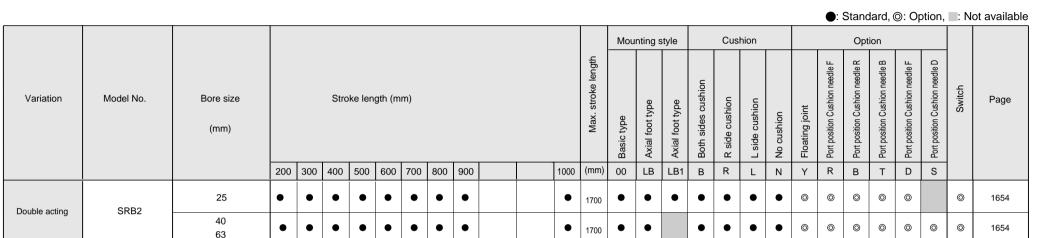
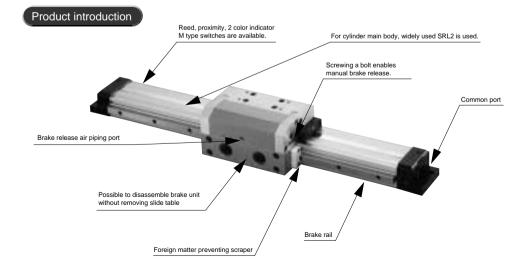
SRB2 series

SCP * 2



Discontinue



1647



Rodless cylinder with brake SRB2 series



Pneumatic Components Safety Precautions

Always read before starting use

Refer to Intro 45 for general details on the cylinder, and to Intro 52 for details on the cylinder switch.

Rodless cylinder with brake SRB2 Series

WARNING

Structure so that nothing directly touches the driven object or movable sections of the cylinder with brakes. Provide a protective cover so that no human body directly

Provide a protective cover so that no numan body directly touches the unit. If parts contact is possible, provide safety measures by placing a sensor to stop the cylinder or sound a warning to report danger.

2 Use a balance circuit considering cylinder protrusion.

(1) When activating brakes at the specified position in the stroke, as with braking, or if pneumatic pressure is applied to only 1 side of the cylinder, the piston protrudes at high speed when brakes are released. This involves risk to personnel and equipment. Use a balance circuit, such as the recommended pneumatic pressure circuit, to prevent protrusion.

(2) The brake cylinder has oilless specifications. Do not lubricate this cylinder. Otherwise, braking faults may occur.

(3) Use pneumatics for the brake section when using the low hydraulic type middle bore size brake cylinder.

Holding force (maximum static load) refers to performance to hold a static load without vibration or impact when brakes are activated in a no-load state. Take care when constantly using near the upper limit of the holding force.

4 During braking, kinetic energy is large and the braking distance is long. Thus, avoid using when brakes may be applied at the stroke limit.

Even if a cushion is provided, the back pressure is released and the cushions may not function. If kinetic energy is large, overrun distance increases and stopping accuracy drops.

5 Do not apply loads with impact, strong vibration, or torque while brakes are activated.

If a load with impact, strong vibration, or torque is applied externally, holding force drops.

6 Consider stopping accuracy and overrun distance when braking.

A mechanical lock is applied, so the cylinder does not stop instantly when the stop signal is issued, but stops with a timewise delay. The stroke at which the cylinder slides due to this delay is the overrun distance. The maximum and minimum width of overrun distance is stopping accuracy.

- To achieve the required stop position, move the limit switch forward by the overrun distance.
- The limit switch must have a detection length (dog length) equivalent to the overrun distance + α .
- When using the CKD cylinder switch, the working range is 7 to 16 mm, depending on the switch. If overrun distance exceeds this, provide self-holding of the contact at the switch load.

Design & Selection

To improve stopping accuracy, minimize keep the time from stop signal output to brake stoppage. Use a high-response DC control electricity circuit or solenoid valve, and set the solenoid valve as close to the cylinder as possible.

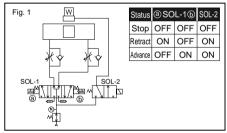
B Stopping accuracy is affected by changes in piston speed.

If piston speed changes due to load fluctuation or disturbance during cylinder reciprocation, stop position dispersion increases. Take measures to keep piston speed constant just before the stop position. Speed changes are large during the acceleration range, compared to during the cushion stroke and when starting operation, so dispersion in the stop position increases.

9 Precautions for basic circuit

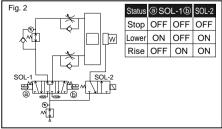
For horizontal load

Pipe as in Fig. 1. When using the rodless cylinder, the section area on both sides of the piston is equal, so the regulator for balancing is not required.



For vertical load

If the load is facing downward as in Fig. 2, the table moves in the direction of the load when brakes are released. Install a regulator with a check valve to reduce thrust in the load direction and balance the load.



(Note 1) If pressure may fluctuate due to other pneumatic components, install a dedicated regulator to stabilize operation.

A WARNING

- Release brakes faster than cylinder operation. If the cylinder operates first, brakes may not be released.
- If back pressure is applied to the locking mechanism, the lock may be released. Use a discrete valve, or use an individual exhaust type manifold.

Design & Selection

- Use a 3-position PAB connection (bi-directional pressurization) valve for the cylinder drive to prevent the piston from protruding when starting.
- Use a regulator with a check valve on the side with large thrust to balance thrust, including load.

A CAUTION

- The cylinder cannot be used where welding spatter, etc., may come in contact
- 2 With the slit rodless cylinder, such as the SRL2, air leaks externally at a level that does not affect speed control.

3 Precautions in stopping accuracy

· Stop pitch and load ratio

Stopping accuracy differs with stop pitch and load ratio. The load ratio below is recommended for achieving specified stopping accuracy.

Stop pitch	Load ratio
50mm or less	20% of thrust
50mm to 100mm	40% of thrust
100mm over	60% of thrust

· Selection of solenoid valve for brake

Stopping accuracy and overrun distance change with the response time of the solenoid valve for brake. Use a solenoid valve in the Device Selection Guide. Couple the solenoid valve to the brake port to improve stopping accuracy.

When using a PLC

If a PLC is used as the electric control unit for the solenoid valve for brake, stopping accuracy drops due to scan time (computing time). When using a PLC, do not assemble the solenoid valve for brake into the PLC circuit.

- Design & Selection
 - Do not make major changes in load weight when stopped with brakes, or the stopping position may change.



Pneumatic Components Safety Precautions

Always read before starting use

Refer to Intro 45 for general details on the cylinder, and to Intro 52 for details on the cylinder switch.

Rodless cylinder with brake SRB2 Series

WARNING

Installation / Adjustment

- If brakes are released when air is pressurized on only 1 side of the cylinder, the piston may protrude at high speed, causing a hazard. Observe the points below when releasing brakes for adjustment, etc.
 - Check that no one is in the movable range of the load and that no problem arises if the load moves when brakes are released.
 - Take the following measures to prevent the load from dropping when brakes are released:
 - · Set the load at the lowering end
 - · Pressurize both sides
 - · Set a support column
 - Confirm that air is not pressured on only one side of the cylinder when releasing brakes.

2 Manually releasing brakes

SRB2 Series

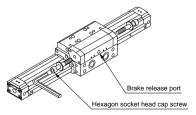
 Brakes are manually released by removing caps on both ends of the brake unit, and screwing in hexagon socket head cap screws from both sides.

Use a plain washer when screwing in the hexagon socket head cap screw to prevent scratching ends.

Bore size	Applicable hexagon socket head cap screw
25 dia.	M5 X 25 ℓ
40 dia.	M5 X 30ℓ
63 dia.	M8 X 40 l



Hexagon socket head cap screw



When using a screw longer than that shown above, use several plain washers.

- Brakes are released manually or by pressurizing the brake release port. If brakes are left released in this state while a load is installed, the load may drop. Return to the initial state after manually releasing brakes or stop the air supply to the brake release port, and confirm that brakes work before installing a load.
- 4 Do not apply brake holding force to the cylinder exceeding that indicated in the catalog.
- If there is any play, such as looseness, in the brake signal dog, stopping accuracy is affected. Securely fix to eliminate play, etc.
- If cylinder speed is fast, the detection dog must be long enough to match relay response time. If the dog is short, the stop signal is not output and operation does not stop.

CAUTION

Installation / Adjustment

Avoid electric welding after installing the rodless cylinder.

If the current flows into the cylinder and generates sparks between the dust-proof belt and cylinder tube, the dust-proof belt may be damaged.

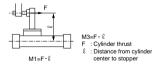
- 2 If a unit with excessive inertia, etc., is moved, the cylinder may be damaged or faulty operation occur. Use only within the allowable range.
- 3 Do not apply strong impact or excessive moment to the table.
- 4 When connecting to a load with external guide mechanism, align the center carefully.
 - The longer the stroke, the greater the shaft center may deviate. Carefully consider connection (floating) so deviation is absorbed.
- **5** Check that moment, including inertia generated when moving or stopping the load, does not exceed the allowable load, or damage may result.

(Overhang is large)

 If overhang is large and the cylinder is stopped at both ends with the piston, the bending moment functions due to load inertia even within internal cushion energy absorption.
 If kinetic energy is large and an external cushion, etc., is used, try contact with the workpiece center of gravity when possible.

(Using an external stopper)

- When selecting an external stopper, consider the bending moment generated by cylinder thrust.
- · Moment that functions when stopping with external stopper



(Using an external guide)

- When an external guide is installed, if cores are not aligned, movement is not smooth and resistance caused by twisting functions as moment. Configure connection so misalignment is absorbed.
- Example of using guide



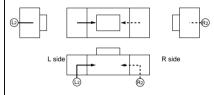
6 Piping port position and operating direction

• For option symbol (blank, R, B, T)



(R) indicates the R side pressure port, and (L) indicates the L side pressure port. Before shipping, all plugs other than one each at (R) and (L) are sealed with plugs. Pipes are connected to other ports by removing plugs. Note that pipes cannot be connected to the bottom. Select options (D, S) if such connection is necessary.

For option symbols (D, S) (bottom piping)



(R) indicates the R side pressure port, and (L) indicates the L side pressure port. There are no ports other than (R2) or (L2), so pipes cannot be connected.

7 Adjust cylinder air balance.

With brakes released, place a load on the cylinder and balance the load by adjusting air pressure applied to the cylinder rod and head. Faults such as cylinder protrusion during brake release or improper brake release are prevented by accurately balancing the load.

B Check the installation position of detectors such as the cylinder switch.

When using braking, consider overrun distance for the required stopping position, and adjust the position of detectors such as the cylinder switch.

9 Load fluctuation during the cylinder reciprocation stroke leads to changes in the piston speed, which in turn increases dispersion in the stop position. Place and adjust so the load does not change just before stopping in the cylinder reciprocation stroke.

Speed changes are large during the cushion stroke range and the acceleration range from starting operation, so dispersion in the stop position increases. Accuracy in specifications may therefore not be attained in step operation with a short stroke from the starting position to the next position. SCP * 2

q

ake



Pneumatic Components Safety Precautions

Always read before starting use

Refer to Intro 45 for general details on the cylinder, and to Intro 52 for details on the cylinder switch.

Rodless cylinder with brake SRB2 Series

WARNING

During use & maintenance

- The brake section can be removed from the cylinder body. Do not disassemble or inspect brakes or hazards may result when brakes are used again.
- 2 The required grease is applied to brakes. Avoid applying extra grease and do not wipe grease off.
- **3** To prevent faults, use a dust cover during operation except when manually releasing brakes.

During use & maintenance

- If the air supply pipe is thin or long, stopping accuracy drops.
- Frictional resistance increases and causes the piston speed to change when the cylinder has been stopped for a long time, such as when using first thing in the morning or afternoon. This may impair stoppage accuracy. Conduct break-in operation to obtain stable stopping accuracy.

Technical data 1) How to install

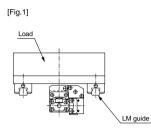
How to install

SRB2 Series

• External guide

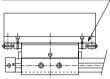
Please use SRB2, basically, combining with a linear bearing such as external LM guide etc. [Fig.1]

For connecting part, provide the structure that enables easy alignment with an external guide, and reduces misalignment to realize smooth motion. [Fig.2]





Misalignment adjustment mechanism



Installation attitude

[Fig.3] shows installation attitude. Brake section cannot be installed underside.

 Vertical installation
 Horizontal installation

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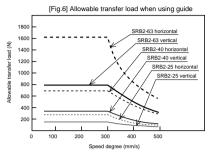
[Fig.3]

SRB2 Series Technical data 2) Allowable load

Allowable load

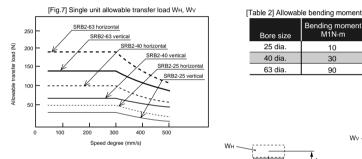
Allowable transfer load when using an external guide

[Fig.6] shows allowable transfer load. Use this product within this value.



• When external guide cannot be used, allowable transfer load.

[Fig.7] shows allowable transfer load. Use this product within this value.



- WH : Load at horizontal installation
- Wv : Load at vertical installation
- M1 : Bending moment

 $M1 = W \times L$





Load factor

Considering thrust efficiency, use this product with load factor 50% or less.

Load factor =
$$\frac{F}{\frac{a}{100} \cdot A} X \ 100 \le 50$$

SRB2-25, 40 ; a=70% SRB2-63

M2

When calculating thrust efficiency, use the following values.

: a=80%

Theoretical thrust table Working pressure MPa Bore size 0.2 0.4 n 0.3 0.5 0.6 0.7 25 dia. 98 147 196 245 295 344 40 dia 251 377 503 628 754 880 63 dia. 468 935 1247 1559 1870 623 2182

Bending moment M1N·m

10

30

90

W١

П¢

Unit: N

Bore size

25 dia

40 dia

63 dia

CMK2 CMA2 SCM SCA2 SCS CKV2 CAV2/ COV * CAT MDC2 MVC SMD2 MSD/ MSDG SSD SSD (large) FC * ULKP/ ULK JSK2/ JSM2 JSC3 (medium) JSC3 (large) JSB3 UCAC STS STL LCS LCY STR2 UCA2 STK USSD USC MFC GLC SHC CAC3 HCM HCA MRL2 SRL2 SRG SRM SRT SRB2 Rodless type Rodless cylinder with) brake

SCP * 2





• Bore size : 25, 40, 63 mm bore

JIS symbol	_



CAD DATA AVAILABLE.

Specifications

Description	s	SRB2 (standard type/with switch)								
Bore size	mm	25 dia.	40 dia.	63 dia.						
Actuation		Double acting								
Working fluid	1	Compressed air								
Max. working p	ressure MPa		0.7							
Min. working	Cylinder section MPa	C	0.2	0.15						
Pressure	Brake section MPa		0.29							
Withstanding p	ressure MPa	1.05								
Ambient temp	erature °C	5 to 60								
Port size	Cylinder section	Rc ¹ /8	Rc ¹ /4	Rc ³ /8						
Port size	Brake section	R	c ¹ /8	Rc1/4						
Stroke length to	blerance mm	$^{+2.0}_{0}$ (to 1000) $^{+2.5}_{0}$ (to 1000)								
Working piston	speed mm/s	50 to 1000								
Cushion			Air cushion							
Lubrication		(tur Not required	bine oil Class 1 ISOVG3	2 should be used.						
Lubrication		Not required	Continue to lubricate on	ce lubricated.)						
Stoppage acc	uracy mm		±1 (300mm/s at no load)) Note						
Holding forc	e N	313	313 800 1989							

Note: Stoppage accuracy varies depending on conditions.

Allowable energy absorption

Bore size	Cush	ioned	No cushion	With shock absorber (Initial set value)						
(mm)	Allowable energy absorption (J)	Cushion stroke length (mm)	Allowable energy absorption (J)	Absorbed energy (J)	Effective stroke length (mm)					
25 dia.	1.40	20.9	0.015	10	9					
40 dia.	4.27	23.9	0.050	50	16.5					
63 dia.	17.4	29.6	0.138	86	21					

Stroke length

Bore size (mm)	Standard stroke length (mm)	Max. stroke length (mm)
25 dia.	200, 300, 400	
40 dia.	500, 600, 700	1700
63 dia.	800, 900, 1000	



Specifications

Switch specifications One color/bi-color indicator/strong magnetic field

Descriptions	Prox	imity 2 wire	Proximit	Proximity 2 wire								
	M2V, M2H	M2WV (2 color indicator)	M3V, M3H	M3WV (2 color indicator)	T2YD							
Applications	Program	mable controller	Programmable controller, relay,	IC circuit, small solenoid valve	Programmable controller							
Power voltage		-	DC4.5 to 28V	DC10 to 28V	-							
Load voltage	DC	10 to 30V	DC30V or less	DC30V or less	DC24V ±10%							
Load current	5	to 30mA	200mA or less	150mA or less	5 to 20mA							
Light	LED	Red/green LED	LED (ON lighting)	Red/green LED	Red/green LED							
Light	(ON lighting)	(ON lighting)	LED (ON lighting)	(ON lighting)	(ON lighting)							

Descriptions		Reed 2 wire										
	M0V,	M0H	M5V, M5H									
Applications	Programmable	controller, relay	Programmable controller, relay, IC circuit	grammable controller, relay, IC circuit (without indicator light), serial connection								
Power voltage												
Load voltage	DC12/24V	AC110V	DC24V or less	AC110V or less								
Load current	5 to 50mA	7 to 20mA	50mA or less 20mA or less									
Light	LED (ON	lighting)	Without indicator light									

Note 1: When load current range is within 7 to 20mA, M0 * switch can be used with AC24V, and AC48V. Note 2: Please refer to Ending 1 about other switch specifications.

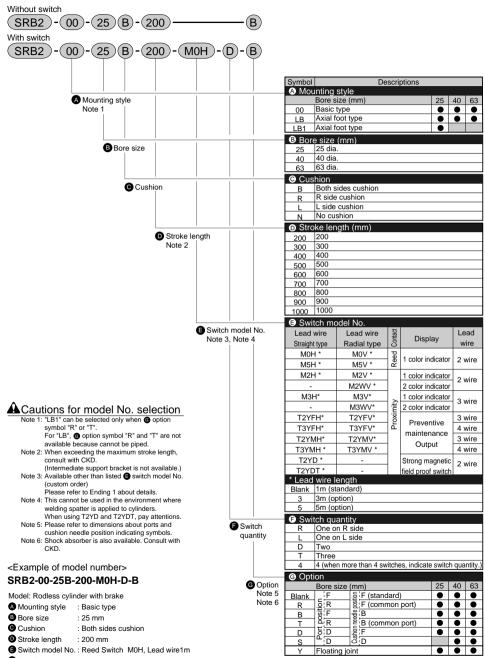
• With preventive maintenance output

Descriptions		Proximity 3 wire	Proximity 4 wire	Proximity 3 wire	Proximity 4 wire						
Desc	npuons	T2YFH/V	T3YFH/V	T2YFH/V T3YFH/V lay Programmable controller Programmable controller, rel ED (ON lighting)							
Applic		Programmable controller	Programmable controller, relay	Programmable controller	Programmable controller, relay						
ht	Installation position adjustment	Red/green LED (ON lighting)									
. <u>P</u>	Preventive maintenance output	-		Yellow LED	(ON lighting)						
Ħ	Current voltage	-	DC10 to 28V	-	DC10 to 28V						
Output	Load voltage	DC10 to 30V	DC30V or less	DC10 to 30V	DC30V or less						
0	Load current	DC5 to 20mA	DC50mA or less	DC5 to 20mA	DC50mA or less						
Preventive	Load voltage		DC30V	or less							
output	Load current	DC20mA or less	DC50mA or less	DC5 to 20mA	DC50mA or less						

Cylinder mass				Unit: kg		
	Ma	Additional mass				
Bore size (mm)	Basic type	Foot type	Mass per switch	per stroke		
	(00)	(LB)	(Including bracket)	length = 100mm		
25 dia.	2.6	2.7		0.45		
40 dia.	6.3	6.4	0.02	0.62		
63 dia.	17.5	17.8	0.02	1.48		

SRB2 Series

How to order

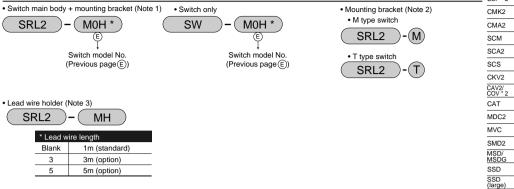


- Switch quantity : Two
- G Option : Port position F, cushion needle



How to order

How to order switch



(Note 1) Switch main body + mounting bracket doesn't include any lead wire holder. When lead wire holder is necessary, place an order separately. (Note 2) For M and T type switches, these brackets are different. (Note 3) For lead wire holder, 10 pieces/1set.

How to order floating joint set

Mount, mount base, pin, plain washer, pan head machine screw with spring washer, 4 mounting bolts

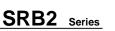
How to order repair parts

(SRB2)-(Bore size)K-(Stroke length

How to order mounting bracket

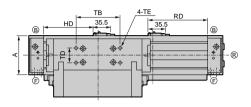
(SRL2 – (Mounting style (LB, LB1)) – (Bore size)

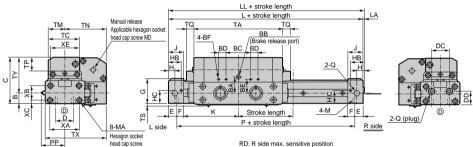
(Two brackets, 4 mounting bolts)



Dimensions

•SRB2- ** - ** - *** - M * H with cylinder switch (File name: Page 1662 or Ending 152) (Axial lead wire)



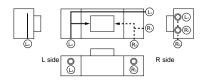


HD: L side max. sensitive position

Bore size	^	в	с	D	Е	F	G	н	J	к		м		Р	Q	тл	тр	тс	тп	т	=	тм	ты	тр	то	тѕ	тv	ту		
			_						-																					
25 dia.	53	17	71	20	14	10	40.5	1.5	24	90	228	M6 de	epth 9	200	Rc1/8	146	70	47	20	M5 de	oth 12	24	64	18	11	8	90.5	54		
40 dia.	80	22	95	36	17	14	51.5	13	31	111	284	M8 de	pth 12	250	Rc1/4	180	90	64	30	M6 de	pth 15	34	85	28	16	5	125	73		
63 dia.	118	35	142	50	19	20	74	15	39	150	378	M10 depth 15		340	Rc3/8	252	110	95	40	M8 de	oth 20	51	125	47	16	2	184	107		
						1						l I					ľ			1							With s	switch		
																												Р	Р	
Bore size	BA	BB	BC	BD	BE	B	F	DC	DD	HB	HC	LA	L	L	XA	ΧВ	XC	XE MA		IA MD		D	HD	RD	M*V	М°Н	T'V	T'H		
25 dia.	28.5	Rc1/8	46	15	25.5	M4 de	epth 6	26	19	20	18.9	2	2 230		38	23	5.5	40	M5 2	X 30	M5)	〈 25			34.5		41	38		
40 dia.	33	Rc1/8	50	15	28	M4 de	epth 6	35	28	26	27	2.5	28	6.5	60	30	7	58	M6 2	X 35	M5)	〈 30	100	122	48.5	50	55	52		
63 dia.	45	Rc1/4	70	20	39	M5 de	epth 8	39	42	32	43	2.5			96	42	14	90	M8 2	X 45	M8)	〈 40	139	161	67.5	69	74	71		

Piping port position and operational direction

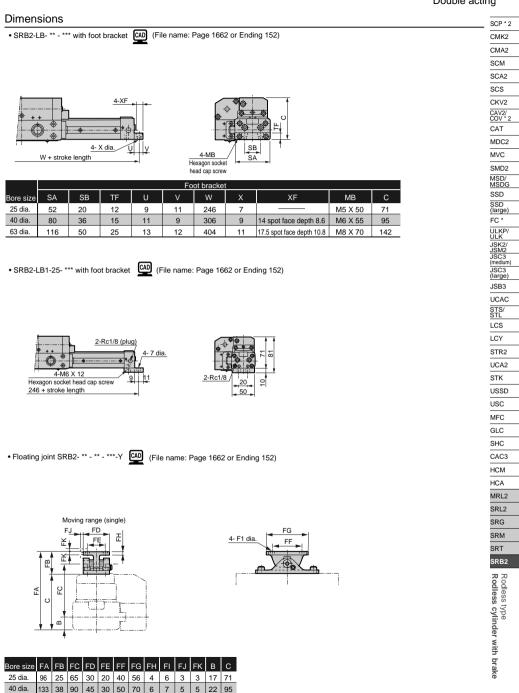
• When option symbol (blank, R, B, T)



(R) shows R side pressure port, and (L) shows L side pressure port. Ports other than (R) and (L) are plugged at shipment. Removing plug enables piping to other ports. When option symbol (D. S), refer to Page 1485 about (bottom side piping) rodless cylinder SRL2 series.

SRB2 Series

Double acting



63 dia.

186 44 126 60 40 70 90

8 9 5

5 35 142