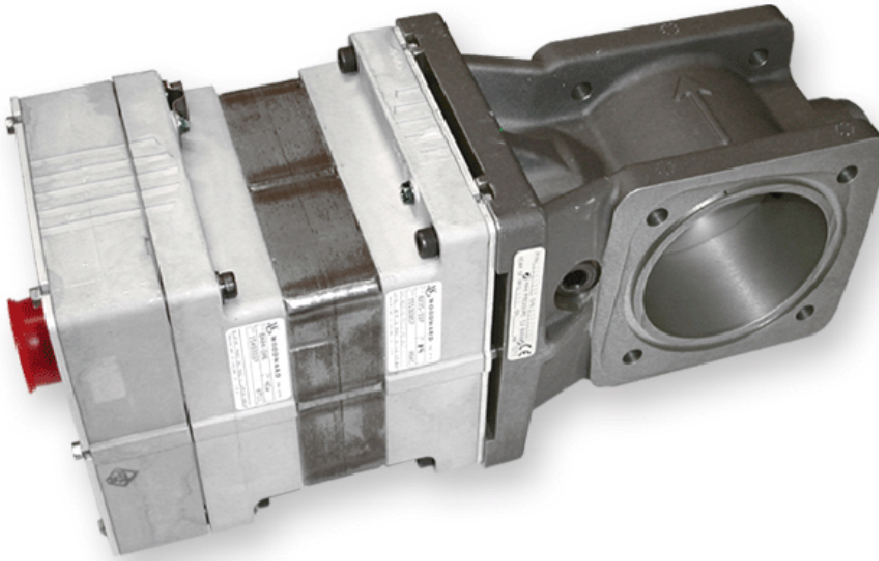


ProAct™ ITB

Integrated Actuator and Throttle Body for large bores (85 to 180 mm)



Description

The ProAct™ Integrated Throttle Bodies (ProAct ITBs) are butterfly valves electrically-actuated by ProAct Analog and ProAct Digital Plus actuators to control flow output. With bore sizes ranging from 85 mm to 180 mm, these ProAct ITBs are designed for use with engines in the 1–2 MW range. The ProAct actuators are electromagnetic, 75 degree-of-travel devices, and therefore alleviate the problems associated with linkages on gas engines (such as setup, non-linearity, and wear).

This direct combination of throttle and actuator results in excellent stability and transient characteristics, and requires no hydraulics, pneumatics, or governor gear train. Therefore, you end up with an efficient, long lasting, and easily-installed throttle option.

Application

The ProAct ITB integrated actuator and throttle body is designed to throttle air or air/fuel for gaseous engines. This system is designed for direct replacement of traditional throttle valves, and requires no linkage between valve and actuator. The three sizes are designed to cover a wide range of engines and should be selected using the sizing procedure described inside this specification.

- No linkage or couplings
- Cost effective and highly efficient
- Low maintenance
- Requires no hydraulics, pneumatics, or governor gear train
- Long lasting, easy to install throttle option
- Can be configured as an integrated speed controller or a positioner

Determining the Proper Valve Size

The proper size valve can be determined using the equation below. The required Cv (flow coefficient) should be calculated for both the minimum and maximum flows expected on the application. This design allows for a nominal travel of 75 degrees of rotation.

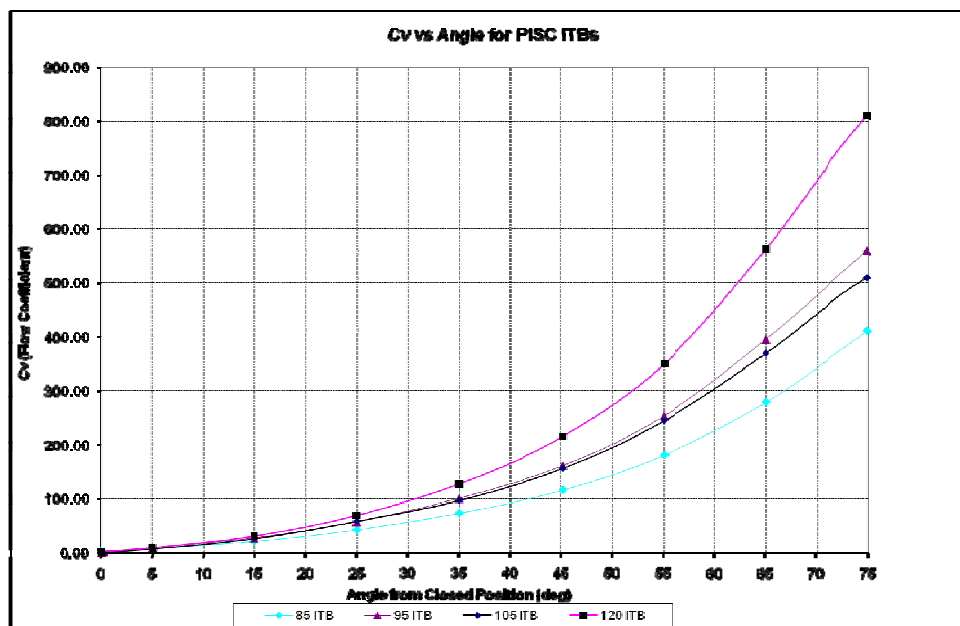
Using the graph and table below, select the closest valve that has a Cv equal to or greater than the calculated maximum flow value at approximately 80% opening (60 degrees) to ensure reasonable flow margin. Also, check that the particular valve's minimum Cv listed below is less than the minimum calculated Cv for good low idle performance. For further assistance, consult the Woodward engineering department.

$$C_v := \frac{Q \cdot 0.00976}{P_1 \cdot S_g} \sqrt{\frac{(T + 460) \cdot P_1 \cdot S_g}{P_1 - P_2}}$$

where:

Cv = Flow Coefficient
 Q = Mass Flow (PPH [pounds/hour]) [1 pound = 0.45 kg]
 Sg = Specific Gravity of Gas (use 1.0 for air)
 T1 = Upstream Gas Temperature (°F) [°F = 1.8 * °C + 32]
 P1 = Inlet Pressure (psia) [1 psi = 6.895 kPa = 0.06895 bar]
 P2 = Downstream Pressure (psia)

NOTE—P2 must be greater than 0.528 * P1 or flow becomes choked. If P2 is less than 0.528 * P1, then use P2= 0.528 * P1.



Specifications

Available Sizes	85, 95, 105, 120, 135, 160, 180 mm
Operating Temperature Range:	
Digital Plus	−40 to +85 °C (−40 to +185 °F)
Analog	−40 to +74 °C (−40 to +165 °F)
Storage Temperature Range	−55 to +125 °C (−67 to +257 °F)
Vibration Qualification Test Spec	Woodward RV2 (0.1 G ² /Hz Random, 10–2000 Hz, 12.8 Grms – 3 hours per axis)
Shock Qualification Test Spec	40 G, 11 ms sawtooth pulse
Weight	See table under mounting section of manual
Nominal Diameter	135 mm (5.3 inches), 120 mm (4.7 inches), or 105 mm (4.1 inches)
Maximum Working Pressure	60 psig (414 kPa/4.1 bar)

Regulatory Compliance

Note—Refer to the ProAct Digital Plus manual (26112) or ProAct Analog manual (26147) for actuator compliance.

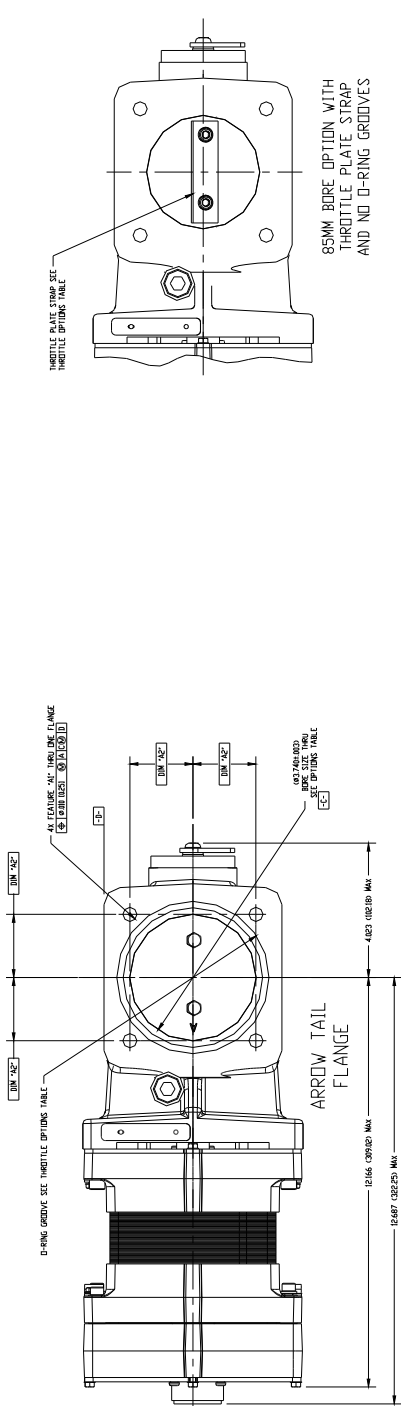
European Compliance for CE Marking:

Pressure Equipment Directive:	Certified to Pressure Equipment Directive 97/23/EC of 29 May 1997 on the approximation of the laws of the Member States concerning pressure equipment, Category II
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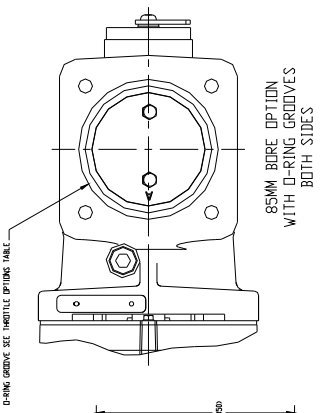
Other European Compliance:

Compliance with the following European Directive does not qualify this product for application of the CE Marking:

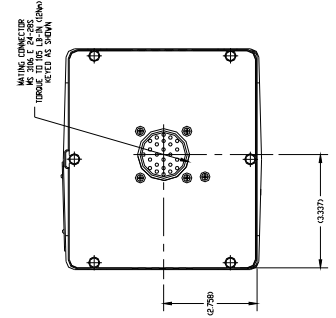
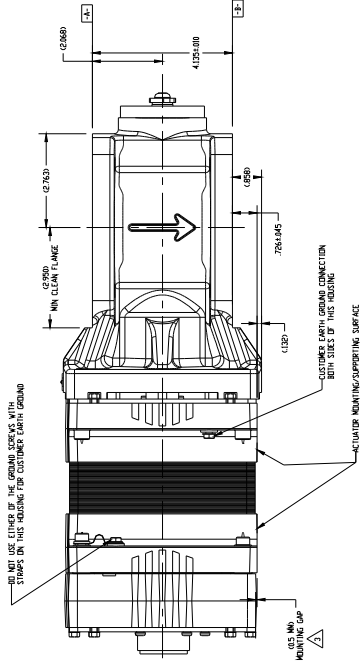
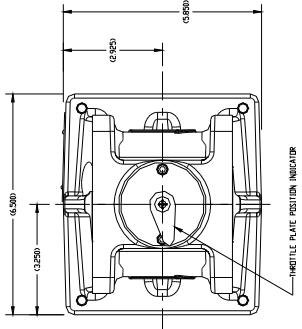
Machinery Directive:	Compliance as a component with 98/37/EC COUNCIL DIRECTIVE of 23 July 1998 on the approximation of the laws of the Member States relating to machinery.
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85MM BORE OPTION WITH THROTTLE PLATE STRAP AND NO O-RING GROOVES



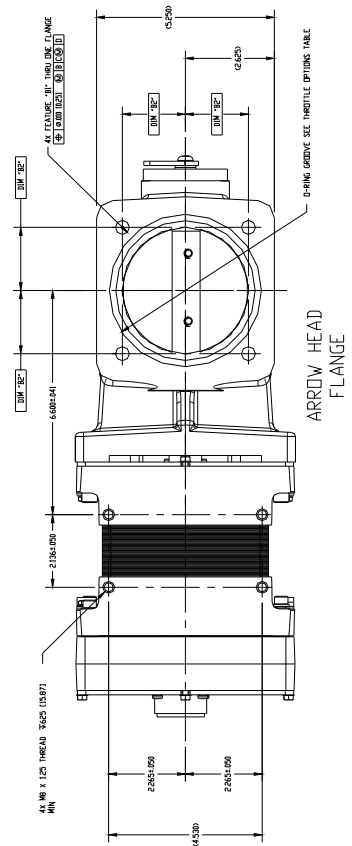
85MM BORE OPTION WITH O-RING GROOVES BOTH SIDES



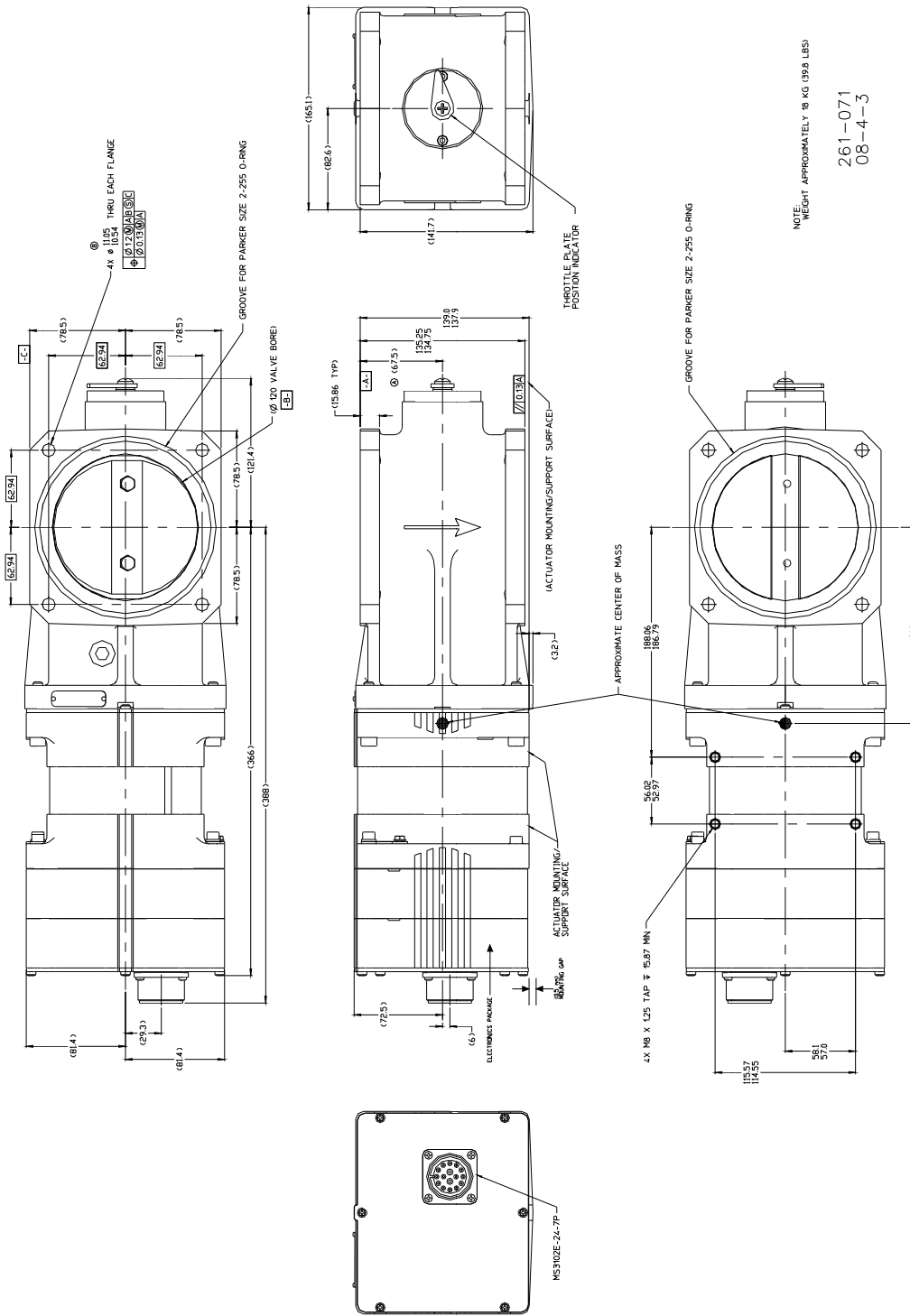
THROTTLE OPTIONS TABLE

THROTTLE ASSEMBLY	BORE SIZE	DETAILS ARROW TAIL FLANGE				DETAILS ARROW HEAD FLANGE				PRODUCT DETAILS (OPT)			
		A1	A2	A3	A4	B1	B2	B3	B4	MINIMUM GROOVES	O-RING GROOVES	PLATE STRAP	TYPE BOLLING
8225-236	0.3125 (1/8)	0.625 (1/4)	0.625 (1/4)	0.625 (1/4)	0.625 (1/4)	0.625 (1/4)	0.625 (1/4)	0.625 (1/4)	0.625 (1/4)	85	NO	YES	NO
8225-239	0.3125 (1/8)	0.625 (1/4)	0.625 (1/4)	0.625 (1/4)	0.625 (1/4)	0.625 (1/4)	0.625 (1/4)	0.625 (1/4)	0.625 (1/4)	85	NO	YES	NO
8225-237	0.3125 (1/8)	0.625 (1/4)	0.625 (1/4)	0.625 (1/4)	0.625 (1/4)	0.625 (1/4)	0.625 (1/4)	0.625 (1/4)	0.625 (1/4)	95	YES	NO	NO

- NOTES:
1. DIMENSIONS ARE SHOWN IN INCHES (MM)
 2. THROTTLE ASSEMBLY 8225-237 SHOWN
- △ INDICATOR TO BE USED TO ENSURE A MINIMUM OF 0.5 MM MOUNTING GAP ON INSTALLATION PER MANUAL



033-013
(9999-1247)
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ProAct ITB 120 with ProAct Digital Plus Model II (also available with ProAct Analog)
(Do not use for construction)



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