



DDA Series DYNA Tie-Rod Actuators

Wide product range tie-rod type medium-size actuators. Mounting types conform to ISO standards. New cushion needles and floating packing makes the series easier to use.

- 8 Mounting Configurations
- End of Stroke Locking Available
- 1500 mm Max. Stroke
- Heat Resistant Models Available
- Braking Function
- RoHS Compliance

Improve the performance and reduce the size of your next generation machine. Koganei sets the standard for supplying innovative high-quality solutions with unmatched reliability. Optimized designs, with a wide variety of styles and sizes, increase speed to market as well as provide solutions for most applications. Expedite deliveries with product stocked in the USA.

KOGANEI is committed to your success from concept, to initial design, to final delivery and beyond.

Operations

Double Acting	Double Acting Brake	Double Acting Double Rod	Double Acting Double Rod Non-Rotating
Double Acting Dual Stroke	Double Acting End Keep Head Side or Rod Side	Double Acting Heat Resistant	Double Acting Low Pressure Hydraulic
Double Acting Non-Rotating	Double Acting Tandem	Double Acting Valpack	Double Acting with Pull Side Stroke Adjusting
Double Acting with Push Side Stroke Adjusting			

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Model	Operation	Bore mm	Standard Strokes mm [in]	Max Stroke mm [in]	Port Size metric [imperial]	Max Force - Push N [lbf]	Max Force - Pull N [lbf]	Speed Range mm/s [in/s]	Pressure Range MPa [psi]	Temperature Range °C [°F]
DDA	Double Acting	32	50 - 700 [upon request]	700 [27.6]	Rc 1/8 [upon request]	804 [181]	690 [155]	30 - 800 [1.2 - 31.5]	0.05 - 1 [7.3 - 145.0]	-10 - 70 [14 - 158]
DDA	Double Acting	40	50 - 800 [upon request]	800 [31.5]	Rc 1/4 [upon request]	1,256 [282]	1,055 [237]	30 - 700 [1.2 - 27.6]	0.05 - 1 [7.3 - 145.0]	-10 - 70 [14 - 158]
DDA	Double Acting	50	50 - 800 [upon request]	800 [31.5]	Rc 3/8 [upon request]	1,963 [441]	1,649 [371]	30 - 700 [1.2 - 27.6]	0.05 - 1 [7.3 - 145.0]	-10 - 70 [14 - 158]
DDA	Double Acting	63	50 - 1000 [upon request]	1000 [39.4]	Rc 3/8 [upon request]	3,117 [701]	2,803 [630]	30 - 700 [1.2 - 27.6]	0.05 - 1 [7.3 - 145.0]	-10 - 70 [14 - 158]
DDA	Double Acting	80	50 - 1000 [upon request]	1000 [39.4]	Rc 1/2 [upon request]	5,026 [1,130]	4,536 [1,020]	30 - 700 [1.2 - 27.6]	0.05 - 1 [7.3 - 145.0]	-10 - 70 [14 - 158]

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Model	Operation	Bore mm	Standard Strokes mm [in]	Max Stroke mm [in]	Port Size metric [imperial]	Max Force - Push N [lbf]	Max Force - Pull N [lbf]	Speed Range mm/s [in/s]	Pressure Range MPa [psi]	Temperature Range °C [°F]
DDA	Double Acting	100	50 - 1000 [upon request]	1000 [39.4]	Rc 1/2 [upon request]	7,853 [1,765]	7,147 [1,607]	30 - 700 [1.2 - 27.6]	0.05 - 1 [7.3 - 145.0]	-10 - 70 [14 - 158]
DDA	Double Acting	125	50 - 1000 [upon request]	1000 [39.4]	Rc 1/2 [upon request]	12,271 [2,759]	11,310 [2,543]	30 - 700 [1.2 - 27.6]	0.05 - 1 [7.3 - 145.0]	-10 - 70 [14 - 158]
DDAR	Double Acting Brake	40	50 - 800 [upon request]	1000 [39.4]	Rc 1/4 [upon request]	1,256 [282]	1,055 [237]	50 - 300 [2.0 - 11.8]	0.1 - 1 [14.5 - 145.0]	5 - 60 [41 - 140]
DDAR	Double Acting Brake	50	50 - 1000 [upon request]	1500 [59.1]	Rc 3/8 [upon request]	1,963 [441]	1,649 [371]	50 - 300 [2.0 - 11.8]	0.1 - 1 [14.5 - 145.0]	5 - 60 [41 - 140]
DDAR	Double Acting Brake	63	50 - 1000 [upon request]	1500 [59.1]	Rc 3/8 [upon request]	3,117 [701]	2,803 [630]	50 - 300 [2.0 - 11.8]	0.1 - 1 [14.5 - 145.0]	5 - 60 [41 - 140]
DDAR	Double Acting Brake	80	50 - 1000 [upon request]	1500 [59.1]	Rc 1/2 [upon request]	5,026 [1,130]	4,536 [1,020]	50 - 300 [2.0 - 11.8]	0.1 - 1 [14.5 - 145.0]	5 - 60 [41 - 140]
DDAR	Double Acting Brake	100	50 - 1000 [upon request]	1500 [59.1]	Rc 1/2 [upon request]	7,853 [1,765]	7,147 [1,607]	50 - 300 [2.0 - 11.8]	0.1 - 1 [14.5 - 145.0]	5 - 60 [41 - 140]
DDAD	Double Acting Double Rod	32	50 - 500 [upon request]	500 [19.7]	Rc 1/8 [upon request]	690 [155]	690 [155]	50 - 700 [2.0 - 27.6]	0.1 - 1 [14.5 - 145.0]	-10 - 70 [14 - 158]
DDAD	Double Acting Double Rod	40	50 - 800 [upon request]	800 [31.5]	Rc 1/4 [upon request]	1,055 [237]	1,055 [237]	50 - 700 [2.0 - 27.6]	0.1 - 1 [14.5 - 145.0]	-10 - 70 [14 - 158]
DDAD	Double Acting Double Rod	50	50 - 800 [upon request]	800 [31.5]	Rc 3/8 [upon request]	1,649 [371]	1,649 [371]	50 - 700 [2.0 - 27.6]	0.1 - 1 [14.5 - 145.0]	-10 - 70 [14 - 158]
DDAD	Double Acting Double Rod	63	50 - 1000 [upon request]	1000 [39.4]	Rc 3/8 [upon request]	2,803 [630]	2,803 [630]	50 - 700 [2.0 - 27.6]	0.1 - 1 [14.5 - 145.0]	-10 - 70 [14 - 158]
DDAD	Double Acting Double Rod	80	50 - 1000 [upon request]	1000 [39.4]	Rc 1/2 [upon request]	4,536 [1,020]	4,536 [1,020]	50 - 700 [2.0 - 27.6]	0.1 - 1 [14.5 - 145.0]	-10 - 70 [14 - 158]
DDAD	Double Acting Double Rod	100	50 - 1000 [upon request]	1000 [39.4]	Rc 1/2 [upon request]	7,147 [1,607]	7,147 [1,607]	50 - 700 [2.0 - 27.6]	0.1 - 1 [14.5 - 145.0]	-10 - 70 [14 - 158]
DDAD	Double Acting Double Rod	125	50 - 1000 [upon request]	1000 [39.4]	Rc 1/2 [upon request]	11,310 [2,543]	11,310 [2,543]	50 - 700 [2.0 - 27.6]	0.1 - 1 [14.5 - 145.0]	-10 - 70 [14 - 158]
DDADL	Double Acting Double Rod Non-Rotating	40	50 - 500 [upon request]	500 [19.7]	Rc 1/4 [upon request]	1,055 [237]	1,055 [237]	50 - 500 [2.0 - 19.7]	0.15 - 1 [21.8 - 145.0]	-10 - 70 [14 - 158]

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Model	Operation	Bore mm	Standard Strokes mm [in]	Max Stroke mm [in]	Port Size metric [imperial]	Max Force - Push N [lbf]	Max Force - Pull N [lbf]	Speed Range mm/s [in/s]	Pressure Range MPa [psi]	Temperature Range °C [°F]
DDADL	Double Acting Double Rod Non-Rotating	50	50 - 500 [upon request]	500 [19.7]	Rc 3/8 [upon request]	1,649 [371]	1,649 [371]	50 - 500 [2.0 - 19.7]	0.15 - 1 [21.8 - 145.0]	-10 - 70 [14 - 158]
DDADL	Double Acting Double Rod Non-Rotating	63	50 - 500 [upon request]	500 [19.7]	Rc 3/8 [upon request]	2,803 [630]	2,803 [630]	50 - 500 [2.0 - 19.7]	0.15 - 1 [21.8 - 145.0]	-10 - 70 [14 - 158]
DDADL	Double Acting Double Rod Non-Rotating	80	50 - 500 [upon request]	500 [19.7]	Rc 1/2 [upon request]	4,536 [1,020]	4,536 [1,020]	50 - 500 [2.0 - 19.7]	0.15 - 1 [21.8 - 145.0]	-10 - 70 [14 - 158]
DDADL	Double Acting Double Rod Non-Rotating	100	50 - 500 [upon request]	500 [19.7]	Rc 1/2 [upon request]	7,147 [1,607]	7,147 [1,607]	50 - 500 [2.0 - 19.7]	0.15 - 1 [21.8 - 145.0]	-10 - 70 [14 - 158]
DDAW	Double Acting Dual Stroke	40	50 - 450 [upon request]	800 [31.5]	Rc 1/4 [upon request]	1,256 [282]	1,055 [237]	30 - 700 [1.2 - 27.6]	0.05 - 1 [7.3 - 145.0]	-10 - 70 [14 - 158]
DDAW	Double Acting Dual Stroke	50	50 - 500 [upon request]	1000 [39.4]	Rc 3/8 [upon request]	1,963 [441]	1,649 [371]	30 - 700 [1.2 - 27.6]	0.05 - 1 [7.3 - 145.0]	-10 - 70 [14 - 158]
DDAW	Double Acting Dual Stroke	63	50 - 500 [upon request]	1000 [39.4]	Rc 3/8 [upon request]	3,117 [701]	2,803 [630]	30 - 700 [1.2 - 27.6]	0.05 - 1 [7.3 - 145.0]	-10 - 70 [14 - 158]
DDAW	Double Acting Dual Stroke	80	50 - 700 [upon request]	1000 [39.4]	Rc 1/2 [upon request]	5,026 [1,130]	4,536 [1,020]	30 - 700 [1.2 - 27.6]	0.05 - 1 [7.3 - 145.0]	-10 - 70 [14 - 158]
DDAW	Double Acting Dual Stroke	100	50 - 700 [upon request]	1000 [39.4]	Rc 1/2 [upon request]	7,853 [1,765]	7,147 [1,607]	30 - 700 [1.2 - 27.6]	0.05 - 1 [7.3 - 145.0]	-10 - 70 [14 - 158]
DDAK	Double Acting End Keep Head Side or Rod Side	40	50 - 800 [upon request]	1000 [39.4]	Rc 1/4 [upon request]	1,256 [282]	1,055 [237]	30 - 700 [1.2 - 27.6]	0.15 - 1 [21.8 - 145.0]	-10 - 70 [14 - 158]
DDAK	Double Acting End Keep Head Side or Rod Side	50	50 - 1000 [upon request]	1500 [59.1]	Rc 3/8 [upon request]	1,963 [441]	1,649 [371]	30 - 700 [1.2 - 27.6]	0.15 - 1 [21.8 - 145.0]	-10 - 70 [14 - 158]
DDAK	Double Acting End Keep Head Side or Rod Side	63	50 - 1000 [upon request]	1500 [59.1]	Rc 3/8 [upon request]	3,117 [701]	2,803 [630]	30 - 700 [1.2 - 27.6]	0.15 - 1 [21.8 - 145.0]	-10 - 70 [14 - 158]
DDAK	Double Acting End Keep Head Side or Rod Side	80	50 - 1000 [upon request]	1500 [59.1]	Rc 1/2 [upon request]	5,026 [1,130]	4,536 [1,020]	30 - 700 [1.2 - 27.6]	0.15 - 1 [21.8 - 145.0]	-10 - 70 [14 - 158]
DDAK	Double Acting End Keep Head Side or Rod Side	100	50 - 1000 [upon request]	1500 [59.1]	Rc 1/2 [upon request]	7,853 [1,765]	7,147 [1,607]	30 - 700 [1.2 - 27.6]	0.15 - 1 [21.8 - 145.0]	-10 - 70 [14 - 158]
DDAF	Double Acting Heat Resistant	32	50 - 700 [upon request]	700 [27.6]	Rc 1/8 [upon request]	804 [181]	690 [155]	30 - 800 [1.2 - 31.5]	0.05 - 1 [7.3 - 145.0]	5 - 120 [41 - 248]

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Model	Operation	Bore mm	Standard Strokes mm [in]	Max Stroke mm [in]	Port Size metric [imperial]	Max Force - Push N [lbf]	Max Force - Pull N [lbf]	Speed Range mm/s [in/s]	Pressure Range MPa [psi]	Temperature Range °C [°F]
DDAF	Double Acting Heat Resistant	40	50 - 800 [upon request]	800 [31.5]	Rc 1/4 [upon request]	1,256 [282]	1,055 [237]	30 - 700 [1.2 - 27.6]	0.05 - 1 [7.3 - 145.0]	5 - 120 [41 - 248]
DDAF	Double Acting Heat Resistant	50	50 - 800 [upon request]	800 [31.5]	Rc 3/8 [upon request]	1,963 [441]	1,649 [371]	30 - 700 [1.2 - 27.6]	0.05 - 1 [7.3 - 145.0]	5 - 120 [41 - 248]
DDAF	Double Acting Heat Resistant	63	50 - 1000 [upon request]	1000 [39.4]	Rc 3/8 [upon request]	3,117 [701]	2,803 [630]	30 - 700 [1.2 - 27.6]	0.05 - 1 [7.3 - 145.0]	5 - 120 [41 - 248]
DDAF	Double Acting Heat Resistant	80	50 - 1000 [upon request]	1000 [39.4]	Rc 1/2 [upon request]	5,026 [1,130]	4,536 [1,020]	30 - 700 [1.2 - 27.6]	0.05 - 1 [7.3 - 145.0]	5 - 120 [41 - 248]
DDAF	Double Acting Heat Resistant	100	50 - 1000 [upon request]	1000 [39.4]	Rc 1/2 [upon request]	7,853 [1,765]	7,147 [1,607]	30 - 700 [1.2 - 27.6]	0.05 - 1 [7.3 - 145.0]	5 - 120 [41 - 248]
DDAF	Double Acting Heat Resistant	125	50 - 1000 [upon request]	1000 [39.4]	Rc 1/2 [upon request]	12,271 [2,759]	11,310 [2,543]	30 - 700 [1.2 - 27.6]	0.05 - 1 [7.3 - 145.0]	5 - 120 [41 - 248]
DDAH	Double Acting Low Pressure Hydraulic	32	50 - 700 [upon request]	700 [27.6]	Rc 1/8 [upon request]	804 [181]	690 [155]	1 - 150 [0.0 - 5.9]	0.2 - 1 [29.0 - 145.0]	0 - 60 [32 - 140]
DDAH	Double Acting Low Pressure Hydraulic	40	50 - 800 [upon request]	1000 [39.4]	Rc 1/4 [upon request]	1,256 [282]	1,055 [237]	1 - 150 [0.0 - 5.9]	0.2 - 1 [29.0 - 145.0]	0 - 60 [32 - 140]
DDAH	Double Acting Low Pressure Hydraulic	50	50 - 800 [upon request]	1500 [59.1]	Rc 3/8 [upon request]	1,963 [441]	1,649 [371]	1 - 150 [0.0 - 5.9]	0.2 - 1 [29.0 - 145.0]	0 - 60 [32 - 140]
DDAH	Double Acting Low Pressure Hydraulic	63	50 - 1000 [upon request]	1500 [59.1]	Rc 3/8 [upon request]	3,117 [701]	2,803 [630]	1 - 150 [0.0 - 5.9]	0.2 - 1 [29.0 - 145.0]	0 - 60 [32 - 140]
DDAH	Double Acting Low Pressure Hydraulic	80	50 - 1000 [upon request]	1500 [59.1]	Rc 1/2 [upon request]	5,026 [1,130]	4,536 [1,020]	1 - 150 [0.0 - 5.9]	0.2 - 1 [29.0 - 145.0]	0 - 60 [32 - 140]
DDAH	Double Acting Low Pressure Hydraulic	100	50 - 1000 [upon request]	1500 [59.1]	Rc 1/2 [upon request]	7,853 [1,765]	7,147 [1,607]	1 - 150 [0.0 - 5.9]	0.2 - 1 [29.0 - 145.0]	0 - 60 [32 - 140]
DDAL	Double Acting Non-Rotating	40	50 - 500 [upon request]	500 [19.7]	Rc 1/4 [upon request]	1,256 [282]	1,055 [237]	50 - 500 [2.0 - 19.7]	0.1 - 1 [14.5 - 145.0]	-10 - 70 [14 - 158]
DDAL	Double Acting Non-Rotating	50	50 - 500 [upon request]	500 [19.7]	Rc 3/8 [upon request]	1,963 [441]	1,649 [371]	50 - 500 [2.0 - 19.7]	0.1 - 1 [14.5 - 145.0]	-10 - 70 [14 - 158]
DDAL	Double Acting Non-Rotating	63	50 - 500 [upon request]	500 [19.7]	Rc 3/8 [upon request]	3,117 [701]	2,803 [630]	50 - 500 [2.0 - 19.7]	0.1 - 1 [14.5 - 145.0]	-10 - 70 [14 - 158]

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Model	Operation	Bore mm	Standard Strokes mm [in]	Max Stroke mm [in]	Port Size metric [imperial]	Max Force - Push N [lbf]	Max Force - Pull N [lbf]	Speed Range mm/s [in/s]	Pressure Range MPa [psi]	Temperature Range °C [°F]
DDAL	Double Acting Non-Rotating	80	50 - 500 [upon request]	500 [19.7]	Rc 1/2 [upon request]	5,026 [1,130]	4,536 [1,020]	50 - 500 [2.0 - 19.7]	0.1 - 1 [14.5 - 145.0]	-10 - 70 [14 - 158]
DDAL	Double Acting Non-Rotating	100	50 - 500 [upon request]	500 [19.7]	Rc 1/2 [upon request]	7,853 [1,765]	7,147 [1,607]	50 - 500 [2.0 - 19.7]	0.1 - 1 [14.5 - 145.0]	-10 - 70 [14 - 158]
DDAT	Double Acting Tandem	40	0 - 400 [upon request]	800 [31.5]	Rc 1/4 [upon request]	2,512 [565]	1,055 [237]	30 - 700 [1.2 - 27.6]	0.05 - 0.7 [7.3 - 101.5]	-10 - 70 [14 - 158]
DDAT	Double Acting Tandem	50	0 - 450 [upon request]	1000 [39.4]	Rc 3/8 [upon request]	3,926 [883]	1,649 [371]	30 - 700 [1.2 - 27.6]	0.05 - 0.7 [7.3 - 101.5]	-10 - 70 [14 - 158]
DDAT	Double Acting Tandem	63	0 - 450 [upon request]	1000 [39.4]	Rc 3/8 [upon request]	6,234 [1,402]	2,803 [630]	30 - 700 [1.2 - 27.6]	0.05 - 0.7 [7.3 - 101.5]	-10 - 70 [14 - 158]
DDAT	Double Acting Tandem	80	0 - 650 [upon request]	1000 [39.4]	Rc 1/2 [upon request]	10,052 [2,260]	4,536 [1,020]	30 - 700 [1.2 - 27.6]	0.05 - 0.7 [7.3 - 101.5]	-10 - 70 [14 - 158]
DDAT	Double Acting Tandem	100	0 - 650 [upon request]	1000 [39.4]	Rc 1/2 [upon request]	15,706 [3,531]	7,147 [1,607]	30 - 700 [1.2 - 27.6]	0.05 - 0.7 [7.3 - 101.5]	-10 - 70 [14 - 158]
DDV	Double Acting Valpack	40	50 - 800 [upon request]	1000 [39.4]	Rc 3/8 [upon request]	1,256 [282]	1,055 [237]	50 - 500 [2.0 - 19.7]	0.17 - 0.7 [24.7 - 101.5]	5 - 50 [41 - 122]
DDV	Double Acting Valpack	50	50 - 1000 [upon request]	1500 [59.1]	Rc 3/8 [upon request]	1,963 [441]	1,649 [371]	50 - 500 [2.0 - 19.7]	0.17 - 0.7 [24.7 - 101.5]	5 - 50 [41 - 122]
DDV	Double Acting Valpack	63	50 - 1000 [upon request]	1500 [59.1]	Rc 3/8 [upon request]	3,117 [701]	2,803 [630]	50 - 500 [2.0 - 19.7]	0.17 - 0.7 [24.7 - 101.5]	5 - 50 [41 - 122]
DDV	Double Acting Valpack	80	50 - 1000 [upon request]	1500 [59.1]	Rc 3/8 [upon request]	5,026 [1,130]	4,536 [1,020]	50 - 500 [2.0 - 19.7]	0.17 - 0.7 [24.7 - 101.5]	5 - 50 [41 - 122]
DDV	Double Acting Valpack	100	50 - 1000 [upon request]	1500 [59.1]	Rc 3/8 [upon request]	7,853 [1,765]	7,147 [1,607]	50 - 500 [2.0 - 19.7]	0.17 - 0.7 [24.7 - 101.5]	5 - 50 [41 - 122]
DDAP	Double Acting with Pull Side Stroke Adjusting	40	50 - 800 [upon request]	1000 [39.4]	Rc 1/4 [upon request]	1,256 [282]	1,055 [237]	30 - 700 [1.2 - 27.6]	0.05 - 1 [7.3 - 145.0]	-10 - 70 [14 - 158]
DDAP	Double Acting with Pull Side Stroke Adjusting	50	50 - 800 [upon request]	1000 [39.4]	Rc 3/8 [upon request]	1,963 [441]	1,649 [371]	30 - 700 [1.2 - 27.6]	0.05 - 1 [7.3 - 145.0]	-10 - 70 [14 - 158]
DDAP	Double Acting with Pull Side Stroke Adjusting	63	50 - 800 [upon request]	1000 [39.4]	Rc 3/8 [upon request]	3,117 [701]	2,803 [630]	30 - 700 [1.2 - 27.6]	0.05 - 1 [7.3 - 145.0]	-10 - 70 [14 - 158]

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Model	Operation	Bore mm	Standard Strokes mm [in]	Max Stroke mm [in]	Port Size metric [imperial]	Max Force - Push N [lbf]	Max Force - Pull N [lbf]	Speed Range mm/s [in/s]	Pressure Range MPa [psi]	Temperature Range °C [°F]
DDAP	Double Acting with Pull Side Stroke Adjusting	80	50 - 1000 [upon request]	1500 [59.1]	Rc 1/2 [upon request]	5,026 [1,130]	4,536 [1,020]	30 - 700 [1.2 - 27.6]	0.05 - 1 [7.3 - 145.0]	-10 - 70 [14 - 158]
DDAP	Double Acting with Pull Side Stroke Adjusting	100	50 - 1000 [upon request]	1500 [59.1]	Rc 1/2 [upon request]	7,853 [1,765]	7,147 [1,607]	30 - 700 [1.2 - 27.6]	0.05 - 1 [7.3 - 145.0]	-10 - 70 [14 - 158]
DDAE	Double Acting with Push Side Stroke Adjusting	40	50 - 700 [upon request]	700 [27.6]	Rc 1/4 [upon request]	1,256 [282]	1,055 [237]	50 - 700 [2.0 - 27.6]	0.05 - 1 [7.3 - 145.0]	-10 - 70 [14 - 158]
DDAE	Double Acting with Push Side Stroke Adjusting	50	50 - 700 [upon request]	700 [27.6]	Rc 3/8 [upon request]	1,963 [441]	1,649 [371]	50 - 700 [2.0 - 27.6]	0.05 - 1 [7.3 - 145.0]	-10 - 70 [14 - 158]
DDAE	Double Acting with Push Side Stroke Adjusting	63	50 - 700 [upon request]	700 [27.6]	Rc 3/8 [upon request]	3,117 [701]	2,803 [630]	50 - 700 [2.0 - 27.6]	0.05 - 1 [7.3 - 145.0]	-10 - 70 [14 - 158]
DDAE	Double Acting with Push Side Stroke Adjusting	80	50 - 900 [upon request]	900 [35.4]	Rc 1/2 [upon request]	5,026 [1,130]	4,536 [1,020]	50 - 700 [2.0 - 27.6]	0.05 - 1 [7.3 - 145.0]	-10 - 70 [14 - 158]
DDAE	Double Acting with Push Side Stroke Adjusting	100	50 - 900 [upon request]	900 [35.4]	Rc 1/2 [upon request]	7,853 [1,765]	7,147 [1,607]	50 - 700 [2.0 - 27.6]	0.05 - 1 [7.3 - 145.0]	-10 - 70 [14 - 158]