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"A REALLY Good REASON"



**REASON Custom-Manufactured
Heavy-Duty High-Pressure Cylinders**



"A REALLY Good REASON"



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Reason Technology Company Limited



Group Company Headquartered in Nanjing, China

For details please visit : www.reasonmaterials.com

Reason Technology is a unique Chinese manufacturer, a subsidiary of a large industrial group (AIGI Industrial Group of Companies Limited). The company is proud of its exceptional group of employees and of its international standard of quality. We are committed to continuous improvement for excellence.

The company is divided into two divisions, Reason Hydraulic Division and Reason Seal-N-C & Material Division. Our products represent the highest standard of quality in our industry in China. We strive to provide our clients with internationally competitive products through high quality standards and management.

"A REALLY Good REASON"

The company's mission for quality is "Continuous improvement for excellence". With our industry leading manufacturing and technical capabilities, our Nanjing factories incorporate state-of-the-art international manufacturing equipment and automated processes. We utilize proven methods in process control to ensure each product and manufacturing process is controlled under a strict standardized quality system. Through this, we provide higher product quality, shorter lead time and better service to increase our partners' machining capacity.

50000 m² Manufacturing Plant and Logistics Center, Nanjing, China



REASON Hydraulic Division



Custom-Manufactured Cylinders



Moulded Seals



Floating Seals

REASON SEAL-N-C™ & Materials Division



Reason SEAL-N-C™ Machining Center



Semi-finished Materials

ISO 9001 Quality Management System Certificate

ISO 14001 Environmental Management System Certificate

GB/T28001 Occupational Health and Safety Management System Certificate

REASON Custom-Manufactured Heavy-Duty High-Pressure Cylinders

REASON Robust Design Concept

- *High Work Efficiency
- *High Pressure Load
- *High Reliability



Cylinder Workshop

The Leader in Industrial Sealing Technologies

REASON is the authority in industrial sealing. Our hydraulic sealing technology uses advanced low-coefficient-of-friction sealing material and high-precision, CNC manufacturing technology.

Specialized Production Equipments

We professionally design the hydraulic cylinder according to our customer's system requirements by upgrading sealing performance and reliability in the hydraulic cylinder design.

Pistons are made with high-strength steel by precision cylindrical machining, and then are plated and polished. This gives the piston surface good impact resistance, which increases the life of the seals.

The accurate heat treatment of the piston and piston rods ensures outstanding performance under standard pressure. The Cylinder bore has a low surface coefficient of friction, which extends seal and cylinder life.

Advanced design software and data analysis.

Cylinder Types

- Heavy-duty High-Pressure Cylinders for Metallurgical Industry
- Heavy-duty High-Pressure Cylinders for Marine Industry
- Heavy-duty Cylinders for Construction
- Pneumatic Cylinders
- Hydraulic Cylinders
- Special Custom Manufactured Cylinders



Large Honing Machine for Long Cylinders



Seal-N-C Seal Machining Processing

Features & Benefits

- Improve the hydraulic cylinder / Pneumatic cylinder efficiency
- Increased product specialization
- Accurate analysis of working conditions
- Upgrade of materials
- Upgrade of processing methods
- Improve the reliability of hydraulic systems
- Reduce maintenance costs
- Extend equipment MTBF (Mean Time between Failure)

Upgrade of Seal Design

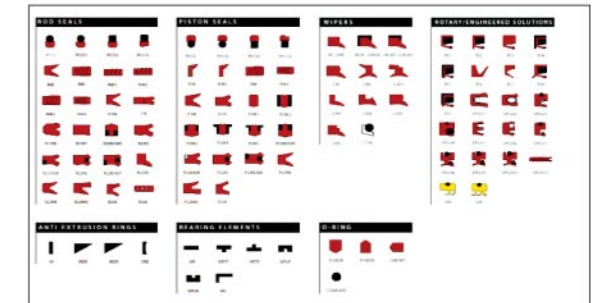
- No-mold processing technology
- Low coefficient of friction sealing materials
- Professionals to troubleshoot and solve problems
- Specialized manufacturing and testing equipment

Precision QC System

- Superior process craftsmanship
- Comprehensive work stations
- Professional staff
- Advanced production equipment
- Complete testing equipment
- First-class after-sales service



CNC Centre – Hydraulic sealing solution



SEAL-N-C Machining Profiles



Clean, Safe, and Reliable Workshop



Cylinder Workshop

● Advanced QC testing equipments in our lab



Precision surface testing



Testing equipment of material properties



Testing equipments



Testing laboratories



Chemical analysis laboratory

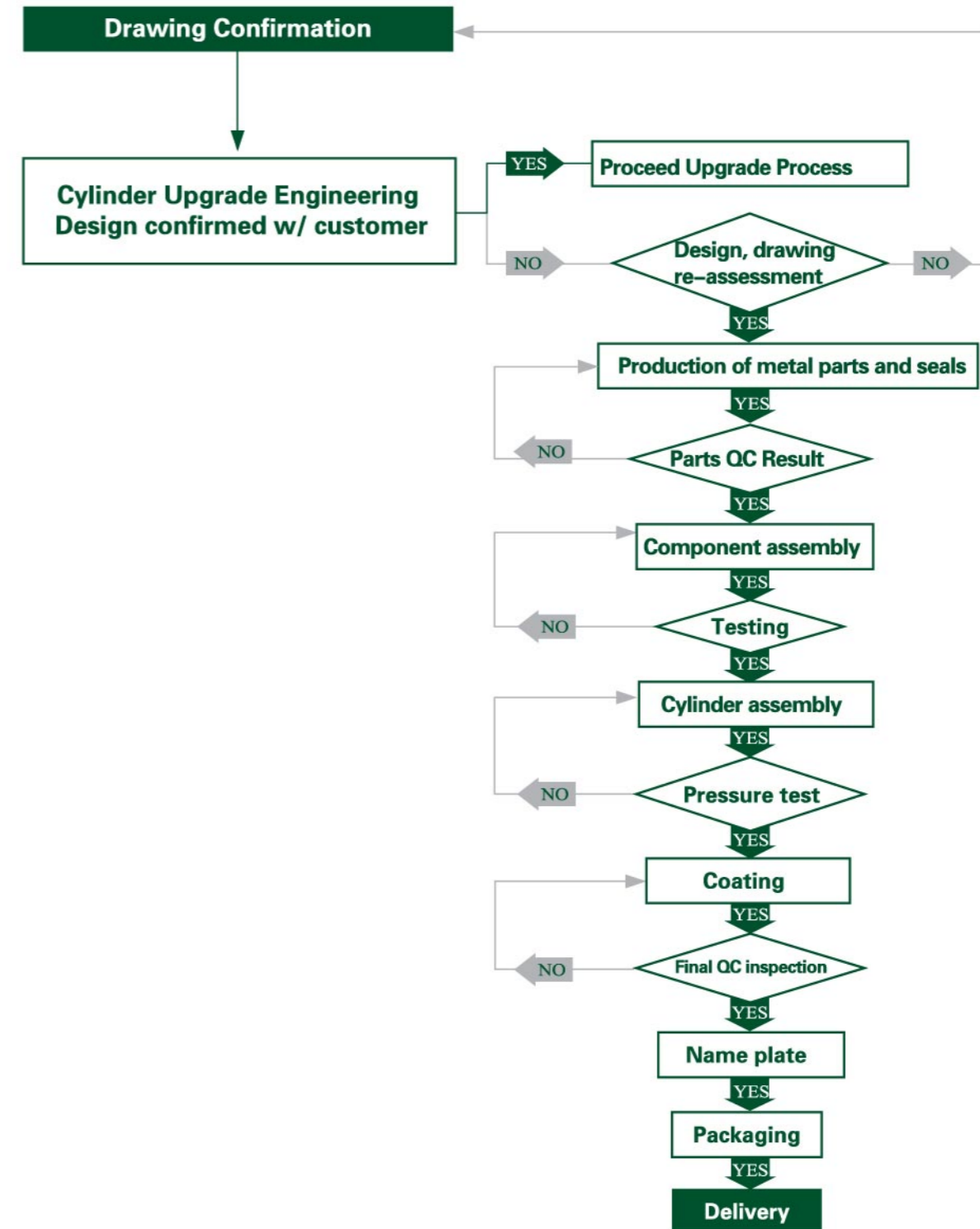


CMM- dimensional measurement equipment



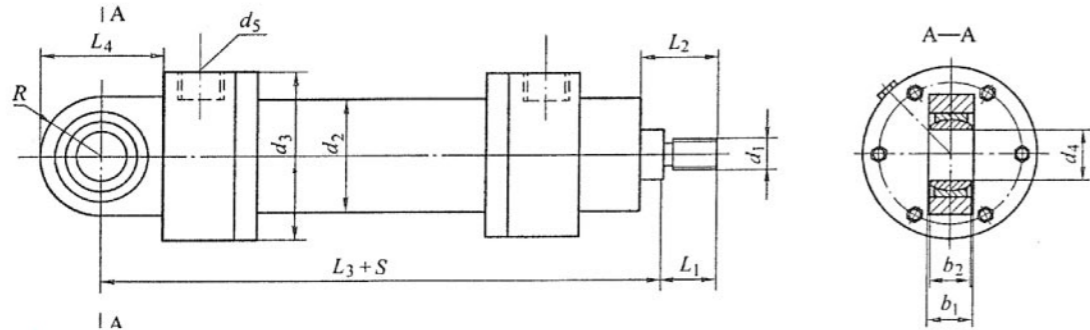
Dynamic performance test

REASON Hydraulic Cylinder Manufacturing Process

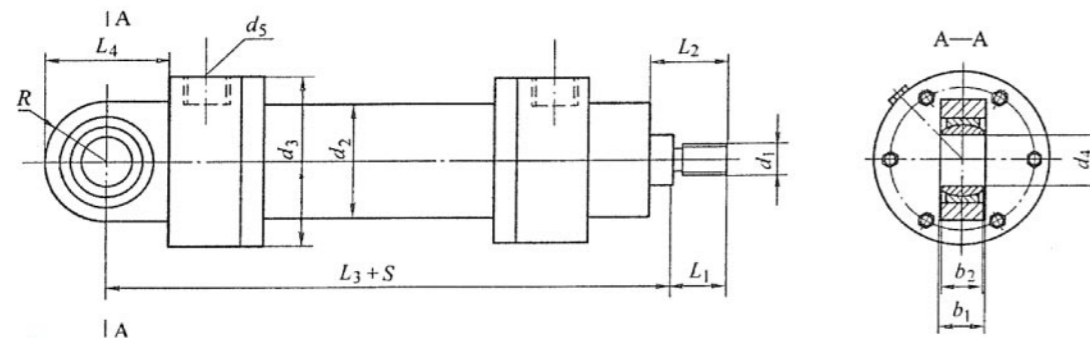


Size and Dimensions

Back-end Earrings Style with Bearing Joints or Sliding Bearings



Back-end earrings style with bearing joints (S1)



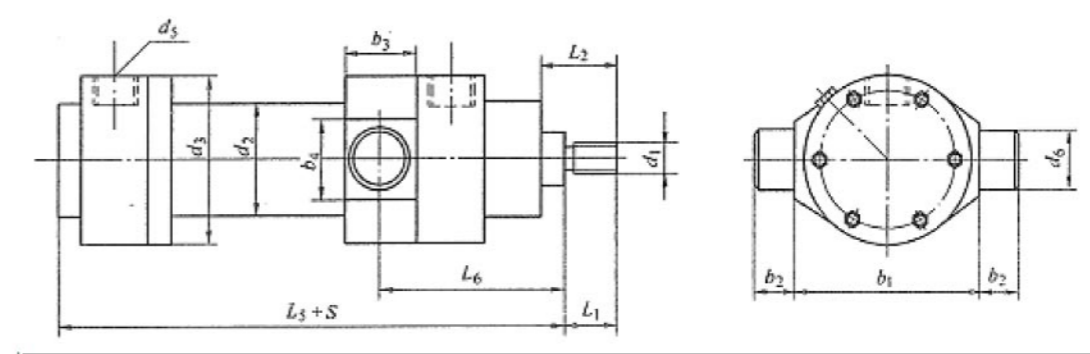
Back-end earrings style with sliding bearings (S2)

(mm)

Cylinder ID	d ₁	d ₂	d ₃	d ₄ (H7)	d ₅	L ₁	L ₂	L ₃	L ₄	b ₁	b ₂	R
40	M16x1.5-6g	57	85	25	M22x1.5-6H	26	38	247	60	23	20	30
50	M22x1.5-6g	63.5	105	30	M22x1.5-6H	34	50	261	69	28	22	34
63	M27x2-6g	76	120	35	M27x2-6H	42	60	298	87	30	25	42
80	M36x2-6g	102	135	40	M27x2-6H	56	75	324	100	35	28	50
100	M48x2-6g	121	165	50	M33x2-6H	69	95	376	123	40	35	63
125	M56x2-6g	152	200	60	M42x2-6H	81	110	444	140	50	44	70
140	M64x3-6g	168	220	70	M42x2-6H	94	120	481	157	55	49	77
160	M80x3-6g	194	265	80	M48x2-6H	104	135	541	180	60	55	88
200	M110x3-6g	245	320	100	M48x2-6H	121	152	636	240	70	70	115
220	M125x4-6g	273	355	110	F40	137	170	738	270	80	70	132.5
250	M140x4-6g	299	395	120	F40	152	185	777	300	90	85	150
320	M160x4-6g	377	490	160	F50	172	215	968	375	110	105	190

For other cylinder sizes or special specs, please inquire through REASON customer service department

Front-end Mounted Trunnion Cylinder



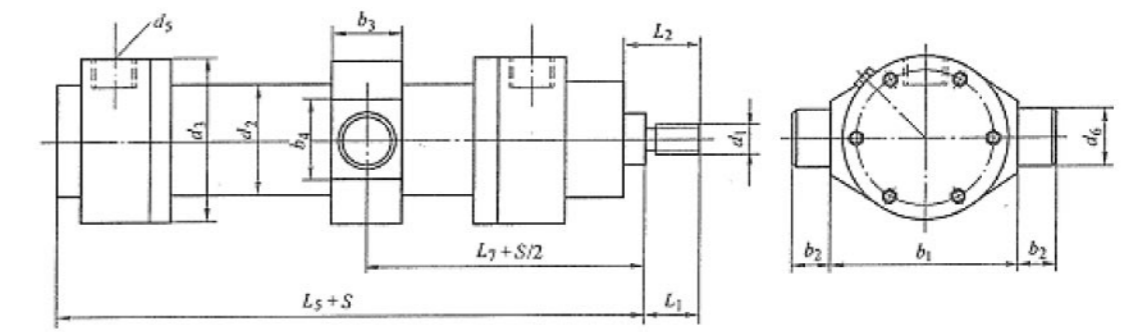
Front-end mounted trunnion cylinder (B1)

(mm)

Cylinder ID	d ₁	d ₂	d ₃	d ₅	d ₆ (f9)	L ₁	L ₂	L ₃	L ₆	b ₁ (h8)	b ₂	b ₃	b ₄
40	M16x1.5-6g	57	85	M22x1.5-6H	30	26	38	222	111	95	20	38	40
50	M22x1.5-6g	63.5	105	M22x1.5-6H	30	34	50	231	115	115	20	38	40
63	M27x2-6g	76	120	M27x2-6H	35	42	60	258	129	130	20	42	50
80	M36x2-6g	102	135	M27x2-6H	40	56	75	279	138	145	25	48	55
100	M48x2-6g	121	165	M33x2-6H	50	69	95	321	165	175	30	58	68
125	M56x2-6g	152	200	M42x2-6H	60	81	110	382	193	210	40	68	74
140	M64x3-6g	168	220	M42x2-6H	65	94	120	414	202	230	42.5	72	80
160	M80x3-6g	194	265	M48x2-6H	75	104	135	464	227	275	52.5	82	90
200	M110x3-6g	245	320	M48x2-6H	90	121	152	529	255	320	55	98	120
220	M125x4-6g	273	355	F40	100	137	170	621	302	370	60	108	130
250	M140x4-6g	299	395	F40	110	152	185	645	321	410	65	126	147
320	M160x4-6g	377	490	F50	160	172	215	803	416	510	90	176	184

For other cylinder sizes or special specs, please inquire through REASON customer service department

Middle Mounted Trunnion Cylinder



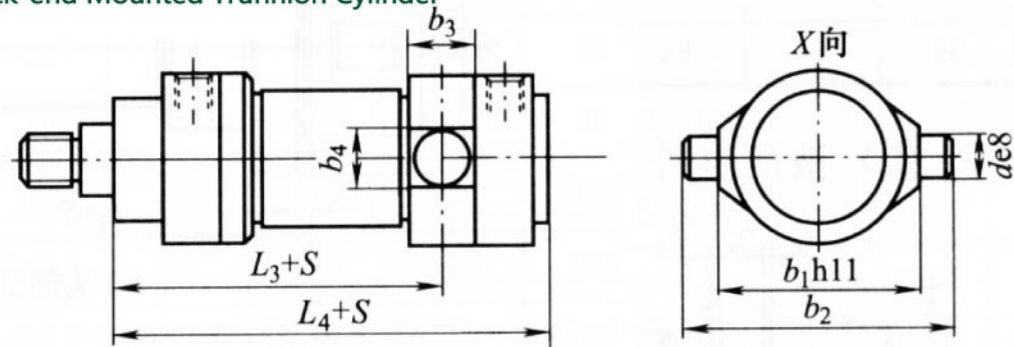
Middle mounted trunnion cylinder (B2)

(mm)

Cylinder ID	d ₁	d ₂	d ₃	d ₅	d ₆ (f9)	L ₁	L ₂	L ₅	L ₇	b ₁ (h8)	b ₂	b ₃	b ₄
40	M16x1.5-6g	57	85	M22x1.5-6H	30	26	38	222	134	95	20	38	40
50	M22x1.5-6g	63.5	105	M22x1.5-6H	30	34	50	231	141	115	20	38	40
63	M27x2-6g	76	120	M27x2-6H	35	42	60	258	153	130	20	42	50
80	M36x2-6g	102	135	M27x2-6H	40	56	75	279	170	145	25	48	55
100	M48x2-6g	121	165	M33x2-6H	50	69	95	321	198	175	30	58	68
125	M56x2-6g	152	200	M42x2-6H	60	81	110	382	234	210	40	68	74
140	M64x3-6g	168	220	M42x2-6H	65	94	120	414	251	230	42.5	72	80
160	M80x3-6g	194	265	M48x2-6H	75	104	135	464	261	275	52.5	82	90
200	M110x3-6g	245	320	M48x2-6H	90	121	152	529	293	320	55	98	120
220	M125x4-6g	273	355	F40	100	137	170	621	370	370	60	108	130
250	M140x4-6g	299	395	F40	110	152	185	645	395	410	65	126	147
320	M160x4-6g	377	490	F50	160	172	215	803	488	510	90	176	184

For other cylinder sizes or special specs, please inquire through REASON customer service department

● Back-end Mounted Trunnion Cylinder



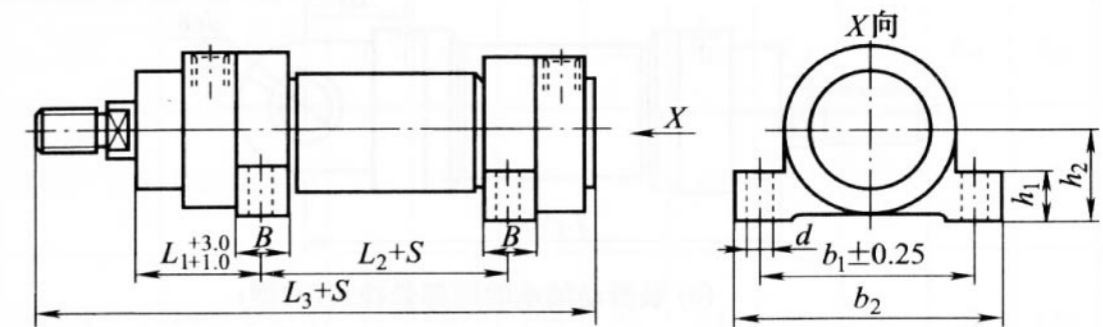
Back-end mounted trunnion cylinder (B3)

(mm)

Cylinder ID	d ₁	d ₂	d ₃	d ₅	d ₆ (f9)	L ₁	L ₂	L ₅	L ₁₁	b ₁ (h8)	b ₂	b ₃	b ₄
40	M16x1.5-6g	57	85	M22x1.5-6H	30	26	38	222	64	95	20	38	40
50	M22x1.5-6g	63.5	105	M22x1.5-6H	30	34	50	231	64	115	20	38	40
63	M27x2-6g	76	120	M27x2-6H	35	42	60	258	71	130	20	42	50
80	M36x2-6g	102	135	M27x2-6H	40	56	75	279	79	145	25	48	55
100	M48x2-6g	121	165	M33x2-6H	50	69	95	321	89	175	30	58	68
125	M56x2-6g	152	200	M42x2-6H	60	81	110	382	107	210	40	68	74
140	M64x3-6g	168	220	M42x2-6H	65	94	120	414	114	230	42.5	72	80
160	M80x3-6g	194	265	M48x2-6H	75	104	135	464	124	275	52.5	82	90
200	M110x3-6g	245	320	M48x2-6H	90	121	152	529	137	320	55	98	120
220	M125x4-6g	273	355	F40	100	137	170	621	167	370	60	108	130
250	M140x4-6g	299	395	F40	110	152	185	645	176	410	65	126	147
320	M160x4-6g	377	490	F50	160	172	215	803	243	510	90	176	184

For other cylinder sizes or special specs, please inquire through REASON customer service department

● End Tripod Cylinder



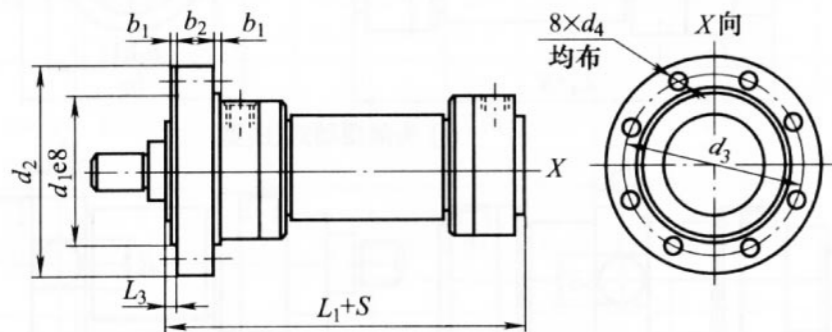
End tripod cylinder (G)

(mm)

Cylinder ID	d ₁	d ₂	d ₃	d ₅	d ₇	L ₁	L ₂	L ₈	L ₉	L ₁₀	L ₁₃	b ₁	b ₂	b ₃	b ₅	b ₆
40	M16x1.5-6g	57	85	M22x1.5-6H	11	26	38	60	260	104	25	25	45	87.5	110	135
50	M22x1.5-6g	63.5	105	M22x1.5-6H	11	34	50	65	281	108	25	30	55	107.5	130	155
63	M27x2-6g	76	120	M27x2-6H	14	42	60	70	318	123	30	35	65	125	150	180
80	M36x2-6g	102	135	M27x2-6H	18	56	75	70	354	134	40	40	70	137.5	170	210
100	M48x2-6g	121	165	M33x2-6H	22	69	95	75	416	161	50	50	85	167.5	205	250
125	M56x2-6g	152	200	M42x2-6H	26	81	110	90	492	189	60	60	105	205	255	305
140	M64x3-6g	168	220	M42x2-6H	26	94	120	105	534	198.5	65	65	115	225	280	340
160	M80x3-6g	194	265	M48x2-6H	33	104	135	120	599	223.5	75	70	135	267.5	330	400
200	M110x3-6g	245	320	M48x2-6H	39	121	152	145	681	251	90	85	160	315	385	465
220	M125x4-6g	273	355	F40	45	137	170	166	791	295	94	95	185	362.5	445	530
250	M140x4-6g	299	395	F40	52	152	185	174	830	308	100	110	205	402.5	500	600
320	M160x4-6g	377	490	F50	62	172	215	200	1018	388	120	140	255	500	610	730

For other cylinder sizes or special specs, please inquire through REASON customer service department

● Front-end Flange Cylinder



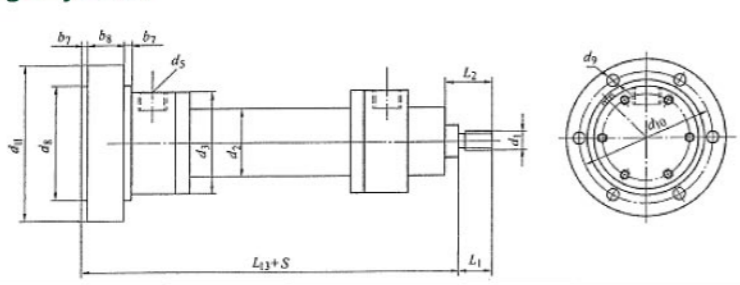
Front-end flange cylinder (F1)

(mm)

Cylinder ID	d ₁	d ₂	d ₃	d ₄	d ₅ (h11)	d ₆	d ₁₀	d ₁₁	L ₁	L ₂	L ₃	L ₁₂	b ₇	b ₈
40	M16x1.5-6g	57	85	M22x1.5-6H	90	9	108	130	26	38	222	12	5	30
50	M22x1.5-6g	63.5	105	M22x1.5-6H	110	11	130	160	34	50	231	16	5	30
63	M27x2-6g	76	120	M27x2-6H	130	14	155	185	42	60	258	18	5	35
80	M36x2-6g	102	135	M27x2-6H	145	14	170	200	56	75	279	19	5	35
100	M48x2-6g	121	165	M33x2-6H	175	18	205	245	69	95	321	26	5	45
125	M56x2-6g	152	200	M42x2-6H	210	22	245	295	81	110	382	29	10	45
140	M64x3-6g	168	220	M42x2-6H	230	22	265	315	94	120	414	26	10	50
160	M80x3-6g	194	265	M48x2-6H	275	26	325	385	104	135	464	31	10	60
200	M110x3-6g	245	320	M48x2-6H	320	33	375	445	121	152	529	31	10	75
220	M125x4-6g	273	355	F40	370	33	430	490	137	170	621	48	10	85
250	M140x4-6g	299	395	F40	415	39	485	555	152	185	645	58	10	85
320	M160x4-6g	377	490	F50	510	45	600	680	172	215	803	78	10	95

● For other cylinder sizes or special specs, please inquire through REASON customer service department

● Back-end Flange Cylinder



Back-end flange cylinder (F2)

(mm)

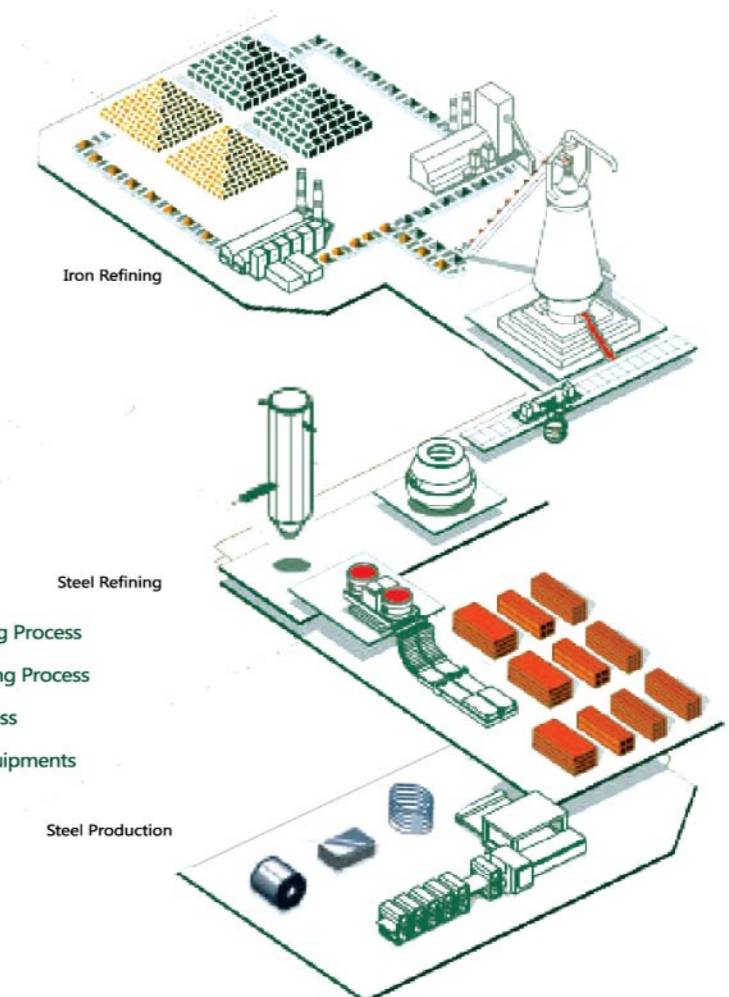
Cylinder ID	d ₁	d ₂	d ₃	d ₄	d ₅ (h11)	d ₆	d ₁₀	d ₁₁	L ₁	L ₂	L ₁₃	b ₇	b ₈
40	M16x1.5-6g	57	85	M22x1.5-6H	90	9	108	130	26	38	257	5	30
50	M22x1.5-6g	63.5	105	M22x1.5-6H	110	11	130	160	34	50	266	5	30
63	M27x2-6g	76	120	M27x2-6H	130	14	155	185	42	60	298	5	35
80	M36x2-6g	102	135	M27x2-6H	145	14	170	200	56	75	319	5	35
100	M48x2-6g	121	165	M33x2-6H	175	18	205	245	69	95	371	5	45
125	M56x2-6g	152	200	M42x2-6H	210	22	245	295	81	110	439	10	45
140	M64x3-6g	168	220	M42x2-6H	230	22	265	315	94	120	476	10	50
160	M80x3-6g	194	265	M48x2-6H	275	26	325	385	104	135	536	10	60
200	M110x3-6g	245	320	M48x2-6H	320	33	375	445	121	152	616	10	75
220	M125x4-6g	273	355	F40	370	33	430	490	137	170	718	10	85
250	M140x4-6g	299	395	F40	415	39	485	555	152	185	742	10	85
320	M160x4-6g	377	490	F50	510	45	600	680	172	215	908	10	95

● For other cylinder sizes or special specs, please inquire through REASON customer service department

Heavy-Duty High-Pressure Cylinders for Metallurgical Industry

Hydraulic cylinder converts mechanical energy into hydraulic energy, and it is the hydraulic actuator which makes the linear reciprocating motion (or swing movement). Its structure is simple and operation is reliable. When using it to achieve the reciprocating movement, deceleration devices can be removed, with no transmission gap and with smooth motion. Therefore, it is widely used in a variety of hydraulic metallurgical machinery systems.

REASON's Custom-Manufactured Heavy-duty Cylinder is the product of foreign and domestic advanced technology, and a result of the development and design of custom products. The installation dimensions are in line with international and domestic standards and customer requirements. The series has excellent performance and reliability, with its performance indicators and quality indicators reaching international and domestic levels of similar products. Our cylinders have been widely used in the metallurgy industry as well as in other industries. REASON is able to design and manufacture cylinders and hydraulic systems with bores from 20 to 1200mm and cylinder lengths up to 12m with a rated working pressure of 32MPa. According to user needs, our company can design and manufacture special cylinders and extreme high-pressure cylinders.



P13 Heavy-Duty High-Pressure Cylinders in Iron Refining Process

P14 Heavy-Duty High-Pressure Cylinders in Steel Refining Process

P17 Heavy-Duty Cylinders in Metallurgical Rolling Process

P18 REASON Cylinders for Construction and Mobile Equipments

● Heavy-Duty High-Pressure Cylinders in Iron Refining Process

● Hydraulic Cylinders for Blast Furnace Clay Gun

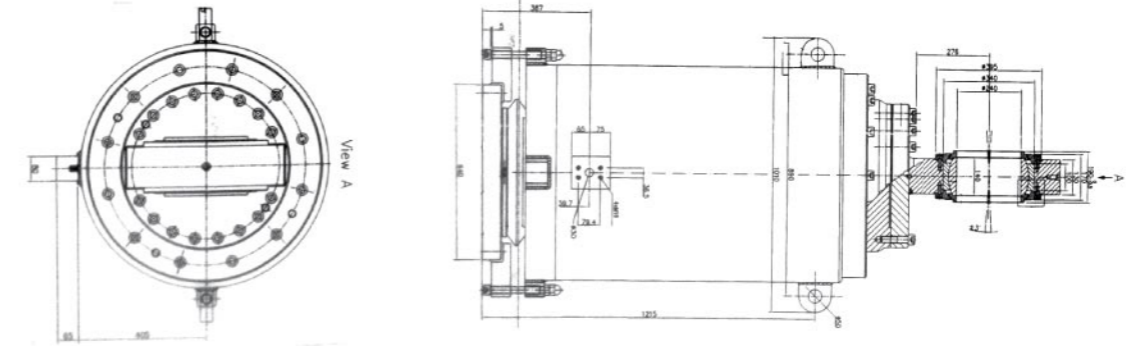
	Cylinder Bore(mm)	Rod Diameter (mm)	Stroke (mm)	Working Pressure(MPa)	Item Number
Hydraulic Cylinders for Blast Furnace Clay Gun	250	160	1250	16	REASON 160 250/160-1250
	280	180	1200	16	REASON 160 280/180-1200
	300	220	1100	21	REASON 210 300/220-1100
	320	200	1260	21	REASON 210 320/200-1260
	350	220	1260	21	REASON 210 350/220-1260
	400	280	1100	21	REASON 210 500/280-1100
	500	350	1100	25	REASON 210 500/350-1100

● For other cylinder sizes or special specs, please inquire through REASON customer service department



● Heavy-Duty High-Pressure Cylinders in Steel Refining Process

● Ladle Lifting Cylinders Type I



Working Pressure : 18MPa Test Pressure:27MPa Working Temperature: 20-80°C Medium: Hydraulic oil
 Cylinder Bore: 665mm Rod Diameter: 650mm Stroke: 370mm

	Cylinder Bore(mm)	Rod Diameter (mm)	Stroke (mm)	Working Pressure(MPa)	Item Number
Ladle Lifting Cylinders	500	280	500	18	REASON 180 500/280-500
	540	350	620	18	REASON 180 540/350-620
	500	335	350	18	REASON 180 500/335-350
	540	360	460	18	REASON 180 540/360-460
	600	380	646	18	REASON 180 600/380-646
	610	550	720	18	REASON 180 610/550-720
	650	600	700	18	REASON 180 650/600-700
	665	600	370	18	REASON 180 665/600-370
	710	650	710	18	REASON 180 710/650-710
	735	680	530	18	REASON 180 735/680-530

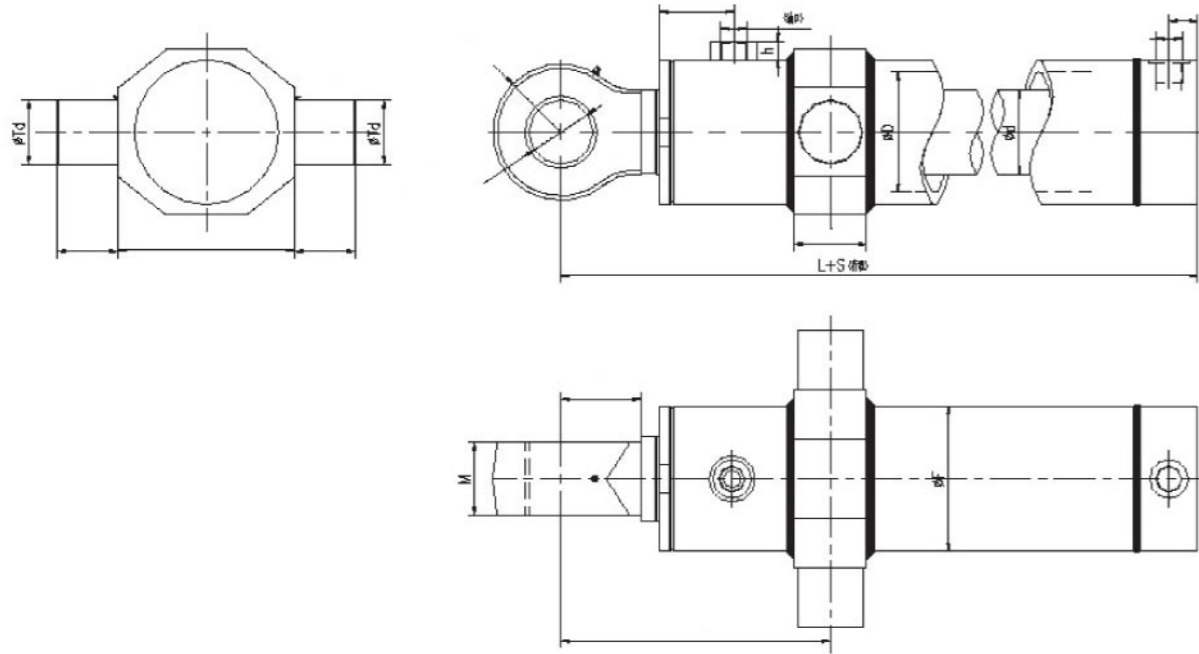
● For other cylinder sizes or special specs, please inquire through REASON customer service department.



● Tundish Lifting Cylinders Type II

	Cylinder Bore(mm)	Rod Diameter (mm)	Stroke(mm)	Working Pressure(MPa)	Item Number
Tundish Lifting Cylinders	160	110	400	21	REASON 210 160/110-400
	320	220	800	21	REASON 210 320/220-800

● For other cylinder sizes or special specs, please inquire through REASON customer service department.

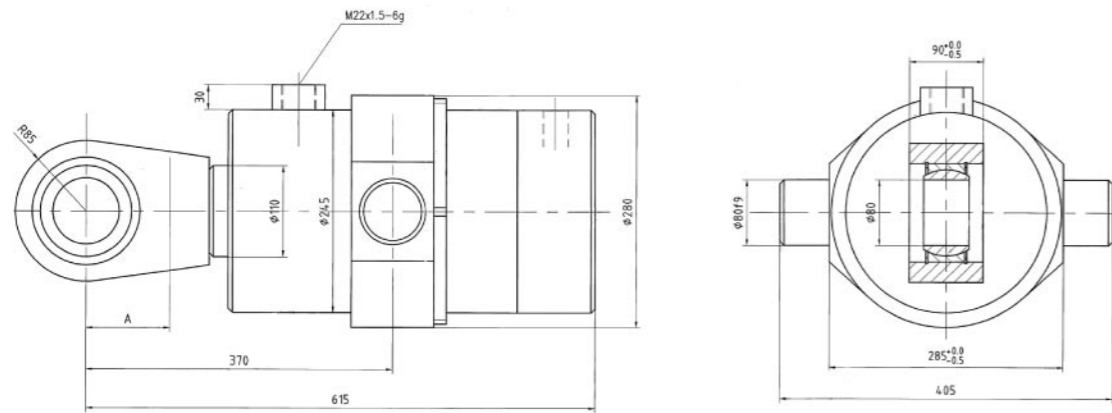


● Slab Caster Hydraulic Cylinder

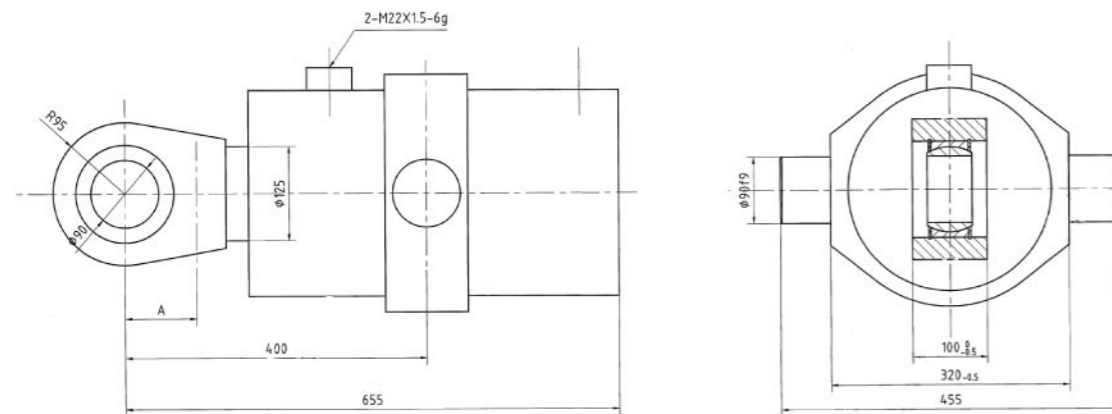
	Cylinder Bore(mm)	Rod Diameter (mm)	Stroke(mm)	Working Pressure (MPa)	Item Number
Clamping Cylinder	140	63	250	21	REASON 210 140/63-250
	180	90	250	21	REASON 210 180/90-250
	200	90	250	21	REASON 210 200/90-250
	250	125	250	21	REASON 210 250/125-250
Pressure Cylinder	390	310	230	21	REASON 210 390/310-230
	100	70	150	21	REASON 210 100/70-150
	140	100	150	21	REASON 210 140/100-150
	160	110	150	21	REASON 210 160/110-150
Drive Cylinder	200	140	220	21	REASON 210 200/140-220
	100	70	150	21	REASON 210 100/70-150
	140	100	150	21	REASON 210 140/100-150
	160	110	150	21	REASON 210 160/110-150
	200	140	70	21	REASON 210 200/140-70

● For other cylinder sizes or special specs, please inquire through REASON customer service department.





Working Pressure: 21MPa Test Pressure: 31.5MPa Working Temperature: -20~150°C Medium: Fatty acid ester
Cylinder Bore: 220mm Stem Diameter: 125mm Stroke: 150mm



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● Heavy-Duty Cylinders in Metallurgical Rolling Process

Heating Furnace Lifting Cylinder, R1 Balance Cylinder, E1 Balance Cylinder, Cooling Bed Lifting Cylinder, AWC Cylinder, AGC Cylinder, etc.

- For other cylinder sizes or special specs, please inquire through REASON customer service department.

Heavy-Duty Cylinders for Construction and Mobile Equipments

● Custom-Manufactured Cylinders

REASON offers Custom-Manufactured Heavy-Duty High Pressure Cylinders as well as standard HSG class cylinders for construction and mobile equipment.

Standard HSG class cylinder is a double-acting hydraulic cylinder piston rod which is mainly used for a variety of construction machinery, including: lifting, transport, shipping, metallurgical and mining machinery, as well as in engineering vehicle hydraulic systems.

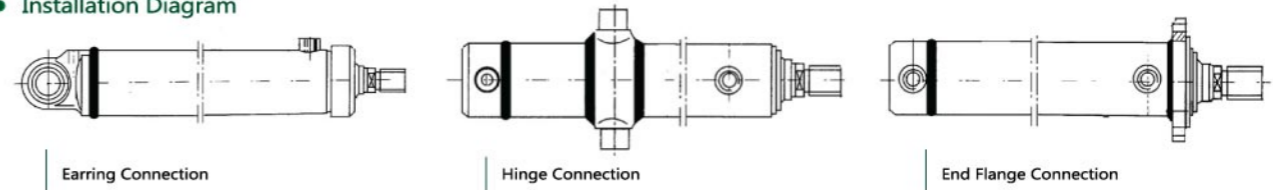
● Structure

There are 17 kinds of standard cylinder bores (40, 50, 63, 80, 90, 100, 110, 125, 140, 150, 160, 180, 200, 220, 250, 280, 320) composed of 34 kinds according to the two speed ratio specifications (1.46, 2). Structures are divided into buffer with gap, and no-buffer, with the 34 kinds of specifications composed of 68 varieties. These give the user many selection options.

● Installation and Connection

Installation and connection of the cylinder conforms to international standard ISO6020/1-/1981. Bore types include: rectangular flange in front and in the back, square flange in front and in the back, round flange in front and in the back, pin in front, in the middle and in the back and clevis in front, axial, radial foot stool, making a total of 13 kinds of installation forms. Except for the axial foot type, all of the installation and connection dimensions meet ISO6020/1-/1981. Threaded rods also meet the GB2350-80 standard.

● Installation Diagram



● Heavy-Duty Cylinders for the Marine Industry

REASON offers Custom-Manufactured Heavy-duty Cylinders in Marine, Water Resources and Hydropower Engineering. Due to the special design of cylinder for the marine industry, it can effectively prevent water and other damage to the cylinder. Internal and external leakage is prevented by using special seals, extending cylinder life.

● Piston Rod

Pistons are manufactured by precise, high-strength structural or stainless steel. Proper heat treatment process improves piston rod' s strength, and the polished surface improves corrosion resistance.

The following are common piston options:

1. Chrome or nickel-chromium plated piston rod
2. Stainless steel sleeve welded at the end of piston rod surface
3. Stainless steel piston rod

● Cylinder Body

High-quality surface smoothness and hardness can be achieved through high-strength alloy steel, cold roll extrusion and optical processing. The surface friction is reduced, while the wear resistance is enhanced to extend seal life.

● Surface Treatment

Unless otherwise specified, shot blasting 2.5 to cylinder surface according to the standard ISO8501, and use inorganic zinc silicate paint to resist corrosion.



Storage and Transportation Instructions

● Storage and Handling Precautions

Cylinder storage can be considered Short-term or Long-term.

Short-term storage is considered to be stored for three months or less after arrival; all other conditions are considered to be long-term storage.

● Storage Conditions

Cylinder storage sites must not be affected by weather and be dry and well-ventilated without condensation or corrosive gases. Pistons which extrude from the cylinder must be wrapped with sealing tape to prevent corrosion, and also covered with waterproof paper to prevent oil loss in higher temperature conditions. The piston must also be wrapped with cardboard to prevent mechanical damage.

● Short-term Storage

After the factory test of the cylinder, the cylinder body already has a 10% mixture of anti-corrosion oil (please inquire for details), suitable for protection up to 3 months in storage.

● Long-term Storage

For long-term storage, apart from the following general storage of spare parts, the inside of cylinder must have anti-corrosion lubrication. This treatment must be compatible with the seal material. 80% of the volume of the cylinder must be filled with a mixture of anti-corrosion oil (please inquire for details). The cleanliness of the oil must meet a minimum class 8 standard NAS1638 or higher. Moreover, the cylinder must run a half-cycle every two months. The cylinder body can also be filled with hydraulic oil when in long-term storage. Unprotected spare parts, such as the assembly surface or processing surface must be protected with special oil. The port area must be sealed with a high quality plug or O-ring steel flange. The spherical hinge bearing and other types of bearings must be coated with a special grease and protected with sealing tape, and then be wrapped with plastic packaging to prevent moisture leading to rust.

● The Requirements of Best Performance

In order to ensure the best conditions during storage, cylinders need annual inspections. During the inspection, please observe the following conditions:

- Anti-corrosion: Check whether there is any damage and/or corrosion.
- Working medium: Check oxidation and acidification of the hydraulic fluid/oil.
- Inspection and maintenance of the bearing oil.

Cylinders should be extended and retracted several millimeters in order to prevent seal sticking. Any irregularities must be corrected.

● Functionality Verification

If the cylinder is in storage for more than one year, or the actual storage conditions can not meet the previous requirements, then the cylinder must be inspected comprehensively before putting into use. Its availability must be confirmed by functional tests. These functional tests include:

- Pressurized to 30bar and kept 10 minutes to check for inside and outside leakage.
- Extending and retracting the cylinder to check for any anomalies.

● Loading, Unloading and Handling

During the transport and lifting of cylinder, the following precautions must be observed:

- Cylinders must be horizontally transported and placed on wooden board. Use the original packaging if possible.
- Do not allow for any impact, collision, etc. during storage and transportation. Exposed surface of the piston and other assembly parts must be properly protected.
- Use a soft sling to prevent damage to the surface. A chain and hook can only be used to hook the cylinder.
- The distribution of the weight on the hook must make lifting stable. If necessary, you can use the balancing device. Confirm the center of gravity of the cylinder through experimentation.