



Contemporary styling of Truth's face mounted Single Arm Operator complements the overall window design. Created for use with Truth's 14 Series Concealed Casement Hinges or 29 Series Butt Hinges. The Single Arm Operator provides arm movement for 90° of the window opening. These operators can also be used with Truth's 4-Bar Hinges. See Truth Tips for additional clarification.

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:

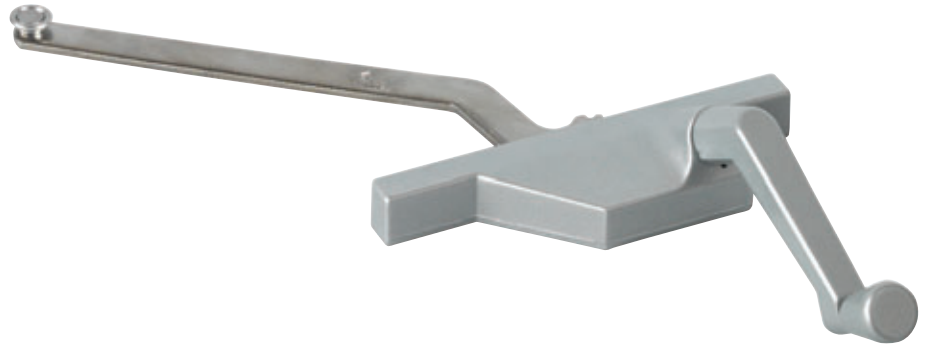
Protected under the terms of the Truth Warranty for Window and Door Manufacturers and Authorized Distributors. Refer to Truth's Terms and Conditions for further details.

MATERIAL: High-pressure die cast zinc case, crank handle and knob. Hardened steel worm gear and gear arm. Non-magnetic stainless steel arm roller, rivet, sash track and screws.

CORROSION PROTECTION:

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.



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. Choose operator style desired (specify by part number).
2. Specify finish number.
3. Specify left- or right-hand (determined by the side the hinge is on when viewed from the inside). See Truth Tip # 1 for further information.
4. Select mounting hardware (sold separately):
 #11454 - Contour Handle (painted) or
 #10579 - Roto Gear Operator Handle - shown above (painted).
Optional Handle styles, such as Truth's *Folding Handle*, are also available.
Operator Track - see Figures 2 & 3 for available track options.
 #21306 - Protective red plastic spline cap
 Rubber-cork adhesive backed operator gasket (optional).
 #32357 - 375 pcs per roll
 #30174 - 400 pcs per box
 #20947 - Backing Plate (2 per operator).

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. 23 Series Single Arm Operators are handed by the hinge side when viewed from the inside (commercially handed).
2. Sash weight should be limited to 35 lbs. to insure ease of operation for the lifetime of the window. When used on a sash weighing over 35 lbs., operating torque will noticeably increase and operator life will be reduced.
3. Operator torque can be kept to a minimum by using an operator with the longest available arm that will fit a given window width.
4. Before selecting an operator, the hinge should be selected depending upon desired window features and hinge requirements (example: egress vs. washability).
5. If your window design requires the use of a 4-Bar Hinge and single arm operator, an egress 4-Bar Hinge must be used for proper operation. Single Arm Operators do not work well with 4-Bar Hinges that offer washability. If the window design requires a 4-Bar Hinge and washability is desired, then a 23 Series Dyad Operator should be used.
6. The Truth Single Arm Operator works well with a Butt Hinge. Always use an operator with the longest arm possible for best operation.
7. The Casement Single Arm Operators with 6" and 7.5" arms were designed for use on narrow sashes. A Truth Limit Device must be used when using one of these operators in combination with a Truth Egress Hinge.

TRUTH TIPS (con't):

8. This operator may be mounted closer to the lock side of the window to effectively limit opening and improve corner pull-in performance.

9. Truth recommends that a Snubber be used at the center of the hinge side on any casement window which has a tendency to bow outward at the center in the closed position. Adding a Snubber may increase the negative air pressure rating of a casement window.

10. When used in high rise applications of over two stories, Truth recommends using a Limit Device. (or see Tip #8)

11. For accurate hardware placement in vinyl or metal applications, pre-drilling of the window profile is recommended.

12. Operator mounting screws must pass through one PVC wall and Truth Backing Plates #20947 or one PVC wall and one insert wall. Track mounting screws must pass through two PVC walls or one PVC wall and one insert wall. For this reason, it is necessary to use a longer screw than is recommended.

13. Truth recommends that stainless steel screws be used to fasten stainless steel components to the window. 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.

14. For metal window profiles, Truth recommends machine screws. However, in most applications, sheet metal screws will provide adequate holding power.

15. Truth recommends that Backing Plates (#20947) be used for added support to the operator in an effort to reduce the amount of flex experienced in many PVC profile systems.

16. If air infiltration around the operator is a concern, the gasket (#30174) should be used.

17. 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.

**INCLUDE TRUTH SPECS ON
YOUR NEXT WINDOW PROJECT**

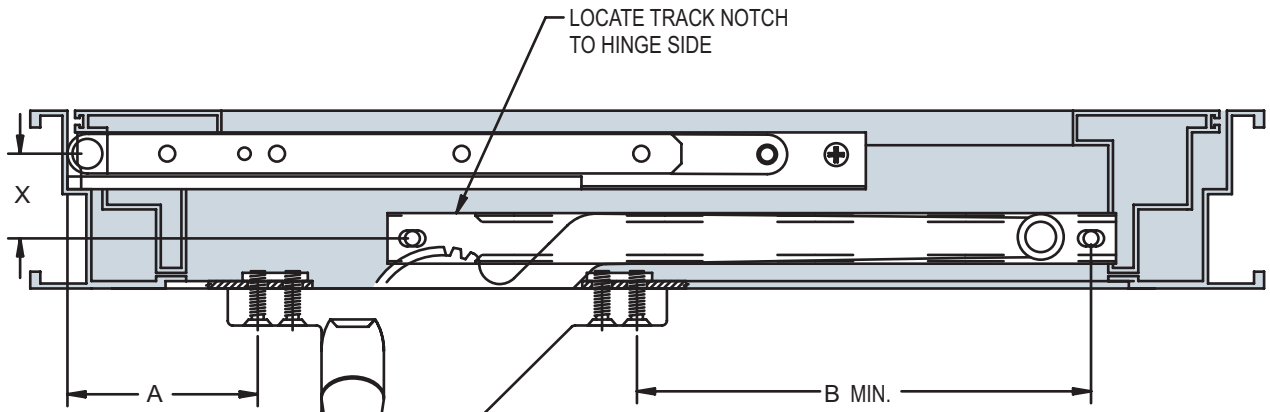
Window operators shall be provided which allow easy adjustment of window position. The mechanism should be crank operated and provide smooth operation of egress or butt hinges. Connection to the movable sash must be easily detachable for window cleaning and maintenance.

Window operators will be of single push arm design driven by a hand crank. The operator must be constructed of E-Gard® components, hardened steel worm and gearing and high pressure zinc alloy die cast housing.

Window Operators shall be 23 series Single Arm Operator as manufactured by Truth Hardware, Owatonna, MN.

23 SINGLE ARM OPERATOR (FACE-MOUNT)

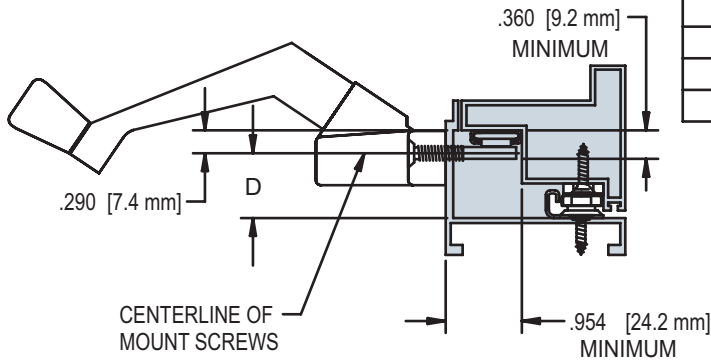
FIG. 1 APPLICATION OF THE 23 SERIES SINGLE ARM OPERATOR



HARDWARE SHOWN	
23.38	OPERATOR
14.77	HINGE
31002	TRACK
10579	HANDLE
20947	BACKING PLATE(2)

LEFT HAND SHOWN

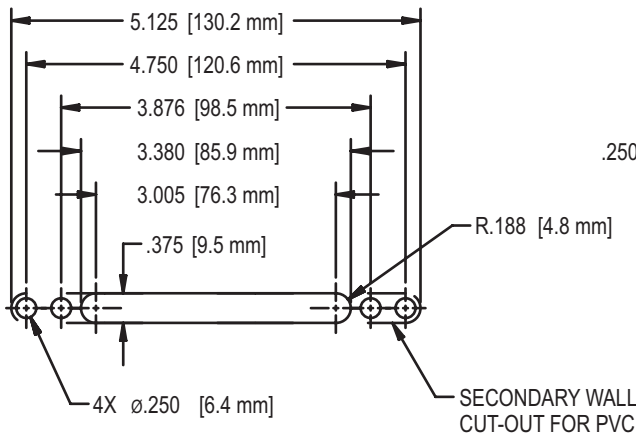
APPLICATION TABLE FOR 90° SASH OPENING		
AVAILABLE HINGES	Y HINGE CONSTANT	D (MINIMUM)
14.05	3.939 [100.1mm]	.476 [12.1mm]
14.06	4.567 [116.0mm]	
14.75	3.939 [100.1mm]	
14.76	4.567 [116.0mm]	
14.77	1.311 [33.3mm]	
14.80	3.939 [100.1mm]	.562 [14.3mm]
35.10	.495 [12.6mm]	
35.11	.495 [12.6mm]	.687 [17.5mm]
35.12	.389 [9.9mm]	
35.13	.389 [9.9mm]	



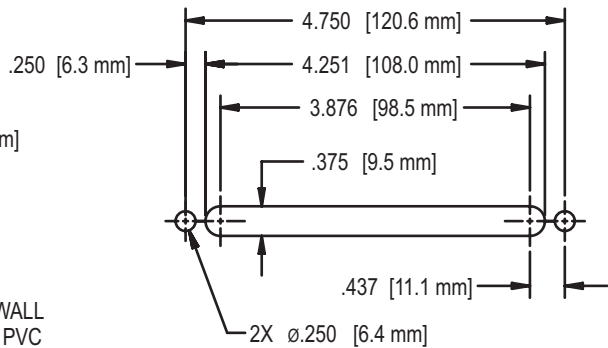
NOTE:

1. TO DETERMINE THE A DIMENSION, FIRST DETERMINE WHICH HINGE IS TO BE USED, THEN DETERMINE THE HINGE CONSTANT Y FROM THE ABOVE TABLE AND ADD IT TO THE X DIMENSION

$$A=Y+X$$



OPERATOR CUT-OUT



OPTIONAL OPERATOR CUT-OUT

23 SINGLE ARM OPERATOR (FACE-MOUNT)

FIG. 2 SINGLE ARM OPERATOR 23.00, 23.01, 23.02, 23.03 AND 23.38 (commercially handed - see Truth Tips)

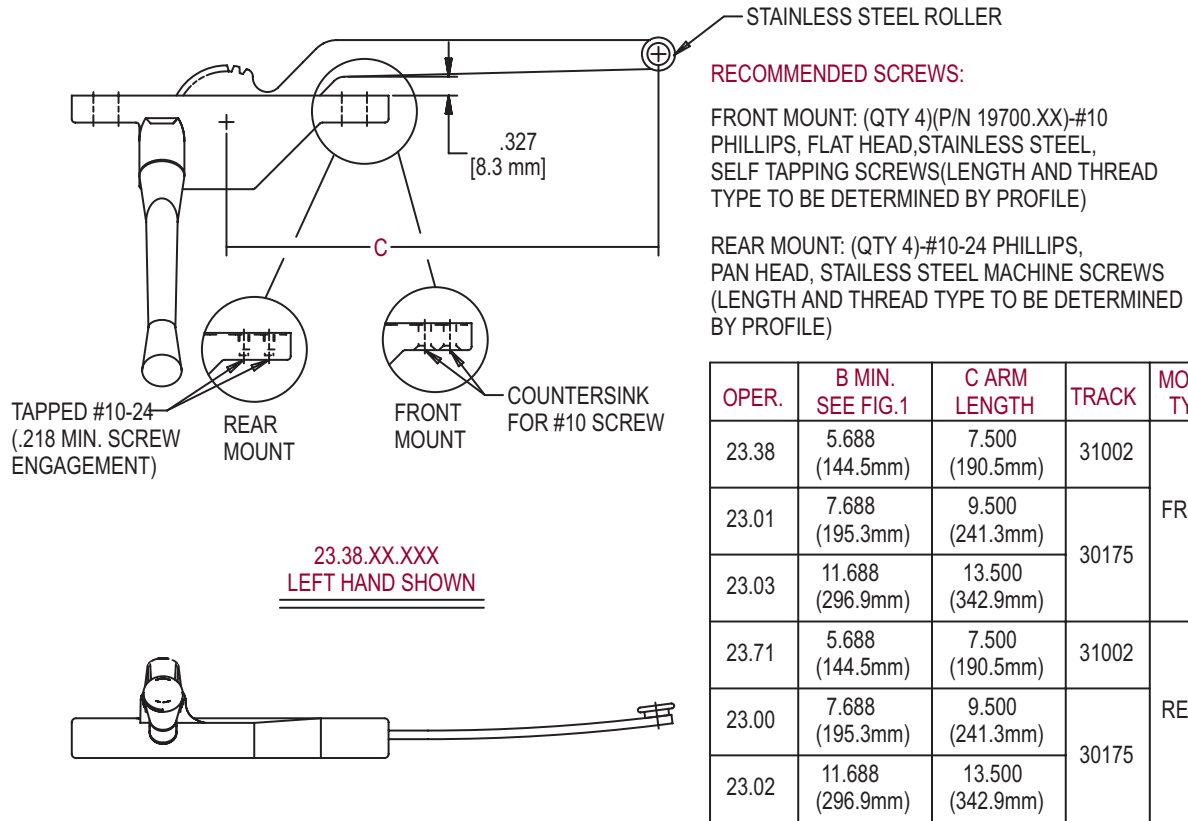


FIG. 3 TRACK 30175 AND 31002

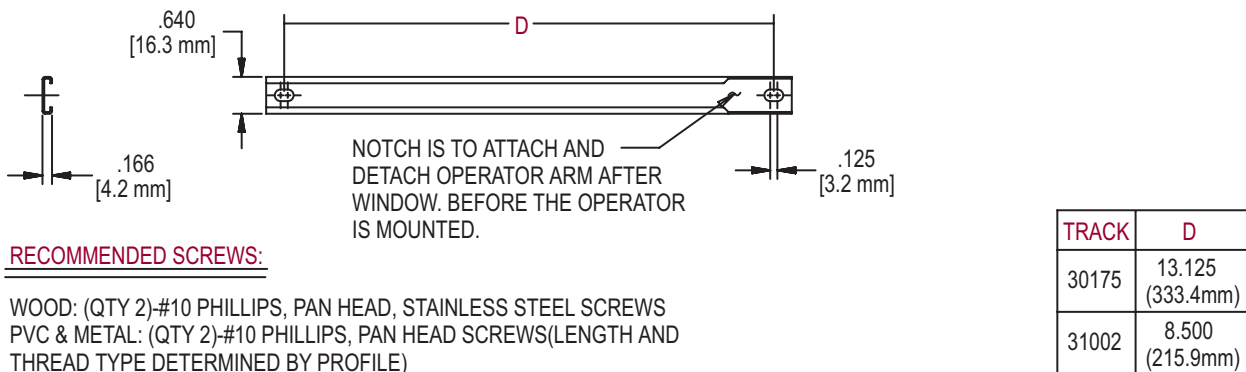


FIG. 4 GASKET 30174

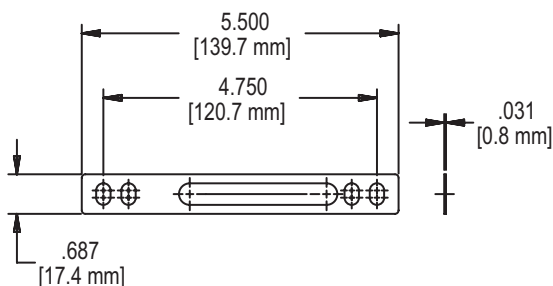
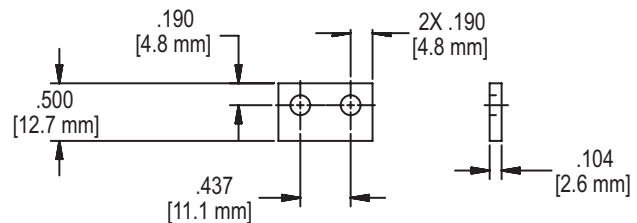


FIG. 5 BACKING PLATE 20947.XX



NOTE:

- (QTY 2) BACKING PLATES REQUIRED PER OPERATOR
- PLATE IS DESIGNED FOR A #8 SCREW TO PASS THROUGH IT FOR REAR MOUNT AND FOR A #10 SCREW TO TAP INTO IT FOR FRONT MOUNT