

MARINE CONTROLS - STEERING SYSTEMS



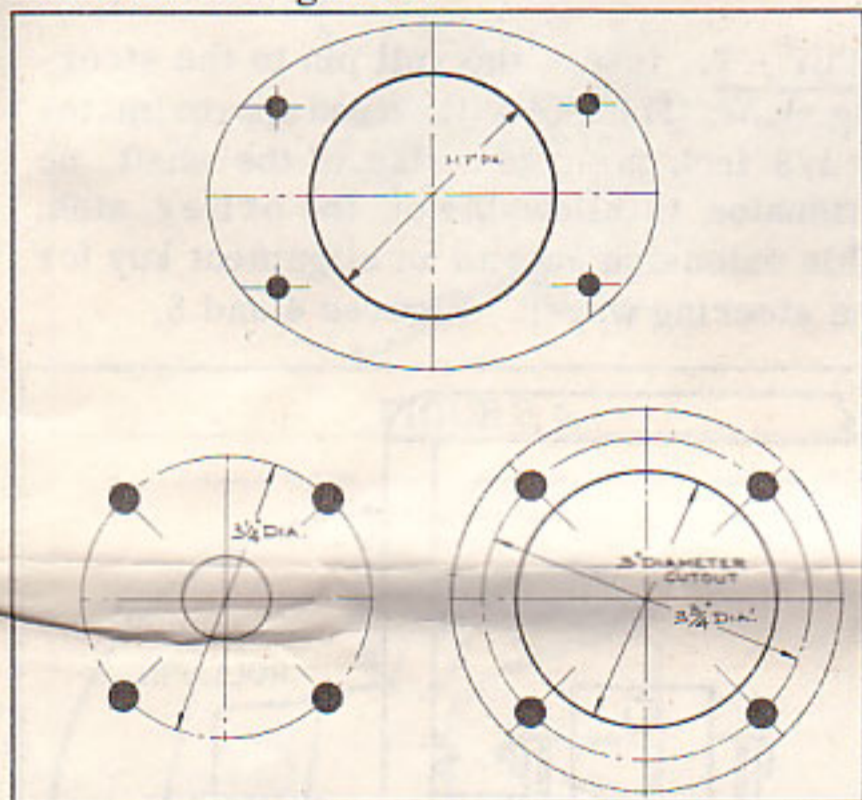
INSTALLATION INSTRUCTIONS

CONTROL HEAD AND WHEEL PREPARATION

NOTE

Control head and steering wheel may be installed as supplied for either a Port or Starboard installation. Steering cables if possible should be routed on the Starboard side to eliminate any powerhead crossover at the stern.

STEP - 1. Locate control head on console or boat dashboard by using template supplied with kit. Dimensions and hole locations are indicated in Figure 1.



NOTE

Clearance behind dash must be at least 7 inches; clearance on the operator side of the dash must be at least 12 inches from the center of the steering wheel to the inner edge of the gunnel to allow for the steering wheel rotation. Figure 2. Be certain that steering wheel rotation will not interfere with remote control operation or any other functional equipment.

STEERING CONTROL
P/N 21001; -3; -6; -10
FOR TELEFLEX STEERING SYSTEMS

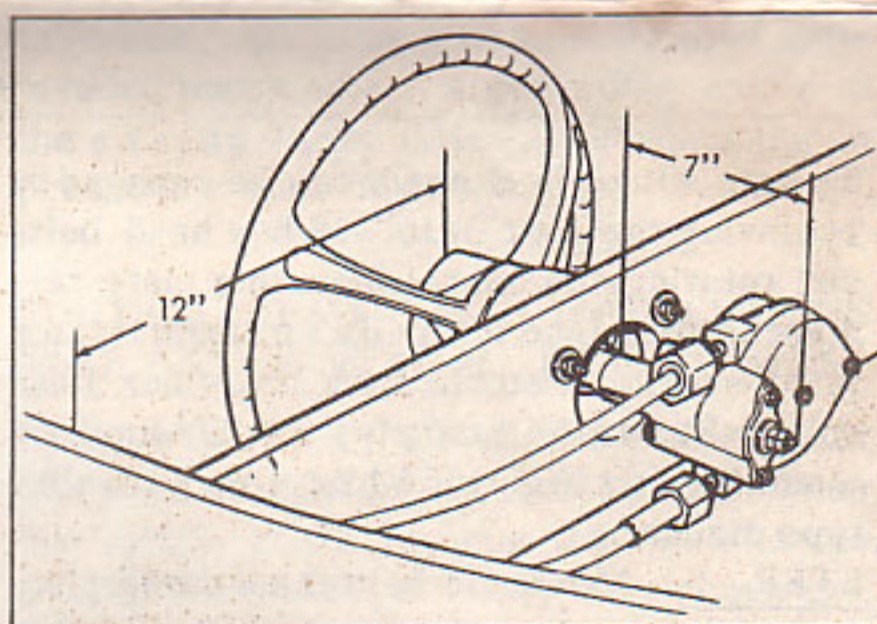


FIGURE 2. STARBOARD MOUNTING

STEP - 2. Using the template, drill four 11/32 inch diameter holes and cut out one 3 1/2 inch diameter hole. Be certain to positive check clearance recommendations before drilling holes.

STEP - 3. Remove the barrel housing from the barrel mounting plate by removing the four 1/4"- 28 slotted flat head machine screws. Figure 3.

STEP - 4. Assemble barrel mounting plate and dash mounting plate to provide the desired steering wheel angle.

SPECIAL NOTE

STEP 4 is not necessary unless steering wheel mounting angle must be changed.

TELEFLEX INCORPORATED Church Road, North Wales, Pa. Telephone 699-4861 Area Code 215

ONGARO DYNAMIC INDUSTRIES a wholly owned subsidiary

PRINTED IN U.S.A.

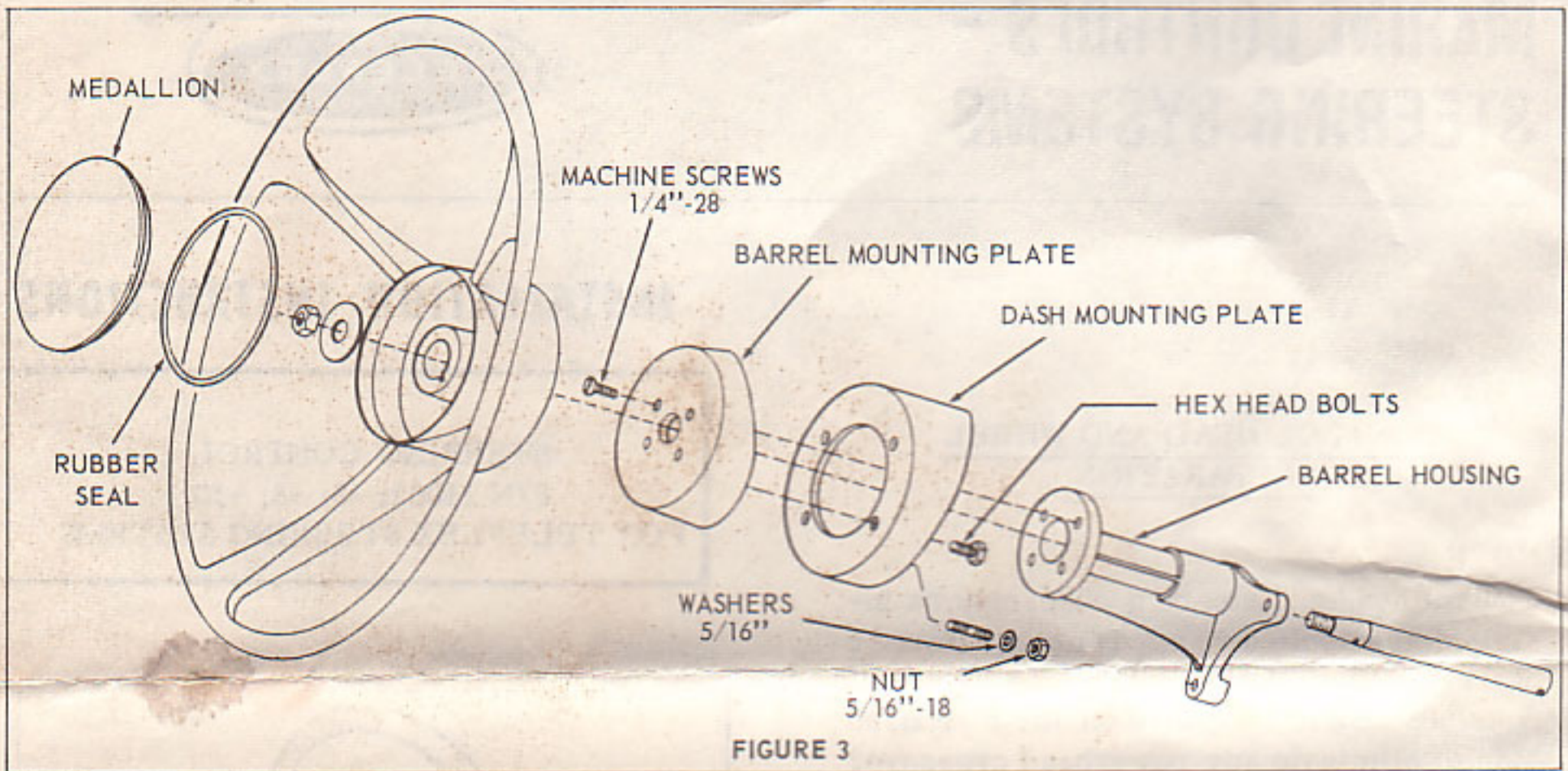


FIGURE 3

The steering wheel angle can be changed by removing the four 5/16"-18 hex head bolts and rotating the barrel mounting plate relative to the plane of the dash mounting plate and reassemble with the 4 hex head bolts. Figure 4 illustrates the 20° inclined mounting and Figure 5 illustrates a parallel type mounting.

STEP - 5. Mount the barrel mounting plate and dash mounting plate to dashboard using the 4 5/16" washers and 5/16"-18 nuts. Figure 3.

STEP - 6. From behind the dash, reassemble the housing to the barrel mounting plate using the four 1/4"-28 flat head machine screws removed in Step 3.

STEP - 7. Insert the roll pin to the steering shaft. This pin will extend approximately 1/8 inch from one side of the shaft, no extension is allowable on the other side. This extension acts as an alignment key for the steering wheel. Figures 4 and 5.

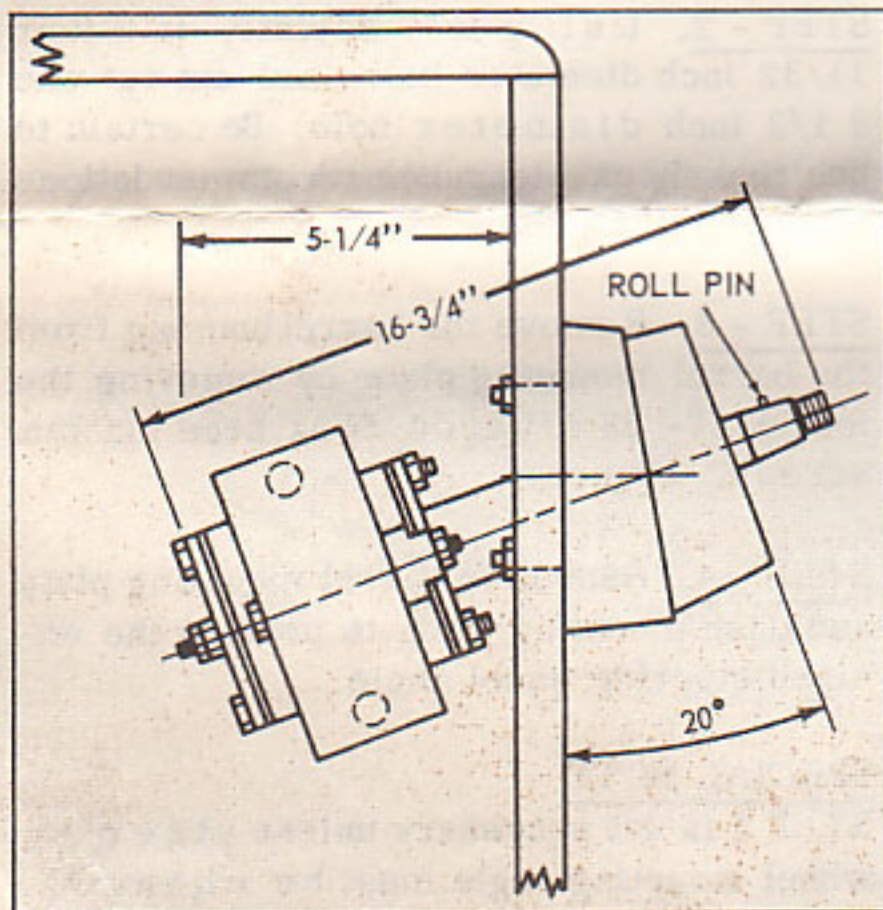


FIGURE 4. 20 DEGREE INCLINE MOUNTING

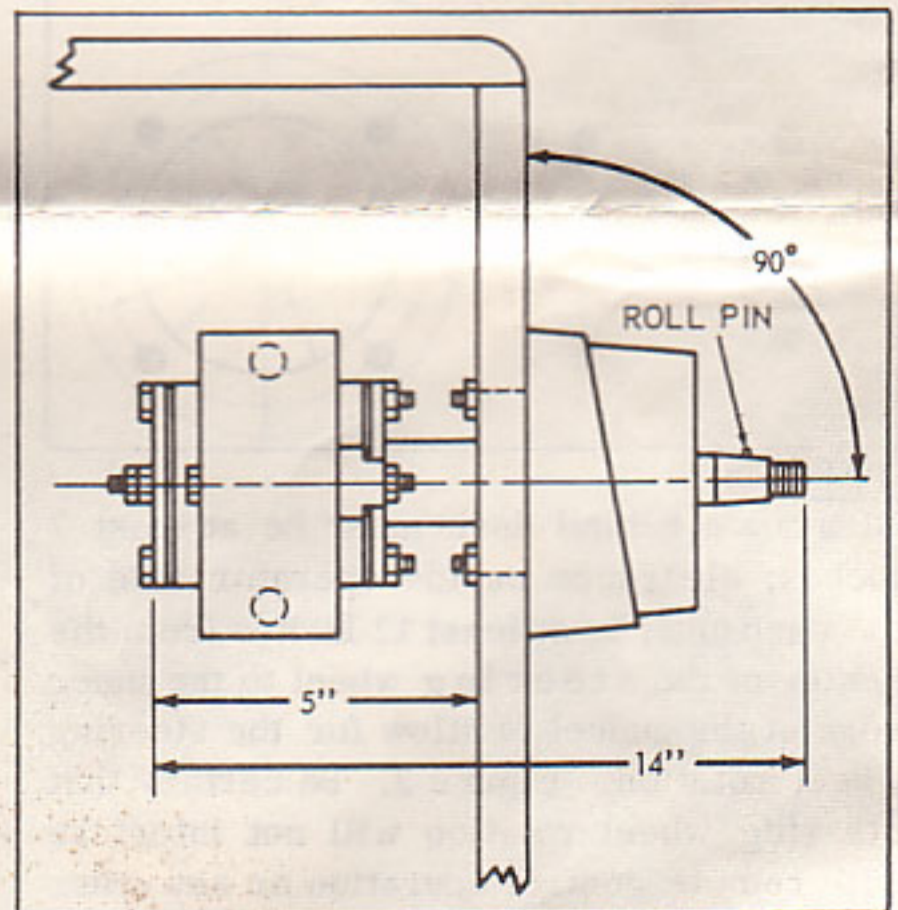
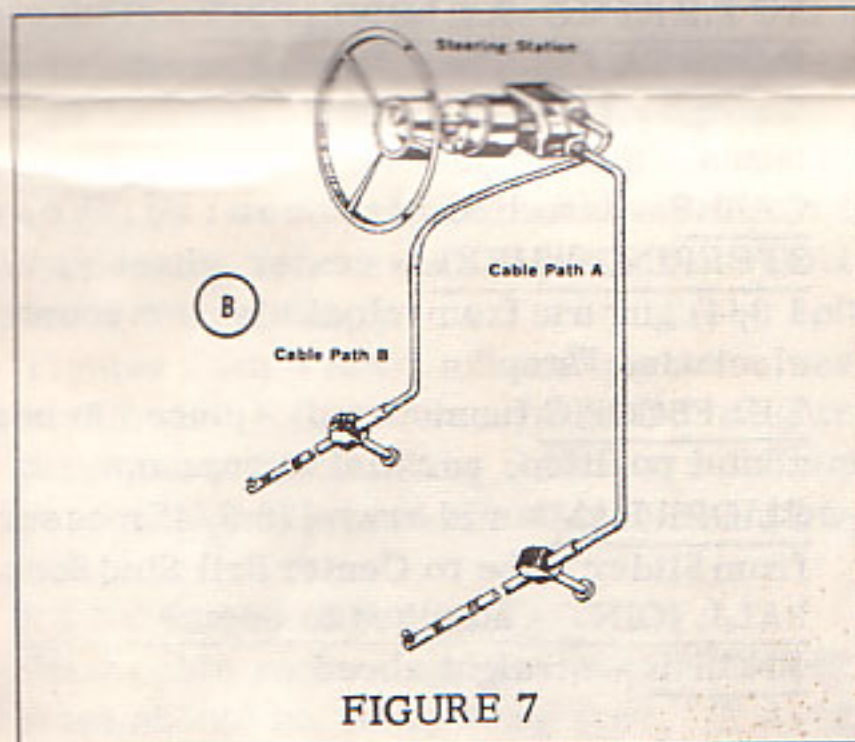
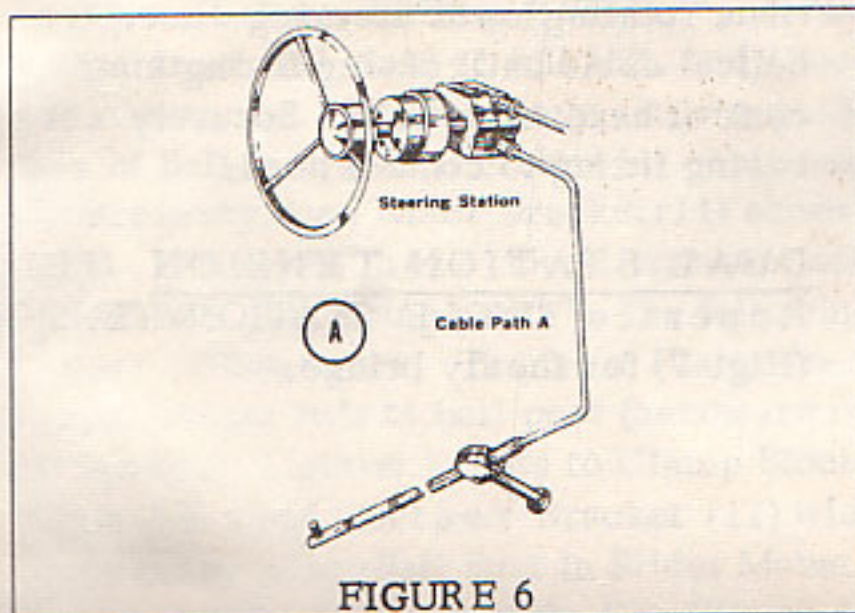


FIGURE 5. PARALLEL TYPE MOUNTING

CABLE AND CASING INSTALLATION

When routing cable and casing assembly through length of boat, always take the most convenient and least obstructed path. Minimum bend radius is 8 inches. If required to pass through bulkhead, drill 1 1/4 inch hole and feed cable and casing assembly through opening.

It is extremely important that absolute cleanliness be maintained when installing and attaching cable and casing assemblies. The entry of dirt can only result in premature wear of the steering system.



Cable and casing assemblies supplied for a single station, single engine installation are properly lubricated and ready for immediate installation. When feeding cable assemblies through casing assemblies such as used on dual engine or dual helm and tension system installations, cleanliness must be maintained.

CAUTION

Under no conditions should this special lubricant be substituted with any other type of lubricant. Use of lubricants not recommended may cause a corroding action in the casing inner lining thus resulting in premature wear of the steering system.

CONTROL HEAD CABLE INSTALLATION SINGLE STATION PUSH PULL (FIG. 6)

Feed extended end of helical cable into bottom entry hole of control head. When the helical cable engages the teeth of the control head rotate steering wheel counter-clockwise until casing fitting mates with control head entry hole. Securely attach casing fitting to control head. Assemble the spent travel tube to the cable exit hole of the control head.

SINGLE STATION TENSION (FIG. 7)

Installation made with Control Head gear box UNMOUNTED AND DISASSEMBLED.
STEP - 1. Wrap helical cable around hobbled gear.

CAUTION: Be certain cable meshes precisely into hobbled gear wheel, that is "bottoms out".

STEP - 2. Reassemble Control Head gear when gear box halves close freely.

STEP - 3. Mount Control Head to dash or console per INSTRUCTIONS. "CONTROL HEAD AND WHEEL INSTALLATION (first page)

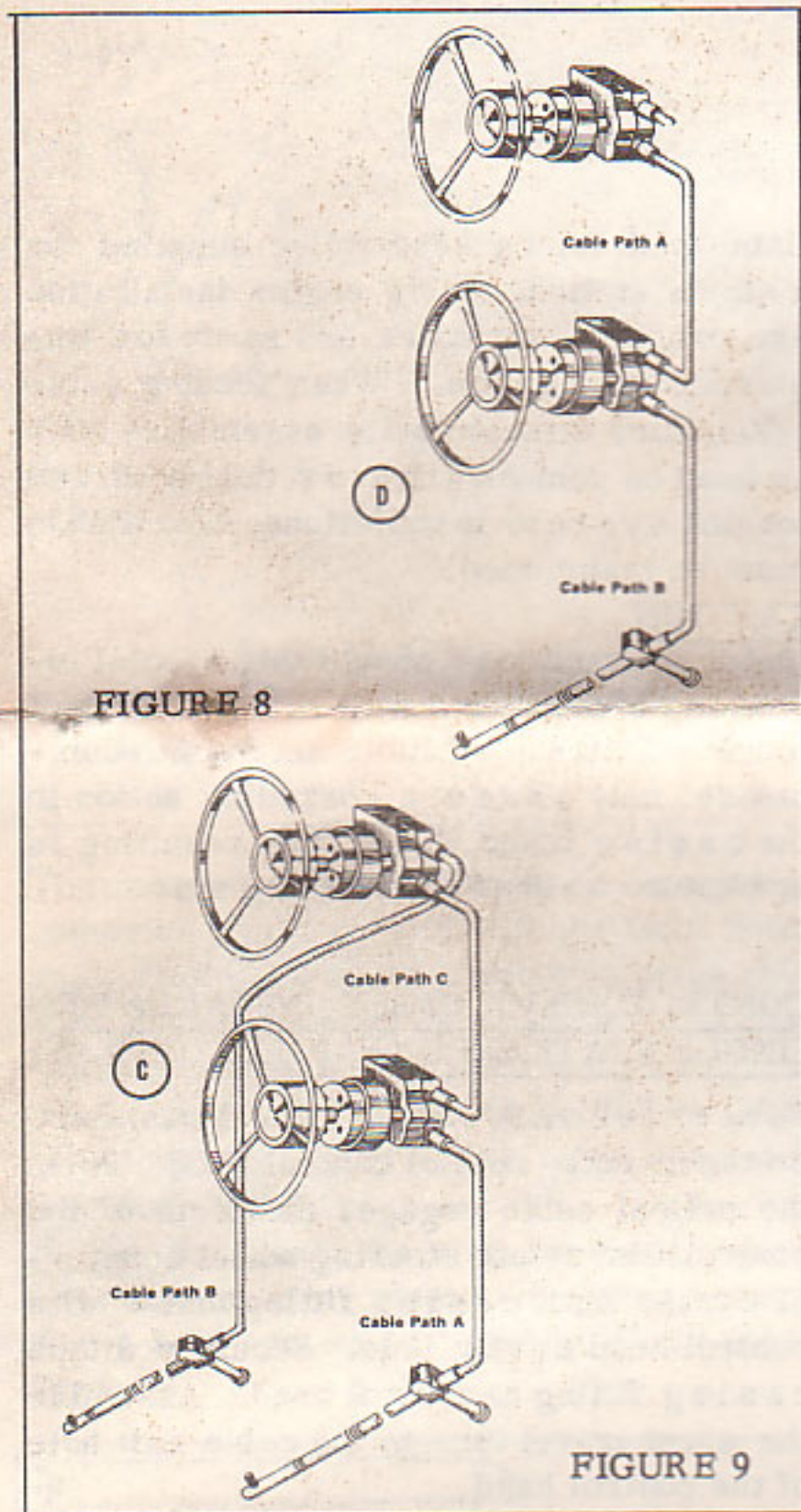


FIGURE 8

FIGURE 9

PREPARE STEERING CABLE (FIG. 11)

Remove and discard red plastic thread protector on Slider Ram and screw on Ball Joint Assembly.

STEP - 1. Couple Ball Joint (13) to Ball Stud (13).

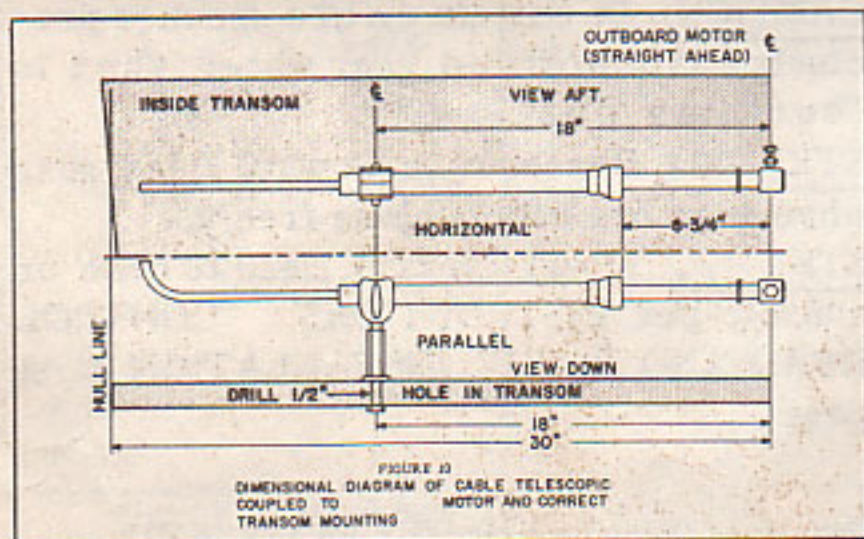


FIGURE 10
DIMENSIONAL DIAGRAM OF CABLE TELESCOPIC
COUPLED TO MOTOR AND CORRECT
TRANSOM MOUNTING

DUAL STATION PUSH PULL (FIG. 8)

STEP - 1. Securely attach short casing to entry hole of flying bridge control head. Route casing to lower control head exit hole and securely attach.

STEP - 2. Feed inner helical cable into lower control head entry hole. When helical cable engages the teeth of the control head, rotate lower steering wheel to draw cable and casing into the control head. Be sure to relieve binding.

STEP - 3. Continue rotating lower steering wheel feeding helical cable through the short casing into the flying bridge control head. When helical cable engages flying bridge control head, be sure to relieve binding if both steering wheels are not turning in same direction remove casing and cable from fly bridge control head entry hole and attach securely to the opposite entry hole. Continue rotating lower steering wheel, feeding helical cable until casing fitting mates with control head entry hole. Securely attach casing fitting to control head.

DUAL STATION TENSION (FIG. 9)

Repeat: "SINGLE STATION TENSION" (Fig. 7) for the fly bridge.

STEERING ALIGNMENT (FIG. 10)

IMPORTANT: The following must be exact throughout the entire cable transom installation. (See Figure 1).

CABLE - installed into control head.
STEERING WHEEL - center wheel (1 2/3 - 1 3/4) turns from clockwise or counter-clockwise "stop"

TELESCOPIC (unmounted) - placed in horizontal position, parallel to transom

SLIDER RAM - mid-travel (6 3/4" measured from Slider Tube to Center Ball Stud Socket)

BALL JOINT - attached to engine

ENGINE - straight ahead

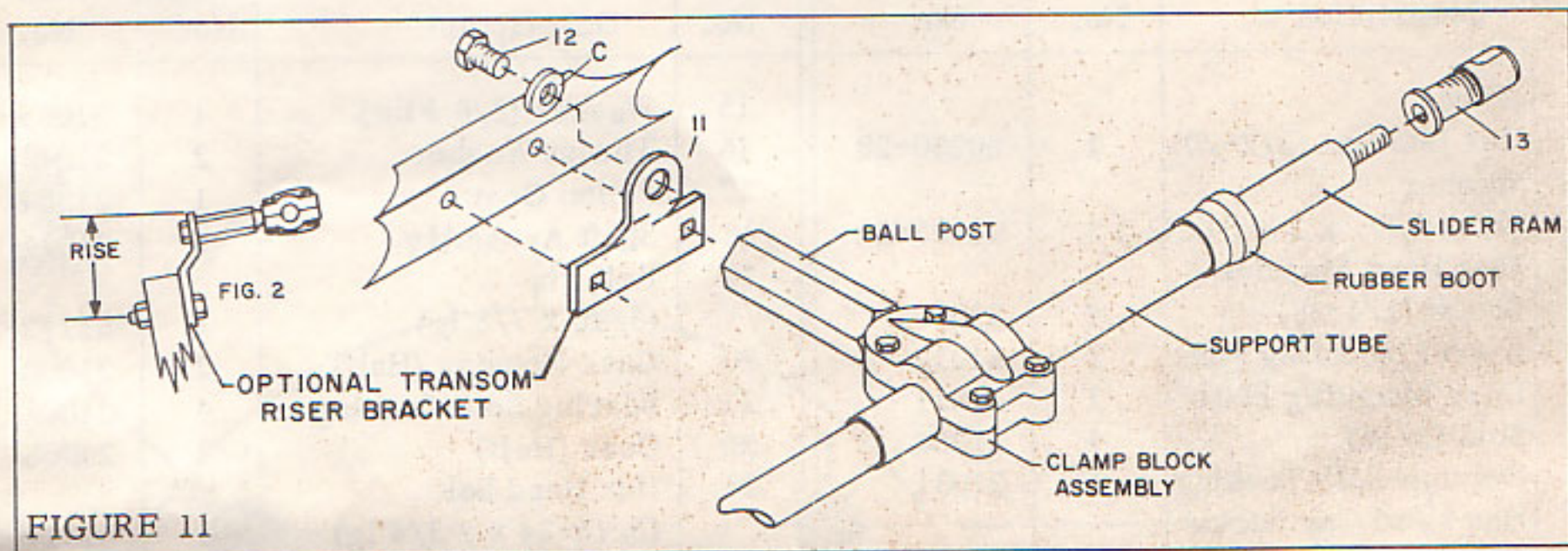


FIGURE 11

STEP - 2. (Fig. 11) Mount the Ball Post to the transom by loosening the 4 bolts to Clamp Block. Slide Clamp Block and Ball Post to a position on the horizontal slider tube 18" away from the ball joint steering ram connection. Before drilling 1/2" hole, rotate motor from full right to full left, and check for clearance. If necessary, adjust position of Ball Post until it clears all positions. If necessary, use Riser Bracket (11) accessory. Drill 1/2" hole thru transom and mount ball post using parts in the following order: Flatwasher, Transom Flatwasher, thru transom bolt to ball post (hardware on ball post). Tighten 4 bolts to Clamp Block.

STEP - 3. Bolt Riser Bracket (11) with Flatwasher (C) to Ball Post in Slider Mounting Assembly with Bolt (12). See Figure 11 Drill mounting holes in bracket and bolt to transom with commercial fasteners not supplied. (Carriage bolts recommended).

STEP - 4. Make fine adjustment of steering system at wheel for equal travel port to starboard, loosen Clamp Block assembly and adjust Support Tube right or left. Tighten Clamp Block assembly. After several hours of operation, check and retighten thru transom bolt of the Ball Post and Clamp Block assembly, and all other connections.

STEERING OPERATION

Once cable and casings are installed, operation should be smooth and free. If steering action is unduly stiff, check for free movement and make certain that there are

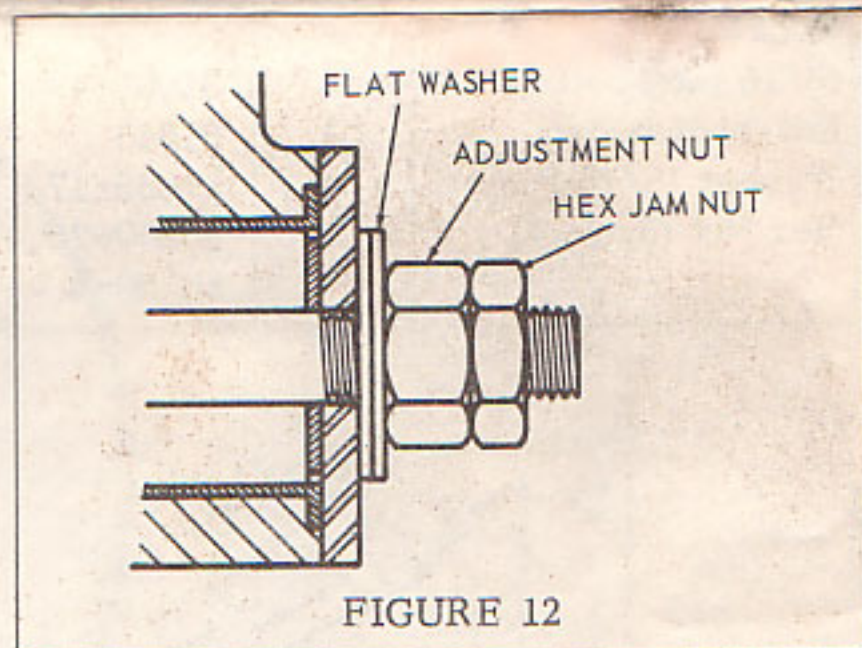


FIGURE 12

no corners of less than 8 inch radii in the casing span. The force required to operate the steering wheel may be adjusted by loosening or tightening the adjustment nut on the rear of the control head. Figure 12.

TORQUE DRAG ADJUSTMENT

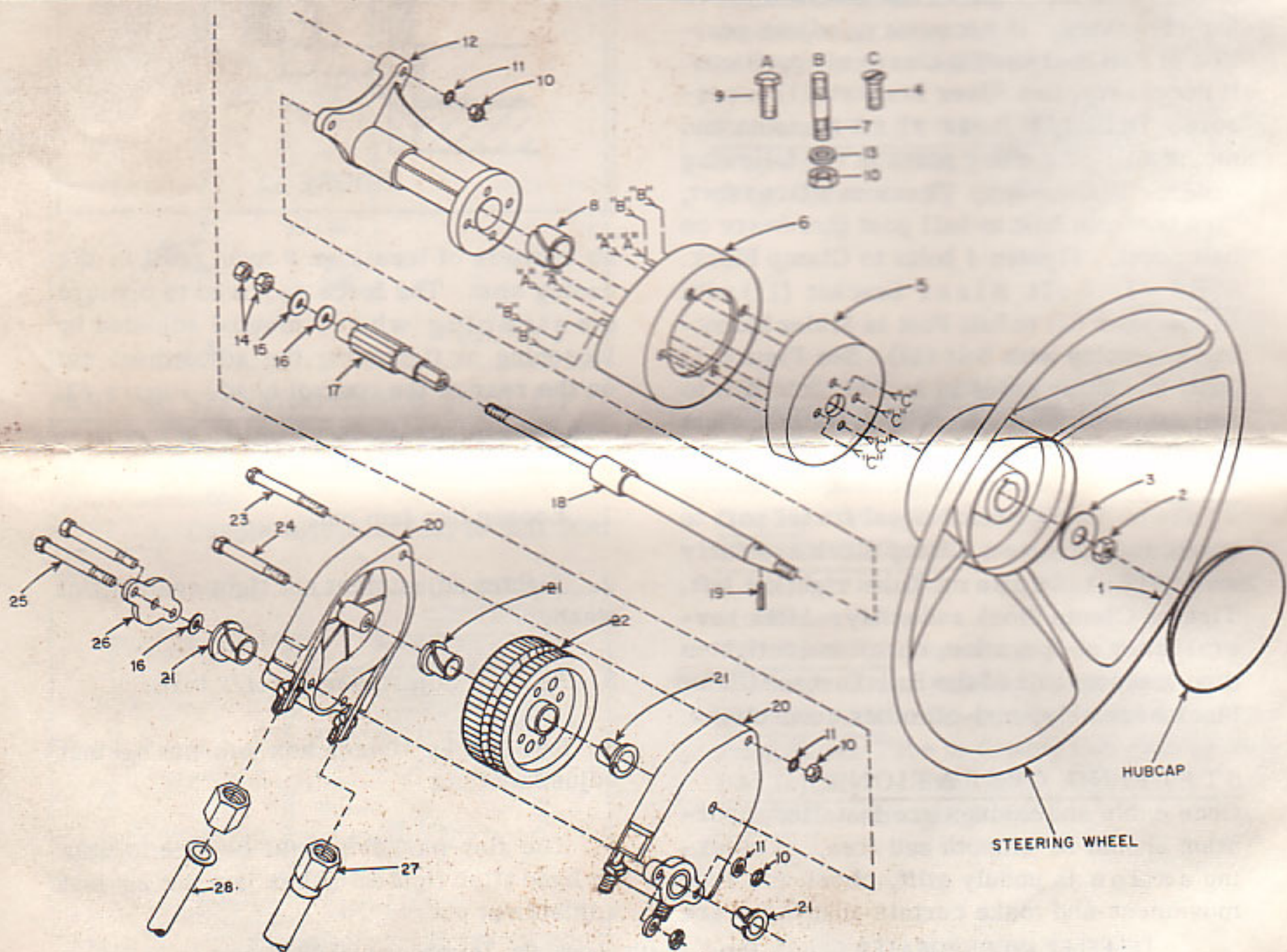
1. Loosen hex jam nut.
2. Tighten adjustment nut tight against flat washer.
3. Back off adjustment nut 1/2 turn.
4. Securely tighten hex jam nut against adjustment nut.
5. The flat washer should be free to spin by hand after tightening hex jam nut against adjustment nut.

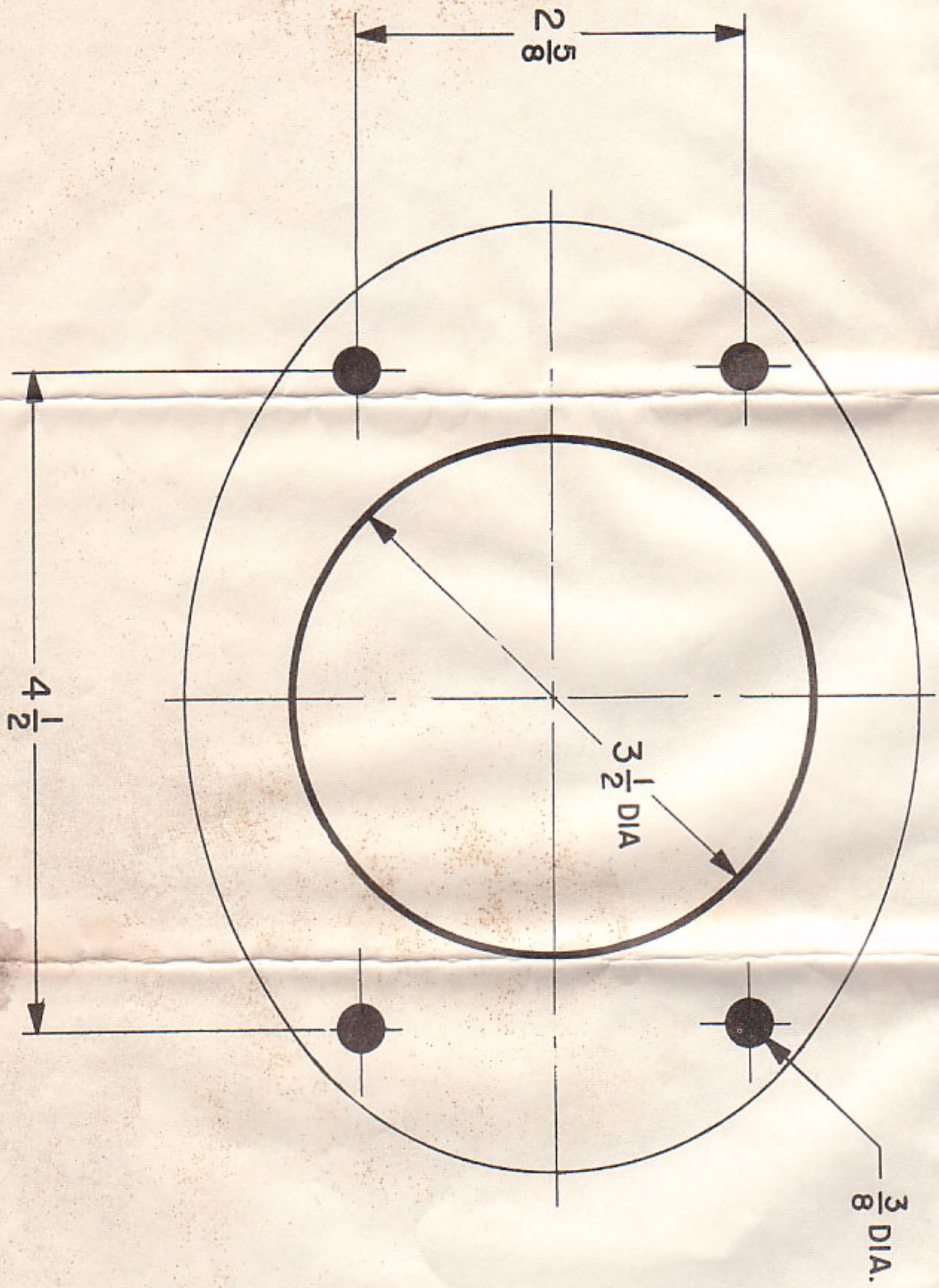
TELEFLEX INCORPORATED Church Road, North Wales, Pa. Telephone 699-4861 Area Code 215

ONGARO DYNAMIC INDUSTRIES a wholly owned subsidiary

PRINTED IN U.S.A.

Item No.	Description	Req'd No.	Part No.	Item No.	Description	Req'd No.	Part No.
1	Wheel			15	Washer (3/8 Flat)	1	51085-4
2	Hex Jam Nut (1/2-20)	1	50250-20	16	Thrust Washer	2	21048
3	Washer (9/16 I.D. x 1 3/8 O.D.)	1	51085-21	17	Pinion Gear	1	21004
4	Flat Head Machine Screw (1/4-28)	4	21053	18	Shaft Assembly	1	21014
5	Barrel Mounting Plate	1	21012	19	Roll Pin (3/16 x 7/8 lg)	1	51772-3
6	Dash Mounting Plate	1	21011	20	Gear Housing (Half)	2	21002
7	Stud (5/16)	4	21064	21	Bearing Split Bushing	4	21008
8	Bearing-Split Bushing	1	21031	22	Gear (Half)	2	21005
9	Hex Head Cap Screw (5/16-18 x 5/8 lg)	4	51817-2	23	Hex Head Bolt (5/16-24 x 2 3/4 lg)	1	51817-6
10	Hex Nut (5/16-24)	8	50250-22	24	Hex Head Bolt (5/16-24 x 3 1/2 lg)	1	51817-5
11	Lockwasher (5/16 Int Tooth)	4	51085-19	25	Hex Head Bolt (5/16-24 x 4 1/2 lg)	2	51817-7
12	Barrel Housing	1	21013	26	Thrust Plate	1	21062
13	Washer (5/16 Flat)	4	51085-17	27	Nut Conduit Connector	1	21032
14	Hex Nut (3/8-24)	1	50250-25 50250-4	28	Spent Travel Tube	1	21056-1
				29	Installation Instructions	1	21060





DASH MOUNTING TEMPLATE