

Operation Instructions

RCH Series Single-Acting Tension Hydraulic Cylinder

RRH Series Double-Acting Tension Hydraulic Cylinder



Please read these instructions carefully before operating. And keep instructions properly for future reference.



These instructions contain warnings, precautions, operation practices, and troubleshooting for RCH (RRH) series single-acting (double-acting) tension hydraulic cylinder. These operation instructions are only for the reference of the end users.

I. Receiving Notice (Unpacking Inspection)

Visually inspect all components for shipping damage. Shipping damage is not covered by warranty. If shipping damage is found, notify carrier at once. The carrier is responsible for all repair and replacement costs resulting from damage in shipment.

II. Warnings and Precautions

Safety First

Please carefully read and understand the operation contents of these instructions before use and abide by these operation rules to prevent the personal injuries and equipment damages during operations of the equipment. ASIVS will not be liable for any damage arising from the incorrect operations.



Warning: Whenever possible, replace old parts with Saivs genuine parts.



Warning: The conditions that may form backpressure for oil hoses, such as serious bending or winding of hoses and placement of objects on oil hoses, are prohibited during operations, in order to prevent burst of oil hoses from causing damages.



Warning: It's prohibited to drag or hoist other hydraulic parts (such as pump, hydraulic wrench, cylinder, and valve) by oil hoses.



Warning: During the operations, do not offset the load or overload, in order to prevent damaging cylinder and causing danger. Under loaded condition, never disassemble the quick couplings, in order to prevent causing accidents and damaging parts.



Warning: This pump utilizes the hydraulic oil as the medium. Therefore, fulfill the maintenances for the oil and this pump, in order to prevent oil silting and leakage and impair the operating performance.



Notice: For a new or long-term unused cylinder, due to excessive air content in the cylinder, the piston rod may have slight bouncing symptom at the start of operations. In such case, reciprocate the oil cylinder under no-load condition for 2~3 times to bleed the

air from the chambers. As the seals are vulnerable to aging under long-term non-use condition for a long-term unused oil cylinder to impair the service life of oil cylinder, during long-term non-use, reciprocate the oil cylinder for 2~3 times under non-load condition once a month.



Warning: The high pressure oil hoses passed the 105MPa (1050Kgf/cm²) test before delivery. However, the hoses are vulnerable to aging, the user shall check frequently, once every 6 months generally or once every 3 months under frequent condition. During the checking, test by 87.5Mpa (875kgf/cm²) pressure. Upon detection of burst, bulge, or leakage, timely replace.



Warning: During operations, strictly abide by the technical specification. The user shall fulfill the periodic checking and maintenances depending on working condition.

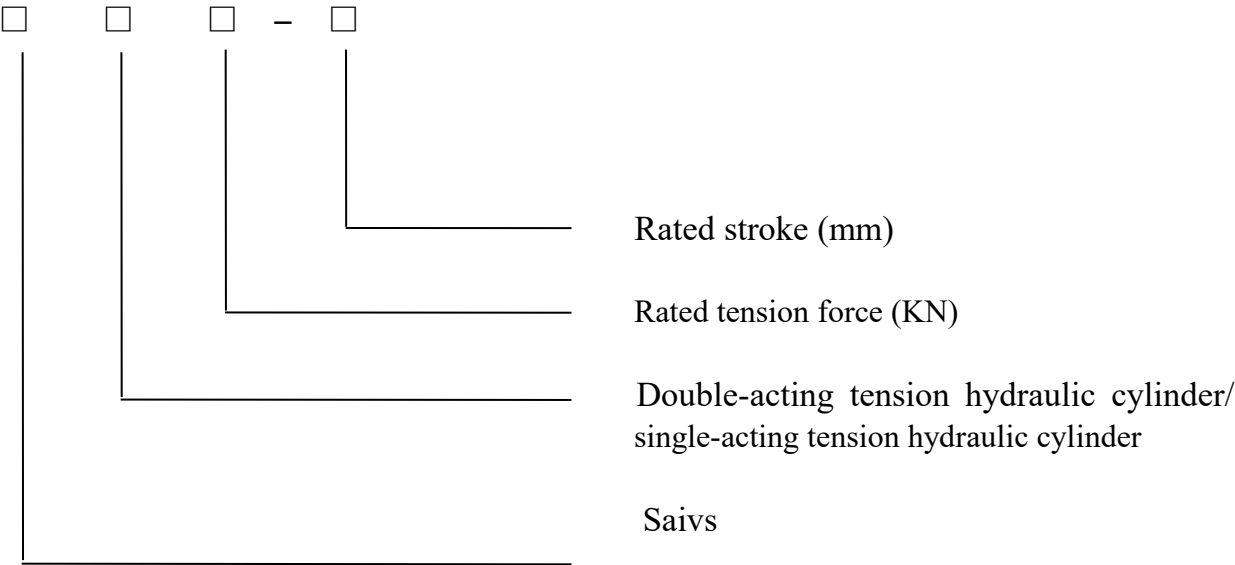


Notice: SAIVS will not be liable for any damages arising from incorrect operations.

III. Overview

RCH (RRH) series single-acting (double-acting) tension hydraulic cylinder is a kind of high-tonnage hydraulic tool with spring (hydraulic) function and central thru hole, featuring exquisite design, compact design, light weight, simple operations, and easy handling, and is used along with the super-pressure electric pump station or hand pump manufactured by our company. It can be used to stretch the cables, steel lock, bolt, and bar material via the central thru hole and can be used for lifting as a common cylinder. It's extensively used in the applications, such as nuclear power stations, tunnel constructions, and underground constructions, for tensioning processes and in the ship-building plants for disassembling and assembling of main shaft and tail shaft.

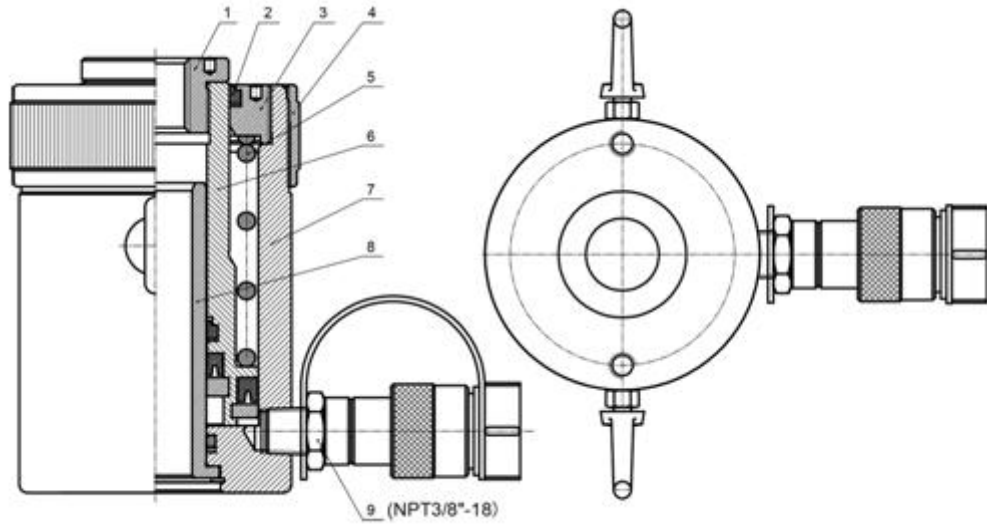
IV. Model Description



Saivs also provides the customization service for non-standard hollow tension hydraulic cylinders at the customer's demands.

V. Technical Specification

RCH Series

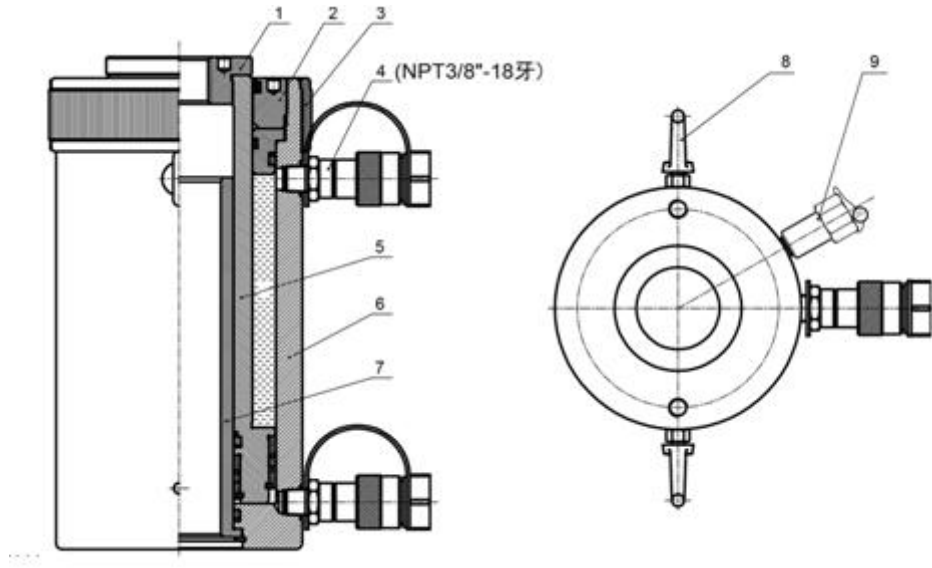


- 1 - Pushing tray 2 - Dust ring 3 - Guide cap 4 - Thread protective sleeve 5 - Reset spring 6 - Piston rod 7 - Cylinder 8 - Central pipe 9 - Female connector

Model	Tonnage	Stroke (mm)	Hydraulic oil capacity (cm ³)	Body height	Stretching height	Outside diameter	Cylinder bore diameter	Diameter of piston rod	Plunger female thread K	Plunger thread length L (mm)	Outer ring thread X (mm)	Outer ring thread length Y (mm)	Central hole diameter Z (mm)	Weight (kg)
	ton(KN)			A (mm)	B (mm)	C (mm)	D (mm)	E (mm)						
RCH-121	13(127)	42	76	130	172	76	55	35.5	3/4"-16UN	16	2 3/4"-16	30	19.5	3.4
RCH-123		76	138	184	260	76	55	35.5	\	\	2 3/4"-16	30	19.5	5.2
RCH-202	20(236)	49	174	162	211	100	76	54.5	1 9/16"-16UN	19	3 7/8"-12	38	26.9	8.2
RCH-206		155	550	306	461	100	76	54.5	1 9/16"-16UN	19	3 7/8"-12	38	26.9	15
RCH-302	30(336)	64	307	180	244	115	90	64.5	1 13/16"-16UN	22	4 1/2"-12	42	33.3	11.5
RCH-306		155	744	330	485	115	90	64.5	1 13/16"-16UN	22	4 1/2"-12	42	33.3	21.5
RCH-603	60(589)	76	640	247	323	159	125	94.5	2 3/4"-16UN	19	6 1/4"-12	48	53.8	28.2
RCH-606		153	1288	323	476	159	125	94.5	2 3/4"-16UN	19	6 1/4"-12	48	53.8	35.5
RCH-1003	100(947)	76	1028	254	330	212	165	125	4"-16UN	25	8 3/8"-12	60	79	63.5

The parameters listed in the table may be subject to change due to improvement without further notice.

RRH Series



- 1 - Pushing tray 2 - Guide cap 3 - Thread protective sleeve 4 - Female connector 5- Piston rod 6 – Cylinder 7 - Central pipe 8 - Lifting eye 9- Safety valve

Model	Tonnage ton	Stroke (mm)	Maximum carrying capacity		Body height A (mm)	Stretching height B (mm)	Outside diameter C (mm)	Cylinder bore diameter D (mm)	Diameter of piston rod E (mm)	Plunger female thread K	Plunger thread length L (mm)	Outer ring thread X	Outer ring thread length Y (mm)	Central hole diameter Z (mm)	Weight (kg)
			Forward	Return											
			(KN)												
RRH-307	30	178	326	210	330	508	115	90	64.5	1 ¹³ / ₁₆ "-16UN	22	4 ¹ / ₂ "-12	42	33.3	21
RRH-3010		258	326	210	431	689	115	90	64.5	1 ¹³ / ₁₆ "-16UN	22	4 ¹ / ₂ "-12	42	33.3	27
RRH-603	60	89	576	360	247	336	159	125	94.5	2 ³ / ₄ "-16UN	19	6 ¹ / ₄ "-12	48	53.8	28
RRH-606		166	576	360	323	489	159	125	94.5	2 ³ / ₄ "-16UN	19	6 ¹ / ₄ "-12	48	53.8	35
RRH-6010		257	576	360	438	695	159	125	94.5	2 ³ / ₄ "-16UN	19	6 ¹ / ₄ "-12	48	53.8	45
RRH-1001	95	38	931	627	165	203	212	165	125	4"-16UN	25	\	\	79	33
RRH-1003		76	931	627	254	330	212	165	125	4"-16UN	25	8 ³ / ₈ "-12	60	79	61
RRH-1006		153	931	627	342	495	212	165	125	4"-16UN	25	8 ³ / ₈ "-12	60	79	79
RRH-10010		257	931	627	460	717	212	165	125	4"-16UN	25	8 ³ / ₈ "-12	60	79	106
RRH-1508	145	203	1429	749	359	562	247	190	150	4 ¹ / ₄ "-12UN	25	\	\	79	111

The parameters listed in the table may be subject to change due to improvement without further notice.

VI. Operation Method

1. Before operations, ensure to check all parts for normal functioning.
2. During operations, strictly abide by the requirements specified in the main specification and eliminate the over-height and overload to prevent accidents.
3. If a hand pump is used as the power source, connect the cylinder, oil hoses, and hand pump by quick couplings, as shown in Figure (I) below.

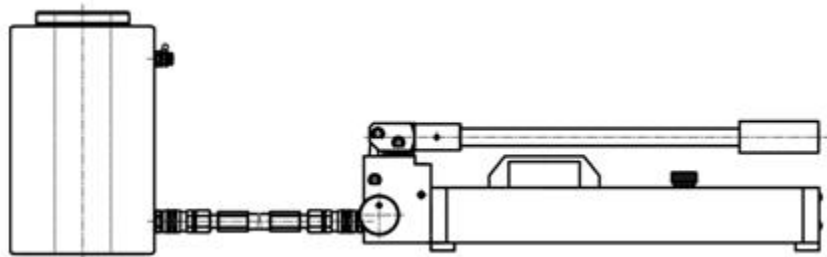


图 (一)
Figure (I)

4. If a super-pressure electric pump is used as the power source, connect the cylinder, oil hoses, and electric pump by quick couplings, as shown in Figure (II) below.

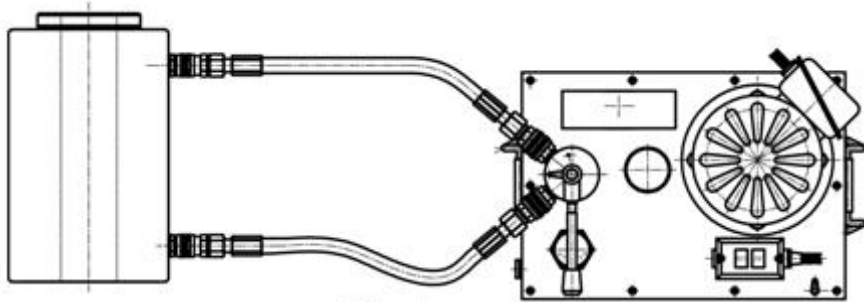


Figure (II)

5. The connection method for quick couplings is shown in figure (III) below: Directly connect the male connector with the female connector axially to the end and then tighten the sleeve. To detach the quick coupling, unscrew the sleeve, pull out the female (male) connector axially, and install the dust caps.

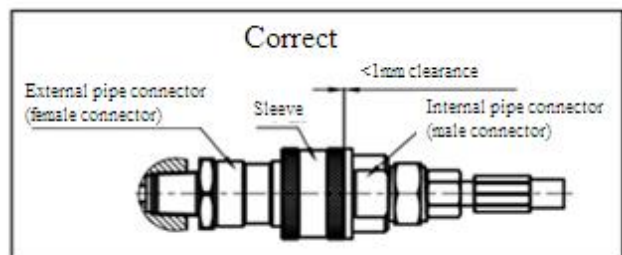
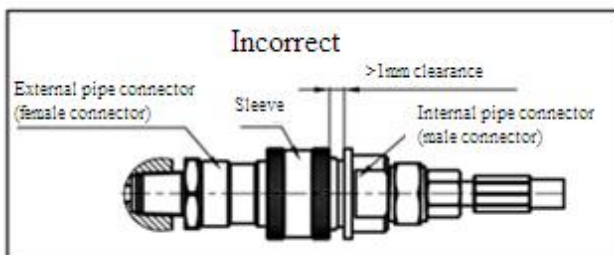


Figure (III)



Warning: Ensure the complete engagement while connecting the quick coupling, in order to ensure that the check valve in the connector is opened to prevent oil line blockage. Otherwise, the check valve in the connected coupling can't open to cause obstructed oil line.



Notice: Ensure to apply the force axially during the disassembling and assembling, in order to prevent damaging O-rings or blocking the external pipe connectors.



Notice: Keep clean the pipe connectors against the ingress of impurities into pipeline, otherwise it will lead to pipeline leakage or blockage.



Notice: Do not loosen any high pressure oil hose during the running of pump.

6. Choose appropriate gravity center for the weight. Appropriately select the support point of the cylinder and cushion its bottom face levelly and stably to prevent sinkage and inclination (The hardness of the ground shall be taken into consideration to determine the necessity of cushioning with tough wood boards).

7. Firstly perform the no-load running:

Hand pump: Tighten the hand wheel clockwise on the unloading valve of the hand pump and lift and depress the handle on the hand pump to lift the piston rod. When the piston rod lifts to the rated stroke of cylinder, loosen counter-clockwise the hand wheel on the unloading valve to return the piston rod. Repeat above operation for several times. If no abnormality is detected, the cylinder can be used for lifting of weights. (Please refer to the corresponding operation instructions for the operations of hand pump)

Electric pump: Start the electric pump and operate the handle of directional control valve on the electric pump to the working position connected with the oil hose. In such case, if the oil outlet hose is connected with "lower chamber" of jack, the jack lifts. For a double-acting cylinder, change the output direction of pressure oil to return the jack. For a single-acting cylinder, when the piston rod extends to the rated stroke of cylinder, operate the handle of directional control valve to the neutral unloading position so that the piston rod returns under the action of return spring. Repeat above operation for several times. If no abnormality is detected, the cylinder can be used for lifting of weights. (Please refer to the corresponding operation instructions for the operations of electric pump)

8. To tension a weight, firstly pass the object to be tensioned, such as cable, steel lock, bar

material, and shaft, through the central hole, and fix by screws or tooling to realize the tension or disassembling/assembling of the object.

9. At completion of the cylinder operations, operate the electric directional control valve to neutral position, timely cut off the power supply, and disassemble the high pressure hoses and install the dust caps.

VII. Troubleshooting

Problem	Possible malfunction cause
Cylinder can't advance	Opened relief valve of pump
	Incompletely tightened connectors
	Low oil level in pump
	Pump malfunction
	Load beyond carrying capacity of cylinder
	Leakage of cylinder seals
Cylinder only advances for one segment	Low oil level in pump
	Incompletely tightened connectors
	Obstructed motion of cylinder piston
Sudden advancement of cylinder	Air content in hydraulic system
	Obstructed motion of cylinder piston
Low advancement speed of cylinder	Connection leakage
	Incompletely tightened connectors
	Pump malfunction
Advancement of cylinder without pressure holding	Pump malfunction
	Connection leakage
	Incorrect system settings
	Leakage of cylinder seals
Oil leakage of cylinder.	Wear or damage of seals
	Internal damage of cylinder
	Loose connection
Reversing failure or slow reversing speed of cylinder	Incompletely tightened connectors
	Excessive oil in pump oil tank
	Obstructed flow due to undersized hose
	Damage or insufficient elasticity of compression spring (if equipped)

	Internal damage of cylinder
Oil leakage of external relief valve	Incompletely tightened connectors
	Obstructed oil return pipeline

Note:

- 1. Our company reserves the modification right for these operation instructions of this hydraulic cylinder without further notice.**
- 2. For more detailed information, please contact our company.**

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