

SPA-R Pneumatic Actuators are suitable for easy, modular installation onto process control components such as Butterfly Valves, Cylindrical Plug Valves, Ball Valves or as operating device applied on automated Reactor Sampling Systems.

## Modular Design

Actuators are available as double-acting or single-acting with spring return (fail safe close or fail safe open). Upon request, the actuators can be mounted onto valves as complete units, i.e. with solenoid valve, limit switch box or electro-pneumatic positioner, incl. all required mounting parts.



**Standard Actuator**  
with visual position indicator

## Main Features

- Robust design, body/cover made of cast aluminum, reliable function by proven rack and pinion construction  
Option: actuators with stainless steel bodies
- Smooth surface finish of the cylinder bore (Ra 0.4-0.6 microns) for increased life span of actuator
- Excellent corrosion protection of the actuator, resistant to salt spray for up to 500 hours
- Easy replaceable guide pads made of materials with low coefficient of friction
- Actuators with at least two bolt circles acc. to ISO 5211 for direct mounting onto valves
- NAMUR interface for easy installation of limit switch boxes and solenoid pilot valves
- Visual position indicator as integrated standard item
- Special actuators, for extreme temperatures and any environmental conditions, upon specified request

 **Conformity acc. to  
European Machinery Directive 98/37/EC**

## Options



**Actuator Unit On-Off**  
with limit switch box and solenoid valve



**Actuator Control Unit**  
with E/P positioner

### Operating Data

- Air Supply filtered air (dry or lubricated)
- Air Pressure min. 1 bar (14.2 psi) up to 8 bar (116 psi)
- Torque Range 20 up to 10'025 Nm (88'720 in-lbs) at 6 bar (87 psi) air pressure
- Operating Angle 90°
- Stroke Adjustment  $\pm 5^\circ$
- Lubrication permanent lubrication (for min. 1 million cycles)
- Temp. Range -20°C bis +80°C
- Installation Pos. user-defined

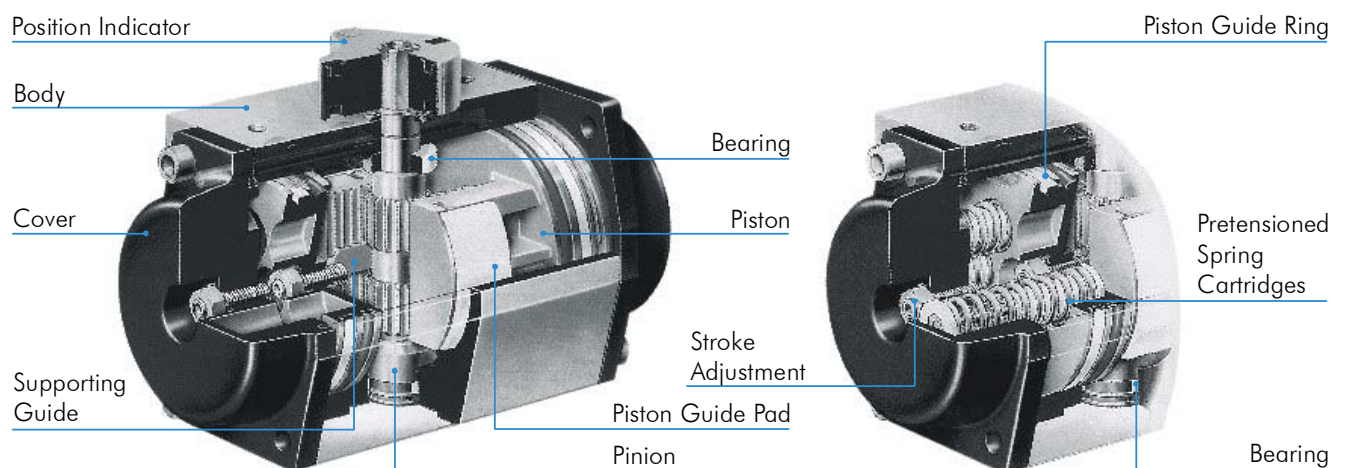
### Testing

- 100% function- and tightness testing on electronic testing bench guarantees the reliable function of the pneumatic actuators

### Technical Data (lbs = kg x 2.2)

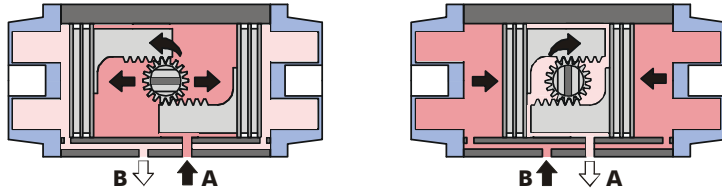
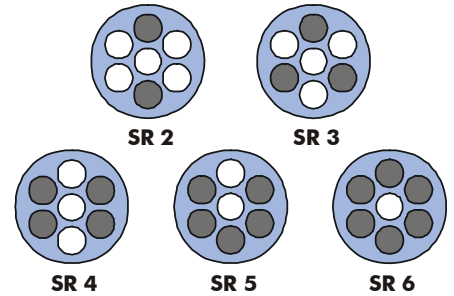
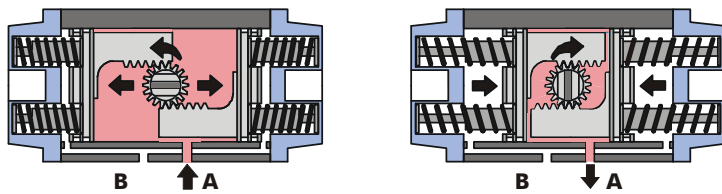
TR Type		050	063	075	085	100	115	125	160	200	270	330	420
Air Volume (dm <sup>3</sup> )	DA	0.23	0.45	0.61	0.98	1.8	2.8	3.7	8.0	14.2	32.2	62.8	131.0
	SR	-	-	-	-	-	-	-	-	-	-	-	-
Opening Time (sec)	DA	0.6	0.6	0.6	0.6	0.8	0.9	1.1	1.3	3.6	4.5	5.0	8.0
	SR	0.6	0.7	0.7	0.7	1.1	1.2	1.3	2.1	4.6	6.0	6.5	10.0
Closing Time (sec)	DA	0.6	0.7	0.7	0.9	0.9	1.1	1.1	1.6	4.6	4.5	5.0	9.0
	SR	0.6	0.9	1.0	1.3	1.3	1.6	2.1	2.6	6.1	6.0	6.5	11.0
Weight (kg)	DA	1.07	1.6	2.9	4.2	5.8	9.2	11.9	20.5	43.0	94.0	105.0	210
	SR	1.2	1.8	3.37	4.83	6.82	10.3	14.2	24.9	53.0	113.0	144.6	279

### Construction of Actuator

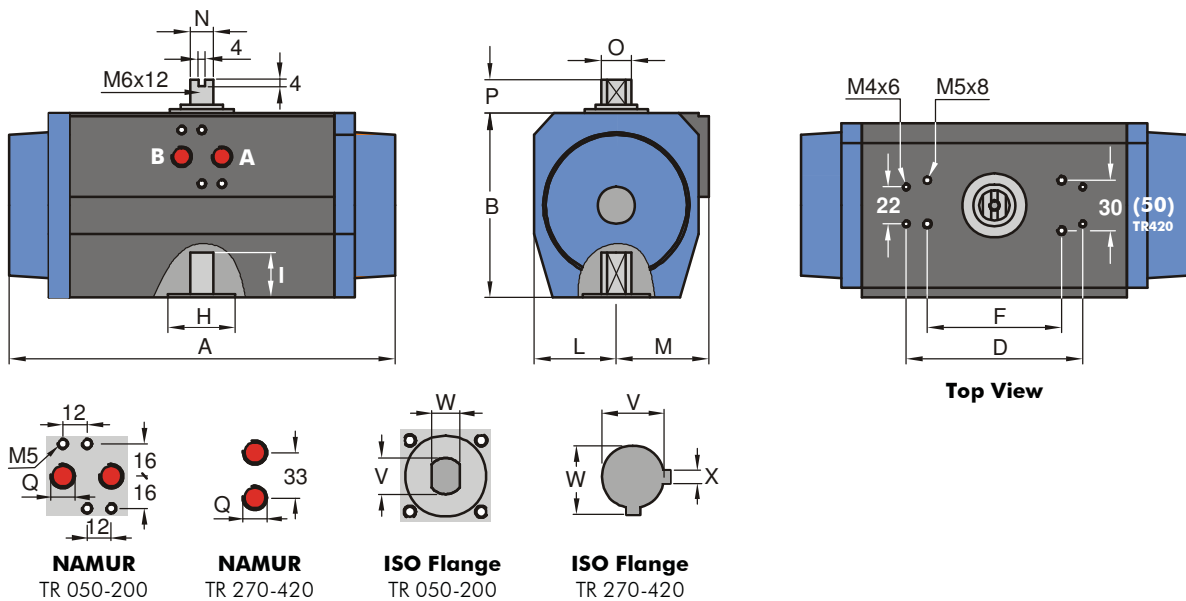


### Assembly

of compl. actuators incl. options and accessories  
acc. to data sheet  
Mounting Options, Specification

**Modes of Operation**
**DA: double-acting**

**SR: single-acting**

**Arrangement of Spring Cartridges**

- Do **not** open actuator under pressure!
- Spring cartridges release automatically during removal of covers!

**Dimensions** in mm


TR Type	A	B	D	F	H	I	L	M	N	O	ISO	P	Q	V	W	X
<b>050</b>	138	67	-	80	25	13	33.5	41.5	8	12	F03/05	20	1/8"	14.2	11	-
<b>063</b>	152	83	-	80	25	16	38	48	8	12	F03/05	20	1/4"	14.2	11	-
<b>075</b>	205	100	105	80	35	20.5	42.5	51.5	14	18	F05/07	20	1/4"	18.2	14	-
<b>085</b>	228	110	105	80	40	23.5	49	55	14	18	F05/07	20	1/4"	18.2	14	-
<b>100</b>	274	125	105	80	55	28.5	55	65	14	18	F05-10	20	1/4"	24.2	17	-
<b>115</b>	308	142	139	130	55	28.5	64	68	27	36	F07/10	30	1/4"	24.2	17	-
<b>125</b>	362	155	139	130	55	41	69.5	71.5	27	36	F07/10	30	1/4"	30.2	22	-
<b>160</b>	462	196	139	130	75	51	88	88	27	36	F10/12	50	1/4"	40.2	27	-
<b>200</b>	575	240	139	130	85	51	110	110	32	42	F10/12	50	1/4"	40.2	27	-
<b>270</b>	685	332	-	130	104	62	166	166	55	80	F14	50	1/2"	50	53.8	14
<b>330</b>	850	414	-	130	130	84	190	210	55	80	F16	50	1/2"	60	64.4	18
<b>420</b>	934	534	-	200	200	94	249	272	55	80	F25	80	1/2"	70	74.9	20

**DA: double-acting** Torque values in Nm (in-lbs = Nm x 8.86) (psi = bar/0.0689)

Type TR	Air Supply in bar									
	1	2	3	4	5	6	7	8	9	10
<b>050</b>	3.0	6.1	9.2	12.3	15.4	18.5	21.5	24.6	27.7	30.8
<b>063</b>	5.5	11.0	16.5	22.0	27.5	33.0	38.5	44.0	49.5	55.0
<b>075</b>	11.7	23.4	35.1	46.8	58.5	70.2	81.9	93.6	105.3	117.0
<b>085</b>	17.8	35.6	53.4	71.2	89.0	106.9	124.7	142.4	160.3	178.1
<b>100</b>	27.7	55.4	89.2	110.9	138.6	166.4	194.1	221.8	249.5	277.3
<b>115</b>	45.7	91.5	137.2	183.0	228.7	274.5	320.2	366.0	411.7	457.5
<b>125</b>	60.1	120.3	180.5	240.7	300.9	361.1	421.2	481.4	541.6	601.8
<b>160</b>	118.3	236.7	355.0	473.4	591.7	710.1	828.4	946.8	1'065.1	1'183.5
<b>200</b>	221.8	443.7	665.6	887.5	1'109.4	1'333.3	1'553.1	1'775.0	1'996.9	2'218.8
<b>270</b>	539.2	1'078.4	1'617.6	2'156.8	2'696.0	3'235.2	3'774.4	4'313.6	4'852.8	5'392.0
<b>330</b>	911.5	1'823.0	2'734.0	3'646.0	4'558.0	5'469.0	6'385.0	7'292.0	8'204.0	9'115.0
<b>420</b>	1'671	3'342	5'013	6'684	8'354	10'025	11'696	13'367	-	-

**SR: single-acting** Torque values in Nm

Type TR	Spring Cartr./ Side	Air Supply in bar												Spring Torque	
		3		4		5		6		7		8		90°	0°
		0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°		
<b>050</b>	3	5.7	3.5	8.9	6.6	12.0	9.6	15.1	12.7	18.1	15.7	21.2	18.8	5.7	3.5
	4			7.7	4.7	10.8	7.7	13.9	10.8	16.9	13.8	20.0	16.9	7.7	4.7
	5					9.6	5.8	12.7	8.9	15.7	11.9	18.8	15.0	9.6	5.8
	6					8.4	3.9	11.5	7.0	14.5	10.0	17.6	13.1	11.5	7.0
<b>063</b>	3	9.4	6.3	14.9	11.7	20.4	17.2	25.9	22.7	31.4	28.2	36.9	33.7	10.2	7.2
	4			12.3	8.3	17.8	13.8	23.3	19.3	28.8	24.8	34.3	30.3	13.7	9.7
	5					15.4	10.4	20.9	15.9	26.4	21.4	31.9	26.9	17.1	12.1
	6					13.0	7.0	18.5	12.5	24.0	18.0	29.5	23.5	20.5	14.5
<b>075</b>	3	22.5	12.6	34.2	24.4	46.0	36.1	57.7	47.8	69.4	59.5	81.1	71.2	22.5	12.6
	4			30.0	16.9	41.8	28.6	53.5	40.3	65.2	52.0	76.9	63.7	30.0	16.9
	5					37.6	21.1	49.3	32.8	61.0	44.5	72.7	56.2	37.6	21.1
	6					33.4	13.6	45.1	25.3	56.8	37.0	68.5	48.7	45.1	25.3
<b>085</b>	3	34.5	18.9	52.4	36.7	70.2	54.5	88.0	72.3	105.8	90.1	123.6	107.9	34.5	18.9
	4			46.1	25.2	63.9	43.0	81.7	60.8	99.5	78.6	117.3	96.4	46.1	25.2
	5					57.6	31.5	75.4	49.3	93.2	67.1	111.0	84.9	57.6	31.5
	6					51.5	20.0	69.1	37.8	86.9	55.6	104.7	73.4	69.1	37.8
<b>100</b>	3	53.2	30.0	80.9	57.7	108.7	85.4	136.4	113.1	164.1	140.8	191.8	168.5	53.2	30.0
	4			70.9	40.0	98.7	67.7	126.4	95.4	154.1	123.1	181.8	150.8	70.9	40.0
	5					88.7	50.0	116.4	77.7	144.1	105.4	171.8	133.1	88.7	50.0
	6					78.7	32.2	106.4	60.0	134.1	87.7	161.8	115.4	106.4	60.0
<b>115</b>	3	84.3	53.0	130.0	98.8	175.8	144.5	221.6	190.3	267.3	236.0	313.0	281.7	84.3	53.0
	4			112.3	70.7	158.1	116.4	203.9	162.2	249.6	207.9	295.3	253.6	112.3	70.7
	5					140.4	88.3	186.2	134.1	231.9	179.8	277.6	225.5	140.4	88.3
	6					122.7	60.2	168.5	106.0	214.2	151.7	259.9	197.4	168.5	106.0
<b>125</b>	3	116.8	63.7	177.0	123.9	237.3	184.1	297.5	244.2	357.6	304.3	417.7	364.4	116.8	63.7
	4			155.7	85.0	216.0	145.2	276.2	205.3	336.3	265.4	396.4	325.5	155.7	85.0
	5					194.7	106.3	254.9	166.4	315.0	226.5	375.1	286.6	194.7	106.3
	6					173.4	74.1	233.6	127.5	293.7	187.6	353.8	247.7	233.6	127.5

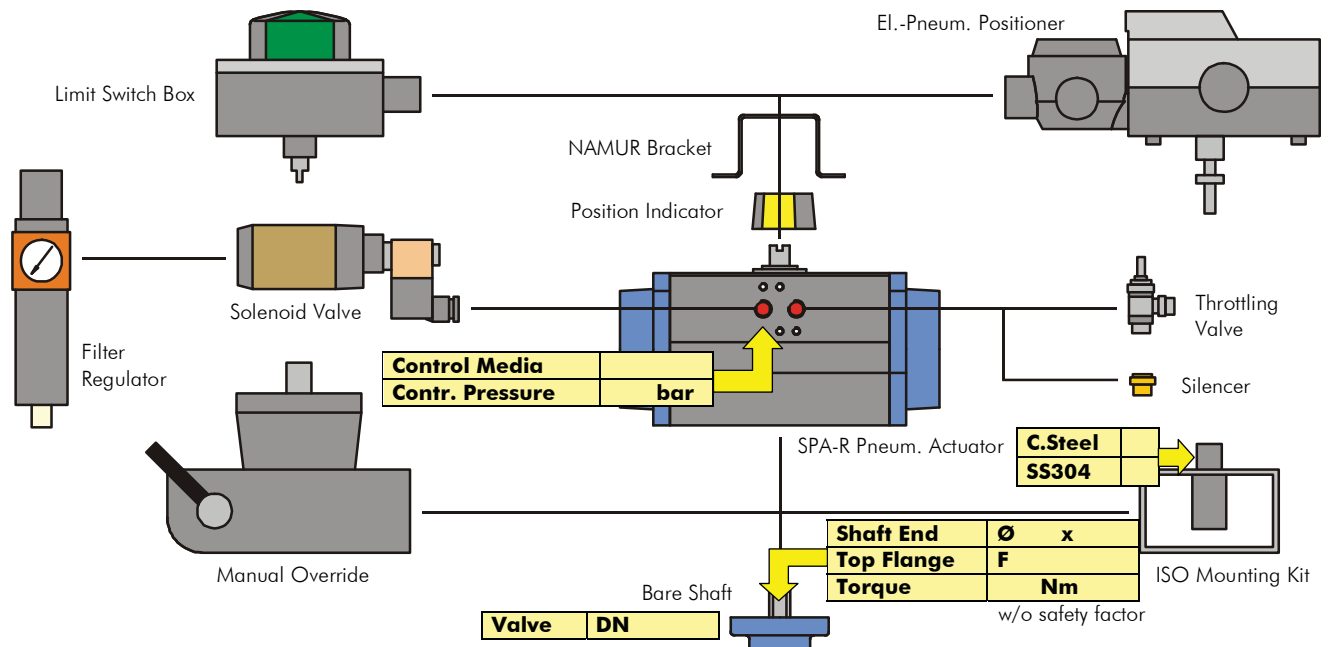
**SR: single-acting** Torque values in Nm

Type <b>TR</b>	Spring Cartr./ Side	Air Supply in bar												Spring Torque	
		<b>3</b>		<b>4</b>		<b>5</b>		<b>6</b>		<b>7</b>		<b>8</b>		90°	0°
		0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°		
<b>160</b>	3	222.4	132.6	340.7	251.0	459.1	369.3	577.4	487.6	695.7	605.9	814.0	724.2	222.4	132.6
	4			296.5	176.9	414.9	295.2	533.2	413.5	651.5	531.8	769.8	650.1	296.5	176.9
	5					370.7	221.1	489.0	339.4	607.3	457.7	725.6	576.0	370.7	221.1
	6					326.5	147.0	444.8	265.3	563.1	383.6	681.4	501.9	444.8	265.3
<b>200</b>	3	423.6	242.0	644.7	463.8	867.4	685.8	1089.0	907.7	1311.0	1130.0	1533.0	1351.0	423.6	242.0
	4			564.8	322.6	786.7	544.6	1008.0	766.5	1230.0	988.4	1452.0	1209.0	564.8	322.6
	5					706.0	403.4	927.9	625.3	1150.0	847.2	1372.0	1068.0	706.0	403.4
	6					625.3	262.2	847.2	484.1	1069.0	706.0	1291.0	927.0	847.2	484.1
<b>270</b>	3	912.5	705.1	1451.7	1244.3	1990.9	1783.5	2530.1	2322.7	3069.3	2861.9	3608.5	3401.1	912.5	705.1
	4			1216.7	940.2	1755.9	1479.4	2295.1	2018.6	2834.3	2557.8	3373.5	3097.0	1216.6	940.1
	5					1520.9	1175.5	2060.1	1714.4	2599.3	2144.4	3138.5	2792.8	1520.8	1175.1
	6					1285.8	871.0	1825.0	1410.2	2364.2	1953.6	2903.4	2488.6	1825.0	1410.2
<b>330</b>	3	1626.5	1108.5	2538.2	2020.1	3450.8	2931.8	4361.5	3843.4	5273.1	4755.1	6184.8	5666.8	1626.5	1108.5
	4			2168.3	1477.3	3080.0	2389.0	3992.6	3301.6	4903.3	4212.3	5815.0	5123.9	2168.3	1477.3
	5					2711.2	1847.1	3622.8	2759.8	4534.5	3670.4	5445.1	4582.1	2711.2	1847.1
	6					2341.3	1305.3	3253.0	2216.9	4165.7	3128.6	5076.3	4040.3	3253.0	2216.9
<b>420</b>	3	2999.0	2014.0	4670.0	3685.0	6340.0	5356.0	8011.0	7026.0	9682.0	8697.0	11353	10368	2999.5	2014.5
	4			3998.0	2685.0	5669.0	4356.0	7340.0	6027.0	9011.0	7698.0	10682	9369	3998.3	2685.3
	5					4998.0	3356.0	6669.0	5027.0	8340.0	6698.0	10010	8369	4998.2	3356.1
	6					4327.0	2357.0	5997.0	4028.0	7668.0	5698.0	9339	7369	5997.0	4028.9

Values in column 0° indicate the maximum available starting torque by means of air supply through connection **A**.

Values in column 90° indicate the minimum available end torque if air supply fails.

## Specification

**Mounting Options**

**Project-/Customer Data**

Inquiry/Date: \_\_\_\_\_

**Ref. SF** \_\_\_\_\_

Company: \_\_\_\_\_

Contact Person: \_\_\_\_\_

Phone: \_\_\_\_\_

Address: \_\_\_\_\_

Function: \_\_\_\_\_

Fax: \_\_\_\_\_

ZIP/Place: \_\_\_\_\_

Department: \_\_\_\_\_

E-mail: \_\_\_\_\_

**Cycle Time**

Min. \_\_\_\_ sec

**Limit Switch Box**
 1 Switch

Max. \_\_\_\_ sec

 2 Switches

**Pilot Valve**
 zero-current OFF Type: \_\_\_\_\_

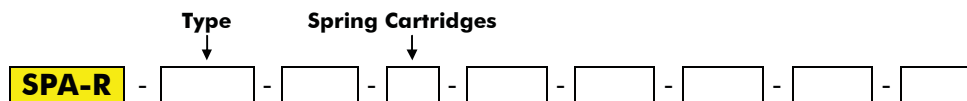
 zero-current ON Voltage \_\_\_\_\_

**Positioner**
 4 – 20 mA

 0.2 – 1.0 bar

**Ex Class**

required

**Specification of a complete Quarter Turn Actuator SPA-R Series**

**Mode of Operation**

<b>DA</b>	double-acting
<b>FC</b>	single-acting (spring to close)
<b>FO</b>	single-acting (spring to open)

**Actuator Options**

<b>LS</b>	Limit Switch Box (Micro)	<b>EP</b>	El.-Pneum. Positioner
<b>LSe</b>	Limit Switch Box (Micro Ex)	<b>EPe</b>	El.-Pneum. Positioner Ex
<b>PS</b>	Limit Switch Box (Proximity)	<b>PP</b>	Pneum. Positioner
<b>PSe</b>	Limit Switch Box (Proximity Ex)		

**Accessories**

<b>Na</b>	NAMUR Bracket or Mounting Kit
<b>SV3</b>	Solenoid Valve 3/2-Way
<b>SV3e</b>	Solenoid Valve 3/2-Way Ex
<b>SV5</b>	Solenoid Valve 5/2-3/2-Way
<b>SV5e</b>	Solenoid Valve 5/2-3/2-Way Ex
<b>Hh</b>	Stroke Limiter/Manual Override
<b>Ad</b>	Adapter (comb. with el. pos. indicator)
<b>Vs</b>	Piping Stainless Steel
<b>Dr</b>	Throttling Valve
<b>Sc</b>	Silencer
<b>Fr</b>	Filter Regulator incl. Pressure Gauge
<b>Ia</b>	ISO Mounting Kit