

INSTALLATION INSTRUCTIONS AND OWNERS MANUAL

Part # ISCHMV3E, Rev 2, 08/2013

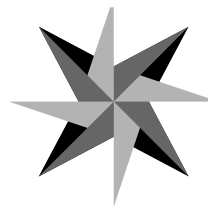
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MV3-E SERIES
HYBRID ENGINE CONTROLS

ch2200
ch2300
mt3
osprey
pro-trim
single s
twin s
sl-3

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MARINE ACQUISITION INCORPORATED
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*Before you do it your way,
please try it our way.*

HYBRID ENGINE CONTROL

MV3-E SERIES

NOTICE

Installer: these instructions contain important safety information and must be forwarded to the boat owner.

The SeaStar Solutions MV3-E Control is designed to provide convenient, one hand, single lever operation of shift and throttle for most popular inboards equipped with hydraulic reverse gears and stern drives with MEFI V engine control module.

A safety feature of the MV3-E is a Neutral Locking Hand Lever. It can only be disengaged from Neutral by raising the lifter under the ball knob. The MV3-E accepts SeaStar Solutions 3300/33C style cables.

NOTICE

Cable installation and connections must be made in accordance with the motor manufacturer's instructions.

To insure best performance, free operation of all linkages and the remote control is essential. Follow the manufacturer's recommended procedures for adjustment and lubrication.

All specifications and features are subject to change without notice.

WARNING

Before starting installation read these instructions and engine makers instructions thoroughly. Failure to follow either of these instructions or incorrect assembly can result in loss of control and cause property damage, injury, or death.

WARNING

DO NOT substitute parts from other manufacturers, they may cause a safety hazard for which SeaStar Solutions cannot accept responsibility.

NOTICE

SeaStar Solutions highly recommends the installation and usage of an engine emergency shut off switch as a important safety feature. This switch should be connected by a cord to the boat driver. Should the driver be thrown from the helm position, the engine will automatically shut off.

This shut off switch is not a standard part of this control. It can, however, be obtained from most marine dealers and distributors.

WARNING

This device should not be used as a navigational aid to prevent collision, grounding, boat damage or personal injury. When the boat is moving, water depth may change too quickly to allow time for you to react. Always operate the boat at very slow speeds if you suspect shallow water or submerged objects.

WARNING

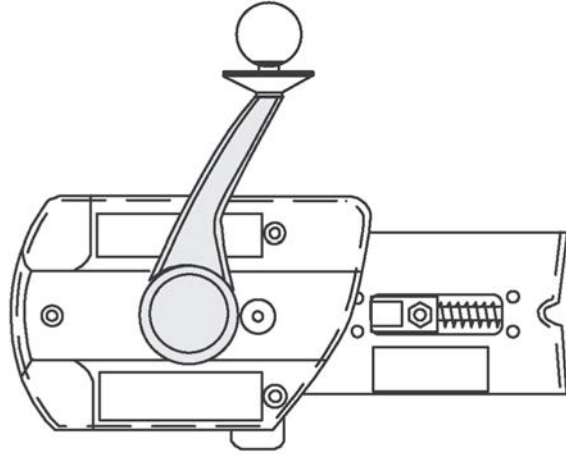
This product contains lead, a chemical known to the State of California to cause cancer, birth defects, and other reproductive harm.

Control Configuration

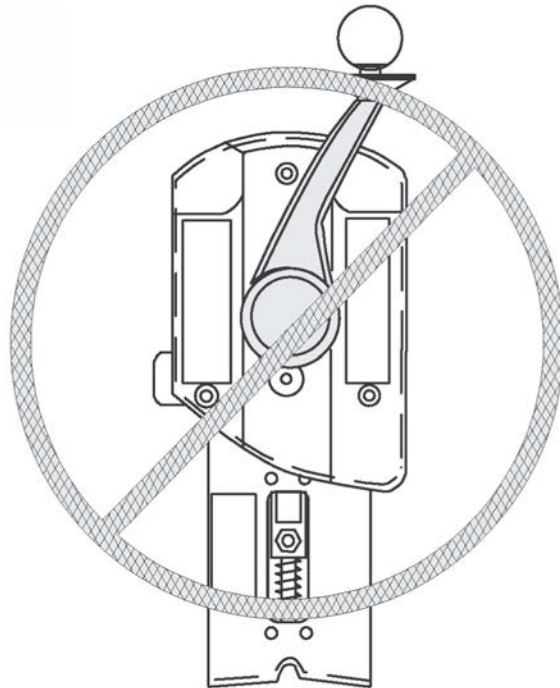
The MV-3 Control can only be mounted in a horizontal position.

CAUTION

Do not remove hand lever to change position.



Horizontal Mount Only



Vertical Mount

Operation

MV3-E SIDE MOUNT CONTROL.

NEUTRAL INTERLOCK RING.

To prevent bumping the MV3-E side mount control out of neutral, a Neutral Interlock Ring has been installed as a preventative safety feature.

OPERATION.

- When the Control Hand Lever is in Neutral, lift the Neutral Interlock Ring and move the lever forward or reverse to engage the gears.



NEUTRAL THROTTLE WARM-UP BUTTON.

This feature provides a “Throttle Only” option to operate the engine throttle without going into gear.

OPERATION.

- When the Control Hand Lever is in Neutral, *lift* the Neutral Interlock Ring and *pull out* the Neutral Throttle Warm-up button at the same time.
- While holding the ring and button (releases), move the lever forward to throttle up the engine.
- When the handle is returned to the Neutral position, the releases will reset automatically.
- Once the releases reset, the Control Hand Lever will work both shift and throttle functions.

Installation

LOCATION OF CONTROL.

Choose a mounting location for the control head which will provide comfortable operation of the hand lever, unobstructed movement of mechanism arms and a clear path for cables to engine.

STEP 1. Allow adequate clearance for hand and lever swing (forward and reverse positions). See page 10 for the control dimensions and the recommended clearance around and behind the mounting surface.

STEP 2. Allow adequate clearance under the console or in the gunwale for the cables AND **allow a minimum of 36" from the cable nest connection with no restraint.** When supporting the cables beyond 36", do not tie or clamp tightly.

STEP 3. After a suitable location for the control is determined, use the separate mounting template to make the cut-out. The templates are supplied with the control (also see mounting dimensions on page 11).

STEP 4. Closely follow the instructions provided on the template. Cut and drill the mounting holes required.

MEASURING THE SHIFT CABLE.

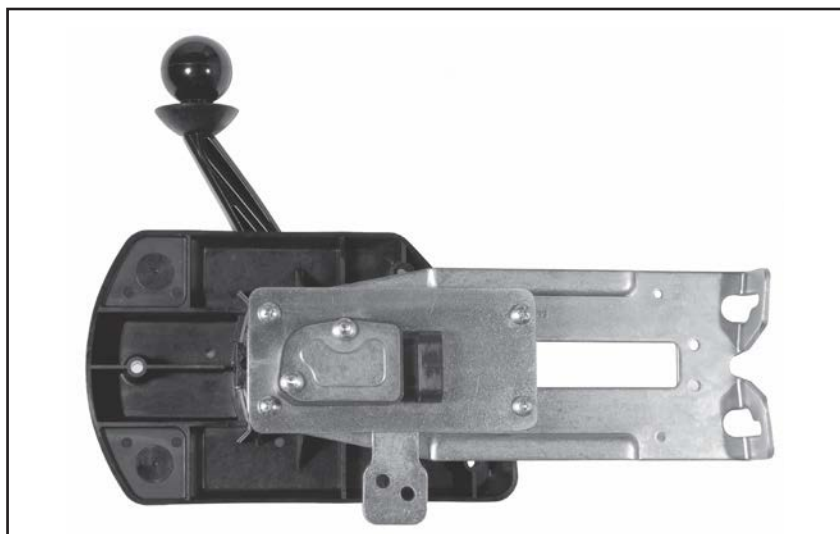
Measure from the control connection—along an unobstructed cable routing—to the shift connection. Round this dimension **UP** to the next whole foot and order the required cable part number.

(Last two digits of the SeaStar Solutions cable number equal the length of the cable in feet. Example: CCX63312 is a 12 foot cable.)

NOTICE

To determine the correct control assemble for inboards with hydraulic transmissions, you must determine if the Shift Cable "pulls" or "pushes" to go into forward.

SIDE MOUNT CABLING.



SHIFT CABLE CONNECTION-CONTROL END.

NOTICE

The Control Shift Lever and the Transmission Shift Lever must coincide at the "Forward," "Neutral," and "Reverse" positions. Different makes of transmissions may require different amounts of shift travel. For this reason, the Control Shift Lever is provided with two positions for attaching the shift cable: one for the standard travel and one for the longest travel.

NOTICE

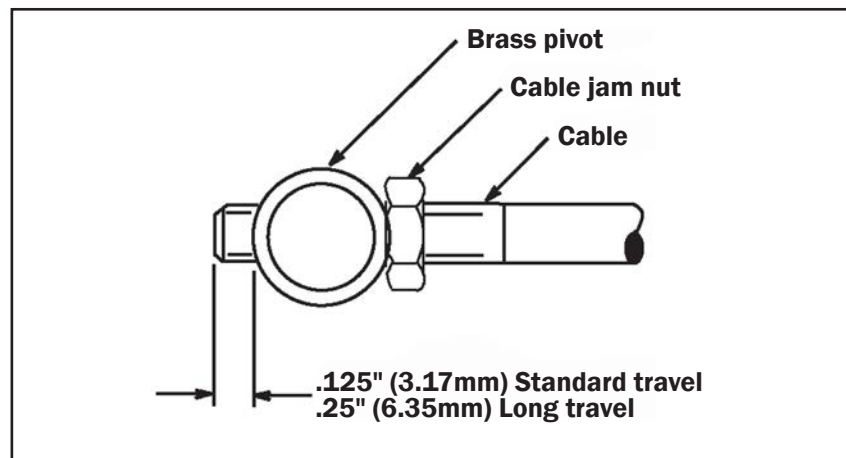
When installing a shift cable always connect to the control end first, then put both the control and the transmission levers into forward gear. Adjust the transmission end of the cable to where it will easily slide into the transmission lever. Complete cable connection at shift end and test operation of forward, neutral, and reverse positions.

Connect Shift Cable to Control

STEP 1. Insert shift cable through opening in hanger assembly in line with shift arm pivot attachment hole and lock cable in hanger slot.

STEP 2. Screw pivot onto cable rod, allowing threads to protrude through pivot $\frac{1}{8}$ " for standard travel or $\frac{1}{4}$ " for long travel.

STEP 3. Lubricate pivot with grease, then insert into required hole in shift arm. Fasten with cotter pin. Tighten cable nut against pivot to lock position.



To obtain standard ($2 \frac{3}{4}$ inch) cable shift travel at the engine use the shift arm on the control at the short pivot hole location.

If Mercury, long (3 inch) cable shift travel at the engine is necessary, assemble the shift arm to the control using longest pivot hole location.

⚠ CAUTION

The pivot must be in the hole nearest to the cable entry end of the control. Using the hole in the shift arm (furthest away from the cable mounting) support will produce unequal shift travel between the "neutral to forward" and the "neutral to reverse" positions; resulting in improper shift action.

SHIFT CABLE CONNECTION-ENGINE END.

See engine or stern drive instructions for shift cable connection.

THROTTLE WIRING HARNESS.

INSTALLATION OF THE WIRING HARNESS.

A wire harness must be prepared for connection of the MV3-E control head to the engine TAC module. Every boat is different and there may be several ways to route the harness. Inside the boat there is often a channel or conduit used for wiring. This can also be used to route the wire harness for the MV3-E control.

When routing the wiring harness, care must be taken not to damage the cable insulation. If a harness is short, replace it with a correct length harness. **Don't add a short harness to make up the required length.** Run the harness over the shortest and straightest possible path. Secure the harness every 2 feet (0.6 m) with stainless steel screws and mounting head ties or clamps. Excess harness length should be neatly coiled and secured with nylon ties. The mounted harness should be as far as practical from high current wires or wiring runs and should not be subjected to water, fuel, lubricants, or excess heat.

PREPARATION OF THE CONTROL HEAD WIRING HARNESS.

Measure from the control head mounting location along unobstructed wire runs to the engine module.

Round measurement to the next whole foot and add additional length if uncertain.

Prepare harness as shown in the diagram on the next page. It is recommended that conductors be stranded tinned copper (UL 1426 or equivalent), 18 AWG min. Colors shown are optional.

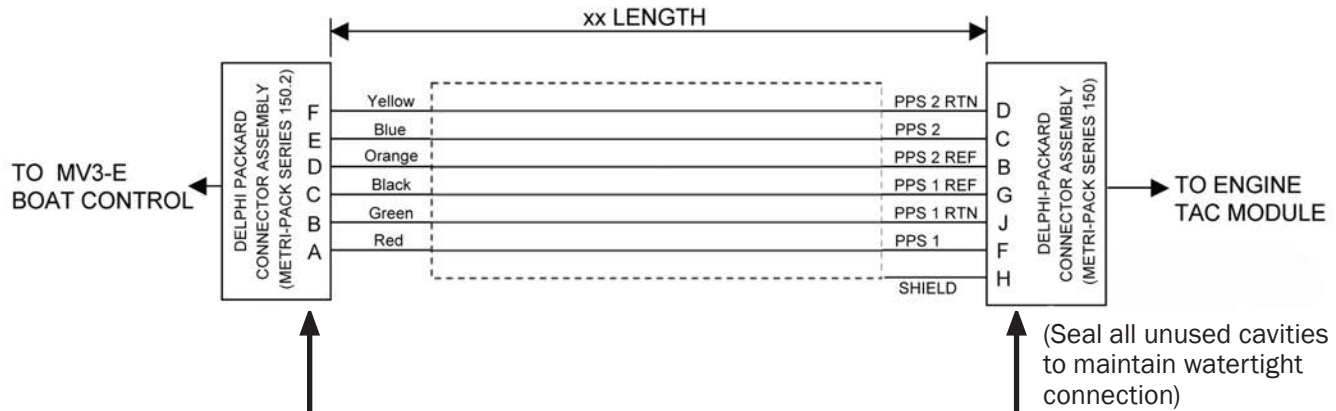
CONNECTION OF THE WIRING HARNESS.

NOTICE

Always connect the wiring harness to the Control Head before connecting to the engine. The engine connection should not be made until the control has been completely installed.

Ensure that the watertight seal is in place and connect the 6-pin connector from the completed harness assembly into the rear of the potentiometer mounted on the control head mechanism. The connector should be fully seated and latched for proper operation.

MV3-E Throttle Wiring Connections



**BOAT CONTROL CONNECTOR BODY
(Cable seal included)**

CABLE O.D. (mm)	DELPHI PACKARD P/N
2.66 - 2.00	12162210
2.15 - 1.65	12162260
1.85 - 1.47	12162261

TAC MODULE CONNECTOR BODY

DESCRIPTION	DELPHI PACKARD P/N
10 POSITION HOUSING	12065425
TERMINAL POSITION ASSURANCE (TPA)	12124264

BOAT CONTROL FEMALE TERMINALS

CABLE RANGE (mm2)	DELPHI PACKARD P/N
1.0 - 0.80	12124075
0.50 - 0.35	12124076

TAC MODULE FEMALE TERMINALS

CABLE RANGE (mm2)	DELPHI PACKARD P/N
1.0 - 0.80	12048074
0.50 - 0.35	12084200

TAC MODULE CABLE SEAL

CABLE O.D. (mm)	DELPHI PACKARD P/N
2.85 - 2.03	12048086
2.15 - 1.60	12089678
1.70 - 1.29	12048087
1.009 - 0.995	12084193

TAC MODULE CAVITY PLUG

DESCRIPTION	DELPHI PACKARD P/N
CAVITY PLUG	12059168

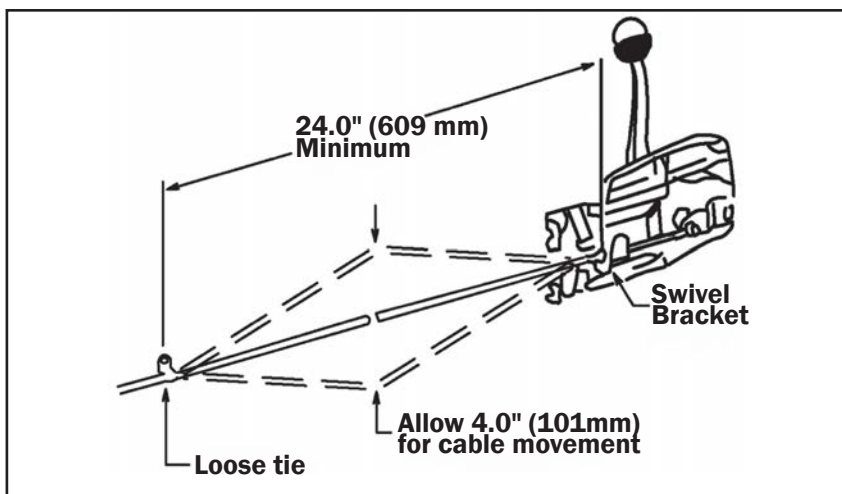
MOUNT THE CONTROL

STEP 1. Run the cable, which is connected to the control, back to the shift location of the engine and drive.

STEP 2. The cables should run as straight as possible, avoiding any sharp bends. Make no bends in the cable of less than 8 inch (203.2 mm) radius.

STEP 3. Shift the control into “Forward” to move shift arm out of the way. This allows the control to be inserted into the cut out.

STEP 4. When satisfied with the position to the control, fasten the housing to the mounting surface with three (3) #10 thread cutting screws. One screw is 1.50 inches (38.1 mm).



SHIFT CABLE CONNECTION AND ADJUSTMENT.

The shift cable must be connected so that the “Forward,” “Neutral,” and “Reverse” positions of the control shift lever will coincide with the forward, neutral and reverse positions of the transmission lever. Readjust the cable terminals until the correct function of the shift lever is achieved. Proper adjustment of the shift cable will result in a much better operating control.

NOTICE

Overjamming the transmission stop on either end of the shift travel may:

1. Cause excessive wear of the drive and the shift gear.
2. Result in a “heavy” feel of the hand lever and/or
3. Over-stress and damage the cable.

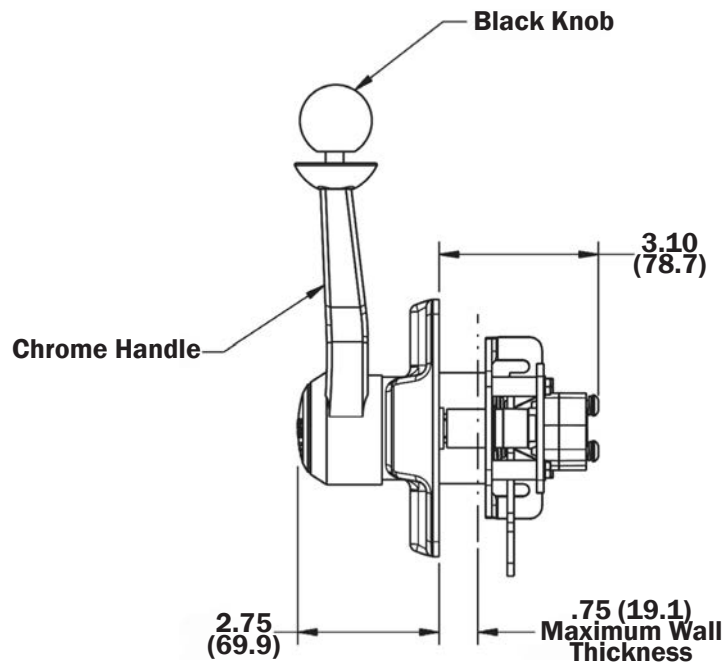
Maintenance and Corrosion Protection

For maximum protection, especially in a saltwater environment, the control head and hand lever should be washed lightly with fresh water on a regular basis.

- Periodically check the control head mechanism for loose fasteners and signs of wear on moving parts.
- Keep moving parts well lubricated with a good waterproof marine grease.
- Periodically check the cables and engine connections for signs of wear and corrosion. Replace as necessary.

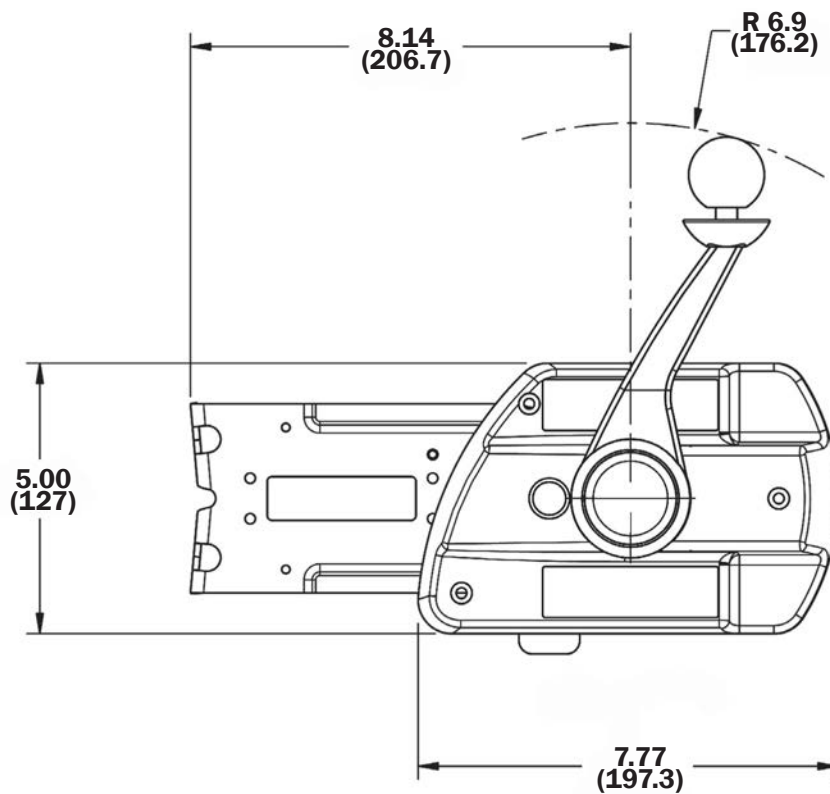
General Control Dimensions

FRONT VIEW.



Inch
(mm)

SIDE VIEW.

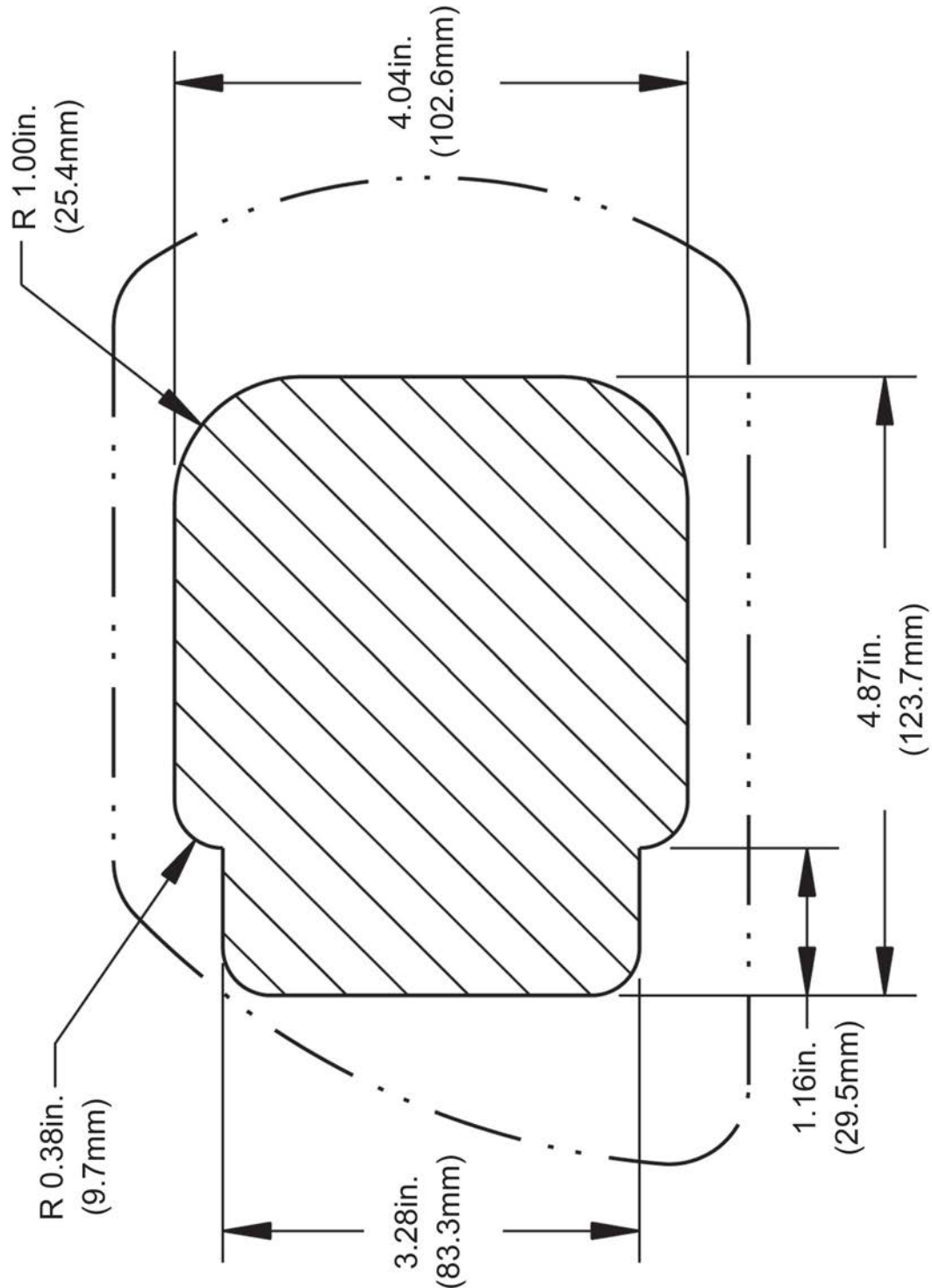


Inch
(mm)

Mounting Dimensions MV3-E Side Mount Control

NOTICE

These dimensions are NOT to scale. When mounting, use the template—311370E—which is included with this control.





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