

INSTALLATION and OPERATING INSTRUCTION MANUAL

V-BOX MATERIAL SPREADERS MDV SERIES



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MAGNUMTM
SPREADERS



THE BEST SAFETY DEVICE IS A CAREFUL OPERATOR!

SAFETY ALERT SYMBOL



THIS SYMBOL MEANS **ATTENTION!**
BECOME ALERT!
YOUR SAFETY IS INVOLVED!

PLEASE READ AND UNDERSTAND COMPLETELY BEFORE DOING!

SAFE EQUIPMENT INSTALLERS and OPERATORS:



TURN OFF ALL POWER BEFORE PERFORMING ANY SERVICE OPERATIONS


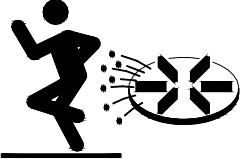
- FOLLOW RECOMMENDED OPERATING PROCEDURES.
- KEEP EQUIPMENT IN SAFE OPERATING CONDITION AT ALL TIMES.
- RECOGNIZE AND AVOID HAZARDS WHILE OPERATING, SERVICING AND MAINTAINING EQUIPMENT.



CAUTION

1. KEEP ALL SHIELDS IN PLACE.
2. MAKE CERTAIN EVERYONE IS CLEAR BEFORE STARTING MACHINE OR MOVING VEHICLE.
3. KEEP HANDS, FEET, AND CLOTHING AWAY FROM ALL POWER DRIVEN PARTS.
4. DISENGAGE PTO, SHUT OFF HYDRAULIC VALVE, AND SET PARKING BRAKE BEFORE LEAVING OPERATORS POSITION. MAKE SURE ALL MOVEMENT HAS STOPPED BEFORE SERVICING, UNCLOGGING, OR CLEANING MACHINE.
5. USE FLASHING LIGHTS WHEN OPERATING MACHINE.
6. MAKE SURE MACHINE IS SOLIDLY SUPPORTED WHEN IT IS BEING MOUNTED, DISMOUNTED, OR STORED.


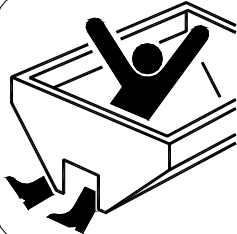
IF DEFACED - ORDER PART NO. 04049 045 00



DANGER

Stay clear while spinner is turning

IF DEFACED - ORDER PART NO. 04049 044 00



DANGER

Turn power off before servicing or cleaning

IF DEFACED - ORDER PART NO. 04049 182 00

NOTICE: INSTRUCTIONAL MATERIAL AND PARTS LISTS INCLUDED IN THIS MANUAL ARE SUBJECT TO CHANGE WITHOUT NOTICE.

INSTALLATION AND ASSEMBLY INSTRUCTIONS



CAUTION!

READ ALL OF THE INSTALLATION INSTRUCTIONS BEFORE STARTING.

INSTALLATION INSTRUCTIONS:

The Magnum MDV Spreader can be mounted and stored as a single unit. The Magnum MDV Spreader will mount on most 15,000 - 20,000 GVW and larger trucks.



WARNING!

THE SPREADER UNIT MUST BE SECURELY FASTENED TO THE VEHICLE. FAILURE TO PROPERLY RESTRAIN THE UNIT COULD PERMIT THE UNIT TO BREAK FREE FROM THE TRUCK AND CREATE A POTENTIAL FOR A LIFE THREATENING ACCIDENT.

DO NOT OVERLOAD THE VEHICLE

It is possible to overload the vehicle by improperly mounting or overloading the spreader. This could result in dangerous stability and braking problems. Always consult and follow the truck manufacturer's instructions.



WARNING!

BEFORE BEGINNING ANY INSTALLATION ON THIS UNIT, DISCONNECT THE SPREADER BATTERY NEGATIVE CABLE IF ALREADY INSTALLED.

1. Place the spreader in the rear of the truck with the engine/motor to the rear of the truck. Center the spreader (side to side) in the truck. Allow sufficient overhang to mount spinner.

2. Attach spinner assembly in lowered position with supplied mounting rods. Check for proper engagement of spinner drive shaft and drive shaft coupling.



CAUTION!

INSURE THAT THE SPREADER CANNOT TIP WHEN THE SPINNER ASSEMBLY IS ATTACHED.

3. Reposition the spreader in the truck bed, just short of making contact with the rearmost part of the truck bed, bumper, pintle hook etc. Bolt the unit to the truck using a minimum of four (4) 1/2" Grade 5 bolts and corresponding washers and locknuts.

The spreader is designed to sit flat on the bed of the truck, supported by the longitudinals/sides. **DO NOT SUPPORT THE SPREADER BY THE BODY JACKS ALONE! UNIT IS NOT DESIGNED FOR CHASSIS MOUNT APPLICATIONS!**



CAUTION!

DO NOT LEAVE UNUSED MATERIAL IN HOPPER.

4. Material could freeze causing the unit to not function correctly. Hopper should be emptied and cleaned after each use.



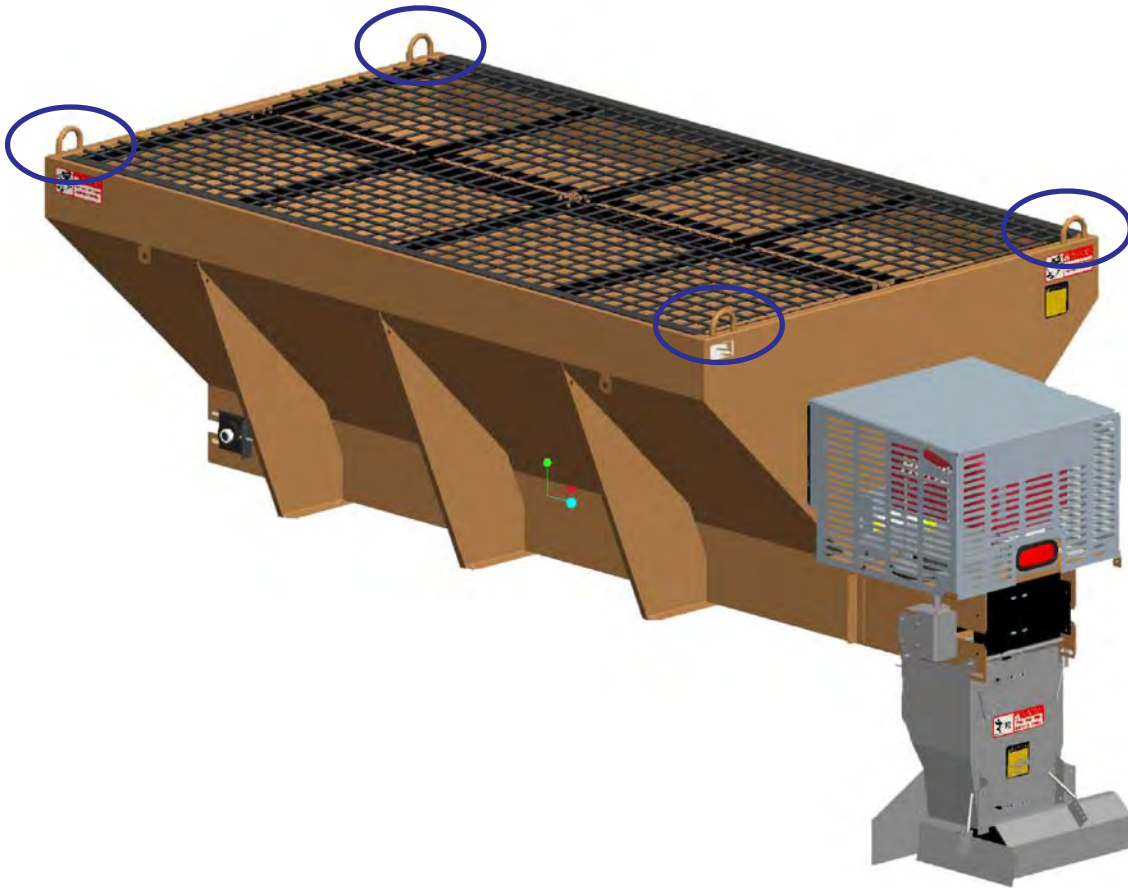
CAUTION!

BEFORE STARTING, VERIFY THAT THIS MOUNTING METHOD IS ACCEPTABLE TO THE VEHICLE MANUFACTURER.

5. Attach the hold down at each corner of the hopper as shown on page 5. Locate and drill four .531 (17/32") diameter holes for eyebolts in the truck bed. Straps must be positioned at opposing angles so that the spreader cannot slide forward or rearward. Assemble ratchet/strap to eye bolts. Tighten hold downs evenly. Do not overtighten, damage will result to the spreader or the truck.

Note: If truck is equipped with sufficient tie downs, they may be used in place of eyebolt.

INSTALLATION AND ASSEMBLY



1. To install or remove spreader from truck: Lift by using the 4 lift hooks.

⚠ WARNING!

DO NOT ATTEMPT TO LIFT SPREADER BY THE CENTER LIFT OR CORNER LIFT HOOKS WITH MATERIAL IN THE SPREADER.

⚠ WARNING!

ALWAYS USE SUFFICIENTLY RATED CHAIN WITH SAFETY HOOKS WHEN LIFTING SPREADER.

OPTIONAL HOLD-DOWN KIT Part No. (62562)

ITEM	PART NUMBER	QTY.	DESCRIPTION
1	62602	4	Ratchet/Strap
2	62807	4	Bolt, 1/2" Eye
3	20307	4	Locknut, 1/2-13 Esna ZP
4	62604	4	Nut, 1/2-13 Hex ZP
5	62605	8	Flatwasher, 3/4"

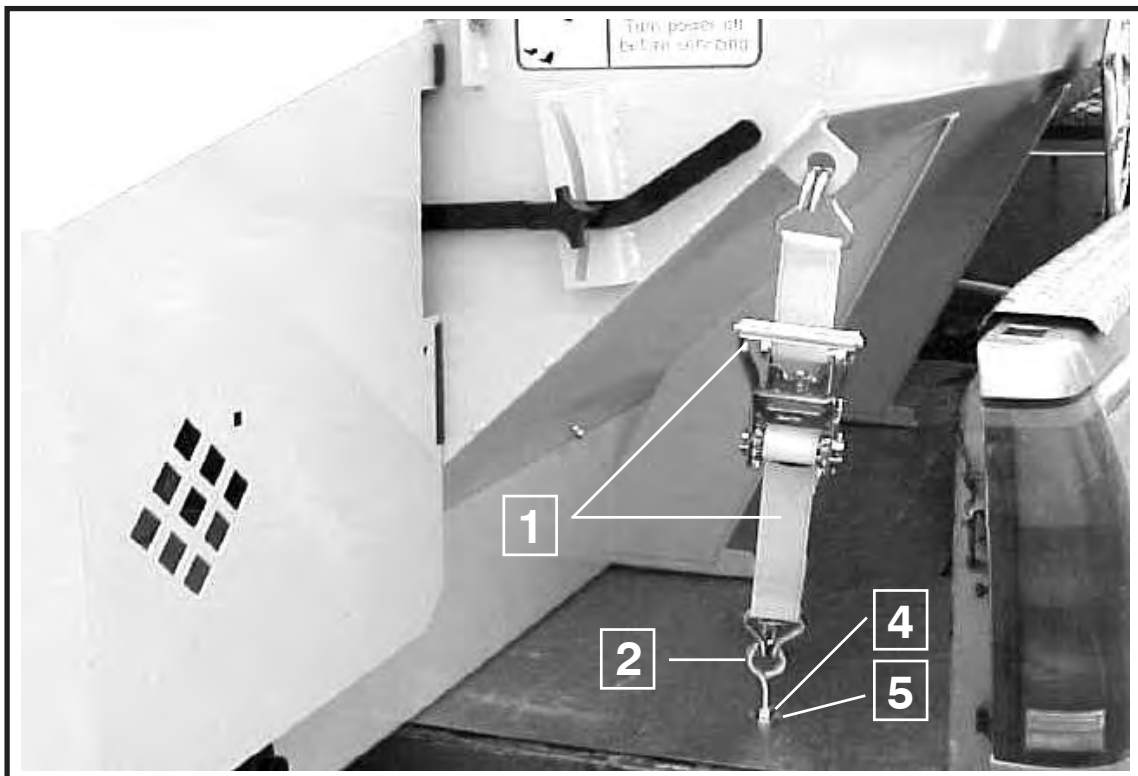
INSTALLATION INSTRUCTIONS

CAUTION

READ ALL THE INSTALLATION INSTRUCTIONS BEFORE STARTING

Before starting, verify that this mounting is acceptable to the vehicle manufacturer.

Attach the hold down at each corner of hopper as shown. Locate and drill four .531 (17/32") diameter holes for eye-bolts in the truck bed (position may vary from that shown). Straps must be positioned at opposing angles so that spreader cannot slide forward or rearward. Mount eye-bolts as shown, with locknuts and flatwashers on the bottom side. Assemble ratchet/strap to eye-bolts. Tighten hold downs evenly. Do not over tighten damage will result to the spreader or the truck.



INSTALLATION INSTRUCTIONS ELECTRIC THROTTLE CONTROLS

(FACTORY INSTALLED ACTUATORS)



WARNING!

BEFORE BEGINNING ANY INSTALLATION ON THIS UNIT, DISCONNECT THE SPREADER BATTERY NEGATIVE CABLE (IF ALREADY INSTALLED).

1. Spreaders with factory installed throttle controls do not require installer hookup to the engine. The actuator has been installed and tested at the factory.
2. Remove the engine shroud and securely place it on the ground.
3. The throttle actuator cable plugs into the in-cab control panel after being routed from the cab of the vehicle to the rear of the mounted spreader.
4. Select a suitable location in the cab of the vehicle to mount the spreader control box. **(Do not mount at this time.)**



WARNING!

CONSULT VEHICLE MANUFACTURER FOR ACCEPTABLE MOUNTING. THE CONTROL BOX COULD INTERFERE WITH THE AIR BAG(S) AND THE OTHER FUNCTIONS OF THE OCCUPANT PROTECTIVE SYSTEMS, SUCH AS KNEE BOLSTERS!

5. After the location of the control panel is determined, the cable must be routed to the front of the spreader, securing as needed. Allow enough cable for the control panel to be mounted in the cab.
6. The routed cable must be clear of all moving or hot parts on the spreader or the vehicle. Secure the cable with the ties provided. Excess cable must be coiled up and secured. Apply dielectric grease to all connections for protection from the salt spreading environment.
7. Mount the control panel (with the screws supplied).
8. For a permanent cable mount, a mounting bracket is supplied.

9. It is recommended that a 12 volt battery with 40 ampere hour rating be installed for winter use. The battery hold downs furnished will accept any 2SM series battery.

10. Attach the positive battery cable (each end should have a red rubber boot) to the positive terminal on the solenoid and to the terminal of the battery. Make sure these protective boots are covering the positive terminal post on the battery and on the solenoid.



WARNING!

USE SAFETY GLASSES OR OTHER FACE PROTECTION AGAINST POSSIBLE BATTERY EXPLOSION. DO NOT SMOKE AND AVOID OTHER SOURCES OF IGNITION.

11. Connect the negative battery terminal to the engine mounting bolt for proper grounding. When finished, make sure all wires are away from hot or moving parts and replace engine shroud.
12. Plug cable from spreader into socket mounted on truck.



WARNING!

NEVER OPERATE MACHINE WITH ENGINE SHROUD REMOVED. NEVER CLIMB INTO THE HOPPER WHILE THE ENGINE IS OPERATING OR CAPABLE OF BEING OPERATED. SERIOUS INJURY OR DEATH MIGHT OCCUR.

NOTE: Read and fully understand the owners manual supplied by the engine manufacturer before operating this equipment. Not doing so, endangers your safety and the warranty of the engine.

INSTALLATION INSTRUCTIONS

CENTER HIGH MOUNT STOP LAMP (CHMSL)



WARNING!

FEDERAL MOTOR VEHICLE SAFETY STANDARDS REQUIRE ALL TRUCKS, BUSES AND MULTIPURPOSE PASSENGER VEHICLES MANUFACTURED ON OR AFTER 5/1/1993, WITH A GROSS VEHICLE WEIGHT RATING (GVWR) OF 10,000 LBS. OR LESS AND OVERALL WIDTH LESS THAN 80" BE EQUIPPED WITH A CENTER HIGH MOUNT STOP LAMP.

NOTE: If the original equipment CHMSL is obscured, an auxiliary CHMSL must be installed to bring the vehicle back into compliance with Federal Regulations.

ELECTRICAL CONNECTIONS FOR AUXILIARY CHMSL:

1. Use high quality butt connectors and shrink wrap on all electrical splice connections. Wire should be routed and secured to protect against abrasion, sharp edges, and excessive movement. It is highly recommended that wiring be placed in convoluted tubing and secured with tie wraps.

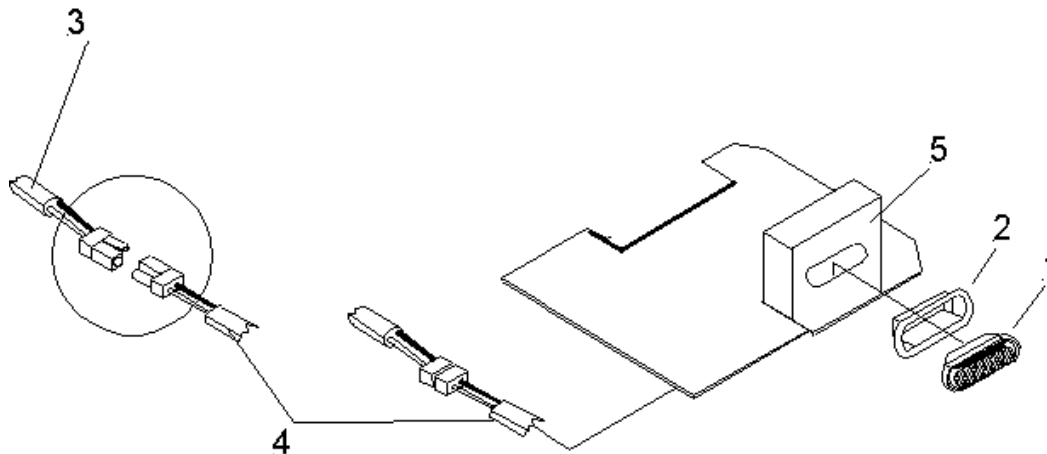
2. When drilling holes, any bare metal should be coated with a rust preventative; use appropriate size grommets and seal hole with appropriate sealant.
3. Allow for normal movement/twisting between cab and chassis/pickup box when routing wires.
4. When spreader is removed from the truck, the **OEM CHMSL** must be reconnected.



WARNING!

CONSULT THE TRUCK MANUFACTURER FOR AN APPROVED METHOD OF CONNECTING AN AUXILIARY CHMSL TO A PARTICULAR TRUCK WHICH IS TO CARRY THE SPREADER. METHODS VARY WITH TRUCK MODELS, OPTIONAL EQUIPMENT AND YEARS OF MANUFACTURER.

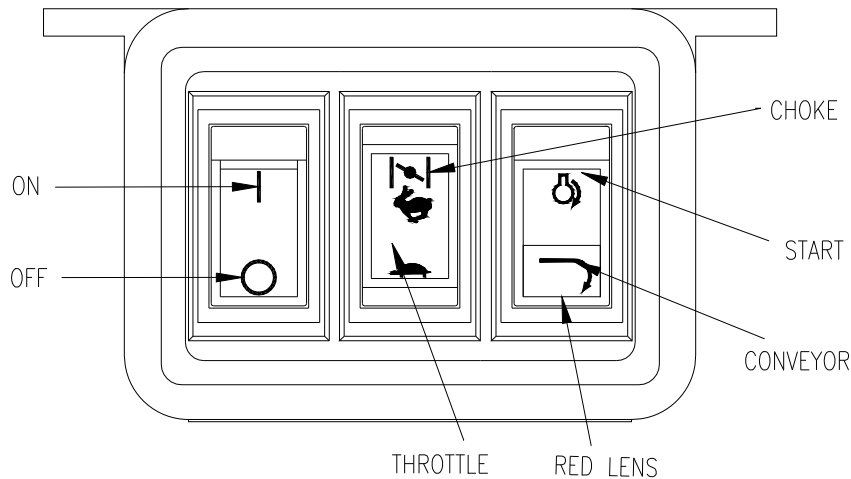
IMPROPER CONNECTIONS COULD RESULT IN A VARIETY OF PROBLEMS AFFECTING CRITICAL SYSTEMS SUCH AS BRAKING, ELECTRICAL AND EMISSION! DON'T GUESS!



<u>Item</u>	<u>Part Number</u>	<u>Qty.</u>	<u>Description</u>
1	62714	1	Lamp, Stop
2	62715	1	Grommet, Mounting
3	62738	1	Cable, Stop Lamp Power (Truck)
4	62364	1	Cable, Light Power (Hopper)
5	63155	1	Forming, Rear Stop Light Bracket

SPREADER OPERATION

Electric Throttle Control Panel Switch Functions (Optional) (Sequence of Operations)



A. ON/Off System power activated (ready to start). Spreader engine not running. Spreader conveyor is not engaged.

B. START (Engine Only)

1. Open fuel shut off valve on engine.
2. ON On Switch depressed.
3. CHOKE (Cold engine.) Hold down for 5 seconds to move the throttle actuator to the choke position.

NOTE: Choking a warm engine may not be necessary.

4. START Hold down until engine starts.
5. TURTLE Decreases throttle speed - adjust as engine warms up. Will stop the choke function.

RABBIT Increases throttle speed.

C. TO ENGAGE SPREADER CONVEYOR

1. CONVEYOR Push CONVEYOR switch only after you are sure no one is in the hopper or near the spinner! This lights up the red indicator light, if light does not light, take care to verify that the light is not malfunctioning.

D. TO CONTROL CONVEYOR SPEED

1. RABBIT Hold RABBIT to increase speed. Note **DO NOT** hold switch in HI position after the desired RPM is achieved or you will choke and/or stall the engine.
2. TURTLE Hold TURTLE to decrease speed.

E. TO DISENGAGE SPREADER CONVEYOR

1. START Tap START switch momentarily so that red indicator light goes out. **DO NOT** fully depress the START switch, only half way is needed. Only the conveyor stops, the engine continues to run.

F. TO TURN ENGINE OFF (With or without conveyor running).

1. TURTLE Depress LO on throttle control to reduce setting to idle (this prevents engine flooding and hard starting).
2. ON/OFF Push OFF position on the ON/Off switch.

NOTE: OFF can be pushed at anytime during spreader operation to cut power to the unit; however, you should normally use steps under F above.

G. Do not attempt to start the engine with the conveyor engaged. (Conveyor switch light will be lit to indicate it is on.

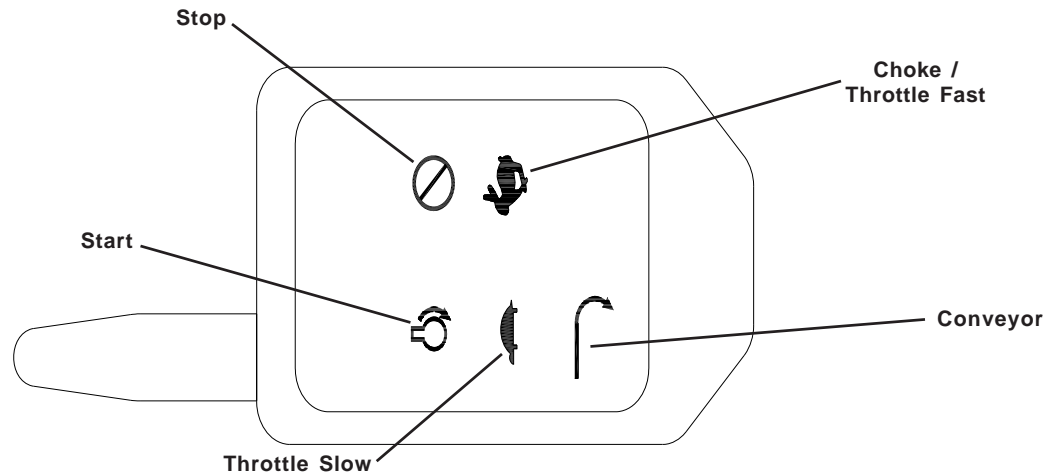
H. Close fuel shut off valve on engine if unit is to be transported while not running.



1. As with all power equipment, safety is the number one concern.
2. Do not operate this equipment until you fully understand how it functions.
3. Before starting engine, be sure that no one is near the rear of the unit and that no one is inside the unit!
4. Do not start the engine or engage the conveyor (which is interconnected to the spinner) until everyone is clear from moving parts and flying material from the spinner.

SPREADER OPERATION

Wireless Throttle Control Button Functions (Sequence of Operations)



A. ON/Off System power activated (ready to start). Spreader engine not running. Spreader conveyor is not engaged.

B. START (Engine Only)

1. Open fuel shut off valve on engine. CHOKE (Cold engine.) Hold down for 5 seconds to move the throttle actuator to the choke position.

NOTE: Choking a warm engine may not be necessary.

4. START Hold down button until engine starts.
 5. TURTLE Decreases throttle speed - adjust as engine warms up. Will stop the choke function.
- RABBIT Increases throttle speed.

C. TO ENGAGE SPREADER CONVEYOR

1. CONVEYOR Push CONVEYOR switch only after you are sure no one is in the hopper or near the spinner!

D. TO CONTROL CONVEYOR SPEED

1. RABBIT Hold RABBIT to increase speed. Note DO NOT hold switch in H position after the desired RPM is achieved or you will choke and/or stall the engine.
2. TURTLE Hold TURTLE to decrease speed.

E. TO DISENGAGE SPREADER CONVEYOR

1. CONVEYOR Push conveyor button.

F. TO TURN ENGINE OFF (With or without conveyor running).

1. TURTLE Push throttle slow button to reduce setting to idle (this prevents engine flooding and hard starting).
2. STOP Push STOP button and hold 5 seconds.

NOTE: OFF can be pushed at anytime during spreader operation to cut power to the unit; however, you should normally use steps under F above.

G. Do not attempt to start the engine with the conveyor engaged.

H. Close fuel shut off valve on engine if unit is to be transported while not running.

⚠ WARNING!

1. As with all power equipment, safety is the number one concern.
2. Do not operate this equipment until you fully understand how it functions.
3. Before starting engine, be sure that no one is near the rear of the unit and that no one is inside the unit!
4. Do not start the engine or engage the conveyor (which is interconnected to the spinner) until everyone is clear from moving parts and flying material from the spinner.

SPREADER OPERATION - LOADING

This manual covers vehicles which have been recommended for carrying the hopper spreader. Please see your local dealer for proper vehicle applications.



WARNING!

OVERLOADING COULD RESULT IN AN ACCIDENT OR DAMAGE. DO NOT EXCEED GVWR OR GAWR AS FOUND ON THE DRIVER-SIDE CORNERPOST OF VEHICLE.



CAUTION!

READ AND ADHERE TO MANUFACTURER'S ICE CONTROL PACKAGE LABELING INCLUDING MATERIAL SAFETY DATA SHEET REQUIREMENTS.

DETERMINING VEHICLE PAYLOAD

1. Install spreader and optional equipment according to the instructions.
2. Install or attach any other equipment that will be on the vehicle while the spreader will be in use (step bumper, trailer hitch, snowplows, etc.). Fill gas tanks.
3. Obtain the Gross Vehicle Weight Rating (GVWR), Front Gross Axle Weight Rating (FGAWR), and Rear Gross Axle Weight Rating (RGAWR) from the certification label located inside the driver-side door jam.
4. With the occupants in the truck for normal spreader operation, weigh the vehicle to obtain gross vehicle weight (GVW).
5. Subtract the GVW from the GVWR to determine the available material payload.
6. Obtain the weight per cubic yard (lb./cu. yd.) of the desired material. Divide the weight into the payload to determine the maximum volume of material that can be carried.
7. Compare the maximum volume to determine the maximum height of the material in the hopper spreader.
8. Fill hopper with the material to the calculated height. Reweigh vehicle with occupants and verify the GVW, Front Gross Axle Weight, and Rear Gross Axle Weight are less than the vehicle's ratings.
9. Repeat steps 7 and 8 for each type of material.

Material Weights (Reference Only)

Material	Density (lb. per cubic yd.)
Salt (78lbs cu.ft.) - Dry	2,106
Coarse Sand - Dry	2,700
Course Sand - Wet	3,375

SPREADER OPERATION - SPREAD PATTERN

GAS ENGINE DRIVE

- A. Start engine and allow engine to warm-up to operating temperature and engage the clutch. The amount of material spread, depends on engine speed and gate opening. Decreasing RPM and/or gate height will decrease amount spread. The inverse also holds true. Notice that the electric clutch can be engaged or disengaged at any time and at any engine RPM. However, since engagement time and torque is almost instantaneous, to prevent premature spinner chain failure and chain tension loss, it is recommended that the electric clutch be engaged at the lowest possible RPM without stalling the engine.

NOTE: If the truck is to be driven for an extended period of time while the spreader is not operating, it is **RECOMMENDED** the gas be turned off at the fuel tank shut-off valve to prevent the carburetor from over filling with fuel.



WARNING!

ALWAYS STAND AT A SAFE DISTANCE AWAY FROM THE SPINNER WHILE OPERATING. ALWAYS WEAR EYE PROTECTION WHEN OUTSIDE OF THE TRUCK CAB WHILE SPREADER IS RUNNING.

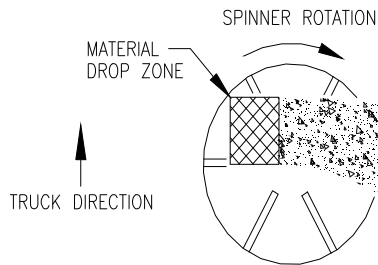
- B. Spread pattern / width depends on baffle settings (Gas Engine / Hydraulic Drive 4ft-30ft.)
1. Internal baffle adjustments will move the spread pattern to the right or left.
 2. External baffle adjustments will block spreading to the rear, right or left side.



CAUTION!

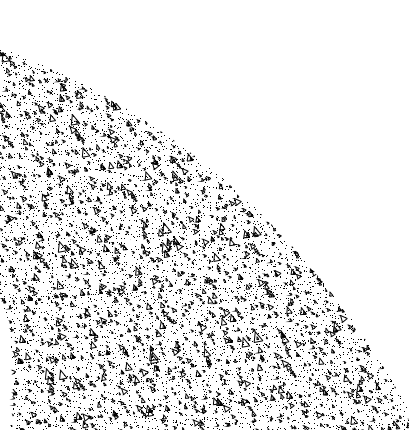
DO NOT LEAVE UNUSED MATERIAL IN HOPPER.

- C. Material could freeze causing the unit to not function correctly. Hopper should be emptied and cleaned after each use.



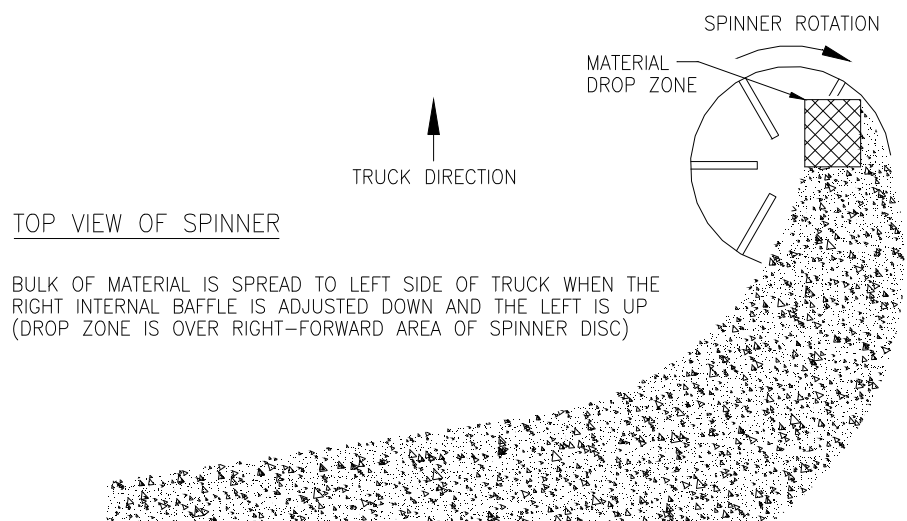
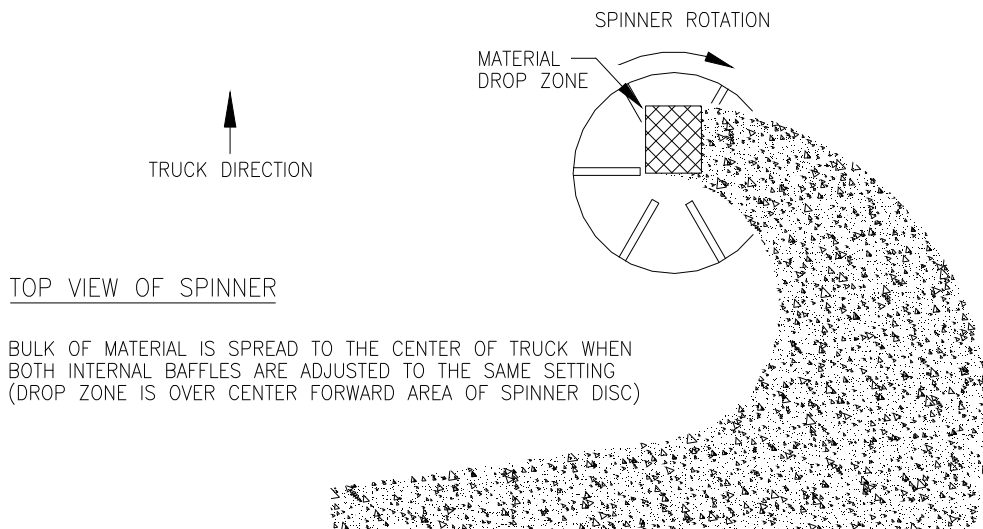
TOP VIEW OF SPINNER

BULK OF MATERIAL IS SPREAD TO RIGHT SIDE OF TRUCK WHEN THE RIGHT INTERNAL BAFFLE IS ADJUSTED UP AND THE LEFT IS DOWN (DROP ZONE IS OVER LEFT-FORWARD AREA OF SPINNER DISC)



SPREADER OPERATION - SPREAD PATTERN

(Continued)



SPREADER OPERATON - MAINTENANCE



WARNING!

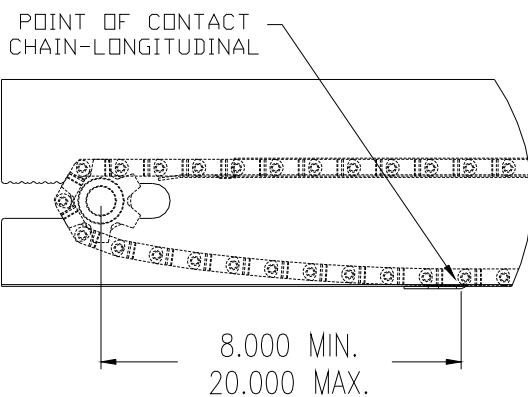
DO NOT ATTEMPT TO LIFT SPREADER BY THE CENTER LIFT OR CORNER LIFT HOOKS WITH MATERIAL IN THE SPREADER.



WARNING!

BEFORE BEGINNING ANY MAINTENANCE ON SPREADER, DISCONNECT SPREADER BATTERY LEADS.

1. Grease idler bearings on idler shaft take-up assembly, outboard bearing on gearbox output shaft, and spinner bearings every ten hours of operation.
2. Grease input shaft bearing on gearbox every fifty hours of operation. **CAUTION!** Over greasing may cause seal damage. The gearbox must be filled to oil level plug with SAE 90 gear type lubricant. Keep breather plug clean.
3. Drag chain slack on V-boxes should be checked periodically and taken up if distance between center line of front sprocket and point where chain contacts lower flange on longitudinal is less than eight (8) inches. **CAUTION!** Over tightening conveyor chain can cause serious drive train problems. Above distance must not exceed twenty (20) inches.



DETAIL - CHAIN TENSION

4. If the spreader is equipped with a gasoline engine, it should be maintained per engine manufacturer's instruction. (Instructions and parts book is enclosed.
5. V-belt/Chain tension must be maintained. The V-belt/Chain can be adjusted by loosening motor hold-down bolts and sliding motor as required.

To adjust chain tension on spinner shaft, loosen the 8 bearing bolts on the rear vertical plates and slide spinner shafts as required. Make sure the spinner shaft is straight up and down before re tightening.

CAUTION! Overtightening may damage gearbox.

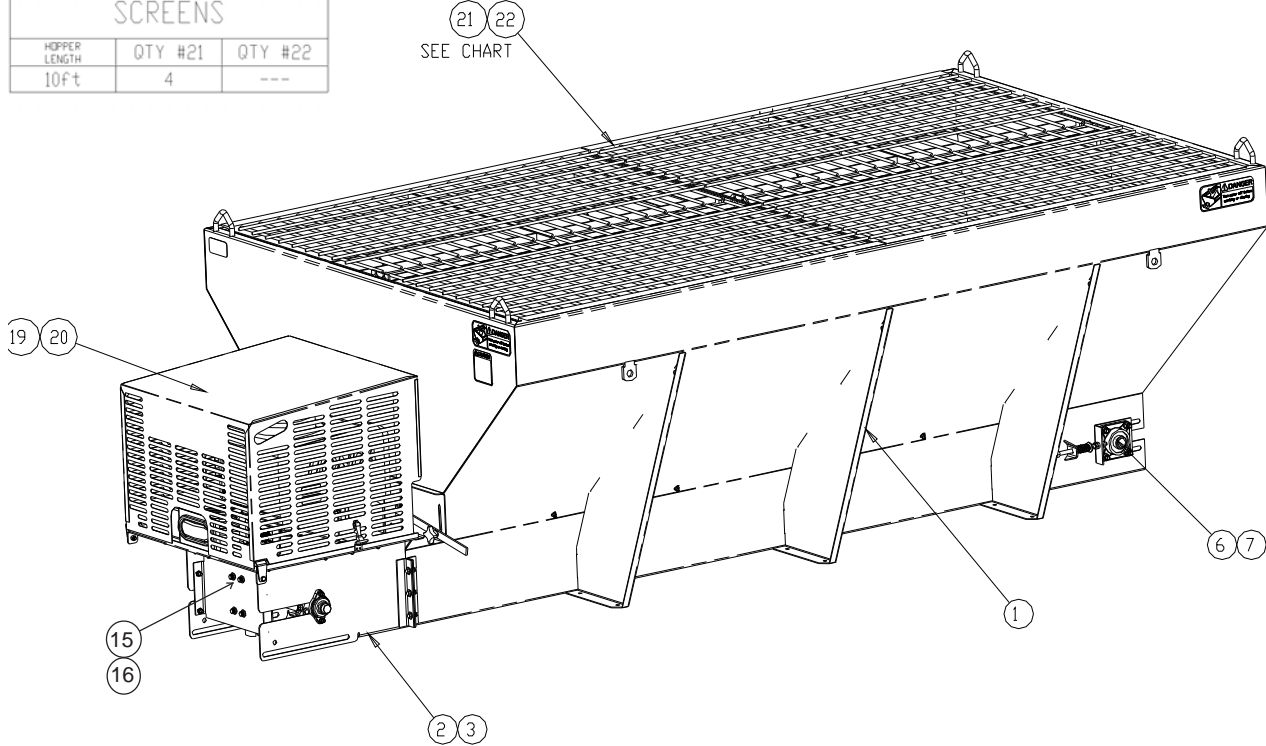
6. Oil drive chains before each use.
7. Spreader should be emptied and cleaned after each use. Material could freeze causing the unit to not function correctly.
8. If chain becomes stuck or "frozen" to the floor to the point where the drive system cannot pull the load, never attempt to free chain using a pipe wrench or any other tool on the output shaft. The gearbox is designed to accept torque from input shaft only. Trying to turn output shaft will strip the gears, thus voiding the warranty.
9. To minimize problems and extend the life of the drive system, the following is highly recommended.
 - a. Before loading spreader, make sure the drag chain is free (not stuck or "frozen" to the floor). If the drag chain is stuck, this can cause the drive system to burn up.

OFF-SEASON STORAGE:

1. Grease all bearings, oil drag chain and roller chains.
2. Raise spinner and remove spreader from truck.

PARTS LIST - HOPPER GAS ENGINE (EST-B&S, EST-Honda)

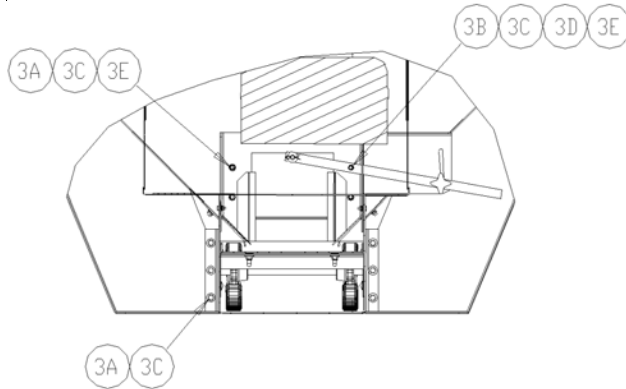
SCREENS		
HOPPER LENGTH	QTY #21	QTY #22
10ft	4	---



<u>Item</u>	<u>Part#</u>	<u>Qty</u>	<u>Description</u>
1	63708	1	Weld, Hopper 1044
2	63712	1	Assy, Drive Module, Honda
	63714	1	Assy, Drive Module, B&S
3	63715	1	Bag, Hdwr Drive Mounting
6	63115	1	Assy, Idler Shaft
7	63716	1	Bag, Hdwr Idler
15	63718	1	Cover, Rear
16	63719	1	1 Bag, HDWR Rear Cover
19	63721	1	Assy, Shroud (B&S) est only
	63723	1	Assy, Shroud (Honda) est only
20	63724	1	Bag, Hdrw Shroud
21	62258	a/r	Screen (57") see chart
22	62256	a/r	Screen (45") see chart

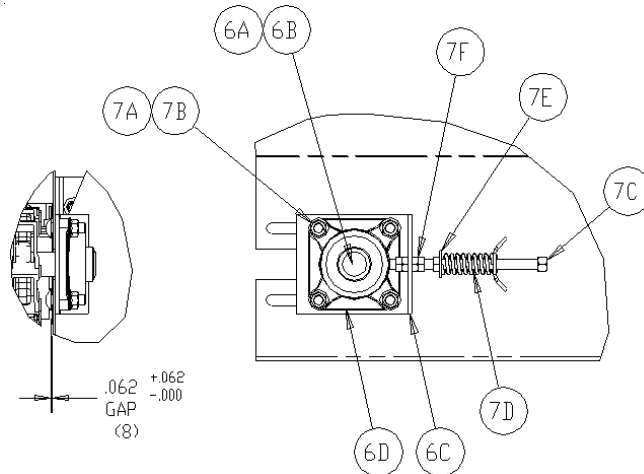
**PARTS LIST - HOPPER
GAS ENGINE (EST-B&S, EST-Honda)**

DRIVE MODULE MOUNTING



<u>ITEM</u>	<u>PART NUMBER</u>	<u>QTY.</u>	<u>DESCRIPTION</u>
3	63715	1	Bag, HDWR Drive Module Mounting
3A	62697	9	Bolt, 3/8-16 X 1 HH SS
3B	63725	1	Bolt, 3/8-16 X 1-1/2 HH SS
3C	62743	10	Nut, 3/8-16 SER Flange SS
3D	63199	1	Locknut, 3/8-16 Top Lock SS
3E	22230	4	Flatwasher, 3/8 SS

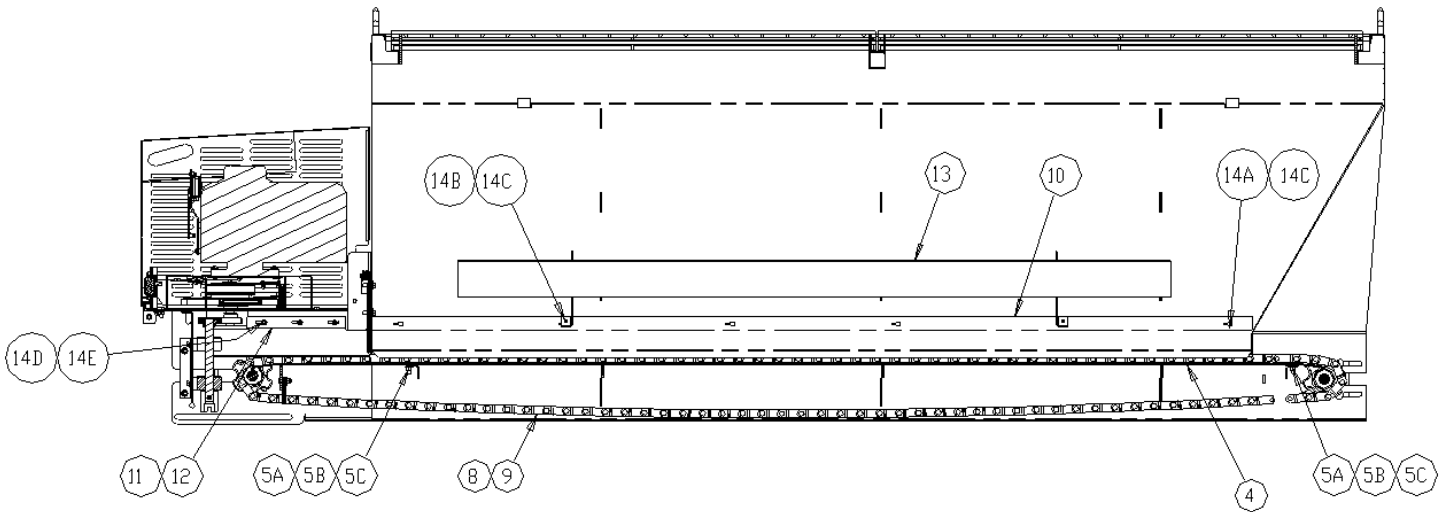
IDLER TAKE-UP



<u>ITEM</u>	<u>PART NUMBER</u>	<u>QTY.</u>	<u>DESCRIPTION</u>
6	63115		Assy, Idler Shaft SS
6A	62370	1	Weld, Idler Shaft (Fixed Sprocket)
6B	61171	1	Sprocket (Floating)
6C	62303	1	Plate, Bearing Mounting (SS)
6D	62355	1	Bearing, 1-1/4"

<u>ITEM</u>	<u>PART NUMBER</u>	<u>QTY.</u>	<u>DESCRIPTION</u>
7	63716		Bag, HDWR Idler
7A	N/A	8	Bolt, 1/2-13 X 1-3/4 Car NK SS
7B	63259	8	Nut, 1/2-13 SER Flange SS
7C	62304	2	Weld, Take-up Bolt SS
7D	62395	2	Spring, Linkage
7E	63257	2	Flatwasher, 1/2 SS
7F	62336	10	Nut, 1/2-13 Hex Jam

PARTS LIST - HOPPER GAS ENGINE (EST)



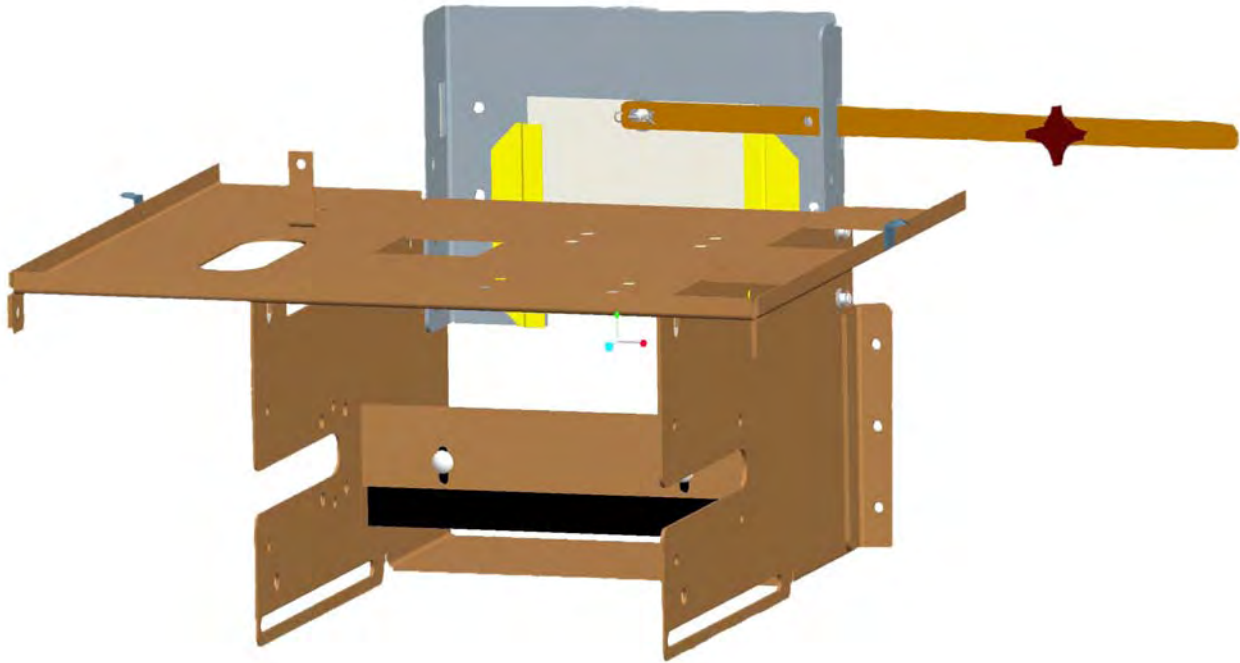
<u>ITEM</u>	<u>PART NUMBER</u>	<u>QTY.</u>	<u>DESCRIPTION</u>
5	63732		Bag, HDWR Floor Mounting
5A	62771	4	Screw, 3/8-16 X 1-1/4 SLT FL
5B	22230	4	Flatwasher, 3/8 SS
5C	62638	4	Locknut, 3/8-16 NYL INS SS

<u>ITEM</u>	<u>PART NUMBER</u>	<u>QTY.</u>	<u>DESCRIPTION</u>
9	63736		Bag, HDWR Drag Chain
9A	61204	2	Pin, Master For Chn W/O Cotter
9B	62755	2	Pin, Cotter Only

<u>ITEM</u>	<u>PART NUMBER</u>	<u>QTY.</u>	<u>DESCRIPTION</u>
14	63742		Bag, HDWR Chain Shield 10ft.
14A	62640	A/R	Bolt, 5/16-18 X 3/4 Car SS
14B	63175	4	Bolt, 5/16-18 X 1 Car SS
14C	62641	A/R	Nut, 5/16-18 SER Flange
14D	62189	6	Bolt, 1/4-20 X 3/4 HH SS
14E	62690	6	Nut, 1/4-20 SER Flange SS

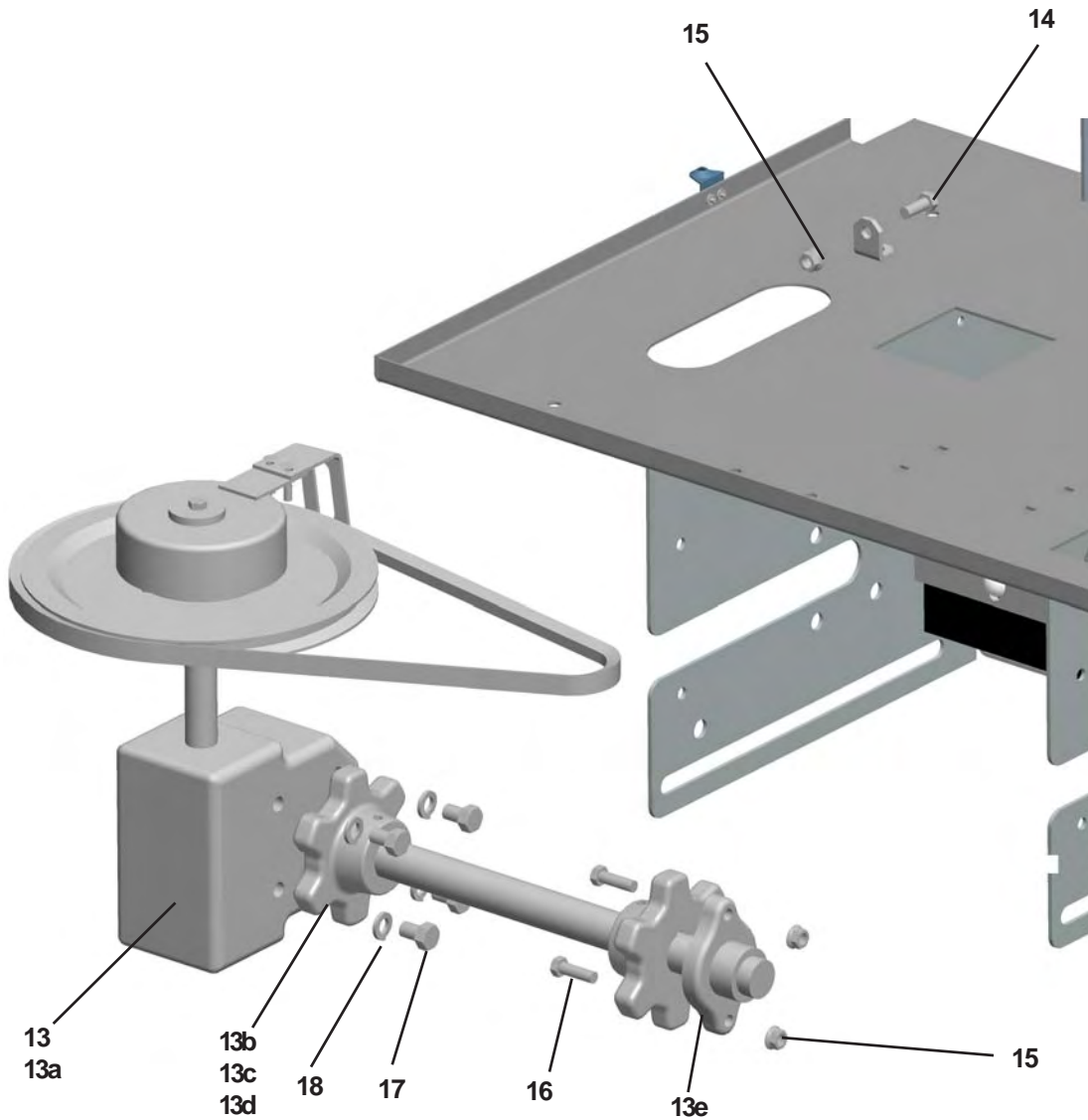
<u>Item</u>	<u>Part#</u>	<u>Qty</u>	<u>Description</u>
4	63731	1	Floor, MDV 10ft
5	63732	1	Bag, Floor Mounting
8	63735	1	Weld, Drag Chain, MDV 10ft
9	63736	1	Bag, Hdwr Drag Chain
10	62307	1	Shield, Replacement Chain 10ft
11	63738	1	Shield, Sprocket LH
12	63740	1	Shield, Sprocket RH
13	62295	1	Weld, Inverted V 10ft
14	63742	1	Bag, hdrw Chain Shield 9ft/10ft

**PARTS LIST - DRIVE MODULE (Common Parts)
GAS ENGINE (EST-B&S, EST-Honda)**



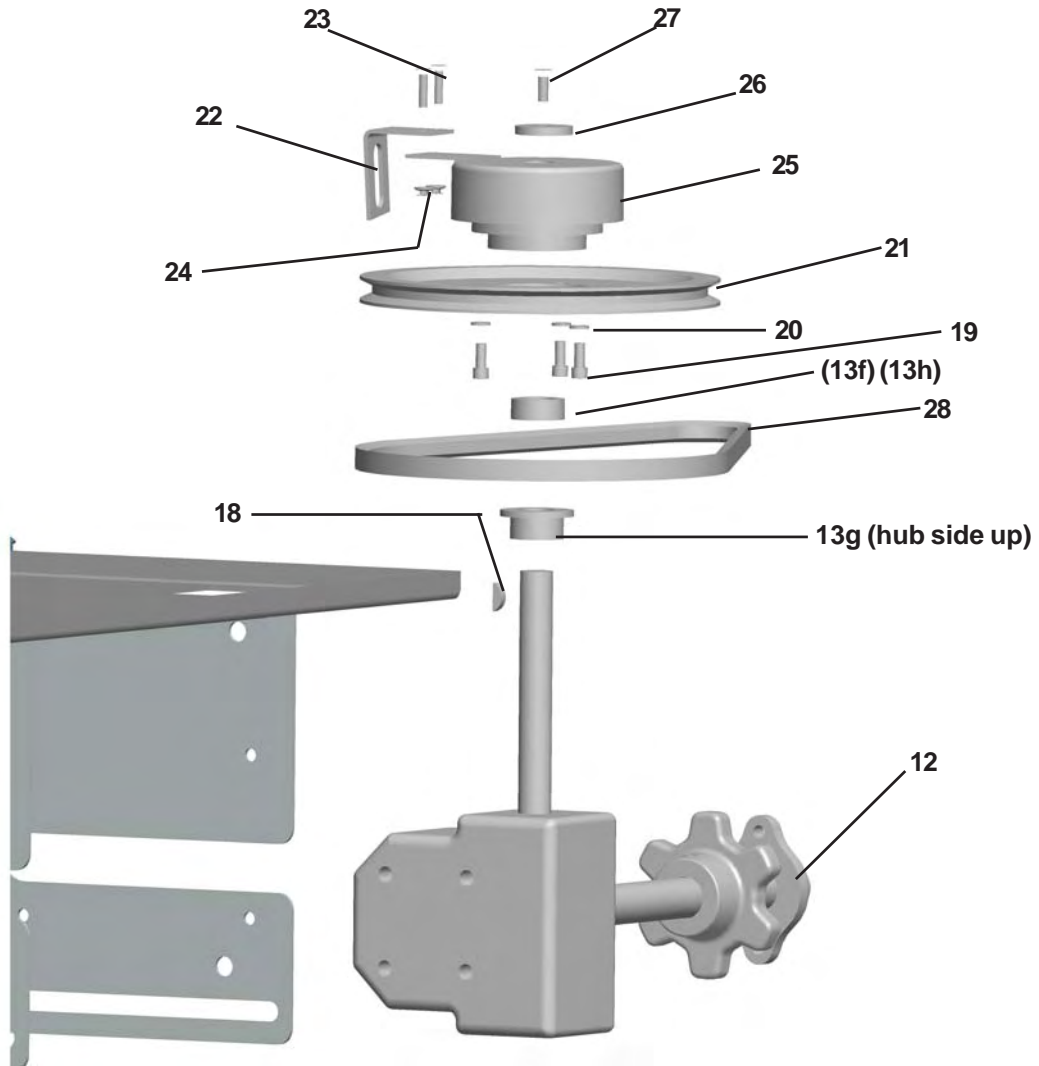
<u>Item</u>	<u>Part#</u>	<u>Qty</u>	<u>Description</u>
1	63744	1	Weld, Drive Module Est Cs
2	62354	1	Wiper, Chain
3	62813	2	Bolt, 3/8-16 X 1 1/4 Car Ss
4	22230	3	Flatwasher, 3/8" Ss
5	62638	2	Nut, 3/8-16 Nylon Insert Ss
6	62282	1	Weld, Feedgate
7	63185	1	Bar, Feedgate Handle
8	62808	1	Flatwasher, 7/16" Ss
9	62691	1	Pin, 1/8" X 1" Cotter Ss
10	61169	1	Knob, Hand
11	62746	5	Bolt, 3/8-16 X 3/4 Car Ss
12	62743	4	Nut, 3/8-16 Serated Flange Ss

**PARTS LIST - DRIVE MODULE (Common Parts - Gearbox)
GAS ENGINE (EST-B&S, EST-Honda)**



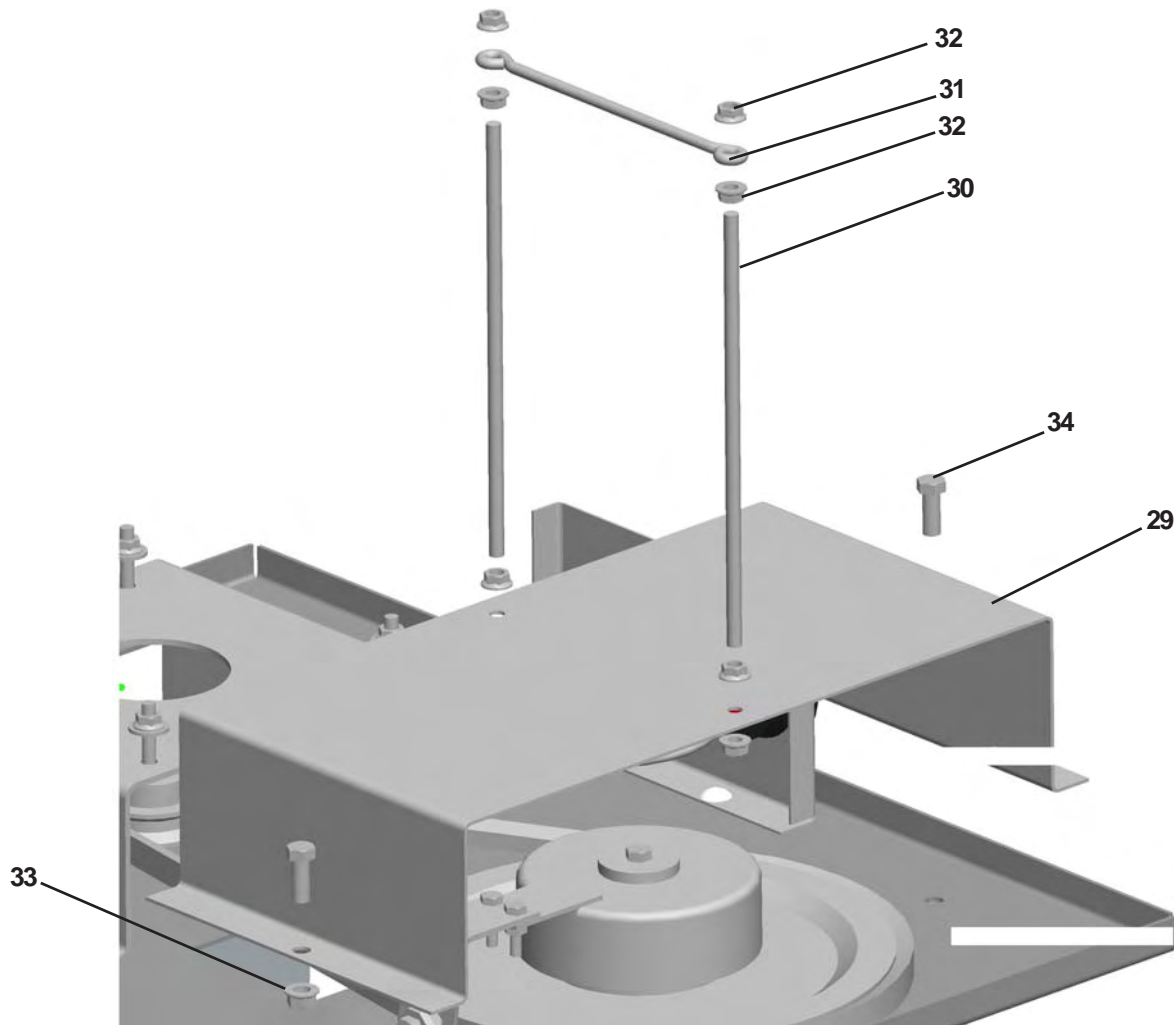
<u>Item</u>	<u>Part Number</u>	<u>Qty.</u>	<u>Description</u>
13	63410	1	Sub-Assembly Gearbox (cont. next pg.)
13a	63419	1	Gearbox 20:1
13b	63411	2	Key, 1/4" sq x 1-1/2"
13c	63100	2	Sprocket, Machining
13d	63123	2	Setscrew, 3/8-16 x 3/8 Al Hd
13e	61163	1	Bearing, 1-1/4"
14	62697	1	Bolt, 3/8-16 X 1" HH, SS
15	62743	3	Nut, 3/8-16 Serrated Flange, SS
16	62695	2	Bolt, 3/8-16 X 1 1/4" HH, SS
17	62750	4	Bolt, 1/2-13 X 3/4" HH, SS
18	62770	4	Lockwasher, 1/2" Med. Split, SS

**PARTS LIST - DRIVE MODULE (Common Parts - Clutch)
GAS ENGINE (EST-B&S, EST-Honda)**



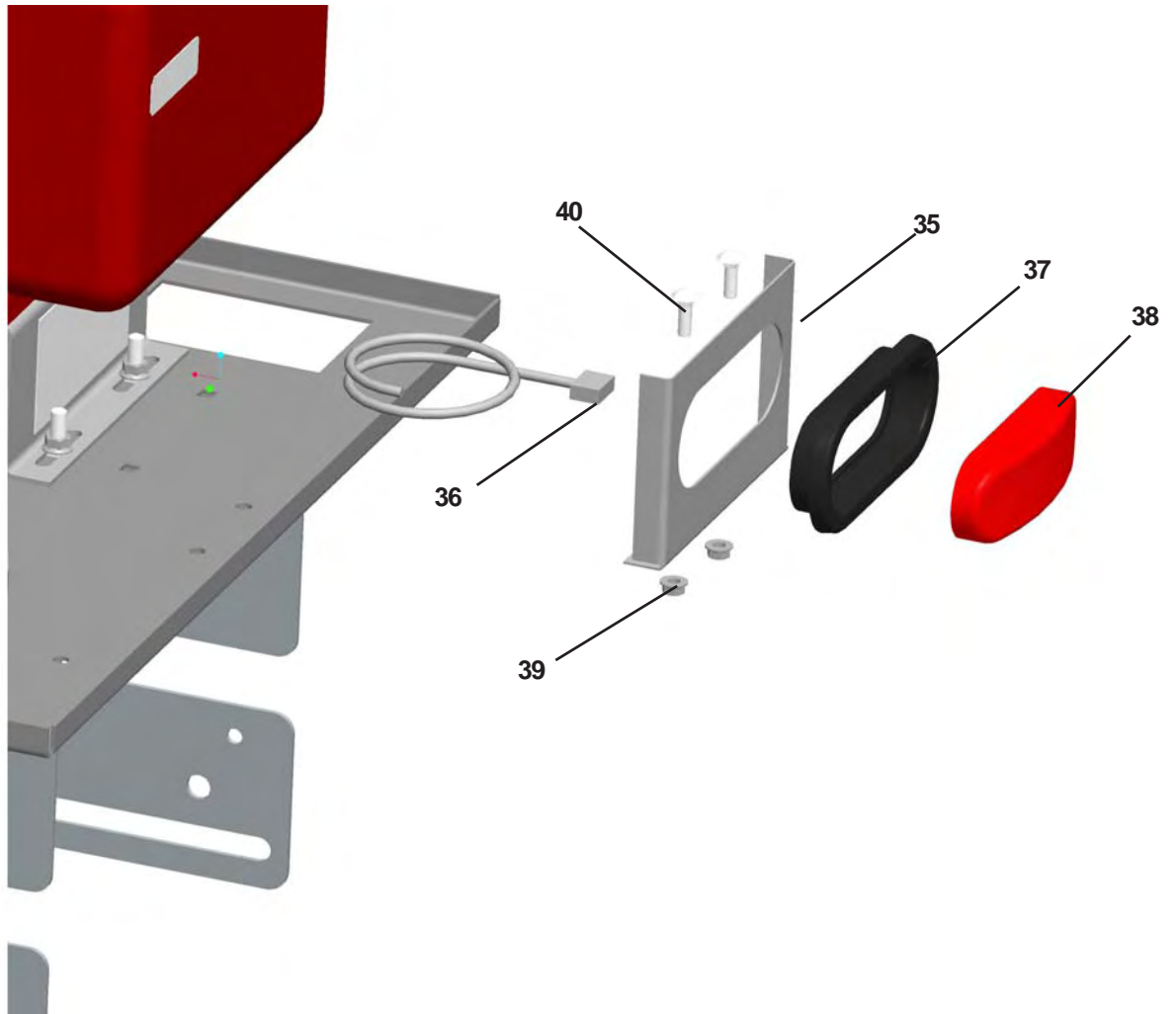
<u>Item</u>	<u>Part Number</u>	<u>Qty.</u>	<u>Description</u>
13	63410	1	Sub-Assembly, Gearbox (cont.)
13f	62769	1	Collar, Set 1"
13g	63685	1	Sprocket, 40B13-1" Bore
13h	61202	1	Snap Ring, External
18	61201	1	Key, 1/4" x 7/8" Woodruff
19	62634	3	Screw, 5/16-18 X 5/8" Socket Cap
20	20326	3	Lockwasher, 5/16 Medium Split, ZP
21	61161	1	Pulley, Driven
22	63749	1	Retainer, Clutch
23	62772	2	Bolt, 1/4-20 X 1" HH, SS
24	62690	2	Nut, 1/4-20 Serrated Flange, SS
25	61167	1	Clutch
26	63103	1	Washer, Flat, Clutch Retainer
27	62752	1	Bolt, 5/16-18 X 3/4" HH, SS
28	62940	1	V-Belt, BX-46

**PARTS LIST - DRIVE MODULE (Common Parts - Battery Plate)
GAS ENGINE (EST-B&S, EST-Honda)**



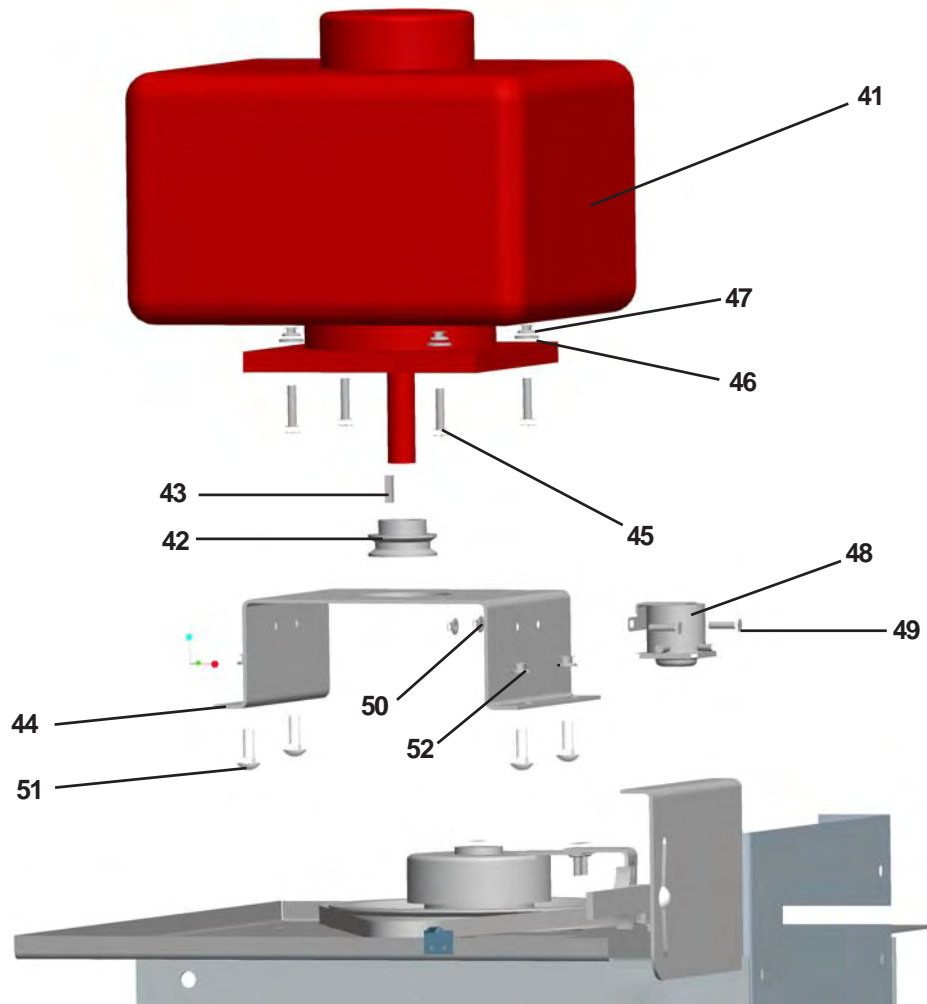
<u>Item</u>	<u>Part#</u>	<u>Qty</u>	<u>Description</u>
29	63176	1	Forming, Battery Plate
30	61206	2	Rod, Battery
31	62767	1	Holddown
32	62641	8	Nut, 5/16-18 Ser Flange Ss
33	62743	2	Nut, 3/8-16 Ser Flange Ss
34	62697	2	Bolt, 3/8-16 X 1 Hh Ss

**PARTS LIST - DRIVE MODULE (Common Parts - Stop Light)
GAS ENGINE (EST-B&S, EST-Honda)**



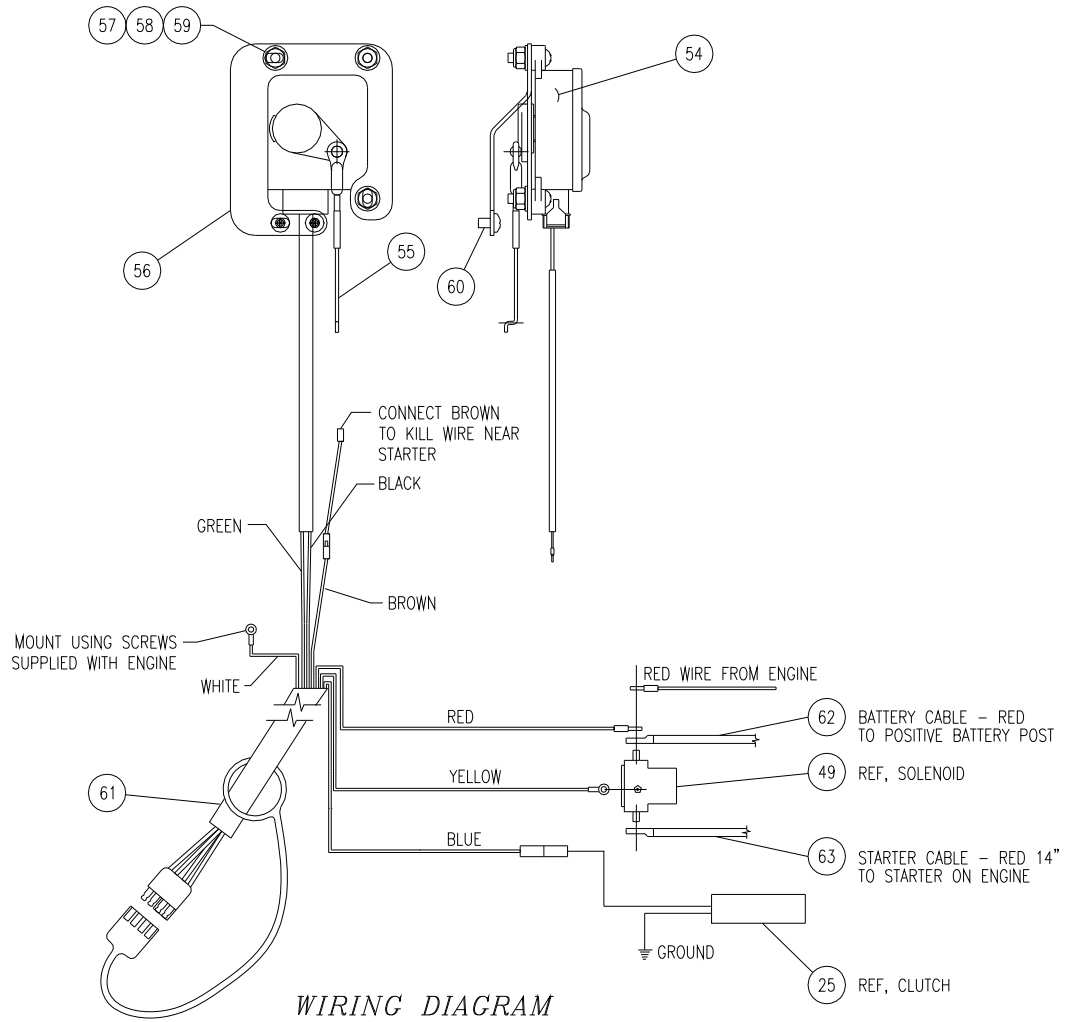
<u>Item</u>	<u>Part Number</u>	<u>Qty.</u>	<u>Description</u>
35	63155	1	Forming, Rear Stoplight Bracket SS
36	62364	1	Cable, Light Power
37	62715	1	Grommet, Mounting
38	62714	1	Lamp, Stop
39	62641	2	Nut, 5/16-18 Serrated Flange, SS
40	63175	2	Bolt, 5/16-18 X 1" Carriage, SS

**PARTS LIST - DRIVE MODULE - BRIGGS & STRATTON
GAS ENGINE (EST-B&S)**



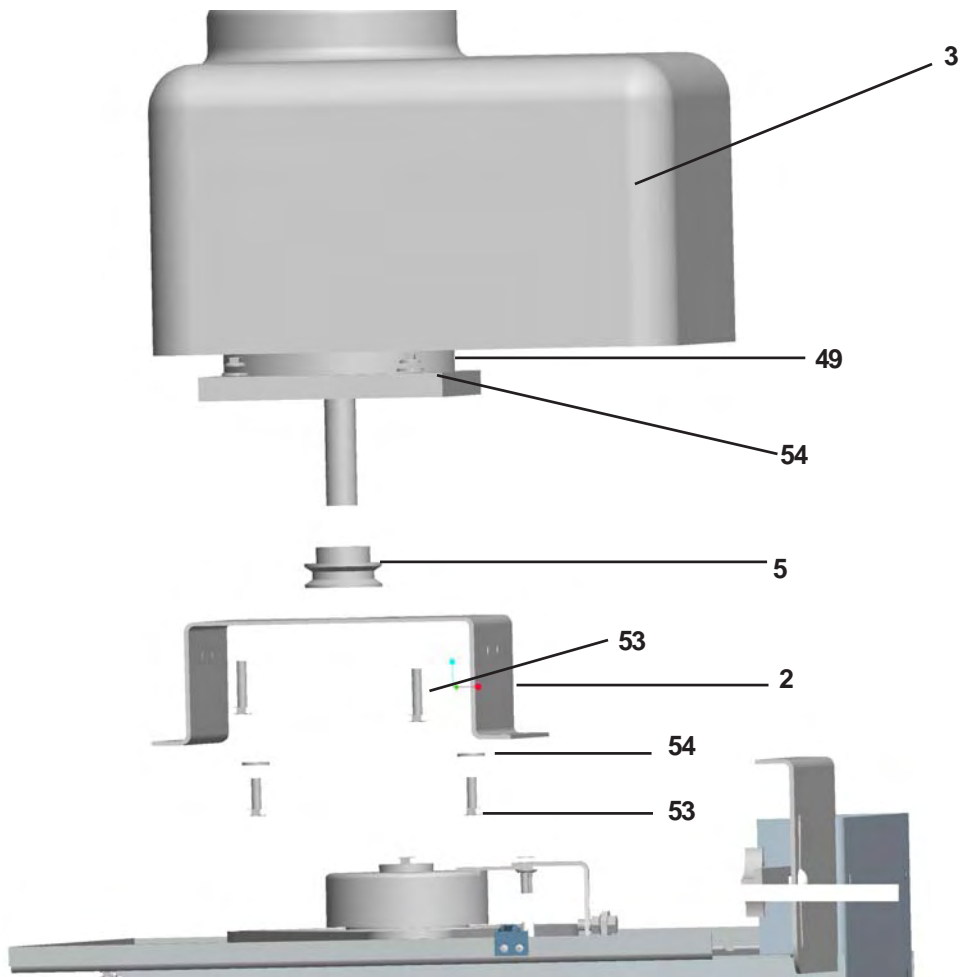
<u>Item</u>	<u>Part#</u>	<u>Qty</u>	<u>Description</u>
41	63311	1	Engine, 10.5 Hp,B&S,Vs,Intek
42	61177	1	Pulley, Driver
43	61196	1	Key, 1/4" Sq X 1"
44	63169	1	Engine Adapter
45	62773	4	Bolt, 5/16-18 X 1 1/2 Hh Ss
46	63173	4	Flatwasher, 5/16" U.S.S. Ss
47	62641	4	Nut, 5/16-18 Ser Flange Ss
48	61179	1	Solenoid, Grounded
49	62189	2	Bolt, 1/4-20 X 3/4 Hh Ss
50	62690	2	Nut, 1/4-20 Ser. Flange Ss
51	62610	4	Bolt, 3/8-16 X 1 Car Ss
52	62743	4	Nut, 3/8-16 Ser Flange Ss

PARTS LIST - DRIVE MODULE - BRIGGS & STRATTON ACTUATOR CONTROLS & SCHEMATIC



<u>Item</u>	<u>Part#</u>	<u>Qty</u>	<u>Description</u>
54	63165	1	Actuator, 12v
55	62648	1	Linkage, Throttle
56	62645	1	Bracket, Actuator, B & S
57	62649	3	Screw, #8-32 X 3/4" Phil Rd Ss
58	62651	3	Flatwasher, #8, S.S.
59	62650	3	Locknut, #8-32 Nyl Ins Ss
60	62646	1	Screw, #10-32 Pph Machine
61	63166	1	Cable, Control Spdr-Pv/Lpv/Mdv
62	63130	1	Cable, Battery-Red
63	63753	1	Cable, Starter 14" 6 Ga. Red
N/S	62040	1	Cable, Battery-Black
N/S	63125	1	Boot, Batt. Cable, Straight
N/S	62106	2	Boot, Alt. Cable
N/S	63754	1	Clamp, 5/8" Cushioned
N/S	63167	1	Cable, Control (Truck Side)

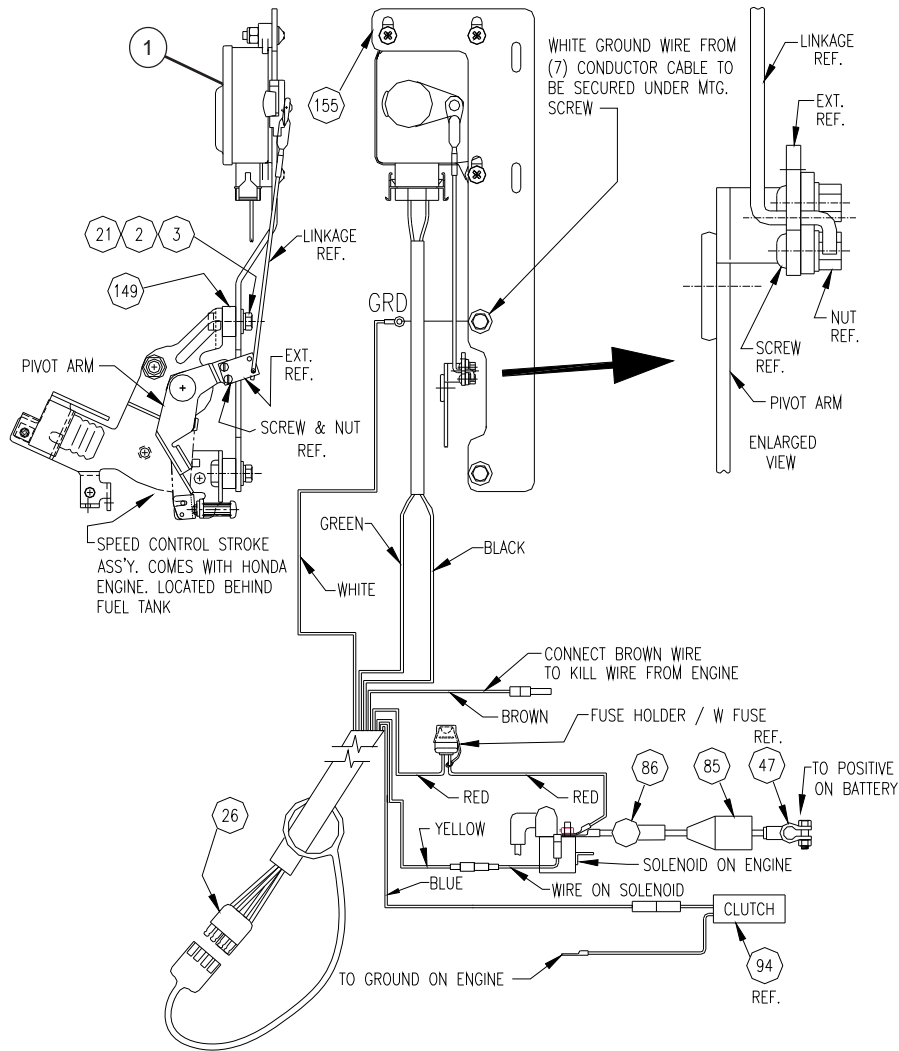
PARTS LIST -DRIVE MODULE - HONDA GAS ENGINE (EST-HONDA)



<u>Item</u>	<u>Part #</u>	<u>Qty</u>	<u>Description</u>
2	63169	1	Forming, Engine Adapter
3	63171	1	Engine, Honda w/decals
5	61177	1	Pulley, Driver
49	62641	2	Nut, 5/16-18 Serrated Flange, SS
53	63174	4	Bolt, 5/16-24 X 1" HH, SS
54	63173	4	Flatwasher, 5/16" U.S.S., SS

PARTS LIST - DRIVE MODULE - HONDA

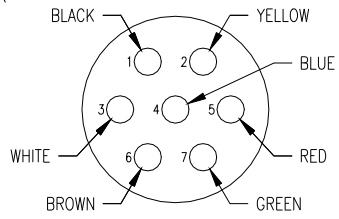
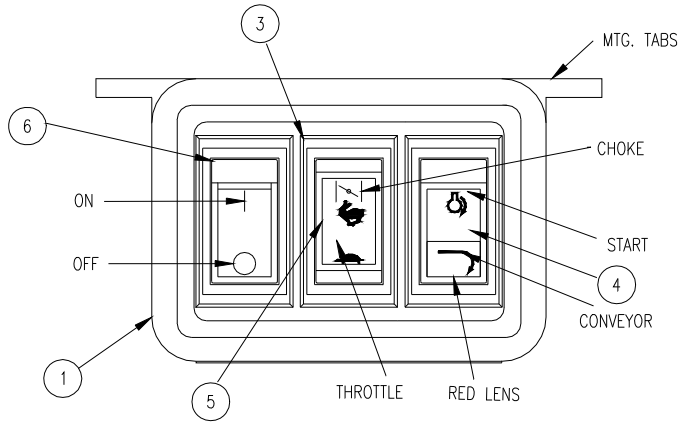
ACTUATOR CONTROLS & SCHEMATIC



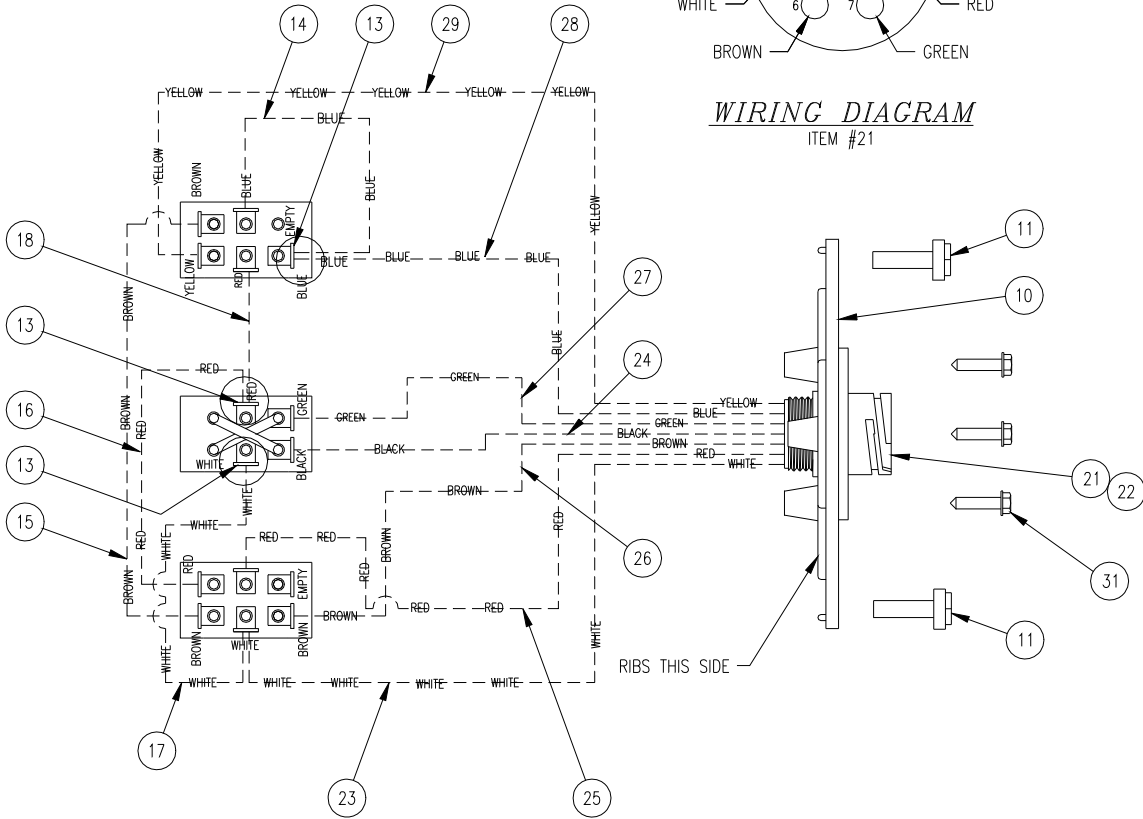
WIRING DIAGRAM

<u>ITEM</u>	<u>PART NUMBER</u>	<u>QTY.</u>	<u>DESCRIPTION</u>
1	63165	1	Actuator
2	62801	2	Flatwasher, #10 SS
3	62800	2	Lockwasher, #10, SS
21	62799	2	Bolt, M5 X 25 HH, SS
26	63166	1	Cable, Control - Spreader
N/S	63167	1	Cable, Control - Truck
47	62040	1	Cable, Battery - Black
	63130	1	Cable, Battery - Red
85	63125	1	Boot, Battery Cable Straight
86	62106	1	Boot, Alternator Cable
94	63168	1	Clutch, Electric, Inertia Dynamic
149	62339	2	Bushing, Spacer, SS
155	62703	1	Assembly, Actuator Honda Mounting

CONTROL BOX (OPTIONAL)



WIRING DIAGRAM
ITEM #21

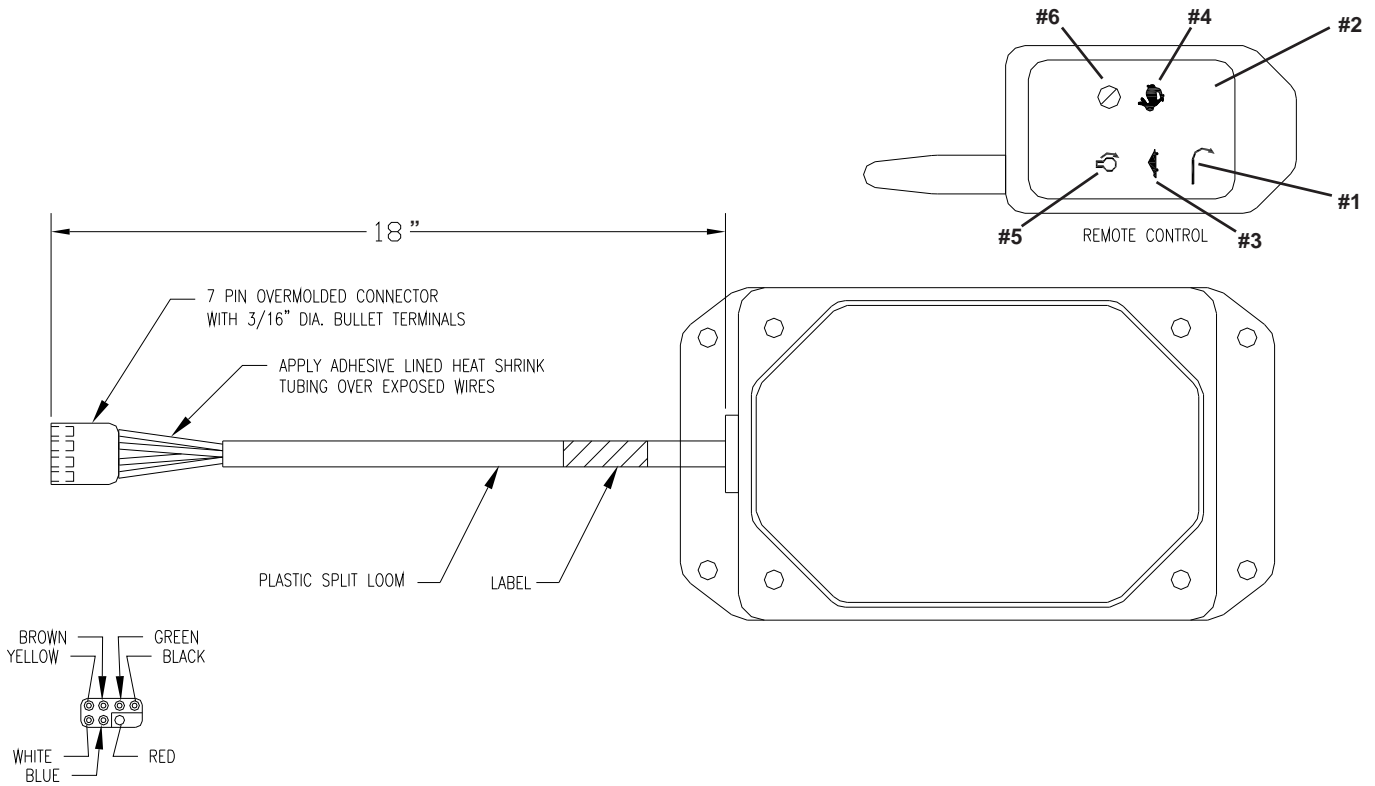


PARTS LIST FOR CONTROL PANEL ASSEMBLY (OPTIONAL)

(62334)

<u>ITEM</u>	<u>PART NUMBER</u>	<u>QTY.</u>	<u>DESCRIPTION</u>
1	62150	1	Enclosure
3	62670	2	Panel
4	62153	1	Switch, START/CONV
5	62154	1	Switch, Choke HI/LO
6	62155	1	Switch, ON/OFF
10	62158	1	Enclosure, Back Panel
11	62159	4	Screw, #8 x 1/2 SM SLT HWH ZP
13	62156	3	Conn., double M/FM
14	62161	1	Jump Wire, 14 Ga., BLUE 3"
15	62162	1	Jump Wire, 14 Ga., BROWN 5.5"
16	62163	1	Jump Wire, 14 Ga., RED 4"
17	62164	1	Jump Wire, 14 GA., BROWN 3"
18	62165	1	Jump Wire, 14 Ga., RED 3"
21	62671	1	Receptical, Sq. Flange
22	62672	7	Connector, Socket, 14 Ga., Tin
23	62673	.333	Wire, 14 Ga., White Insulated
24	62674	.333	Wire, 14 Ga., Black Insulated
25	62675	.333	Wire, 14 Ga., Red Insulated
26	62676	.333	Wire, 14 Ga., Brown Insulated
27	62677	.333	Wire, 14 Ga., Green Insulated
28	62678	.333	Wire, 14 Ga., Blue Insulated
29	62679	.333	Wire, 14 Ga., Yellow Insulated
30	62680	7	Terminal Insulated Disc. Female
31	63120	4	Screw, #4 Self Tapping Slotted Hex Washer Head

WIRELESS REMOTE CONTROL

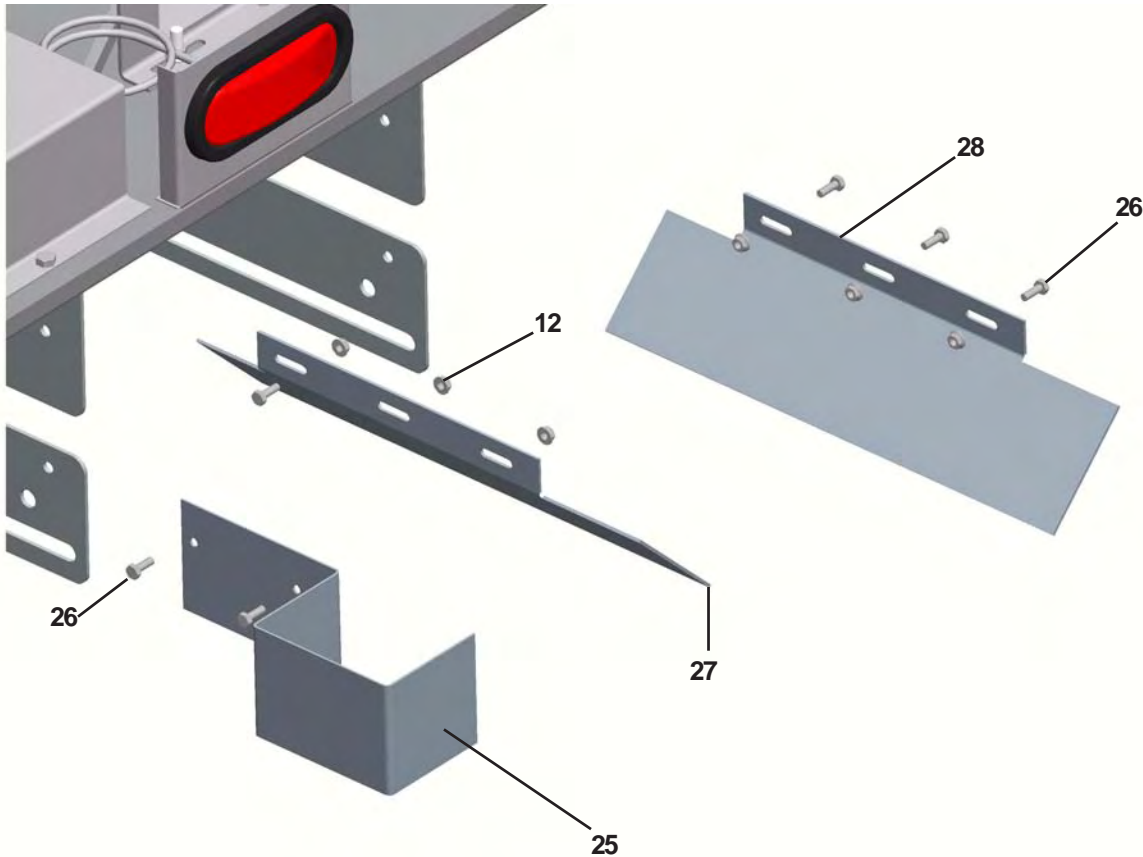


FUNCTIONS WILL BE AS FOLLOWS:

- Button #1 - Engage spreader clutch and latched
- Button #2 - Open
- Button #3 - Throttle decrease / momentary
- Button #4 - Throttle increase / set choke / momentary
- Button #5 - Engage starter motor / momentary
- Button #6 - Kill switch / motor / momentary

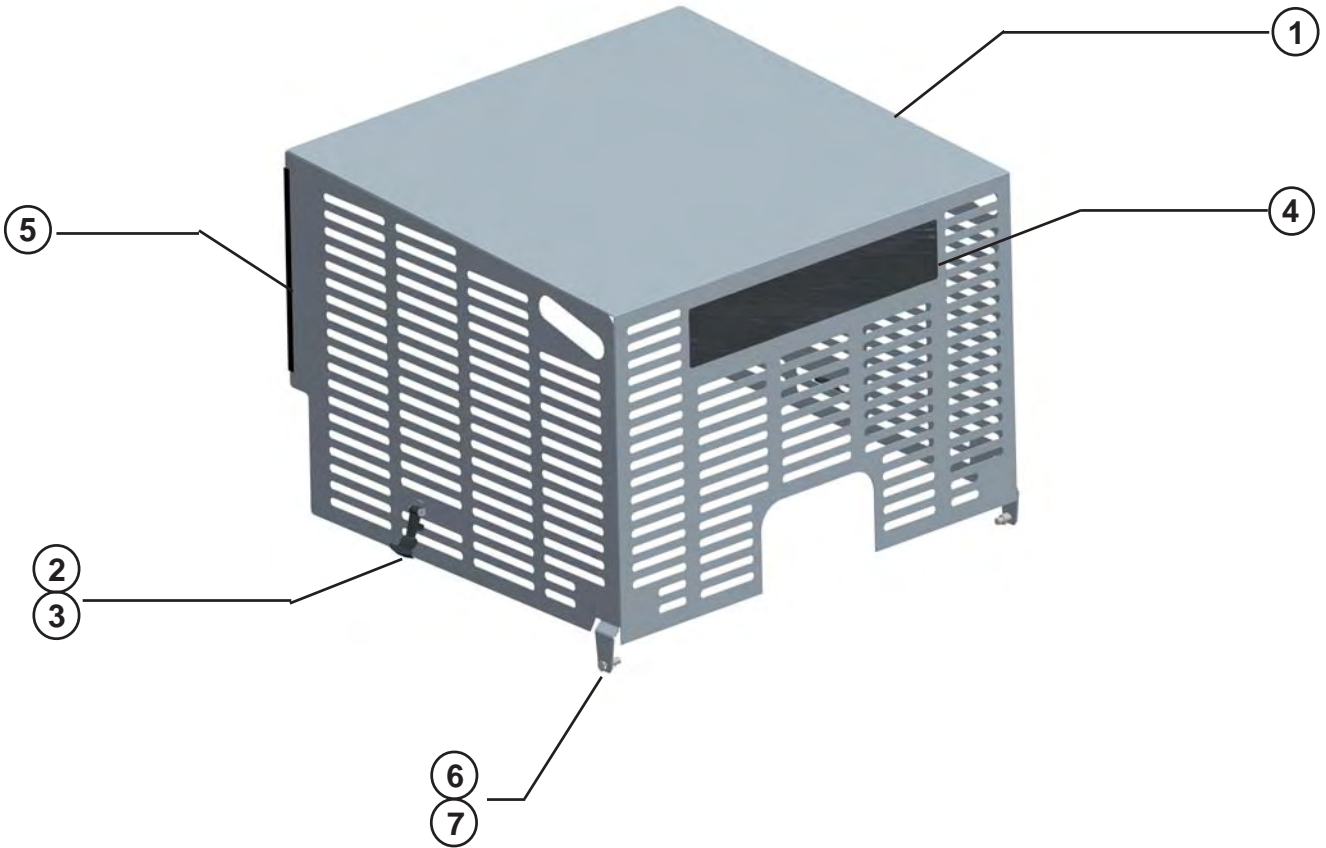
<u>PART NUMBER</u>	<u>DESCRIPTION</u>
63688	P, Spreader Remote Control
63755	Transmitter, Remote Control

PARTS LIST FOR CHAIN SHIELD



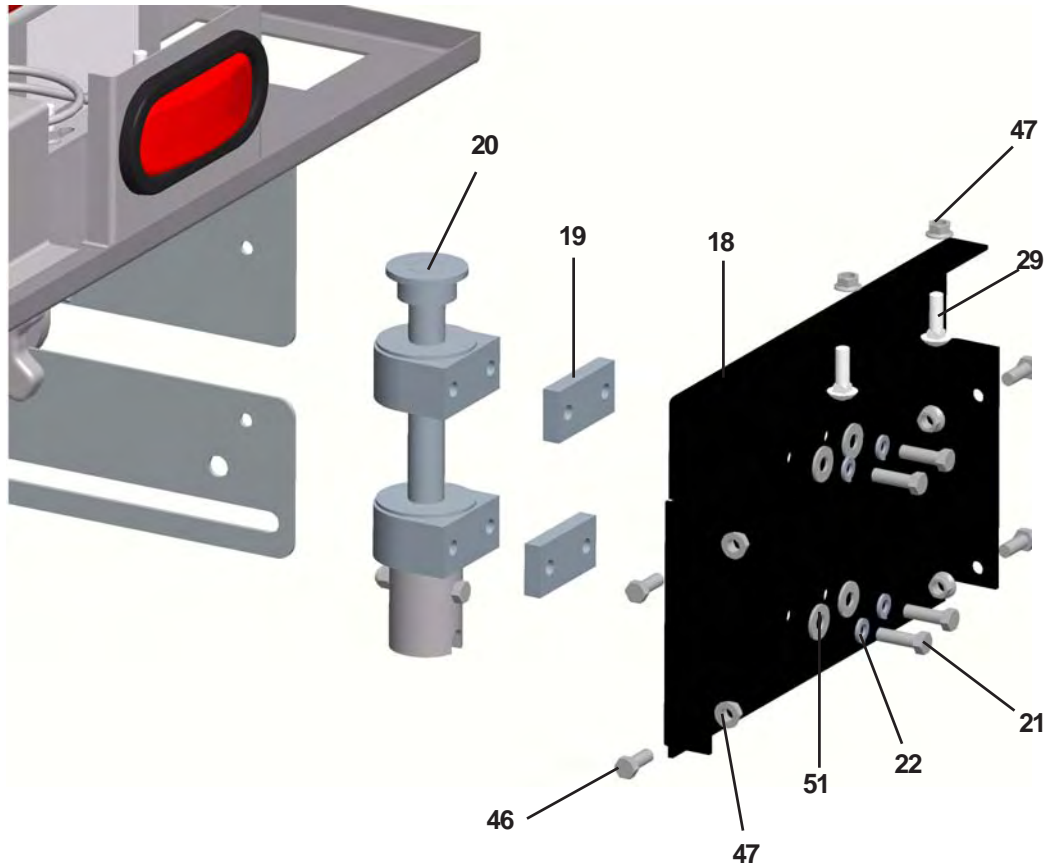
<u>ITEM</u>	<u>PART #</u>	<u>QTY</u>	<u>DESCRIPTION</u>
12	62690	8	Nut, 1/4-20 Serrated Flange, SS
25	63189	1	Chain Guard
26	62189	8	Bolt, 1/4-20 x 3/4" HH, SS
27	63190	1	Sprocket Shield LH
28	63191	1	Sprocket Shield RH

PARTS LIST FOR GAS ENGINE SHROUD



<u>Item</u>	<u>Part #</u>	<u>Qty</u>	<u>Description</u>
1	63412	1	Shroud - B & S Engine
	63413	1	Shroud - Honda Engine
2	63141	2	Handle, Rubber "T"
3	63157	4	Rivet, 1/8" x 3/8" Pop Round Head
4	63845	1	Decal, Magnum Logo
5	63128	2 ft	Trim, Vinyl
6	62697	2	Bolt, 3/8-16 x 1 HH SS
7	62638	2	Locknut, 3/8-16 Nyl Ins SS

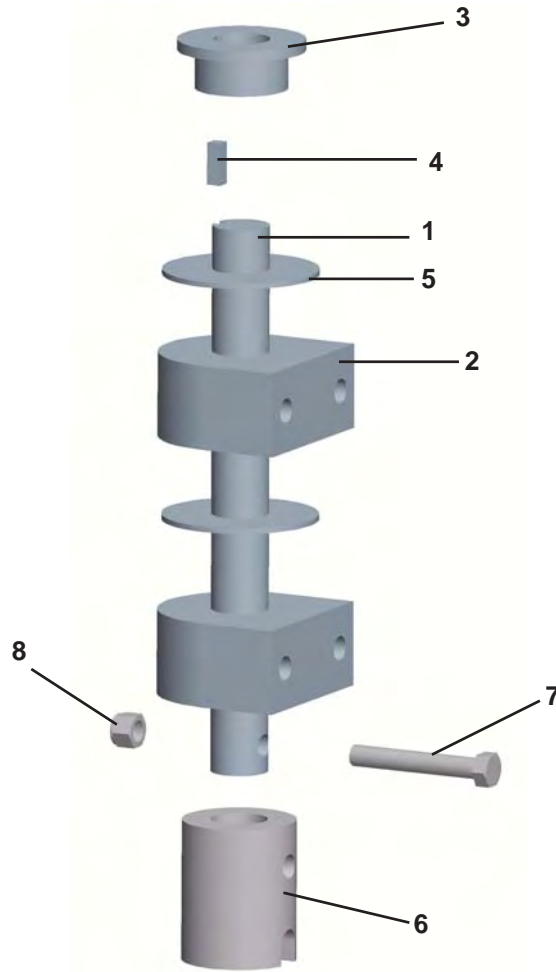
PARTS LIST FOR REAR COVER



<u>Item</u>	<u>Part #</u>	<u>Qty.</u>	<u>Description</u>
18	63718	1	Forming, Rear Cover
19	62684	2	Block, Spacer, Bearing
20	63187	1	Sub, Assembly, Spinner Drive Shaft
21	62695	4	Bolt, 3/8-16 X 1 1/4" HH, SS
22	62685	4	Lockwasher, 3/8" Int./Ext. TH., SS
29	62813	2	Bolt, 3/8-16 X 1 1/4" Carriage, SS
46	62697	4	Bolt, 3/8-16 X 1" HH, SS
47	62743	6	Nut, 3/8-16 Serrated Flange, SS
51	22230	4	Flatwasher, 3/8" U.S.S., SS
N/S	63188	1	Chain, Roller #40-55 Pitches

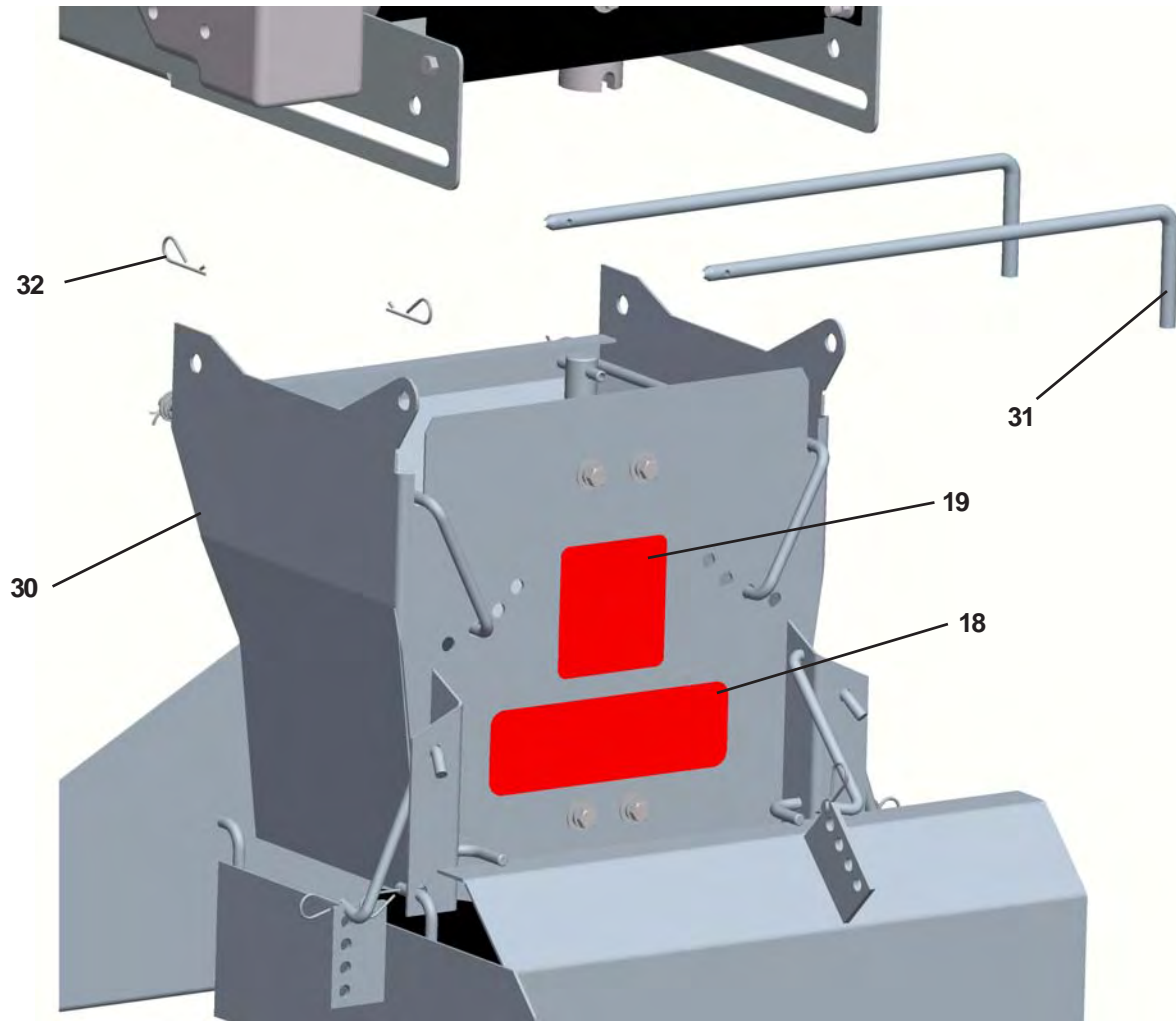
PARTS LIST FOR SUB, ASSEMBLY, SPINNER DRIVE SHAFT

(63187)



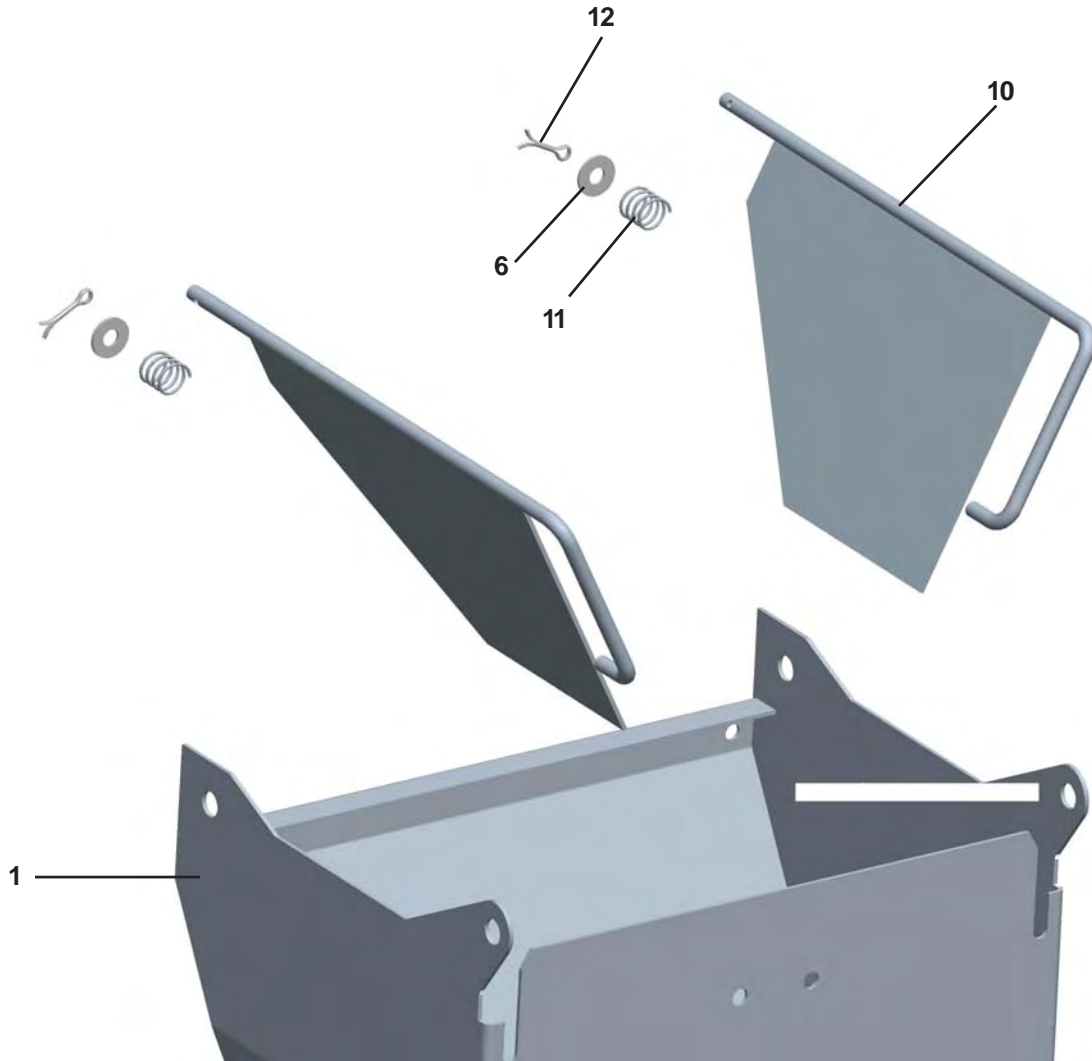
<u>Item</u>	<u>Part Number</u>	<u>Qty.</u>	<u>Description</u>
1	63144	1	Shaft, Spinner Drive Shaft
2	62356	2	Bearing, 1" Tapped Base
3	61156	1	Sprocket, 41B13-1" Bore
4	63090	1	Key, 1/4" Sq. X 3/4"
5	63143	2	Washer, Flat, Rubber
6	63142	1	Shaft, Coupling, Poly
7	20068	1	Bolt, 3/8-16 X 2 1/2", HH Gr 5, ZP
8	62696	1	Locknut, 3/8-16 Nylon Insert, SS

PARTS LIST FOR SPINNER



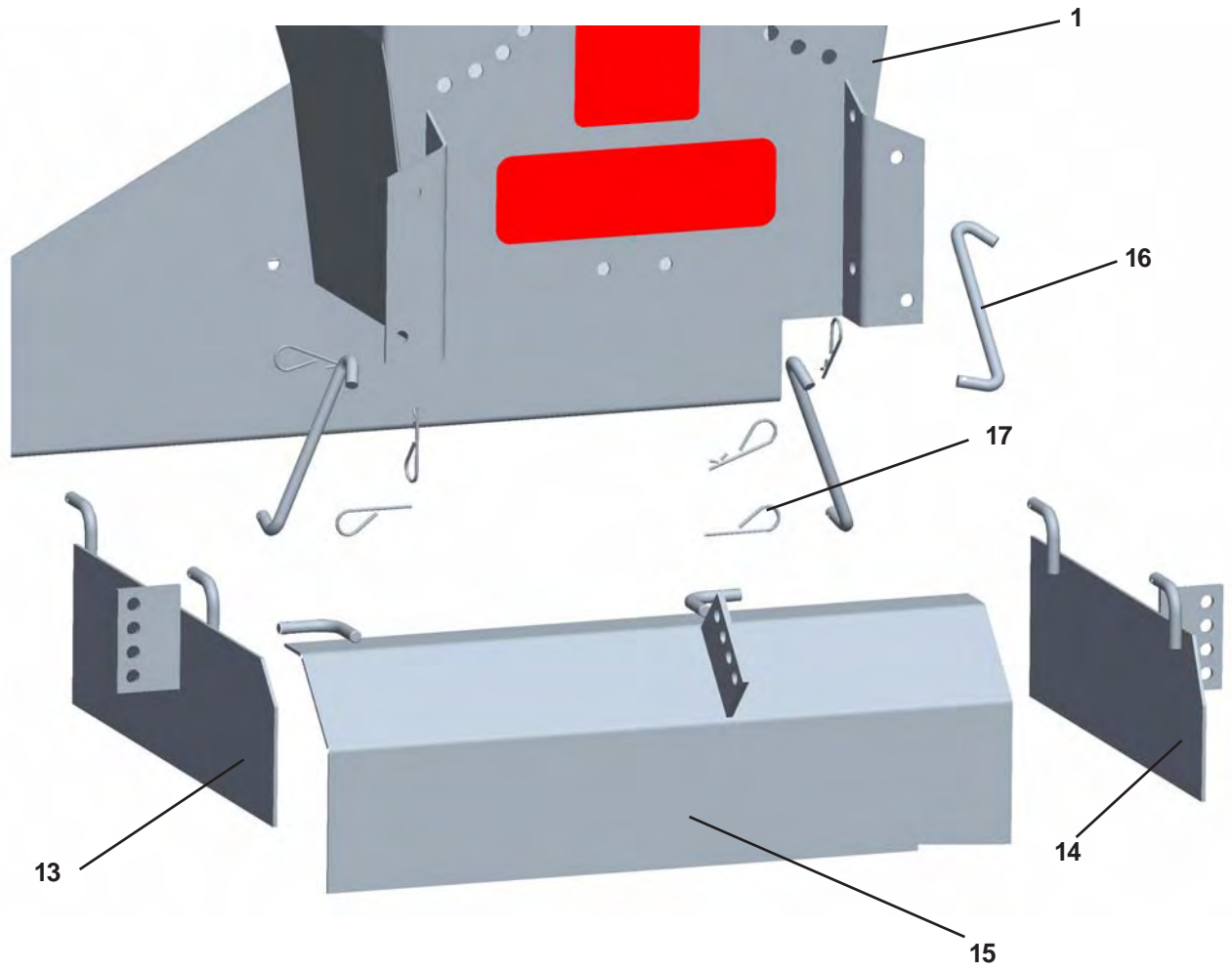
<u>Item</u>	<u>Part Number</u>	<u>Qty</u>	<u>Description</u>
18	62006	1	Decal, Danger Spinner
19	62007	1	Decal, Caution
30	63760	1	Assy, Spinner EST
31	63145	2	Rod, Spinner Mount
32	63193	2	Keeper, Hairpin, Large

PARTS LIST FOR INTERNAL BAFFLES



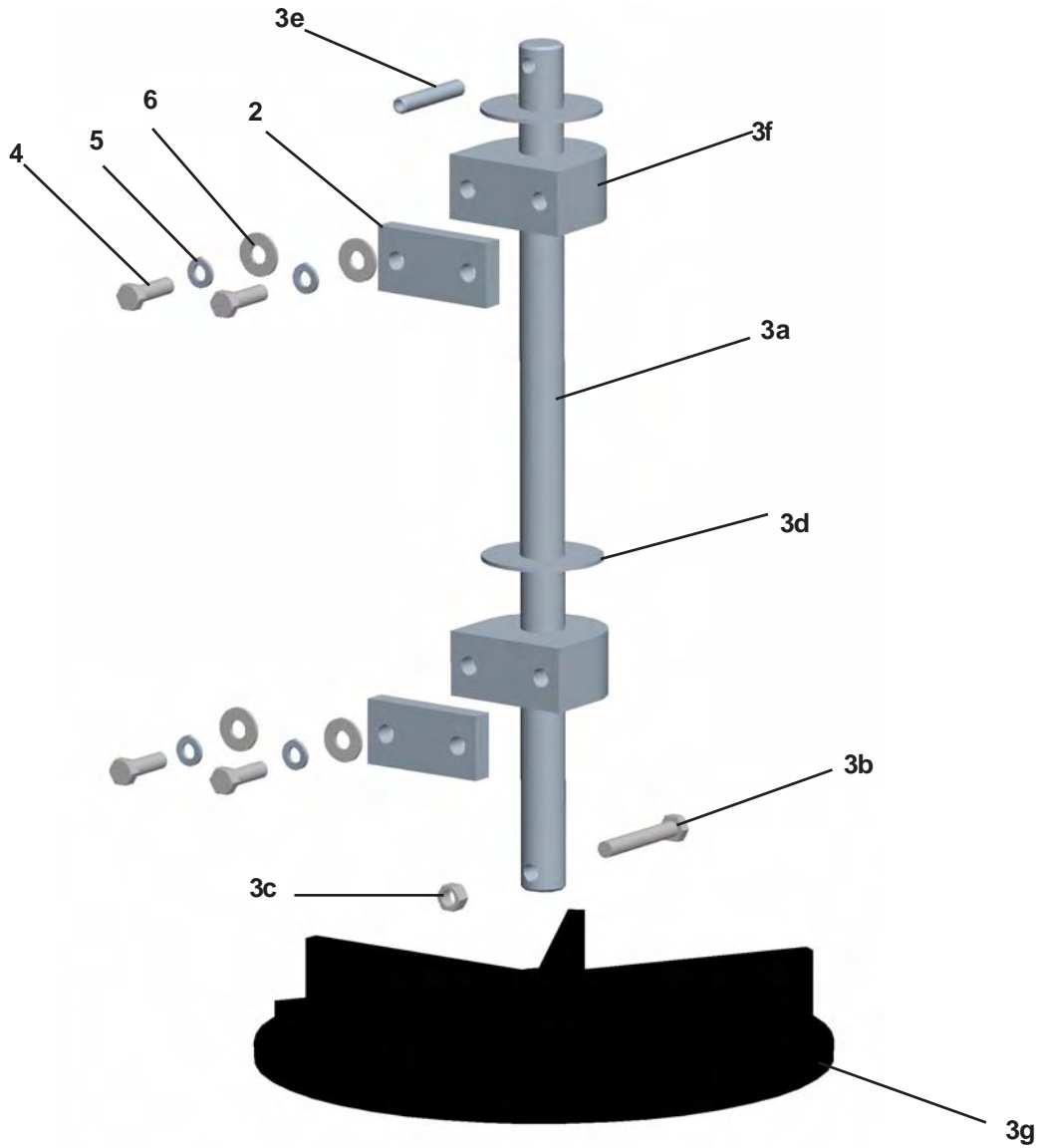
<u>Item</u>	<u>Part Number</u>	<u>Qty</u>	<u>Description</u>
1	63764	1	Spinner, Chute, EST
6	22230	2	Flat Washer, 3/8" USS, SS
10	63148	2	Internal Baffle
11	62358	2	Spring, Compression
12	62691	2	Pin, 1/8 x 1" Cotter, SS

PARTS LIST FOR EXTERNAL SPINNER BAFFLES



<u>Item</u>	<u>Part Number</u>	<u>Qty</u>	<u>Description</u>
1	63764	1	Spinner, Chute, EST
13	63194	1	Spinner Baffle, LH
14	63195	1	Spinner Baffle, RH
15	63196	1	Spinner Baffle, Rear
16	62313	3	Bar, Link SS
17	61232	9	Keeper, Hairpin, Small

PARTS LIST FOR SPINNER



<u>Item</u>	<u>Part Number</u>	<u>Qty.</u>	<u>Description</u>
2	62684	2	Block, Spacer, Bearing
3	63767	1	Sub-Assembly, Swing-Up Shaft
3a	63768	1	Shaft, Swing-Up Spinner
3b	63198	1	Bolt, 3/8-16 X 2 1/2", HH, SS
3c	63199	1	Locknut, 3/8-16 Top Lock, SS
3d	63143	2	Washer, Flat Rubber
3e	63200	1	Pin, 3/8" X 2 1/4" Roll
3f	62356	2	Bearing, 1" Tapped Base
3g	62146	1	Disc , Poly Spinner 13"
4	62695	4	Bolt, 3/8-16 X 1 1/4", HH, SS
5	62685	4	Lockwsher, 3/8" Int./Ext., TH., SS
6	22230	4	Flatwasher, 3/8" , U.S.S., SS

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Magnum Spreaders Wireless Controller

The wireless controller is a compact unit with two parts. One part is the **Base Unit (Receiver)** and the other part is the **Keyfob (Transmitter)**. The Keyfob is used to send a corresponding signal to the Base Unit to act as a remote switching device.

Set-up and Operation

The Magnum Wireless Controller comes factory programmed. That means matching the Base Unit to the Keyfob has been done by Magnum Spreaders. This gives a matched (1 of 16 million combinations @ 418MHz) interface between the Keyfob and Base Unit. See (Fig. 1 & 2) for Keyfob button assignments. On the 8 button Magnum Spreaders Keyfob, all (8) buttons are used when programming. When programmed, only (5) buttons are functional (Buttons #3 - #7).

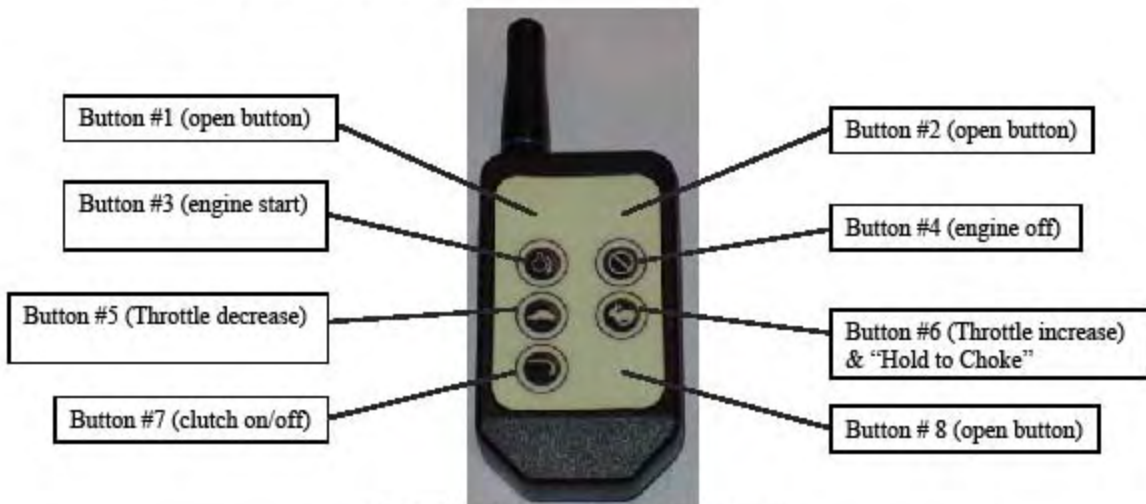


Fig. 1: Keyfob Front Button Assignments



Fig. 2: Keyfob Back Button Assignments

Revision Date: September 23, 2008



Fig. 3: Base Unit layout (Figure shown without Base Unit Cover)

Programming the Keyfob and the Base Unit:

Tools needed: A small "phillips" screwdriver and a small diameter pin (paper clip).
Please follow these steps:

1. Remove (4) screws and cover on Base Unit.
2. Power-up the Base Unit. (Connect a power source to the Male Connector).
3. On the backside of the Keyfob depress the "**ADD**" button (See Fig. 2) using a small pin or paper clip. If the Keyfob is working properly, the "blue" LED will blink for approximately 17 seconds.
4. Flip the Keyfob over and press all (8) buttons (see Fig. 1). There is no certain order to press the buttons. Press all buttons once. Perform this step before the 17 seconds are up. The Keyfob is now programmed.
5. On the Base Unit (see Fig. 3), press the black "**Learn**" button. The "red" LED will begin to blink, for approximately 17 seconds.
6. Again, on the Keyfob press all (8) buttons in no certain order. Press all buttons once. Perform this step before the 17 seconds are up. The Keyfob is now programmed.
7. Again, on the Base Unit, push the "black" "**Learn**" button. The "red" LED will stop blinking. The Base Unit is now uniquely addressed to the Keyfob.
8. Check your Keyfob's (5) functional buttons (#3 - #7) to see if they are working. If Keyfob buttons are not working, please repeat steps 3 - 8.
9. When Keyfob buttons are functioning properly, Assemble Cover back on Base Unit with the (4) screws.

Your Magnum Wireless Controller is now ready to use!

Revision Date: September 23, 2008

Battery Replacement

The Keyfob uses a standard CR2032 lithium button cell battery. In normal use it will provide 1 to 2 years of operation. To replace the Keyfob battery, gently press and slide the battery cover off. Remove the battery by sliding it out from underneath the retainer (see Fig. 4). Observe the battery polarity when replacing (“+” showing face up).

Note: If the battery loses power or is removed – the Keyfob and Base Unit will need to be reprogrammed (follow steps 3 – 8 for **Programming the Keyfob and the Base Unit**).

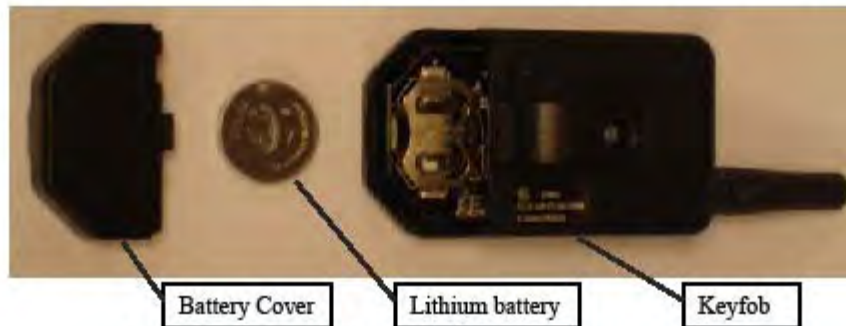


Fig. 4: Back of Keyfob with back cover and battery removed

Other Considerations

Only one transmitter at a time can be activated within a reception area. Only one carrier of a particular frequency may occupy the same airspace at a given time. This means that if two transmitters are activated in the same area at the same time the signals will interfere and the decoder on the receiver will not see a valid transmission and the wireless controller will not function. If the range of the transmitter needs to be increased, contact your supplier and ask about antenna options of up to 1000ft.

Also Magnum Spreaders has no control over the intended usage of this product. Because of that Magnum Spreaders offers no written or expressed liability as to how this product is used. Magnum Spreaders recommends that these units are intended for **OFF ROAD USE ONLY!**

TROUBLE SHOOTING

Follow these steps:

- When the base unit is powered up, make sure the “red” LED comes on when the Keyfob buttons are depressed. If the “red” LED does not come on, the Base Unit is not getting a signal from the Keyfob. If the battery in the Keyfob is more than 2 years old check battery voltage with a meter or replace battery as needed.
- After completing the above steps and the unit still will not function, follow the procedure, **Programming the Keyfob and the Base Unit**.
- If the unit still will not operate. Check connections to the component that the unit is trying to operate using a voltmeter.

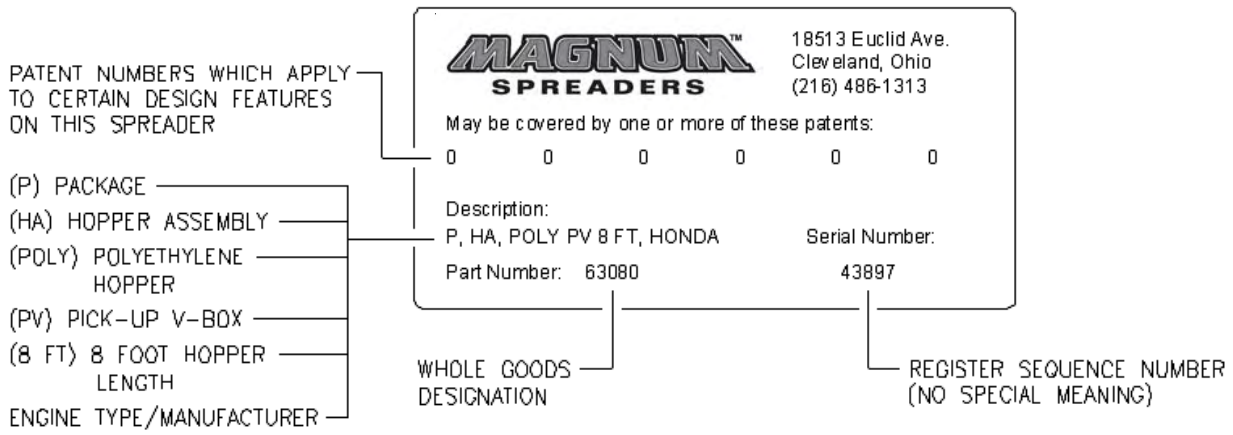
For further technical assistance please contact Magnum Spreader at (216)486-1313 or visit us at www.magnumspreaders.com.

Revision Date: September 23, 2008

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NAME PLATE INFORMATION

EXPLANATION OF SERIAL NUMBER DECAL



TWO YEAR WARRANTY

TWO YEAR WARRANTY

Magnum Spreader promises to the consumer to repair, or at our option to replace any part of this Magnum Spreader, accessory (other than noted below) except expendable parts such as pins, Spreader fins, and other normal wear items, which proves to be defective in workmanship or material under normal use for a period of two year's from the date of delivery to the original purchaser. During the two year's, Magnum Spreader will provide, through its Distributor / Sub-Distributor network, all labor or parts necessary to correct such defects free of charge. Faulty parts will be repaired or replaced by the Distributor / Sub-Distributor where that particular piece of equipment was purchased. Any cost incurred in returning the product to the Distributor / Sub-Distributor is the responsibility of the consumer.

EXCLUSIONS

IN NO EVENT SHALL MAGNUM SPREADER BE LIABLE FOR SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES OR FOR DAMAGES RESULTING FROM LACK OF NECESSARY MAINTENANCE, FROM MISUSE, ABUSE, ACTS OF GOD, ALTERATION OF ANY PRODUCT, OR FROM USE OF PARTS NOT SUPPLIED BY MAGNUM SPREADER. USE OF THE MAGNUM SPREADER FOR ANY PURPOSE OTHER THAN SPREADING MATERIALS AS INTENDED BY MAGNUM SPREADER, IS ONE EXAMPLE OF AN ABUSE AND MISUSE OF THE PRODUCT.

WARRANTY SERVICE

In order to obtain service under this warranty, the consumer must return this product to the Distributor / Sub-Distributor from whom the product was purchased or to any authorized Magnum Spreader Distributor / Sub-Distributor, transportation and freight charges prepaid. Only Magnum Spreader Distributors / Sub-Distributors are authorized to perform the obligations under these warranties. For the address and telephone number of the Distributor / Sub-Distributor nearest you, check the telephone directory or you may write to the warrantor at the address below.

GENERAL

It is the responsibility of the consumer to establish the warranty period by verifying the original delivery date. A bill of sale, canceled check or some other appropriate payment record may be kept for that purpose. For this warranty to be effective, the consumer must Register the product on-line at www.magnumspreaders.com. No person is authorized to change this warranty or to create any warranty other than that set forth herein. This warranty gives you specific legal rights and you may also have other rights which vary from state to state.

In order to validate this warranty, please go to our web site www.magnumspreaders.com to register your new Magnum Spreader.

Magnum Spreader reserves the right, under its continuing product improvement program, to change construction or design details, specifications and prices without notice or without incurring any obligation.

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MAGNUMTM

SPREADERS

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**IMPORTANT
INFORMATION
ENCLOSED**

