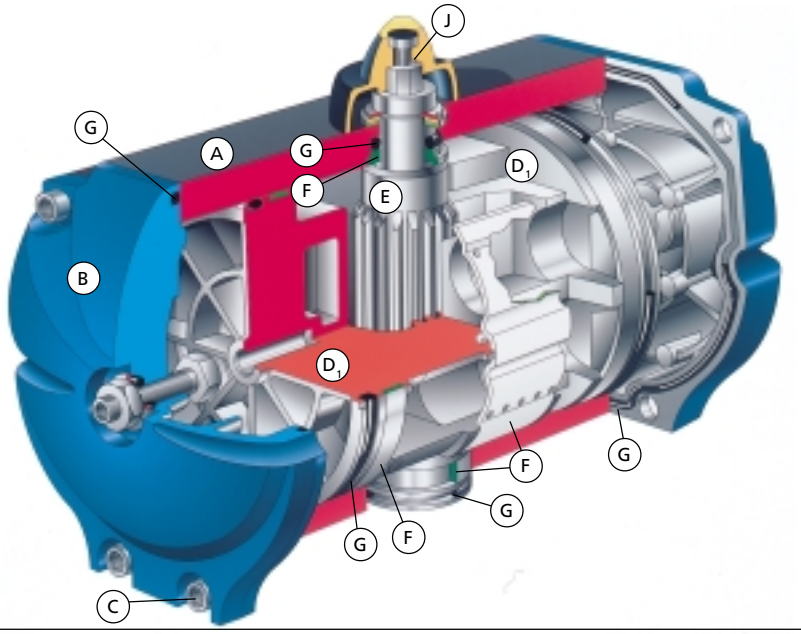
ACTAIR/DYNACTAIR

Double Acting and Spring Return
Actuator and Accessories

amri

KSB



ACTAIR 1.5* , ACTAIR 3, ACTAIR 6, ACTAIR 12, ACTAIR 25 and ACTAIR 50

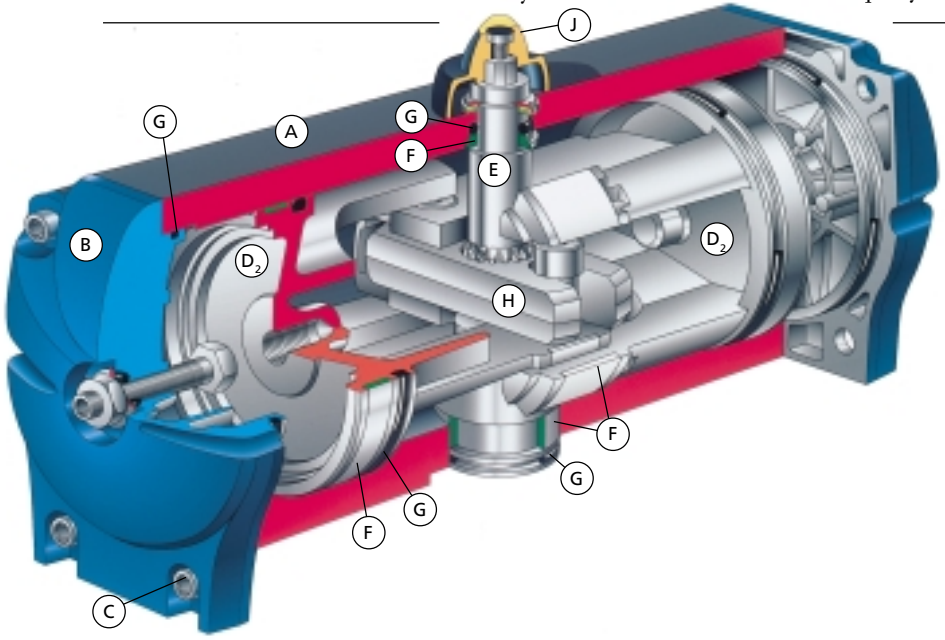
- Double acting rack & pinion actuators.
- Wide range of torque outputs from 133 to 4867 (in. lbs.) at 80 PSIG.
- Extra large self-lubricating piston guide and piston bearings for maximum cycle life.

***Actair 1.5 construction varies slightly**

AMRI introduces its new series of ACTAIR and DYNACTAIR actuators. These pneumatic actuators have been specifically designed for the automation of any type quarter-turn valve (plug, ball, butterfly, damper).

Advantages of the new ACTAIR and DYNACTAIR series include:

- Standard ISO 5211 mounting interface dimensions.
- Top mounting for positioner and limit switch box in accordance with VDI/VDE 3845 NAMUR specifications.
- Solenoid valves can be mounted directly to the actuator in accordance with NAMUR standards.
- Direct mounting of the AMRI AMTRONIC instrumentation box.
- Internal porting eliminating external tubing (when NAMUR mounted solenoid or AMTRONIC instrumentation box is used).
- Adjustable mechanical travel stops.
- Blow out proof pinion gear.
- Nitrile (Buna-N) seals, continuous working temperatures from -10ºF to +185ºF (-23ºC to +85ºC)
- Visual indication.
- Works equally well on lubricated or non-lubricated air.

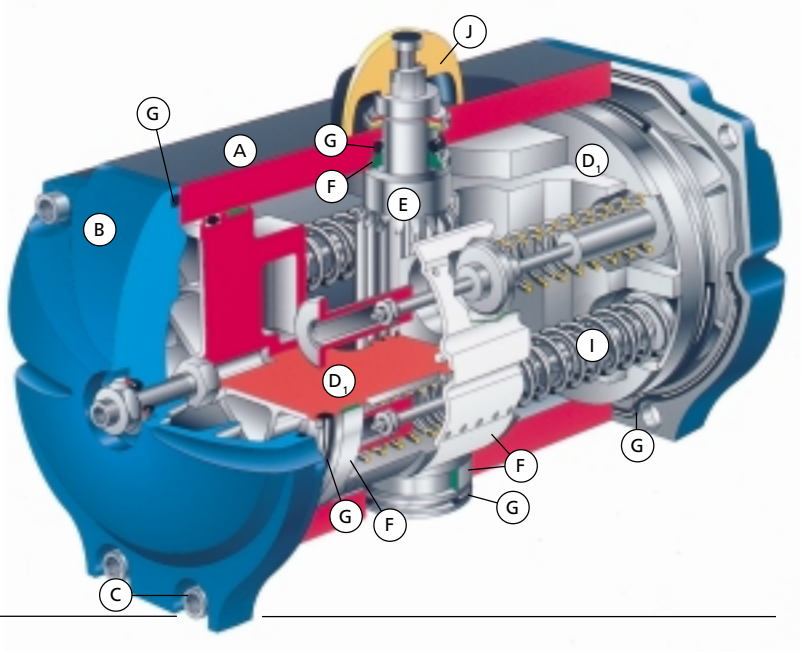


ACTAIR 100 and ACTAIR 200

- Double acting
- Double scotch-yoke.
- High starting and ending torque.
- Ductile iron piston, heat treated steel yoke and rollers.

DYNACTAIR 1.5, DYNACTAIR 3, DYNACTAIR 6, DYNACTAIR 12 and DYNACTAIR 25

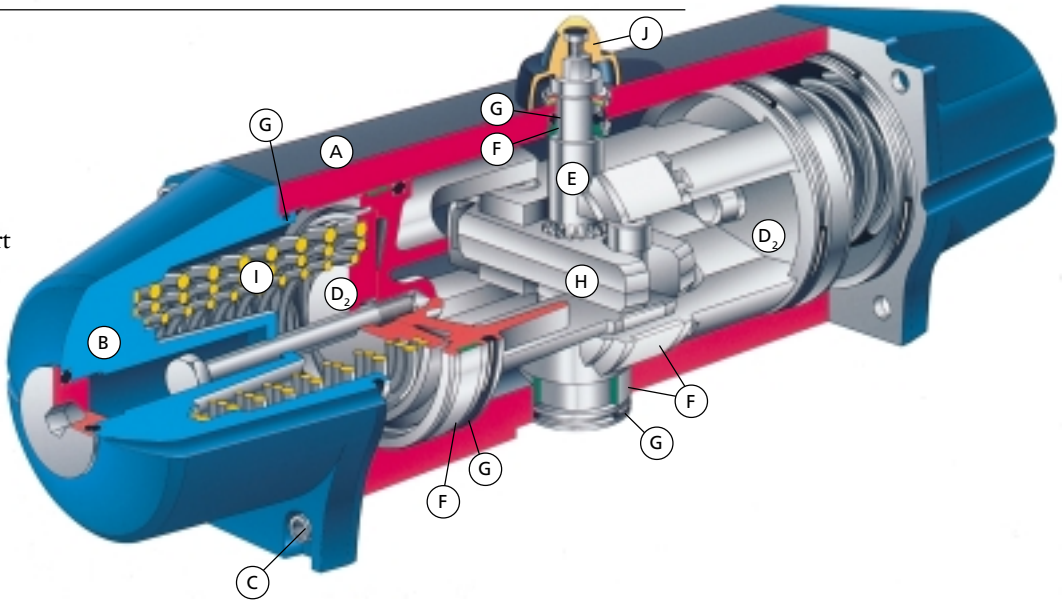
- Spring return rack & pinion actuators.
- ACTAIR double acting units easily convert to spring return units by installing precompressed spring cartridges between pistons.
- Possibility of 2, 3, or 4 spring cartridges depending on required torque output.



Item	Description	Material
A	Body	Anodized Aluminum
B	End Cap	Polyurethane Coated Aluminum
C	Nuts & Bolts	A2-70 (300 Series Stainless)
D_1	Piston (Rack & Piston)	Aluminum
D_2	Piston (Double Scotch-Yoke)	Ductile Iron
E	Pinion	Zinc Plated Steel
F	Piston Guides & Pinion Bearing	Acetal
G	Piston, Pinion and End Cap Seals	Nitrile (Buna-N)
H	Yoke & Rollers	Heat Treated Steel
I	Springs	Epoxy Coated Steel
J	Visual Indication	Nylon

DYNACTAIR 50 and DYNACTAIR 100

- Spring return
- Double scotch-yoke
- Double acting units easily convert to spring return units by mounting precompressed spring packs with end caps.
- Spring packs include 1, 2 or 3 springs depending on the required torque output.



AIR CAPACITIES (in³)			
	MODEL	TO OPEN	TO CLOSE
ACTAIR	1.5	4.39	6.10
	3	14.6	18.6
	6	34.8	40.3
	12	72.0	77.2
	25	146.5	153.0
	50	286.8	285.5
	100	322.2	267.3
	200	598.0	518.7
DYNACTAIR	1.5	14.6	18.6
	3	34.8	40.3
	6	72.0	77.2
	12	146.5	153.0
	25	286.8	285.5
	50	322.2	267.3
	100	598.0	518.7

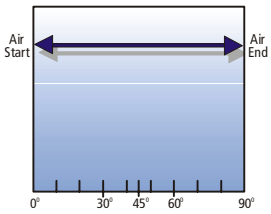
Air supply requirements:
ON-OFF applications:
Filtered, dry or lubricated air or any neutral gas between 45 and 115 psig pressure.
Throttling applications:
Filtered, dry air (not lubricated) or any neutral gas between 45 and 115 psig pressure

All torques are guaranteed minimum. A safety factor should be added to the actual valve torque before using these charts. Additional running torque due to the forces of liquid or high solids content flow past the valve disc, ball or plug should also be considered. When emergency shut down or infrequently used valves are being sized, additional safety factors may be required due to potential increases in the valve torques. If in doubt, or you require any assistance in sizing actuators, please contact AMRI.

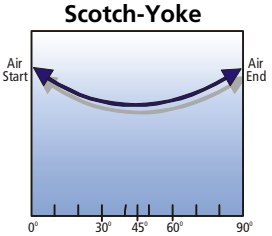
AMRI New "ACTAIR" Actuators — *Double Acting* — *Torque Output (in. lbs.)*						
ACTAIR Model	AIR SUPPLY (start and end torques are the same)					
	45 PSIG	60 PSIG	80 PSIG	90 PSIG	100 PSIG	115 PSIG
1.5	79	106	133	159	168	177
3	221	292	398	443	514	585
6	424	566	778	850	974	1107
12	788	1018	1305	1372	1770	2036
25	1575	2097	2832	3098	3629	4160
50	3160	4204	4867	5133	7346	8408
100	5310	7080	9735	10620	12390	14160
200	10620	14160	19470	21240	24780	28320

Note: 1) ACTAIR models 1.5, 3, 6, 12, 25 and 50 are rack and pinion; models 100 and 200 are double scotch-yoke.

ACTAIR 1.5 to 50
Rack & Pinion



ACTAIR 100 & 200
Scotch-Yoke



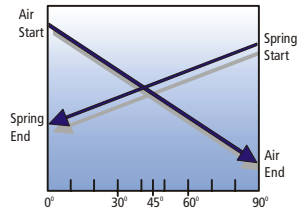
*Torque output at 45° is 60% (a 0.60 multiplier) of the stated torque.

AMRI New "DYNACTAIR" Actuators — *Spring Return* — *Torque Output (in. lbs.)*

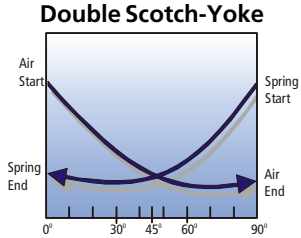
DYNACTAIR Model	Spring Set	Spring		AIR SUPPLY											
				45 PSIG		60 PSIG		80 PSIG		90 PSIG		100 PSIG		115 PSIG	
Rack & Pinion		Start	End	Start	End	Start	End	Start	End	Start	End	Start	End	Start	End
1.5	3 (2 sets/2 springs)	141	79	141	44	212	115	283	177	—	—	—	—	—	—
	4 (2 sets/4 springs)	265	133	—	—	—	—	221	44	283	115	—	—	—	—
3	2 (2 sets)	248	141	239	124	363	248	487	381	611	504	735	628	867	752
	3 (3 sets)	372	212	168	2 1/2	292	124	416	257	540	381	673	504	797	628
	4 (STD) (4 sets)	504	283	—	—	221	2	345	124	469	257	602	381	726	504
6	2 (2 sets)	451	283	487	248	726	487	956	717	1195	956	1425	1186	1664	1425
	3 (3 sets)	681	425	283	21	513	257	752	496	982	726	1221	965	1381	1080
	4 (STD) (4 sets)	912	566	—	—	372	27	611	266	850	504	1080	734	1310	965
12	2 (2 sets)	955	566	832	443	1301	912	1770	1381	2230	1850	2699	2319	3168	2779
	3 (3 sets)	1425	850	—	—	1018	443	1487	912	1947	1372	2416	1841	2885	2310
	4 (STD) (4 sets)	1903	1133	—	—	—	—	1204	425	1664	894	2133	1363	2602	1832
25	2 (2 sets)	1947	1159	1646	858	2584	1797	3522	2726	4452	3664	5381	4593	6319	5531
	3 (3 sets)	2920	1735	—	—	2000	832	2938	1761	3867	2699	4806	3629	5744	4567
	4 (STD) (4 sets)	3894	2319	—	—	—	—	2363	788	3292	1717	4230	2646	5160	3584
Double Scotch-Yoke			@ 45°												
50	1 (1 spring A••)	3186	1549	2027	3549	2390	5407	4257	7275	6115	9133	7983	11001	9841	12859	11700
	2 (2 springs A•C)	4868	2283	2974	2611	717	4469	2575	6337	4443	8195	6301	10062	8169	11921	10027
	3 (2 springs AB•)	5505	2744	3575	—	—	3867	1929	5726	3797	7584	5655	9452	7514	11310	9381
	4 (STD) (3 springs ABC)	7169	3540	4602	—	—	2805	531	4673	2460	6531	4319	8399	6177	9877	8045
100	1 (1 spring A••)	6443	3230	3956	6983	4496	10638	8151	14293	11806	17948	15461	21594	19116	25249	22771
	2 (2 springs A•C)	8585	4292	5177	5770	2363	9425	6018	13080	9673	16727	13328	20390	16983	24037	20638
	3 (2 springs AB•)	11948	5974	7080	—	—	7461	2593	11116	6248	14771	9903	18408	13558	22081	17213
	4 (STD) (3 springs ABC)	14160	7080	8939	—	—	5814	1062	9470	4717	13116	8372	16771	12018	20355	15673

Notes: 1) STD indicates standard models. 2) DYNACTAIR models 1.5,3,6,12, and 25 are rack & pinion; models 50 and 100 are double scotch-yoke.

DYNACTAIR 1.5 to 25 Rack & Pinion



DYNACTAIR 50 & 100 Double Scotch-Yoke



Spring Set Configuration

DYNACTAIR 3, 6, 12 and 25

2 SETS

3 SETS

4 SETS

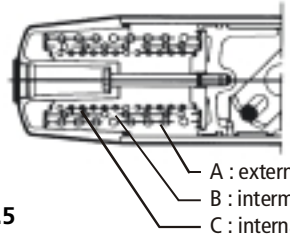
2 SETS

DYNACTAIR 1.5

3 (2 Sets/ 2 Springs)
4 (2 Sets/ 4 Springs)

DYNACTAIR 50 and 100

A ● C defines spring arrangement:
→ one internal spring
→ no intermediate spring
→ one external spring



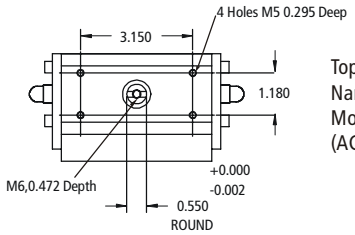
Model	Valve Mounting (Note 1)															
	4 Holes Off-Centerlines				4 Holes Off-Centerlines				4 Holes On-Centerlines				4 Holes as Shown (Note1)			
	∅ A Bolt Circle	B Threads	C Depth	ISO Pattern	∅ D Bolt Circle	E Threads	F Depth	ISO Pattern	∅ G Bolt Circle	H Threads	I Depth	ISO Pattern	J Bolt Pattern	K Bolt Pattern	L Threads	M Depth
ACTAIR 1.5	1.653	M5	.393	F04	—	—	—	—	—	—	—	—	—	—	—	—
3	1.969	M6	.354	F05	—	—	—	—	1.653	M5	.315	F04	—	—	—	—
6	1.969	M6	.354	F05	2.756	M8	.472	F07	—	—	—	—	—	—	—	—
12	1.969	M6	.354	F05	2.756	M8	.472	F07	—	—	—	—	—	—	—	—
25	2.756	M8	.472	F07	4.015	M10	.590	F10	—	—	—	—	—	—	—	—
50	4.015	M10	.590	F10	4.921	M12	.708	F12	—	—	—	—	—	—	—	—
100	4.015	M10	.590	F10	4.921	M12	.708	F12	—	—	—	—	4.524	2.262	M12	.708
200	5.512	M16	.945	F14	—	—	—	—	—	—	—	—	4.953	2.477	M16	.945
DYNACTAIR 1.5	1.969	M6	.354	F05	—	—	—	—	1.653	M5	.315	F04	—	—	—	—
3	1.969	M6	.354	F05	2.756	M8	.472	F07	—	—	—	—	—	—	—	—
6	1.969	M6	.354	F05	2.756	M8	.472	F07	—	—	—	—	—	—	—	—
12	2.756	M8	.472	F07	4.015	M10	.590	F10	—	—	—	—	—	—	—	—
25	4.015	M10	.590	F10	4.921	M12	.708	F12	—	—	—	—	—	—	—	—
50	4.015	M10	.590	F10	4.921	M12	.708	F12	—	—	—	—	4.524	2.262	M12	.708
100	5.512	M16	.945	F14	—	—	—	—	—	—	—	—	4.953	2.477	M16	.945

* All dimensions in inches unless otherwise noted.

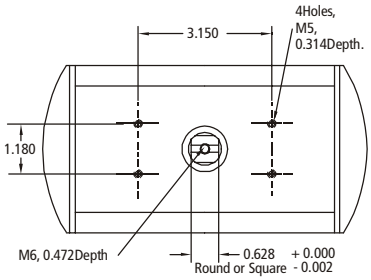
Note: 1) Additional mounting plate available for an ACTAIR 100/ DYNACTAIR 50 having an ISO F14 mounting pattern and an ACTAIR 200/ DYNACTAIR 100 having an ISO F16 mounting pattern. Additional mounting plate bolts onto actuator using J, K, L and M dimensions shown. ISO F14 and F16 mounting patterns are as follows:

4 Holes Off-Centerline						
Actuator	ISO Pattern	∅ D Bolt Circle	E Threads	F Depth	Q Shaft Depth	R Height
ACTAIR 100/ DYNACTAIR 50	F14	5.512	M16	0.669	2.589	8.348
ACTAIR 200/ DYNACTAIR 100	F16	6.496	M20	0.866	2.926	10.196

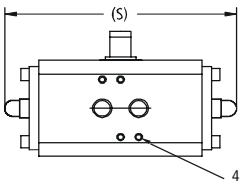
	Shaft Adaption with Machinable Inserts (Maximum Dimensions)				Overall Dimensions				Weights
	N Width	∅ O Diameter	P Square	Q Depth	R Height	S Length	T Base Width	U Overall Width	Lbs
	.433	.551	.433	.944	2.59	5.62	1.73	2.99	2.6
	.433	.551	.433	.944	3.86	7.64	2.16	3.93	6
	.551	.708	.629	1.181	4.56	8.58	2.55	4.65	9
	.553/ .551	.711/ .708	—	1.259	5.77	10.70	2.55	5.43	13
	.751/ .748	.987/ .984	—	1.574	6.93	13.54	3.54	6.53	24
	.869/ .866	1.105/ 1.102	—	1.771	8.54	16.69	4.92	7.87	40
	—	1.909/ 1.902	1.421/ 1.417	2.165	7.68	19.88	4.80	6.69	66
	—	2.566/ 2.559	1.971/ 1.968	2.559	9.33	23.30	5.67	8.27	106
	.433	.551	.433	.944	3.86	7.64	2.16	3.93	7
	.553/ .551	.711/ .708	—	1.181	4.56	8.58	2.55	4.65	10
	.553/ .551	.711/ .708	—	1.259	5.77	10.70	2.55	5.43	16
	.751/ .748	.987/ .984	—	1.574	6.93	13.54	3.54	6.53	30
	.869/ .866	1.105/ 1.102	—	1.771	8.54	16.69	4.92	7.87	53
	—	1.909/ 1.902	1.421/ 1.417	2.165	7.68	27.75	4.80	6.69	101
	—	2.566/ 2.559	1.971/ 1.968	2.559	9.33	31.97	5.67	8.27	165



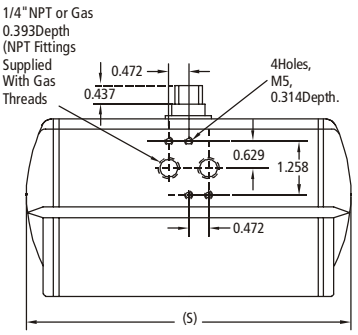
Top View
Namur Accessory
Mounting
(ACTAIR 1.5)



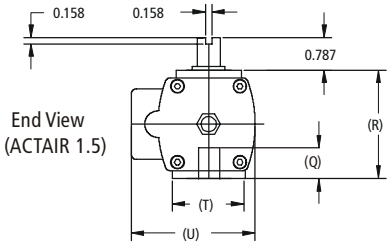
Top View
Namur Accessory
Mounting
(All Other Models)



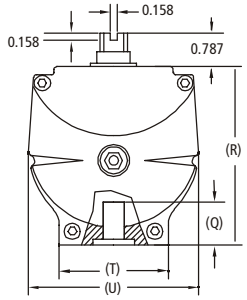
Side View
Namur Solenoid
Mounting
(ACTAIR 1.5)



Side View
Namur Solenoid
Mounting
(All Other Models)

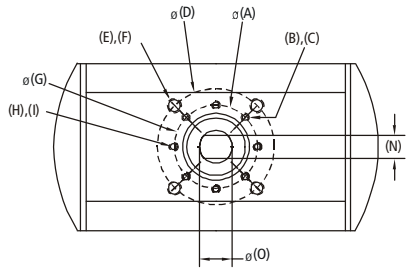


End View
(ACTAIR 1.5)

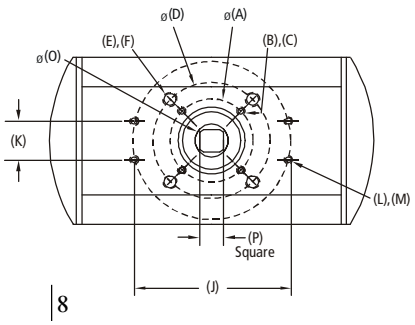


End View
(All Other Models)

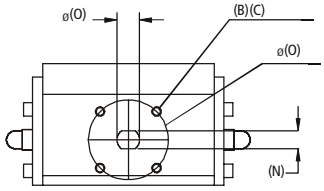
Bottom View
ISO Valve Mounting
(ACTAIR 3 to 50)
(DYNACTAIR 3 to 25)



Bottom View
ISO Valve Mounting
(ACTAIR 100 to 200)
(DYNACTAIR 50 to 100)



Bottom View
ISO Valve Mounting
(ACTAIR 1.5)



RACK AND PINION ACTUATOR OPERATION (TOP VIEW OF ACTUATOR)

DOUBLE ACTING

When air pressure is applied to port 1, the inboard cavity is filled with compressed air and creates an outward force on the pistons, rotating the pinion gear clockwise.

When air pressure is applied to port 2, the outboard cavities are filled with compressed air, and creates an inward force on the pistons, rotating the pinion gear counter-clockwise.

SPRING RETURN (FAIL CLOCKWISE - CW)

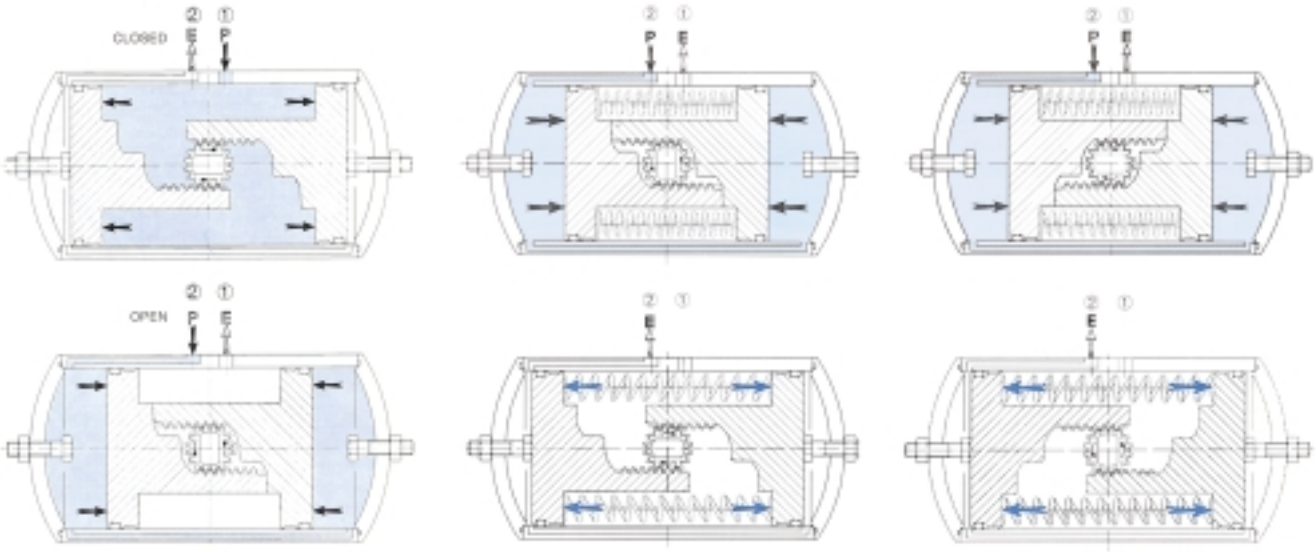
When air pressure is applied to port 2, the outboard cavity is filled with compressed air, and creates an inward force on the pistons, compressing the springs and rotating the pinion gear counter clockwise.

Exhausting the air pressure from port 2, allows the compressed springs to create a force outward and rotate the pinion gear clockwise.

SPRING RETURN (FAIL COUNTER CLOCKWISE - CCW)

When air pressure is applied to port 2, the outboard cavity is filled with compressed air, and creates an inward force on the pistons, compressing the springs and rotating the pinion gear clockwise.

Exhausting the air pressure from port 2, allows the compressed springs to create a force outward and rotate the pinion gear counter clockwise.



AMTRONIC

- Direct mounted instrument-ation box in accordance with VDI/VDE 3845 NAMUR specification.
- Corrosion resistant, weather-proof housing NEMA 4X & 6 rated.
  Options:
  -Electro-pneumatic positioner.
  -Mechanical or intrinsically safe proximity switches.
  -Pneumatic positioning by use of an integrated positioner card.
  -Adjustable operating time.

POSITIONERS

- Pneumatic and electro-pneumatic.
- NAMUR mounting.
- Simple mechanical zero and span adjustments.
- Pressure and temperature compensated with integral filter for the I/P model.
- RFI protected, corrosion resistant, weatherproof housing.
- Low, high and max flow spool valves with low air consumption.
  Options:
  -Integral limit switches and/or analog outputs.
  -"Pharos" or "flat lens" position indicators
  -Universal mounting adaptation

LIMIT SWITCH BOX

- NAMUR mounting.
- Nema 4, 4X, 7 & 9.
- Class I, Groups C & D, Divisions 1 & 2.
- Class II, Groups E, F & G, Division 1 & 2.
- Potting Compartments to Nema Specifications.
- Terminal Strip Contacts: 2 open contacts provided.
- SPST, SPDT and DPDT mechanical and proximity switches with multi point terminal strip.
- Integral potting of leads and either (1) ½" NPT or (2) ¾" NPT conduit entries (depending on model). "Quick-Set" cams and captive cover bolts.
- Beacon visual indication.

Represented by:

amri
Butterfly Valves
Actuators and Systems

AMRI, Inc.
2045 Silber Road
Houston, Texas 77055

Phone: 713-682-0000
Fax: 713-682-0080
Email: info@amrivalves.com
htttp://www.amrivalves.com

KSB

DOUBLE SCOTCH-YOKE ACTUATOR OPERATION (TOP VIEW OF ACTUATOR)

DOUBLE ACTING

When air pressure is applied to port 1, the inboard cavity is filled with compressed air and creates an outward force on the pistons, rotating the pinion clockwise.

When air pressure is applied to port 2, the outboard cavities are filled with compressed air, and creates an inward force on the pistons, rotating the pinion counterclockwise.

SPRING RETURN (FAIL CLOCKWISE - CW)

When air pressure is applied to port 1, the inboard cavity is filled with compressed air, and creates an outward force on the pistons, compressing the springs and rotating the pinion counter clockwise.

Exhausting the air pressure from port 1, allows the compressed springs to create a force inward and rotate the pinion clockwise.

SPRING RETURN (FAIL COUNTER CLOCKWISE - CCW)

When air pressure is applied to port 1, the inboard cavity is filled with compressed air, and creates an outward force on the pistons, compressing the springs and rotating the pinion clockwise.

Exhausting the air pressure from port 1, allows the compressed springs to create a force inward and rotate the pinion counter clockwise.