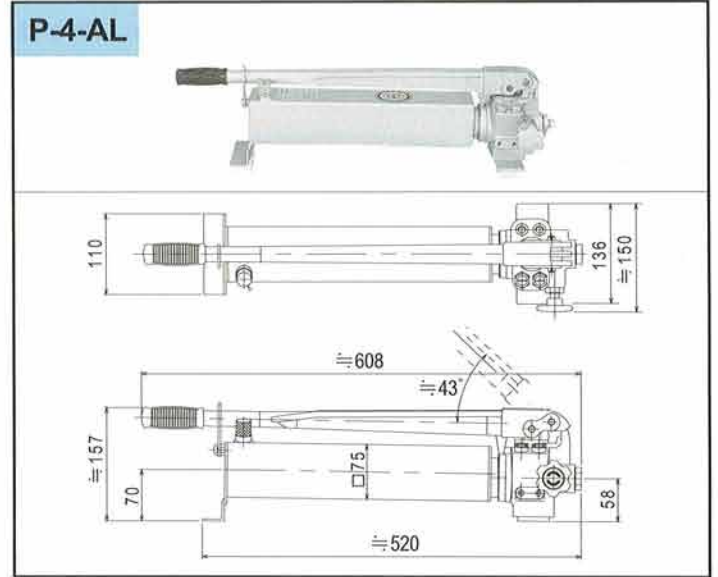
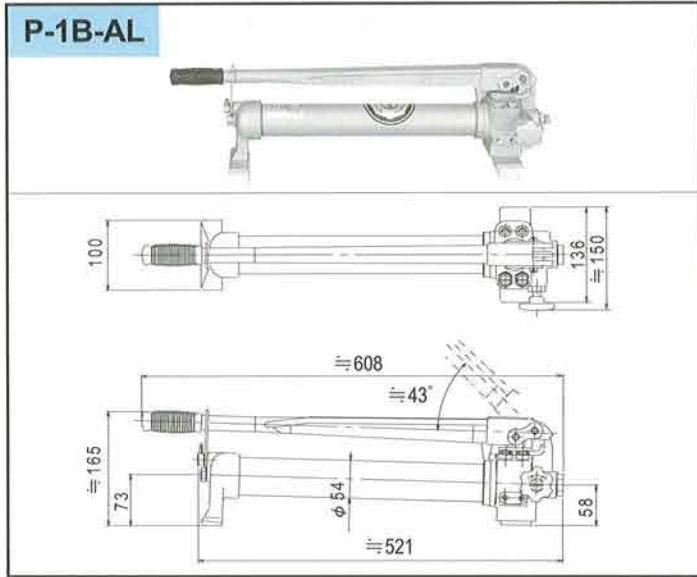


# Aluminum series

● Newly developed for jacking-up, shipbuilding, and other portable use applications.

## Hand-operated pumps

● Such main parts of these pumps, as pump bodies, levers and legs are made of light-weight and ultra-high tensile strength aluminum.



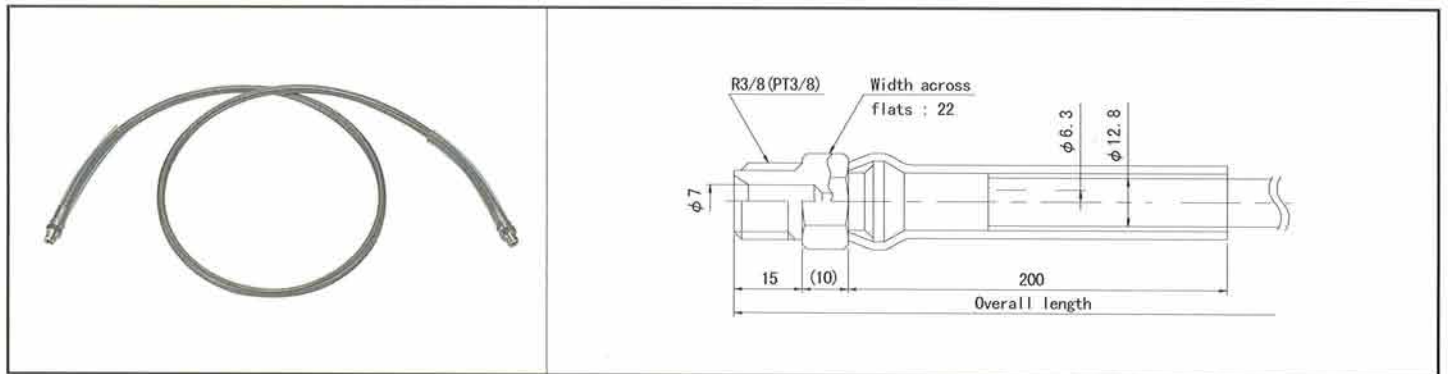
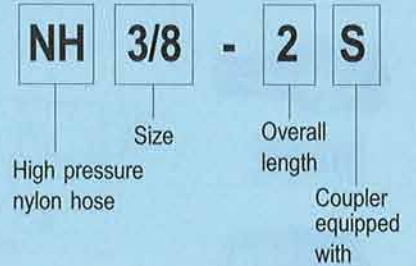
### SPECIFICATIONS

Model	Max. working pressure MPa(kgf/cm <sup>2</sup> )		Output/stroke cm <sup>3</sup>		Piston stroke mm	Oil port	Reservoir capacity cm <sup>3</sup>	Usable oil cm <sup>3</sup>	Handle ef- for at capa- city kg	With valve	Weight kg
	1st stage	2nd stage	1st stage	2nd stage							
P-1B-AL	2{20}	70{700}	13.0	2.3	20.5	Rc3/8(PT3/8)	700	600	64	Proper	4.8
P-4-AL											

## High pressure nylon hoses

● The weight of nylon hoses are less than half of rubber hoses.

### Model Description

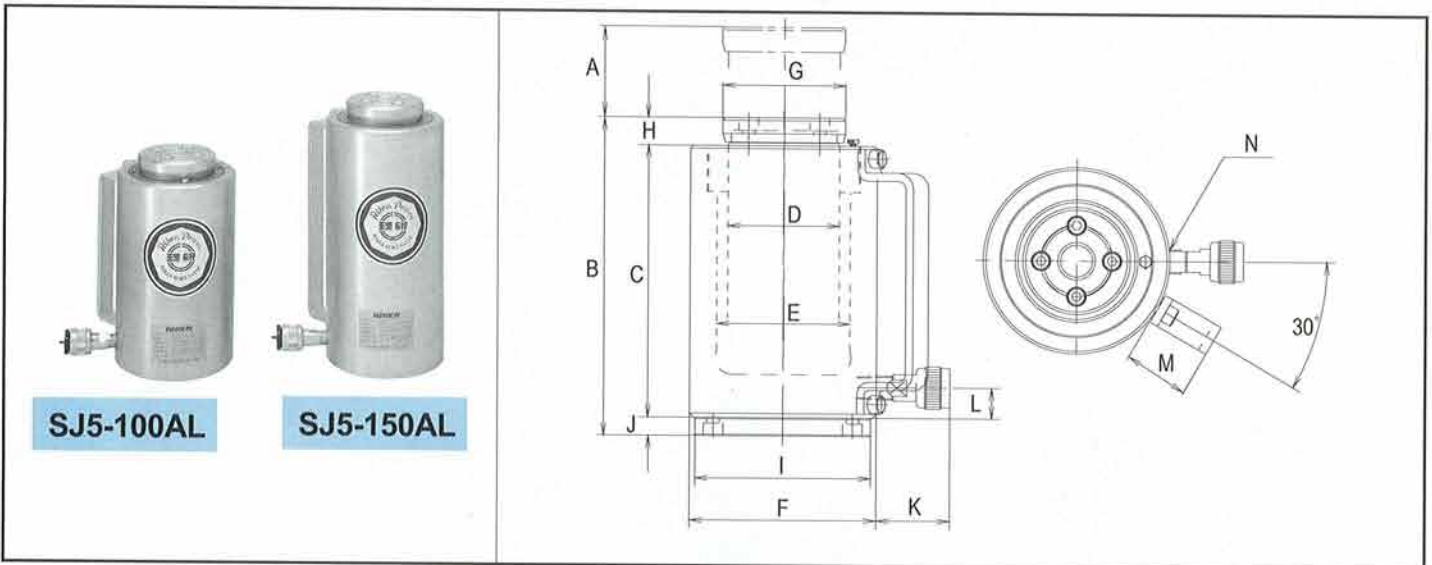


### SPECIFICATIONS

Max. working pressure	Min. burst pressure	Oil temperature range	Hydraulic oil	Material	Hose dia.	Req. oil volume	Expansion volume	Min. bending radius	Weight
70MPa {700kgf/cm <sup>2</sup> }	170MPa {1700kgf/cm <sup>2</sup> }	-40 to +80° C	Hydraulic oil or phosphoric ester oil	Nylon	I. D. : 6.3mm O. D. : 12.8mm	31.2 cm <sup>3</sup> /m	4.3 cm <sup>3</sup> /m	60 mm	0.21 kg/m

\* Please see page 138 on detailed nylon hoses.

- All main parts are made of ultra-high proof stress aluminum alloy, and weigh almost half of alloy steel standard cylinders.
- The surfaces of the main parts are specially treated, and feature wear-proof coatings.
- Please apply the loads on the base and/or piston surface evenly and totally.
- If the off-centre loads are applied on the pistons, please use the optional spherical heads shown below.



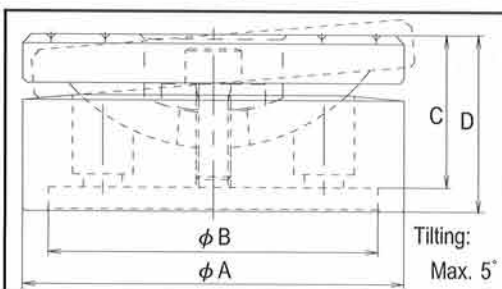
## SPECIFICATIONS

Capacity	200kN{20ton}			* 300kN{30ton}			500kN{50ton}			* 1000kN{100ton}			
	Model	SJ2-50AL	SJ2-100AL	SJ2-150AL	SJ3-50AL	SJ3-100AL	SJ3-150AL	SJ5-50AL	SJ5-100AL	SJ5-150AL	SJ10-50AL	SJ10-100AL	SJ10-150AL
Cylinder area	cm <sup>2</sup>	28.74			44.17			71.63			146.55		
Stroke	A	50	100	150	50	100	150	50	100	150	50	100	150
Collapsed height	B	167	225	290	184	234	304	188	248	318	242	292	361
Cylinder length	C	140	198	263	151	201	271	155	215	285	200	250	319
Piston dia.	φ D	53			65			80			112		
Bore dia.	φ E	60.5			75			95.5			136.6		
Cylinder dia.	φ F	98			114			134			192		
Cap dia.	φ G	58			70			88			126		
Cap height	H	17			20			20			26		
Base dia.	φ I	92			105			126			182		
Base height	J	10			13			13			16		
Coupler protrusion length	K	≒ 53			≒ 53			≒ 53			≒ 53		
Coupler position	L	22			22			22			32		
Carrying handle	M	45.5			47			47			47		
Port size	N	Rc3/8(PT3/8)											
Fitted coupler		S-1R											
Oil capacity	cm <sup>3</sup>	144	288	432	221	442	663	358	717	1075	733	1466	2199
Weight	kg	4.5	5.6	6.9	6.3	8.6	11.1	9.3	11.5	13.7	25.8	29.9	35.4

\* 300kN and 1000kN cylinders are available on order basis.

## Spherical heads for aluminum cylinders

- Please use these spherical heads when off-centre loads are to be applied to the pistons.



### Dimension table

Model	A	B	C	D	Weight kg
RAL-20	58	48	26	31.5	0.5
RAL-30	70	60	32	37.5	0.9
RAL-50	88	76	35	40.5	1.6
RAL-100	126	105	50	57.0	4.8