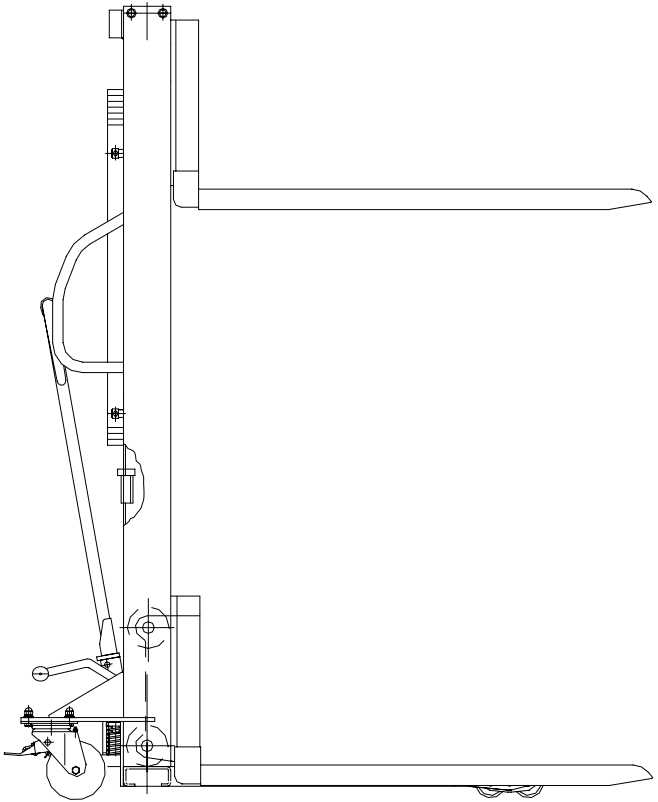
SYC MANUAL HYDRAULIC FORK LIFTER
OPERATION DIRECTIONS



FOREWORD

This direction instructs you the structure, mechanism, operation and service method on SYC manual hydraulic fork lifter.

To ensure the safety, all the personnel that in charge of operation, maintenance and management must read this manual thoroughly before starting work with the fork lifter.

Forbade repairing the truck if you haven’t been trained.

SYC MANUAL HYDRAULIC FORK LIFTER OPERATION DIRECTIONS

Ⅰ. Use

SYC manual hydraulic fork lifter is a dual-purpose tool for high-lifting handling and short haulage. AS it produces no spark and electromagnetic field, the lifter is especially applicable for truck loading or unloading and for handling or hauling inflammable and explosive goods in the site of workshop, warehouse, depot, freight yard etc. with the characteristics of stable elevation, flexible turning, easy operation, safe and reliable performance and particularly brake caster, this lifter is an ideal tool for reducing labor intensity, increasing productive efficiency and ensuring safe handling.

Ⅱ. Technical parameter

The main technical parameters of the SYC manual hydraulic fork lifter are contained in Table 1 and Figure 1.

Ⅲ. Structure and Mechanism

SYC manual hydraulic fork lifter is composed of hydraulic system, mast and fork.

This lifter hoists weights with manual hydraulic jack and hauls loads by manual force. The hydraulic gear is equipped with spill valve to control fork lowing rate and ensure the hydraulic action accurate and reliable.

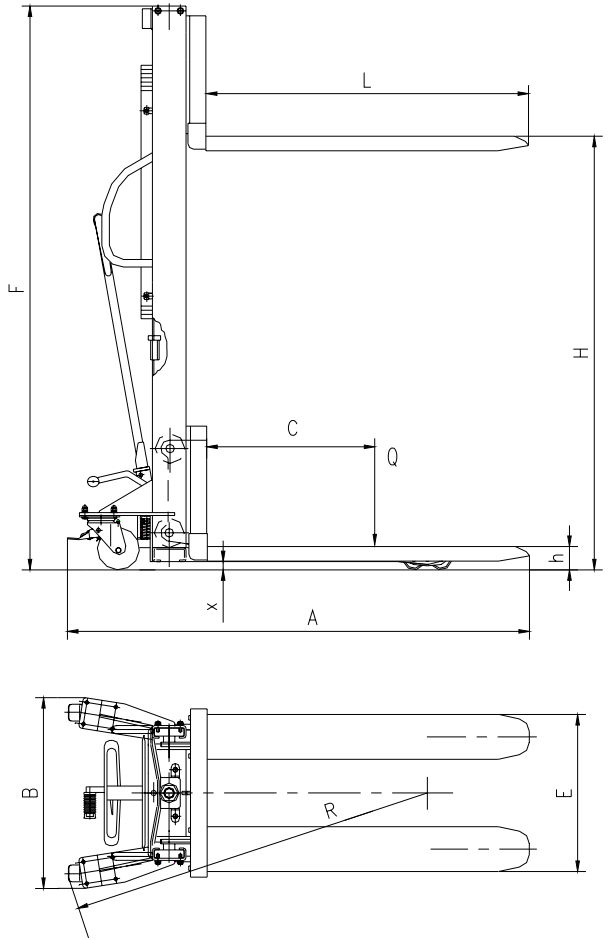
The framework is welded of high-quality swage. The rear wheels are equipped with brake casters that turn freely and easily. The front and rear casters are fixed with ball bearings on its wheel axle. The casters are made of nylon that is wearable, endurable and harmless to the working surface.

The working process is as follows: place the fork under the weights, brake the rear wheels if required, throw handle to press pump element so that the oil in pump tank enters the bottom of piston cylinder and lift the piston rod assembly upwards a stroke and through chain lift forked frame and fork upwards twice stroke. Repeatedly throw handle to hoist weights. When the fork is lifted to the highest position, pressure oil will get back to oil tank via relief valve so as to avoid the forks from further lifting and even damaging. Pull or push the lifter manually to haul loads from place to place. To unload the weights, throw spill valve handle so that the spill valve will be open and working oil in piston cylinder via the spill valve will get back to oil tank by the action of the weight of loads and the fork proper. Piston rod assembly and the forks will lower to the preset position; then withdraw the forks and unload the weights. Thus, the dual effects of hoist and hauling are obtained.

Table1

Main parameter			Unite	SYC0.5M1.6	SYC1M1.6	SYC1.5M1.6
Rated hoisting mass		Q	Kg	500	1000	1500
Center of load		C	mm	600		
Maximum lift height		H		1600		
Minimum fork height		h		90		
Length of fork		L		1150		
Maximum width of fork		E		560		
Lifting speed with loading			mm/time	⩾20	⩾16	⩾12
Lowering speed			Controllable			
Dimensions:	Overall length	A	mm	1650		
	Overall width	B		630	680	690
	Overall height	F		1970	2020	2070
Wheel:	Outer diameter of front wheel			80		
	Outer diameter of rear wheel			150		
Minimum clearance from ground		X⩾		30		
Extreme radius of turn		R⩽		1540	1590	1590
Dead weight			Kg	154	223	246

Figure 1



Ⅳ. Requirements of working conditions for the fork lifter

1. The ambient temperature is –25℃~ 45℃。.
2. The floor is even and hard without holes or obstacles.
3. The gradient of the ground shall be less than 2%.
4. The ambient lighting is 50 lux at least.

Ⅴ. Operation and maintenance

1. Oil should be filtered clean and maintained adequate.
2. Before operating the lifter, check whether every structure is normal and every joint part is tightened.
3. Freight should be placed on the fork uniformly and without overload.
4. Heavy should not be allowed to remain on the fork for a long time after operation is over.
5. When freight is lowered, spill valve pedal should be trod lightly and slowly in order not to lower the freight suddenly and cause unsafe cases.
6. When freight is lowered at a high speed, it is inadvisable to suddenly shut spill valve, for it will produce a great force caused by the inertial acceleration at the meantime so as to spoil machine member and freight.

Ⅵ. Safety in operation

1. Operator must wear safety shoes and gloves.
2. Forbid inserting finger or foot into the guard net.
3. Forbid anyone to be under or near the fork arms, as they are in the upper position.

4．Forbid the truck to lift or to transport persons.

5．Forbid the truck being used as a vehicle jack.

6．Forbid the extremity of fork arms being used as a lever to lift a load.

7．Forbid the truck handling free swinging loads.

8．Forbid the truck having direct contact with foodstuffs.

9．Forbid the truck being used in a potentially explosive atmosphere.

10．Every time the truck transports goods, its fork arms must be in the lowest position.

11．Forbid to stop the truck with its tiller turned at right angles.

12．The truck must be stopped for loading and unloading.

13．To avoid impairing the truck stability, special precautions must be taken when operating the truck, load or unload, with the fork arms in the upper position:

（1） The truck shall be moved slowly and smoothly.

（2） While moving no part of the fork arms or of the load shall come with an obstacle.

（3） During lowering neither the fork arms nor the load shall rest upon an obstacle.

（4） If it is necessary to negotiate small slope, the gradient shall be no more than 2% and the truck shall be unladen, with the fork arms facing downgrade.

Ⅶ．Marking, spare parts, slinging and transporting

1．Keep the marks intact all the time that are nameplate, operating instruction, safety and warning signs.

2．Only qualified spare parts can be used.

3. Transport trucks can be fulfilled by vehicle, train or ship.
4. Slinging a truck into a container, or in the vehicle needs a steel rope about 1.5 meters long.
5. Be sure of the tightness of the steel rope and lifting instrument that can load the truck enough.
6. Correct slinging position is indicated in figure 2.

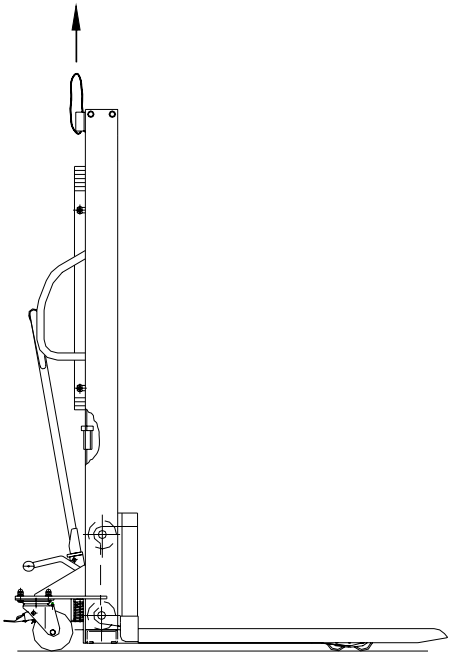


Figure 2 Hoisting diagram of Truck

Ⅷ Troubleshooting（See Table2）

Table2

Trouble	Reason	Removing Method
1．The height of hoisting does not reach the designing requirement.	Working oil is not adequate.	Unscrew oiling bolt, refill filtered clean working oil to the level of oil-hole, then tighten the oiling bolt.
2．The fork can not be lifted when throw the handle.	1．The working oil is too Viscose or no working oil is filled.	Replace working oil or refill working oil in accordance with stipulated oil level.
	2．There is impurity in working oil, which prevents the feed valve from closing tightly.	Remove impurity or replace working oil.
	3．Release valve, pedal or extension spring is ineffective or not at the highest closing position or jammed by foreign matters.	Check extension spring, regulate pedal at the highest closing position, remove impurity.
	4．Pedal or release valve has not been adjusted in proper position.	Release extension spring and pedal-connecting clip bolt, adjust repeatedly until it is in proper position, then tighten clip bolt and replace extension spring.

3. Fork lifted can not be lowed.	1. Oil-release pedal has not been regulated. 2. A too great offset load and permanent deform action occur to piston. 3. Forked frame and roller or carrier wheel are jammed.	Regulate, repair or replace piston rod or bearings as per the above-mentioned method.
4. Oil seepage or leak	1. Packing gasket spoiled or ineffective. 2. Slight fissures or pores occurring to a few parts. 3. Screwed joint loosened or packing gasket not tightened.	Replace packing gasket. Tighten, repair or replace parts.

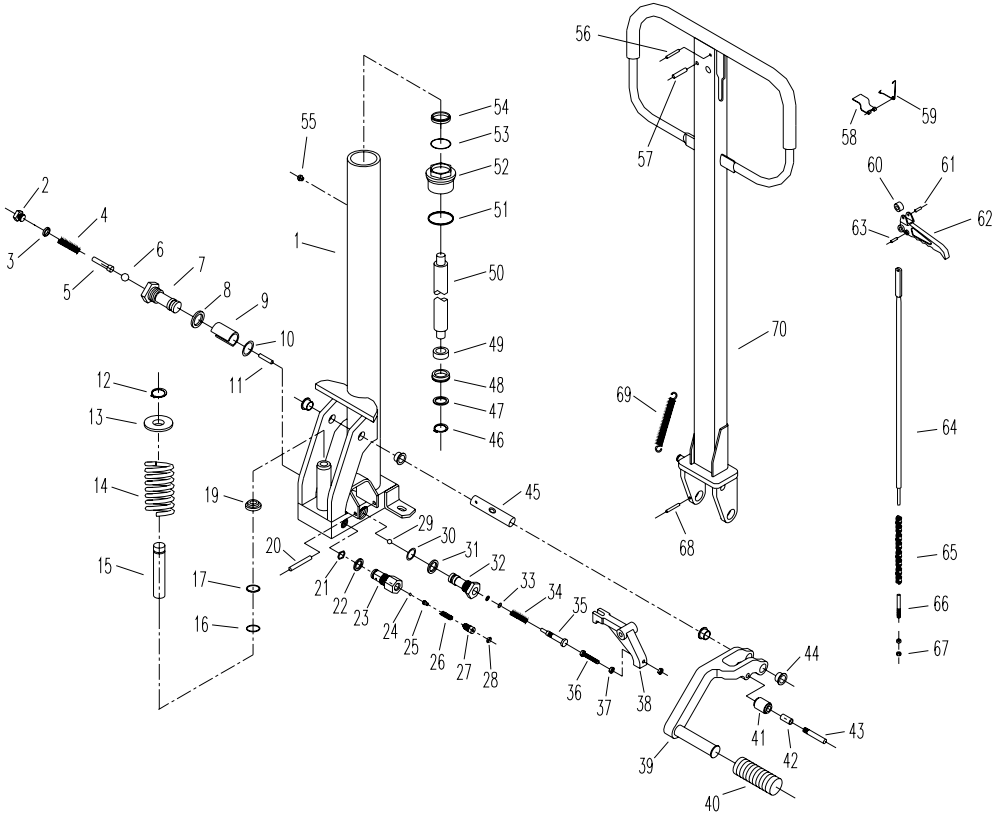

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Figure 3

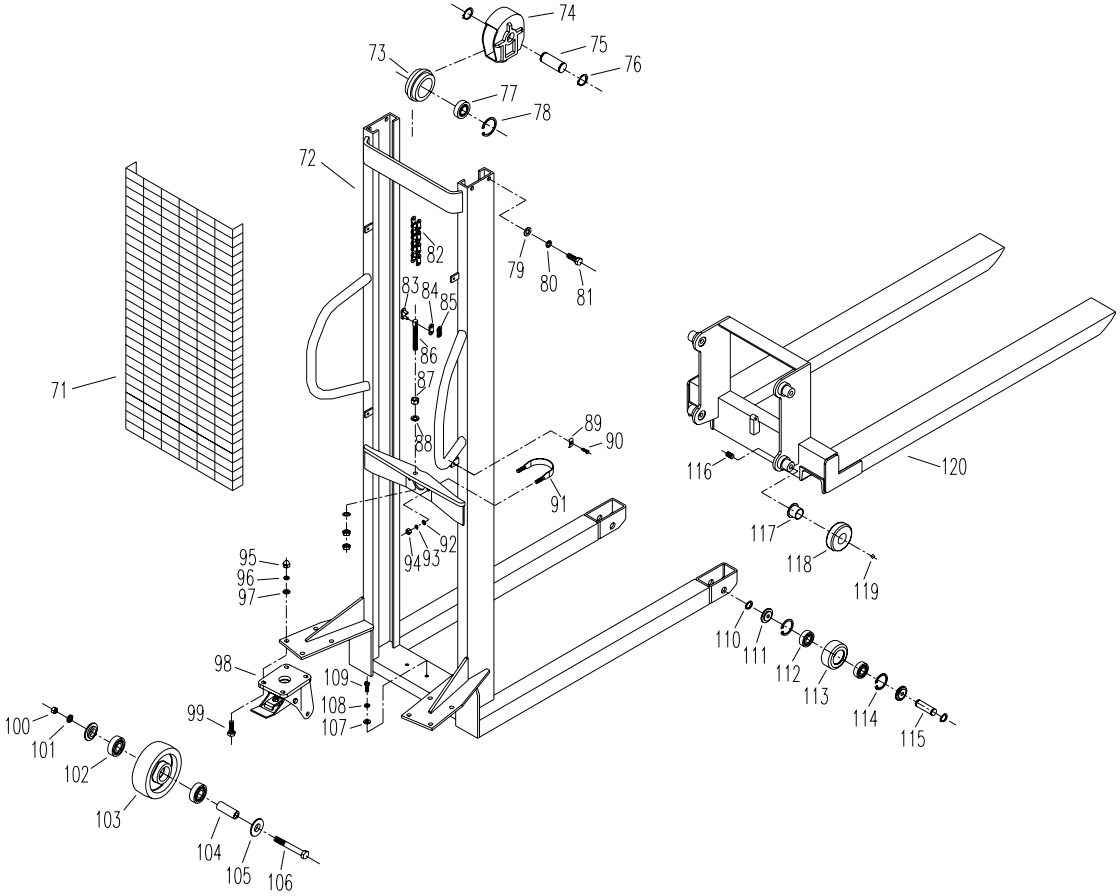
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Figure 3

Parts List For Manual Hydraulic Fork Lifter

（SYC0.5M1.6　See Figure 3）

Item	Description	Qty	Item	Description	Qty
1	Cylinder	1	20	Spring Cotter 8×40	1
2	Screw	1	21	O-Seal Ring 14×1.8	1
3	Copper Liner	1	22	Copper Liner	1
4	Spring	1	23	Valve Bush	1
5	Lift Pin	1	24	Steel Bead 5	1
6	Steel Bead 5.55	1	25	Lift Pin	1
7	Left Valve Bush	1	26	Spring	1
8	Copper Liner	1	27	Bolt	1
9	Flat Spring	1	28	O-Seal Ring 8×1.8	1
10	O-Seal Ring 11.8×2.65	1	29	Steel Bead 8	1
11	Stop Pin 3×16.8	1	30	O-Seal Ring 11.8×2.65	1
12	Snap Ring 15	1	31	Copper Liner	1
13	Spring Cup	1	32	Right Valve Bush	1
14	Spring	1	33	O-Seal Ring4.5×1.8	2
15	Pump Plunger	1	34	Spring	1
16	O-Seal Ring 18×2.5	1	35	Return Oil Ram	1
17	Snap Ring	1	36	Bolt M6×35	1
19	Dust Seal Ring 18	1	37	Nut M6	2

38	Bracket	1	59	Spring	1
39	Food Pedal	1	60	Nylon Roller	1
40	Pedal Pad	1	61	Spring Cotter 4×20	1
41	Roller	1	62	Return Oil Handle	1
42	Oilless Bearing 1028	1	63	Spring Cotter 4×12	1
43	Pin	1	64	Tie Rod	1
44	Oilless Bearing 26/20×18×11	4	65	Chain	1
45	Handle Axle	1	66	Adjustable Bolt	1
46	Snap Ring 12	1	67	Nut M6	2
47	Plane Washer 16	1	68	Spring Cotter 4×30	1
48	Seal Ring UN27	1	69	Extension Spring	1
49	Bush	1	70	Handle Instrument	1
50	Piston Rod	1	71	Net Cover	1
51	Oil Seal	1	72	Truck Frame	1
52	Top Nut	1	73	Carrier Wheel	1
53	O-Seal Ring 29.5×3.65	1	74	Carrier Wheel Cover	1
54	Dust Seal Ring 38.5×28.5×6.5	1	75	Carrier Wheel Axle	1
55	Stopper	1	76	Snap Ring 30	2
56	Spring Cotter 4×30	1	77	Bearing 6206	1
57	Spring Cotter 6×30	1	78	Snap Ring 62	1
58	Flat Spring	1	79	Plane Washer 12	4

80	Spring Washer 12	4	101	Spring Washer 12	2
81	Bolt M12×35	4	102	Bearing 6204	4
82	Chain	1	103	Rear Wheel	2
83	Chain Pin	2	104	Axle Cover	2
84	Chain Sheet	2	105	Push Cover	4
85	Chain Lock Sheet	2	106	Bolt M12×85	2
86	Chain Joint	1	107	Plane Washer 10	2
87	Nut M16	3	108	Spring Washer 10	2
88	Plane Washer 16	2	109	Bolt M10×25	2
89	Flat	4	110	Snap Ring 20	4
90	Bolt M6×20	4	111	Push Cover	4
91	Clevis Bolt	1	112	Bearing 6204	4
92	Plane Washer 8	2	113	Front Wheel	2
93	Spring Washer 8	2	114	Snap Ring 47	4
94	Nut M8	2	115	Axle	2
95	Nut M10	8	116	Screw M12×20	4
96	Spring Washer 10	8	117	Oilless Bearing 43/34×30×24	4
97	Plane Washer 10	8	118	Roller	4
98	Wheel Rack	2	119	Steel Bead 12	4
99	Bolt M10×25	8	120	Fork Arm Carrier	1
100	Nut M12	2			

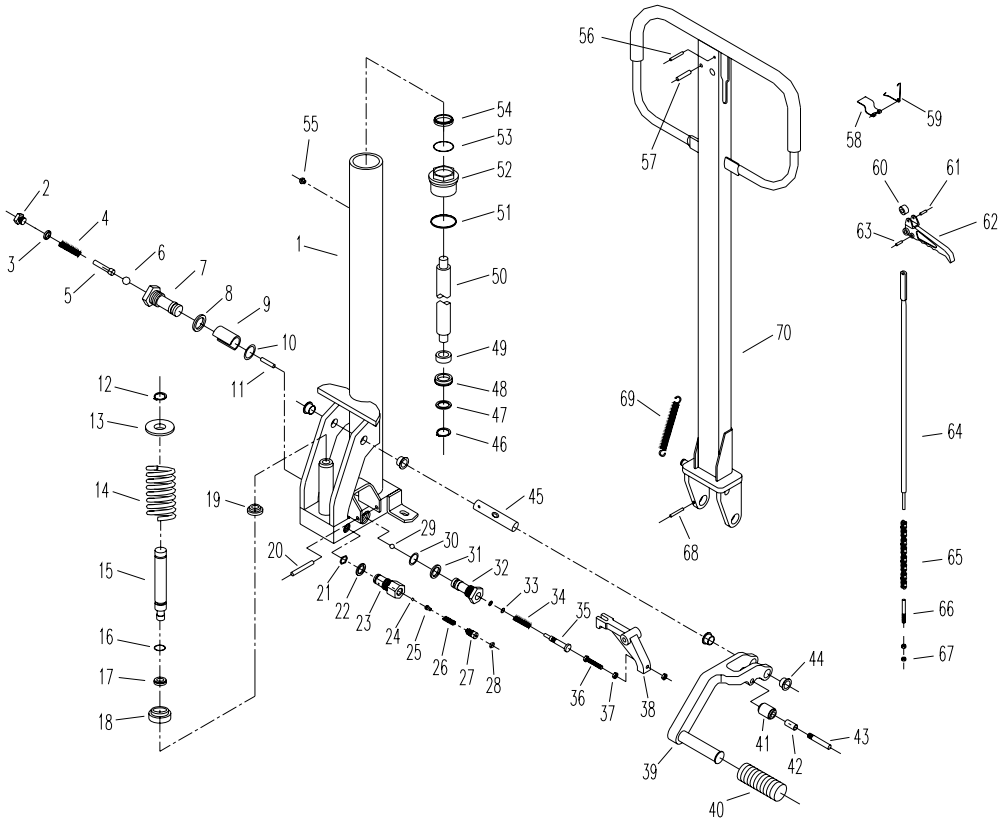
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Figure 4

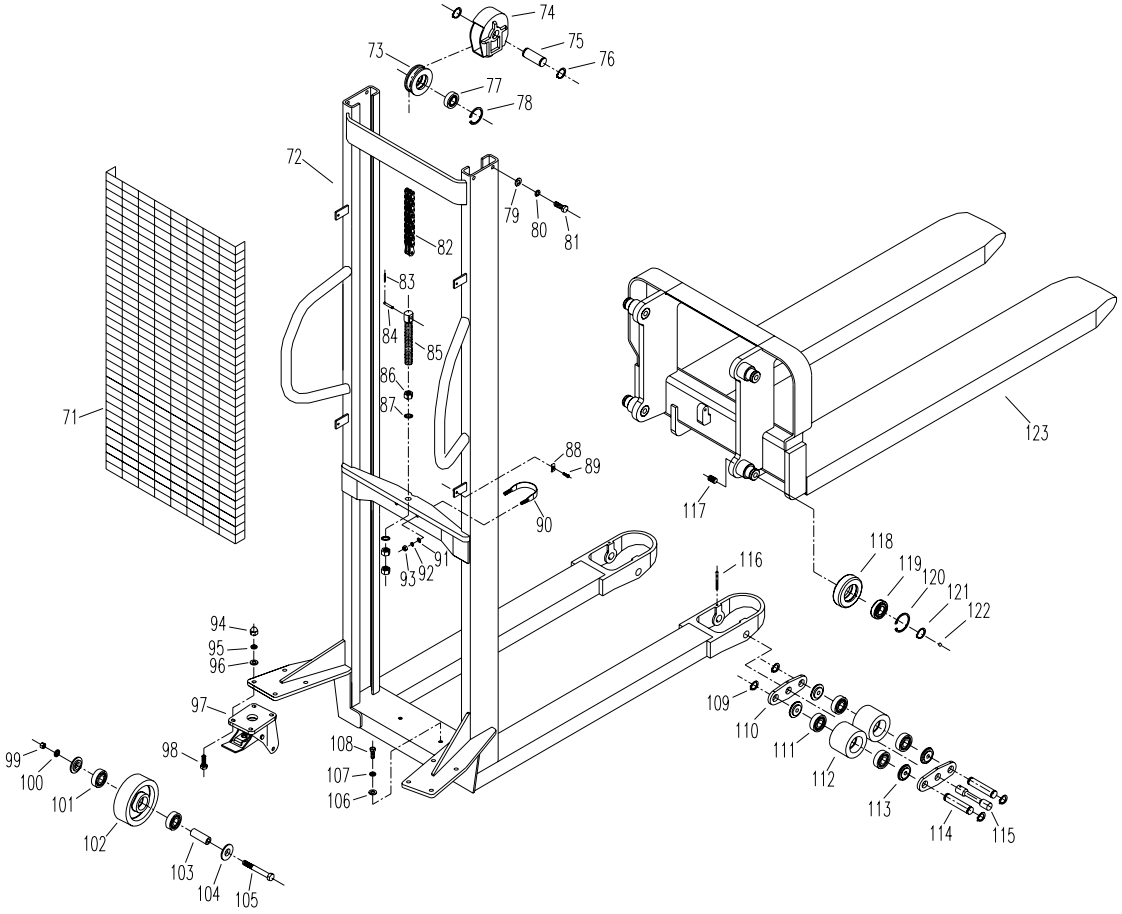
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Figure 4

Parts List For Manual Hydraulic Fork Lifter

（SYC1M1.6　See Figure 4）

Item	Description	Qty	Item	Description	Qty
1	Cylinder	1	19	Dust Seal Ring 16	1
2	Screw	1	20	Spring Cotter 8×40	1
3	Copper Liner	1	21	O-Seal Ring 14×1.8	1
4	Spring	1	22	Copper Liner	1
5	Lift Pin	1	23	Valve Bush	1
6	Steel Bead 5.55	1	24	Steel Bead 5	1
7	Left Valve Bush	1	25	Lift Pin	1
8	Copper Liner	1	26	Spring	1
9	Flat Spring	1	27	Bolt	1
10	O-Seal Ring 11.8×2.65	1	28	O-Seal Ring 8×1.8	1
11	Stop Pin 3×16.8	1	29	Steel Bead 8	1
12	Snap Ring 12	1	30	O-Seal Ring 11.8×2.65	1
13	Spring Cup	1	31	Copper Liner	1
14	Spring	1	32	Right Valve Bush	1
15	Pump Plunger	1	33	O-Seal Ring4.5×1.8	2
16	O-Seal Ring 11.2×2.65	1	34	Spring	1
17	Seal Ring D16	1	35	Return Oil Ram	1
18	Spring Seat	1	36	Bolt M6×35	1

37	Nut M6	2	59	Spring	1
38	Bracket	1	60	Nylon Roller	1
39	Food Pedal	1	61	Spring Cotter 4×20	1
40	Pedal Pad	1	62	Return Oil Handle	1
41	Roller	1	63	Spring Cotter 4×12	1
42	Oilless Bearing 1028	1	64	Tie Rod	1
43	Pin	1	65	Chain	1
44	Oilless Bearing 26/20×18×11	4	66	Adjustable Bolt	1
45	Handle Axle	1	67	Nut M6	2
46	Snap Ring 12	1	68	Spring Cotter 4×30	1
47	Plane Washer 16	1	69	Extension Spring	1
48	Seal Ring UN27	1	70	Handle Instrument	1
49	Bush	1	71	Net Cover	1
50	Piston Rod	1	72	Truck Frame	1
51	Oil Seal	1	73	Carrier Wheel	1
52	Top Nut	1	74	Carrier Wheel Cover	1
53	O-Seal Ring 31.5×3.55	1	75	Carrier Wheel Axle	1
54	Dust Seal Ring 32×45×8	1	76	Snap Ring 30	2
55	Stopper	1	77	Bearing 6306	1
56	Spring Cotter 4×30	1	78	Snap Ring 72	1
57	Spring Cotter 6×30	1	79	Plane Washer 12	4
58	Flat Spring	1	80	Spring Washer 12	4

81	Bolt M12×35	4	103	Axle Cover	2
82	Chain	1	104	Push Cover	4
83	Split Pin 2×30	4	105	Bolt M12×85	2
84	Chain Pin	2	106	Plane Washer 10	2
85	Chain Joint	1	107	Spring Washer 10	2
86	Nut M18	3	108	Bolt M10×25	2
87	Plane Washer 18	2	109	Snap Ring 20	8
88	Flat	4	110	Connector Plate	4
89	Bolt M6×20	4	111	Bearing 6204	8
90	Clevis Bolt	1	112	Front Wheel	4
91	Plane Washer 8	2	113	Push Cover	8
92	Spring Washer 8	2	114	Axle	4
93	Nut M8	2	115	Mandrel	2
94	Nut M10	8	116	Pin 5×50	2
95	Spring Washer 10	8	117	Screw M12×20	4
96	Plane Washer 10	8	118	Roller	4
97	Wheel Rack	2	119	Bearing 6206	4
98	Bolt M10×25	8	120	Snap Ring 62	4
99	Nut M12	2	121	Snap Ring 30	4
100	Spring Washer 12	2	122	Steel Bead 12	4
101	Bearing 6204	4	123	Fork Arm Carrier	1
102	Rear Wheel	2			

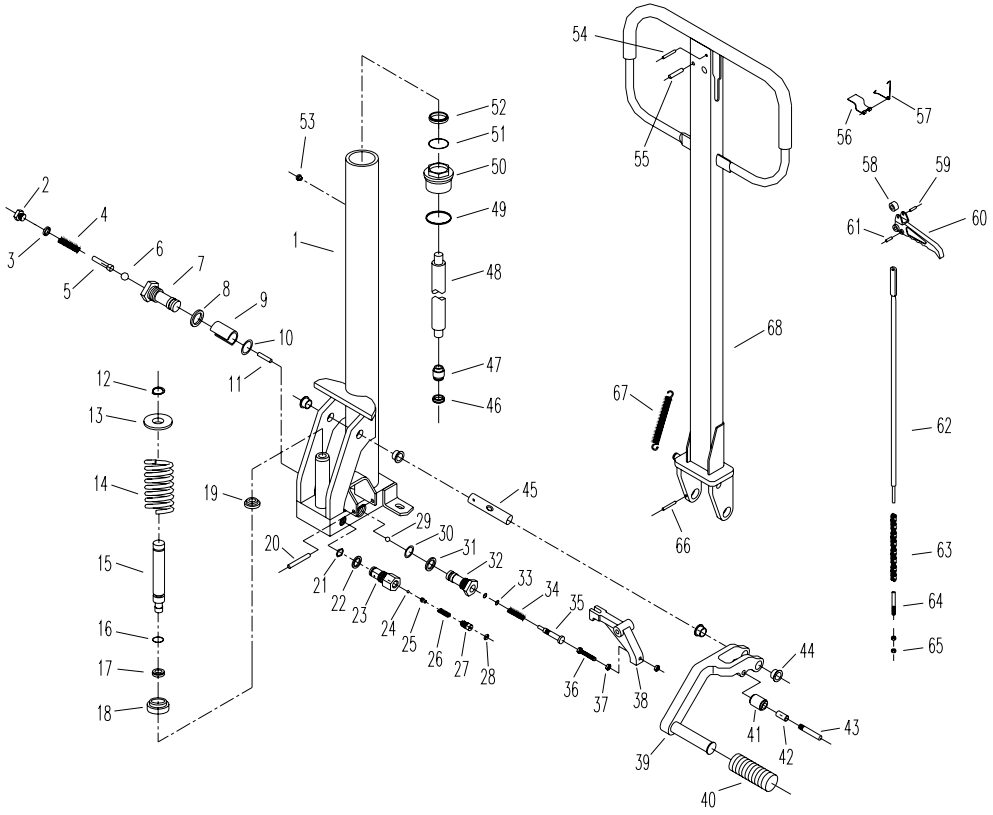
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Figure 5

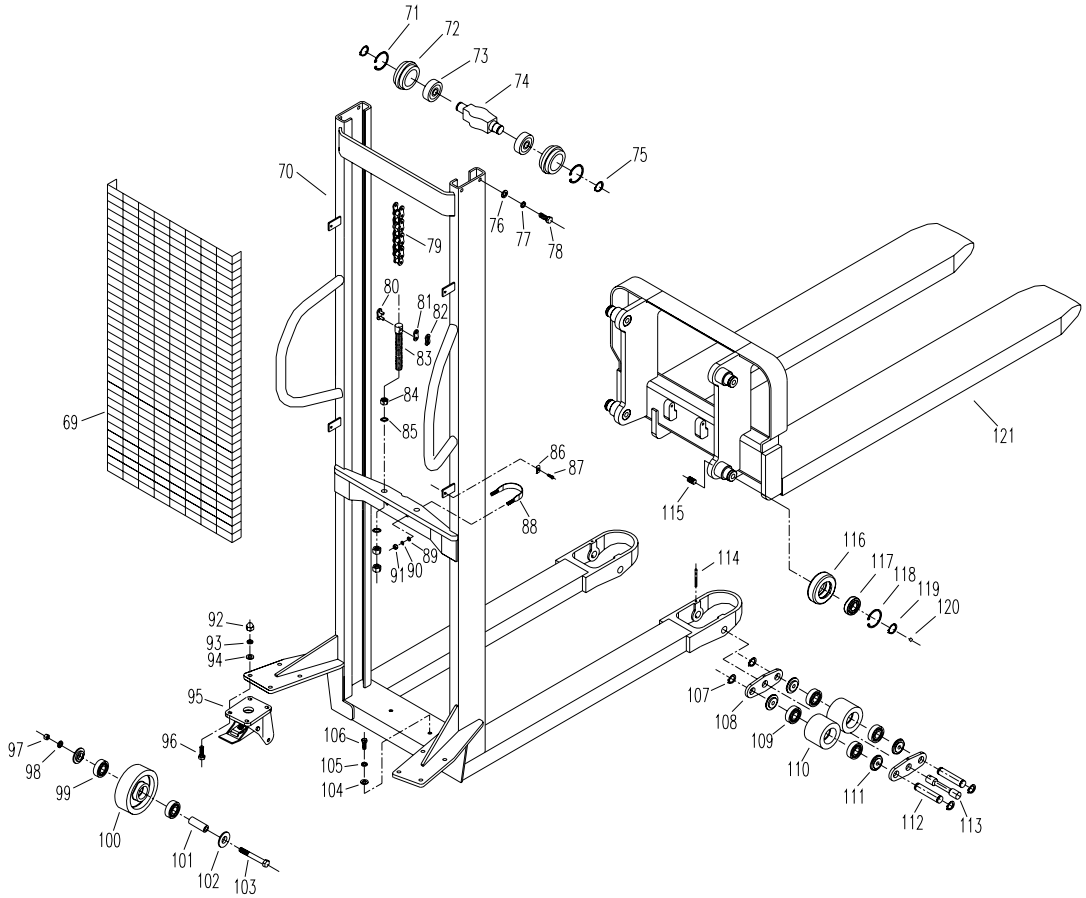
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Figure 5

Parts List For Manual Hydraulic Fork Lifter

（SYC1.5M1.6　See Figure 5）

Item	Description	Qty	Item	Description	Qty
1	Cylinder	1	19	Dust Seal Ring 16	1
2	Screw	1	20	Spring Cotter 8×40	1
3	Copper Liner	1	21	O-Seal Ring 14×1.8	1
4	Spring	1	22	Copper Liner	1
5	Lift Pin	1	23	Valve Bush	1
6	Steel Bead 5.55	1	24	Steel Bead 5	1
7	Left Valve Bush	1	25	Lift Pin	1
8	Copper Liner	1	26	Spring	1
9	Flat Spring	1	27	Bolt	1
10	O-Seal Ring 11.8×2.65	1	28	O-Seal Ring 8×1.8	1
11	Stop Pin 3×16.8	1	29	Steel Bead 8	1
12	Snap Ring 12	1	30	O-Seal Ring 11.8×2.65	1
13	Spring Cup	1	31	Copper Liner	1
14	Spring	1	32	Right Valve Bush	1
15	Pump Plunger	1	33	O-Seal Ring4.5×1.8	2
16	O-Seal Ring 11.2×2.65	1	34	Spring	1
17	Seal Ring D16	1	35	Return Oil Ram	1
18	Spring Seat	1	36	Bolt M6×35	1

37	Nut M6	2	59	Spring Cotter 4×20	1
38	Bracket	1	60	Return Oil Handle	1
39	Food Pedal	1	61	Spring Cotter 4×12	1
40	Pedal Pad	1	62	Tie Rod	1
41	Roller	1	63	Chain	1
42	Oilless Bearing 1028	1	64	Adjustable Bolt	1
43	Pin	1	65	Nut M6	2
44	Oilless Bearing 26/20×18×11	4	66	Spring Cotter 4×30	1
45	Handle Axle	1	67	Extension Spring	1
46	Seal Ring 30×40×6	1	68	Handle Instrument	1
47	Piston	1	69	Net Cover	1
48	Piston Rod	1	70	Truck Frame	1
49	Oil Seal	1	71	Snap Ring 62	2
50	Top Nut	1	72	Carrier Wheel	2
51	O-Seal Ring 31.5×3.55	1	73	Bearing 6206	2
52	Dust Seal Ring 32×45×8	1	74	Carrier Wheel Axle	1
53	Stopper	1	75	Snap Ring 30	2
54	Spring Cotter 4×30	1	76	Plane Washer 12	4
55	Spring Cotter 6×30	1	77	Spring Washer 12	4
56	Flat Spring	1	78	Bolt M12×35	4
57	Spring	1	79	Chain	2
58	Nylon Roller	1	80	Chain Pin	4

81	Chain Sheet	4	102	Push Cover	4
82	Chain Lock Sheet	4	103	Bolt M12×85	2
83	Chain Joint	2	104	Plane Washer 10	2
84	Nut M16	6	105	Spring Washer 10	2
85	Plane Washer 16	4	106	Bolt M10×25	2
86	Flat	4	107	Snap Ring 20	8
87	Bolt M6×20	4	108	Connector Plate	4
88	Clevis Bolt	1	109	Bearing 6204	8
89	Plane Washer 8	2	110	Front Wheel	4
90	Spring Washer 8	2	111	Push Cover	8
91	Nut M8	2	112	Axle	4
92	Nut M10	8	113	Mandrel	2
93	Spring Washer 10	8	114	Pin 5×50	2
94	Plane Washer 10	8	115	Screw M12×20	4
95	Wheel Rack	2	116	Roller	4
96	Bolt M10×25	8	117	Bearing 6206	4
97	Nut M12	2	118	Snap Ring 62	4
98	Spring Washer 12	2	119	Snap Ring 30	4
99	Bearing 6204	4	120	Steel Bead 12	4
100	Rear Wheel	2	121	Fork Arm Carrier	1
101	Axle Cover	2			