



Truth's Ellipse Dyad Operator features a peak operating torque approximately 28% lower than the #15 Series Single Arm Operators, (depending on mounting locations). Profile changes will not be necessary if you are currently using Truth's #15 Series Ellipse or Traditional Single Arm Operators (see drawings for operator locations). This operator was designed to specifically work with Truth's #14.05 Hinge. The operator arm is detachable from the stud bracket for easy sash removal.

SEALABLE CASE: The unique case design complements the smooth contour styling of the Maxim® family of products, while retaining the same mounting and mechanical features of Truth's Traditional Operator lines. A special "lip" around the operators' case will accept a gasket, which will help the window achieve a higher air and water performance rating, while at the same time; eliminate the need for slow, messy and often expensive caulking during the installation process.

PRODUCT APPLICATION

ASSISTANCE: If you are designing a new window profile, or are having difficulty selecting hardware for your window, please contact Truth. Our highly trained Product Specialists can assist you with the selection of the appropriate hardware to meet your performance requirements, as well as providing personalized application drawings.

LOGO OPTIONS: Have you considered *personalizing* your window with your company name or logo? All of Truth's operator handles are capable of accepting your own "signature". Contact Truth for further details.

WARRANTY: Protected under the terms of the Truth Warranty for Window & Door Manufacturers & Authorized Distributors. Refer to Truth's Terms & Conditions for further details.

CORROSION RESISTANCE: Truth's E-Gard® Hardware has a multi-stage coating process that produces a superior physical and aesthetic finish. Plus, it is resistant to a wider range of corrosive materials, including industrial cleaning materials and environmental pollutants. This proprietary process has been tested to be approximately three times better than common zinc plated finishes.



For the severe conditions associated with coastal areas, Truth has developed certain product lines utilizing either CoastGard® Hardware, or stainless steel hardware. See Tech Note #7 for further information about corrosion protection and these special hardware options.

MATERIAL: High-pressure die-cast zinc case. Hardened steel drive worm and gear arms.

FINISH: Electrostatically applied, durable coatings that provide excellent resistance to chipping, scratching and corrosion while maintaining color stability for years in direct sunlight. Please refer to Truth's Color Chart for examples of Truth's most popular finish options. Truth also offers a wide range of decorative "plated" finishes - contact Truth for additional information on availability of these finishes on specific product lines.

ORDERING INFORMATION:

1. Specify operator by model number (see table in Fig. 3 for options).
2. Specify Ellipse style housing.
3. Specify finish number.

4. Specify right- or left-hand (determined by the side hinge is on when viewed from the outside).

5. Select mounting hardware required (sold separately):

Handed Stud Brackets - select from tables in the following drawings. Optional brackets for special profile applications available - see Brackets & Track Section. Note: Handing is determined on handed stud brackets with the stud pointed upward. Handing is reversed for inverted applications.

Operator Handle Styles:

- #11454.XX - Contour™ Handle - shown above (painted) or
- #11329.XX - Folding Handle
- #21306 - Protective red plastic spline cap (optional)
- #21504 - Ellipse Gasket (optional)
- #21494 - Gasket Applicator (optional)

RECOMMENDED SCREWS:

Types of screws required determined by material of profile used. Refer to drawings for complete information on screw type and quantity needed (sold separately). For additional information regarding screw selection - see Truth Tips and Tech Note #11.

TRUTH TIPS:

1. Operator handing is determined by the hinge side when viewed from the outside. Bracket handing is determined on handed stud brackets with the stud pointed upward. Handing is reversed for inverted applications.
2. Sash weight should be limited to 50 lbs. to maintain ease of operation over the lifetime of the window. When used on a sash weighing over 50 lbs., operating effort will noticeably increase and operator life will be reduced.
3. Before selecting an operator, the hinge model should be chosen based upon desired window hinging requirements (example: egress vs. washability).
4. Truth does not recommend the Dyad Operator be used in combination with an egress style or Butt Hinge.
5. When a Dyad Operator is installed in windows used in high rise applications over two stories, a Truth Limit Device, to restrict the amount of opening, is recommended.
6. Minimum sash width is 12 inches.
7. Truth recommends that a Snubber be used at the center of the hinge side on any casement window which has a tendency to bow outwardly at the center in the closed position. Adding a Snubber may increase the negative air pressure rating of a casement window.

8. A Spline Cap (#21306) is available to protect the operator splines from dirt and other windows from damage during shipping, installation, and final building construction.
9. For accurate hardware placement in vinyl or metal applications, pre-drilling of the window profile is recommended.
10. For vinyl window applications, mounting screws should pass through two PVC walls, or one PVC wall and one insert wall. For this reason, it may be necessary to use a longer screw than is recommended.
11. For metal window profiles, Truth recommends machine screws. However, in most applications, sheet metal screws will provide adequate holding power.
12. When selecting mounting screws for Truth hardware, coating compatibility is one of the most important criteria. For best corrosion resistance the coating on the screws should be the same as the coating on the hardware. For more information see Tech Note #11.

INCLUDE TRUTH SPECS ON YOUR NEXT WINDOW PROJECT

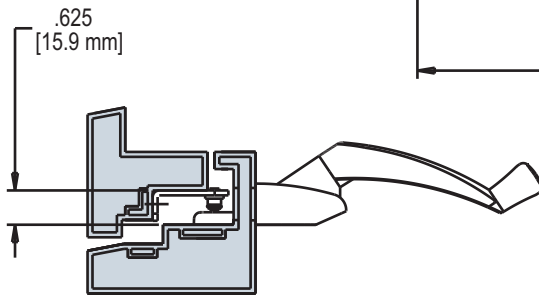
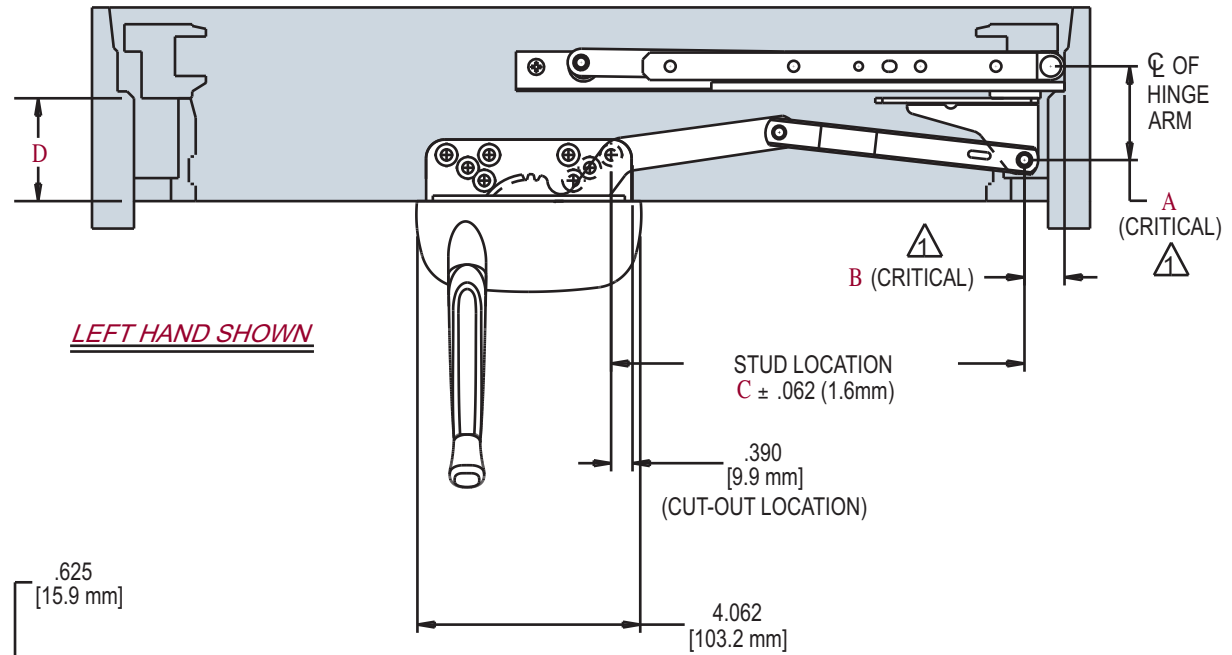
Window operators shall be provided which allow easy adjustment of window position. The mechanism should be crank operated and provide smooth operation out to 90° of sash opening. Connection to the movable sash must be easily detachable for window cleaning and maintenance.

Window operators will be of drag arm/link design driven by a hand crank.

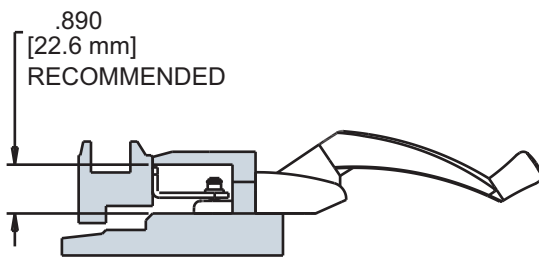
The operator must be constructed of E-Gard® components, hardened steel worm and gear arm and high pressure zinc alloy die cast base.

Window Operators shall be 15 series Ellipse Dyad Operator as manufactured by Truth Hardware, Owatonna, MN.

FIG. 1 APPLICATION OF TRUTH ELLIPSE DYAD OPERATOR



| D DIMENSION | C DIMENSION |
|----------------|-----------------|
| 1.500 (38.1mm) | 7.663 (194.6mm) |
| 1.750 (44.5mm) | 7.607 (193.2mm) |
| 2.000 (50.8mm) | 7.540 (191.5mm) |



| HARDWARE SHOWN | |
|----------------|------------------|
| 15.18 | OPERATOR |
| 12510.92 | LH* STUD BRACKET |
| 12511.92 | RH* STUD BRACKET |
| 14.05 | HINGE |
| 11454 | HANDLE |

* SEE TRUTH TIP #1 FOR HANDING OF BRACKET

NOTE:

⚠ CRITICAL **A** RANGES FROM 1.375 (34.9mm) TO 2.125 (54.0mm)
 CRITICAL **B** RANGES FROM .750 (19.1mm) TO 1.750 (44.5mm)

2. MAXIMIZE THE **A** DIMENSION AND MINIMIZE THE **B** DIMENSION FOR BEST OPERATOR PERFORMANCE.

3. CONTACT TRUTH IF PROFILE DOES NOT FIT INTO THE **A** OR **B** RANGES

FIG. 2 ELLIPSE DYAD WOOD/PVC CUT-OUT DETAIL

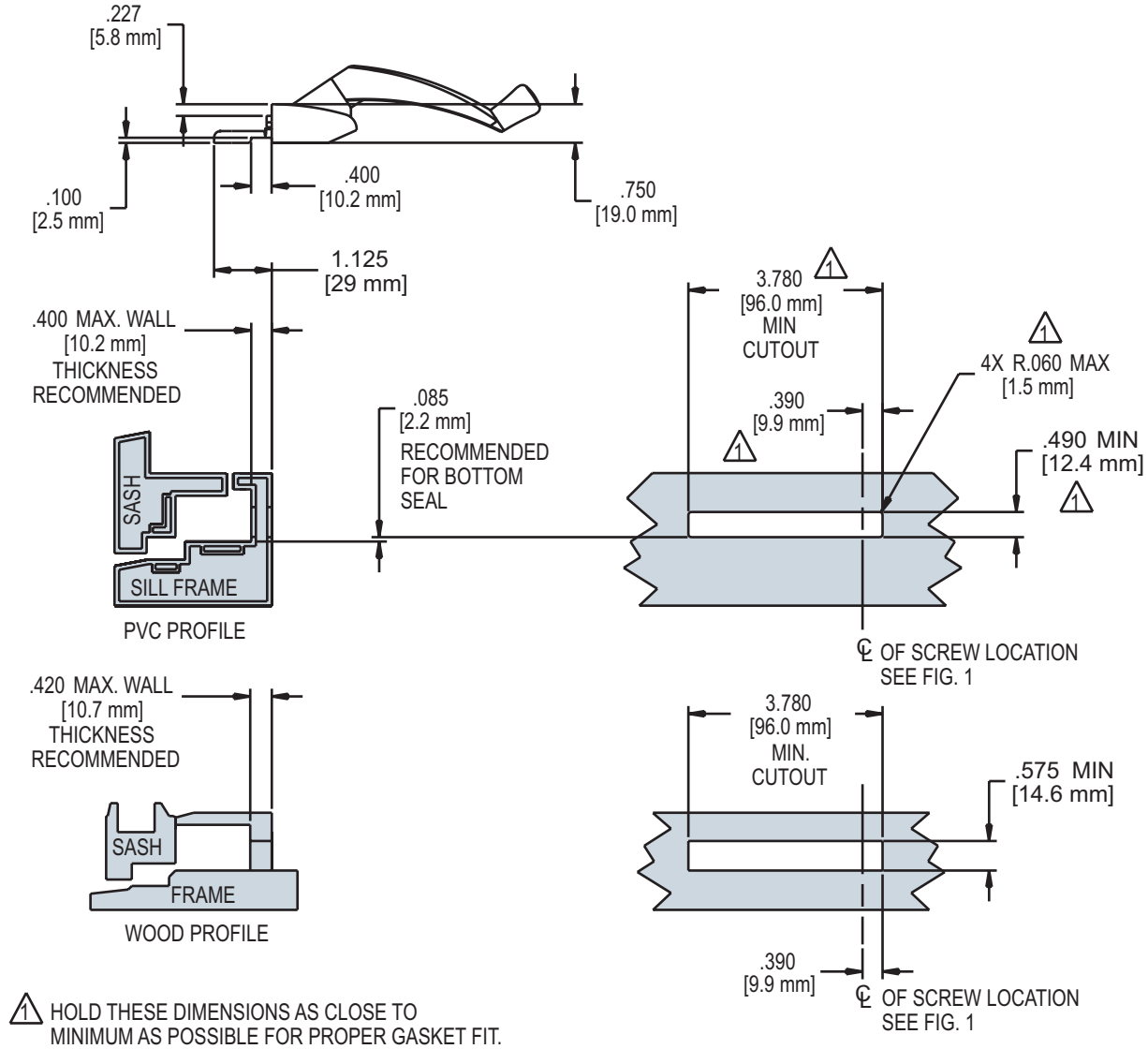
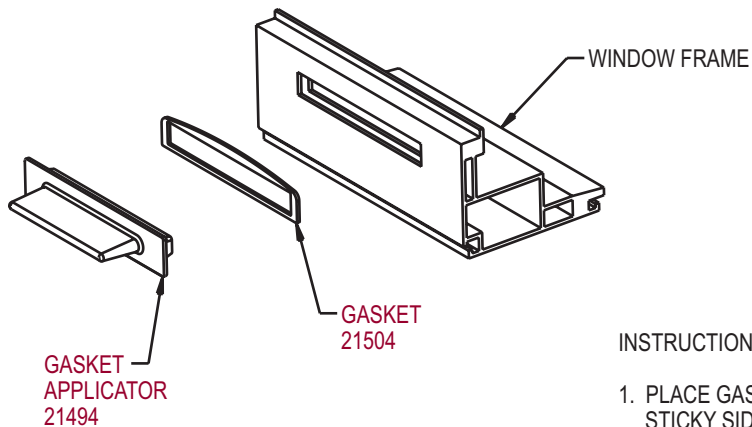


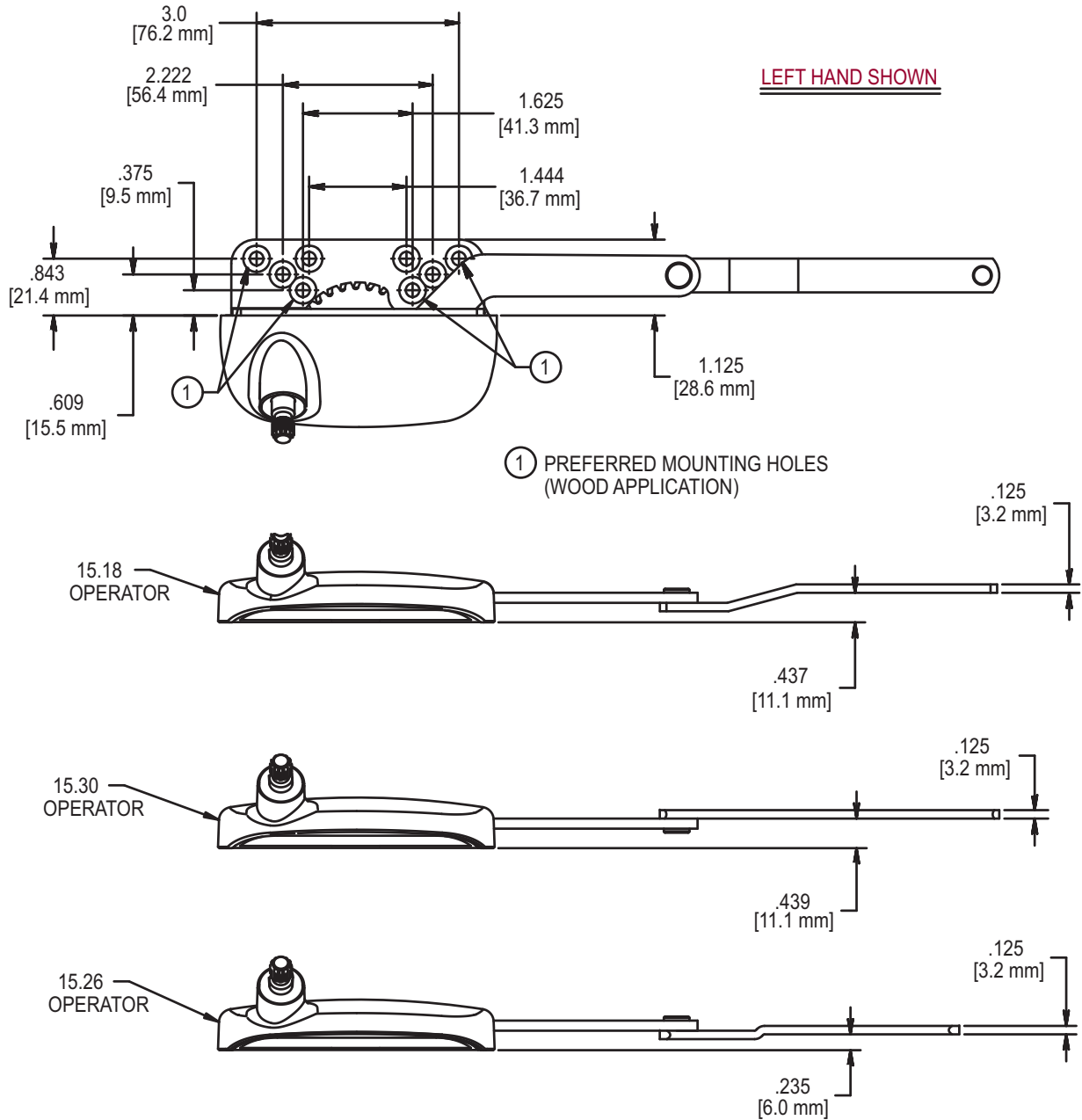
FIG. 3 GASKET APPLICATION FOR ELLIPSE SINGLE ARM OPERATOR



INSTRUCTIONS:

1. PLACE GASKET ONTO APPLICATOR WITH STICKY SIDE OUT
2. PRESS APPLICATOR INTO FRAME CUT-OUT TO SECURE GASKET

FIG. 4 ELLIPSE DYAD OPERATOR



RECOMMENDED SCREWS:

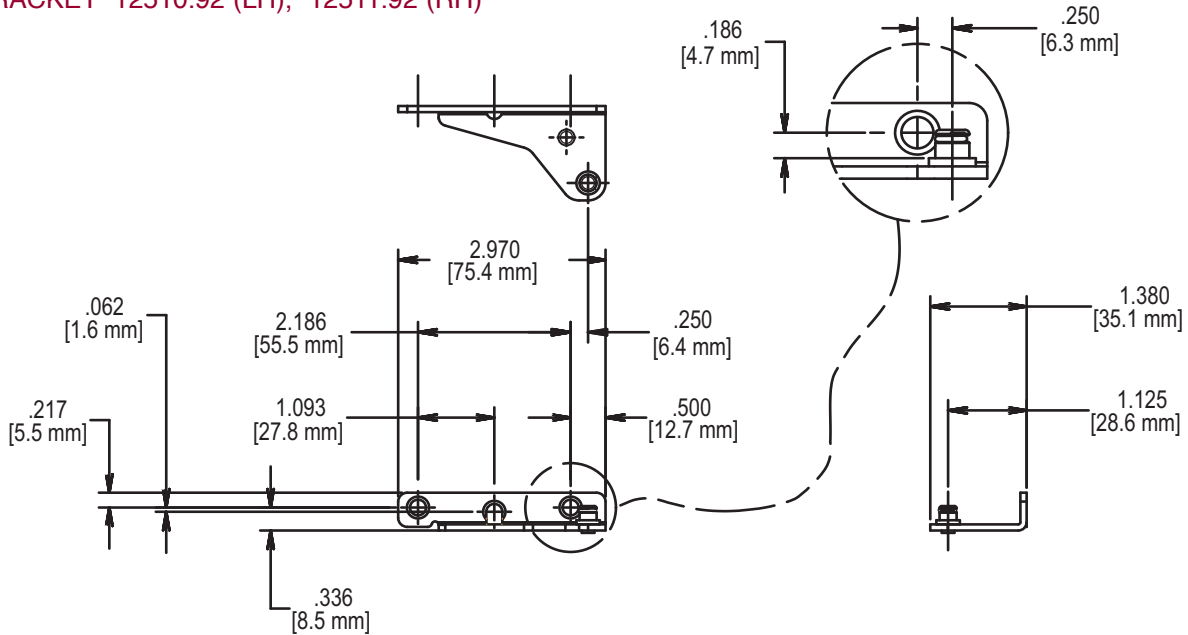
WOOD:(QTY 4) (P/N 19380.92) #10 X 1.0 PHILLIPS, FLAT HEAD, SHEET METAL SCREWS

PVC & METAL: (QTY 4) #10 PHILLIPS, FLAT HEAD SCREWS (LENGTH AND THREAD TYPE DETERMINED BY PROFILE)

| AVAILABLE OPERATOR | *RECOMMENDED STUD BRACKET | AVAILABLE HINGES |
|--------------------|----------------------------|------------------|
| 15.18 | 12510.92 LH 12511.92 RH | 14.05 |
| 15.26 | 12510.92 LH 12511.92 RH | 14.06 14.75 |
| 15.30 | 12510.92 LH 12511.92 RH | 14.76 |

*SEE TRUTH TIP #1 FOR HANDING OF BRACKET

FIG. 5 BRACKET 12510.92 (LH), 12511.92 (RH)



RECOMMENDED SCREWS:

WOOD: (QTY 3) (P/N 19140.92) #7 X .875
PHILLIPS FLAT HEAD, SHEET METAL
SCREWS

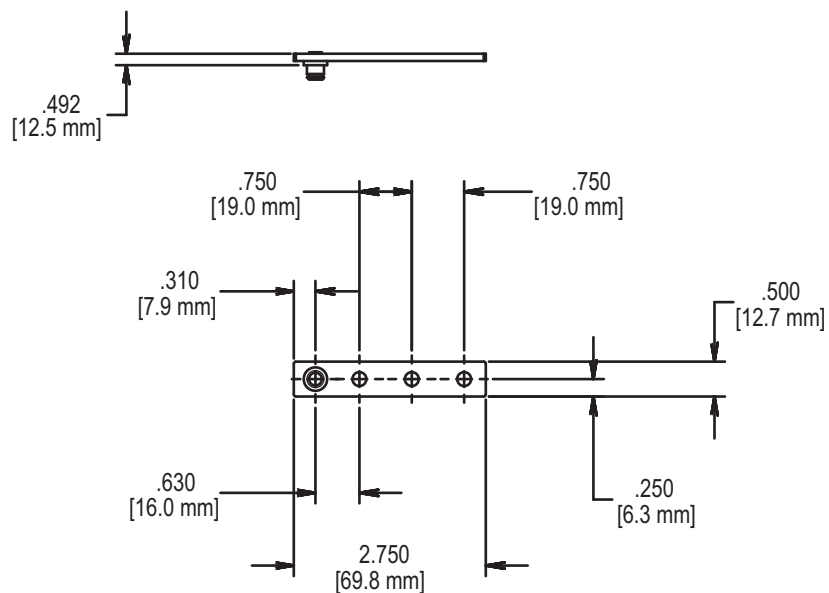
PVC & METAL: (QTY 3) #7 PHILLIPS, FLAT
HEAD SCREWS (LENGTH AND THREAD
TYPE DETERMINED BY PROFILE)

12510.92 LEFT HAND SHOWN

(USE OPPOSITE HAND BRACKET
FOR INVERTED APPLICATIONS)

NOTE: 12511.92 RIGHT HAND

FIG. 6 BRACKET 10558.92 (NON HANDED)



NON HANDED

RECOMMENDED SCREWS:

WOOD: (QTY 3) (P/N 19140.92)
#7 X .875 PHILLIPS FLAT
HEAD, METAL SCREWS

PVC & METAL: (QTY 3) #7 FLAT HEAD SCREWS
(LENGTH AND THREAD TYPE
DETERMINED BY PROFILE)