

# Hagan Pneumatic Power Positioners

## PRODUCT DESCRIPTION

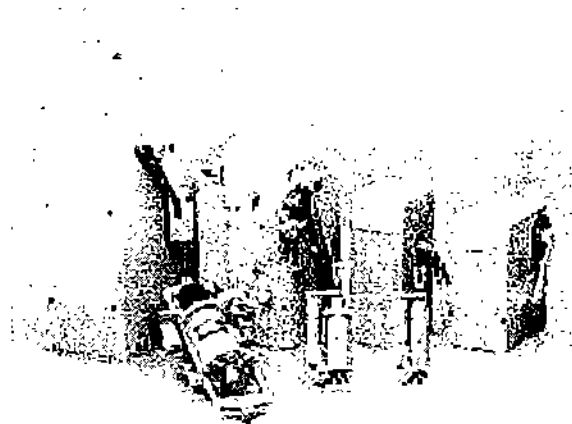
Industry needs muscle to control process valves, dampers and feed mechanisms accurately and in response to a demand signal. Hagan pneumatic power positioners have been satisfying these exacting control requirements for many years in countless applications - from steel mills to refineries - where positioning speed and accuracy are taken for granted.

Hagan power positioners are manufactured in cylinder sizes from 2-1/2 to 8 inches in diameter with strokes of 5 to 14 inches. They come in thrust and torque models for wall, swivel, or floor mounting and with accessories such as limit switches, position transmitters, heated enclosures, air failure lock, and characterized cams that provide an output motion that is a function of the input signal.

The miniature 2-1/2 x 5 positioner is so compact that 24 to 48 of these units are often used to control secondary air on one boiler. The 4 x 5, 5 x 10, 5 x 20, and 6 x 10 units are appropriately sized for average control requirements, and the 8 x 14 and HF Heavy Duty units offer greater force for tougher jobs such as huge slide dampers and large valves.

## FEATURES

- True Positioning Devices - All power positioners assume a definite position of the crosshead or operating lever for each demand signal variation through the action of an integral feedback mechanism.
- Mounting Variety - Models are available for convenient wall, swivel, or floor mounting. These positioners are often mounted directly on lever type valves by the valve manufacturer.
- Characterized Positioner - All positioners are equipped with a standard rotary cam or cam bar which produces a straight line relationship between input signal and output motion. Square or square root and blank cams are available.
- Air Lock - Designated models are equipped with an internal locking mechanism which stops and locks the positioner in the control position existing at the moment of air supply failure until air pressure is restored. System air locking schemes are also available.
- Fail Safe - Designated models can be equipped to drive the positioner to full open or full closed in case of air supply failure. NOTE: This feature should not be used with the air lock feature.



- Manual Operators - All torque type positioners are equipped with either a manual operating lever or a manual operating handwheel.
- Ambient Temperature - Positioners are generally suitable for operation from 0 to 140°F (-17.8 to 60°C) with a maximum rating of 300°F (149°C) for certain high temperature models.
- Dust Cover and Internal Heater - A dust cover is provided with or without heater and thermostat for certain torque type models.
- Limit Switches and Position Transmitters - Limit switches and position transmitters are available on designated models.
- Linkage - Clevises, linkage struts, and rigging accessories are available for all models, except the Heavy Duty Foot Mounting Type.
- Power Air Supply - Clean dry instrument air at 45 to 120 psig is required for cylinders of 8 inch diameter or less. For cylinders over 8 inches in diameter, the maximum air pressure for standard service is 100 psig and 250 psig for heavy duty service.

## BENEFITS

- Accuracy
- Reliability
- Simple maintenance because of rugged frame construction
- Efficient torque and power at a minimum cost
- Fast response to small input signal changes due to high internal gain



Contact Esys for more information about this product:  
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website: <http://www.esys.us>

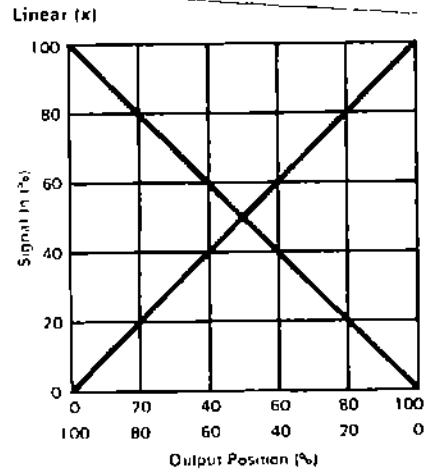


## OPERATION

Non-characterized (spring) feedback produces a straight line (1:1) relationship between the input signal and output response.

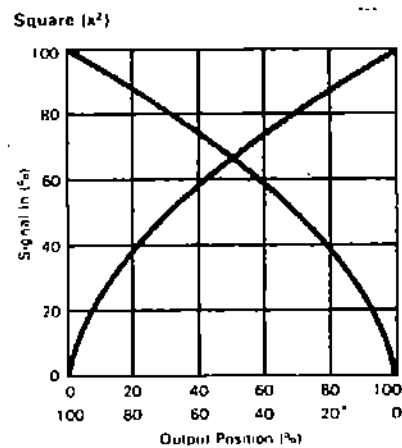
The linear shape produces a straight line (1:1) relationship between the input signal and output response.

## Input-Output Characteristics

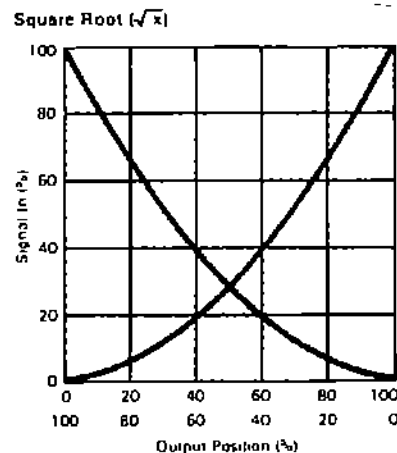


Characterized (cam) feedback provides choice of linear/square or square root characteristic for more versatility and better zeroing ability.

The square ( $x^2$ ) shape will produce a small output change for large input changes during the lower portion of the signal range. When operating in the upper portion of the signal range, a small input change will be required to produce a large output change.

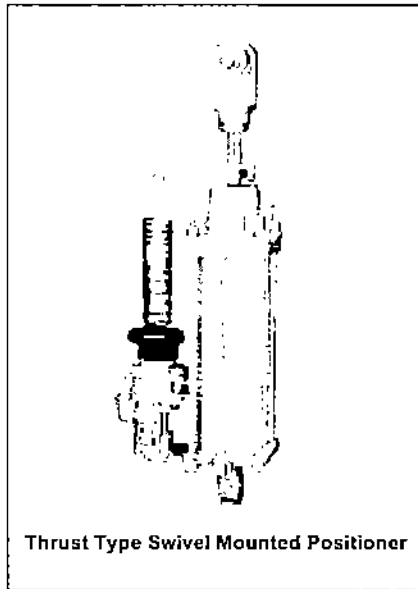


Conversely, the square-root ( $\sqrt{x}$ ) shape will produce a relatively large output change for small input changes during approximately the first 10% of signal range. When operating in the upper portion of the signal range, a large input change will be required to produce a small output change.



Note: Stall torques and thrusts are noted in the specifications. Rosemount Analytical recommends oversizing actuators by 40 percent above force required to ensure responsive operation.

## 2-1/2 X 5 THRUST TYPE SWIVEL MOUNTED SPECIFICATIONS ①



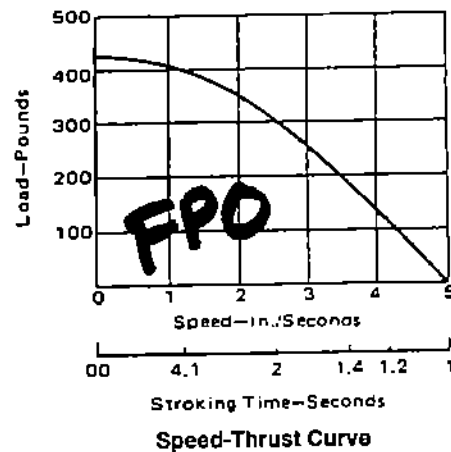
### OPTIONS

Fail safe (loss of power air)  
I/P signal converter  
Dual limit switches

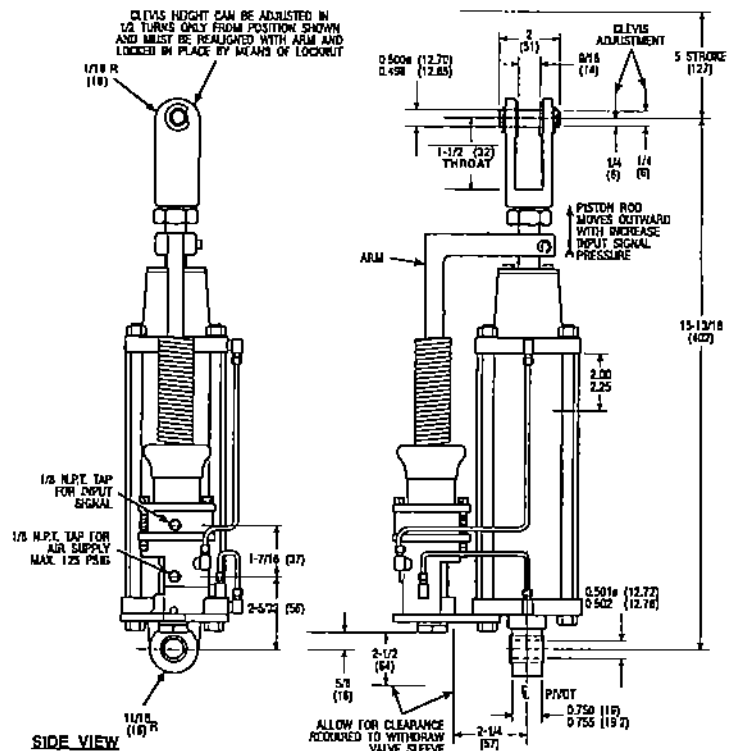
Pivot Base  
Anchor pivot pin for CE

### ACCESSORIES

Clevis, clevis pin, and retaining rings are included. An air filter regulator is required but is not included.



Accuracy:	± 1% of full scale
Temperature limits:	0° to 170°F (-17.8° to 77°C)
Full stroke time:	2 sec. or less
Hysteresis:	± 0.8% of full scale
Input signal range:	3-15, 3-27, 0-30, 0-60 psig (21-103, 21-186, 0-207, 0-414 kPa gauge), and 4-20 mA
<b>Air supply</b>	
Maximum:	120 psig (827 kPa gauge)
Minimum:	45 psig (310 kPa gauge)
Recommended:	100 psig (689 kPa gauge)
<b>Thrust and load data</b>	
Stall thrust:	500 lbs (228 kg)
Maximum friction load:	125 lbs (57 kg)
Maximum allowable weight load:	175 lbs (79 kg)
<b>Positioning accuracy with 3-27 psi control signal:</b>	1%
Air consumption:	0.5 scfm free air
Air filter, style 4505C21G03:	sufficient capacity for 12 positioners



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Two air filter regulators, Style 45D5C21G03, in parallel are required for 12 positioners.

## 2-1/2 X 5 THRUST TYPE SWIVEL MOUNTED ORDERING INFORMATION

Clevis, clevis pin, and retaining rings are integral and are included. Instruction Manual IB 102-202N is included. Air filler 4505C21G03 should be ordered with positioner (see Accessory List below).

<b>PP205</b>	<b>Pneumatic Power Positioner 2-1/2 x 5 Thrust Type</b>					<b>Shipping Weight: 9 lbs (20 kg)</b>
		<b>Code</b>	<b>Single Range/Electric Position Transmitter</b>			
		1	3-15 PSI Signal			
		2	3-15 PSI Signal, EPT included			
		3	3-27 PSI Signal			
		4	3-27 PSI Signal, EPT included			
		5	0-30 PSI Signal			
		6	0-30 PSI Signal, EPT included			
		7	On/Off Operation <sup>(1)</sup>			
		<b>Code</b>	<b>Limit Switches</b>			
		0	None			
		1	2 Limit Switches Provided <sup>(2)</sup>			
		<b>Code</b>	<b>I/P Transmitter for accepting 4-20 mA Control Signal</b>			
		0	None			
		1	Provided (unmounted)			
		<b>Code</b>	<b>Mounting</b>			
		1	Standard Swivel Base			
		2	VeriTrim Mounting			
<b>PP205</b>		<b>2</b>	<b>1</b>	<b>0</b>	<b>1</b>	<b>EXAMPLE</b>

### Accessories

Code	Description
4505C21G03	Air Filter/Regulator - Recommended
371763	Pivot Base and Pin
271638	Anchor Pivot Pin for CE Boilers (separated overfire air) <sup>(3)</sup>
3D37449G01	Fail-Safe - 0% or 100% of travel initiated upon loss of power air, I/P included. 3-15 PSI control signals, only
3D39395G07	Maintenance Tool Kit
	Paint - Rosemount Blue
	Stainless Steel Fittings

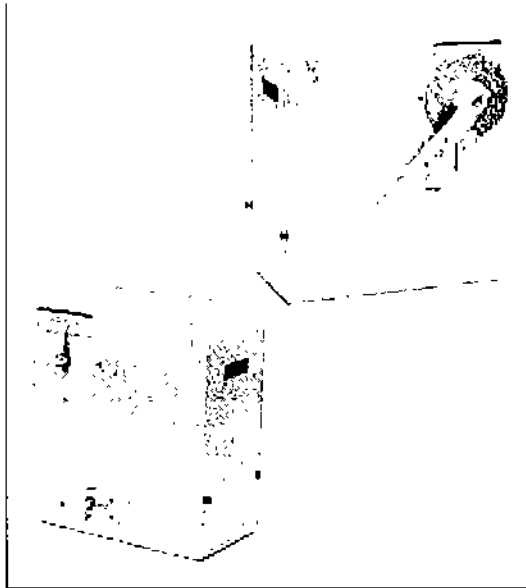
### NOTES:

- Solenoid for On/Off operation is dual coil 120 V A/C.
- Limit switches are only adjustable 0-5% on closed end, and 95-100% on open end.
- For Trunnion Mounted version, consult factory..

### Rating for Limit Switches - SPDT

125 volts ac	15 amps
250 volts ac	15 amps
480 volts ac	15 amps
150 volts dc	0.5 amps
250 volts dc	0.25 amps

# 2-1/2 X 5; 4 X 5 ECONO TORQUE TYPE FLOOR MOUNTED SPECIFICATIONS ①



This positioner was designed to accommodate low torque applications (below 90 ft-lb) (122 N-m) such as small packaged boilers, butterfly valves, jackshafts, fired heaters, etc. For applications requiring up to 180 foot pounds (244 N-m) a 4 x 5 cylinder is available.

## OPTIONS

- Characterized or non-Characterized positioning
- Manual brake
- Supply air release
- SPDT limit switches
- Heater and thermostat
- Electric position transmitter
- Air lock
- Fail safe
- I/P signal converter
- Large cylinder for plant air supply below 100 psig (689 kPa)

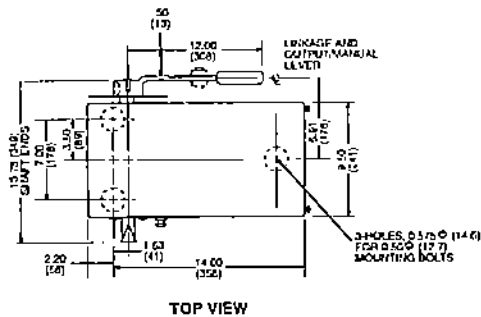
## ACCESSORIES

- Air filter regulator is included
- Clevis and pin are included

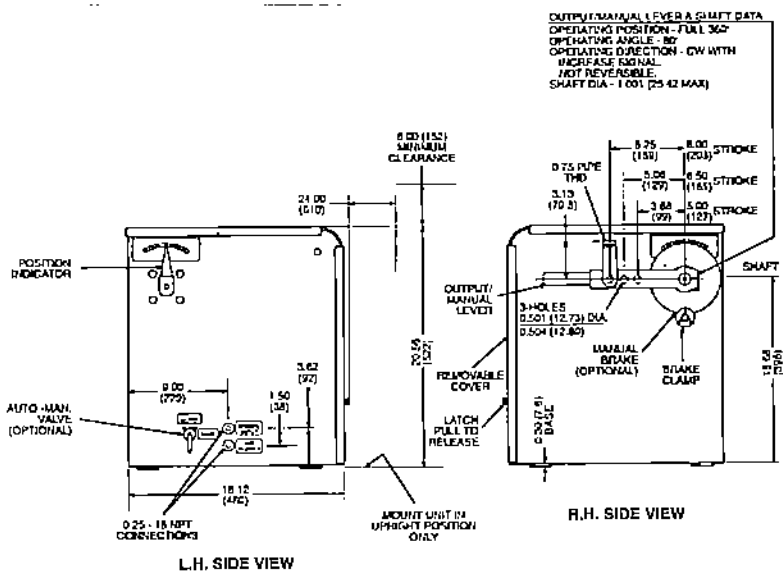
- Repeatability: 1.0% of full stroke
- Temperature limit: 40-170°F (4-77°C)
- Full stroke time (unloaded): 2 seconds or less
- Air supply
  - Maximum: 120 psi (827 kPa)
  - Minimum: 45 psi (310 kPa)
  - Recommended: 100 psi (689 kPa)
- Air consumption: 0.4 scfm (free air)

## Torque load data based on recommended air supply

- Stall torque (2-1/2 x 5): 120 ft-lbs (162 N-m)
- Stall torque (4x5): 240 ft-lbs (325 N-m)
- Maximum friction load: 30 ft-lbs (41 N-m)
- Maximum allowable weight load: 45 ft-lbs (61 N-m)
- Input signal: 3-15, 3-27, 0-30 psi (21-103, 21-186, 0-207 kPa), and 4-20 mA
- Output shaft angle: 80°
- Unit weight: 60 lbs (27 kg)



TOP VIEW



Outline and Mounting Dimensions

## DIMENSIONS IN INCHES WITH MILLIMETERS IN PARENTHESES

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## 2-1/2 X 5; 4 x 5 ECONO TORQUE TYPE FLOOR MOUNTED ORDERING INFORMATION

• Select complete model number from Model Number Matrix

Shp Wgt  
lbs/kgs

Pneumatic Power Positioner Econo Torque Type	80/33
----------------------------------------------	-------

Includes air filter/Reg style 4505C21G03 and Clevis, style 174469

Code	Positioner Type	Shp Wgt lbs/kgs
1	Non-Characterized	
2	Characterized	

Code	Positioner Size	
1	2.5 x 5 Cylinder	
2	4 x 5 Cylinder <sup>(1)</sup>	

Code	Signal Range	
1	3 - 15 psig (21-103 kPa)	4/1,8
2	3 - 27 psig (21-186 kPa)	4/1,8
3	0 - 30 psig (0-207 kPa)	4/1,8
4	4 - 20 mA (I/P mounted and piped)	9/4,1

Code	Manual and Lock Operation	
0	None	
1	Manual Operator	
2	Manual Operator and Manual Lock	
3	Manual Operator, Manual Lock and Soft Air Lock <sup>(2)</sup>	
4	Manual Operator, Manual Lock and Fail Safe <sup>(3)</sup>	10/4,5

Code	Limit Switches (SPDT) <sup>(4)</sup>	
1	None	
2	Two Switches	4/1,8
3	Electric Position Transmitter (EPT) <sup>(5)</sup>	4/1,8
4	Two Switches and Electric Position Transmitter (EPT) <sup>(5)</sup>	8/3,6

Code	Heater and Thermostat	
0	None	
1	150 Watt (AC) Heater	

PP075T	1	2	3	1	2	1	EXAMPLE	80/33
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<sup>(1)</sup>Recommended to provide 180 foot pounds (244 N m) torque if plant air supply is 100 psig (689 kPa) or 90 foot pounds (122 N m) with 50 psig (345 kPa) air supply

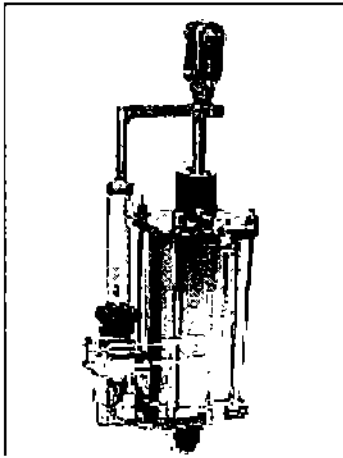
<sup>(2)</sup>Soft air lock is accomplished by trapping air in the cylinder - it is not a mechanical lock.

<sup>(3)</sup>Assembled to fail open (piston extended 100%) on loss of power air supply

<sup>(4)</sup>SPDT Switch Ratings 15 Amps, 125, 250, or 480 Vac; 10 Amps, 125 Vac, "L" (Tungsten Lamp) 1 HP, 125 Vac; 2 HP, 250 Vac  
1/2 Amp, 125 Vdc, 1/4 Amp, 250 Vdc

<sup>(5)</sup>Two wire (24 Vdc) 4 -20 mA transmitter, not for intrinsically safe applications.

# 4 X 5 THRUST TYPE SWIVEL MOUNTED SPECIFICATIONS ①

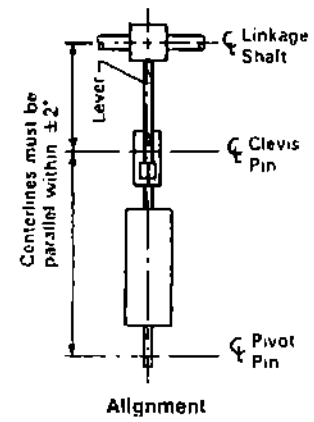
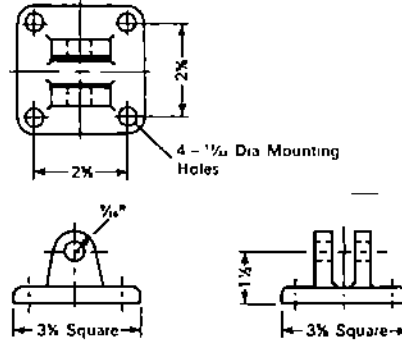


## OPTIONS

Fail safe (loss of power air)  
I/P signal convertor

## ACCESSORIES

Clevis, clevis pin, and retaining rings are included.  
An air filter is required but not included.

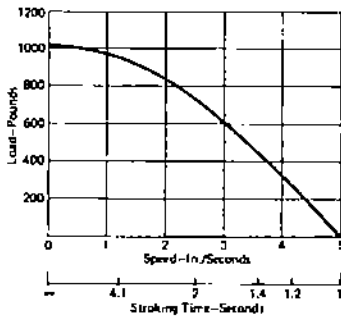


Accuracy:	±1% of full
Temperature limits:	0-170°F (-17. 8-77°C)
Full stroke time:	2 sec or less
Air supply	
Maximum:	125 psig (862 kPa)
Minimum:	45 psig (310 kPa)
Recommended:	100 psig (689 kPa)
Built-in lock:	prevents shipping damage
Thrust and load data	
Stall thrust:	1200 lbs (545 kg)
Maximum friction load:	300 lbs (136 kg)
Maximum allowable weight load:	400 lbs (136 kg)
Input signal range:	see table
Air consumption:	0.5 scfm free air

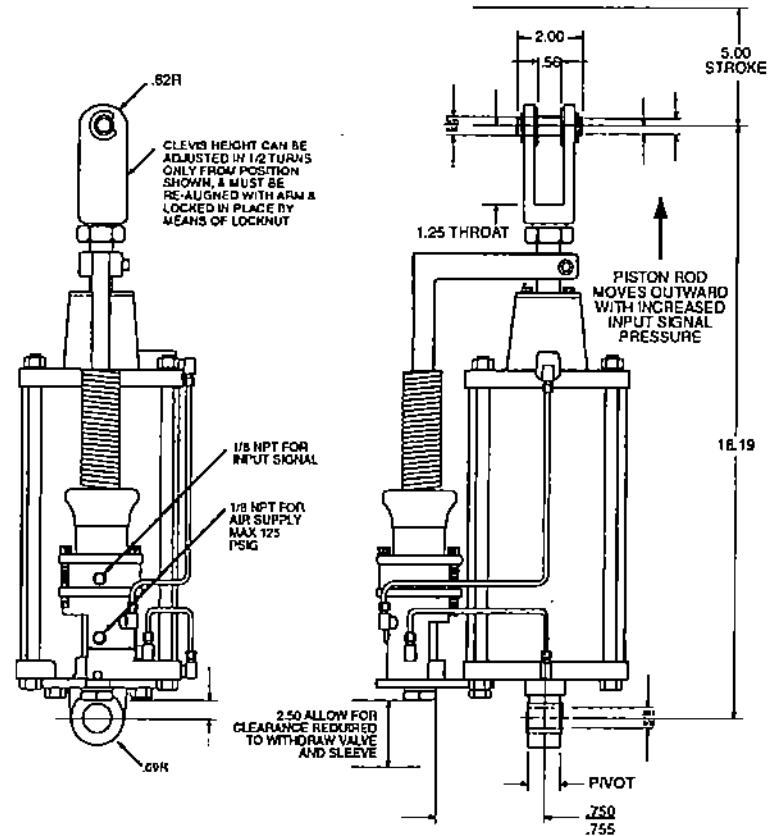
An anchor pivot pin is not available as for the 2-1/2 x 5 Swivel Type Positioner

Two air filters/regulators, Style 45D5C21G03, in parallel are required for 12 positioners.

- To Order, Specify:
1. Style number.
  2. Pivot base and pin, if required.



Speed-Thrust Curve



Typical 4 x 5 Thrust Type Mounted Positioner, Style 477739-X. Refer to individual outline drawings.

Positioner

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## 4 X 5 THRUST TYPE SWIVEL MOUNTED ORDERING INFORMATION

Clevis, clevis pin, and retaining rings are integral and are included. Air filter/Reg 4505C21G03 should be ordered with positioner (See Accessory List below).

Code	Signal Range		Shp Wgt lbs/kgs
	psig	N.m Current	
3D39491G01	0 - 30	0-207	30/13,6
3D39491G02	3 - 15	21-103	30/13,6
3D39491G03	3 - 27	21-186	30/13,6
3D39491G02	(requires I/P parts, see Note <sup>(1)</sup> below)		4 - 20

### Accessories

Code		Shp Wgt lbs/kgs
371763	Pivot Base & Pin	3/1,4
3D37449G01	Fail-Safe <sup>(2)</sup>	15/6,8
4505C21G03	Air Filter	1/0,5

<sup>(1)</sup> Order Parts 9885A31H01, 275431-007, 4505C21G01 (these parts remote mounted)

<sup>(2)</sup> Actuated on Loss of Power Air Only





## 4 X 5 TORQUE TYPE FLOOR MOUNTED SPECIFICATIONS (Continued)

### POWER SUPPLY REQUIREMENTS

#### Pneumatic

Operating air supply pressure: 45 to 120 psig (310 to 827 kPa)  
 Recommended air supply pressure: 100 psig (689 kPa)

#### Electrical

##### Pivot valve heater

Voltage: 117 Vac, 60 Hz  
 Power consumption: 150 watts

### RATING FOR LIMIT SWITCHES

Standard switch SPDT 125 volts AC: 15 amps  
 Heavy duty switch SPDT 120 volts AC: 20 amps

24 Vdc power supply required for position transmitter.  
 Switches suitable for 100% adjustment.  
 Field wiring direct to switches (not by Rosemount).

## 4 X 5 TORQUE TYPE FLOOR MOUNTED ORDERING INFORMATION

\* Select complete model number from Model Number Matrix

Shp Wgt  
lbs/kgs

Pneumatic Power Positioner 4 X 5 Torque Type	95/43
----------------------------------------------	-------

Includes air filter/Reg style 4505C21G03 and Clevis, style 174469

Code	Frame Description	Shp Wgt
1	Standard/Brass Conns	
2	Manual Lock/Brass Conns	8/3,6
3	Air Lock/Brass Conns	12/5,5
4	Standard/Stainless Steel Conns	
5	Manual Lock/Stainless Steel Conns	8/3,6
6	Air Lock/Stainless Steel Conns	12/5,5

Code	Signal Range	
1	3 - 15 psig (21-103 kPa)	
2	0 - 30 psig (0-207 kPa)	
3	4 - 20 mA (I/P mounted and piped)	4/1,8

Code	Cam Selection	
1	Linear Std. Rotation	
2	Linear Rev. Rotation	
3	Sq. Rt. Std. Rot. - Direct System	
4	Sq. Rt. Rev. Rot. - Direct System	
5	Sq. Rt. Std. Rot. - Inverse System	
6	Sq. Rt. Rev. Rot. - Inverse System	

Code	Limit Switch	
0	None	
1	EPT <sup>(2)</sup>	4/1,8
2	Std. Limit Switch 2 - SPDT <sup>(1)</sup>	2/0,9
3	H. D. Limit Switch 2 - 2 DPDT	6/2,7
4	Std. Limit Switch & EPT	6/2,7
5	H. D. Limit Switch & EPT	10/4,5

Code	Heater	
0	None	
1	117	2/0,9

Code	Minimum Limit Stop	
0	None	
1	Limit Stop Feature	

PP405TR	1	2	2	1	1	1	EXAMPLE	95/43
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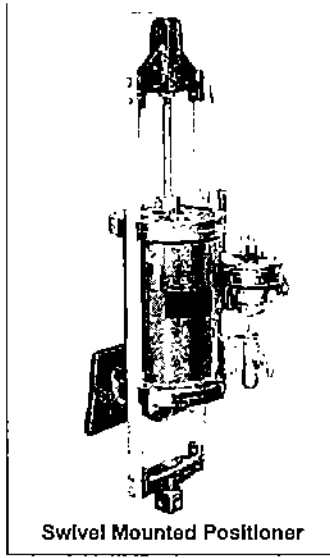
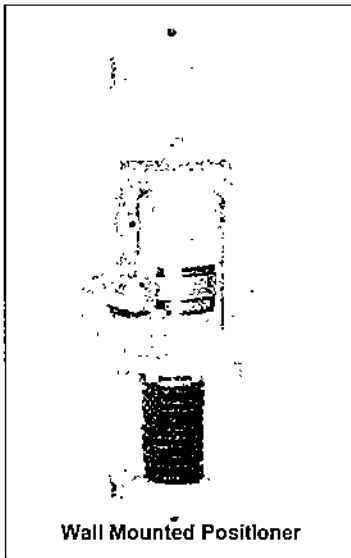
### Accessories

Code		Shp Wgt lbs/kgs
3D37097	On-Off	

(1)SPDT Switch Ratings  
 15 Amps, 125, 250 or 480 Vac;  
 10 Amps, 125 Vac "L" (Tungsten Lamp)  
 1 Hp, 125 Vac; 2 Hp, 250 Vac  
 1/2 Amp, 125 Vdc, 1/4 Amp, 250 Vdc

(2)Two wire (24 Vdc) 4 -20 mA transmitter mounted under power positioner cover, not for intrinsically safe applications.

# 5 x 10 THRUST TYPE WALL AND SWIVEL MOUNTED SPECIFICATIONS ①

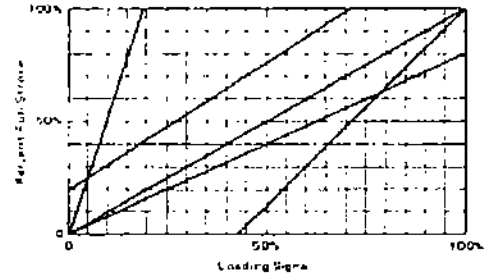


### OPTIONS

- Air lock
- Manual operator included
- Dual limit switches
- Dust boot
- I/P convertor
- Fail safe
- Position transmitter

### ACCESSORIES

- Air filter is included
- Clevis and pin are



Cam Bar Adjustment Results with 5 x 10 Power Positioners

- Repeatability:** 1% of full scale or better
- Temperature limits:** 0-140°F (-17.8 -60°C), 160°F (71°C) with increased maintenance
- Full stroke time:** 2 sec
- Air supply:**
  - Maximum: 120 psig (827 kPa)
  - Minimum: 45 psig (310 kPa)
  - Recommended: 100 psig (689 kPa)
- Air consumption:** 1 scfm free air
- Input signal ranges:** 3-15, 0-30 psig (21-103, 0-207 kPa), and 4-20 mA

### Thrust, torque and load data

- Stall thrust:** 1950 lbs (885 kg)
- Maximum friction load:** 500 lbs (227 kg)
- Minimum allowable weight load:** 800 lbs (363 kg)

### Compensating Bar

The standard compensating bar produces a straight line relationship. Other relationships are obtained by field shaping the compensation bar.

### Limit Switches

Limit switches are of the single pole, double throw, non-explosion proof type. Switch ratings are 125 Vac-15 amperes, 125 Vdc - 0.5 ampere.

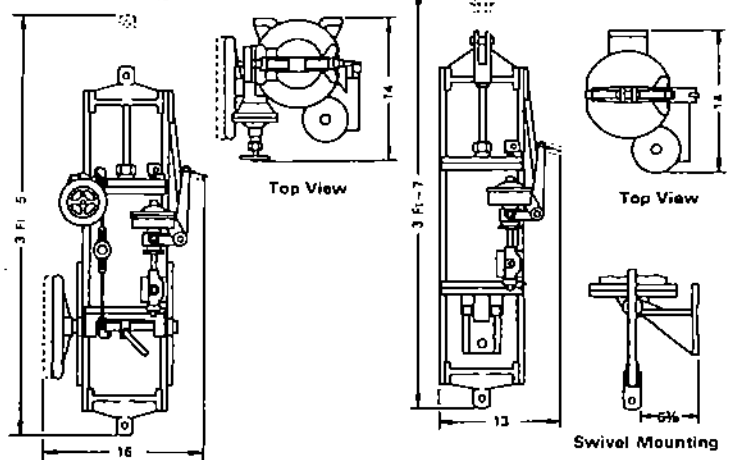
### To Order, Specify:

1. Positioner
2. Desired input signal range.
3. Desired accessory style number or description

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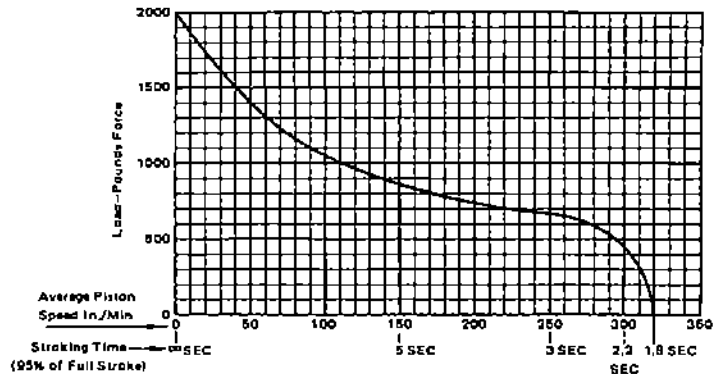
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### Dimensions in Inches



Typical Wall Mounted Type, Style 473400-XX. Refer to individual outline drawing.

Typical Swivel Mounted Type, Style 473402-XX. Refer to individual outline drawings.



Speed-Thrust Curve, All 5 x 10 Styles

## 5 x 10 THRUST TYPE WALL AND SWIVEL MOUNTED ORDERING INFORMATION

Basic Wall Mounted and Swivel Mounted types include Air Filter, Style 372538-2, and Clevis 174247-1

Style Number	1 Limit Switch	2 Limit Switches	Manual Operator	Air Lock	Dust Boot	Signal Range	Shp Wgt lbs/kgs
<b>Wall Mounted Type (WM)</b>							
473400-1						Specify, in addition to part number, desired input: 3 - 15 psi (21-103 kPa) 0 - 30 psi (0-207 kPa) 4 - 20 mA <sup>(1)</sup>	190/86,3
473400-2	x						195/88,5
473400-3		x					195/88,5
473400-4			x				200/90,8
473400-5			x	x			205/93,1
473400-6	x		x				205/93,1
473400-7	x		x	x			215/97,6
473400-8		x	x				205/93,1
473400-9		x	x	x			215/97,6
473400-10					x		192/87,2
473400-11	x				x		197/89,4
473400-12		x			x		197/89,4
473400-13			x				202/91,7
473400-14			x	x	x		210/95,3
473400-15	x		x		x		207/94,0
473400-16	x		x	x	x		217/98,5
473400-17		x	x		x		207/94,0
473400-18		x	x	x	x		217/98,5

Style Number	1 Limit Switch	2 Limit Switches	Manual Operator	Air Lock	Dust Boot	Signal Range	Shp Wgt lbs/kgs
<b>Swivel Mounted Type (FF)</b>							
473402-1						Specify, in addition to part number, desired input: 3 - 15 psi (21-103 kPa) 0 - 30 psi (0-207 kPa) 4 - 20 mA <sup>(1)</sup>	190/86,3
473402-2	x						195/88,5
473402-3		x					195/88,5
473402-4			x				200/90,8
473402-5			x	x			210/95,3
473402-6	x		x				205/93,1
473402-7	x		x	x			215/97,6
473402-8		x	x				205/93,1
473402-9		x	x	x			215/97,6
473402-10					x		192/87,2
473402-11	x				x		197/89,4
473402-12		x			x		197/89,4
473402-13			x				202/91,7
473402-14			x	x	x		212/96,3
473402-15	x		x		x		207/94,0
473402-16	x		x	x	x		217/98,5
473402-17		x	x		x		207/94,0
473402-18		x	x	x	x		217/98,5

### Accessories

Code	Description	Shp Wgt lbs/kgs
348374-001	Sq. Rt. Compensating Bar, Style 348374-001 in place of Linear Compensating Bar 12015-2 - all styles	--

### I/P 4 -20 mA (Without Failsafe)

9885A31M01	Current/Pneumatic Converter	--
275431-007	Pressure Gage	--
4505C21G01	Filter Regulator	--

248375	Crosshead with 1/4 - 16 lapped hole rather than Clevis Type Crosshead, Style 5015-4	--
3D37455	Failsafe <sup>(2)</sup> cannot be used with Air Lock	15/6,9
1A99030G01	Position Transmitter <sup>(3)</sup>	1/0,5
174468-1	Extended Throat Clevis (See Parts Price Book)	1/0,5

<sup>(1)</sup> For 4 -20 mA input (without failsafe) order I/P from accessories (These parts remote mounted).

<sup>(2)</sup> Actuated on Loss of Power Air Only

<sup>(3)</sup> Two wire (24 Vdc) 4-20 mA transmitter, not for intrinsically safe applications.

# 6 x 10 TORQUE TYPE FLOOR MOUNTED SPECIFICATIONS ①



6 x 10 Floor Mounted Positioner

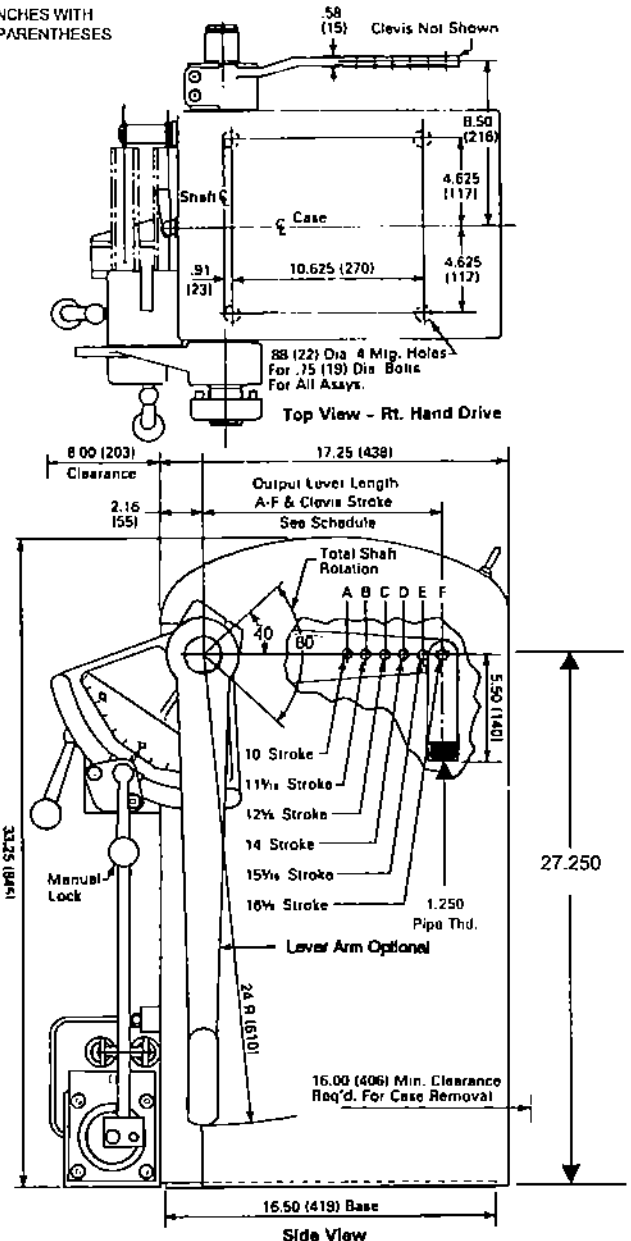
## OPTIONS

- Manual operator
- Air lock
- I/P convertor
- Dual limit switches
- Heater
- Position transmitter
- Minimum limit stop

## ACCESSORIES

- Air filter is included
- Clevis and pin are included

DIMENSIONS IN INCHES WITH  
MILLIMETERS IN PARENTHESES



Repeatability: 1% of full stroke or better  
 Temperature limits: 0-140°F (-17,8 -60°C), 160°F (71°C)

with increased maintenance

Full stroke time (unloaded): 5 sec or less  
 Input signal ranges: 3-15, 0-30 psig (21-103, 0-207 kPa), and 4-20 mA

Air supply:  
 Maximum: 120 psig (827 kPa)  
 Minimum: 45 psig (310 kPa)  
 Recommended: 100 psig (689 kPa)  
 Air consumption: 1 scfm free air  
 10-inch stroke: (80° rotation)

Torque and load data  
 Stall torque: 1800 ft-lbs (2441 N-m)  
 Maximum friction load: 450 ft-lbs (610 N-m)  
 Minimum allowable weight load: 600 ft-lbs (814 N-m)

Physical Characteristics  
 Weight: 275 lbs (125 kg), typical  
 Air supply and signal air input fittings: 1/4 inch NPT female connections  
 Electrical connections: 16 gauge pigtail leads

Limit Switches  
 Limit switches are of the single pole, double throw, non-explosion proof. Ratings are 125 Vac-15 amperes, 125 Vdc - 0.5 ampere.

Cam Bar  
 The standard cam bar produces a straight line relationship. Shaping the cam bar in the field produces other relationships.

Standard rotation (as supplied) - lever moves counterclockwise with increased loading pressure.

Reverse rotation - lever moves clockwise with increased loading pressure when valve block and angling bar are reversed.

Operating lever shown with piston at midstroke position. Lever may be installed at 7-1/2 inch (191 mm) increments on a 2 inch (51 mm) dia. 48 tooth shaft from position shown.

## To Order, Specify:

1. Positioner style number.
2. Accessory style number.
3. Desired input signal [3-15, 0-30 psig (21-103, 0-207 kPa)] or 4-20 mA.

Drawings are for reference purposes only, and Rosemount Analytical Inc. does not warrant the accuracy of the dimensions herein.

① Specifications are subject to change without notification. Our policy is one of continuous improvement, and we reserve the right to change specifications.

# 6 x 10 TORQUE TYPE FLOOR MOUNTED ORDERING INFORMATION

• Select complete model number from Model Number Matrix

Shp Wgt  
lbs/kgs

Pneumatic Power Positioner 6 x 10 Torque Type	300/136
-----------------------------------------------	---------

Includes air filter style 372538-002 and Clevis, style 174468-001

Code	Frame Description	Shp Wgt lbs/kgs
1	Standard/Brass Conns	
2	Manual Lock/Brass Conns	8/3,6
3	Manual & Air Lock/Brass Conns	12/5,5
4	Standard/Stainless Steel Conns	
5	Manual Lock/Stainless Steel Conns	8/3,6
6	Manual & Air Lock/Stainless Steel Conns	12/5,5

Code	Drive Shaft Assembly	
1	Right Hand Drive	
2	Left Hand Drive	

Code	Signal Range	
1	3 - 15 psig (21-103 kPa)	
2	0 - 30 psig (0-207 kPa)	
3	4 - 20 mA (I/P Mounted and Piped)	4/1,8

Code	Limit Switch (Selection Based on Type)	
0	None	
1	<sup>(6)</sup> Two Standard <sup>(1)</sup>	2/0,9
2	<sup>(6)</sup> Two Standard <sup>(2)</sup>	2/0,9
3	<sup>(6)</sup> Two Standard <sup>(3)</sup>	2/0,9
4	Two Heavy Duty <sup>(1)</sup>	6/2,7
5	Two Heavy Duty <sup>(2)</sup>	6/2,7
6	Two Heavy Duty <sup>(3)</sup>	6/2,7

Code	Heater	
0	None	
1	117 Vac, 150 Watt Heater	2/0,9

Code	Miscellaneous Accessories (Selection Based on Type)	
0	None	
1	Electric Position Transmitter <sup>(4)</sup>	4/1,8
2	Electric Position Transmitter <sup>(5)</sup>	4/1,8
3	Electric Position Transmitter and Limit Stop <sup>(4)</sup>	4/1,8
4	Electric Position Transmitter and Limit Stop <sup>(5)</sup>	4/1,8
5	Minimum Limit Stop	

PP610	1	2	3	0	0	1	EXAMPLE	300/1
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Limit Switches, EPT and Manual Limit Stop dependent on type codes 1, 2, 3, 4 & 5 as below:

<sup>(1)</sup> For Type Codes 11, 12, 21, 31, 41, 42, 51 & 61

<sup>(2)</sup> For Type Codes 22 & 52

<sup>(3)</sup> For Type Codes 32 & 62

<sup>(4)</sup> For Type Codes 21, 31, 51 & 61

<sup>(5)</sup> For Type Codes 11, 12, 22, 32, 41, 42, 52 & 62

<sup>(6)</sup> SPOT Switch Ratings

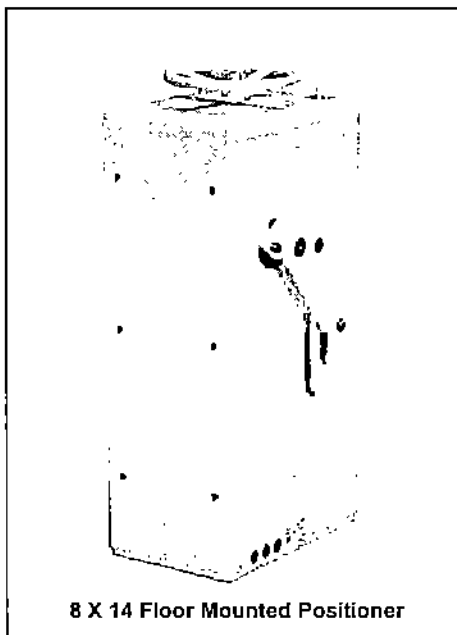
15 Amps, 125, 250 or 480 Vac;

10 Amps, 125 Vac "L" (Tungsten Lamp)

1 Hp, 125 Vac; 2 Hp, 250 Vac

1/2 Amp, 125 Vdc, 1/4 Amp, 250 Vdc

# 8 x 14 TORQUE TYPE FLOOR MOUNTED SPECIFICATIONS ①



### OPTIONS

- Manual operator
- Air lock
- Dust Cover
- Heater
- I/P convertor
- Position transmitter
- Fail safe
- Dual limit switches
- Dual heavy duty limit switches
- Potentiometer (retransmitting slideware)
- Master/slave positioner

### ACCESSORIES

- Air filter is included
- Clevis and pin are included

### Limit Switches (SPDT) and Potentiometer Accessory (add 15 lbs)

For styles 452593, 443700, and 457031: For styles 450890, 452167, and 457696:

473662-001... 1 AC Switch	473662-010 .. 1 AC Switch
473662-002... 2 AC Switches	473662-011 .. 2 AC Switches
473662-003... Pot only	473662-012 .. Pot only
473662-004... 1 AC Switch and 1 Pot	473662-013 .. 1 AC Switch and 1 Pot
473662-005... 2 AC Switches and 1 Pot	473662-014 .. 2 AC Switches and 1 Pot
473662-006... 1 DC Switch	473662-015 .. 1 DC Switch
473662-007... 2 DC Switches	473662-016 .. 2 DC Switches
473662-008... 1 DC Switch and 1 Pot	473662-017 .. 1 DC Switch and 1 Pot
473662-009... 2 DC Switches and 1 Pot	473662-018 .. 2 DC Switches and 1 Pot

**Repeatability:** 1% of full stroke or better  
**Temperature limits:** 0-140°F (-17,8 -60°C), 160°F (71°C) with increased maintenance

**Full stroke time (unloaded):** 2.5 sec

#### Air supply:

- Maximum:** 120 psig (827 kPa)
- Minimum:** 45 psig (20 kPa)
- Recommended:** 100 psig (689 kPa)

**Air consumption:** 2 scfm steady state  
**8-inch stroke:** (80° rotation)  
**Input signal ranges:** 3-15, 0-30 psig (21-103, 0-207 kPa), and 4-20 mA

#### Torque and load data

- Stall torque:** 4600 ft-lbs. (6238 N-m)
- Maximum friction load:** 1100 ft-lbs (1492 N-m)
- Maximum allowable weight load:** 1600 ft-lbs (2170 N-m)
- Maximum load capability of the manual operator:** 45 psi (310 kPa) differential across the piston

#### Cam Shape

The standard cam produces a straight line relationship. Shaping the cam in the field produces other relationships.

#### Limit Switches

Limit ratings listed under 4 x 5 Torque Type Floor Mounted Type Positioner on page 6 "Limit Switches" and "Current Rating" also apply to this positioner.

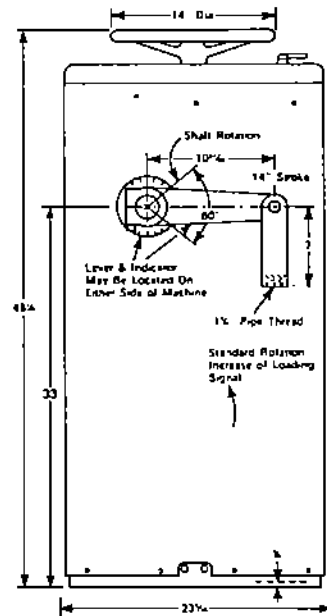
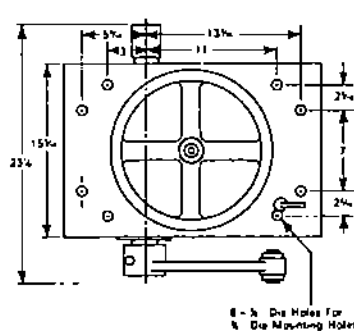
#### To Order, Specify:

1. Positioner style number (add a -1 if potentiometer and limit switch are required).
2. Accessory style number.
3. Desired input signal

#### Potentiometers

Eighty degrees of rotation of the operating lever produces a 225 to 300 degree rotation at the potentiometer. Three hundred degrees rotation is equivalent to 500 ohms. Refer to Drawing 273654 for other resistance values, up to a maximum of 5000 ohms.

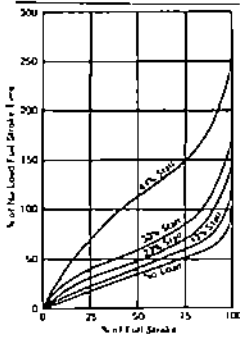
Dimensions in inches



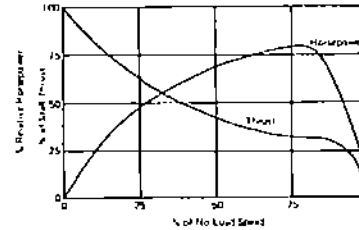
Typical 8 x 14 Torque Type Floor Mounted Positioner with Dust Cover, Styles 452167, 457696, 443700, and 457031. Refer to individual outline drawings.

Drawings are for reference purposes only, and Rosemount Analytical Inc. does not warrant the accuracy of the dimensions herein.

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Set of Characteristic Curves for a Typical Air-operated Power Cylinder (Piston displacement and time are plotted for suddenly applied full-range positioning inputs to the cylinder. The linear sections of the curves correspond to steady speed).



A typical cylinder-thrust vs. speed characteristic. The curve of relative horsepower output is also shown.

## 8 x 14 TORQUE TYPE FLOOR MOUNTED ORDERING INFORMATION

Includes air filter style 372538-2 and Clevis, style 274472

Code	Manual Operator	Dust Cover	Air Lock	Heater and Thermostat	Shp Wgt lbs/kgs
452167		x			550/250
457696		x		x	560/254
452593	x		x		580/263
443700	x	x	x		600/272
457031	x	x	x	x	610/277

### Accessories

Code	Description	Shp Wgt lbs/kgs
7362C69G02	Electric Position Transmitter	20/9,1
7362C69G03	Limit Switches (2) DPDT - Nema 4, 13, Factory wired to terminal box	5/2,3
7362C69G04	Electric Positioner Transmitter and Limit Switches (2) DPDT - Nema 4, 13, Factory wired to terminal box	25/11,4

### I/P 4 - 20 mA Input

Code	Description	Shp Wgt lbs/kgs
9885A31H01	Current/Pneumatic Converter	
275431-007	Pressure Gage	
4505C21G01	Filter Regulator	

### Fail-Safe Option (4)

Code	Description	Shp Wgt lbs/kgs
SKI - 63580	(2) Check Valves, (2) Diaphr. Valves (1) 2.2 Ft. Tank, (1) Press. Switch (1) Solenoid Valve. Mtd. & Piped	50/22,7

### Master Slave Positioners

Code	Description	Shp Wgt lbs/kgs
6630D09G01	Master - Man. Oper., Dust Cover Air Lock, Heater	620/281
6630D08G01	Slave - Man. Oper., Dust Cover Air Lock, Heater	550/250

To Order, Specify:

- Desired input signal [3 -15, 0 - 30 psig (21-103, 0-207 kPa), or 4 - 20 mA - See Accessories].
- If 4 - 20 mA input is required, also order I/P from accessories.

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