VNE
Neumo Ehrenberg Group

PNEUMATIC ACTUATORS

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VNE PNEUMATIC ACTUATOR OPERATION AND SELECTION GUIDE

Double Acting Actuators

Actuator Overview

- All listed torques are expressed in inch pounds of torque (in. lbs).
- Charts for available air pressure are expressed in pounds per square inch (P.S.I.)
- VNE BI -series actuators offer +-5° adjustment in the open and closed positions on BI-52 through BI-125 models. For all other models, adjustment is in the open position only. The closed position is 0° fixed. Optional retrofit kits are available to allow for adjustment in both open and closed positions on the BI-160, BI-200 and BI-270 models.

Double Acting Actuator Sizing (Please see Double Acting Torque Chart)

1. Establish the valve manufacturers breakaway or seating / unseating torque, then add 20% as a safety factor (e.g. 115 in lbs. valve breakaway torque x 20% = 138 in. lbs).
2. Determine available air pressure to the actuator (e.g 60 P.S.I)
3. Refer to the chart, find the 60 P.S.I. column and scan down until a torque value greater than the valve torque is found (e.g. 141 in. lbs.) Then go to the left to determine the VNE model number. In this sample case, the selected actuator would be the BI-52DA.

Contact our sales staff for slurry or steam services.
Note: The VNE double acting actuator has no torque drop through the full 90° stroke.

Spring Return Actuators

Spring Return Actuator Terminology

1. **AIR STROKE:** When air is supplied to the actuator, the pistons compress the springs. The greater the spring compression, the less torque output the actuator can supply.
2. **SPRING STROKE:** When air is removed from the actuator, the stored energy in the springs forces the pistons inward. At full compression, the spring is at its maximum torque output. This is the SPRING START. When springs are uncompressed, this is the SPRING END.
3. **FAIL POSITION:** Standard VNE actuators are preset for fail closed (CW) operation, but can be adjusted easily for fail open (CCW) rotation.

Spring Return Actuator Sizing (Please see Spring Return Torque Chart)

1. Establish the valve manufacturer's seating torque (closing) and breakaway torque (opening). Add a 20% safety factor (e.g. a valve torque of 80 in lbs x 20% = 96in. lbs).
2. Refer to the spring torque column and select the SPRING END TORQUE that equals or exceeds the required valve torque (i.e. the VNE model BI-63 with a 80# spring set, which has an **spring end** of 111 in. lbs. and a **spring start** of 196 in. lbs).
3. Determine the available air line pressure to the actuator (e.g. 80 P.S.I.). Refer to the 80 P.S.I. column and scan down to where it intersects with the BI-63 with an 80# spring. In this case, the end spring torque is 111 in. lbs,. which exceeds the required 96 in. lbs. required.

Contact our sales staff for slurry or steam services.

VNE BI-SERIES PNEUMATIC ACTUATOR FEATURES

Rotation Adjustment

BI-52 through BI-140 Models

Standard adjustment is ±5° in both the open and closed positions through easily accessible external adjustment screws.

BI-160 though BI-270 Models

Standard adjustment is ±5° in the open position. An adapter kit is available for ±5° adjustment in the closed position.

Indicator

A disc indicator is standard on the BI-52 through BI-125 models. A high visibility open-closed dome indicator is available on all VNE actuators.

Pinion

The hardened steel pinion is precision ground and then nickel plated in order to reduce friction, provide maximum wear resistance, and protect against corrosion under severe conditions. An optional stainless steel pinion is available for corrosive environments.

Actuator Body

The aluminum extrusion is hard anodized to 45-50 microns to protect against wear and corrosion while reducing piston friction to the absolute minimum.

End Caps

Epoxy coated die cast aluminum end caps provide maximum resistance against potentially corrosive elements.

Piston Guides

Large contact areas and self-lubricating, highly-durable materials provide high thrust stability with minimum friction.

Heavy Duty Springs

True-rated spring sets create absolute confidence in all of the fail safe spring return models. The high tensile steel springs are coated with zinc phosphate for corrosion resistance. Springs can be safely and quickly modified into sets ranging from 40 pounds to 80 pounds (through 120 pounds on 200/270 models). Full length end cap bolts allow for easy and safe disassembly.

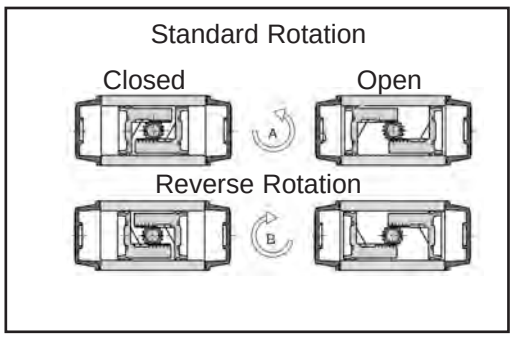
Pinion Seals

NBR-70 rubber pinion seals provide trouble free operation at standard temperature ranges. Viton® and HNBR seals are available to high or low temperature extremes.

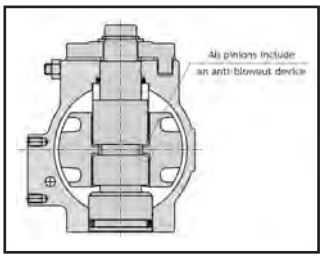
Pistons

The precisely-balanced die cast aluminum pistons are fitted with high-quality rings and guides, resulting in high ratios of output torque vs. input air pressure. The twin rack and piston design creates a constant torque output on all models.

Rotation Variations



Anti-Blowout System



Options For Corrosive Environments

Body: nickel plated or double epoxy coated bodies available upon request

Pinion: stainless steel

End Caps: nickel plated

ALL 316 STAINLESS STEEL ACTUATORS ALSO AVAILABLE. PLEASE CONTACT OUR SALES STAFF FOR INFORMATION

STANDARD FEATURES

MAXIMUM PRESSURE RATING

120 PSI/8 Bar

STANDARD TEMPERATURE RATING*

-4° F / -20°C to +180°F / +85°C

MAXIMUM TEMPERATURE RATING**

-40°F / -40°C to +350°F / +180°C

*with standard NBR70 seals

**with Viton or HNBR seals (available upon request)

- 100% FACTORY TESTED
- TWIN RACK AND PINION DESIGN FOR CONSISTENT TORQUE OUTPUT
- PRE-LUBRICATED FOR LIFE OF ACTUATOR

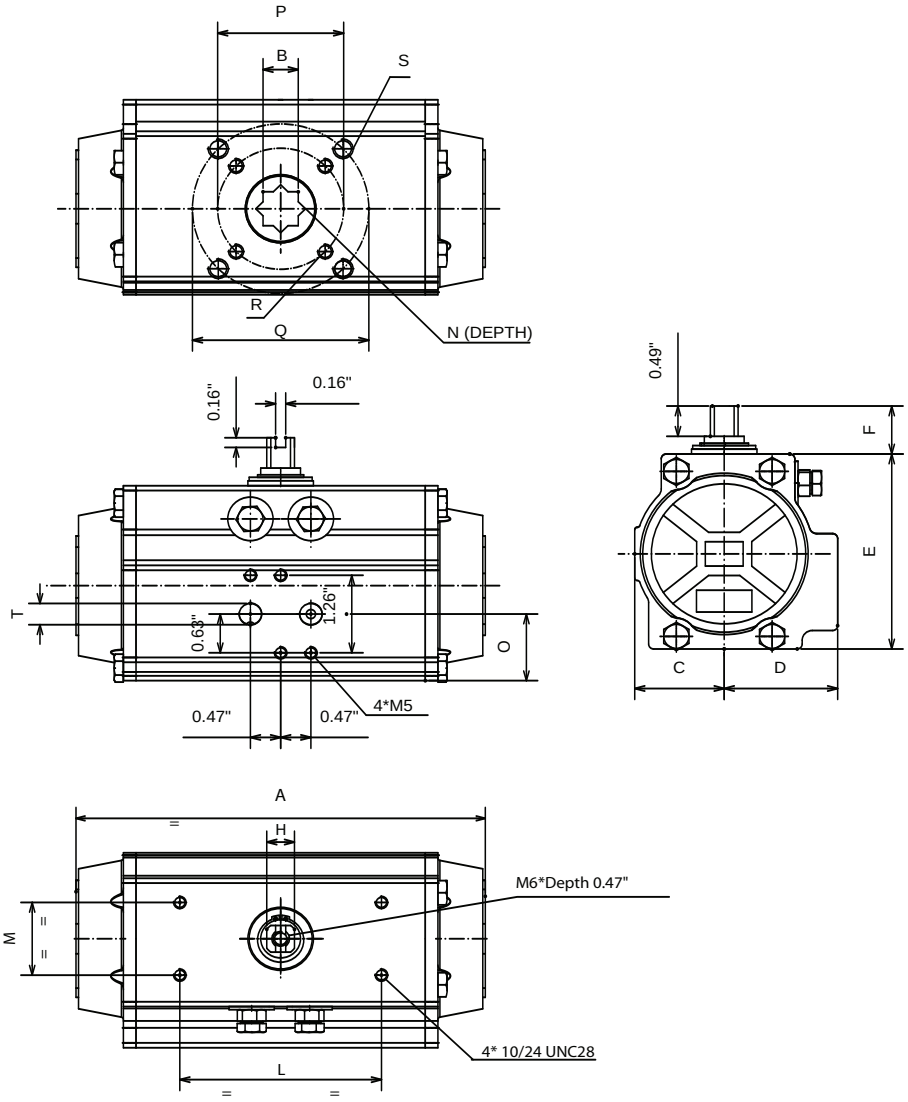
MOUNTING OPTIONS

VALVE MOUNTING: True ISO 5211 standard base mounting bolt patterns and a double square female output shaft provide multiple options for direct mounting to valve stems and a greater flexibility of actuator rotation. Double D pinions are also available for additional direct mount options.

ACCESSORY MOUNTING: The top mounting pad is drilled and tapped to international NAMUR and ISO standards, providing for quick and economical accessory mounting in conjunction with the NAMUR pinion shaft. The standard NAMUR slotted and threaded shaft allows for direct mounting of NAMUR limit switches, valve positioners, and position monitors.

SOLENOID MOUNTING: All VNE actuators have an international NAMUR solenoid mounting pattern that permits direct mounting of a wide range of solenoid models. The NAMUR mount eliminates the need for pipe nipples or solenoid brackets.

VNE BI-SERIES DIMENSIONAL DATA



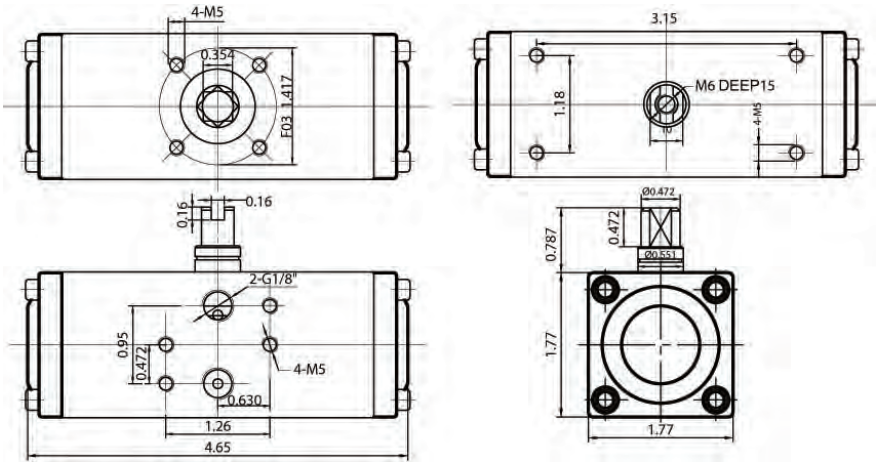
Dimensional Data

	ISO 5211	A	B	C	D	E	F	G	H	K	L	M	N	O	P	Q	R (UNC)	S (UNC)	T (NPT)
BI-52	F03 / F05	5.49	0.433	1.18	1.61	2.74	0.787	3.52	0.43	0.47	3.15	1.18	0.47	1.04	1.42	1.97	10-24X0.29	1/4-20X0.35	1/8¨
BI-63	F05 / F07	6.38	0.551	1.40	1.77	3.17	0.787	3.96	0.43	0.59	3.15	1.18	0.63	1.08	1.97	2.76	1/4-20X0.31	5/16-18X0.47	1/8¨
BI-75	F05 / F07	8.15	0.669	1.65	2.07	3.82	0.787	4.61	0.67	0.75	3.15	1.18	0.75	1.38	1.97	2.76	1/4-20X0.31	5/16-18X0.47	1/8¨
BI-85	F05 / F07	9.35	0.669	1.87	2.30	4.27	0.787	5.06	0.67	0.87	3.15	1.18	0.75	1.65	1.97	2.76	1/4-20X0.31	5/16-18X0.47	1/8¨
BI-100	F07 / F10	10.69	0.669	2.17	2.68	4.78	0.787	5.57	0.67	0.87	3.15	1.18	0.81	1.97	2.76	4.02	5/16-18X0.47	3/8-16X0.55	1/4¨
BI-115	F07 / F10	12.91	0.869	2.52	2.87	5.57	0.787	6.75	1.06	1.26	5.12	1.18	0.94	1.97	2.76	4.02	5/16-18X0.47	3/8-16X0.59	1/4¨
BI-125	F07 / F10	14.41	0.869	2.68	3.15	6.04	0.787	7.22	1.06	1.26	5.12	1.18	0.94	2.40	2.76	4.02	5/16-18X0.47	3/8-16X0.59	1/4¨
BI-140	F10 / F12	16.85	1.060	3.01	3.44	6.93	0.787	8.11	1.06	1.38	5.12	1.18	1.14	2.80	4.02	4.92	3/8-16X0.59	1/2-13X0.71	1/4¨

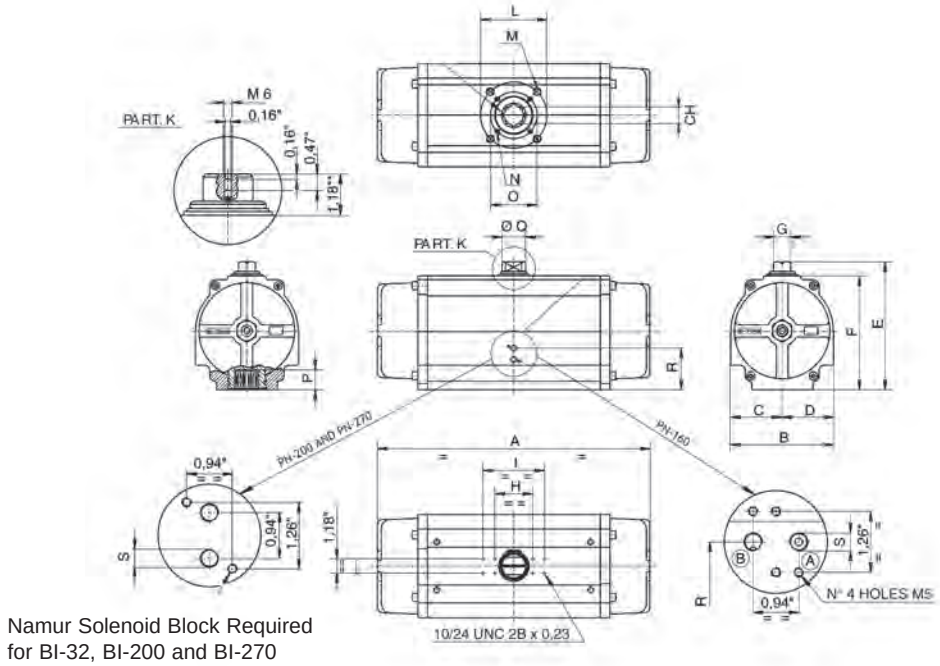
VNE BI-SERIES DIMENSIONAL DATA

For Actuator Models 32, 160, 200, and 270

MODEL
BI-32DA



Models BI-160 THROUGH 270



Namur Solenoid Block Required
for BI-32, BI-200 and BI-270

Dimensional Data

	ISO 5211	CH	A	B	C	D	E	F	G	H	I	L	M(UNC)	N (UNC)	O	P	Q	R	S(NPT)	T	U	V	W	Z	Y	X
BI-160	F10-12	1.06	20.55	7.36	3.94	3.94	8.58	7.40	1.18	3.15	5.12	4.92	1/2-13X0.71	3/8-16 X0.59	4.72	1.26	1.38	3.21	1/4¨	6.29	1.77	2.20	2.50	1.42	1.06	1.89
BI-200	F14	1.42	22.64	8.58	4.29	4.29	10.59	9.41	1.42	3.15	5.12	5.51	5/8-11X0.98	---	---	1.54	1.97	3.46	1/4¨	7.48	2.03	2.52	3.11	1.90	1.41	1.52
BI-270	F16	1.81*	26.46	11.42	5.71	5.71	14.21	13.03	1.42	3.15	5.12	6.50	3/4-10X1.18	---	---	2.05	1.97	4.76	1/4¨	9.05	2.68	3.11	4.37	2.37	1.81	3.23

* Square at 45° Only

VNE BI-SERIES Spring Return Actuator Torque

MODEL	SPRING SET	SPRING TORQUE START-END	40PSI AIR TORQUE START-END	50PSI AIR TORQUE START-END	60PSI AIR TORQUE START-END	70PSI AIR TORQUE START-END	80PSI AIR TORQUE START-END	90PSI AIR TORQUE START-END	100PSI AIR TORQUE START-END	115PSI AIR TORQUE START-END
BI-52SR	01	44-32	48-23	72-47	95-70					
	02	59-42		61-31	85-54	108-77				
	03	66-46			80-47	104-70	127-94	150-117		
	04	82-57			70-31	93-55	116-78	140-101	163-125	
	05	105-72				78-32	101-55	125-78	148-102	183-137
BI-63R	01	85-44	92-38	134-80	176-122					
	02	109-58		120-56	162-98	204-140				
	03	128-71			149-79	191-121	233-162	275-204		
	04	152-82			136-54	177-96	219-138	261-180	303-222	
	05	196-111				151-53	193-95	235-136	276-178	339-241
BI-75SR	01	172-89	168-63	244-138	319-214					
	02	226-118		215-85	291-160	366-235				
	03	249-133			275-137	351-212	426-288	502-363		
	04	303-162			247-83	322-158	398-234	473-309	549-385	
	05	380-205				279-81	354-157	430-232	505-308	618-421
BI-85SR	01	242-1473	238-109	349-219	460-330					
	02	298-176		316-163	427-274	537-384				
	03	361-215			387-211	498-322	609-432	720-543		
	04	417-248			354-155	465-265	576-376	687-487	797-633	
	05	536-321				392-146	503-257	614-368	725-478	891-645
BI-100SR	01	395-218	384-154	556-326	728-499					
	02	521-288		485-199	658-372	830-544				
	03	564-318			628-329	801-502	973-674	1146-847		
	04	691-389			558-203	730-375	903-548	1075-720		
	05	860-486				630-206	802-378	975-551	1147-723	1406-982
BI-115SR	01	658-363	650-270	935-555	1220-840					
	02	835-449		848-378	1133-663	1419-949				
	03	957-538			1044-541	1329-827	1615-1112	1900-1397		
	04	1133-625			958-365	1243-650	1528-934	1813-1220	2098-1505	
	05	1432-800				1067-352	1352-637	1638-922	1923-1207	2350-1635
BI-125SR	01	877-470	850-328	1224-703	1559-1077					
	02	1040-560		1135-539	1509-914	1883-1288				
	03	1313-718			1351-640	1725-1015	2099-1389	2474-1763		
	04	1477-808			1261-477	1636-851	2010-1226	2384-1600	2758-1974	
	05	1913-1055				1388-415	1762-789	2136-1164	2511-1538	3072-2099
BI-140SR	01	1346-726	1240-508	1742-1010	2244-1512					
	02	1523-815		1642-821	2144-1323	2646-1825				
	03	1958-1036			1910-856	2412-1358	2914-1861	3408-2355		
	04	2126-1134			1810-668	2312-1170	2814-1672	3308-2166	3810-2668	
	05	2728-1453				1979-515	2481-1017	2975-1511	3477-2013	4233-2769
BI-160SR	01	1345-885	1921-1390	2644-2140						
	02	1991-1301		2228-1503	2952-2217					
	03	2336-1531		1980-1131	2713-1854	3419-2569				
	04	2841-1770			2447-1650	3162-2074	3886-2779			
	05	3327-2230				2737-1507	3452-2240	4175-2963		
	06	4186-2655					2983-1443	3715-2167	4421-2828	5475-3865
BI-200SR	01	2168-1540	3718-2904	5069-4317						
	02	3150-2186		4414-3308	5770-4681					
	03	3752-2637		3936-2591	5301-4035	6639-5400				
	04	4699-3124			4788-3080	6126-4445	7486-5795			
	05	5327-3726				5453-3613	6822-5008	8182-6385		
	06	6867-4664					5893-3539	7288-4925	8591-6175	10562-8137
BI-270SR	01	6973-4469	8574-6017	11883-9317	15309-12743					
	02	8372-5363	7619-4548	10928-7857	14353-11283					
	03	9761-6257	6672-3088	9972-6388	13398-9814	16824-13240				
	04	11159-7150	5716-1619	9016-7928	12442-8353	15877-11779	19177-15080			
	05	12549-8044		8069-3459	11495-6884	14921-10310	18221-13619	21530-16920		
	06	13947-8938			10539-5415	13965-8850	17274-12150	20574-15459		
	07	15336-9832			9584-3955	13009-7381	16319-10681	19619-13990	23053-17416	
	08	16735-10735			8637-2486	12063-5912	15363-9221	18672-12521	22098-15947	27115-20965

VNE BI-SERIES Double Acting Actuator Torque

Model	40PSI	50PSI	60PSI	70PSI	80PSI	90PSI	100PSI	115PSI
BI-32DA	34	43	55	64	71	82	87	101
BI-52DA	86	110	133	156	179	203	226	261
BI-63DA	154	196	238	280	321	363	405	468
BI-75DA	284	360	435	511	586	661	737	850
BI-85DA	408	518	629	740	851	962	1072	1238
BI-100DA	646	818	991	1163	1336	1508	1681	1939
BI-115DA	1070	1355	1640	1925	2210	2495	2780	3208
BI-125DA	1409	1783	2157	2532	2906	3280	3654	4216
BI-140DA	2009	2511	3013	3515	4018	4513	5015	5772
BI-160DA	2930	3662	4394	5127	5859	6591	7324	8422
BI-200DA	5488	6866	8239	9612	10987	12359	13732	15792
BI-270DA	12734	15919	19097	22284	25469	28654	31832	36661

For Torque Values or Air Supply Pressures Not Listed, Please Consult Factory

BI-SERIES Technical Data

Actuator Weights (LBS)

Model	32	52	63	75	85	100	115	125	140	160	200	270
DOUBLE ACTING	1.08	2.25	3.26	5.51	7.39	11.02	17.75	22.09	33.86	43.21	70.99	154.00
SPRING RETURN	---	2.26	3.97	6.94	9.37	14.40	23.92	26.76	45.28	65.04	111.00	192.79

Actuator Cycle Time (Seconds)

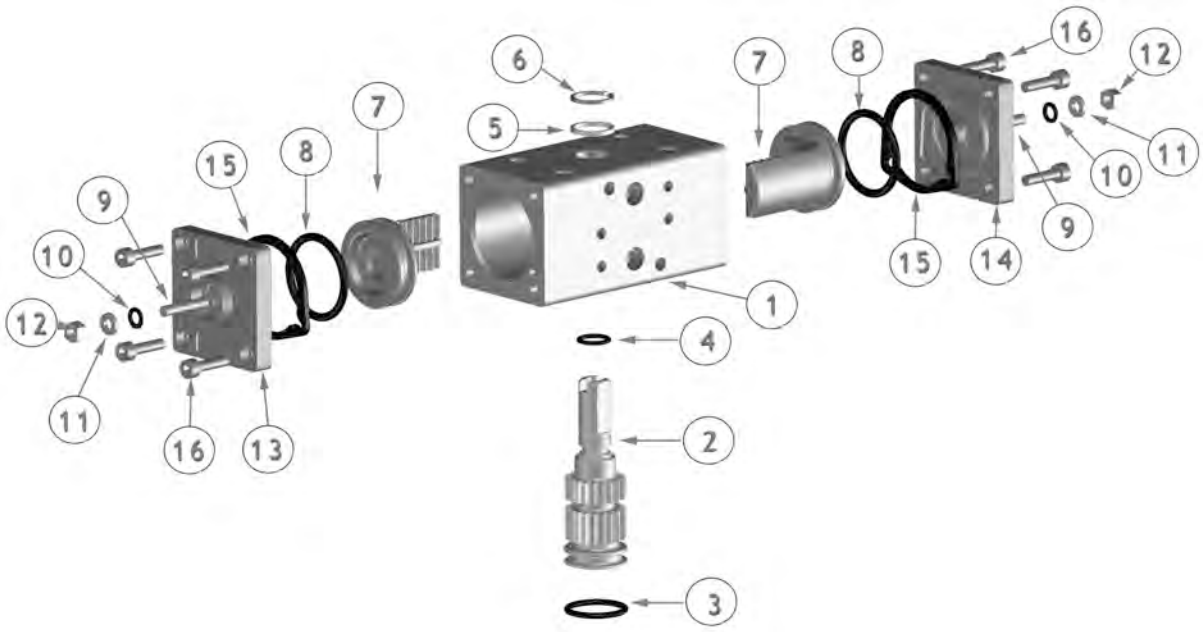
Model	32	52	63	75	85	100	115	125	140	160	200	270
CCW (DA)	0.03	0.03	0.06	0.12	0.20	0.30	0.53	0.83	0.98	1.15	1.74	4.50
CW (DA)	0.03	0.04	0.08	0.12	0.19	0.27	0.47	0.66	0.93	1.10	1.70	4.50
CCW (SR)	---	0.09	0.14	0.22	0.31	0.44	0.83	1.08	1.23	1.75	2.38	4.50
CW(SR)	---	0.09	0.14	0.22	0.33	0.46	0.78	0.90	0.97	1.34	2.19	6.20

Note: All Cycle Times are derived independently of Valves and Actuator accessories that might affect overall time performance. Cycle Times are based on 80 PSI Air Supply.

Actuator Air Consumption (Cubic Inches)

Model	32	52	63	75	85	100	115	125	140	160	200	270
CCW (DA&SR)	2.318	6.590	12.143	16.232	30.206	45.340	61.023	106.852	137.91	220.052	348.080	915.359
CW (DA)	1.708	9.336	17.208	20.504	39.534	66.760	103.740	148.471	192.84	290.596	599.743	1086.226
CW (SR)	---	7.689	14.218	17.147	32.403	54.372	85.433	122.047	146.46	215.109	462.563	945.871

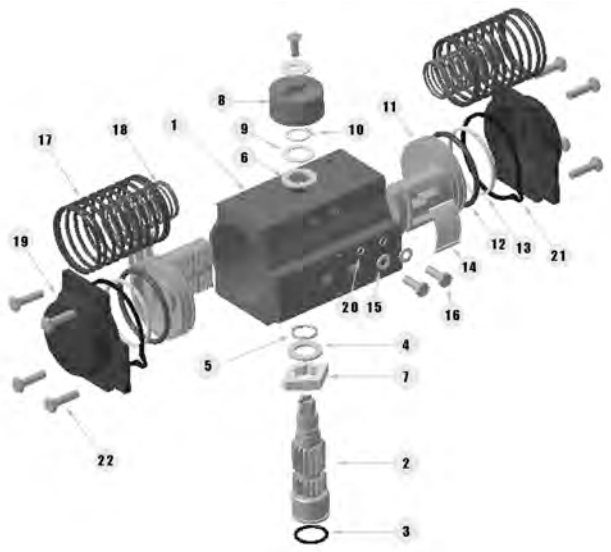
VNE Model BI-32DA



Part Number	Description	Material	Treatment	Qty (DA)
1	BODY	EXTRUDED ALUMINUM	HARD ANODIZED	1
2	ANTI-BLOWOUT PINION	STEEL	NICKEL PLATED	1
3	LOWER PINION O-RINGS*	NBR70	---	1
4	TOP PINION O-RING	NBR70	---	1
5	PINION SPACER RING*	PTFE+15% GRAPHITE	---	1
6	PINION SNAP RING	STEEL	NICKEL PLATED	1
7	PISTON	DIE CAST ALUMINUM	---	1
8	PISTON O-RING*	NBR70	---	2
9	STOP BOLT	STAINLESS STEEL	---	2
10	STOP BOLT O-RING*	NBR70	---	2
11	STOP BOLT WASHER	STAINLESS STEEL	---	2
12	STOP BOLT RETAINING NUT	STAINLESS STEEL	---	2
13	LEFT END CAP	DIE CAST ALUMINUM	EPOXY COATED	1
14	RIGHT END CAP	DIE CAST ALUMINUM	EPOXY COATED	1
15	END CAP SEAL	NBR70	---	2
16	END CAP BOLT	STAINLESS STEEL	---	8

* Parts subject to wear

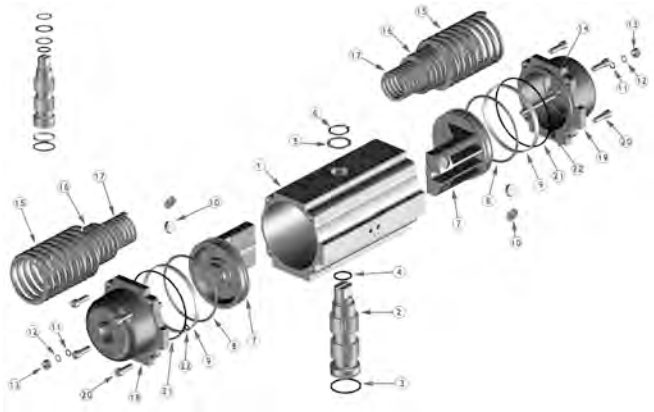
Parts Breakdown for BI-52 through BI-140



Part Number	Description	Material	Treatment	Qty (DA)	Qty (SR)
1	BODY	EXTRUDED ALUMINUM	HARD ANODIZED	1	1
2	ANTI-BLOWOUT PINION	STEEL	NICKEL PLATED	1	1
3	LOWER PINION O-RING*	NBR70	---	1	1
4	PINION SPACER RING	PTFE+15% GRAPHITE	---	1	1
5	TOP PINION O-RING	NBR70	---	1	1
6	CAM SPACER RING*	PTFE+15% GRAPHITE	---	1	1
7	STOP ADJUSTMENT	STAINLESS STEEL	---	1	1
8	POSITION INDICATOR	NYLON	---	1	1
9	PINION WASHER	STAINLESS STEEL	---	1	1
10	PINION SNAP RING	STEEL	NICKEL PLATED	1	1
11	PISTON	DIE CAST ALUMINUM	---	2	2
12	PISTON O-RING*	NBR70	---	2	2
13	ANTI-FRICTION RING*	PTFE+15% GRAPHITE	---	2	2
14	PISTON THRUST BLOCK	PTFE+15% GRAPHITE	---	2	2
15	STOP BOLT WASHER	STAINLESS STEEL	---	2	2
16	STOP BOLT	STAINLESS STEEL	---	2	2
17	EXTERNAL SPRING	STEEL	ZINC PHOSPHATE COATED	N/A	SEE SPRING CHART
18	INTERNAL SPRING	STEEL	ZINC PHOSPHATE COATED	N/A	SEE SPRING CHART
19	END CAP	DIE CAST ALUMINUM	EPOXY COATED	1	1
20	STOP WASHER				
21	END CAP SEAL	NBR70	---	8	8
22	END CAP BOLTS	STAINLESS STEEL	---	8	8

* Parts subject to wear

Parts Breakdown for BI-160 through BI-270



Part Number	Description	Material	Treatment	Qty (DA)	Qty (SR)
1	BODY	EXTRUDED ALUMINUM	HARD ANODIZED	1	1
2	ANTI-BLOWOUT PINION	STEEL	NICKEL PLATED	1	1
3	LOWER PINION O-RING*	NBR70	---	1	1
4	TOP PINION O-RING	NBR70	---	1	1
5	PINION SPACER RING	PTFE+15% GRAPHITE	---	1	1
6	PINION SPACER RING*	STEEL	NICKEL PLATED	1	1
7	PISTON	DIE CAST ALUMINUM	NICKEL PLATED	1	1
8	PISTON O-RING*	NBR70	---	2	2
9	ANTI-FRICTION RING*	PTFE+15% GRAPHITE	---	2	2
10	PINION THRUST BLOCK	PTFE+15% GRAPHITE	---	2	2
11	STOP BOLT O-RING*	NBR70	---	2	2
12	STOP BOLT WASHER	STAINLESS STEEL	---	2	2
13	STOP BOLT RETAINING NUT	STAINLESS STEEL	---	2	2
14	STOP BOLT	STAINLESS STEEL	---	2	2
15	EXTERNAL SPRING	STEEL	ZINC PHOSPHATE COATED	N/A	SEE SPRING CHART
16	CENTRAL SPRING	STEEL	ZINC PHOSPHATE COATED	N/A	SEE SPRING CHART
17	INTERNAL SPRING	STEEL	ZINC PHOSPHATE COATED	N/A	SEE SPRING CHART
18	LEFT END CAP	DIE CAST ALUMINUM	EPOXY COATED	1	1
19	RIGHT END CAP	DIE CAST ALUMINUM	EPOXY COATED	1	1
20	END CAP BOLTS	STAINLESS STEEL	---	8(160-200) 12 (270)	8(160-200) 12(270)
21	END CAP O-RING	NBR70	---	2	2
22	SUPPLY HOLE O-RING	NBR70	---	2	2
23	CARTRIDGE SPRING	STEEL	ZINC PHOSPHATE COATED	---	12 (270 ONLY

* Parts subject to wear

Stainless Steel Pneumatic Actuators

Ideal for Sanitary Applications, Food & Beverage, Pharmaceutical, Chemical and Other Harsh Environments

Available as Part of a Complete Automated Package With:

- Cavity Filled Sanitary Clamp End
- 3-Piece SS Full Port Ball Valves
- 3-Way SS Full Port Ball Valves

STANDARD FEATURES

MAXIMUM PRESSURE RATING
120 PSI/8 Bar
STANDARD TEMPERATURE RATING*
-4° F / -20°C to +180°F / +85°C
MAXIMUM TEMPERATURE RATING**
-40°F / -40°C to +350°F / +180°C
*with standard NBR70 seals
**with Viton or HNBR seals (available upon request)

•100% FACTORY TESTED
•TWIN RACK AND PINION DESIGN FOR CONSISTENT TORQUE OUTPUT
•PRE-LUBRICATED FOR LIFE OF ACTUATOR

MOUNTING OPTIONS

VALVE MOUNTING: True ISO 5211 standard base mounting bolt patterns and a double square female output shaft provide multiple options for direct mounting to valve stems and a greater flexibility of actuator rotation. Double D pinions are also available for additional direct mount options.

ACCESSORY MOUNTING: The top mounting pad is drilled and tapped to international NAMUR and ISO standards, providing for quick and economical accessory mounting in conjunction with the NAMUR pinion shaft. The standard NAMUR slotted and threaded shaft allows for direct mounting of NAMUR limit switches, valve positioners, and position monitors.

SOLENOID MOUNTING: All VNE actuators have an international NAMUR solenoid mounting pattern that permits direct mounting of a wide range of solenoid models. The NAMUR mount eliminates the need for pipe nipples or solenoid brackets.

VNE BI-SS Series Pneumatic Actuator Features

Stainless Steel Body
The all SS housing ideal for sanitary, pulp and paper, marine and a variety of other applications where corrosion resistance is crucial.

Heavy-Duty Pinion
The one piece stainless steel alloy shaft has precision machined gear teeth for precise operations.

Bearings
Replaceable top and bottom TFE pinion bearings ensure low friction, stability up to 400°F and corrosion resistance.

Travel Stops
Travel adjustment of +/-4° in the open position is standard on all models.

Accessory Mounting
NAMUR and ISO mounting allows for the easy factory or field installation of solenoid, switches and positioners.

Stainless Steel Pistons
Durable, precision cast pistons provide full engagement with the pinion. Quality seals and guides provide high thrust stability with minimal friction.

Namur Shaft
The slotted shaft, along with the NAMUR bolt pattern, allows for direct mounting of NAMUR standard switches and positioners.

Actuator Mounting
ISO 5211 standard design provides direct mounting of most ISO pad valves.

Spring Cartridges
The heavy duty spring cartridges allow for easy conversion of a double acting actuator to a spring return actuator, or to modify the torque output depending on air pressure.

Solenoid Mounting
The SS Series actuator is designed for direct mounting of NAMUR solenoid valves without additional piping.

SPRING SET 02
(4 Springs Total)

SPRING SET 03
(6 Springs Total)

SPRING SET 06
(12 Springs Total)

SPRING SET 04
(8 Springs Total)

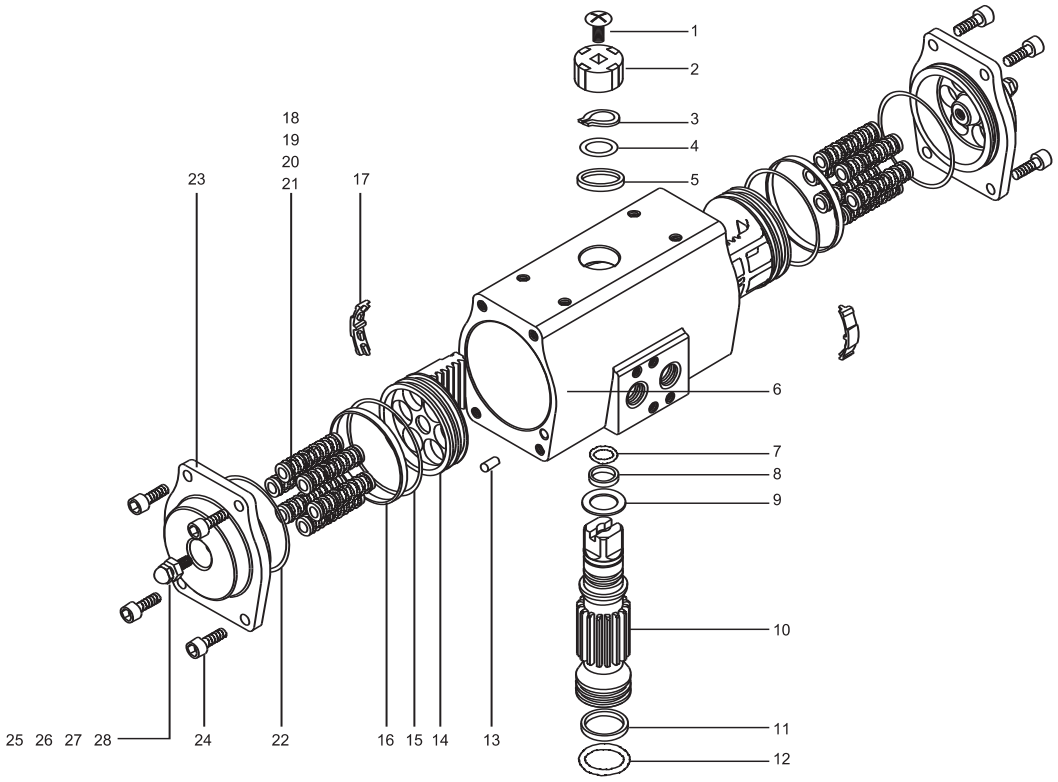
SPRING SET 05
(10 Springs Total)

Spring Sets
All VNE SS series (stainless) pneumatic actuators come standard with a complete cartridge spring set (6 springs per side) sized for 80 PSI supply pressure unless otherwise specified. Actuators can be configured for different air supplies by removing springs from the end caps.
IMPORTANT: Springs must be arranged in a symmetrical manner (see arrangements to the left) so that side load does not occur between the pistons and the actuator body.

Reverse Operation
All VNE actuators are set for a standard CW to close, CCW to open rotation. The action may be reversed by rotating the pistons 1180°.

CAUTION: Refer to VNE operation and maintenance instructions before disassembly and removal of springs.

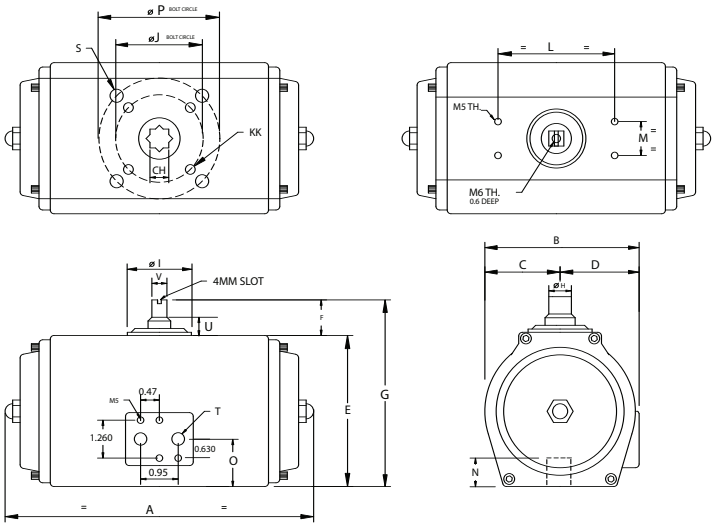
Parts Breakdown For BI-SS Actuator



Part #	Name	Material	Qty
1	Body	SS	1
2	Piston	SS	2
3	End Caps	SS	2
4	Pinion	SS	1
5	Guide Bearing	Nylon 6	1
6	Pinion Bearing (Top)	TFE	1
7	Pinion Bearing (Bottom)	TFE	1
8	Snap Ring	SS	1
9	O-Ring (Inner Top)	Viton®	1
10	O-Ring (outer Top)	Viton®	1
11A	Washer	SS	1
11B	Bearing	Nylon 6	1
12	O-ring (Inner Bottom)	Viton®	1
13	O-Ring (Outer Bottom)	Viton®	1
14	O-Ring (Piston)	Viton®	2

Part #	Name	Material	Qty
15	Piston Bearing	Nylon 6	2
16	O-Ring (End Cap)	Viton®	2
17A	Bolts (End Cap)	SS	8
17B	Lock Washer	SS	8
18	Travel Stop	SS	2
19	O-Ring (Travel Stop)	Viton®	2
20A	Washer	SS	2
20B	Nut (Travel Stop)	SS	2
21	Retaining Nut	SS	2
22	Spring Retainer	Nylon 6	*
23	Spring	Plated CS	*
24	Spring	Plated CS	*
25	Spring Screw	SS	*
26	Spring Nut	SS	*
27	Position Indicator	Nylon	1
28	Port Plug	Nylon 6	2

VNE Bi-SS Series Dimensional Data



Model	A (DA)	A (SR)	B	C	D	E	F	G	CH	J
SS-45	6.54	7.56	2.56	1.15	1.15	2.56	0.787	3.34	0.433	1.42
SS-60	7.00	7.34	2.92	1.39	1.39	3.18	0.787	3.97	0.551	1.97
SS-85	7.81	8.37	3.97	1.91	1.91	4.24	0.787	5.03	0.669	1.97
SS-105	9.91	10.53	4.75	2.29	2.29	5.23	0.787	6.02	0.866	2.76
SS-125	11.66	12.20	5.39	2.69	2.69	6.09	1.181	7.27	0.866	2.76
SS-140	14.17	19.29	6.26	3.11	3.11	6.89	1.181	8.07	1.063	4.02

* Also available with 14mm and 17mm adapters

Model	L	N	M	P	S	T	V	KK
SS-45	3.15	0.58	1.181	1.97	M6 X 10	1/4¨ NPT	0.633	M5 X 8
SS-60	3.15	0.59	1.181	N/A	M6 X 10	1/4¨ NPT	0.633	---
SS-85	3.15	0.66	1.181	2.76	M8 X 13	1/4¨ NPT	0.635	M6 X 10
SS-105	3.15	0.77	1.181	N/A	M8 X 13	1/4¨ NPT	0.629	---
SS-125	5.12	0.97	1.181	4.02	M10 X 16	1/4¨ NPT	0.865	M8 X 13
SS-140	5.12	1.18	1.181	4.92	M12 X 20	1/4¨ NPT	0.865	M10 X 16

Actuator Weights

Model	DA (LBS.)	SR (LBS.)
SS45	5.0	5.5
SS60	8.0	8.5
SS85	14	14.5
SS105	25.5	27.0
SS125	38.5	40.5
SS140	63.5	65.5
SS160	80.0	83.0

VNE Bi-SS Actuator Torque Charts

SPRING RETURN TORQUE (IN. LBS)

	Springs Per Side	Spring Torque		40PSI		60PSI		80PSI			100PSI
Model	(5 STD)	End	Break	End	Break	End	Break	End	Break	End	Break
BI-45-SR-SS	3	35	57	14	36	50	72	86	108	121	143
	4	47	77			30	60	66	96	101	131
	5	60	96					47	83	82	118
	6	71	115							63	107
BI-60-SR-SS	3	67	136	35	104	120	189	206	275	291	360
	4	90	182			94	166	160	252	245	337
	5	119	207					125	230	200	315
	6	135	273							154	292
BI-85-SR-SS	3	167	273	106	203	282	388	467	573	652	758
	4	223	364			191	332	376	517	561	702
	5	279	430					284	461	429	646
	6	335	523							378	590
BI-105-SR-SS	3	346	574	65	278	362	590	675	903	987	1215
	4	461	766			170	475	483	788	795	1110
	5	576	956					293	673	605	985
	6	692	1141							420	869
BI-125-SR-SS	3	651	941	336	563	881	1171	1288	1778	1895	2385
	4	760	1222			689	953	1105	1560	1514	2167
	5	1080	1602					927	1349	1134	1956
	6	1301	1790							1153	1735
BI-140-SR-SS	3	808	1359	655	1226	1592	2243	2517	3260	3525	4277
	4	1071	2087			1200	1980	1983	2997	3166	4014
	5	1345	2607					1755	2626	2625	3740
	6	1610	3026							2340	3475
BI-160-SR-SS	3	1522	2098	895	1580	2420	3131	4022	4682	4657	6233
	4	2035	3133			1720	2618	3122	4169	4822	5720
	5	2550	3690					2467	3654	3588	5205
	6	3054	4893							3333	4701

Double Acting Torque (IN. LBS)

Model	40PSI	60PSI	80PSI	100PSI	120PSI
BI-45-DA-SS	71	107	143	178	214
BI-60-DA-SS	171	256	342	427	512
BI-85-DA-SS	370	555	740	925	1110
BI-105-DA-SS	624	936	1249	1561	1873
BI-125-DA-SS	1214	1822	2429	3036	3643
BI-140-DA-SS	2034	3051	4068	5085	6102
BI-160-DA-SS	3102	4653	6204	7755	9306