

Morse Controls Instruction Sheet

Use with Morse Connection Kits
and
Type 33C "Red-Jaket" Cables

Model MT-2 Control

Introduction

These instructions, when used with the appropriate Throttle Connection Kit and Clutch Connection Kit Instructions, provide all the necessary information for installing, adjusting and operating a Single or Twin Morse Model MT-2 single lever control system.

The Model MT-2 provides complete single lever control of both light clutch and throttle operation in precise sequence for safe, one hand engine control, as shown below (figure 1).

Full neutral throttle is provided for starting and warm-up by pulling out the hand lever hub when the control is in neutral position. This locks the control in neutral allowing full throttle range when lever is moved forward. When the lever is returned to neutral, the hub automatically snaps inward for single lever operation.

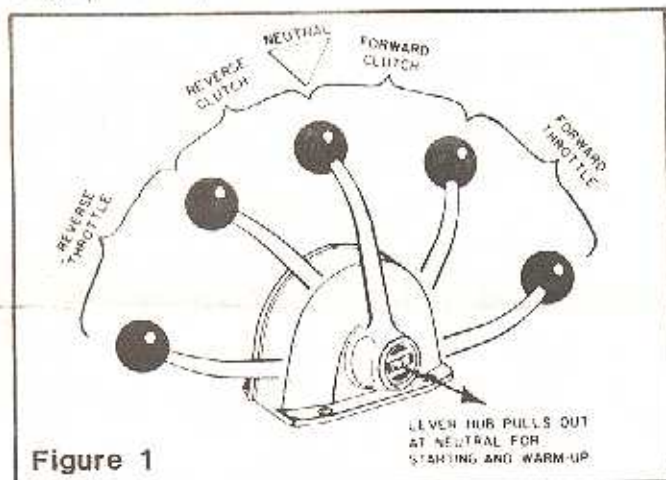


Figure 1

Equipment Required

The following components are required to make a remote control installation for one engine:

1. Model "MT-2" control head
2. Clutch Connection Kit
3. Throttle Connection Kit
4. Two Morse 33C "Red Jacket" push pull cables
5. Optional-Neutral Safety Switch Kit P/N A067925. This kit is to provide start-in-gear protection to meet USCG requirements 33CFR Part 183, Subpart L.
6. Shift Travel Adapter Kit (P/N A304900) for longer shift travel in Mercury I/O's since 1983.

1. Locate Control Head

When determining the position of the control head, consider the following:

- (a) Allow clearance for full forward and ample reverse movement of the control hand lever. (Figure 2).
- (b) The bottom of the control head housing should not interfere with the steering gear or other components inside the wheelbox. (Figure 2).

- (c) The area below the control head housing should allow an unobstructed path for running the control cables to the engine. (See Figure 2).

After location of the control head is determined, use the template provided and cut and drill the mounting holes required.

NOTE

Do not mount Control Head at this time.

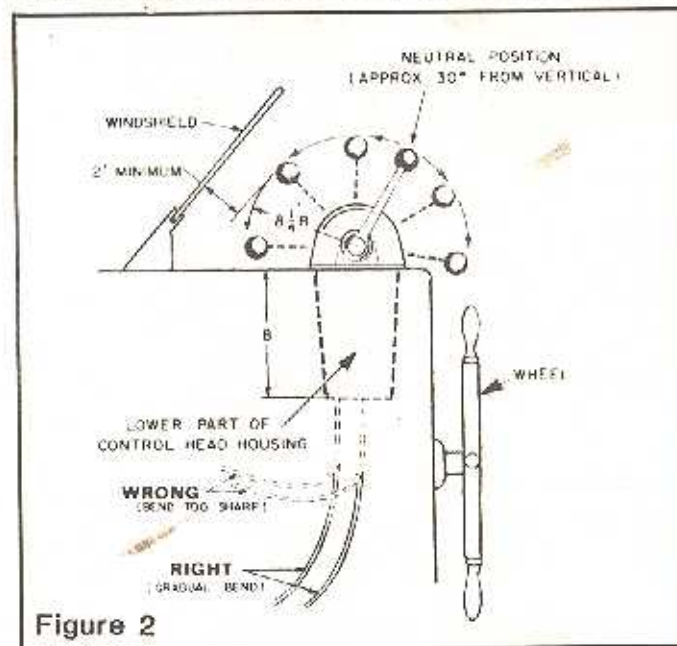


Figure 2

2. Connect Clutch Cable to Control Head

1. Open control head by removing screw (1) and (20).
2. Remove screw (30) and lockwashers (9) and rotate retainer plate and link (27) to uncover the clutch lever.
3. Place jam nut (35) into pocket of terminal (26) then screw terminal onto cable rod until 1/8" of rod is through terminal. Hold terminal securely to prevent it from turning and tighten cable nut against terminal.
4. Lubricate terminal and place in proper hole in clutch lever as shown in Figure 3.
5. Mount Neutral Safety Switch at this time if required. Follow instructions with switch kit. Replace retainer plate screws and lockwashers.

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CAUTION

The clutch lever has two sets of terminal holes on each end (See Clutch Lever Drawing). Use the inner hole for 1-1/8" travel (required for electric switch). Use the outer hole for 2-3/4" travel (standard required by most transmissions).

6. Securely fasten clutch cable to housing (13) using cable clamp (25) and screws (31).

CAUTION

Be sure key on the underside of cable clamp is seated in the groove of cable hub.

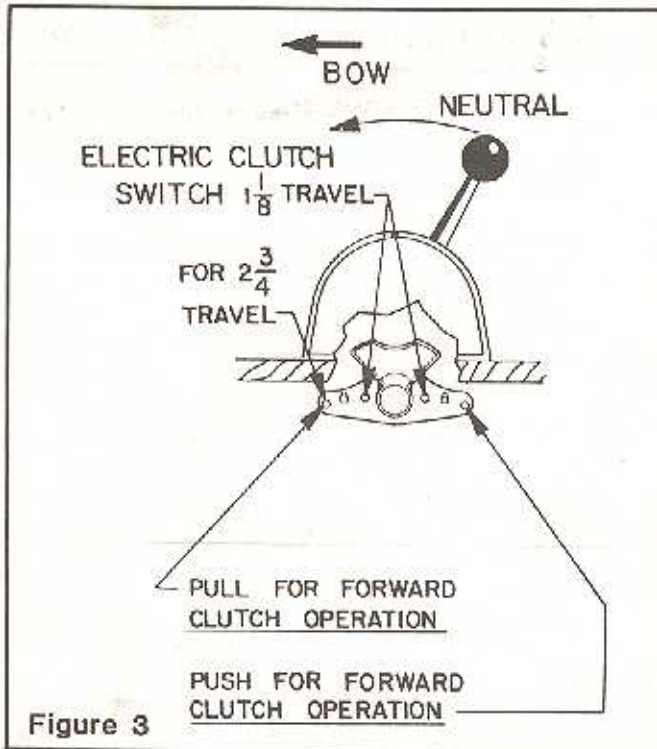


Figure 3

3. Connect Throttle Cable to Control Head

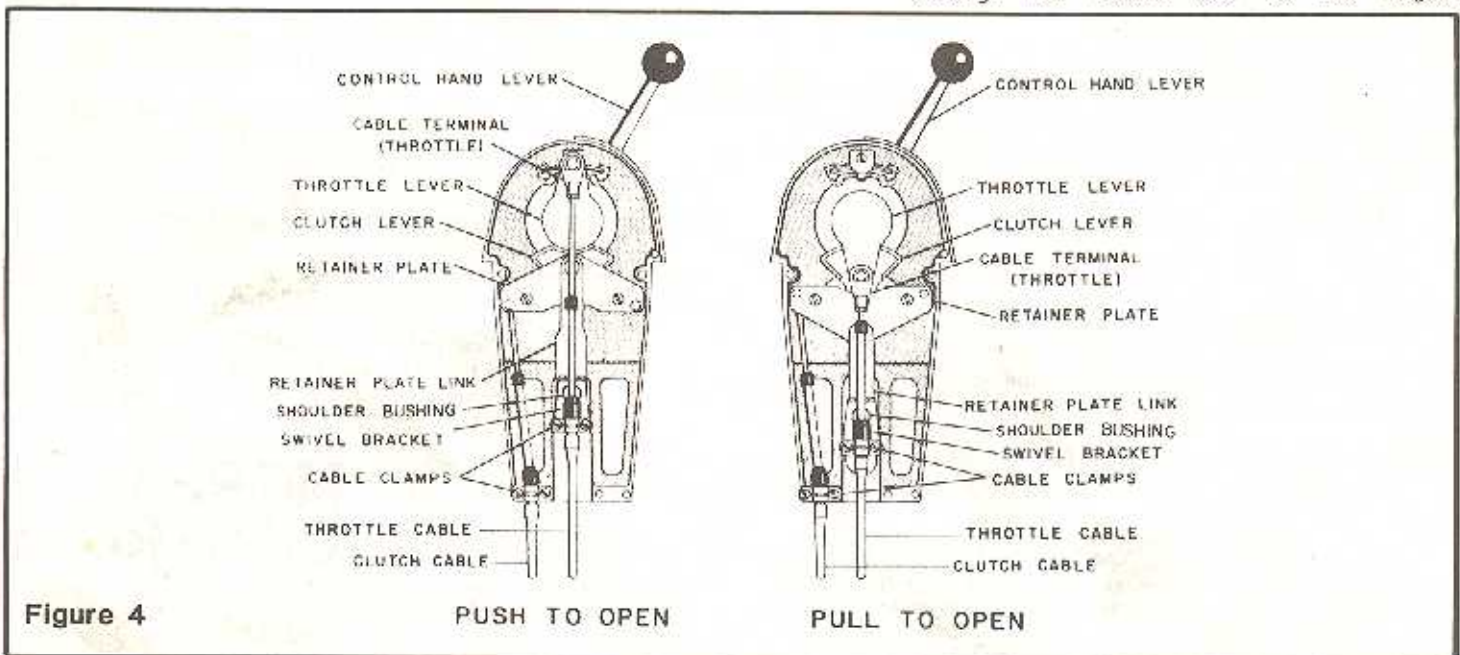


Figure 4

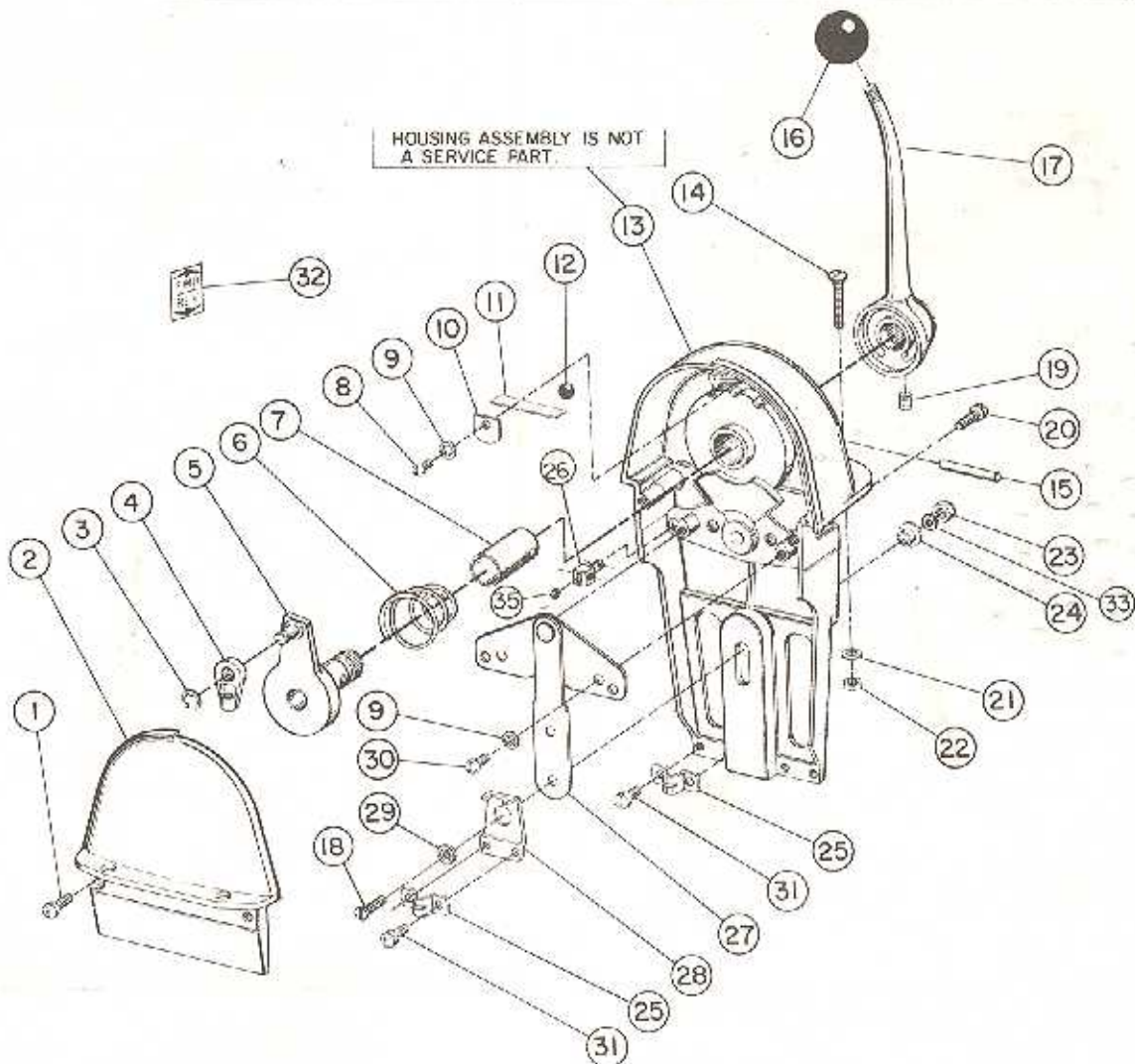
IMPORTANT

Be sure the control head is correctly assembled for PUSH-TO-OPEN or PULL-TO-OPEN throttle operation as required (see Figure 4). If necessary, modify as follows:

- (a) Remove screws (30) and lockwashers (9) from retainer plate (27). Also remove screw (18), shoulder bushing (29), collar (24) and stopnut (23) from swivel bracket (28).
 - (b) Rotate retainer plate 180° so V-point is Down for Pull or Up for Push. Then replace screws (30) and lockwashers (9). Insert screw, shoulder bushing and swivel bracket into retainer plate link (27) hole and housing slot. Replace collar and stopnut.
 - (c) Move hand lever from neutral and loosen setscrew (19). Return hand lever to neutral and remove from control.
 - (d) Press spring-loaded throttle lever toward outside of housing until pin (15) is clear of keyway. Rotate throttle lever 180° until pin snaps back into keyway. Replace control hand lever and tighten setscrew.
1. Screw throttle terminal (4) onto cable rod until 1/8" of the rod shows through terminal. Hold terminal securely to prevent it from turning and tighten cable nut against terminal.
 2. Apply lubricant and place terminal (4), flatwasher (24), and retaining ring (3) on throttle arm (5).
 3. Securely fasten throttle cable to swivel bracket (28), using cable clamp (25) and screws (31). Be sure key on underside of cable clamp is seated in groove of cable hub.
 4. Control should appear as shown in Figure 4 for proper throttle operation.
 5. Reassemble control head.

4. Install Control Cables

1. Run the two cables into the cutout, down through the column and to the engine.



Item No.	Description	MT-2 Single	MT-2 Twin	Part No.	Item No.	Description	MT-2 Single	MT-2 Twin	Part No.
1	Screw, Mach. Slot Fil. Hd. No. 10-24 x 5/8 Lg.	1		A50112-062	18	Screw, Flat Hd. Mach 1/4-28x1" Lg	1	2	A50120-586
2	Plate, Side Chrome	1		D32098-2	19	Selfscrew, Cup Pt. 5/16-18x1/2 Lg	1	2	A50414-003
3	Retaining Ring, 5/16 Nom. Type E	1	2	A51304-135	20	Screw, Mach. Slot, Fil. Hd. No. 10-24 x 1 Lg	1	2	A50112-086
4	Cable Terminal, Throttle	1	2	A330646	21	Washer, Flat No. 10	4	4	A50800-807
5	Arm Assembly, Throttle	1	2	A67954	22	Nut, Hex. No. 10-32	4	4	A50900-068
6	Spring, Conical	1	2	A32790	23	Nut, Elastic Stop Hex 1/4-28	1	2	A50908-061
7	Bearing, Throttle Arm	1	2	A32788	24	Collar	1	2	A32963
8	Screw, Mach. Slot, Rd. Hd. No. 10-24 x 5/16 Lg.	1	2	A50145-022	25	Clamp Cable	2	4	A32010
9	Lockwasher, No. 10 Int. Tooth	3	6	A50803-051	26	Cable Terminal, Clutch	1	2	A50499
10	Clip, Ball Spring	1	2	A32785	27	Linkage Assembly	1	2	A67951
11	Spring, Ball	4	8	A32792	28	Bracket, Swivel	1	2	A32011
12	Ball 3/8 Dia.	1	2	A51600-005	29	Shoulder Bushing	1	2	A48676
13	Housing Assembly Chrome	1	2		30	Screw, Mach. Slot, Rd. Hd. No. 10-24 x 3/8 Lg.	2	4	A50145-030
14	Screw, Mach. Slot, Oval Hd. No. 10-24 x 1-1/2 Lg.	4	4	A50127-110	31	Screw, Fil. Hd. No. 10-24 x 5/16 Lg.	4	8	A50112-022
15	Pin	1	2	A51015-900	32	Decal, Forward-Reverse	1	2	A38853
16	Ball, Knob, Red	1	2	A35232	33	Flat Washer, Special	1	2	A32194
17	Lever Control, Hand	1	2	D32778-2	34	Flat Washer	1	2	A50800-843
					35	Jam Nut	1	2	A32029

Cables should run straight downward or in a gradual curve well below the bottom of the control head housing before bending. Throttle cable requires free, back-and-forth swing clearance below the housing. (See Figure 2).

WARNING

The cables should NOT be bent SHARPLY in ANY DIRECTION close to the bottom of the control. Sharp bends produce excess friction in the cables causing the control lever to bind and become hard to move. In severe cases, cable damage will result. (See Figure 2).

- The cables should be run as straight as possible, avoiding any sharp bends. Make no bends in the cable of less than 8" radius.
- Cables should be supported by using cable hangers or by running them through straight sections of conduit for extremely long runs.

5. Mount Control Head

- Place control head in position and fasten in place with screws (14), washer (21) and nuts (22).

2. Operate control hand lever to check for adequate clearance. If additional clearance is required at full forward proceed as follows:
 - (a) Set control hand lever either side of neutral. Loosen setscrew (19) with a 5/32" Allen wrench and remove control hand lever from shaft.
 - (b) Replace control hand lever on shaft to provide desired clearance and tighten setscrew.
3. Apply forward and reverse decal (32) to the control head adjacent to neutral position of control hand lever.

NOTE: Before stripping of protective backing paper from decal, clean the control surface thoroughly.

6. Connect Clutch and Throttle Cables to Engine

1. Follow the procedure outlined in the Throttle and Clutch Connection Kit Installation Instructions supplied with each kit.

7. Final Adjustment

1. Operate the control hand lever several times. The engine clutch lever and the control clutch arm (14) MUST coincide at forward, neutral and reverse detent positions.
2. The engine clutch lever position must be determined only by the control cable and should not be jammed against forward or reverse stops. Adjust the shift cable terminal (at the clutch end first) until detents are properly synchronized.
3. Operate the control hand lever through the complete operating range. The carburetor throttle lever should rest lightly against its idle stop when the control hand lever is at neutral. At neutral detent, pull out hand lever hub and move thru forward range. Return to neutral and hand lever should snap back in place. Excessive pressure of the carburetor throttle lever against its idle stop will prevent the control hand lever from moving freely in and out at the neutral detent. To remedy this, adjust the engine throttle cable terminal so the control cable will move the engine throttle lever against its idle stop with minimum pressure. (See Figure 6).

CAUTION

THROTTLE CABLE MUST BE DISCONNECTED FROM MOTOR BEFORE MAKING MOTOR IDLE ADJUSTMENTS. Adjustment of the motor idle while the throttle cable is still connected to motor, may cause a jamming action against the idle stop. As a result, control may not function properly.

4. The carburetor throttle arm should be at full travel position when the control hand lever is at full forward throttle. In reverse, only limited movement of the carburetor throttle arm is available. When the throttle cable is correctly adjusted, the engine speed will remain at idle while the control is shifted, and will increase only when the hand lever is moved beyond the shift detent.

NOTE

Throttle cable requires free back-and-forth swing clearance two to three feet below the control head housing for smooth operation.

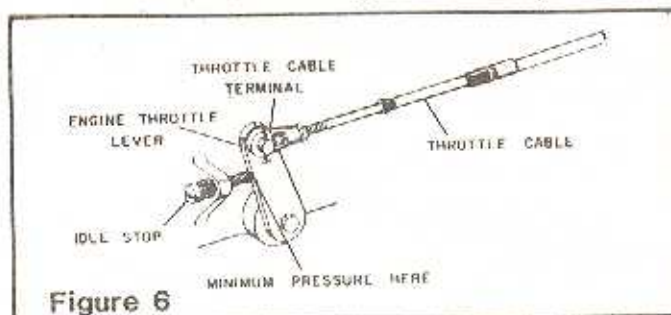


Figure 6

5. Tighten all cable supports.
6. Check all screws, nuts, cable connections and cable terminal for tightness.
7. Water test the boat. The control hand lever should operate freely with light hand pressure. Any stiffness or binding in the operation of the hand lever can usually be traced to:
 - (a) Excess number of bends in cable runs.
 - (b) Sharp bend in the cables too close to control head.
 - (c) Bends smaller than the recommended minimum radius of 8".
 - (d) Tight or misaligned engine linkage.
 - (e) Cable compressed too tightly by cable supports.
 - (f) Engine clutch lever jamming its limit stops at forward and/or reverse.

8. Operation

1. Adjust the engine for smooth idle, as recommended by the manufacturer.
2. For starting or warm-up, place the control in neutral detent position and pull out the hand lever hub to disengage the shift mechanism allowing the lever to be moved forward or backward to advance the throttle. When warm-up is completed, return the lever to neutral detent. The hand lever will automatically snap into the operating range. (If lever does not engage into operating range when returned to neutral, check for excessive pressure of the engine throttle lever against its idle stop).
3. When operating the "MI-2" control, shift crisply out of neutral into forward or reverse, but do not shift too quickly from forward into reverse. Stay in the neutral or idle position until the boat has lost most of its headway before completing the shift to reverse.

9. Maintenance

1. CORROSION PROTECTION

For maximum protection, especially in salt water areas, wipe metallic parts, such as screw heads, cable sleeves, etc., with oil or light grease. Chrome plated hand levers and covers should be washed with fresh water and waxed regularly.

2. MECHANICAL PERFORMANCE

- (a) Periodically check control mechanism for loose fastenings and signs of wear on moving parts, particularly the cable terminals. Lubricate moving parts with a good quality marine grease.
- (b) Periodically examine cables and engine connections for signs of physical damage, wear and corrosion, replace as required.