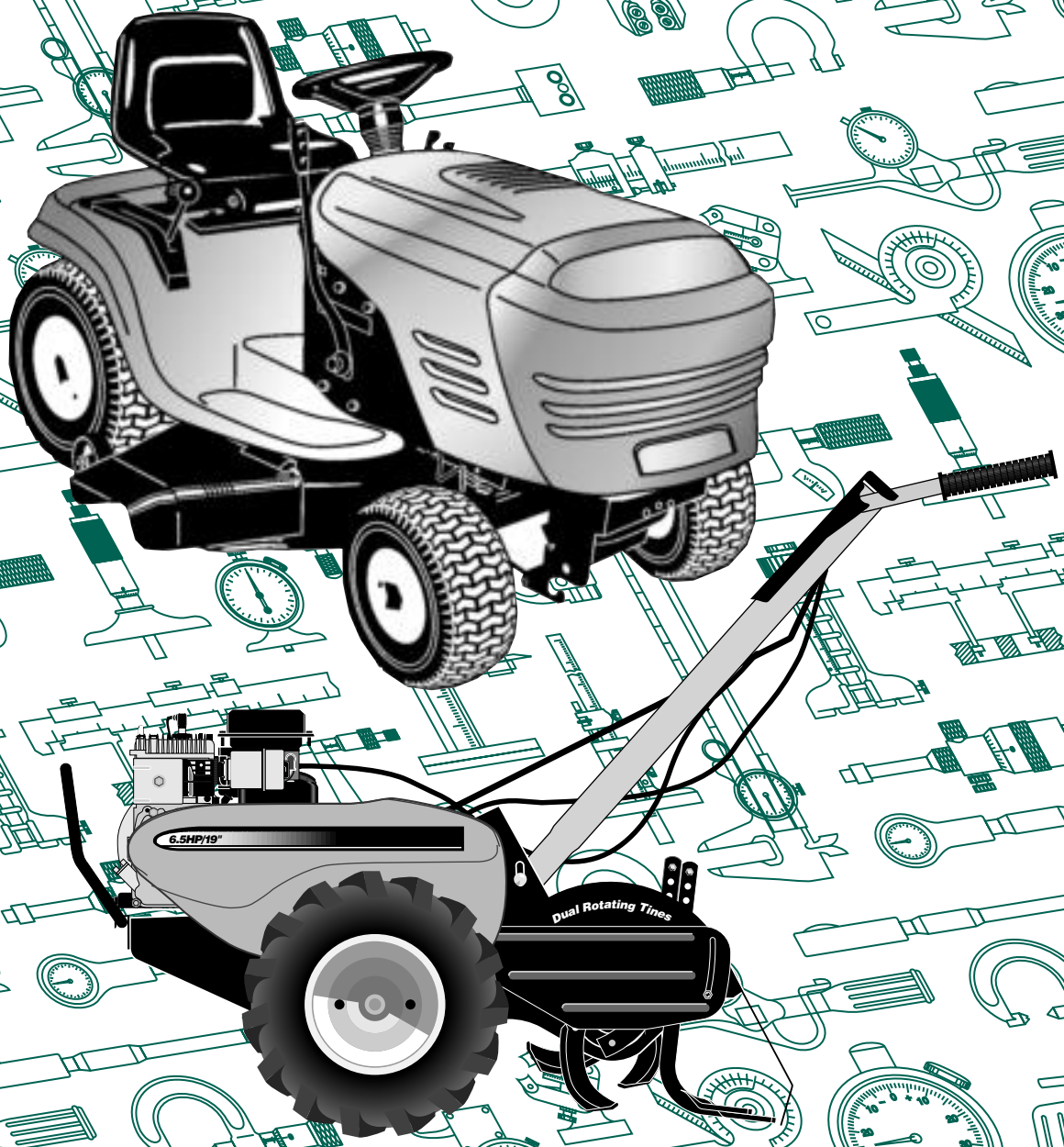
FRIGIDAIRE
HOME PRODUCTS



2000 SERVICE UPDATE INFORMATION

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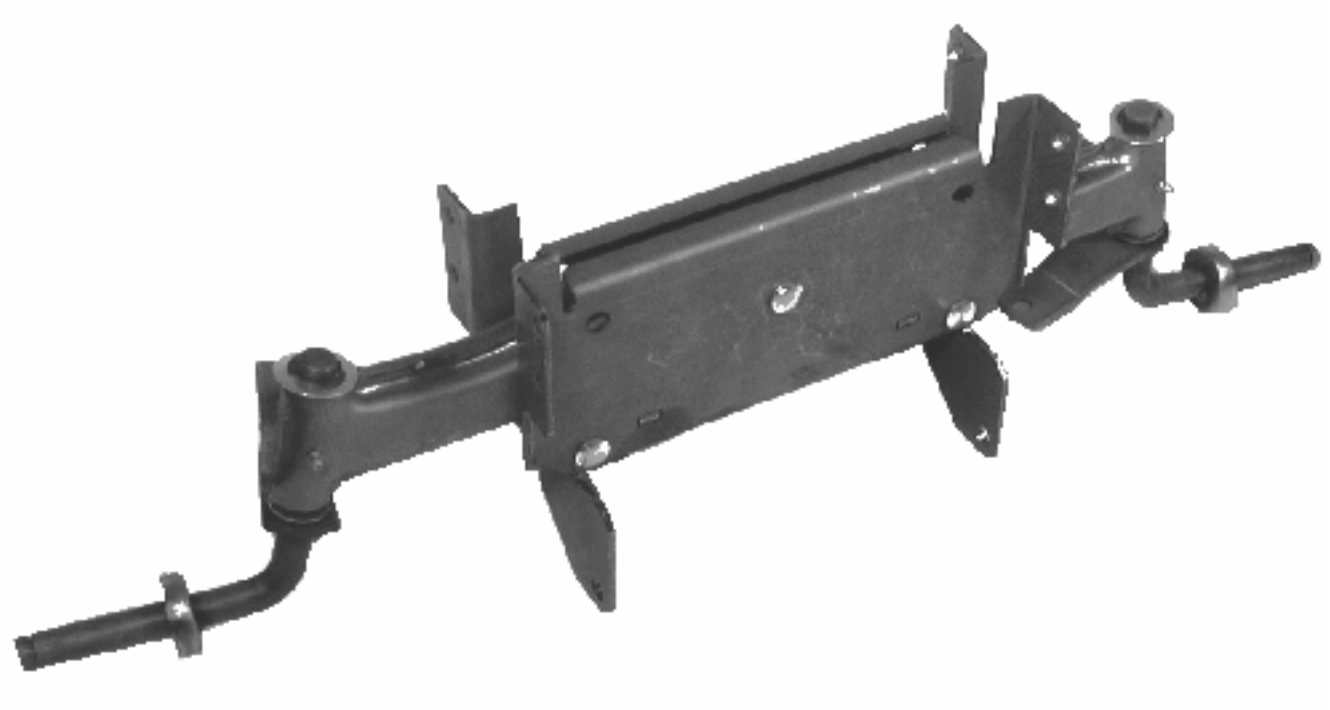
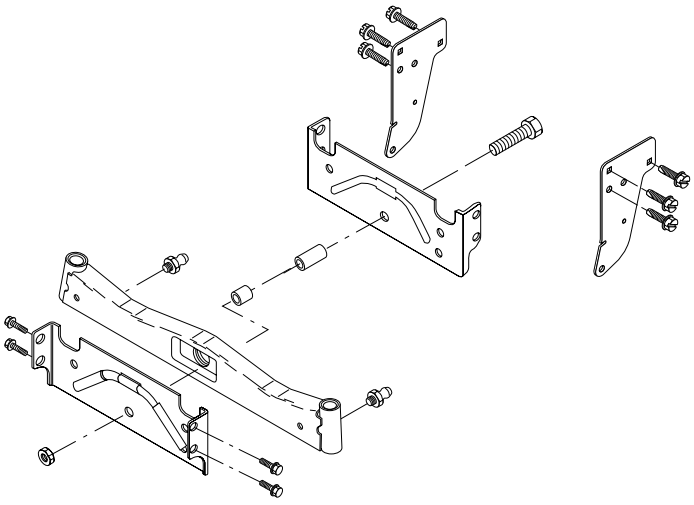
New Front Axle and Frame supports on 2000 LT

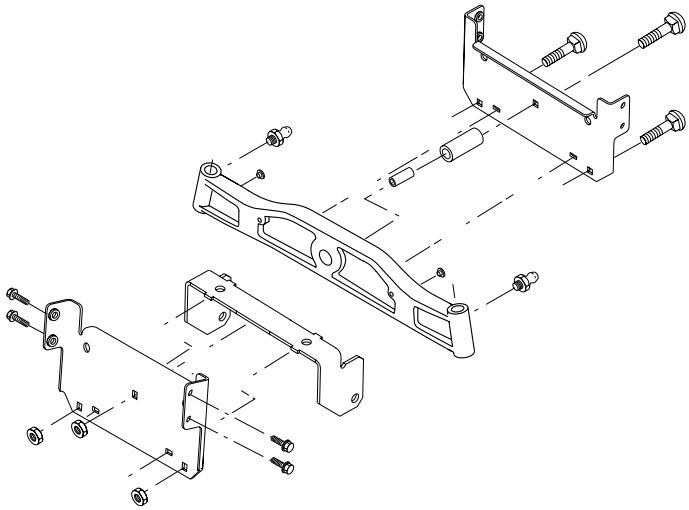


Changes to the axle area will give several benefits. The dimension for the axle channel will be fixed both above and below the axle. This will keep the axle channel from being able to spread below the axle. With this area more firmly supported, we will see less steering play as the Lawn Tractor is used;S and the steering will remain tight for longer service.The changes in this area and the spindles will also result in up to a 20% reduction in turning radius. The mower suspension points will be from brackets tied to the bottom of the axle channel supports.

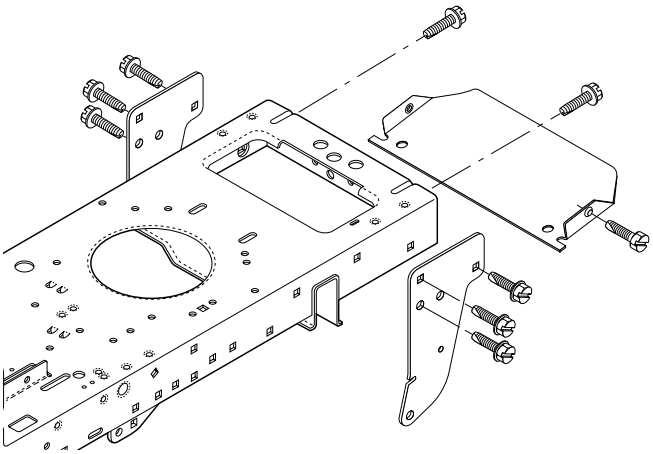
Axle and Supports 1996-1999 Lawn Tractors



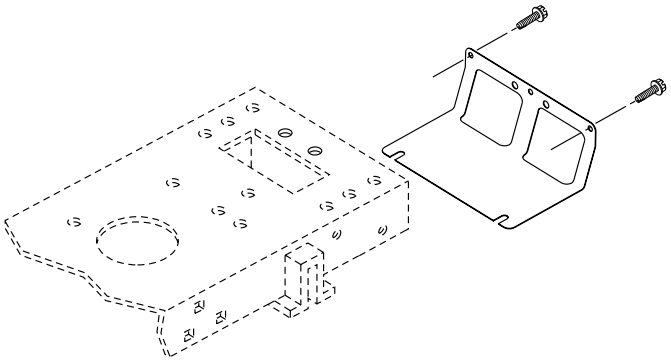
Axle and Supports for 2000 Lawn Tractors



Browning Shield on 1997-1999 Lawn Tractors



Browning shield on 2000 Lawn Tractors



Because of changes to the front axle supports, the Browning Shield will change on Model Year 2000 lawn tractors.

Winter use Heat Shield for Tractors with Metal Hoods

- **use at temperatures below 40 degrees Farenhight**
- **complaints of freezing at the carburetor or at the breather**

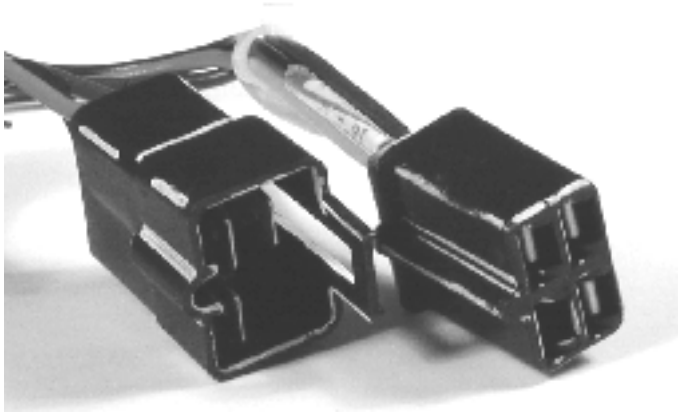
ORDERING INFORMATION: Use part Numbers

170332 SHIELD, Magnetic, Large (11 1/4 " x 14 1/2 ")
170333 SHIELD, Magnetic, Small (9 " x 9 ")

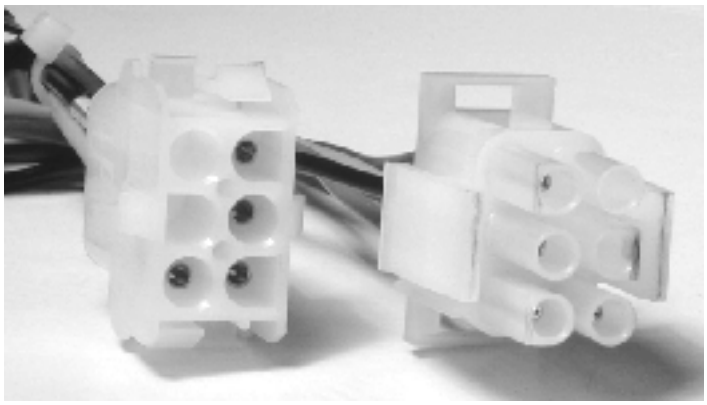
New Tractor Electrical Connector at Engine

The new connector for engines will:

- Eliminate the 'pigtail' currently needed on many harnesses
- Reduce the number of different harnesses needed
- Provide the same connector for engines from all manufacturers

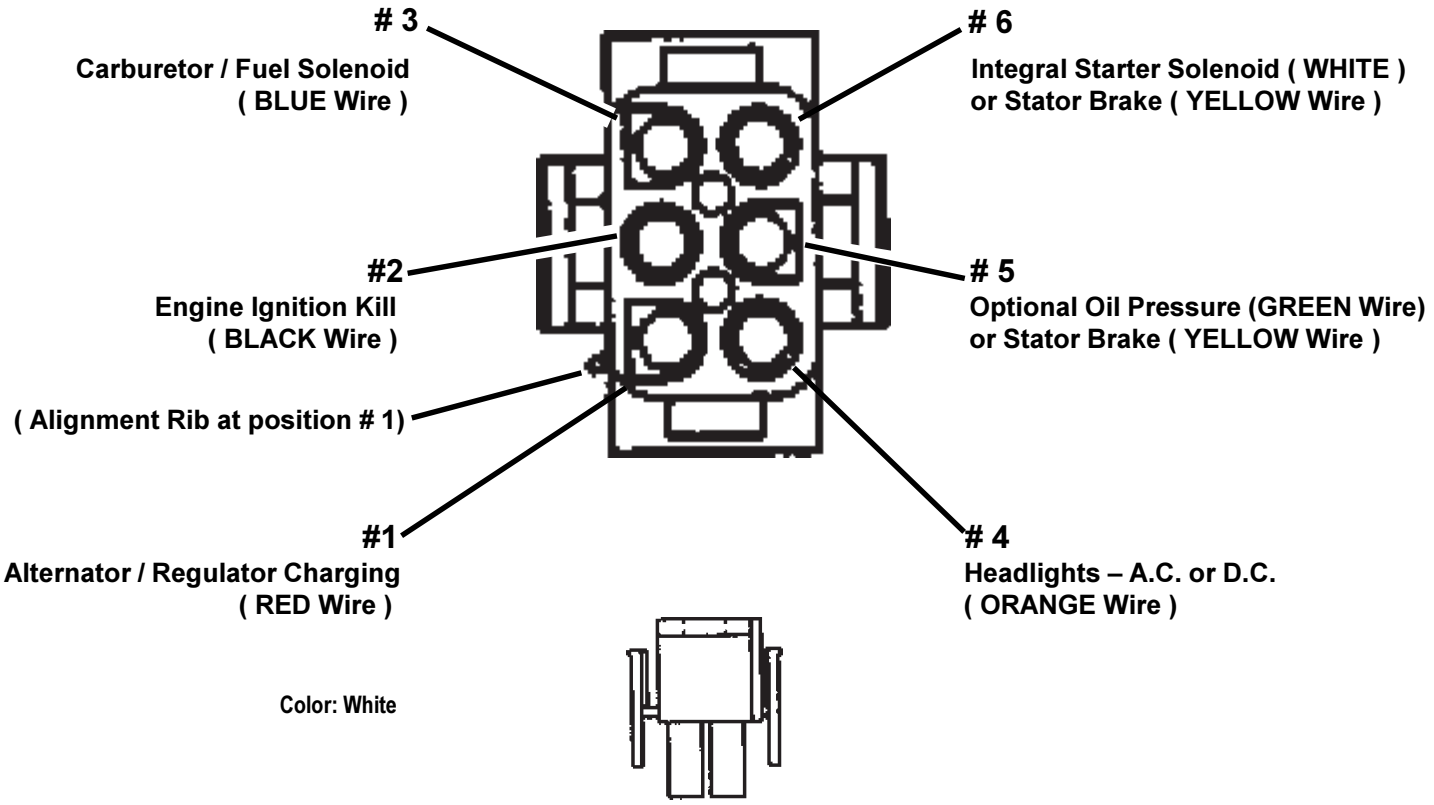


Engine Electrical Connectors before 2000



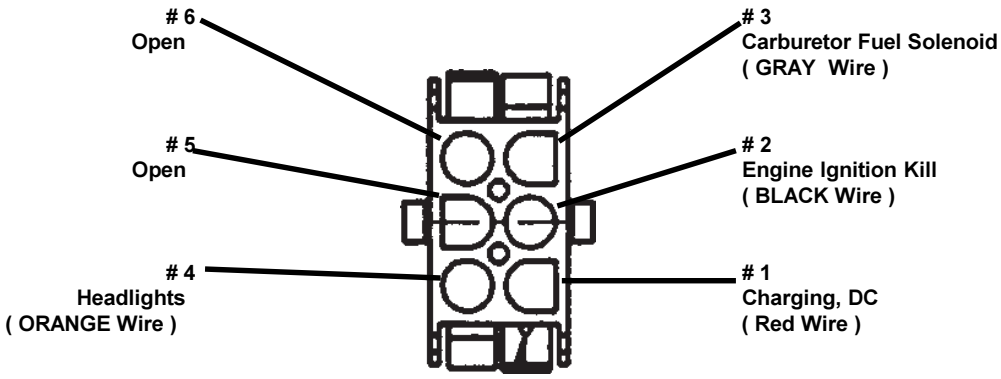
New Engine Electrical Connectors phased in for 2000

Connector used on Tractor Ignition Harness



Connector end from the engine manufacturers

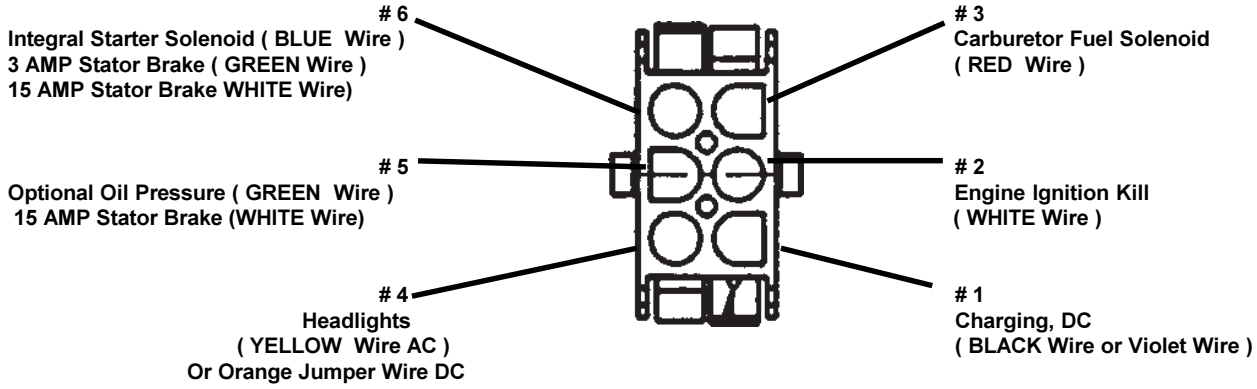
BRIGGS & STRATTON



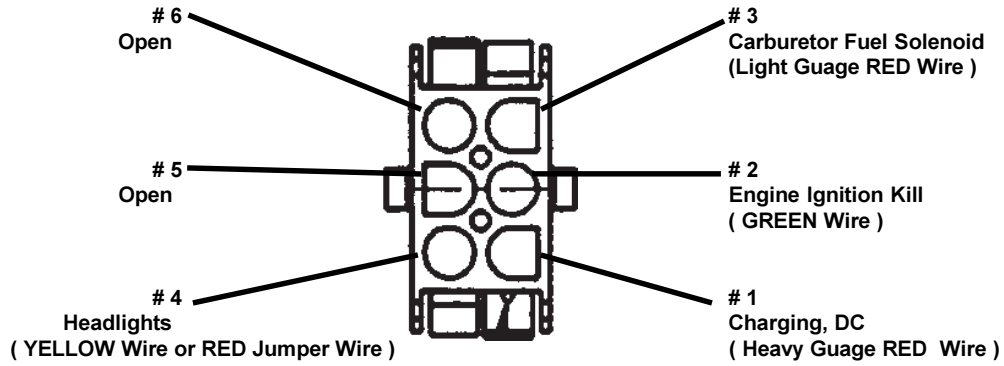
AMP part # 1-480705-0 Color: White

Use AMP Socket part # 350536-1

KOHLER

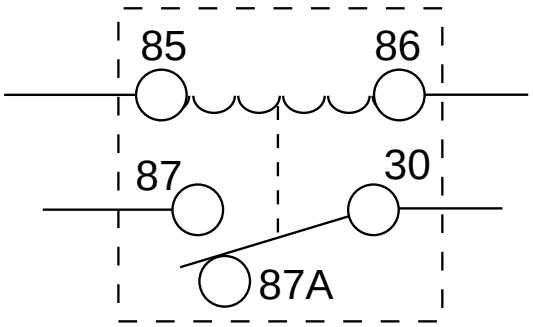


TECUMSEH



NOTE: Engines with a regulate charging system will use a jumper wire from position # 1 to position # 4 to supply DC current for headlights. Engines with a Dual Circuit charging system will have AC current from the alternator to position # 4.

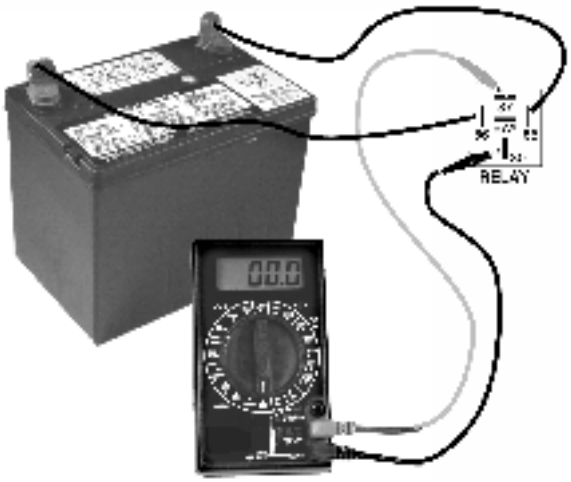
Diagnosis of **ELECTRICAL RELAY** 109748X



Remove Relay from harness connector before testing.

Test # 1, Coil Resistance

1. Set meter to Ohm's scale
2. Attach leads to Relay terminals 85 and 86.
3. There are two relays:
   if the number 49400 is on the relay it is 1998 or newer and should read **68-82** Ohms. Relays with a Hella logo were made before 1998 and should read **80-90 Ohms.**



Test # 2, Continuity when energized

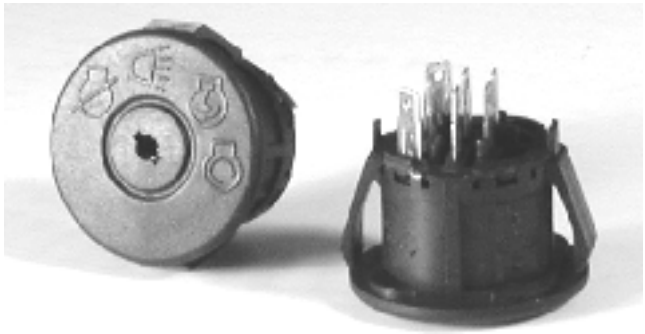
1. Attach a 12 DC volt power source to Relay terminals 85 and 86.
2. Set meter to continuity test or Ohm's scale.
3. Check for continuity between Relay terminals 30 and 87; then 30 and 87a.
4. You should have continuity between terminals 30 and 87 only when the relay is energized. If you have continuity between 30 and 87a when energized, the relay is defective.

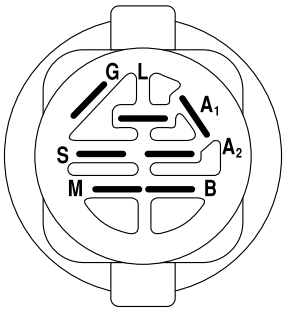
Test # 3, Continuity when NOT **energized**

1. Remove the power source from relay terminals 85 and 86.
2. Check for continuity between Relay terminals 30 and 87; then 30 and 87a.
3. You should have continuity between terminals 30 and 87a **only.**

Snap-in Ignition Switch 163968

The snap-in ignition switch 163969 will be phased into production for all production dashes during model year 2000. It is important to use the correct key in this ignition switch. **DO NOT USE** the ignition key with the two nibs on the side or the switch will fail in a short time.





IGNITION SWITCH

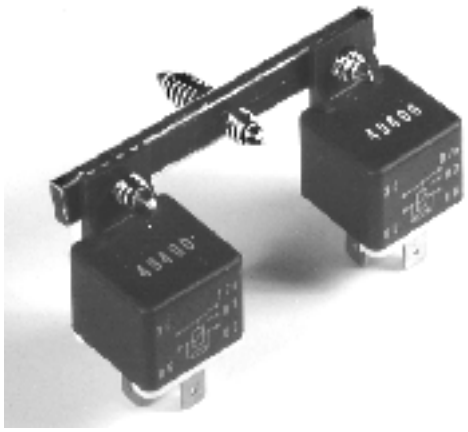
POSITION	CIRCUIT	"MAKE"
OFF	M+G+A1	NONE
RUN/LIGHT	B+A1	A2+L
RUN	B+A1	NONE
START	B + S + A1	NONE

Delta Key

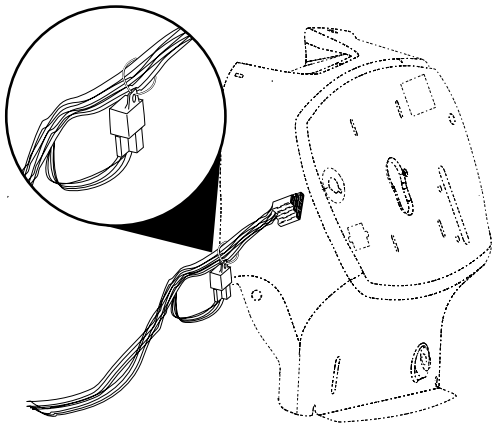
Indak Key

NEW for 2000

The 172989 Relay Hanger will be used to hold up to three relays in an upright position. It will use push on retainers both to hold itself to a panel on the tractor and to hold the relays in an up right position. The hanger will be located just under the battery tray, or other component that will keep the holder in a near horizontal position and the relays upright.

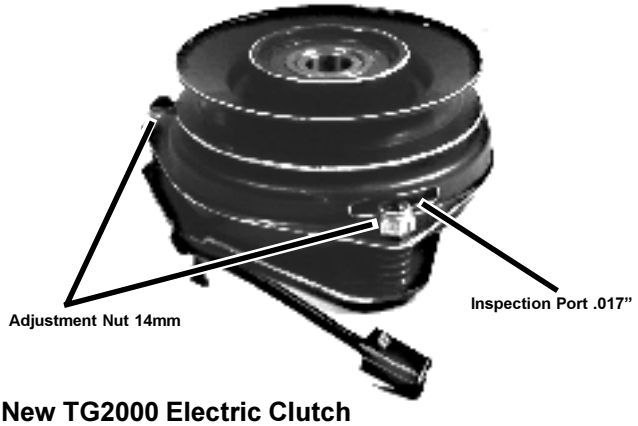


Tie the 109748X Relay in an upright position so that water cannot enter through the drain hole. Current factory production will have the relay attached with a snap in connector to the tractor. Some tractors had the relay tied upright to the wire harness. If you find a tractor where the relay or relays are not tied in an upright position, you should correct this condition.It is acceptable to tie the relay in an upright position if positioned so no levers or shafts behind the dash will interfere.



Electric Clutch Identification and Specifications

New OGURA Electric Clutch



New for model year 2000

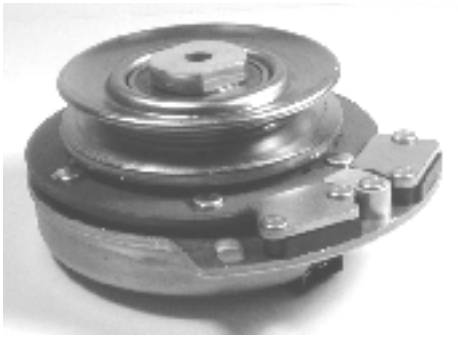
Adjustments: **.0170”**

Winding Resistance: **2.60 Ohms**

Bolt Torque: **50 – 55 Ft. Lbs**

Adjustment Nut: **14 MM**

New TG2000 Electric Clutch



New for model year 2000

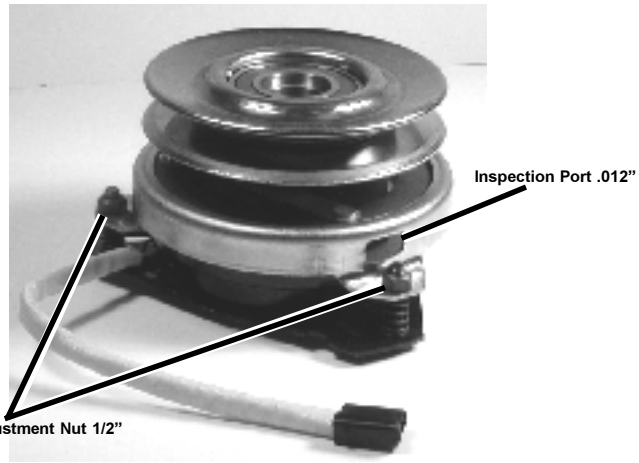
Adjustments: **None**

Winding Resistance: **2.65 - 2.95 Ohms**

Bolt Torque: **50 – 55 Ft. Lbs**

Housing Diameter **5 3/4”**

CVX Electric Clutch



Adjustments: **.012”**

Winding Resistance: **2.40 – 2.90 Ohms**

Amp Draw: **approximately 4 Amps**

Bolt Torque: **50 – 55 Ft. Lbs**

Adjustment Nut: **½ inch**

Note: a 126197X ¼” thick hardened Washer must be used with a 7/16” lockwasher

EVX Electric Clutch

Adjustments: None

Winding Resistance:
EVX – 60 = 6.46 – 7.10 Ohms
EVX – 80 = 4.35 – 4.75 Ohms

Amp Draw: **approximately 1.5 Amps**

Bolt Torque: **50 – 55 Ft. Lbs**

Housing Diameter **5 3/16”**

Symptom: Electric Clutch Doesn't Engage, Engages Intermittently, Drains Battery, Blows Fuses.

Talk to the customer

* Get a complete description of the problem.
* Let the customer help you to isolate the problem by describing the symptom.

Verify the symptom

* Operate the product to verify the complaint.
* Compare what is known about the problem with past experience, service flashes,etc.

Verify all controls are in the proper position

* PTO Switch
* Ignition Switch
* Operator in seat to energize Relay (Tractors made after July 1997)

Checking clutch electrically

Check fuse condition

* Remove fuse and verify fuse is good. Insert circuit breaker from test kit # 150834 into the fuse holder for testing purposes. Look for cut, pinched, or loose wires around the electric clutch wiring and connector. If a bad connector or loose wire is found, repair using Terminal Kit # 148691. **Note:** Be certain the connectors are securely together.

Actuate the Relay during testing

* On tractors manufactured after July 1997 there is a relay. In the energized position this relay provides a ground for the electric clutch. For the relay to be in the energized position when the PTO switch is 'ON', the seat switch will need to be actuated by having someone in the seat while doing further tests. It may be necessary to check the relay, see page 6 in this manual.

Check for 12 volts at battery and at the PTO Connector

* Check for 12 volts at the battery and at the connector for the PTO switch. Or bypass the PTO switch by using a jumper wire between red wires in the PTO switch connector. If the electric clutch engages, replace the switch. If not, check for 12 volts at the electric clutch connector.

Check for Voltage at Electric Clutch Connector

* If 12 volts is present at the clutch connector, then you can assume the PTO switch, Relay, and battery voltage are good. If the clutch still does not engage, insert the meter leads into the connector from the electric clutch and take a Ohm's reading. Compare this to the winding resistance for the clutch you are testing. If acceptable, check continuity from each clutch connector terminal to a good ground on the clutch. If continuity is found the windings are grounded and the clutch must be replaced.**If evaluating a CVX clutch** that still does not work, check the amperage which should not draw over **4 Amps**, if it does the **.012" air gap** must be checked. If evaluating the **OGURA clutch**, check the **air gap at .017"**.

Checking clutch mechanically

Check Compliance

*** Check to be sure that the mower blades stop within 5 seconds after the PTO switch has been disengaged. If the blades do not stop within 5 seconds on a CVX or an Ogura electric clutch, recheck the air gap. If the blades still do not stop within 5 seconds, replace the clutch. NOTE: It's not common for the brakes to wear out on a clutch, the problem on a clutch can usually be resolved by adjusting the air gap.**

Check Air Gap on CVX electric clutch

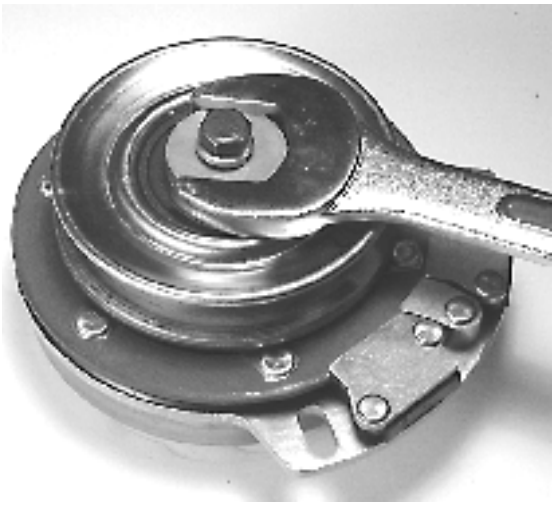
* If the Ohm's reading is good (between 2.40 and 2.90 Ohm's) the air gap must be checked. Turn ignition switch and PTO switch to 'OFF' position. Disconnect the spark plug wires and secure away from the spark plugs, also remove the fuse. Use Tecumseh **air gap gauge part number 670297** and cut into three strips (or use a .012 feeler gauge). Insert into each window between plates and tighten the three adjustment nuts one at a time (rotating) until air gap gauges (feeler gauges) slide out of each window with little resistance. **NOTE:** This is the preferred method. The clutch can also be adjusted one window at a time.

Electric Clutch Bolt Torque

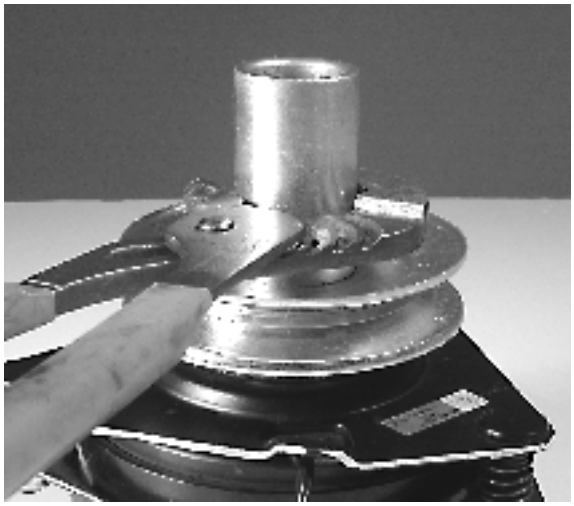
Installation

It is critical that the electric clutch bolt be at 50 - 55 Ft.Lbs of torque. A torque wrench is required. Use blue locktite on the bolt. On the EVX and TG 2000 clutchs, a 1 3/8" open end wrench will fit onto the two flat sides of the hub to hold the clutch in position while torqueing the bolt, see picture below. On the OGURA and CVX clutches, a 10" to 12" channel lock pliers will hold the engine pulley hub, which is keyed to the crankshaft, to hold position while torqueing the bolt.

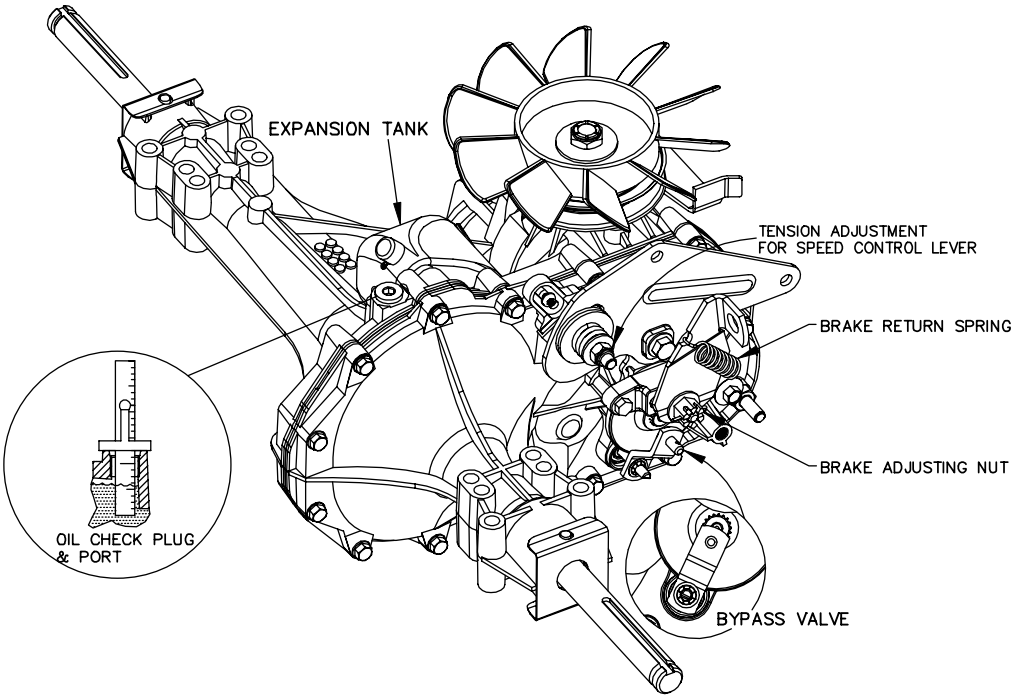
Torque Bolt on EVX Clutch



Torque Bolt using channel locks to hold position



New for 2000, the 0510 Automatic Transmission from HYDRO-GEAR for Lawn Tractors

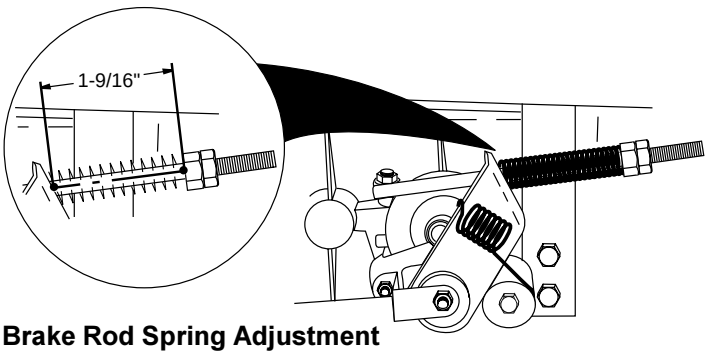


Oil should NOT be checked unless there is a complaint about the operation of the transmission. There is a gold colored plug in the top of the transmission. Clean the underside of the frame and the top of the transmission before checking the oil level. Contamination cannot be allowed to get into the transmission. When the plug is removed, a 6 inch metal scale can be used to check the oil level. When the transmission is cold, the oil level should be from **.50 to 1.25 inches** from the top of the casting. **20W50 engine oil** can be added to the level of the bottom thread for the oil plug. The oil never needs to be changed for maintenance.

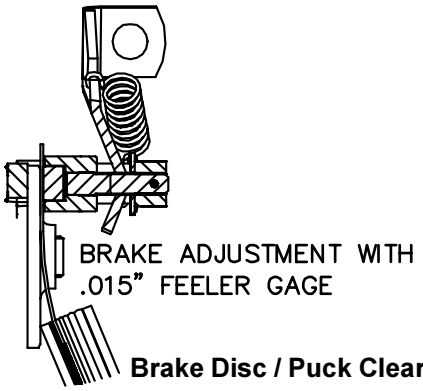
The 0510 transmission has an expansion tank. This allows for oil to expand into the tank when the transmission is hot, and as the oil cools it is drawn back inside the transmission. The expansion tank will be silver-gray in color and should not be opened.

If you are working on a tractor where the operator experiences transmission complaints:

- Check to see that the **brake return spring** is in position.
- Check the movement of the **by pass valve** and the **freewheel control rod**.
- Check the **brake adjustments**, if adjusted too tight, the transmission can overheat.

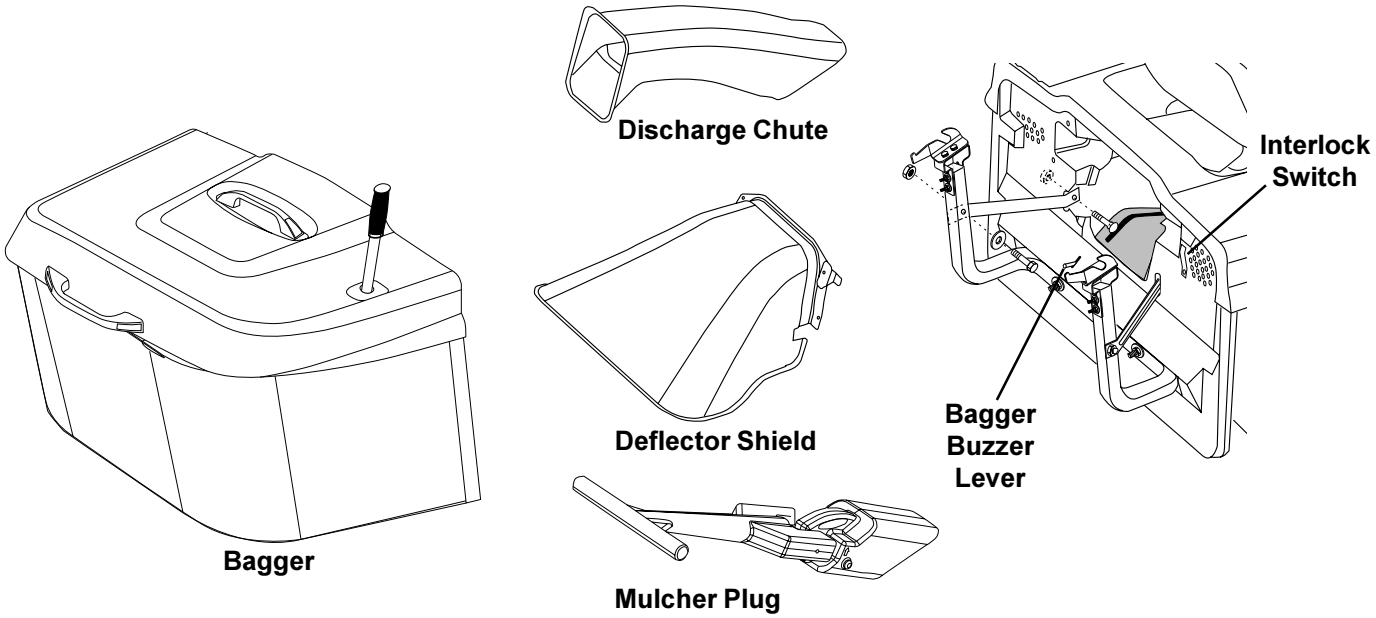


Brake Rod Spring Adjustment



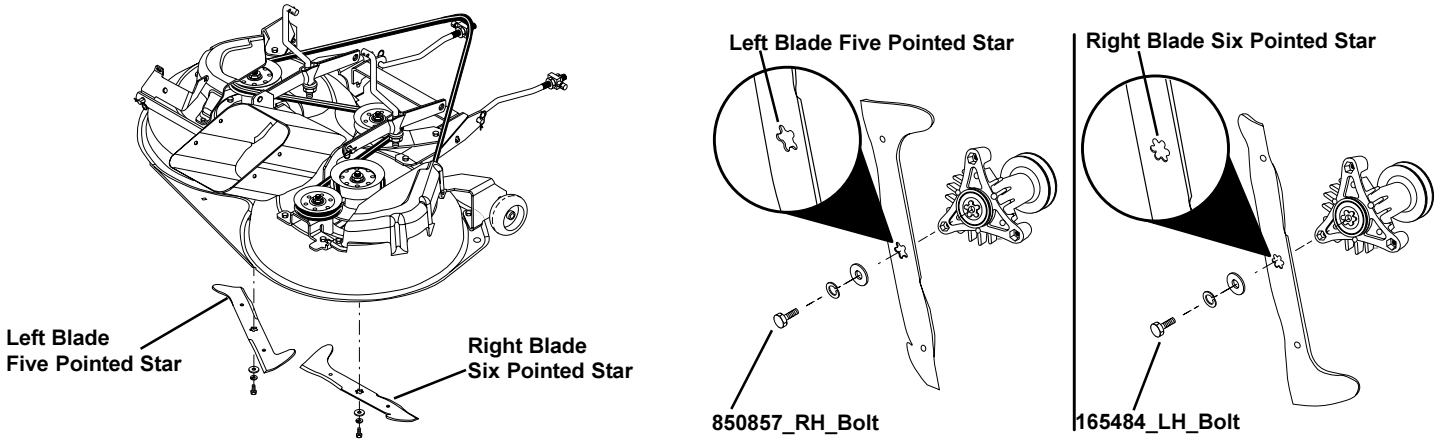
Brake Disc / Puck Clearance

Center Rear Discharge (CRD) Mower Decks available in 92 cm and 107 c.m. cutting widths



The center discharge mower decks have options of bagging, discharging, or mulching. When the mulcher plug is to be used, the bagger assembly or the deflector shield must also be installed. There is an interlock switch on the back of the tractor. The deflector shield and the bagger assembly have a tab to actuate this switch that the mulcher plug does not have.

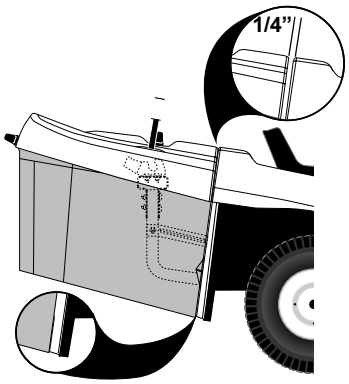
There is a bagger buzzer lever on the back of the tractor. When the grass holds the lever down, a buzzer will sound. When the mower is disengaged, the buzzer will stop. This system may need fine tuning for various grass conditions. If the buzzer sounds when the bagger is less than full, you may need to cut 1/8" segments off the lever tubing. Be careful not to cut off too much. If the buzzer does not sound and grass clogs down to the chute and deck, you will want to make the lever longer. This can be done by putting a screw into the end of the lever tubing used for the lever.

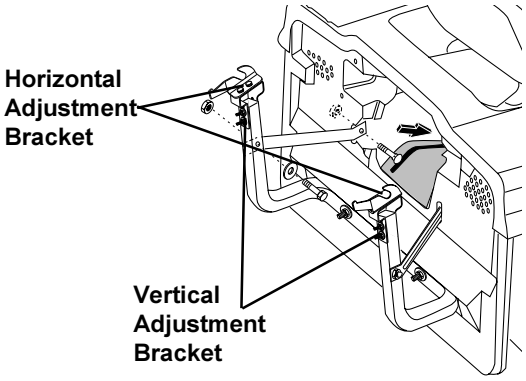


The blades rotate in opposite directions and are a unique design. The right side blade will have a six point star so that it cannot be placed on the left side, which has the five point star used on other blades. The right side Grade 8 blade bolt is a **left hand thread**. Models designed for North America will operate at 3,300 RPMs, and full throttle for European models is 2,600 to 2,800 RPM.

If the **deck idler bracket** is not moving freely the **mower drive belt** will fail in a short time.
Check for the proper movement of this bracket on the deck.

Center Rear Discharge Bagger improvements for 2000





BAGGER ADJUSTMENT – For proper bag function and appearance, it may be necessary to adjust the bagger assembly. There should be ¼" – 3/8" gap between the bagger top and the fender. The bagger top surface should be even with the top surface of the fender. To adjust bagger position:

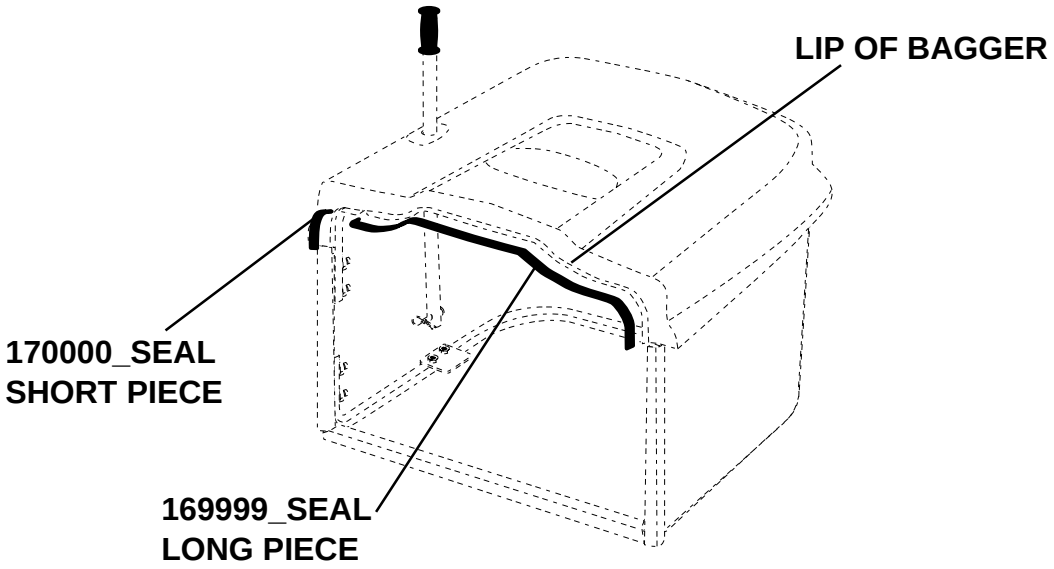
Horizontal Adjustment - Slightly loosen the nuts securing the bagger RH and LH horizontal adjustment brackets. Loosen only enough so the brackets keep their position, but allow them to be moved.

- Move the brackets the amount forward or backward you wish the bag assembly to move. Retighten the nuts securely.

Vertical Adjustment - Slightly loosen the nuts securing the vertical adjustment brackets to the bagger support tube. Loosen only enough so the brackets keep their position, but allow them to be moved.

- Move the brackets the amount up or down you wish the bag assembly to move. Retighten the nuts securely.
- Reinstall the bagger assembly and check the bagger to fender fit. If necessary, repeat the procedure until the proper fit is attained.

CRD Bagger Seal Kit # 169997



A seal kit is available for CRD baggers where customers complain about grass escaping at the bagger lid.

INSTRUCTION SHEET
for the Replacement of Mower Clutch Cables

To remove the Failed Cable:

- Place deck in the lowest position.
- Remove retainer spring securing cable at rear of deck or under the frame. See Fig. 1. Slide plastic washer forward and remove cable fitting in bracket.
- On CRD mower remove spring from NORAM Clutch. See Fig. 2.
- On side discharge mowers, remove retainer spring securing cable spring to idler pulley bolt and remove spring. See Fig. 3.
- On side discharge decks, remove cable tie at edge of right side of frame near brake.
- Open hood and if necessary, remove fuel tank, for access to cable clutch.
- Unsnap cable end clip from rivet head on side of lever. See Fig 4.
- Use needle nose pliers to compress cable clamp while removing from bracket.
- Pull the cable out from under the tractor.

To install the New Cable:

- Lower the end of the cable with the extension spring through the chassis behind the steering assembly.
- Place the lever in the engaged position. Snap the cable end clip over the rivet head on the mower engagement lever. Fig.4. Place the lever in the disengaged position. Pass the cable through the keyhole slot in the clutch bracket and push the lever forward until the cable fitting snaps into place.
- Pull the free end of the cable into place from underneath the tractor. On tractors with the engagement on deck (see Fig .3), find the second hole forward of the brake assembly on the right edge of the frame. Use a plastic tie to hold the cable to this hole Fig 5.
- Install the cable end as shown in either Fig. 2 or Fig. 3, and the cable conduit to the bracket as in Fig 1.

NOTE - Side Discharge Mowers: Be sure the washer is in place on the idler bolt before the cable spring and retainer spring is installed. Without the washer, the spring will fail in a short time. A plastic tie is installed to hold the cable to the right edge of the frame as shown in Fig. 5, keeping the cable away from contact with ground drive components.

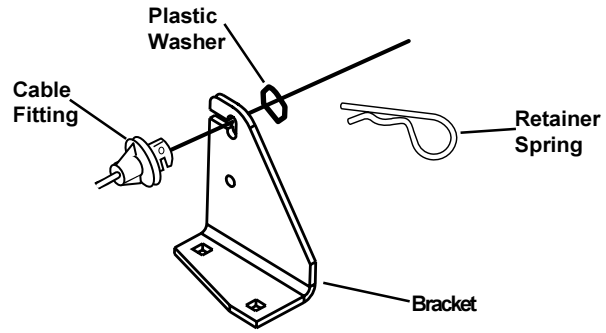


Fig 1

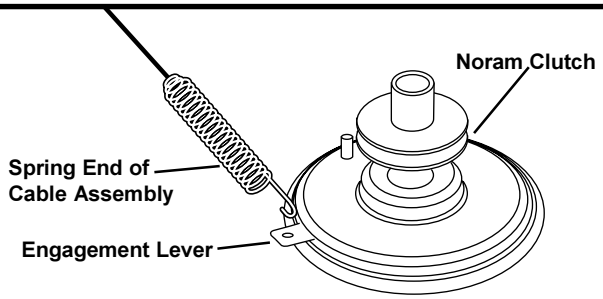


Fig 2

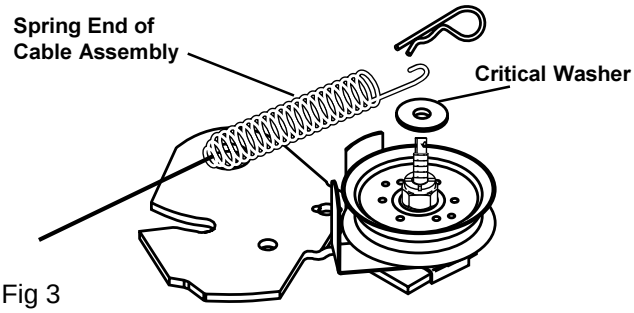


Fig 3

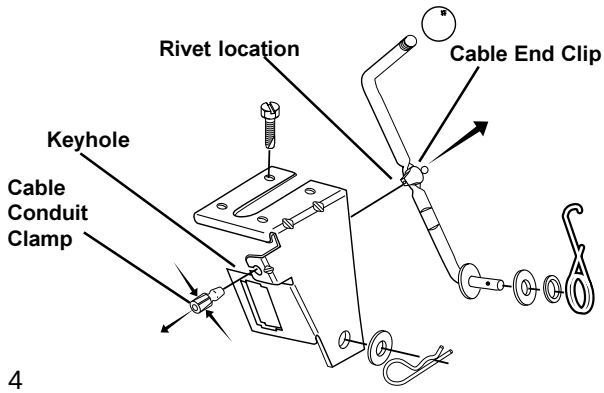


Fig 4

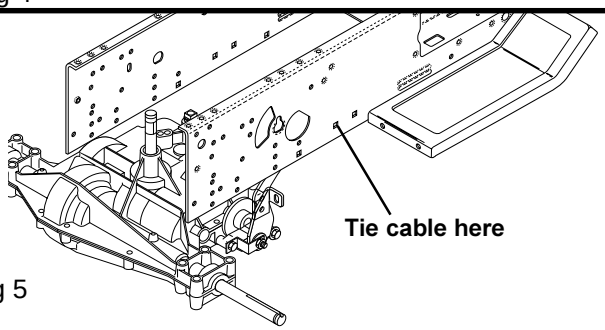
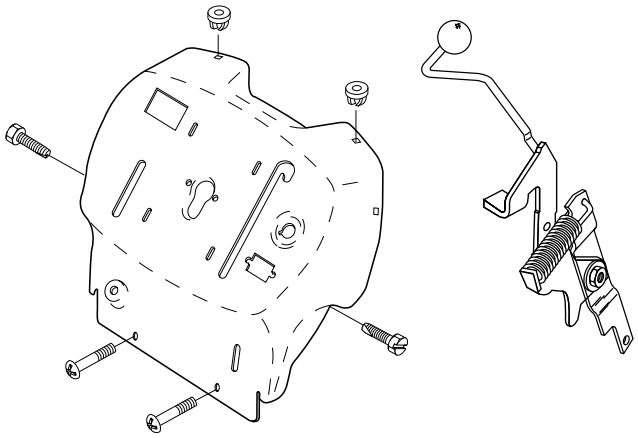


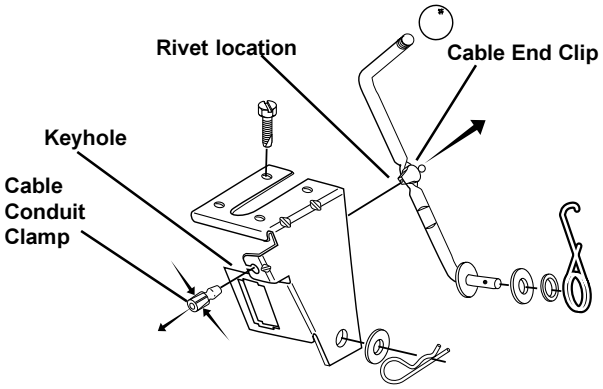
Fig 5

New Cable Clutch for Manual Engagement Mowers in 2000

- Longer belt life due to softer engagement and additional idler travel for disengagement.
- Engagement requires 18% less force than mechanical clutch.
- Eliminates welded engagement lever.
- Puts interlock switch in service accessible location.
- 42” mower with cable clutch uses existing 144959 Mower Belt

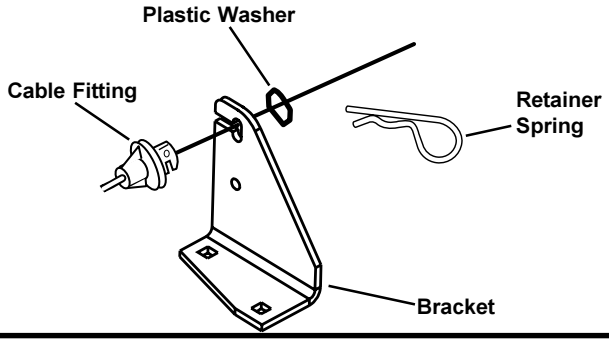


Manual Mower Engagement before 2000

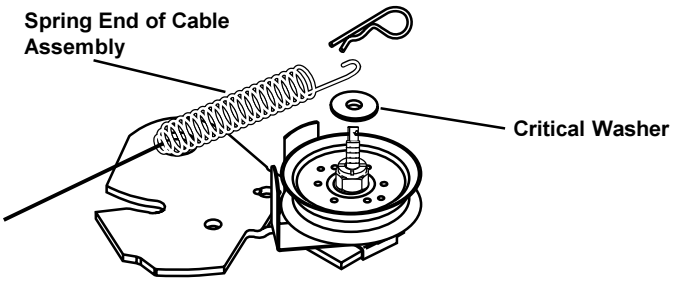


Cable Clutch Mower Engagement for 2000

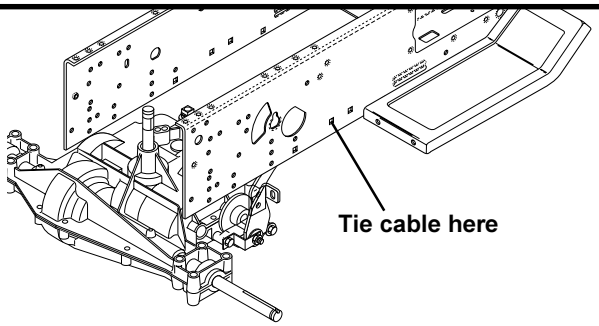
There is a fitting in the end of the cable conduit that goes into the anti-sway bracket. A plastic washer slips into place before the retainer spring is installed.



The spring end of the cable attaches to the idler pulley bolt. A washer is installed first to hold the spring away from the idler.

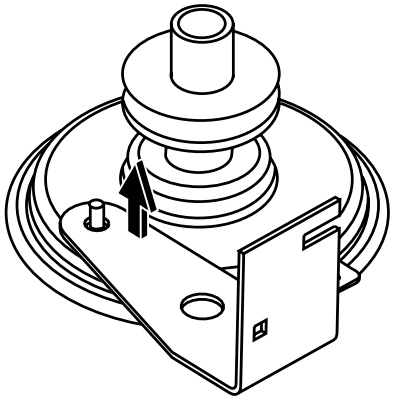


A plastic tie must hold the cable in position at the right edge of the frame, in the second hole forward from the brake.



NOTE: When the mower is removed, relocate the spring at the end of the cable to the wireform engine pulley belt guide or a hole in the frame.

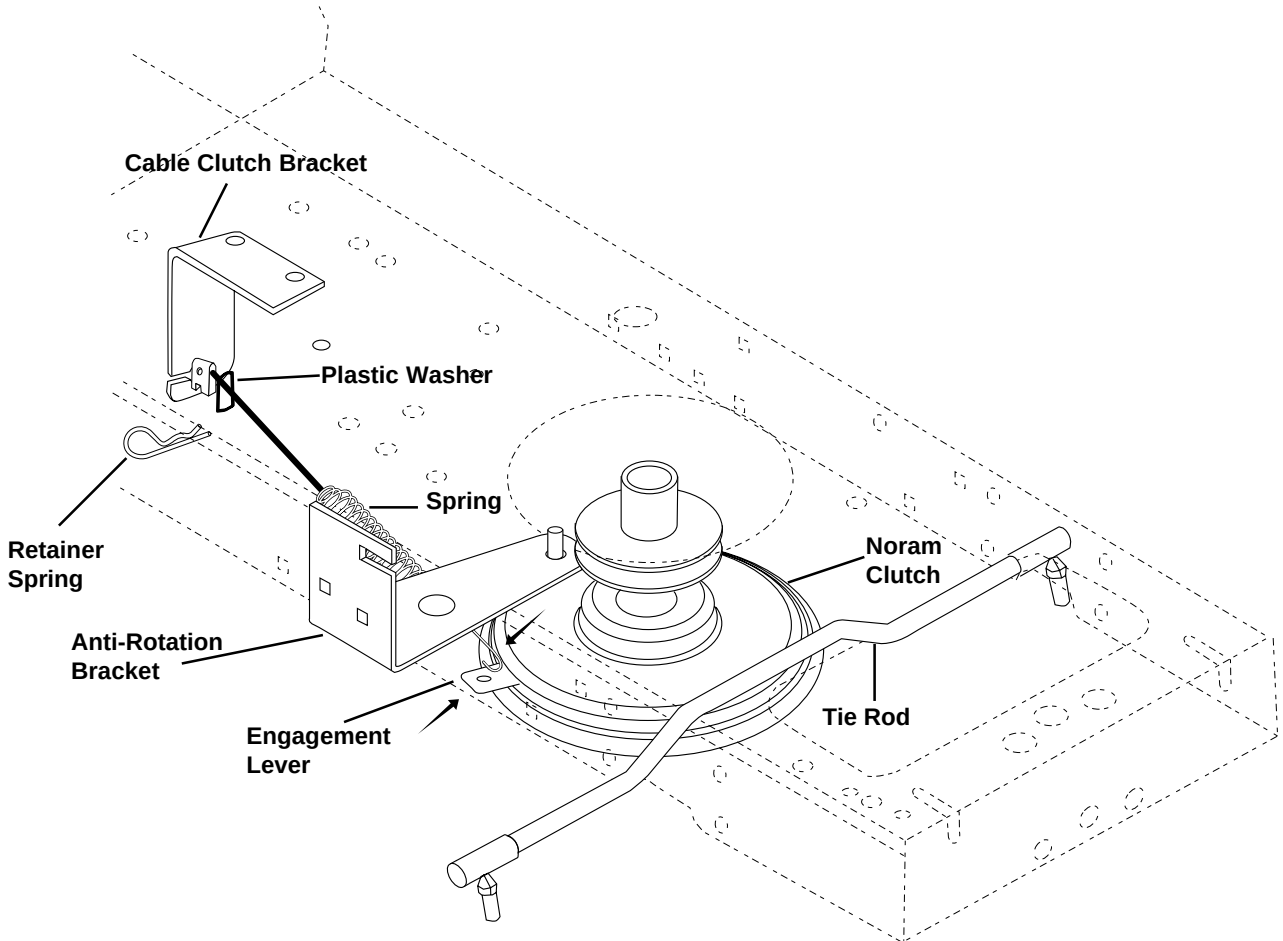
New NORAM Clutch for manual engagement



The NORAM Clutch will be used on center rear discharge mower decks. It will use the same deck assembly and drive belt as models that use an electric clutch.
The NORAM Clutch has the advantage of being smoother than an idler pulley clutch and less likely to kill the engine on deck engagement.

The bolt holding the NORAM Clutch to the crankshaft must be torqued at 50 Foot Pounds like the electric clutches.
The anti – rotation bracket must be in place on the anti – rotation clutch bolt in operation or damage can occur. The Noram Clutch uses the cable clutch mechanism shown on pages 14 and 15.

The anti-rotation bracket can be deflected by hand when replacing the drive belt.



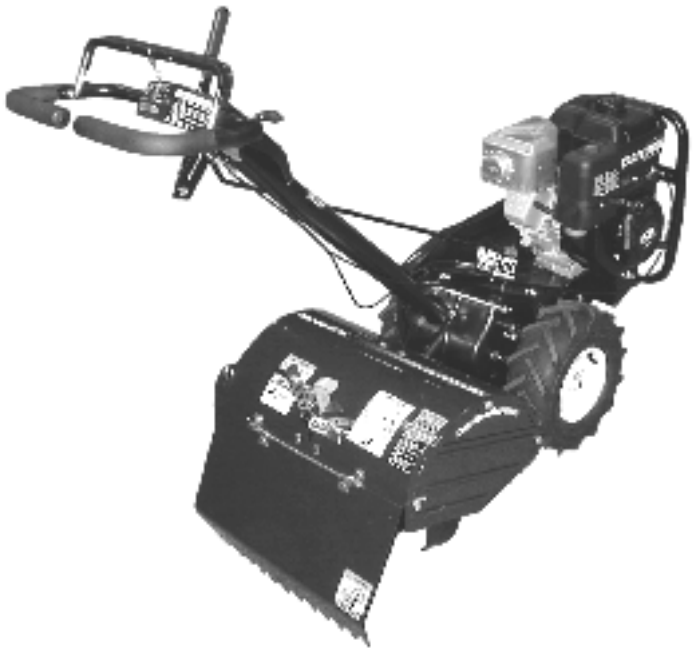
* BLADE LISTING *
by RETAINER HOLE CHARACTERISTICS

PART NUMBER	DECK SIZE	CONSTRUC-TION	TYPE	DECK TYPE	HOLE(S)	BLADE BOLT(S)	RETAIL NUMBER
145106	20"	REGULAR	MULCH		3	1	**71-33255**
146749	20"	PREMIUM	MULCH		3	1	**71-33271**
701211	20"	PREMIUM	STANDARD		3	1	**71-33270**
850972	20"	REGULAR	STANDARD		3	1	**71-33233**
154208	20"	ELECTRIC	MULCH	CAST DECK	3	1	
156716	20"	ELECTRIC	MULCH	REAR DISCHARGE		3	
159267	21"	REGULAR	MULCH	REAR DRIVE	3	1	71-33273
161541	21"	REGULAR	STANDARD	REAR DRIVE	3	1	
165833	21"	REGULAR	MULCH	PUSH	3	1	71-33274
152202	22"	REGULAR	MULCH	SIDE DISC EZ3		3	
157101	22"	REGULAR	MULCH	REAR DISCHARGE	3	3	71-33269
141114	22"	REGULAR	MULCH		3	1	**71-33256**
141443	22"	PREMIUM	MULCH			1	**71-33272**
701213	22"	PREMIUM	STANDARD			1	**71-33223**
850973	22"	REGULAR	STANDARD		3	1	**71-33234**
25645	36"	REGULAR	STANDARD		1	1	
138970	38"	PREMIUM	HI LIFT		STAR	1	**71-24651**
138497	38"	REGULAR	HI LIFT		STAR	1	**71-24671**
139774	38"	PREMIUM	MULCH		STAR	1	**71-24654**
134148	38"	REGULAR	MULCH		STAR	1	**71-24692**
121263X	38"	REGULAR	BAGGER			1	71-24673
25036	38"	REGULAR	STANDARD		1	1	71-24691
104418X	38"	REGULAR	**CROSS / BAGGER**			1	
25741	38"	REGULAR	STANDARD		1	2	
134998	38"	REGULAR	MULCH			1	
170037	92 c.m.	REGULAR	3 in One	Left	Star 5	1	
170038	92 c.m.	REGULAR	3 in One	Right	Star 6	1	
170039	92 c.m.	REGULAR	**Super Bagger**	Left		1	
170040	92 c.m.	REGULAR	**Super Bagger**		Right	1	
168720	107 c.m.	REGULAR	3 in One	Left	Star 5	1	
168721	107 c.m.	REGULAR	3 in One	Right	Star 6	1	
138971	42"	PREMIUM	HI LIFT		STAR		**71-24652**
138498	42"	REGULAR	HI LIFT		STAR	1	
139775	42"	PREMIUM	MULCH		STAR	1	**71-24655**
134149	42"	REGULAR	MULCH		STAR	1	**71-24676**
130652	44"	PREMIUM	STANDARD		STAR	1	71-24678
25034	44"	REGULAR	STANDARD		1	1	71-24677
25742	44"	REGULAR	STANDARD		3	2	
25321	42"	REGULAR	STANDARD		3	2	
25322	48"	REGULAR	STANDARD		3	2	
152443	46"	PREMIUM	MULCH		STAR	1	**71-24004**
170698	46"	PREMIUM	2 in One		STAR	1	**71-24015**
159705	46"	PREMIUM	BAHIA		STAR	1	
137380	50"	PREMIUM	STANDARD		STAR	1	71-24005
156468	50"	PREMIUM	STANDARD-THICK		STAR	1	
121798X	50"	REGULAR	STANDARD		1	1	
25743	50"	REGULAR	STANDARD		3	2	

BLADE PART NUMBERS WITHIN SHADED AREAS ARE INTERCHANGABLE.

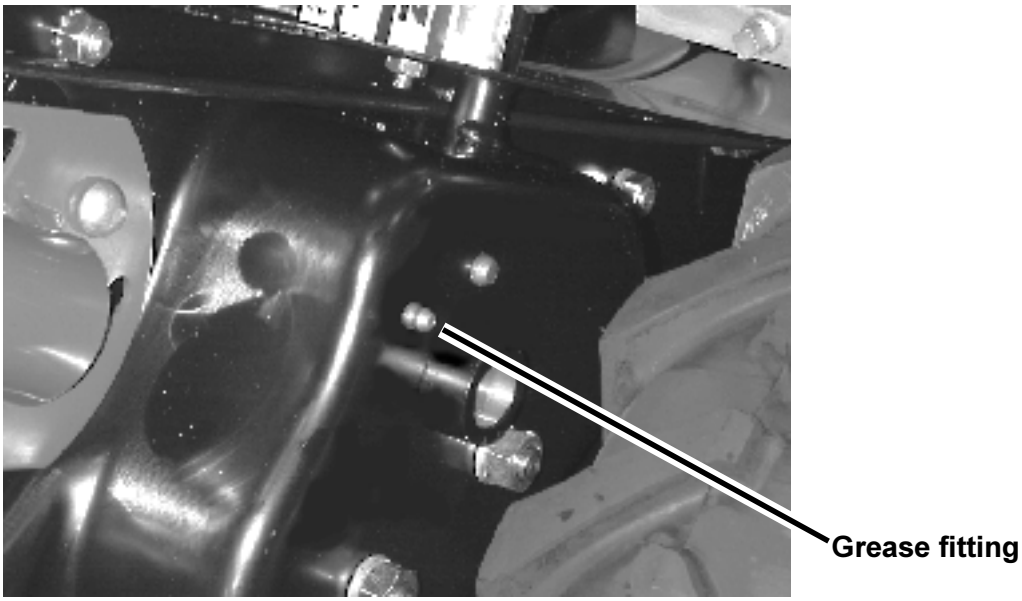
CONSTRUCTION - BLADES INDICATED AS PREMIUM ARE MADE OF BETTER STEEL WITH A BETTER HEAT TREAT PROCESS TO RESIST SAND ABRASION.

New on Rear Tine Tillers for model year 2000….



There will be a grease fitting added on the right side of transmissions.

It is recommended to customers to add one squirt of EP-1 Grease for every 10 hours of use, or when the tiller is stored at the end of the season.



PROCEDURE for a Noisy Rear Tine Tiller Transmission

1. Shift transmission indicator to farthest left position.
2. Add one squirt of **EP-1 Grease** to transmission at grease fitting.
3. Shift transmission indicator to right side and back four times.
4. Drive tiller 5 feet forward and five feet backwards.
5. Shift transmission indicator to farthest right position.
6. Add one squirt of EP-1 Grease to transmission at grease fitting.
7. Shift transmission indicator to right side and back four times.
8. Evaluate transmission for noise improvement. Repeat if necessary.

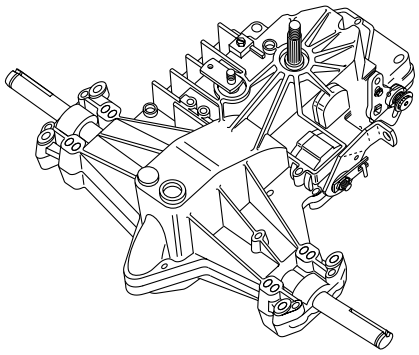
Touch - Up Paints for Lawn & Garden

PART NUMBER	DESCRIPTION	PAINT CODE
150020	POLO GREEN Spray Paint (SEARS)	558
172527	POLO GREEN Paint Pen (48186)	558
172530	SATIN BLACK Paint Pen (48187)	Decks, Chassis, Dash
150131	SATIN BLACK Spray Paint	Decks, Chassis, Dash
130937	DOVER GRAY Spray Paint	459, 478
126967X	SEARS SILVER Spray Paint	417
136247	RED Spray Paint	505, 506, 394, 423
126965X	ORANGE Spray Paint (Husqvarna)	412, 422
126966X	GRAY Spray Paint (Husqvarna/WA)	410, 418
144401	GREEN Spray Paint	550
126963X	GREEN (RALLY) Spray Paint	419
130939	GREEN (POULAN) Spray Paint	475, 476
126964X	YELLOW (POULAN PRO) Spray Paint	416, 421
130941	YELLOW Spray Paint	472, 473
136246	BLUE (Dark) Spray Paint	510, 511
108521X	BRONZE (Old Roper) Spray Paint	388
126687X	BRONZE (New Roper) Spray Paint	425
169695	METALLIC RED Spray Paint	603
169696	ANTIQUE SAGE Spray Paint	598
169694	FOREST GREEN Spray Paint	602
130924	HIGH GLOSS BLACK Spray Paint	428

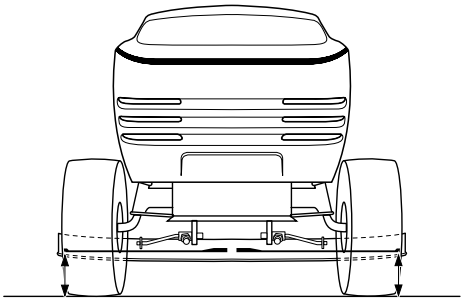
Available Technical Information

163578	**MANUAL, Tractor & Rear Tine Tiller**
163579	**MANUAL, Mower & Front Tine Tiller**
169291	**MANUAL, 1999 Sears Product Accessories**
169418	**MANUAL, 1999 Sears Electrical Schematics**
168695	**VIDEO, FHP Mower Leveling**
169287	**VIDEO, FHP 'Automatic' Drive Servicing**

VIDEO Tapes now available for information on servicing FHP tractors with Automatic Drive Systems or mower cutting complaints



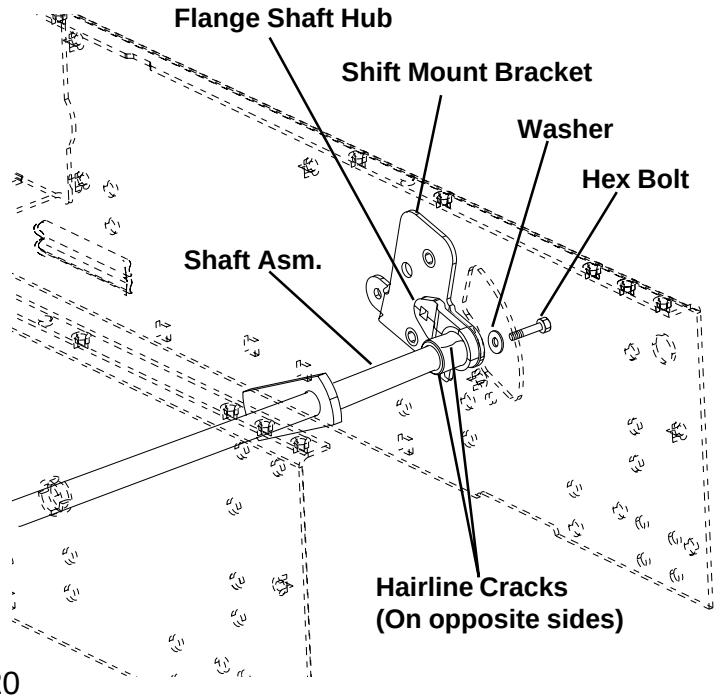
Level deck side-to-side.



Side-to-side should be set at the same or within 1/8" of each other.

SYMPTOMS: Shifting is erratic on both Automatic and Gear Drive Lawn Tractors. The customer can't find neutral or reverse, or the shift lever is loose or is bound up.

SOLUTION: On tractors manufactured after December 1, 1998. Check the **165494 Tapered Flange Shaft Hub** at the base of the fender shift lever. The battery and battery box can be removed from models where they are located under the seat to inspect this part from the inside of the frame. On other models it will be necessary to remove the Drawbar Plate from the rear of the frame. If the part is too hard it can crack, and it may only be visible inside the frame. There may be hairline cracks that can require a flashlight to find where most parts are painted black. If cracks are found, replace the **165494** Shaft Hub.



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