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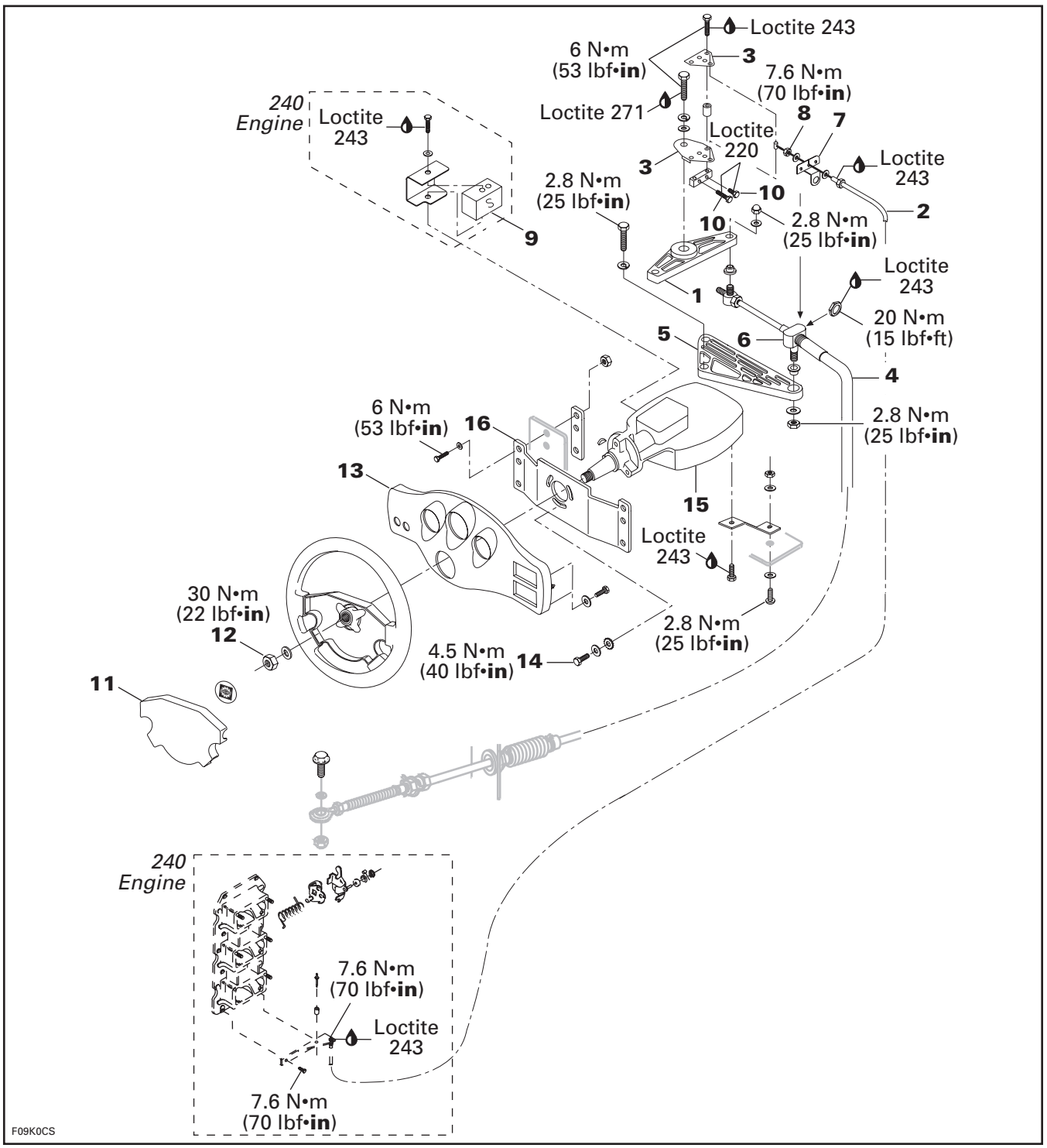
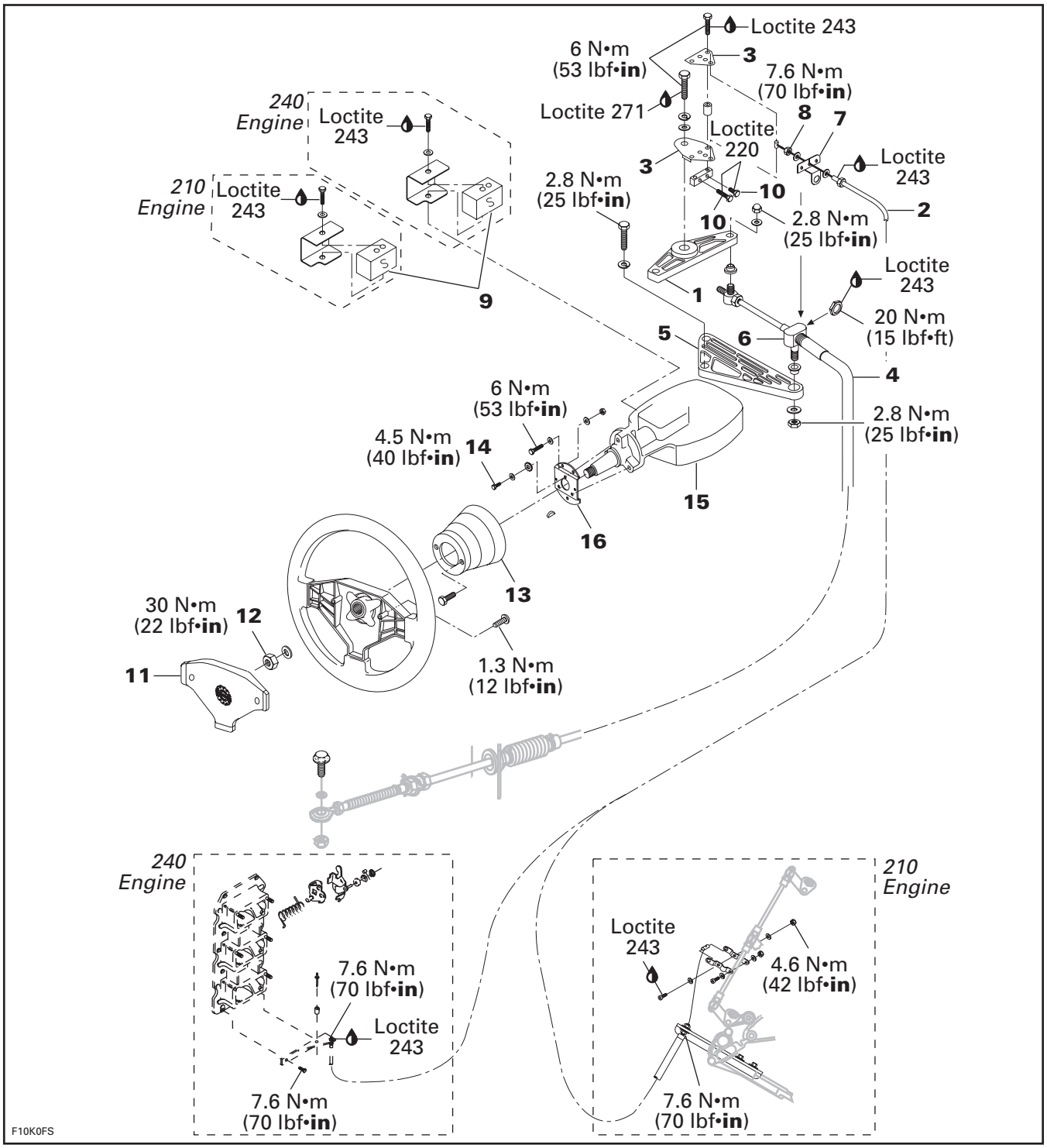
STEERING SYSTEM

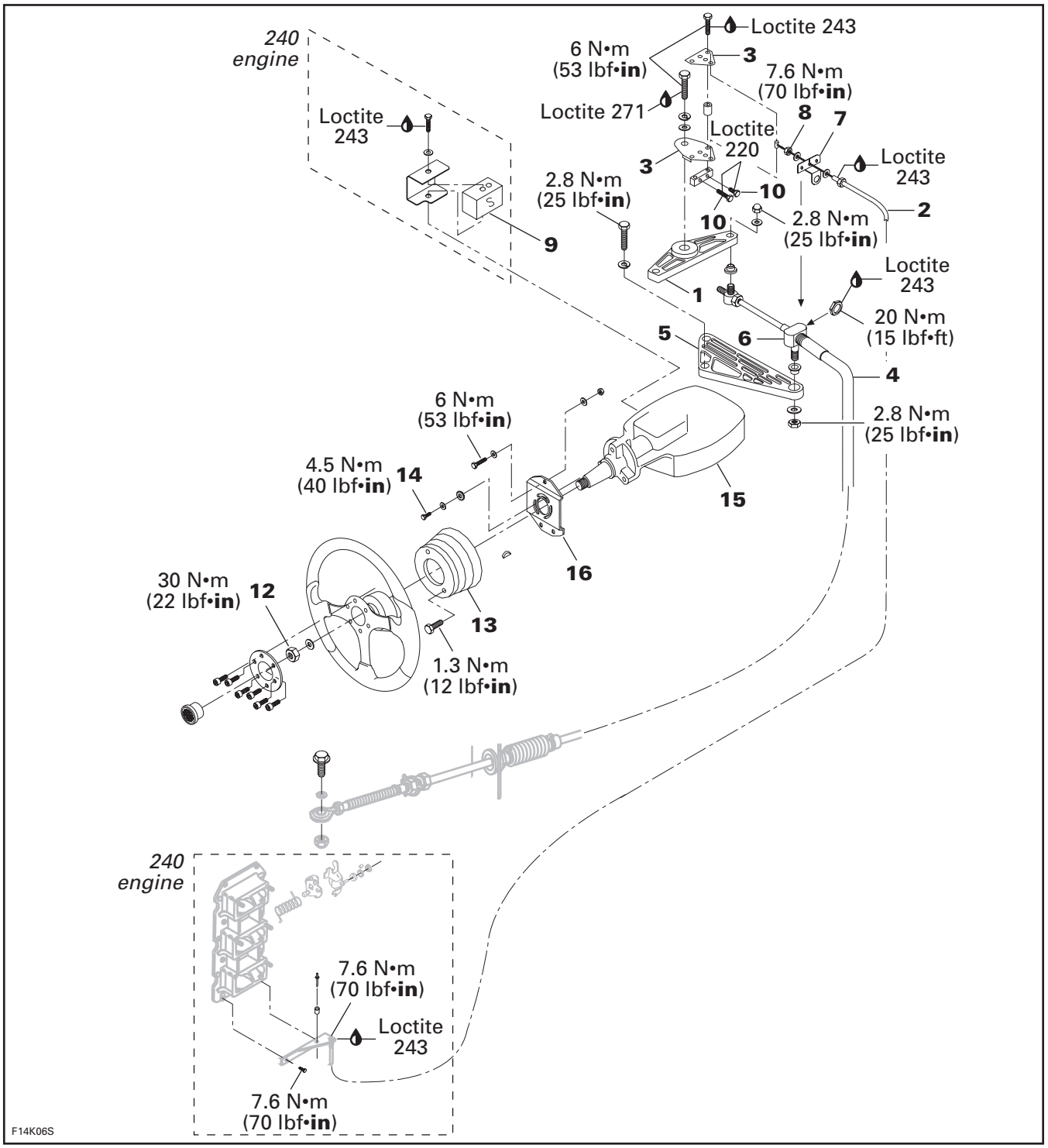
Speedster Model



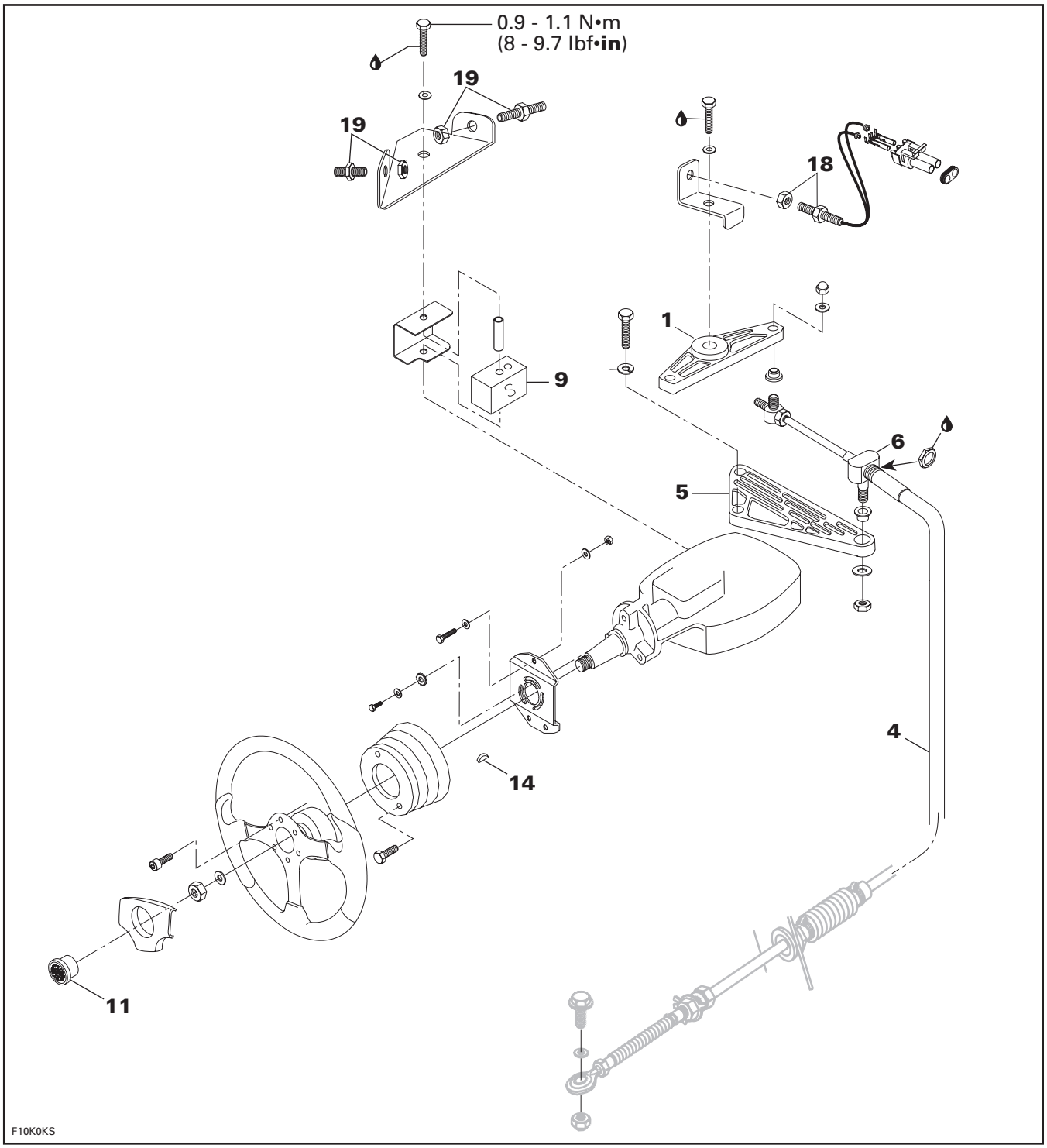
Challenger 1800 Model



Challenger 2000 and X-20 (EFI) Models



240 EFI Plus and 250 Optimax Engine Models



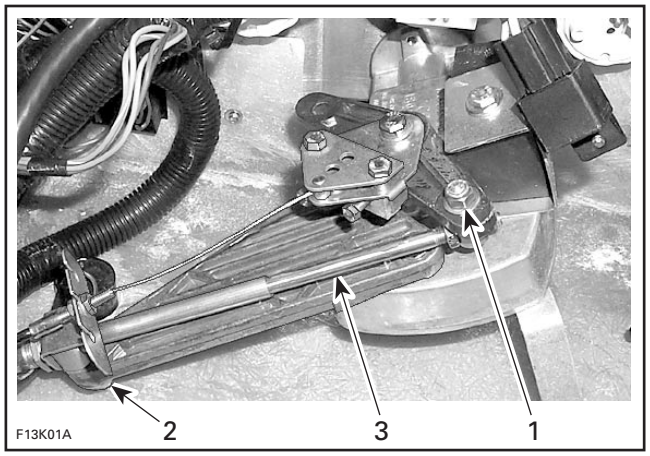
STEERING SYSTEM INSPECTION

All Models

Check operation of steering. It must turn easily and smoothly with a regular resistance from side to side. Rotating resistance must be at a minimum. No friction should be felt. No frictional sound should be heard. Check steering end play. If something is wrong, isolate cable from steering helm to diagnose faulty part. Proceed as follows:

– Visually check cable for wear and oxidation at steering helm and at nozzle. Check at end of cable housing. Replace as necessary.

– Detach cable end from helm arm.



TYPICAL

1. *Remove nut and detach from pivoting arm*
2. *Loosen this nut (underneath) to allow moving cable*
3. *Check for wear (particularly brass bushing wear) or oxidation in this area*

– Check cable movement. Replace as necessary.

Turn steering from side to side, if rotation movement is abnormal or if end play is excessive, replace steering helm as an assembly.

⚠ WARNING

Disassembly of the steering helm can lead to steering failure. Replace complete assembly. For cable assembly, use supplied hardware only. Do not use substitutes.

STEERING CABLE REPLACEMENT

210 and 240 Models

Steering Cable Removal

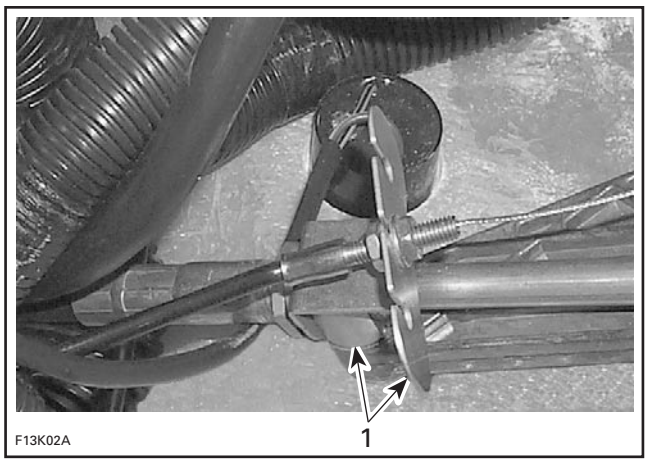
Detach cable from jet pump housing and nozzle. Refer to *Mercury Service Manual* for complete detailed procedure.

Detach cable end from pivoting arm **no. 1**.

Rotate steering wheel (or shaft) to release tension on throttle cable **no. 2**. Detach throttle cable from pivoting plates **no. 3**. Refer to LOW SPEED STEERING CONTROL SYSTEM hereinafter.

Detach cable housing **no. 4** from helm arm **no. 5** and unscrew cable from pivots.

Unscrew adjuster **no. 6** from cable while rotating bracket **no. 7** of throttle cable to allow removal of steering cable.



TYPICAL

1. *Unscrew adjuster while rotating bracket*

Remove cable from hull.

Steering Cable Installation

Reinstall removed parts and pay attention to the following:

Pass cable through transom and jet pump housing then attach to nozzle. Refer to *Mercury Service Manual* for complete detailed procedure.

Secure steering cable to throttle cable bracket **no. 7** on helm arm **no. 5**.

Install throttle cable end to pivoting plates **no. 3**. Refer to LOW SPEED STEERING CONTROL SYSTEM CABLE hereinafter.

Proceed with steering adjustment, as described in *Mercury Service Manual*.

Check cable/hull watertightness.

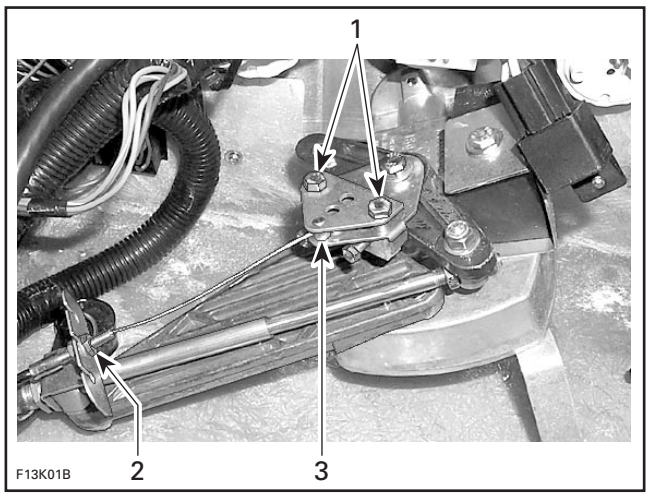
LOW SPEED STEERING CONTROL SYSTEM

210 and 240 Engines

Low Speed Cable Removal

Loosen both screws retaining pivoting plates no. 3 together just enough to release cable end.

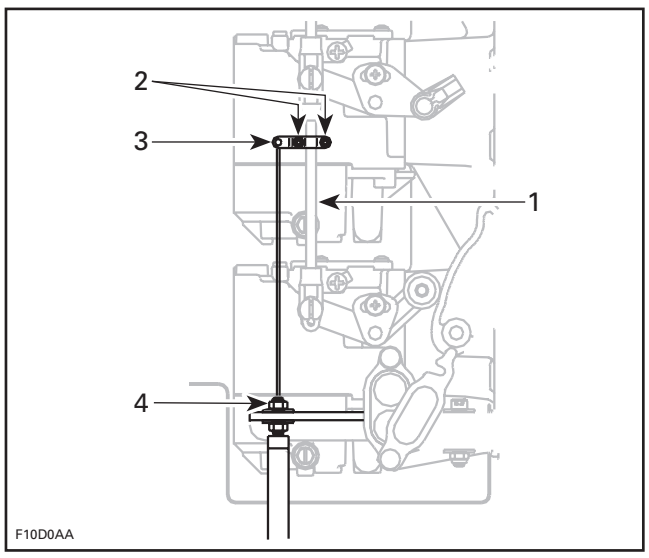
Loosen cable lock nut then detach cable from throttle cable bracket no. 7.



1. *Loosen these two screws*
2. *Loosen cable lock nut*
3. *Detach cable end*

210 Engine

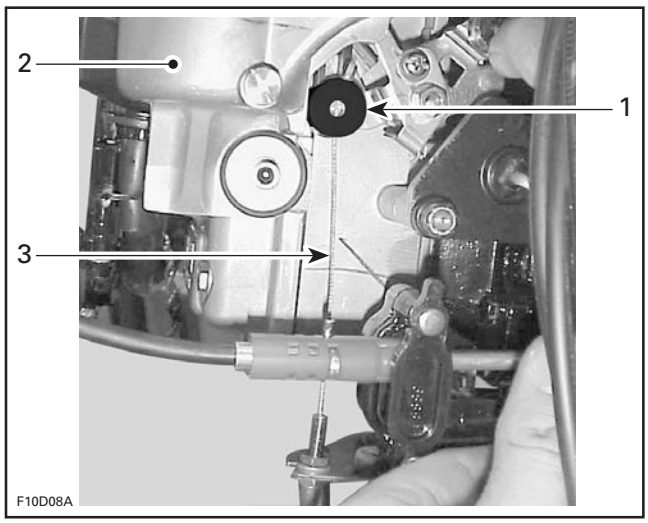
Detach low speed cable end from carburetors link rod, as shown in the next illustration.



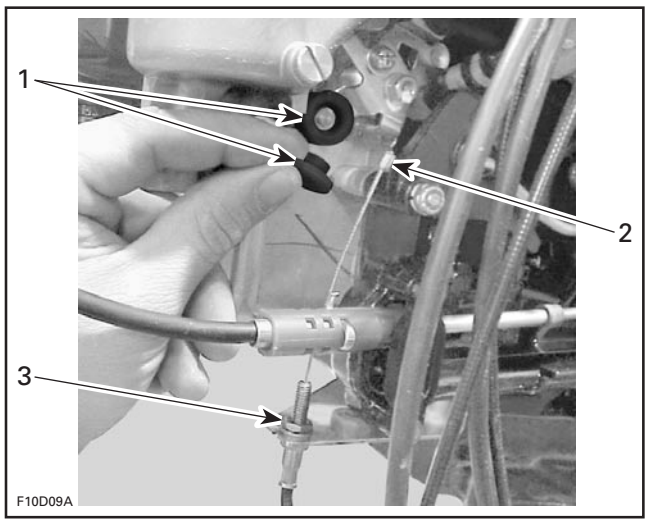
1. *Carburetors link rod*
2. *Loosen both nuts*
3. *Detach low speed cable end*
4. *Loosen cable lock nut*

240 Engine

Detach low speed cable end from roller cam bracket located under vapor separator tank, as shown in the next photos.



1. *Roller cam bracket*
2. *Vapor separator*
3. *Low speed cable*



1. *Remove cap from roller cam bracket*
2. *Pull cable end out*
3. *Loosen cable lock nut to remove cable*

210 and 240 Engines

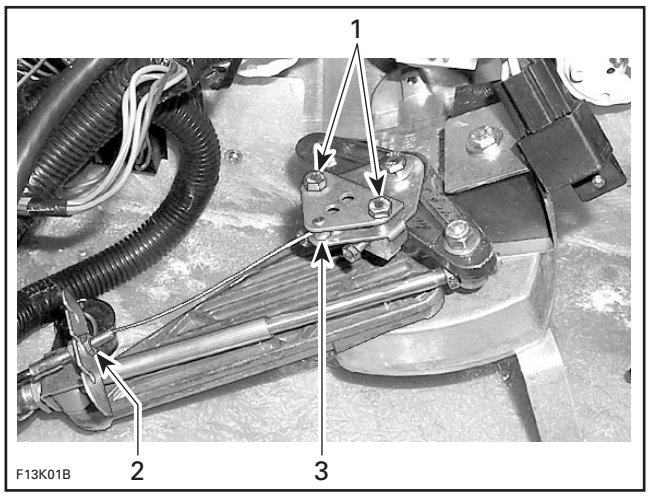
Low Speed Cable Installation

Ensure all on-cable adjuster(s) are set to mid-position before reinstalling low speed cable.

To reinstall low speed cable at steering helm assembly and at engine location reverse removal procedure. Pay attention to following:

Reinstall cable to bracket no. 7 and in proper hole of pivoting plates no. 3, as shown in the next photo.

Retighten cable stop nut no. 8 and screws of pivoting plates.

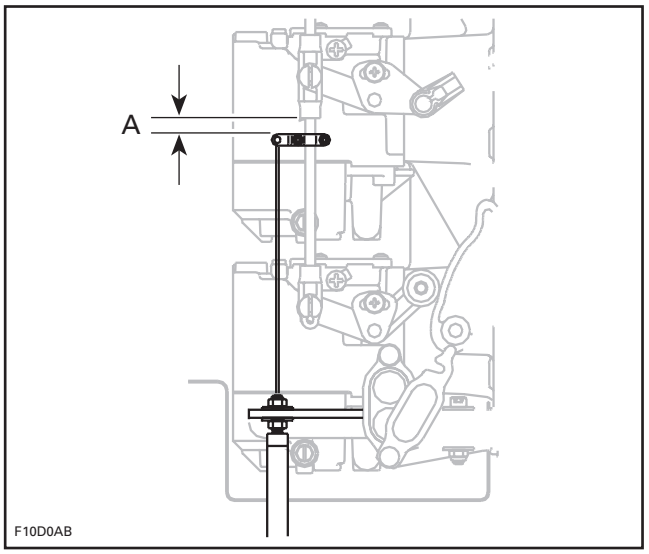


TYPICAL

1. *Retighten these screws*
2. *Cable stop nut*
3. *Cable end in pivoting plates*

210 Engine

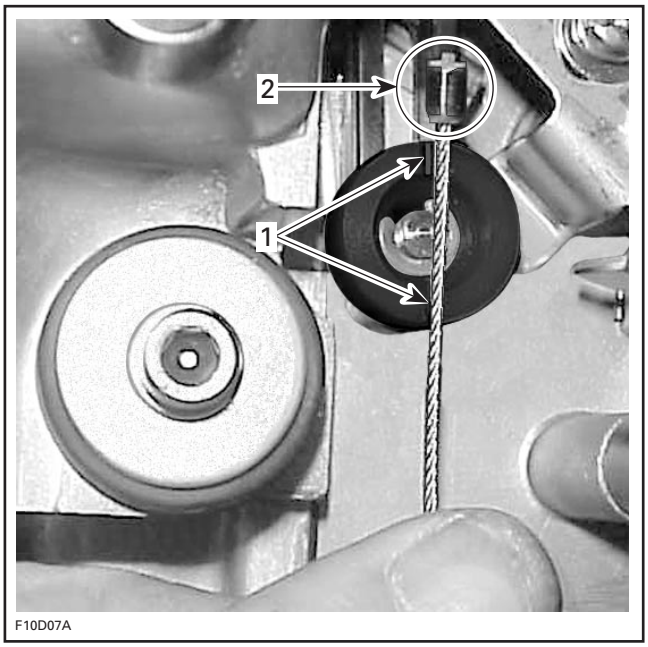
When reinstalling low speed cable to carburetors link rod ensure to position its bracket as specified in the next illustration.



A. 10 mm (3/8 in)

240 Engine

Reinstall low speed cable in roller cam bracket grooves, as shown in the next photo. Secure cable with roller cam cap. Pay attention to low speed cable end position; outside roller cam bracket.



1. *Cable aligned with roller cam grooves*
2. *Cable end outside roller cam bracket*

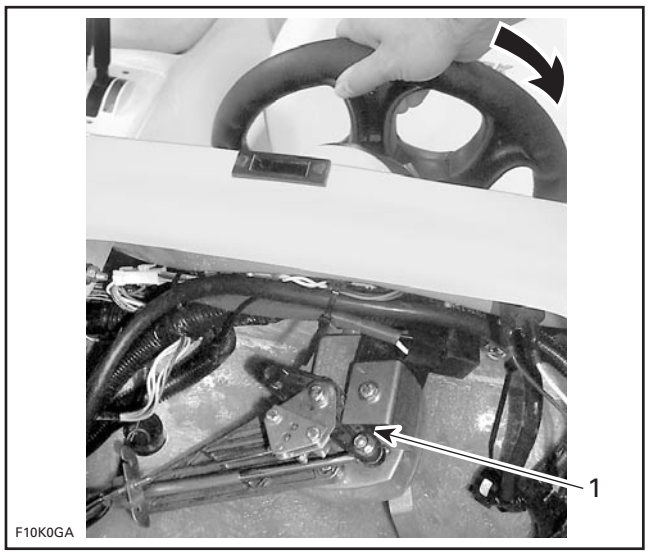
210 and 240 Engines

Proceed with low speed steering control system cable adjustment as specified below.

NOTE: Unit must be in water for proper loading. Engine should be at operating temperature.

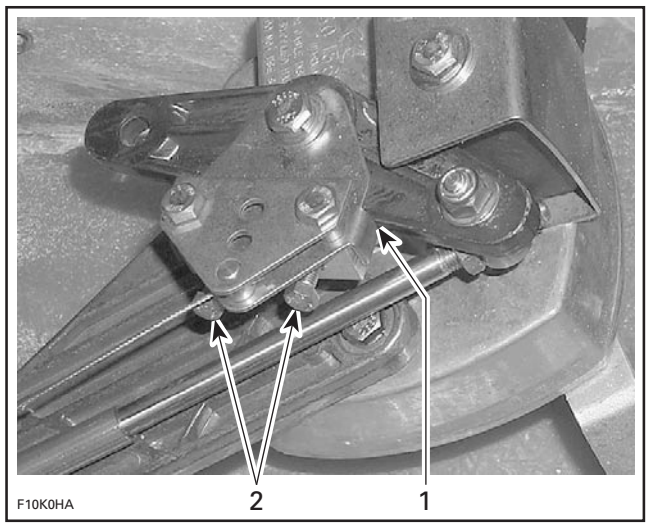
Low Speed Cable Adjustment

Turn steering to port side until pivoting arm **no. 1** leans on rubber stopper **no. 9**.



1. Pivoting arm leaning on rubber stopper

Using both adjustment screws **no. 10**, adjust pivoting plate **no. 3** so its tab leans on pivoting arm **no. 1**, as shown in the next photo.



1. Pivoting plate tab leaning on pivoting arm
2. Use both screws to adjust

Start engine.

CAUTION: Never start or run the engine (even momentarily) without water circulating through the cooling system to prevent damage to engine.

Turn steering both sides and compare engine revvings.

Stop engine.

If revving readings are different, repeat procedure using both adjustment screws **no. 10** to modify pivoting plate position.

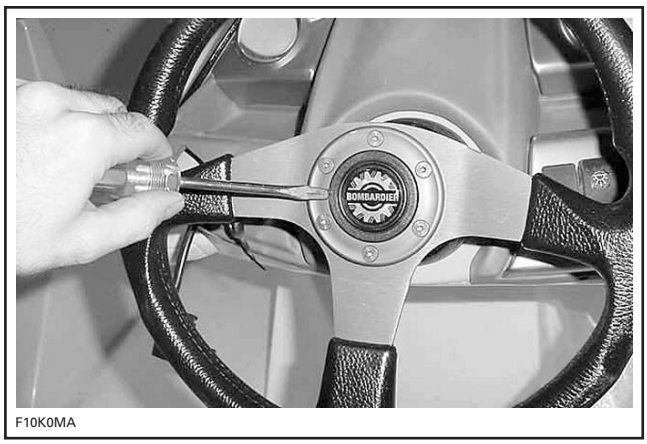
Refer to the TECHNICAL DATA at the end of this Manual for specified low speed system RPM.

STEERING HELM REPLACEMENT

All Models

Removal

To release steering cover **no. 11**, use a small screwdriver, remove cap and pull cover (if applicable), as shown in the next photo.



TYPICAL — CAREFULLY REMOVE WITH SMALL SCREWDRIVER

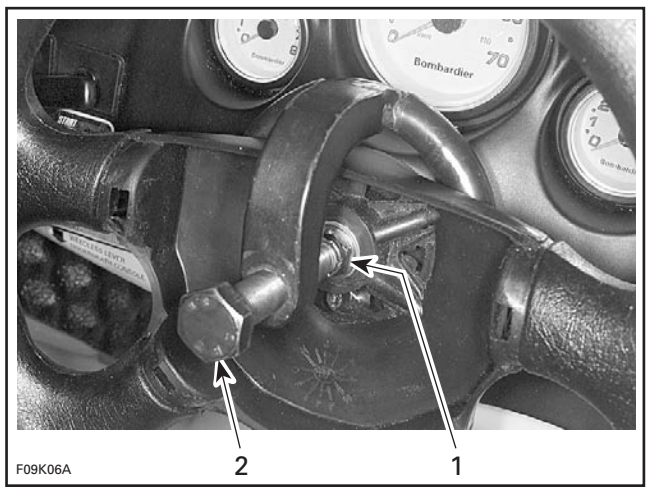
Loosen lock nut **no. 12**.

Use of puller tool (P/N 295 000 161) is recommended to ease steering wheel removal and to prevent damage.

Install steering wheel puller, hold steering wheel firmly and tighten puller screw to detach wheel from the shaft.

Once steering wheel is unlocked, remove steering wheel puller, nut with washer and steering wheel.

CAUTION: Do not hammer on the shaft to dislodge the steering wheel.



TYPICAL

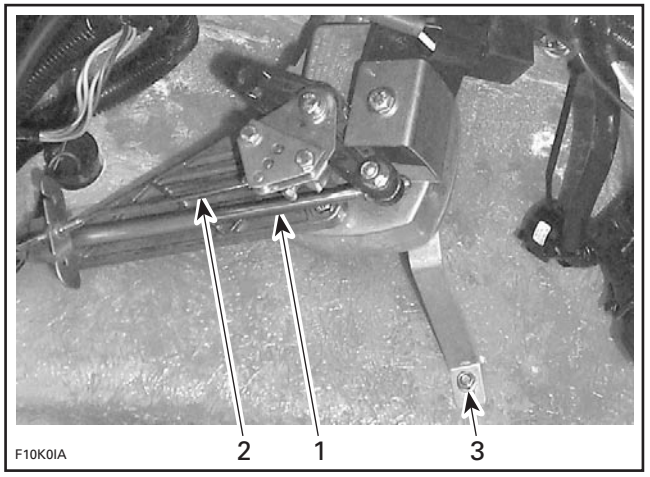
1. *Loosen this nut first*
2. *Use a 24 mm (15/16 in) socket*

Be careful to keep Woodruff key **no. 14** for reinstallation.

Remove collar **no. 13**.

Disconnect steering cable and low speed system cable as described above.

Remove nut and screw retaining steering brace to deck, as shown in the next photo.



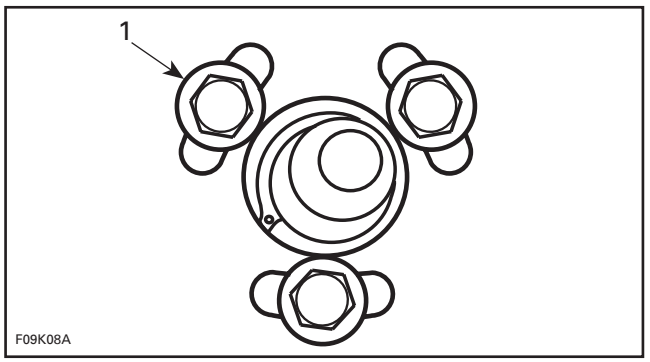
1. *Disconnect steering cable*
2. *Disconnect low speed cable*
3. *Remove nut and screw*

Remove all 3 screws **no. 15** and withdraw steering helm assembly **no. 16**. Pay attention, spacer(s) may be present. In that case note position of each spacer(s) for proper reinstallation.

Installation

Reinstall removed parts and pay attention to the following:

When installing steering helm to boat, reinstall spacer(s) if some were present. Position screws **no. 15** as required in slots on steering support **no. 17** to keep space between helm/cable and body. Centering screws in slots is a good starting point.



1. *Screw centered in slot*

Torque screws as indicated in exploded view.

Ensure to install Woodruff key **no. 14**.

Apply anti-seize lubricant (P/N 293 800 023) on helm shaft.

Install steering wheel.

Secure steering wheel with nut and torque as indicated in exploded view.

Proceed with low speed cable adjustment, as described previously.

Proceed with steering alignment. Refer to *Mercury Service Manual*.

240 EFI Plus and 250 Optimax Models

STEERING CABLE REMOVAL AND REPLACEMENT

Steering Cable Removal

Detach cable from jet pump housing and nozzle. Refer to *Mercury Service Manual* for complete detailed procedure.

Detach cable end and pivot from pivoting arm **no. 1**.

To detach cable housing **no. 4** from helm arm **no. 5**, loosen adjuster **no. 6** and unscrew pivots from cable.

Remove cable from hull.

Steering Cable Installation

Reinstall removed parts and pay attention to the following.

Pass cable through transom and jet pump housing then attach to nozzle. Refer to *Mercury Service Manual* for complete detailed procedure.

Secure steering cable to helm arm **no. 5**.

Proceed with steering adjustment, as described in *Mercury Service Manual*.

Low Speed Control Adjustments

The following method applies to the adjustment of the Low Speed Control (**LSC**) for Utopia models with the **Optimax** power source:

Ensure that the bumper **no. 9** mounting bolt is torqued to the specification of 0.9 - 1.1 N•m (8 - 9.7 lbf•**in**).

Install the sensor **no. 18** and adjust to the distance shown in the next illustration. Adjust to 19.05 mm (.750 in).

Install the actuators **no. 19** and adjust to the distance shown in the next illustration. Clockwise steering to 24.33 mm (.958 in), and counterclockwise steering to 15.31 mm (.603 in).

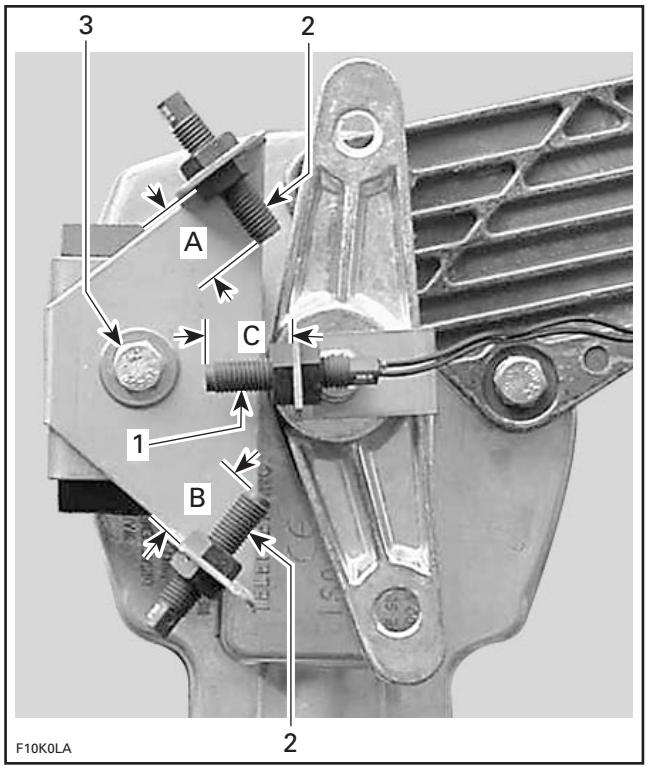
Using an ohmmeter with an audible continuity signal, attach meter to sensor.

Check that the audible signal, indicating that the **LSC** is engaged, activates on each side of the steering position.

Ensure that the signal only engages when the steering is turned fully into the rubber stop at each end to the steering travel, and that the steering assist disengages from the force of the rubber stopper only.

As a final check, slowly rotate the steering to ensure that the **LSC** will not stay engaged without manually holding the steering wheel into the bumpers.

If further adjustment is required, adjust the two actuators 1/4 turn at a time on the side required until the above conditions are met.



TYPICAL

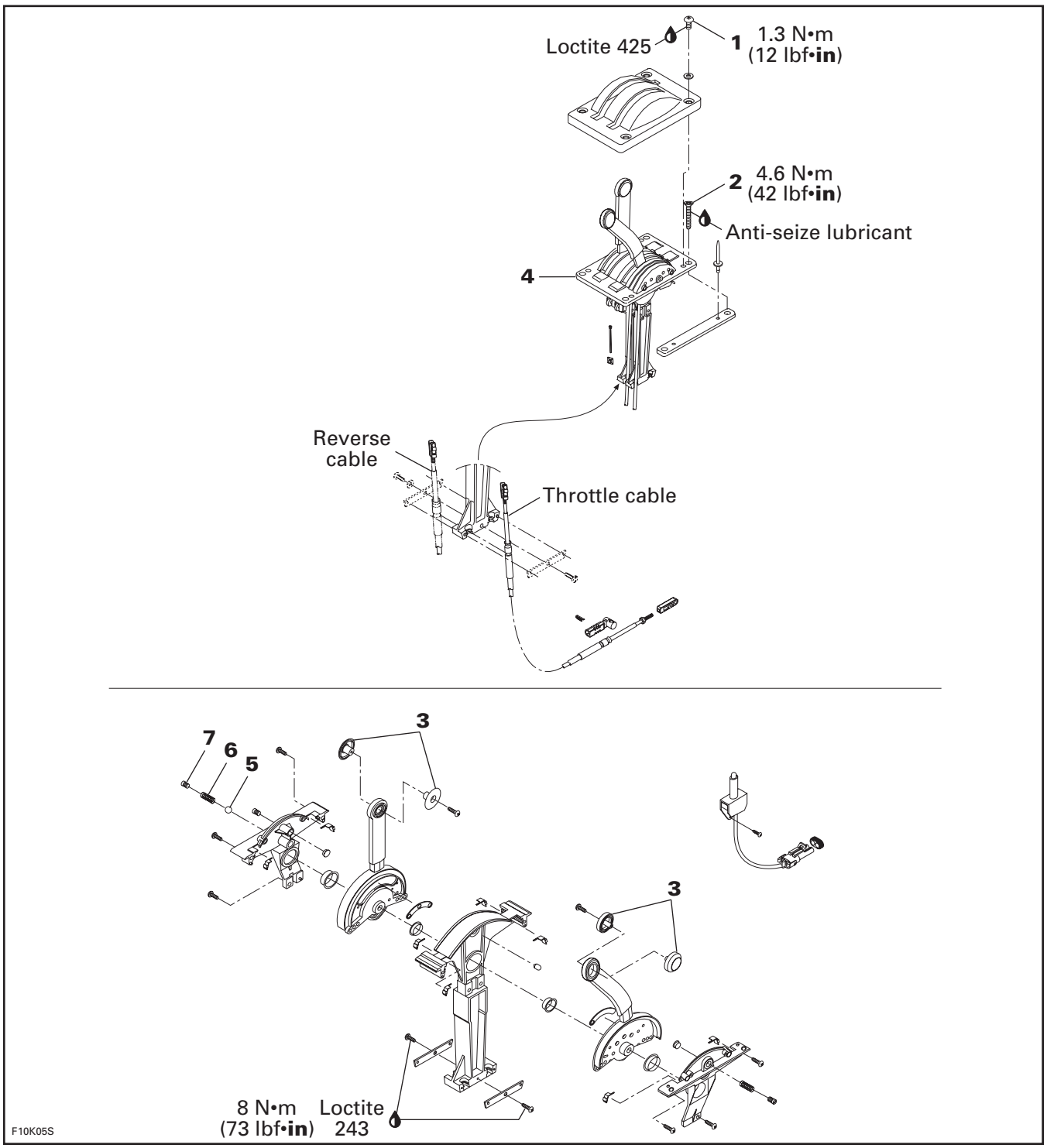
1. ***LSC** sensor*
2. *Counterclockwise and clockwise steering actuators*
3. *Torque to 0.9 - 1.1 N•m (8 - 9.7 lbf•**in**)*

A. 24.33 mm (.958 in)
B. 15.31 mm (.603 in)
C. 19.05 mm (.750 in)

Check cable/hull watertightness.

THROTTLE/SHIFTER CONTROLLER

All Models



REMOVAL

Remove lever handles **no. 3**.

Unscrew retaining screws **no. 1** and **no. 2**.

Pull throttle/shifter controller **no. 4** out of its receptacle.

CAUTION: Use a protective mat (P/N 295 000 129) in shifter area when withdrawing controller.

INSPECTION

Check all moving parts for free movement and for excessive play.

Check cables for wear and oxidation.

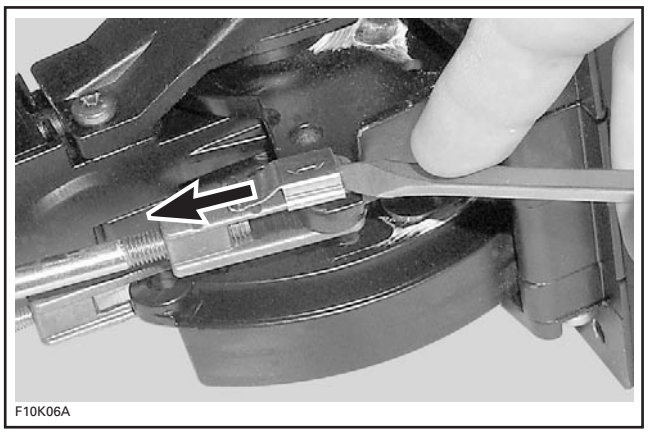
Replace parts as required.

LUBRICATION

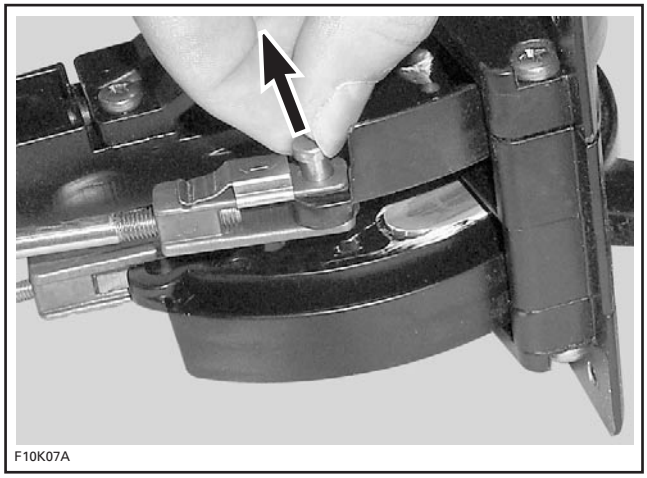
Lubricate moving parts with synthetic grease (P/N 293 550 010). Where not possible, apply BOMBARDIER LUBE (P/N 293 600 016).

CABLES REMOVAL

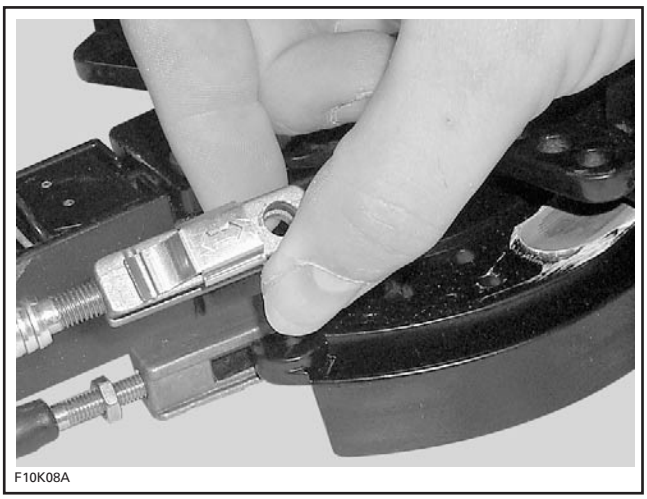
At Shifter Location



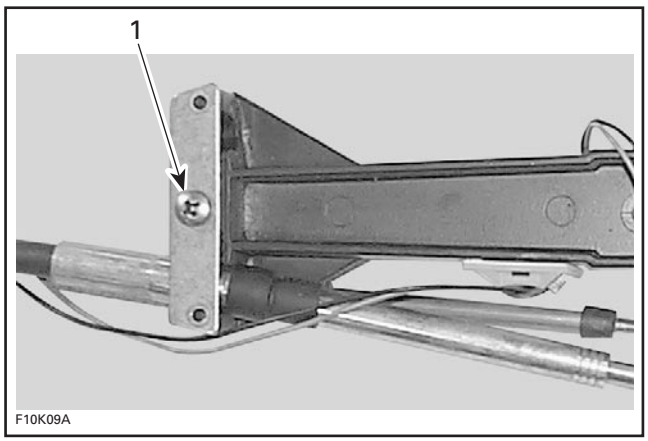
USING A SCREWDRIVER SLIDE OFF LOCKING BRACKET



REMOVE LOCK PIN



REMOVE CABLE END FROM SHIFTER



LOOSEN SCREW, REMOVE BRACKET AND PULL CABLE OUT

1. Loosen this screw

At Engine Location

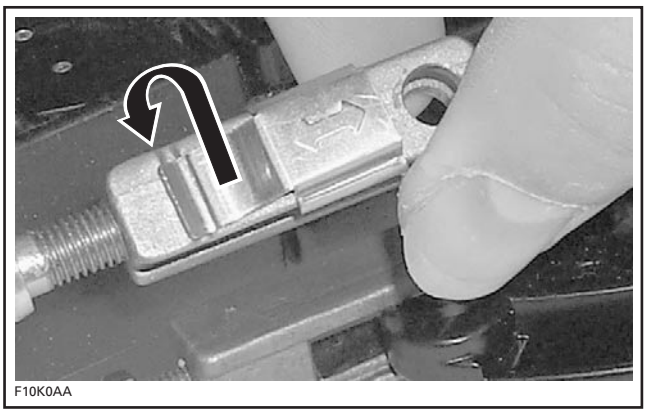
Refer to *210/240 M² Jet Drive Service Manual* for complete detailed procedure.

At Jet Pump Location

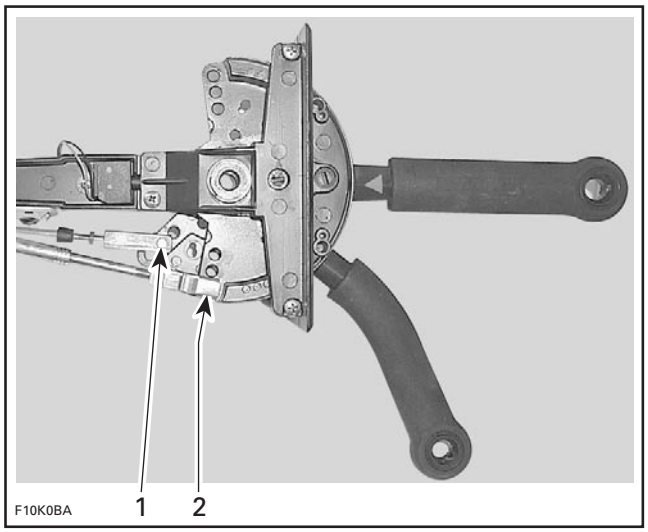
Detach shifter cable from reverse gate, remove shifter cable retainer then loosen bellows inside engine compartment. Refer to *210/240 M² Jet Drive Service Manual* for complete detailed procedure.

CABLES INSTALLATION

Reverse removal procedure and pay attention to the following:

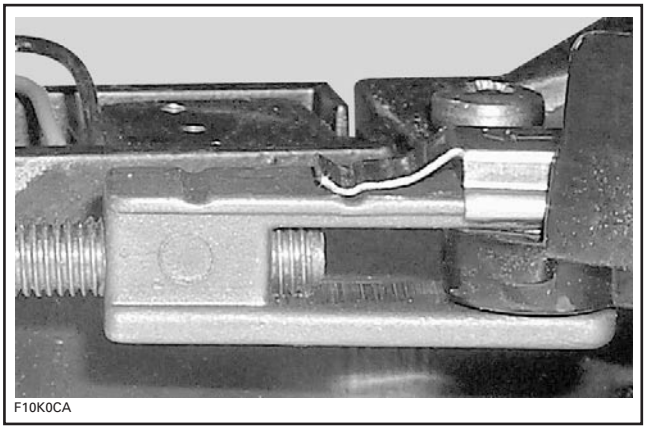


CABLE THREADED ENDS MUST BE SCREWED AT LEAST 6 TURNS INTO CONNECTOR



THROTTLE/SHIFTER CONTROLLER

1. *Install throttle cable in this hole*
2. *Install shifter cable in this hole*



ENSURE LOCKING BRACKET TAB IS PROPERLY LOCKED IN CONNECTOR RECESS

ADJUSTMENTS

Cable Adjustment

Ensure all on-cable adjusters are set to their middle adjustment.

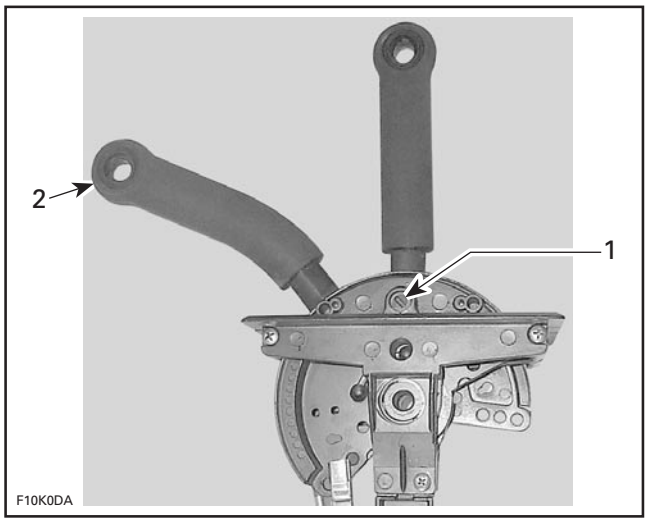
TYPICAL — CABLE ADJUSTER

Perform throttle and shifter cable adjustment at engine and jet pump location. Refer to *210/240 M² Jet Drive Service Manual* for complete detailed procedure.

Levers Friction Adjustment

Lever friction can be adjusted to suit operator's preferences.

Turn set screw clockwise to increase friction and counterclockwise to decrease it. There is one screw for each lever.



TYPICAL

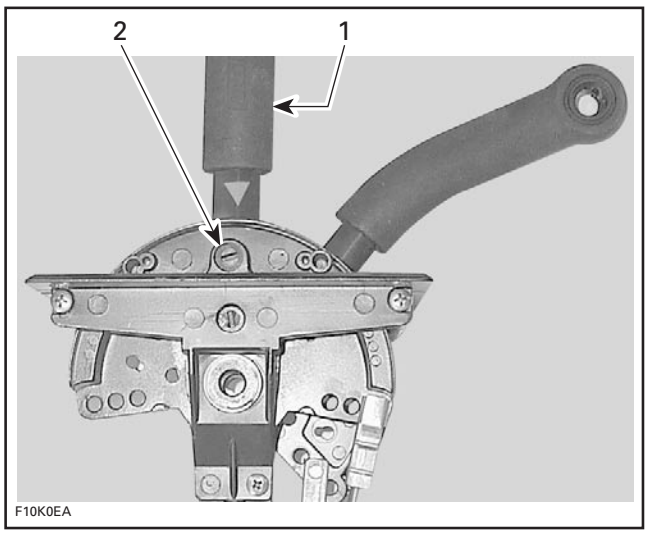
1. *Set screw of throttle lever*
2. *Throttle lever*

Shifter Lock Adjustment

The locking action can be adjusted. The positions Forward/Neutral/Reverse are "notched" by means of a steel ball **no. 5** pushed by a spring **no. 6** against a notch on shifter plate.

Turning the set screw **no. 7** clockwise will increase spring pressure and therefore "hardens" shifter lock action. Conversely turning screw counterclockwise "softens" lock action.

The set screw is located on the same side as shifter lever.



1. *Shifter lever*
2. *Set screw (shifter lock)*

ASSEMBLY

When reinstalling throttle/shifter controller **no. 4**, be careful not to bend cables.

Ensure everything works properly.