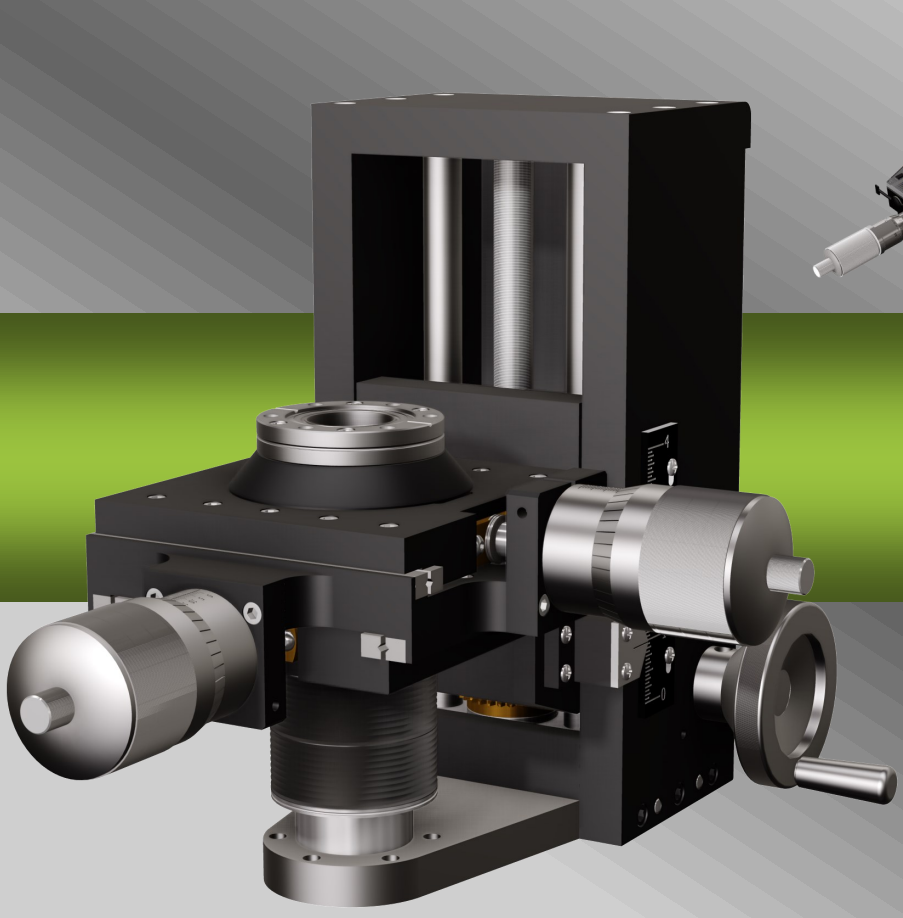
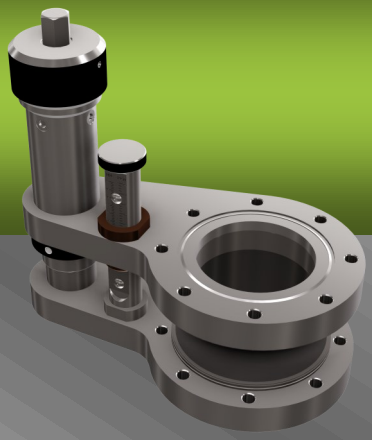
Huntington
Mechanical Labs, Inc.





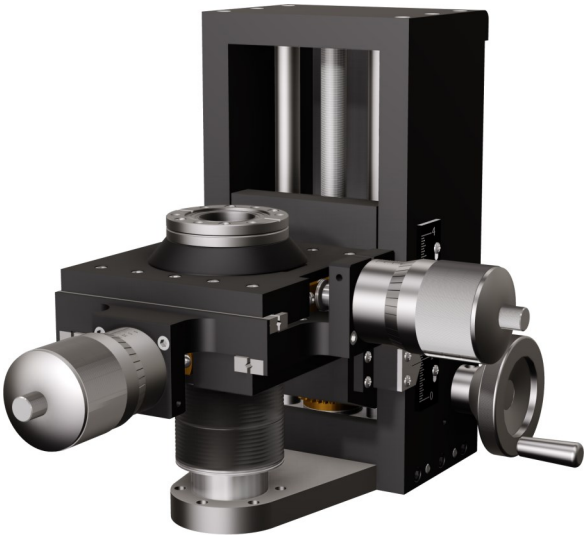
MANIPULATORS & STAGES

ULTRA-HIGH VACUUM COMPONENTS

MANIPULATORS
AND STAGES

DTS-275-155 (PG. 3)

CMZ-450-2 (PG. 4)



PM-275-4 (PG. 6)

MINI CATALOG

ITEM	PAGE
TILT MOTION STAGES	*2*
X-Y AXIS MANIPULATORS	*3*
COMPACT Z AXIS MANIPULATORS	*4*
Z AXIS MANIPULATORS	*5*
X-Y-Z AXIS MANIPULATORS	*6*

Dimensions: inches (mm)

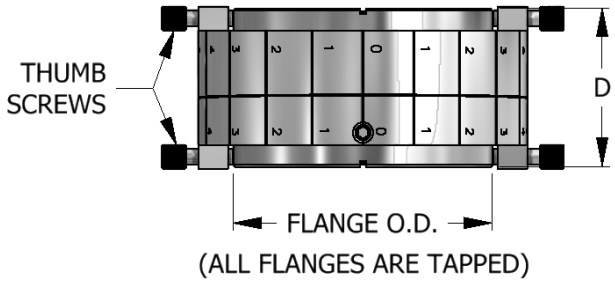
MANUAL ACCU-PORT TILT MOTION STAGE

Material Exposed to Vacuum: Stainless Steel	FLANGE OD	BELLOWS ID	ANGULAR MOTION	INCLUDED ANGLE	D	WEIGHT (lbs.)	PART NUMBER	PRICE $
	1 1/3"	0.50	10°	20°	1.00	1.0	**VF-175-133**	795
	2 3/4"	1.39	2°	4°	1.38	2.5	**VF-175-2**	1095
		1.39	10°	20°	1.38	2.5	**VF-175-10**	1095

Other sizes available upon request. Please call for quote.

Specifications
Sealing Mechanism: Welded Bellows
Position Locks: Thumb Screws
Bakeout Temperature: 200°C
Operating Temp: -20° to 150°C
Pressure Range: Atmosphere to 1 x 10^{-11} Torr

Angular Resolution:
10° Motion: 1°
2° Motion: .2°
Work Load:
1 1/3" VAC-U-FLANGE: 15 lbs.
2 3/4" VAC-U-FLANGE: 30 lbs.



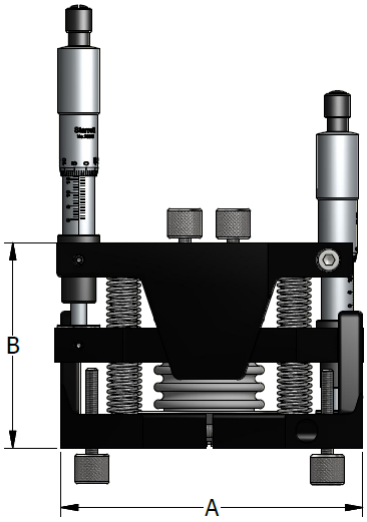
(ALL FLANGES ARE TAPPED)

MANUAL GIMBAL ASSEMBLY

Material : Aluminum body	FLANGE OD	B	A	ADJUSTMENT	WEIGHT (lbs.)	PART NUMBER	PRICE $
	2 3/4"	3.00	4.5	THUMB SCREW	3.0	**VF-171-275**	850
		3.00	4.5	MICROMETERS	4.0	**VF-171-275M**	1125
		3.00	4.5	THUMB SCREW	5.0	**VF-171-275-155**	1000
		3.00	4.5	MICROMETERS	6.0	**VF-171-275-155M**	1275

Other sizes available upon request. Please call for quote.

VF-171-275 = NO BELLOWS, NO MICROS.
VF-171-275M = NO BELLOWS, w/MICROS.
VF-171-275-155 = w/BELLOWS, NO MICROS.
VF-171-275-155M = w/BELLOWS & MICROS.



Specifications
Position Locks: Thumb Screws
Bakeout Temperature: 200°C (Micrometers removed)
Operating Temp: -20° to 150°C

Tilt Motion: 30° included angle
Tilt resolution:
Micrometer: .01 mm
Work Load:
2 3/4" VAC-U-FLANGE®: 20 lbs.

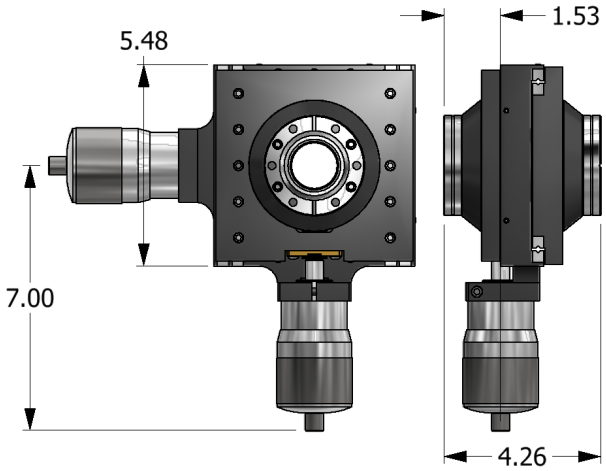
MANIPULATORS
AND STAGES

Dimensions: inches (mm)

X - Y AXIS MANIPULATOR - 2 $^{3}/_{4}$" VAC-U-FLANGE®

Material: Aluminum body with Stainless steel VAC-U-FLANGE®	DESCRIPTION	WEIGHT (lbs.)	PART NUMBER	PRICE $
	Metric micrometer driven X-Y manipulator without bellows	7.0	**TS-275**	3395
	Metric micrometer driven X-Y manipulator, tapped flanges, with bellows	7.5	**TS-275-155**	3895

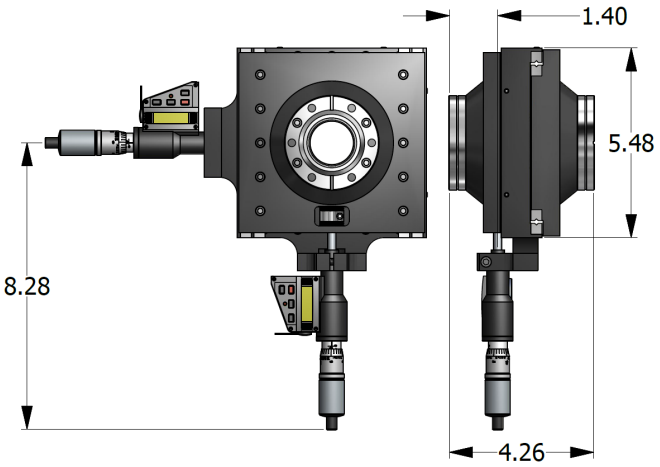
*The **TS-275** Series can be motorized, please call for quote. Inch micrometers available upon request.*



Specifications
Sealing Mechanism: Welded Bellows
Material Exposed to Vacuum: Stainless Steel (Bellows)
Bellows ID: 1.25" (381 mm)
Bakeout Temperature: 200°C (Micrometers removed)
Operating Temp: -20° to 100°C
Pressure Range: Atmosphere To 1 x 10^{-11} Torr (Bellows model)
Operating Load: 50 lbs.
Micrometer: Motion: +/- 12.5 mm or .5" Resolution: .002 mm or .0001"
Flanges: Tapped, $^{1}/_{4}$-28

DIGITAL X - Y AXIS MANIPULATOR- 2 $^{3}/_{4}$" VAC-U-FLANGE®

Material: Aluminum body with Stainless steel VAC-U-FLANGE®	DESCRIPTION	WEIGHT (lbs.)	PART NUMBER	PRICE $
	Digital micrometer driven X-Y manipulator, without bellows	7.0	**DTS-275**	3395
	Digital micrometer driven X-Y manipulator, tapped flanges , with bellows	7.5	**DTS-275-155**	3895



Specifications
Sealing Mechanism: Welded Bellows
Material Exposed to Vacuum: Stainless Steel (Bellows)
Bellows ID: 1.25" (381 mm)
Bakeout Temperature: 200°C (Micrometers removed)
Operating Temp: 0° to 40°C
Pressure Range: Atmosphere To 1 x 10^{-11} Torr (with Bellows)
Operating Load: 50 lbs.
Micrometer: Motion: +/- .5" (12.5 mm) Resolution: .0001" (.002 mm)
Flanges: Tapped, $^{1}/_{4}$-28

Compact Z-Axis Manipulator

Huntington's compact Z-axis series of manipulators allow for installations with limited space. Featuring a smaller outline and simplified designs these manipulators are simple, rugged and cost-effective. Compact manipulators feature 2 $^{3}/_{4}$" or 4 $^{1}/_{2}$" VAC-U-FLANGE® mounting in stroke lengths from 1 to 6". Operation is via a hand knob with visual positioning determined by an engraved scale. Edge welded stainless steel bellows and tapped VAC-U-FLANGES® create a robust vacuum envelope.

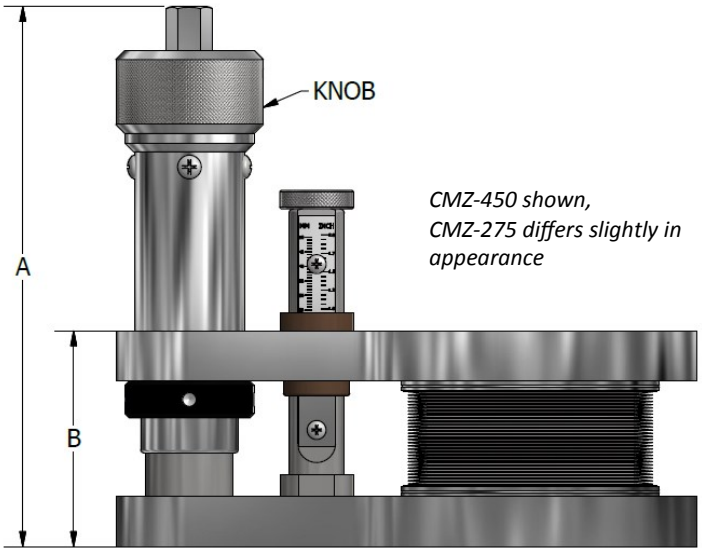
Dimensions: inches (mm)

COMPACT Z-AXIS MANIPULATOR - VAC-U-FLANGE®

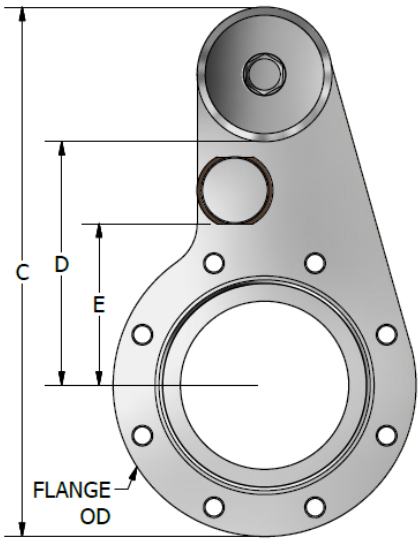
FLANGE OD	STROKE	RETRACTED HEIGHT "A"	RETRACTED HEIGHT "B"	C	D	E	WEIGHT (lbs.)	PART NUMBER	PRICE $
2 $^{3}/_{4}$"	1.0	8.71	2.20	6.33	3.00	1.74	8.0	**CMZ-275-1**	2300
	2.0	8.71	2.20	6.33	3.00	1.74	9.0	**CMZ-275-2**	2550
	4.0	11.32	2.95	6.33	3.00	1.74	11.0	**CMZ-275-4**	3050
	6.0	13.75	3.25	6.33	3.00	1.74	13.0	**CMZ-275-6**	3550
4 $^{1}/_{2}$"	1.0	8.71	2.20	7.87	3.63	2.40	8.0	**CMZ-450-1**	2695
	2.0	8.71	2.20	7.87	3.63	2.40	9.0	**CMZ-450-2**	2995
	4.0	11.32	2.95	7.87	3.63	2.40	11.0	**CMZ-450-4**	3595

Specifications

Sealing Mechanism: Welded Bellows
Bakeout Temperature: 300°C (Bellows only)
Operating Temp: -20° to 230°C
Pressure Range: Atmosphere To 1 x 10^{-11} Torr



CMZ-450 shown,
CMZ-275 differs slightly in appearance



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MANIPULATORS
AND STAGES

Huntington's Z-axis manipulators feature a robust backbone and a self-locking worm drive gearbox. The entire line has been upgraded to ensure greater accuracy and improve cost effectiveness. Please call for quote.

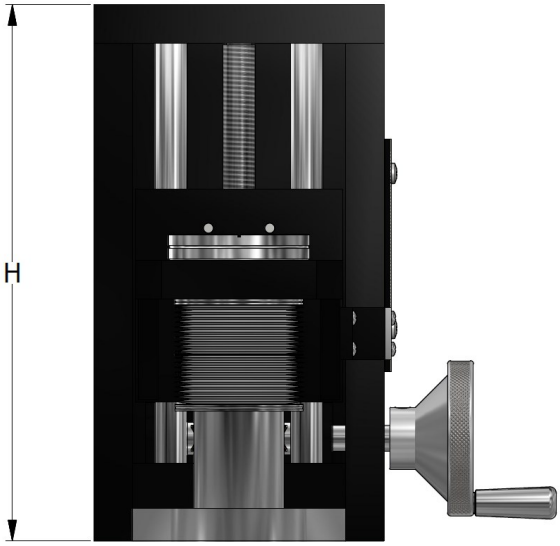
Dimensions: inches (mm)

Z-AXIS MANIPULATOR - 2 $^{3}/_{4}$" VAC-U-FLANGE®

Material Exposed to Vacuum: Stainless Steel	STROKE	RET. LENGTH	H	WEIGHT (lbs.)	PART NUMBER	PRICE $
	2.0	4.70	9.25	26.0	**PMZ-275-2**	4650
	4.0	4.70	10.37	26.4	**PMZ-275-4**	5050
	6.0	5.40	13.00	28.4	**PMZ-275-6**	5450
	8.0	5.75	15.35	30.4	**PMZ-275-8**	5850

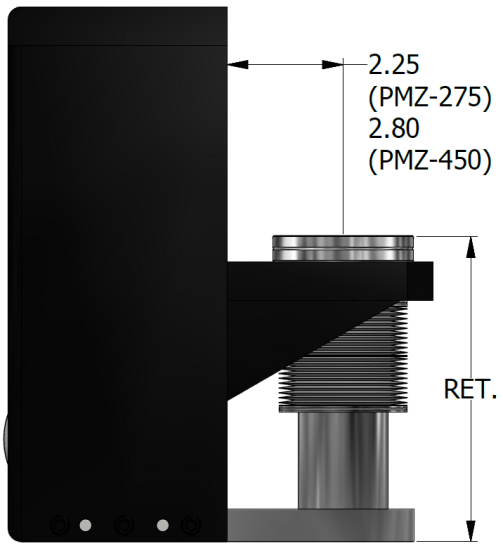
(PMZ-275-4 SHOWN)

Angular motion, digital readout, motorized and other sizes available. Please call technical support for quote.



Z-AXIS MANIPULATOR - 4 $^{1}/_{2}$" VAC-U-FLANGE®

STROKE	RET. LENGTH	H	WEIGHT (lbs.)	PART NUMBER	PRICE $
4.0	5.65	10.72	30.4	**PMZ-450-4**	6950
8.0	6.65	15.72	32.4	**PMZ-450-8**	7950
12.0	8.65	21.72	40.5	**PMZ-450-12**	8950



Specifications

Sealing Mechanism: Welded Bellows

Bakeout Temperature: 300°C (Bellows only)

Operating Temp: -20° to 150°C

Bellows ID:
1.50" (-275), 2.50" (-450)

Pressure Range:
Atm. to 1 x 10^{-11} Torr

Work Load: 22 lbs. concentric

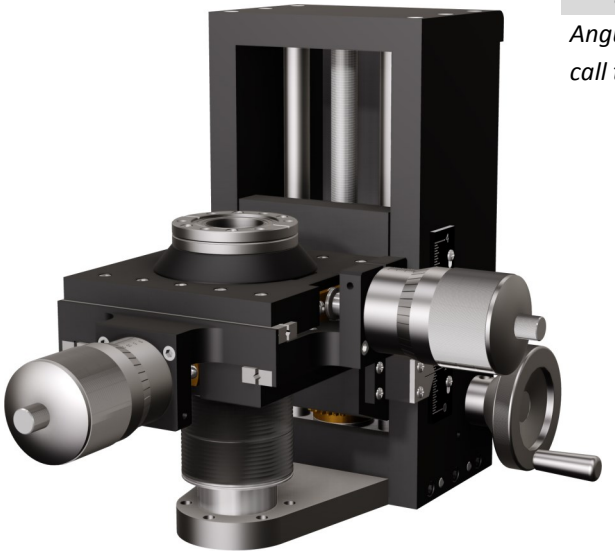
Dimensions: inches (mm)

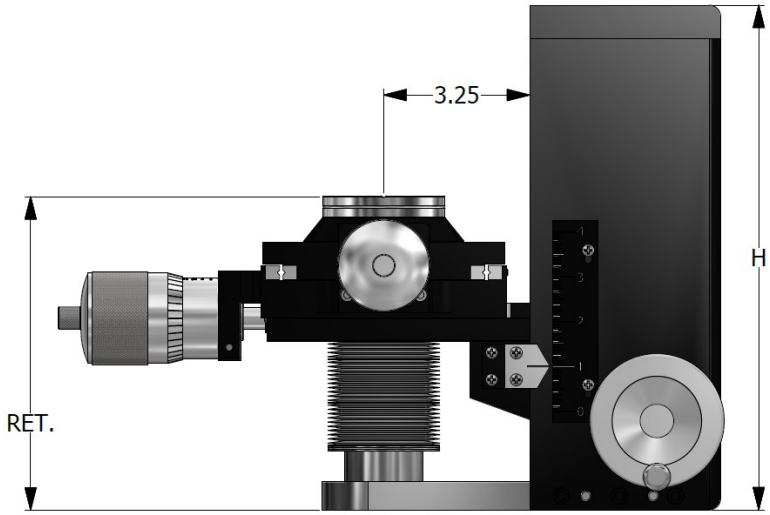
X - Y - Z MANIPULATOR, 2 3/4" VAC-U-FLANGE®

Material Exposed to Vacuum: Stainless Steel	STROKE	MINIMUM	H	WEIGHT (lbs.)	PART NUMBER	PRICE $
	2.0	7.75	9.25	36.0	**PM-275**	7450
	4.0	7.75	11.25	36.6	**PM-275-4Z**	8150
	6.0	8.10	13.57	38.6	**PM-275-6Z**	8850
	8.0	8.40	15.90	40.6	**PM-275-8Z**	9550

Angular motion, digital readout, motorized and other sizes available. Please call technical support for quote.

(PM-275-4 SHOWN)

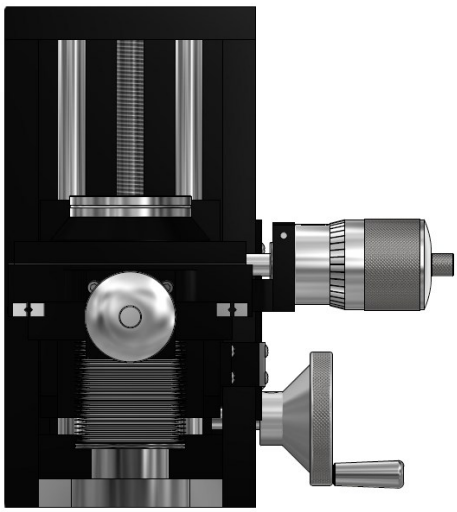




Specifications

Sealing Mechanism: Welded Bellows
Bellows ID: 1.50" (-275), 2.50" (-450)
Bakeout Temperature:
300°C (Bellows only)
Operating Temperature:
-20° to 150°C

Pressure Range:
Atmosphere To 1 x 10^{-11} Torr
X-Y Motion: +/- 12.5 mm
Position Resolution (Micrometer):
.002 mm or .5"



X - Y - Z MANIPULATOR, 4 1/2" VAC-U-FLANGE®

STROKE	MINIMUM	A	WEIGHT (lbs.)	PART NUMBER	PRICE $
4.0	8.40	13.50	39.6	**PM-450-4Z**	10950
8.0	8.40	17.50	41.6	**PM-450-8Z**	12450
12.0	9.40	22.50	43.6	**PM-450-12Z**	13950

Dimensions: inches (mm)

X - Y - Z MANIPULATOR w/MULTIPORT FLANGE

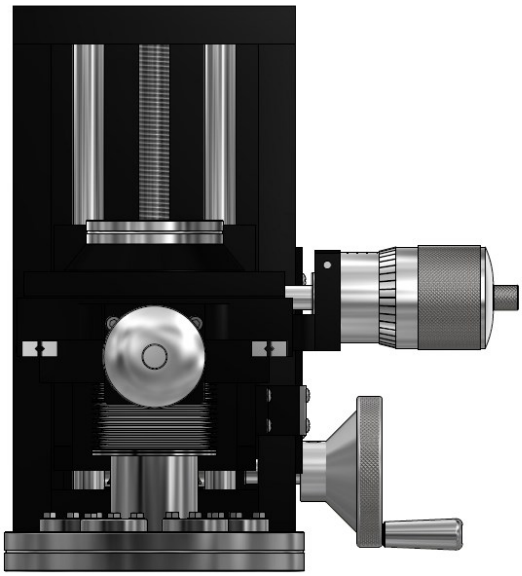
Material Exposed to Vacuum: Stainless Steel	STROKE	RETRACTED HEIGHT	H	WEIGHT (lbs.)	PART NUMBER	PRICE $
	2.0	7.85	9.35	40.1	**PM-275-600**	8200
	4.0	7.85	11.35	40.7	**PM-275-600-4**	8900
	6.0	8.20	13.67	42.7	**PM-275-600-6**	9600
	8.0	8.50	16.00	44.7	**PM-275-600-8**	10300

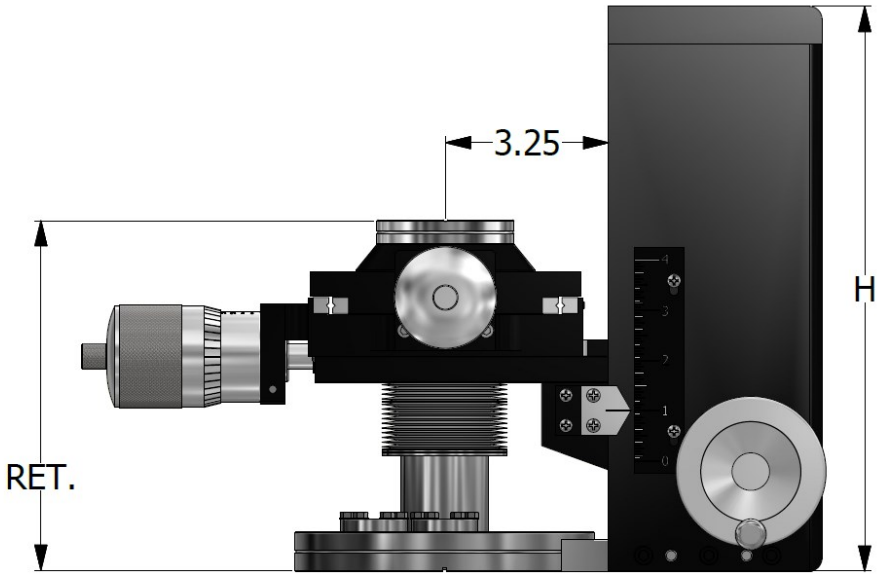
(PM-275-600-4 SHOWN)

Angular motion, digital readout, motorized and other sizes available. Please call technical support for quote.

Specifications

Sealing Mechanism: Welded Bellows
Bellows ID: 1.50" (38.9 mm)
Bakeout Temperature: 300°C (Bellows only)
Operating Temp: -20° to 150°C
Pressure Range: Atmosphere To 1 x 10^{-11} Torr
X-Y Motion: +/- 12.5 mm or .5"
Position Resolution (Micrometer): .002 mm or .0001"





The Huntington Series PM-275-600 ultra-high vacuum precision manipulator is mounted on a 6" O.D. base flange with four 1 $^{1}/_{3}$" O.D. blanked mini ports for accessory feedthrough mounting. The standard model includes X-Y-Z motion. Large drum micrometers provide accurate readings in the X and Y axis. All micrometers should be removed before bake-out above 250°C.

NOTES

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