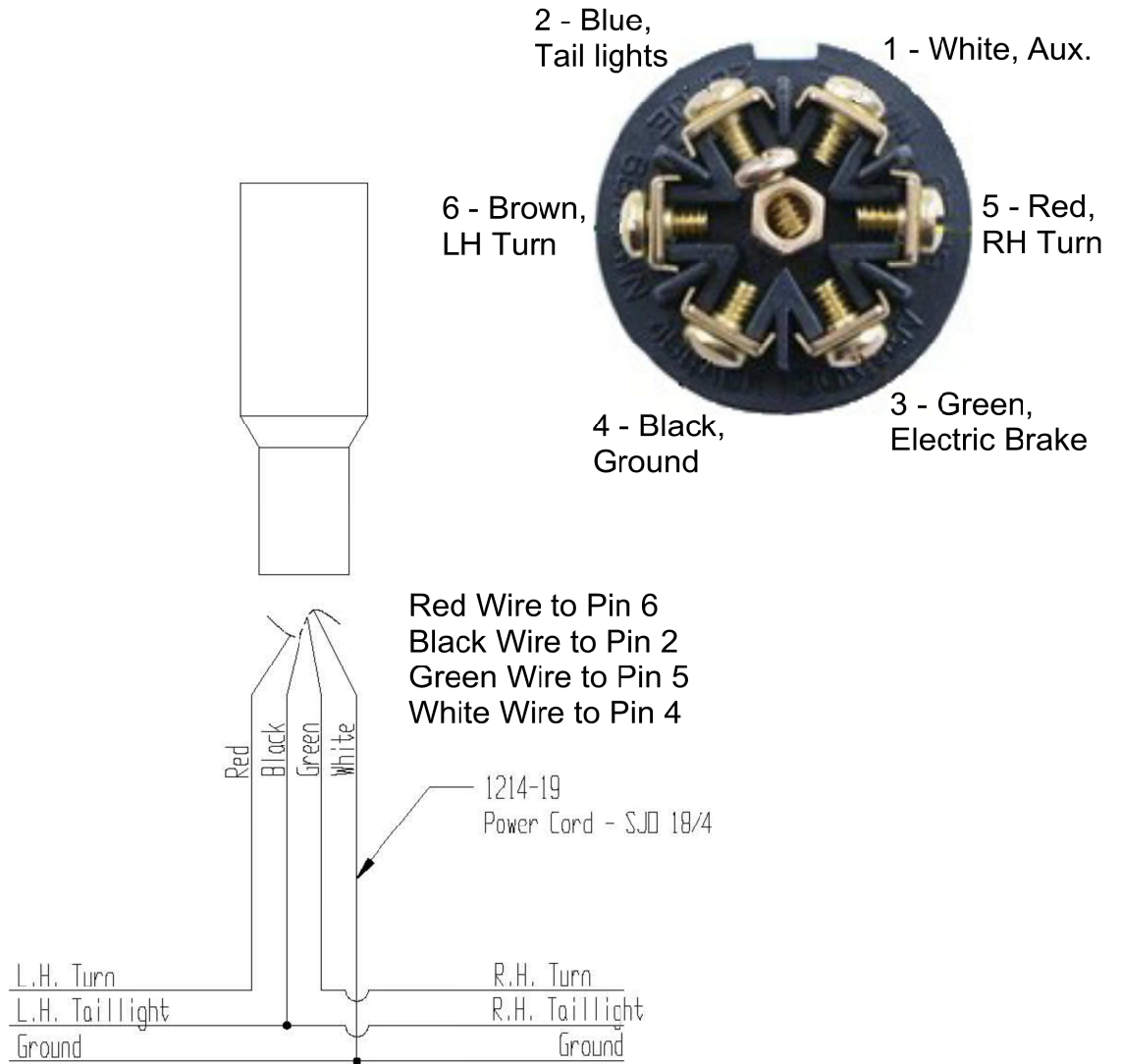


ITEM	PART NO.	DESCRIPTION	QTY
1	FC CC-290	Weldment - Fuel Tank	1
3	1202-254	Hose Barb Fitting	2
4	1220-47	Fuel Cap - Vented	1
5	1201-228	Reducer Bushing	1
6	1201-128	Elbow - Street	2



## OPTIONAL CONVEYOR REMOTE CONTROL HYDRAULICS

ITEM	PART NO.	DESCRIPTION	QTY.
1	1207-302	Hose - Bypass Return	1
2	1202-116	Adapter - Straight	1
3	1202-3013	Adapter - Tee	1
4	1207-313	Hose - Remote Bypass	1
5	1202-113	Adapter - Straight	1
6	1222-110CA	Coil	1
7	1222-110	Valve - Solenoid	1
8	1222-112	Block Requires: 1200-259 (2) Hex Head Capscrew - 5/16" x 3" Lg. 1209-30 (2) Flat Washer - 5/16" 1209-31 (2) Lock Washer - 5/16" 1205-13 (2) Nut, Hex - 5/16"	1
9	1202-3015	Adapter - Tee	1
10	FC 105	Control - Remote (Not shown) Requires: 1200-205 (1) Hex Head Capscrew - 1/4" x 1-1/2" Lg. 1209-21 (1) Lock Washer - 1/4" 1205-6 (1) Nut, Hex - 1/4"	1
11	FC 5400	Transmitter - Remote Keyfob (Not shown)	1
12	1223-105	Cable - Remote Control (Not shown)	1



**1237-270 HPC30A CONVEYOR TAIL LIGHT WIRING**

## RE3-LPDL Wireless Control System

Pt. #FC1052

RE3 Receiver Unit

Receiver LED Window



Typical Wire Harness

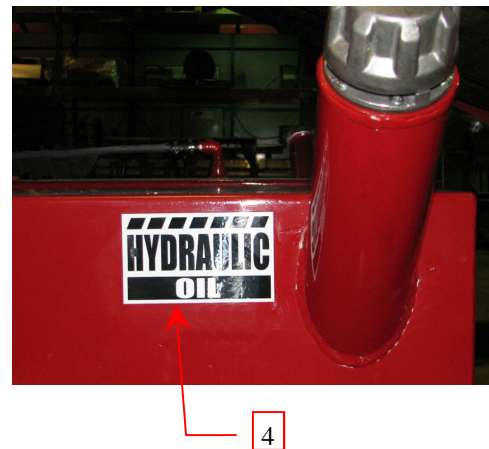
Pt. #1223-1053

Key Fob Transmitter Unit

Pt. #FC5400-3

Signal Transmission LED

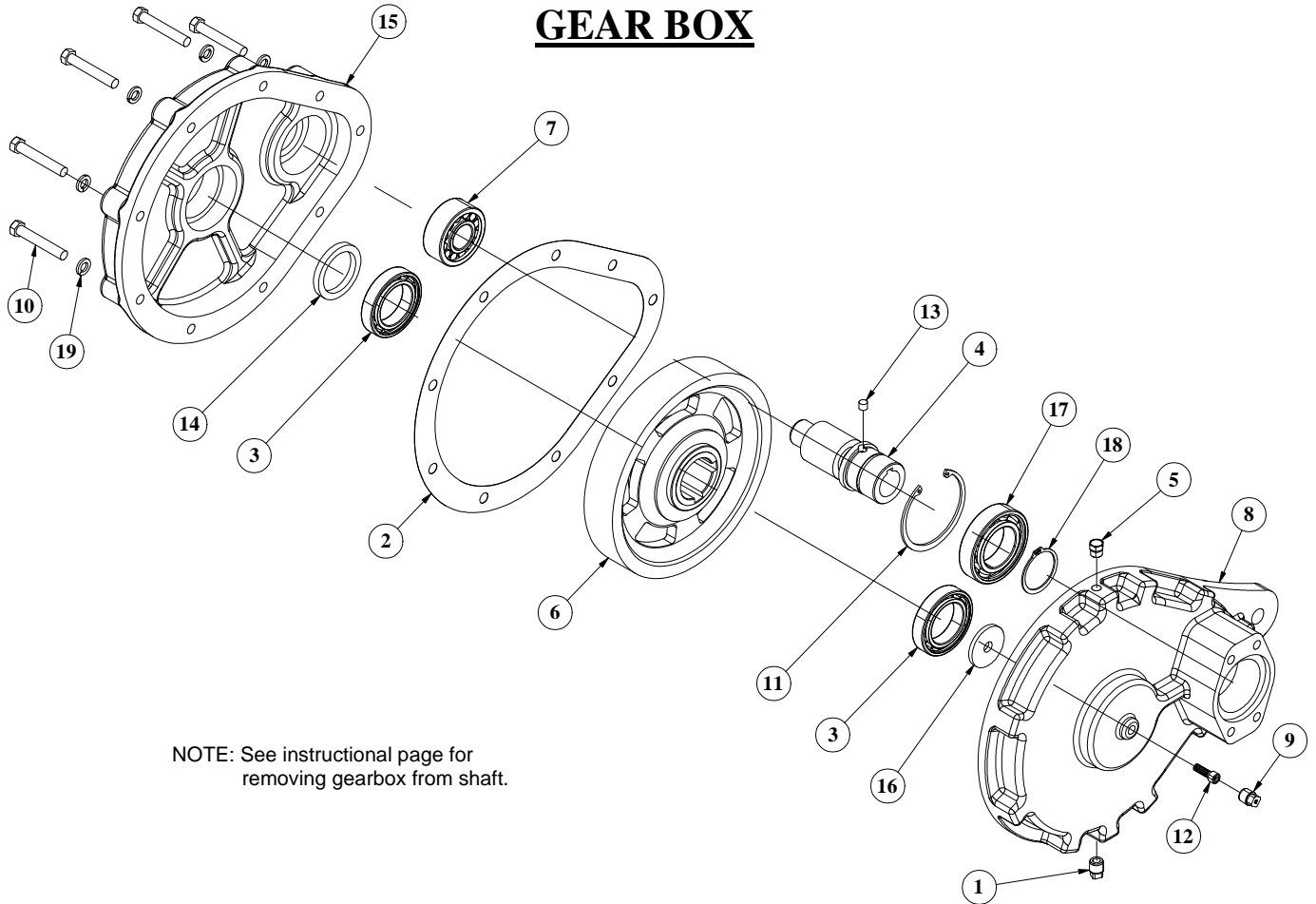
Receiver "Learn" Area



## Decals

<u>ITEM</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>QTY.</u>
1	1220-059	Decal - Danger, Contact with Electrical Lines	1
2	1220-058	Decal - Notice, 8 Bolt Torque Spec / Tire Pressure	1
3	1220-061	Decal - Diesel Only	1
4	1234-056	Decal - Hydraulic Oil	1
5	1220-060	Decal - HPC30A White	1

## GEAR BOX

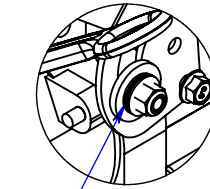
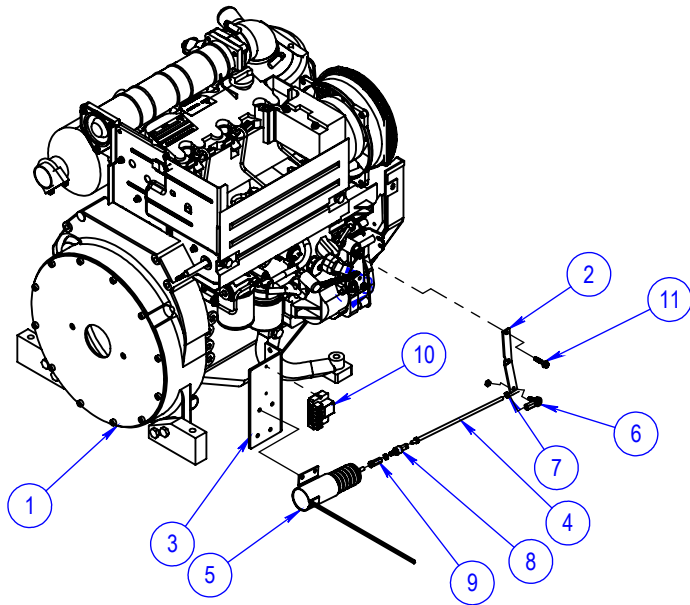


NOTE: See instructional page for removing gearbox from shaft.

ITEM	PART NO.	DESCRIPTION	QTY
1	1201-238M	Plug - 1/2" Square Head, Magnetic	1
2	1204-08	Gasket	1
3	1217-104	Bearing	2
4	1217-110	Gear - Pinion	1
5	1220-501	Breather	1
6	1217-111	Gear - Driven	1
7	1217-105	Bearing - Small - Pinion Nose	1
8	1220-50-O	Housing - Outboard, Gearbox	1
9	1201-238	Plug - 1/2" Square Head	1
10	1200-327	Hex Head Capscrew - 7/16" UNC x 2 3/4"	9
11	1208-97	Snap Ring	1
12	1200-251A	Capscrew - Socket Head 5/16-18 x 1"	1
13	1217-110P	Plug - Delrin	1
14	1204-07	Seal	1
15	1220-50-I	Housing - Inboard, Gearbox	1
16	1209-100	Washer - Retainer	1
17	1217-106	Bearing - Large - Pinion Shaft	1
18	1208-06	Snap Ring	1
19	1209-102	Lock Washer - 7/16"	9

## ASSEMBLY-3 CYL ENGINE

DETAIL B  
SCALE 1:3



REMOVE NUT AND ROTATE  
CONCAVE SPRING WASHERS  
BACK TO BACK SO AS TO  
ALLOW LESS TENSION ON  
THROTTLE HANDLE

ITEM NO.	QTY.	PART NO.	DESCRIPTION
1	1	1220-56	DEUTZ 3 CYL ENGINE
2	1	3-5-00001	LEVER, ENGINE
3	1	3-5-00002	BRACKET
4	1	1220-81	Threaded Rod, 1/4"-28 @ 10.50"
5	1	1220-5620	Solenoid, Trombetta Two Speed
6	1	FC-10376	BALL JOINT, 90 DEGREE
7	3	1205-60	Nut, 1/4" UNF - Trombetta
8	1	FC-10377	BALL JOINT, STRAIGHT-TWO SPEED
9	1	1205-600	Coupling Nut, 1/4" UNF - Trombeta
10	1	1220-5621	Block, Relay, Trombetta Two Speed Actuator
11	2	94036A231	Bolt, M6 x 1 Thread, 30mm long

### **ADJUSTING SOLENOID LINKAGE**

- 1) REMOVE ITEM 6 BALL JOINT FROM ITEM 2 LEVER
- 2) WITH THE IGNITION SWITCH ON, ENGAGE THE SOLENOID WITH THE REMOTE TO FAST IDLE (FULL PULL BACK AND LOCK)
- 3) PULL THE THROTTLE HANDLE BACK TO FULL THROTTLE & ADJUST THE THREADED ROD AND BALL JOINT LINKAGE TO ALIGN WITH THE MOUNTING HOLE FOR THE THROTTLE LEVER
- 4) INSTALL POST OF THE BALL JOINT TO THE THROTTLE LEVER WITH NUT & TIGHTEN ALL LINKAGE NUTS

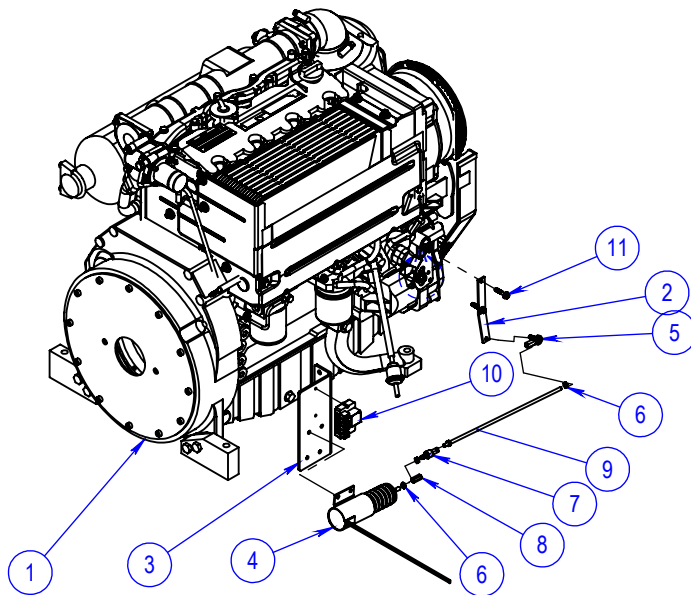
### **SPECIAL CAUTION:**

1220-5620 IS A 2 SPEED SOLENOID, ONE POSITION FOR PULLING & ONE TO HOLD.  
IF THE THROTTLE LINKAGE IS TOO SHORT, THE SOLENOID CAN NOT REACH THE "HOLD" POSITION & WILL BURN UP THE ACTUATOR BLOCK.

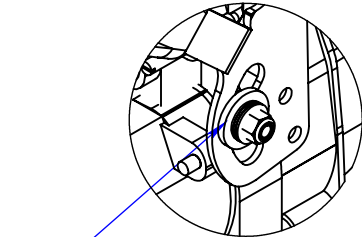
IF THE LINKAGE IS TOO LONG, THE THROTTLE CAN NOT REACH FULL RPM.



## ASSEMBLY-4 CYL ENGINE



DETAIL A  
SCALE 1:3



REMOVE NUT AND ROTATE  
CONCAVE SPRING WASHERS  
BACK TO BACK SO AS TO  
ALLOW LESS TENSION ON  
THROTTLE HANDLE

ITEM NO.	QTY.	PART NO.	DESCRIPTION
1	1	1220-560	F4L2011
2	1	3-5-00001	LEVER, ENGINE
3	1	3-5-00002	BRACKET
4	1	1220-5620	Solenoid, Trombetta Two Speed
5	1	FC-10376	BALL JOINT, 90 DEGREE
6	5	1205-60	Nut, 1/4" UNF - Trombetta
7	1	FC-10377	BALL JOINT, STRAIGHT-TWO SPEED
8	1	1205-600	Coupling Nut, 1/4" UNF - Trombeta
9	1	1220-82	Threaded Rod, 1/4"-28 @13 5/8"
10	1	1220-5621	Block, Relay, Trombetta Two Speed Actuator
11	2	94036A231	Bolt, M6 x 1 Thread, 30mm long

### ADJUSTING SOLENOID LINKAGE

- 1) REMOVE ITEM 5 BALL JOINT FROM ITEM 2 LEVER
- 2) WITH THE IGNITION SWITCH ON, ENGAGE THE SOLENOID WITH THE REMOTE TO FAST IDLE (FULL PULL BACK AND LOCK)
- 3) PULL THE THROTTLE HANDLE BACK TO FULL THROTTLE & ADJUST THE THREADED ROD AND BALL JOINT LINKAGE TO ALIGN WITH THE MOUNTING HOLE FOR THE THROTTLE LEVER
- 4) INSTALL POST OF THE BALL JOINT TO THE THROTTLE LEVER WITH NUT & TIGHTEN ALL LINKAGE NUTS

### SPECIAL CAUTION:

1220-5620 IS A 2 SPEED SOLENOID, ONE POSITION FOR PULLING & ONE TO HOLD.  
IF THE THROTTLE LINKAGE IS TOO SHORT, THE SOLENOID CAN NOT REACH THE "HOLD" POSITION & WILL BURN UP THE ACTUATOR BLOCK.

IF THE LINKAGE IS TOO LONG, THE THROTTLE CAN NOT REACH FULL RPM.