SECTION 6
ADJUSTMENTS

6-1. GENERAL.

6-1.1 This section contains specific information on the proper adjustment of various components of the Series 2000 tractors covered by this manual.

6.2 HOOD AND GRILLE (All Models).

6-2.1 Referring to Figure 5-1, check and adjust the hood and grille as follows:

1. Open the hood and check for distortion of the hood guide (11) engagement area of the engine bulkhead (2, Fig 5-16). Repair if necessary.
2. Make certain the dash panel is installed squarely on the frame pedestal.
3. Close the hood and press downward on the front of the hood to completely close the hood.
4. Check for an even spacing of approximately 0.100 in. between the rear edge of the hood and the flange of the dash panel.
5. Loosen the hex wash. hd. tapp screws (13) securing the LH and RH grille brackets (1 and 2) to the frame.
6. Adjust the grille brackets as necessary to obtain the proper spacing.
7. Holding the hood in position, tighten the hex wash. hd. tapp screws.

6-3 PTO CLUTCH BURNISHING PROCEDURE (All Models).

NOTE

Any time a new PTO clutch is put into service, this procedure should be performed prior to operating the new clutch under load.

WARNING

The PTO clutch may be hot. Use care when handling the clutch assembly if the engine has been run recently. Allow the clutch assembly to cool.

6-3.1 With the engine warm (run approximately 5 minutes) and the mower deck installed, proceed as follows:

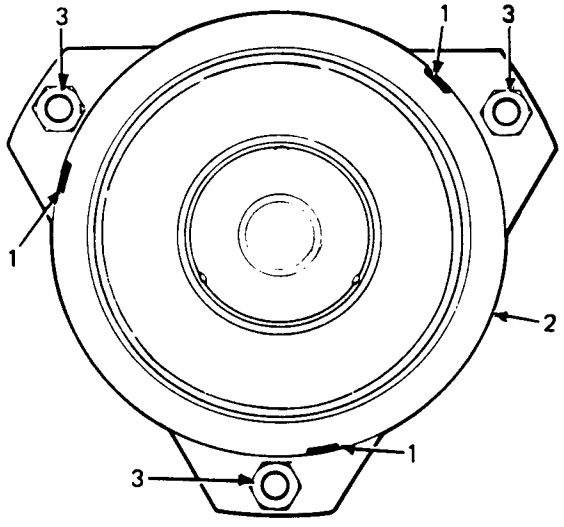
1. With the engine running at approximately 50% throttle, engage and disengage the clutch at ten second intervals (ten seconds ON/ ten seconds OFF) five times. The engine choke may have to be pulled out slightly to accomplish this.
2. Increase the engine speed to 75% throttle and again engage and disengage the PTO clutch at ten second intervals five times.
3. Make certain the PTO is disengaged and stop the engine.
4. On Models 2160, 2165 and 2185, recheck the PTO air gap and adjust if necessary per paragraph 6-4.

6-4 ADJUSTING THE PTO CLUTCH (MODELS 2160, 2165 and 2185).

WARNING

Disengage the PTO, stop the engine and engage the parking brake. The PTO clutch may be hot. Allow the engine and clutch to cool before adjusting the clutch.

6-4.1 Refer to Figure 6-1 and proceed as follows:



1. Access Slots
2. Armature Brake Plate
3. Self Locking Nuts

Figure 6-1. Adjusting PTO Air Gap (Models 2160, 2165 and 2185).

1. Locate the three access slots (1) which are equally spaced around the circumference of the armature brake plate (2).

2. Using a feeler guage, measure the gap between the armature drive plate and the rotor at all three access slots. The air gap measurements should be equal and between .012 to .017 inch.

3. Loosen or tighten the self locking nuts (3) as necessary to achieve an equal air gap measurement, within specifications, at all three locations. Remeasure each location after adjusting any of the self locking nuts.

6-5 FRONT PIVOT AXLE ADJUSTMENT (All Models).

WARNING

Place the tractor on a firm and level surface and chock the rear wheels before raising the front of the tractor off the ground. Use jack stands to support the front of the tractor when raised.

6-5.1 Check for binding or excessive play between the front pivot axle and frame channel, and adjust as follows:

NOTE

A thin coating of lubricant (such as 251H EP grease) should be periodically applied to the front and rear machined faces of the limiter slot areas of the pivot axle.

1. Raise the front of the tractor and set on jack stands, so the front wheels are suspended above the ground.

2. Pivot the ends of the axle up and down to check for binding. If the axle is binding, loosen the lock nuts (see Fig. 5-11) until binding is eliminated.

3. Grasping the ends of the pivot axle, attempt to move the each end of the axle forward and rearward to check for side play between the axle and frame channel. If play is present, gradually tighten the lock nuts until play is minimized.

4. Repeat steps 2 and 3 until minimum play without binding is achieved.

6-6 FRONT WHEEL ALIGNMENT (All Models).

6-6.1 The turning radius should be approximately equal in each direction, and the front wheels should toe-in appoximately 1/8 inch. Check and adjust as follows:

WARNING

Place the tractor on a firm and level surface and chock the rear wheels before beginning alignment procedures.

1. Turn the steering wheel fully to the left and note the distance between the front pivot axle (9, Fig. 5-10) and the rear stop on the left steering knuckle (1, Fig. 5-10).

2. Turn the steering wheel fully to the right and compare the distance between the axle and right steering knuckle stop with that of the left knuckle obtained in the previous step 1. The clearances should be approximately equal.

3. If the steering knuckle clearances differ significantly, check the lower steering arm (2, Fig. 5-17) position as follows:

   a. Center the steering segment gear (1, Fig. 5-17) and insert a 1/4 inch dowel pin into the alignment holes of the gear and the steering housing (see Figure 5-18).

   b. From underneath the tractor, check that the lower steering arm is approximately perpendicular to the tractor frame (see Fig. 5-18). If it is not properly positioned, disassemble and reposition the steering arm per paragraph 5-15.

4. If the lower steering arm is correctly installed, readjust the tie rods (14, Fig. 5-10) and set the 1/8 inch toe-in as follows:

NOTE

To facilitate adjustment of the tie rods and setting of the toe-in, leave the dowel pin inserted in the steering gear to prevent movement of the lower steering arm when adjusting the tie rods.

NOTE

The front of the tractor may be raised slightly to reduce the weight and ease movement of the front wheels.

a. Remove the hex lock nuts (4, Fig. 5-10) securing the front ball joints (10) to the steering arms (15), and disconnect the tie rod assemblies from the arms.

b. Manually place each front wheel in the straight ahead position (as close as visually possible).

c. Place a mark at the same spot on both front wheels; for example, the mold seam in the center of the tire tread or the inner bead flange of the wheel rim.

d. Rotate the wheels to position the marks at the front horizontal diameter of the wheels, then measure the distance between the marks.

e. Rotate the marks to the rear horizontal diameter and measure the distance between the marks. The distance between the marks at the front should be 1/8 inch less than the distance measured at the rear.

f. If the difference between the measurements is more or less than 1/8 inch, move each wheel equally, in the direction necessary, to achieve the required toe-in dimension.

NOTE

Due to the form in the tie rods, the ball joints should be adjusted only in full turn increments. If adjustment requires two or more full turns, it is recommended that the adjustment be split between the front and rear ball joints.

g. Loosen the hex jam nuts (6, Fig. 5-10) from the front ball joints (and rear ball joints, if necessary per above NOTE).

h. Turn the ball joint in or out on each tie rod, as necessary to align with the hole in each steering arm (15, Fig. 5-10).

i. Reinstall the ball joints in the steering arms, but do not tighten the jam nuts against the ball joints now.

j. Remove the dowel pin from the segment gear, and repeat steps 1 and 2 above to ensure the steering knuckle clearances are approximately equal.

k. If the steering knuckle clearances are not approximately equal, determine the difference between the two measurements by subtracting the smaller from the larger.

l. Disconnect the tie rod assembly from the steering knuckle having the *least* clearance. Turning the ball joint (and tie rod if necessary) in full turn increments, shorten the assembly by an amount equal to half (or closest to half) the difference. Reinstall the tie rod assembly in the steering arm.

m. Disconnect the other tie rod assembly and lengthen by the number of full turns required in the previous step l. Reinstall the tie rod assembly in the steering arm.

n. Tighten the hex jam nuts against the ball joints.

5. The turning radius and toe-in shoiuld now be correctly adjusted. Recheck and, if necessary, readjust per the previous instructions.

6-7 ADJUSTING LIFT ASSIST SPRING TENSION (All Models).

6-7.1 **General.** The primary lift assist spring is located along the left/rear frame channel. The spring can be adjusted by accessing the hex cap screw (9, Fig. 5-19) from the rear of the tractor, inside the left rear wheel. Final adjustment should be made *with* the deck installed.

6-7.2 The degree and direction of effort required to operate the tractor's implement lift handle can be varied as follows:

1. Turning the hex cap screw clockwise will decrease the physical effort required for lifting the attachment, but increase the effort needed to lower the equipment. Turning the screw counterclockwise will effect the opposite results.

2. Turn the hex cap screw as necessary to attain a comfortable lifting effort, while not overly increasing the effort required to lower the implement lift handle to its lowest setting.

6-8 BRAKE ADJUSTMENT — ALL MODELS

WARNING

The tractor must be placed on a firm and level surface when testing and/or adjusting the braking system. The tractor may roll, causing serious damage or injury.

6-8.1 Due to normal wear, the tractor brake system should be periodically tested for proper operation and adjusted as follows:

1. Place the tractor on a firm and level surface and stop the engine.

NOTE

The following step 2 applies to Models 2130, 2140 and 2160.

2. Move the speed control lever (20, Fig. 5-23) to the fully rearward (neutral) position.

NOTE

The following step 3 applies to Models 2135, 2145, 2165 and 2185.

3. Pull the hydro disengagement rod (41, Fig. 5-24) rearward and lock in the slot of the drawbar plate (3, Fig. 5-46) to disengage the hydro transmission.

4. Depress the brake pedal and engage the park brake lever (24, Fig. 5-22). While observing the rear wheels, push the tractor forward or rearward. If the tractor can be pushed AND the wheels rotate, the brake tension must be increased.

5. Depress the brake pedal to disengage the park brake lever, then release the brake. While observing the rear wheels, push the tractor forward or rearward. If the wheels do not rotate, the brake tension must be decreased.

6. Release the brake pedal and adjust the brake tension as follows:

   a. Working from underneath the tractor, remove the internal cotter pin (20, Fig. 5-22) from the adjustment ferrule (15) and disconnect the brake rod assembly from the brake cam (see Figure 6-2).

   b. Lightly pull the brake rod forward to ensure the rod is fully seated in the spring and that the spring hook is at the front of the hole in the brake arm (see Fig 5-22). DO NOT actuate the brake arm when pulling the rod.

   c. Turning one full turn at a time, turn the adjustment ferrule inward or outward on the brake rod to align the ferrule with the hole in the brake cam.

   d. Turn the ferrule outward one full turn and install the ferrule in the brake cam.

   e. Depress and release the brake pedal, then check to ensure the spring is not tensioned. There should be a small amount of slack in the brake rod and spring.

   f. Manually depress the brake pedal and observe that the spring begins to extend during the initial movement (approximately 1 inch) of the pedal.

   g. Repeat steps 4 and 5 above to again test the brakes.

      If able to rotate the wheels with the park brake engaged — check for oil on brake shoes, excessively worn brake shoes, or possible internal transaxle damage.

      If unable to push the tractor with the brake disengaged — check for possible brake assembly and/or internal transaxle damage.

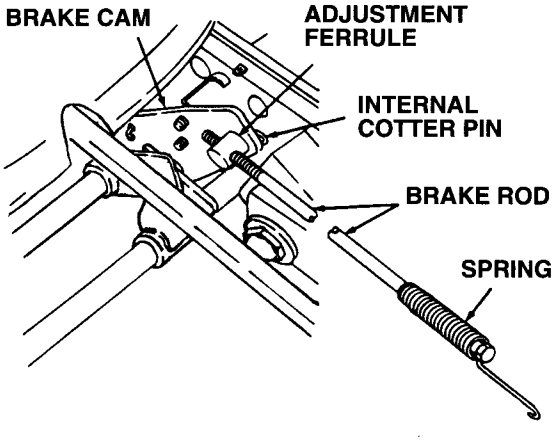


Figure 6-2. Brake Connections.

6-9 CLUTCH ADJUSTMENT ROD — AGS SIX SPEED TRACTORS (Models 2130, 2140 and 2160).

6-9.1 General.

1. The correct installation and adjustment of the clutch adjustment rod (22, Fig. 5-23) is essential to proper operation of the transmission. The adjustment ferrule (6) **must** be installed in the FRONT slotted hole of the clutch cam, and the pivot sleeve (1) **must** be installed in the UPPER hole of the control arm.
2. Although Figure 6-3 depicts the hydro transmission, this figure can also be used for reference when making an adjustment to the clutch rod and/or centering spacer on six speed tractors.
3. The clutch rod must be readjusted whenever a neutral adjustment is made to the centering spacer (5, Fig.6-3).

6-9.2 Verify the correct installation of the clutch rod (per step 1 above) and adjust as follows:

1. Depress the brake pedal and engage the park brake.

NOTE

Although all adjustment is made in the ferrule at the front end of the clutch rod, it is normally easier to disconnect the rod from the control arm at the rear end and turn the rod into, or out of, the ferrule to adjust.

2. Working from underneath the left frame channel of the tractor, remove the internal cotter pin (13, Fig. 5-23) securing the pivot sleeve (1) to the control arm. Disconnect the clutch adjustment rod from the control arm.
3. Ensure the adjustment ferrule (6, Fig. 5-23) is at the back of the proper slotted hole of the clutch cam. The extension spring (15) should hold the ferrule against the back of the hole.
4. Without moving the clutch cam or control arm, check the pivot sleeve pin for direct alignment with the upper hole of the control arm. If not aligned, proceed as follows:
   a. Loosen the hex jam nut (9, Fig. 5-23) from the front of the adjustment ferrule (6).
   b. Turn the rod into, or out of, the adjustment ferrule as necessary to align the pivot sleeve with the hole in the control arm.
5. Install the pivot sleeve (1, Fig. 5-23) in the proper hole of the control arm and secure with the internal cotter pin (13).
6. Tighten the hex jam nut against the adjustment ferrule.

6-10 HYDRO ADJUSTMENT ROD — HDS HYDROSTATIC TRACTORS (Models 2135, 2145, 2165 and 2185).

6-10.1 General.

1. The correct installation and adjustment of the hydro adjustment rod (34, Fig. 5-24) is essential to proper operation of the transmission. The adjustment ferrule (12) **must** be installed in the REAR slotted hole of the clutch cam, and the pivot sleeve (2) **must** be installed in the LOWER hole of the control arm.
2. The hydro adjustment rod must be readjusted whenever a neutral adjustment is made to the centering spacer (5, Fig.6-3).

6-10.2 Verify the correct installation of the clutch rod (per step 1 above) and adjust as follows:

1. Depress the brake pedal and engage the park brake.

NOTE

Although all adjustment is made in the ferrule at the front end of the adjustment rod, it is normally easier to disconnect the rod from the control arm at the rear end and turn the rod into, or out of, the ferrule to adjust.

2. Working from underneath the left frame channel of the tractor, remove the internal cotter pin (19, Fig. 5-24) securing the pivot sleeve (2) to the control arm. Disconnect the hydro adjustment rod from the control arm.
3. Ensure the adjustment ferrule (12, Fig. 5-24) is at the back of the proper slotted hole of the clutch cam. The extension spring (23) should hold the ferrule against the back of the hole.

4. Without moving the clutch cam or control arm, check the pivot sleeve pin for direct alignment with the lower hole of the control arm. If not aligned, proceed as follows:

   a. Loosen the hex jam nut (15, Fig. 5-24) from the front of the adjustment ferrule (12)

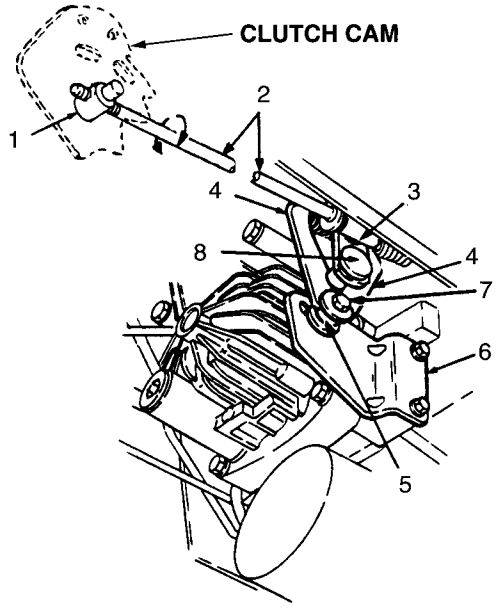
NOTE

Because of the form (bend) in the hydro adjustment rod, the rod and/or adjustment ferrule should be adjusted in approximately full turn increments. The form of the rod should be postioned toward the bottom.

   b. Turn the rod into, or out of, the adjustment ferrule as necessary to align the pivot sleeve with the hole in the control arm.

5. Install the pivot sleeve (2, Fig. 5-24) in the proper hole of the control arm and secure with the internal cotter pin (19).

6. Tighten the hex jam nut against the adjustment ferrule.



1. Adjustment Ferrule
2. Adjustment Rod
3. Pivot Sleeve
4. Neutral Arms
5. Centering Spacer
6. Neutral Bracket
7. Hex Cap Screw
8. Control Arm

Figure 6-3. Adjustment Rod Connections.

6-11 SHIFT INTERLOCK ROD ADJUSTMENT — AGS SIX SPEED TRACTORS (Models 2130, 2140 and 2160).

6-11.1 **General.** Whenever a neutral adjustment is made to the centering spacer (19, Fig. 5-27) on the clutch assembly (1), the interlock rod (11) should be checked and, if necessary, readjusted.

6-11.2 Refer to Figure 5-27 and adjust the interlock rod as follows:

1. Depress the brake pedal and engage the park brake.

2. Working from underneath the rear of the tractor, remove the hex center lock jam nut (9) securing the ferrule (10) to the interlock arm (8), and disconnect the interlock rod.

3. Manually move the interlock lever of the transaxle to ensure the lever is in its center detent position (normally pointing downward).

4. Turn the ferrule on the rod as necessary to align with the hole in the interlock arm. Insert the ferrule into the arm, and secure with the hex center lock jam nut. Do not over tighten the nut; the ferrule must be able to pivot in the arm.

6-12 HYDRO STOP ROD ADJUSTMENT — HDS HYDROSTATIC TRACTORS (Models 2135, 2145, 2165 and 2185).

WARNING

Place the tractor on a firm and level surface and chock the wheels before beginning the adjustment procedures.

6-12.1 Refer to Figure 5-24 and adjust the hydro stop rod as follows:

1. Depress the brake pedal to neutralize the transmission linkage, then slowly release the brake pedal.

2. Working from underneath the right side of the tractor, disconnect the hydro stop rod (32) from the hydro cruise cam (6) by removing the internal cotter pin (19) and bell washer (24).

3. Move the cruise control lever (33) to its full rearward position.

4. Manually position and hold the hydro cruise cam (6) approximately 3/16 of an inch away from the spacer (36) on the neutral return bracket.

5. While continuing to hold the cruise cam, turn the ferrule (12) on the rod as necessary to align with the hole of the cruise cam. Make certain the cruise control lever does not move from the rearward position when adjusting the ferrule.

6. Insert the adjustment ferrule(12) into the right side of the cruise cam (8) and secure with the bell washer (24) and internal cotter pin (19).

6-13 NEUTRAL ADJUSTMENT — AGS SIX SPEED TRACTORS (Models 2130, 2140 and 2160).

6-13.1 **General.** Correct neutral adjustment of the clutch assembly (1, Figure 5-27) is essential to the proper operation of the clutch. While on a level surface, if the tractor attempts to drive (creep) forward or rearward when neither the forward nor reverse pedal is depressed, neutral adjustment should be checked and readjusted.

6-13.2 To check and adjust the clutch assembly neutral setting, proceed as follows:

1. Drive the tractor for approximately 5-10 minutes to warm up the clutch assembly, then stop the engine and engage the parking brake.

WARNING

Place the tractor on a firm and level surface and chock the front wheels before raising the rear wheels from the ground. Use jack stands to support the rear of the tractor when raised.

2. Raise the rear of the tractor, so that the rear tires are at least one inch above the surface, and set it on jack stands. Make certain the jack stands are positioned to balance the tractor and prevent tipping.

WARNING

The operator presence safety circuit will stop the engine if the seat is empty when the brake pedal is released. If an assistant is seated when adjusting the neutral setting, use extreme caution to prevent the tractor from tipping or rolling. Serious injury could result. Similar precautions should be taken with any other method of over-riding the safety circuit, such as placing a weight in the seat. Never allow the tractor to be operated with the safety circuit disabled.

3. Carefully start the tractor engine and release the parking brake.

4. Move the speed control lever (20, Fig. 5-23) to one of the mid (third or fourth gear) speed settings, and observe both rear wheels for rotation in either direction.

5. If wheel rotation is observed, adjust the neutral setting as follows:

   a. Disconnect the clutch adjustment rod (22, Fig. 5-23) from the control arm by removing the internal cotter pin (13) from the pivot sleeve (1).

   b. If wheel rotation stops when the rod is disconnected, check and readjust the rod per paragraph 6-9. Also check the pedal linkage for binding.

   c. If wheel rotation continues, loosen the hex top lock nut (22, Fig.5-27) and hex cap screw (21) securing the centering spacer (19) to the neutral bracket (18).

   d. If the rotation is in the *forward* direction, slide the spacer slightly rearward until the rotation stops. If rotating in the *reverse* direction, slide the spacer forward until rotation stops.

   e. Carefully tighten the hex cap screw (21) and top lock nut (22), making certain the spacer does not move.

   f. Stop the engine and engage the parking brake.

   g. Check and, if necessary, readjust the clutch adjustment rod per paragraph 6-9.

   h. Check and, if necessary, readjust the interlock rod per paragraph 6-11.

6. The inability to attain a neutral setting by adjusting the centering spacer could indicate internal problems with the clutch assembly. Refer to paragraph 5-24 for clutch inspection procedures.

6-14 NEUTRAL ADJUSTMENT — HDS HYDROSTATIC TRACTORS (Models 2135, 2145, 2165 and 2185).

6-14.1 **General.** Incorrect neutral adjustment of the hydrostatic transmission will affect the output performance; most notably in *reverse*. If the tractor attempts to drive (creep) forward or rearward when neither the forward nor reverse pedal is depressed, neutral adjustment should be checked and readjusted.

6-14.2 To check and adjust the hydro transmission neutral setting, proceed as follows:

1. Drive the tractor for approximately 5-10 minutes to warm up the hydro transmission, then stop the engine and engage the parking brake.

WARNING

Place the tractor on a firm and level surface and chock the front wheels before raising the rear wheels from the ground. Use jack stands to support the rear of the tractor when raised.

2. Raise the rear of the tractor, so that the rear tires are at least one inch above the surface, and set it on jack stands. Make certain the jack stands are positioned to balance the tractor and prevent tipping.

WARNING

The operator presence safety circuit will stop the engine if the seat is empty when the brake pedal is released. If an assistant is seated when adjusting the neutral setting, use extreme caution to prevent the tractor from tipping or rolling. Serious injury could result. Similar precautions should be taken with any other method of over-riding the safety circuit, such as placing a weight in the seat. Never allow the tractor to be operated with the safety circuit disabled.

3. Carefully start the tractor engine and release the parking brake. Observe both rear wheels for rotation in either direction.

4. If wheel rotation is observed, adjust the neutral setting as follows:

   a. Disconnect the hydro adjustment rod (34, Fig. 5-24) from the control arm by removing the internal cotter pin (19) from the pivot sleeve (2).

   b. If wheel rotation stops when the rod is disconnected, check and readjust the rod per paragraph 6-10. Also check the pedal linkage and damper cylinder (21, Fig. 5-24) for binding.

   c. If wheel rotation continues, loosen the hex top lock nut (22, Fig.5-29) and hex cap screw (18) securing the centering spacer (20) to the neutral bracket (21).

NOTE

Because of design characteristics of the hydro transmission and the control linkage, it is recommended that the neutral setting be adjusted toward the *reverse* side of the "neutral window".

   d. If the rotation is in the *forward* direction, slide the centering spacer rearward until the wheels just begin to rotate in the *reverse* direction. Then slowly slide the spacer slightly forward until wheel rotation stops.

   e. If the rotation is in the *reverse* direction, slowly slide the centering spacer slightly forward until rotation stops.

   f. Carefully tighten the hex cap screw (18) and top lock nut (22), making certain the spacer does not move.

   g. Stop the engine and engage the parking brake.

   h. Check and, if necessary, readjust the hydro adjustment rod per paragraph 6-10.

5. If unable to obtain a neutral setting by adjusting the centering spacer, refer to paragraph 5-25 for information concerning inspection and repair of the hydrostatic transmission.

6-15 THROTTLE CABLE ADJUSTMENT (All Models).

6-15.1 **General.** If the engine does not achieve its high (no load) speed (see specifications in Section 1) when the throttle control is moved to the full throttle position, check the cable adjustment before performing any other engine or carburetor inspections.

6-15.2 Refer to Figure 6-4 and proceed as follows:

1. Raise the hood and locate the throttle cable connection at the engine.
2. While observing the direction of movement of the engine throttle arm, move the tractor's throttle control lever to the full throttle position.
3. Loosen the screw securing the cable clamp.
4. Push and hold the engine throttle arm fully in the direction of movement noted in step 2 above.
5. While continuing to hold the throttle arm, pull the throttle cable conduit back through the clamp (away from the arm) to remove any slack in the cable and tighten the screw securing the clamp.
6. Start the engine. Use a tachometer to check the high and low speed engine rpm to specifications (see Section1). Refer to the appropriate Engine Service Manual if adjustment is necessary.

6-16 CHOKE CABLE ADJUSTMENT (All Models).

6-16.1 **General.** If the engine is difficult to start or runs roughly when warmed up, check the choke cable setting before performing any other engine or carburetor inspections.

6-16.2 Refer to Figure 6-4 and proceed as follows:

1. Raise the hood and locate the choke cable connection at the engine.
2. While observing the direction of movement of the engine choke arm, pull the tractor's choke handle out.
3. Loosen the screw securing the cable clamp.
4. Push and hold the engine choke arm fully in the direction of movement noted in step 2 above. If desired, the air cleaner cover and element may be removed to observe that the carburetor choke plate is closed completely.
5. While continuing to hold the choke arm, pull the choke cable conduit back through the clamp (away from the arm) to remove any slack in the cable and tighten the screw securing the clamp.

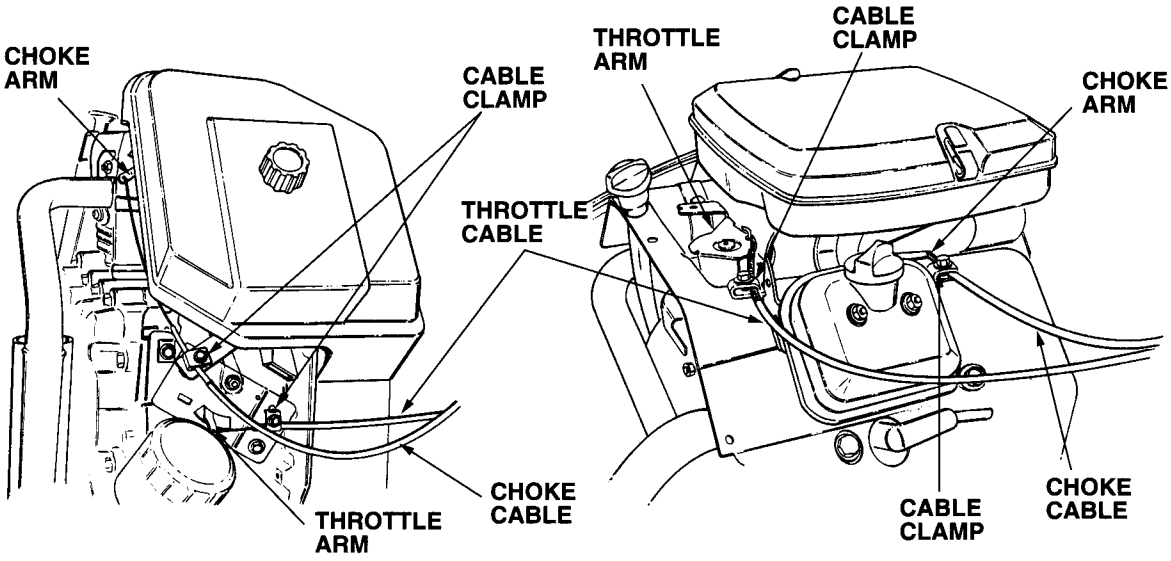


Figure 6-4. Throttle and Choke Cable Connections (Models 2130, 2135, 2160 And 2165 Shown).