BACKHOE

Operation Manual

FOREWORD

The purpose of this manual is to assist you in operating and maintaining your BACKHOE. Read it carefully before operating and maintaining the BACKHOE attachment, it furnishers the specifications, construction, instruction and also the maintenance as well of the BACKHOE attachment. Some information may be general in nature due to unknown and varying conditions. However, through experience and these instructions, you should be able to develop operating procedures suitable to your particular situation.

“right” and “left” as used throughout this manual are determined by facing the direction the machine will travel when in use.

Please kindly note that the specifications and structure of the BACKHOE shall be subject to change without notice.

Thank you very much for purchasing series products from our dealers, and cordially welcome your advice suggestions, on our products, so that we may make improvements on our products in future.

We strived to make this operations manual as correct as possible. However, we do not guarantee the accuracy or recentness of the information herein due to having translated the manual to English. We assume no liability for errors or omission.

Editor

August, 2005

CONTENTS

CHAPER 1 SAFETY INFORMATION

PLEASE NOTE

Make sure all potential operators of this equipment review this manual and all safety messages contained within.

1.1 safety first

Read this manual completely and carefully and make sure you understand all controls. Make sure you are aware of the stability and work characteristic of this BACKHOE before you begin operation. Contact your dealer if you are unsure of any item concerning operation, maintenance or service of this BACKHOE.

Understand that you safety and the safety of other person is measured by how you service and operate this BACKHOE. Know the position and operations of all controls before you try to operate. Make sure you check all controls in a safe state before starting.

The safety information given in this manual does not replace any safety codes, insurance needs, federal, state and local laws. Make sure your machine has the correct equipment required by your local laws and regulations.

	**This safety alert symbol indicates important safety messages in this manual. When you see this symbol, carefully read this message that follows and be alert to the possibility of personnel injury or death.**

1.2 Safety Regulation and Important Caution

Safety regulation

1. **While operating your BACKHOE, make sure to observe the safety regulations of tractor.**
2. **Only the operators who have been specially trained on BACKHOE and understand fully this manual can operate the BACKHOE.**
3. **On traveling**
   To avoid the BACKHOE drop down, be sure the safety lock is in the safety locking position when traveling on the road.

To avoid the tractor tipping or sliding, drive the BACKHOE carefully and slowly while turning.

When traveling on the road, be sure the stabilizers are in fully raised position.

4. **No persons or obstacles are allowed within the BACKHOEs maximum working area.**
5. **To avoid the BACKHOE natural drop down , be sure the BACKHOE boom stick to the ground screwedly after working.**
6. **In order to maintain higher stability on traveling with BACKHOE, add ballast in tractors front-end.**

Important caution

1. **Working with your BACKHOE in unload made while first operating the BACKHOE or after repair. Make sure the unit is in proper condition before starting your work.**
2. **Check all bolts and nuts always, tighten immediately if any loosening is found.**
3. **Add hydraulic oil and lubricant if necessary, and check all hoses, seals, and couplers. Don't operate your BACKHOEs if any leaking exists.**
4. **To avoid sudden and quick reaction damage to BACKHOE or tractor, it's strictly prohibited to fast move control levers to maximum position during winging the BACKHOE, especially with a filled bucket, the only proper method is to move the control levers slowly.**
5. **Don't perform digging operation before the stabilizer maintains contact with the ground. If necessary, the stabilizer should be adjusted by staff. When traveling with BACKHOE, be sure the stabilizer is in the fully high position.**
6. **Don't adjust the hydraulic valve unless an engineer gives instruction.**
7. **To avoid escaping of pressurized hydraulic oil, move the control levers in all direction before disconnecting any hoses, steel lines or couplers the oil will return to the tank.**
8. **Don't transport your BACKHOE with the bucket fully raised.**
9. **When traveling with your BACKHOE, do not make sudden starts, stops and turn at high speed. Do not exceed safe speed limits or sudden start when climbing grades.**
10. **watch overhead low hanging wires, don't touch wires with any part of the BACKHOE. Keep your work area clear of obstacles at any time.**
11. **Before swinging your BACKHOE for any reason, make sure you have enough space to swing and all persons are clear of BACKHOE.**
12. **Take extra care when working on hillsides and close to ditches or any place where danger of tipping or sliding is possible.**
13. **Don't attempt any repairs, maintenances of your BACKHOE while it is in operation. Always turn off tractor before making any repairs, maintenances and adjustments. Be sure the repairs tools, which are used, are designed by the tool manufacture for the specific tank.**
14. **Keep all bolts and nut tight. Replace any damaged or worn parts immediately. Make sure replaced parts of equivalent on strength and quality.**

1.3 Safety Decals

Care of safety decals

1. **Keep safety decals clean and free of obstructing material.**
2. **Replace damaged or missing safety decals with new decals from your dealer.**
3. **If a component with a safety decals(s) affixed is replaced with a new part, make sure new safety decal9s0 are attached in the same locations as the replaced components.**

CHAPTER 2. BACKHOE SPECIFICATON

2.1 Brief Introduction

series BACKHOE can be attached to several brands wheeled tractors for enlarging the service scope of the tractor.

You can reference the Figure of technical parameter.

MODEL	LW-6	LW-7	LW-8
Dimension(L*W*H)(mm)	3800*1860*2500	4410*1960*3400	4980*1960*3510
Structure weight(kg)	600	650	700
Max digging depth(m)	1.85	2.15	2.64
Max digging radius(m)	2.8	3.36	3.93
Max digging height(m)	2.5	3.4	3.5
Max unloading height(m)	1.4	1.76	2.0
Stabilizer width(m)	1.8	1.8	1.83
Swing angle for boom	140°	140°	140°
Bucket turning angle	160°	160°	160°
Bucket capacity(m^3)	0.036	0.045	0.045
Bucket width(mm)	300	400	400

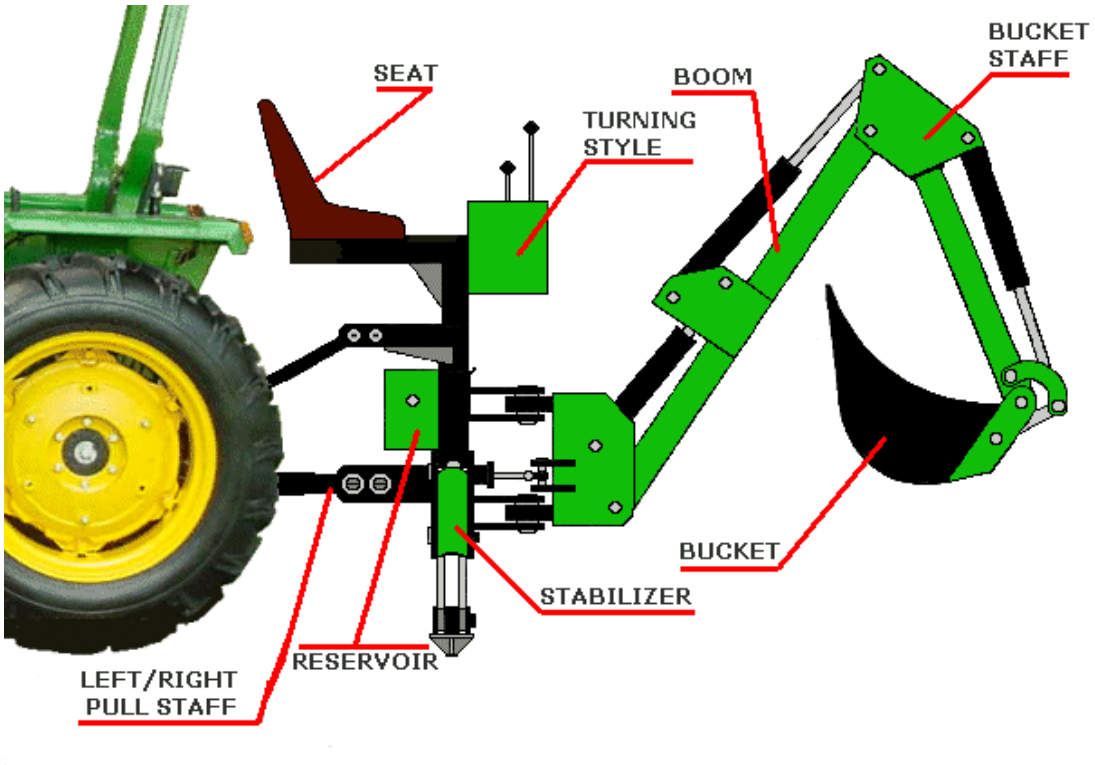


Fig 2.1 Main components of the backhoe

CHAPTER 3. OPERATION

3.1 Tractor Preparation

Counter weight

Add recommended ballast in tractor's front-end loader for increased stability. Refer to tractor operator's manual for specific recommendations on counterweighing tractor.

ROPs system.

The tractor must be equipped with an approved ROPS system to ensure adequate operator's protection

Tractor hydraulic system

Tractor operation in a BACKHOE application significantly increases demands on the tractor hydraulic system. Check the tractor hydraulic system level fluid. Refer to your tractor operator's manual maintenance section for instructions regarding tractor hydraulic system maintenance.
Adhere to recommendations in your tractor operator's manual concerning hydraulic fluid and filter specifications, and change intervals.

Tractor Tires

Rear tires must be maintained at the maximum recommended inflation to maintain normal tire profile with the added weight of BACKHOE.
Rear tires must be maintained at equal pressure within the recommended tire inflation range. Unequal rear tire inflation can prevent BACKHOE bucked from contacting the ground across its full width.

Wheel Tread Setting

Tractor rear wheel tread setting must be restricted to wheel treed spacing recommended in the tractor operator's manual.

3.2 BACKHOE mounting

REFERENCE THE FIGURE OF ASSEMBLY AND HYDRAULIC OIL LINE SYSTEM OF THE HYDRAULIC BACKHOE

1. **Be sure your tractor's left/right low pull staff have a pull and lock equipment. Otherwise, the BACKHOE couldn't fix up with the tractor and will cause swing and injure or machine failure when traveling with the BACKHOE.**
2. **Put the tractor's raised stick to the lowest position when connecting the BACKHOE as the figure guidance, then adjust the raised stick so as to locking nut, make sure the BACKHOE center connect and fix up with the tractor. Failure to do these procedures may cause injure on traveling.**
3. **Don't raise the BACKHOE until the tractor and BACKHOE are connected with 3**

connecting pins.

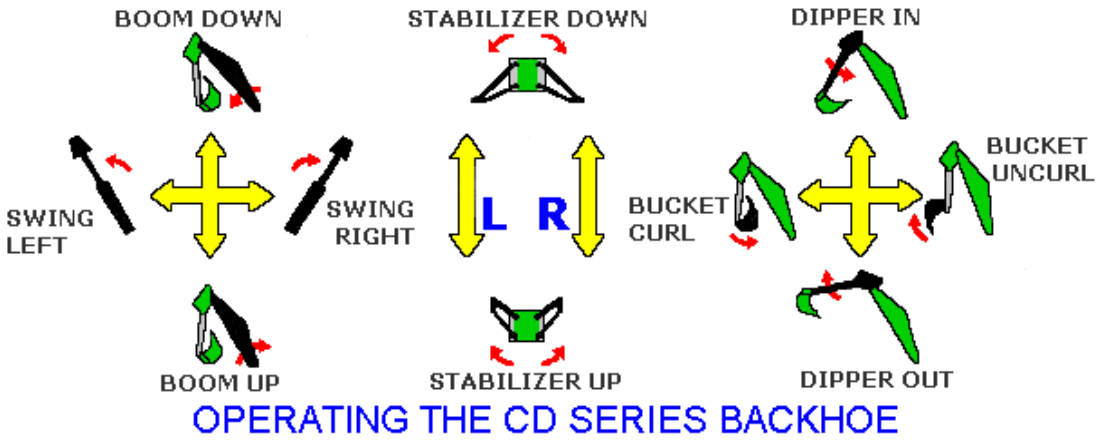
4. Replace the parts connecting both tractor and BACKHOE if necessary, make sure the replacement have a strength equivalent to or greater than original parts.
5. The BACKHOE valve must be compatible with the hydraulic system that will power it.
6. The BACKHOE has been filled with oil at the factory. The oil in unit is compatible with most tractor manufacture's oil. Don't remove control levers on unit before BACKHOE connected the tractor or the independent hydraulic oil system has been completed.
7. For many tractor systems exceed a flow rate specified for you BACKHOE, the flow may have to be adjusted by throttling the engine RPM down to obtain an acceptable flow rate, by adjusting the flow rate correctly could prevent sudden stock loads on the cylinders. Hoses, etc. this results in a smooth operation and reduced maintenance costs and down time.

	**Caution: Do not operate the BACKHOE if the fittings are leaking or if the hoses are damaged. A sudden line burst would cause the boom to drop suddenly, causing damage to the tractor of BACKHOE or injury to personnel.**

3.3 BACKHOE Hydraulic Controls

The BACKHOE hydraulic valve features 4 levers control. Refer to the diagram for reference to loader control functions.

The diagram loader on the back of the bracket of control valve is visible when operating the valve.



CHAPTER 4. MAINTENNCE AND STORING

4.1 Maintenance

	**Caution: Do not perform and service of maintenance operations with BACKHOE raised off the ground. For additional access to tractor components remove BACKHOE.**

Failure to perform the routine maintenance procedures outlined below may cause your BACKHOE to operate improperly, such operation could lead to person injure. Your BACKHOE requires a few minutes of maintenance before each working. For your own safety, follow the procedures suggested bellow.

1. **Don’t service adjust the BACKHOE while it is operating. Remove all power from both tractor and BACKHOE while serving the BACKHOE.**
2. **To avoid injure from escaping pressurized hydraulic oil, move the control levers all directions before disconnecting any hoses, steel lines, couplers.**

	**Caution: Before disconnecting hydraulic lines, relieve all hydraulic pressure. Escaping hydraulic oil under pressure can have sufficient force to penetrate the skin causing serious personal injure.**

3. **Clear the suction line filter after the first 10 hours of operation.**
4. **Check all hardware and hoses in order to be sure they are secure, check particularly the 3-points mounting to link, and check all retaining bolts in pins.**
5. **Check the hosed for cracks, cuts, if a hose is defective, replaced it at once.**
6. **Check for any hoses that may be rubbing against sharps, if any such hoses be found, immediately take them to a safer place.**
7. **Lubricate all zerks, which need before and after operation.**
8. **To avoid injure from escaping pressurized hydraulic oil while disconnecting the BACKHOE oil line from tractor, slow the tractor PRM down until turned off it.**

4.2 Storing at the end of season

1. Coat all exposed cylinder shafts with grease or corrosion preventive
2. Store the BACKHOE in a dry, protective place.
3. Clear the until of all mud and dirt, touch up the paint to prevent rust.

4. Install dirt caps on the quick couplers to prevent dirt contamination of the hydraulic oil system or connect them together.

4.3 At the start of a season

1. Clean all dirt and debris from all quick couplers.
2. Check all hydraulic hoses and replaced if necessary.
3. Tighten loose bolt and nuts.
4. Lubricate the moving parts.
5. Check the bucket teeth, sharpened or replaced if necessary.
6. Run the unit slowly and check the operation control system and make sure on property condition before starting to dig.

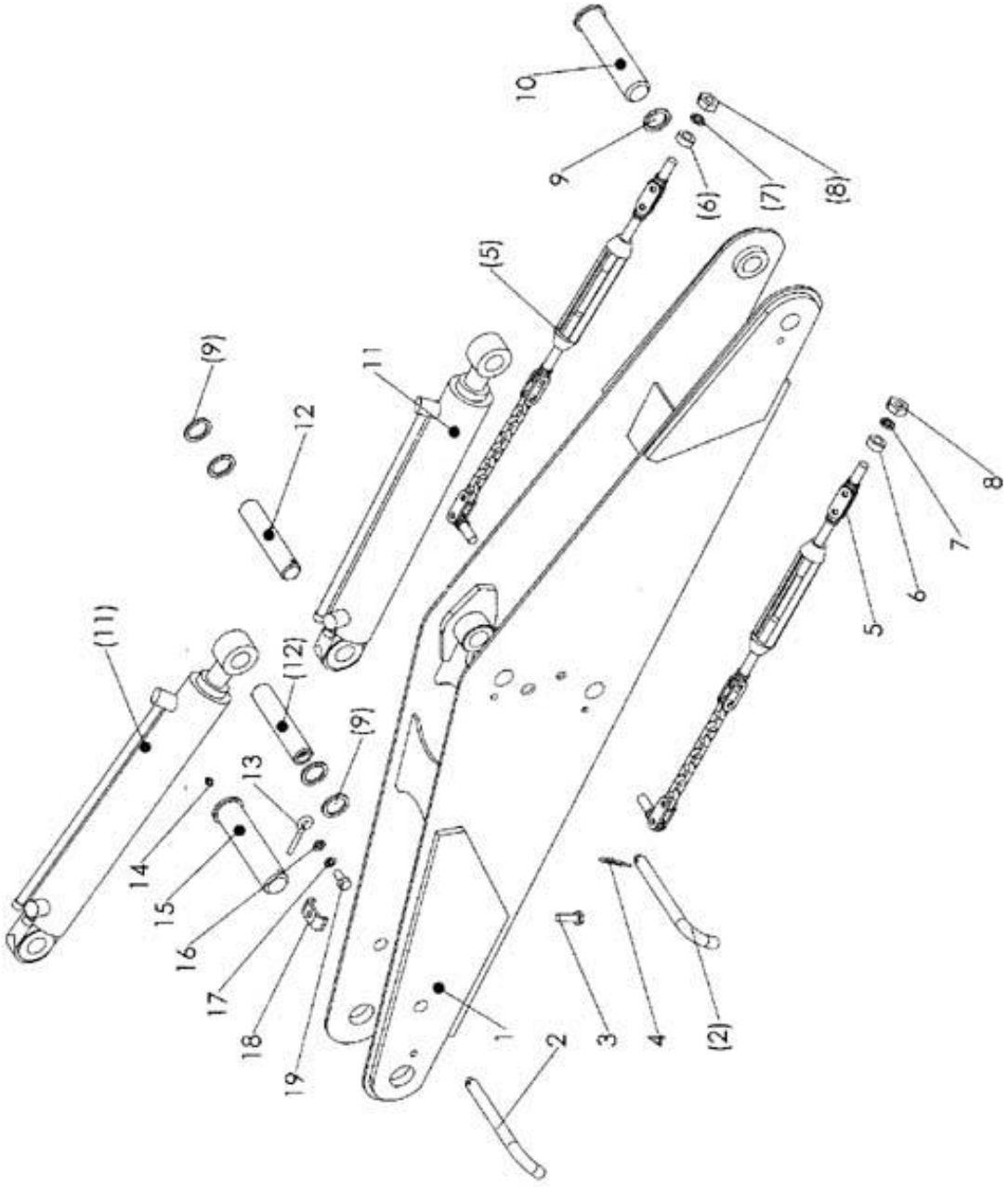
CHAPTER 5. TROUBLE SHOOTING

Trouble	Possible causes	Shooting
BACKHOE Can't operate	1. Low supply 2. Maser valve stick	1. Add oil to proper position 2. Clean or repair master

		valve
Sticking plungers	**1. Excessively high oil temperature 2. Dirt in oil 3. Pipe fitting too tight 4. Valve warped 5. Plunger bent 6. High pressure in valve 7. Valve equilibrium not at thermal 8. Spring and cap in bad position**	**1. Eliminating restrict and filtering system 2. Changed oil or clean system 3. Check torque 4. Replace faulty parts 5. Check with gauge on inlet and cylinder lines 6. Loose valve and check 7. Replace faulty parts 8. Warm up system 9. Loose the cap and retighten**
Leaking seals	**1. Paint on or under seal 2. Excessive back pressure 3. Dirt under seal 4. Scored plunger 5. Loose seal plates 6. Cut or score seal**	**1. Clean and retighten seal 2. Open and enlarge oil to reservoir 3. Clean and retighten 4. Replace valve or section 5. Clean and retighten 6. Replace faulty parts**
Unable to move plunger	**1. Dirt in valve 2. Plunger cap full oil 3. Connection is bad**	**1. Clean and flush out 2. Replace seals 3. Clean connecting lines**

CHAPTER 6. ILLUSTRAED PARTS CATALOGUE

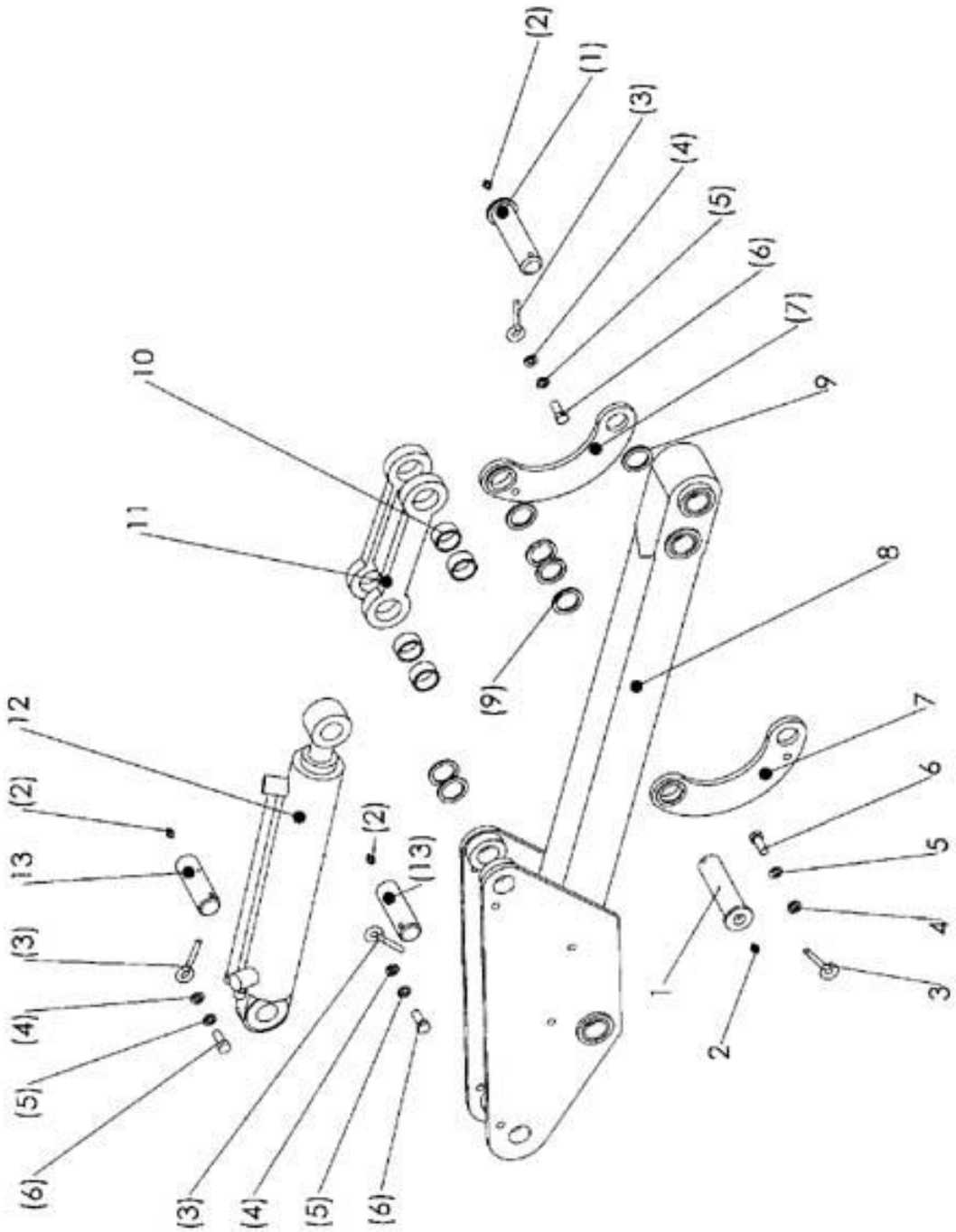
6.1 Boom Assembly



6.1 Boom Assembly 大动壁总成

序号 Ser.No.	代号 Part No.	名称及规格	Name & Specifications	数量 Quantity	备注 Remarks
1	LW-7.03.012	大动壁焊合件	Boom weldment	1	
2	LW-7.03.102	大动壁插销	Pin	1	
3	GB5783-86	螺栓 M12*40	Hex. Headbolt M12*40	2	
4	LW-7.03.106	R 销	“P” Pin	2	
5	LW-7.03.014	链条总成	Chain assembly	2	
6	LW-7.03.105	链条隔套	Chain sleeve	2	
7	GB93-87	垫圈 16	Spring lock warsh 16	2	
8	GB6170-86	螺母 M16	Adjusting washer	2	
9	LW-7.02.103	调整垫圈	Pin Shaft	3	
10	LW-7.03.107	销轴	Boom cylinder	1	
11	LW-7.03.011	大动臂油缸总成	Pin shaft	2	
12	LW-7.03.104	销轴	Pin	2	
13	LW-7.01.101	插销	Grease nipple M10*1	4	
14	GB1153-89	油杯 M10*1	Pin shaft	4	
15	LW-7.03.101	销轴	Plain warsher 12	1	
16	GB97.1-85	垫圈 12	Spring lock warsher 12	4	
17	GB93-87	垫圈 12	Fixing plate for pipe	4	
18	LW-7.03.103	油缸固定板	Hex. Head boll M12*25	2	
19	GB5783-86	螺栓 M12*25	Mounting bracket (RH)	4	

6.2 Bucket Staff Assembly

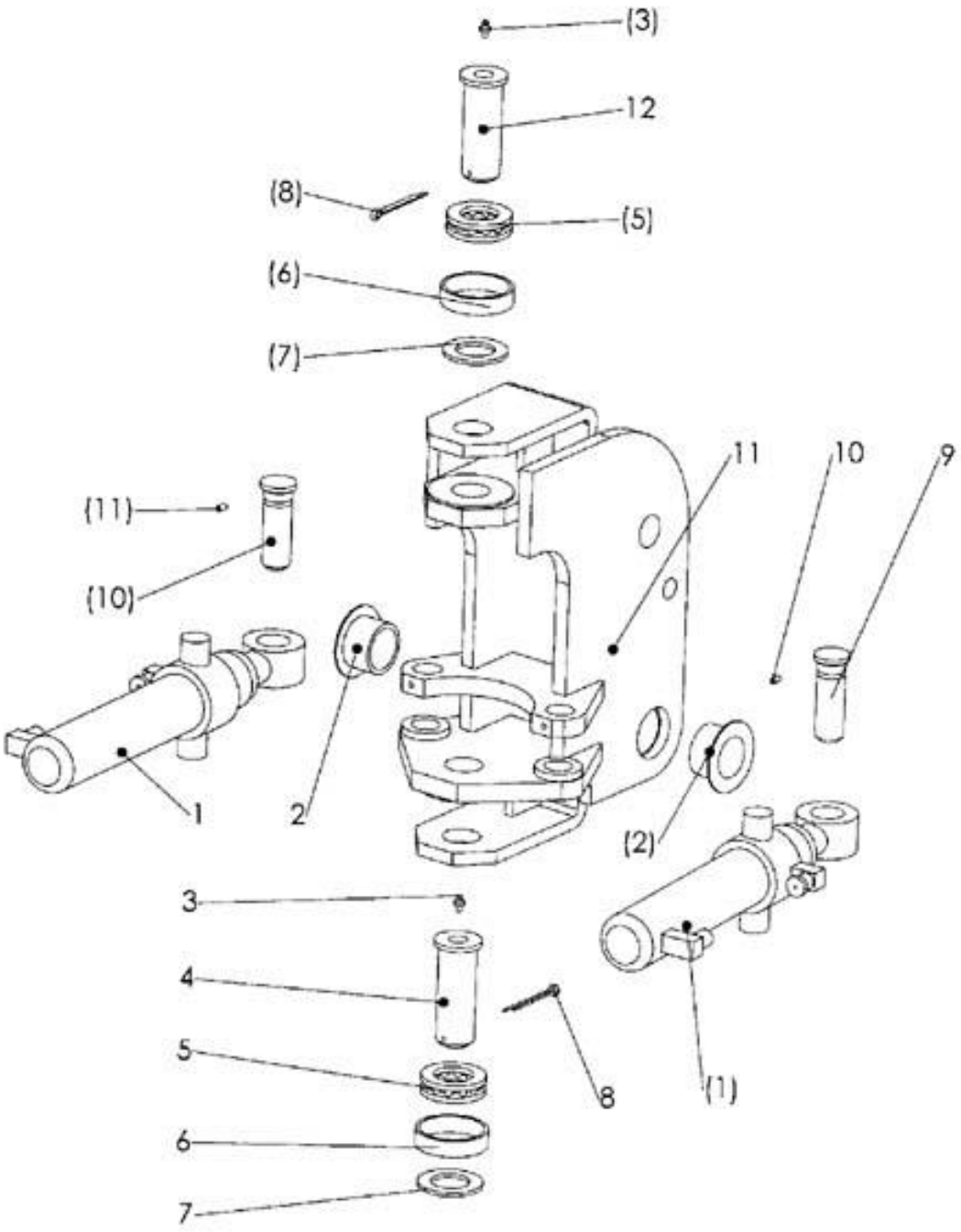


11

6.2 Bucket Staff Assembly 小动壁总成

序号 Ser.No.	代号 Part No.	名称及规格	Name & Specifications	数量 Quantity	备注 Remarks
1	LW-7.02.104	小动臂销轴	Pin shaft	2	
2	GB1153-89	油杯 M10*1	Grease nipple M10*1	4	
3	LW-7.01.101	插销	Pin	4	
4	GB93-87	垫圈 12	Spring lock warsher12	4	
5	GB97.1-85	垫圈 12	Plain warsher 12	4	
6	GB5783-86	螺栓 M12*25	Hex. Head bolt M12*25	4	
7	LW-7.02.013	月亮板焊合件	Cambered plate	2	
8	LW-7.02.011	小动臂焊合件	Bucket staff weldment	1	
9	LW-7.02.106	调整垫圈	Adjusting Warsher	9	
10	LW-7.02.119	衬套	Bush	4	
11	LW-7.02.014	挖斗连接板焊合件	Connecting board weldment	1	
12	LW-7.02.012	小动臂油缸	Cylineder-Bucket Staff	1	
13	LW-7.02.101	小动臂销轴	Grease nipple M10*1	2	

6.3 Swing Post Assembly

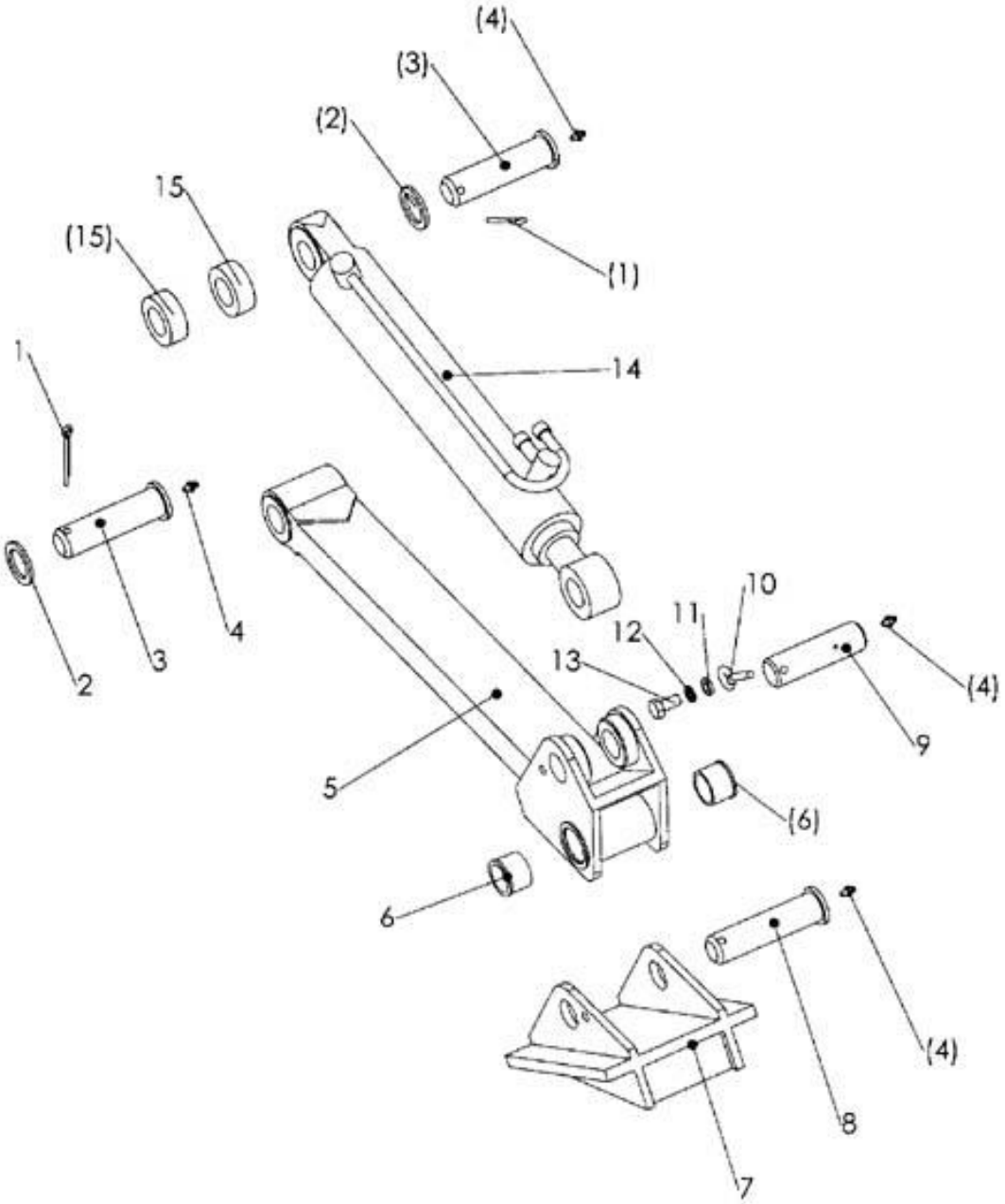


13

6.3 Swing Post Assembly 旋转节总成

序号 Ser.No.	代号 Part No.	名称及规格	Name & Specifications	数量 Quantity	备注 Remarks
1	LW-7.09.012	旋转节油缸总成	Cylinder	2	
2	LW-7.09.106	衬套	Bush	2	
3	GB1152-89	油杯 M10*1	Grease nipple M10*1	2	
4	LW-7.09.105	销轴	Pin shaft	1	
5	GB301-1995	轴承 51208	Bearing 51208	2	
6	LW-7.09.102	轴承套	Bush	2	
7	LW-7.09.103	平垫	Plain warsher	2	
8	GB91-86	销 5*65	Split pin 5*56	2	
9	LW-7.09.104	油缸销	Pin shaft	2	
10	GB71-85	紧定螺钉 M6*12	Screw M16*12	2	
11	LW-7.09.011	旋转节焊合件	Swing post weldment	1	
12	LW-7.09.101	销轴 1	Pin shaft	1	

6.4 Stabilizer Assembly

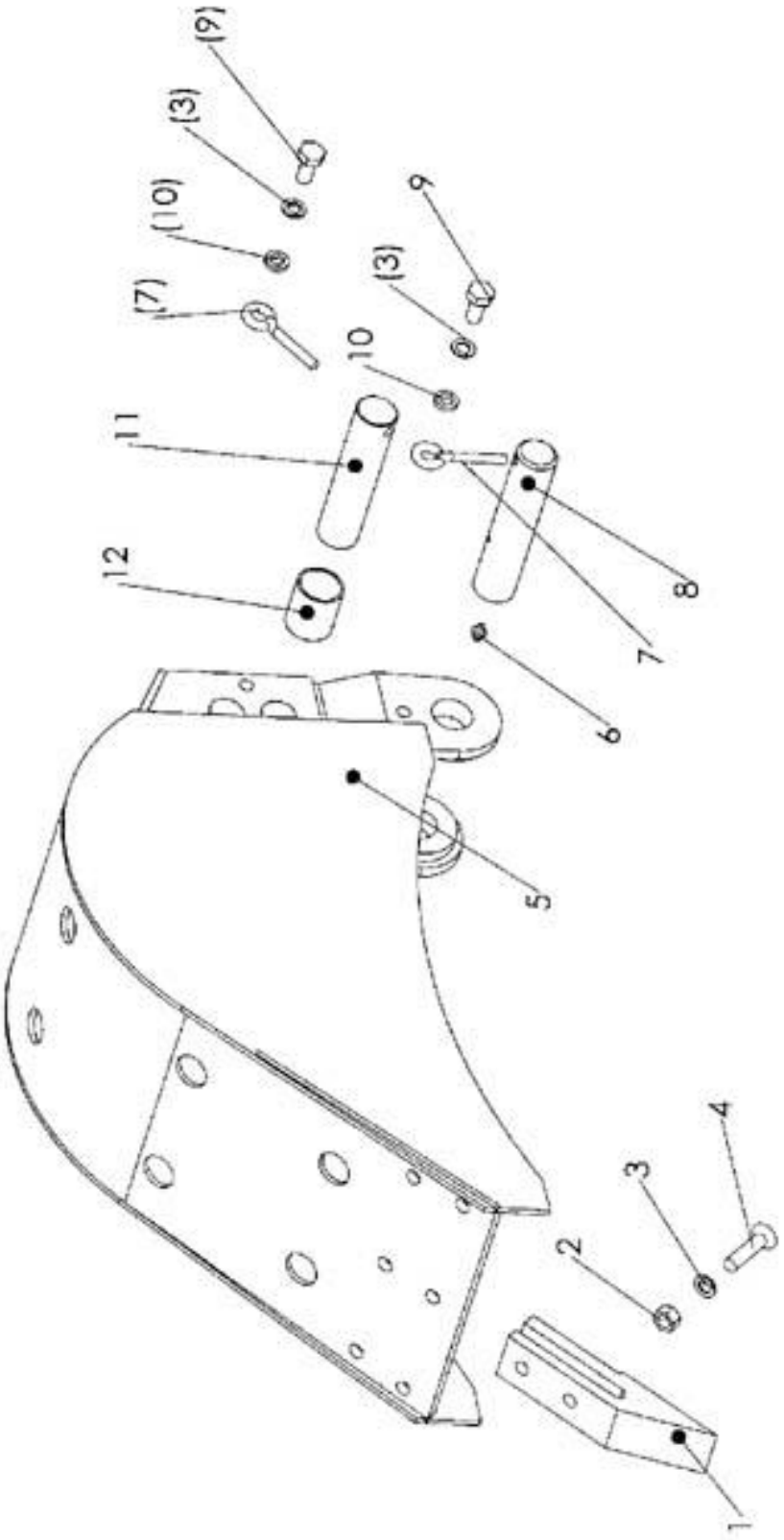


15

6.4 Stabilizer Assembly 撑角总成

序号 Ser.No.	代号 Part No.	名称及规格	Name & Specifications	数量 Quantity	备注 Remarks
1	GB91-86	销 5*75	Split pin 5*75	2	
2	GB97.1-85	垫圈 36	Plain warsher 36	2	
3	LW-7.08.101	销轴	Pin Shaft	2	
4	GB1152-89	油杯 M10*1	Grease nipple M10*1	4	
5	LW-7.08.011	支撑杆焊合件	Stabilizer bracket	1	
6	LW-7.02.112	衬套	Bush	1	
7	LW-7.08.013	撑脚板焊合件	Stabilizer foot	1	
8	LW-7.08.104	撑脚板销轴	Pin Shaft	1	
9	LW-7.08.103	油缸销轴	Pin shaft	1	
10	LW-7.01.101	插销	Pin	2	
11	GB97.1-85	垫圈 12	Plain washer 12	2	
12	GB93-87	垫圈 12	Spring lock washer 12	2	
13	GB5783-86	螺栓 M12*25	Hex. Head bolt M12*25	2	
14	LW-7.08.012	撑脚油缸总成	Stabilizer Cylinder Assem	1	
15	LW-7.08.102	油缸隔套	Sleeve	2	

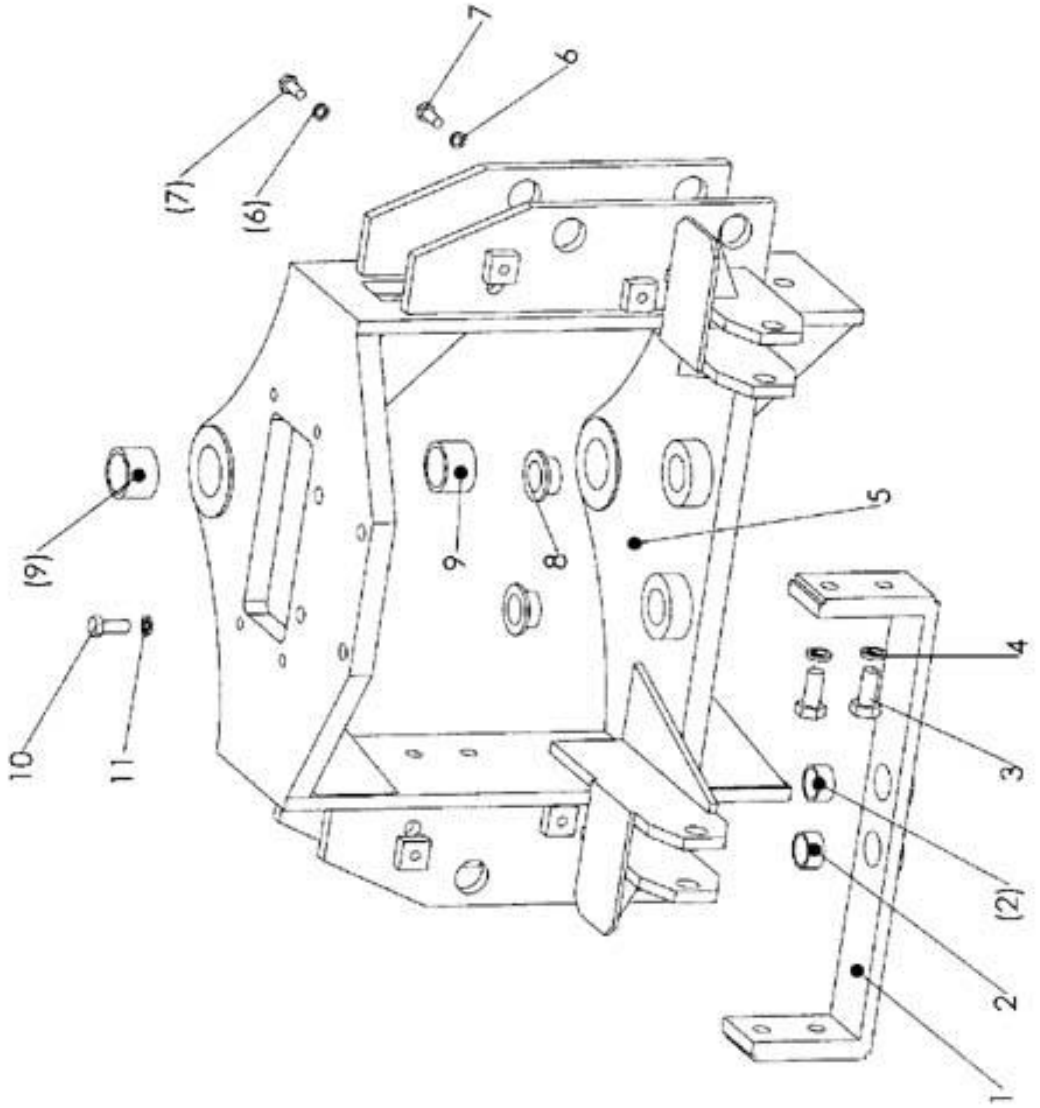
6.5 Bucket Assembly



6.5 Bucket Assembly 铲斗总成

序号 Ser.No.	代号 Part No.	名称及规格	Name & Specifications	数量 Quantity	备注 Remarks
1	LW-7.01.105	抓挖爪	Teeth	3	
2	GB6172-86	螺母 M12	Hex. Bolt M12	6	
3	GB93-87	垫圈 12	Spring lock washer12	8	
4	GB/T 10-1988	螺栓 M10*45	Bolt M10*45	6	
5	LW-7.01.011	挖斗焊合件	Bucket Weld	1	
6	GB1153-89	油杯 M10*1	Grease nipple M10*1	1	
7	LW-7.01.101	插销	Pin	2	
8	LW-7.01.103	支撑销	Pin Shaft	1	
9	GB5783-86	螺栓 M12*25	Hex. Head bolt M12*25	2	
10	GB97.1-85	垫圈 12	Plain washer 12	2	
11	LW-7.01.102	翻转销	Pin Shaft	1	
12	LW-7.01.104	隔套	Sleeve	1	

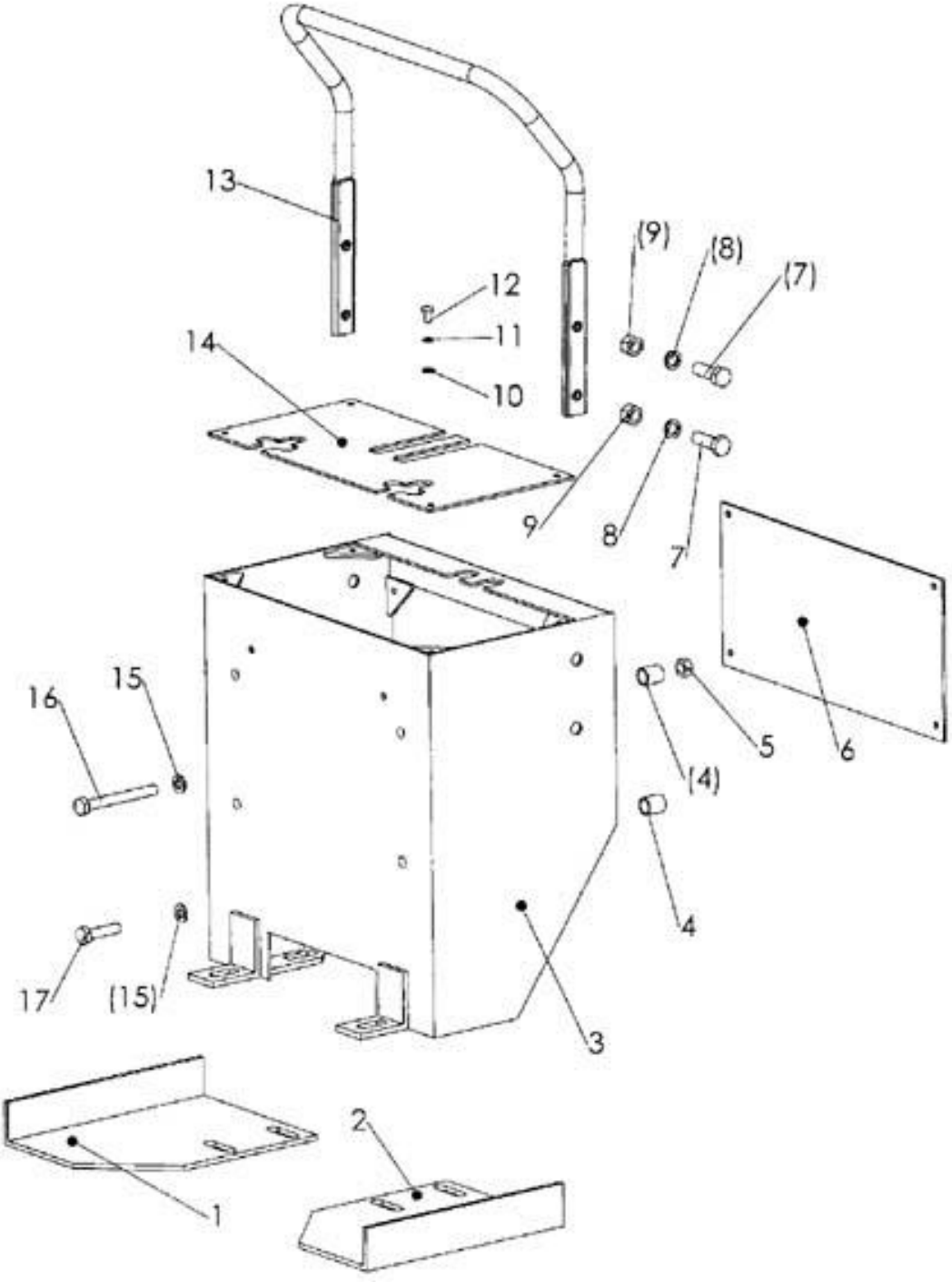
6.6 Bottom Seat Assembly



6.6 Bottom Seat Assembly 底座总成

序号 Ser.No.	代号 Part No.	名称及规格	Name & Specifications	数量 Quantity	备注 Remarks
1	LW-7.10.012	托假焊合件	Supporting weldment	1	
2	LW-7.10.102	油缸转轴上铜套	Copper bush-Upper	1	
3	GB5783-86	螺栓 M16*25	Hex. Head bolt M16*25	1	
4	GB93-87	垫圈 16	Spring lock washer16	4	
5	LW-7.10.011	底座焊合件	Bottom seat weldment	3	
6	GB93-87	弹簧垫圈 10	Spring lock washer10	1	
7	GB5783-86	螺栓 M10*25	Hex. Head bolt M10*25	4	
8	LW-7.10.103	油缸转轴下铜套	Copper bush-lower	4	
9	LW-7.10.101	旋转节转轴铜套	Copper bush	4	
10	GB5783-86	螺栓 M12*30	Hex. Head bolt M12*30	8	
11	GB93-87	垫圈 12	Spring lock washer12	8	

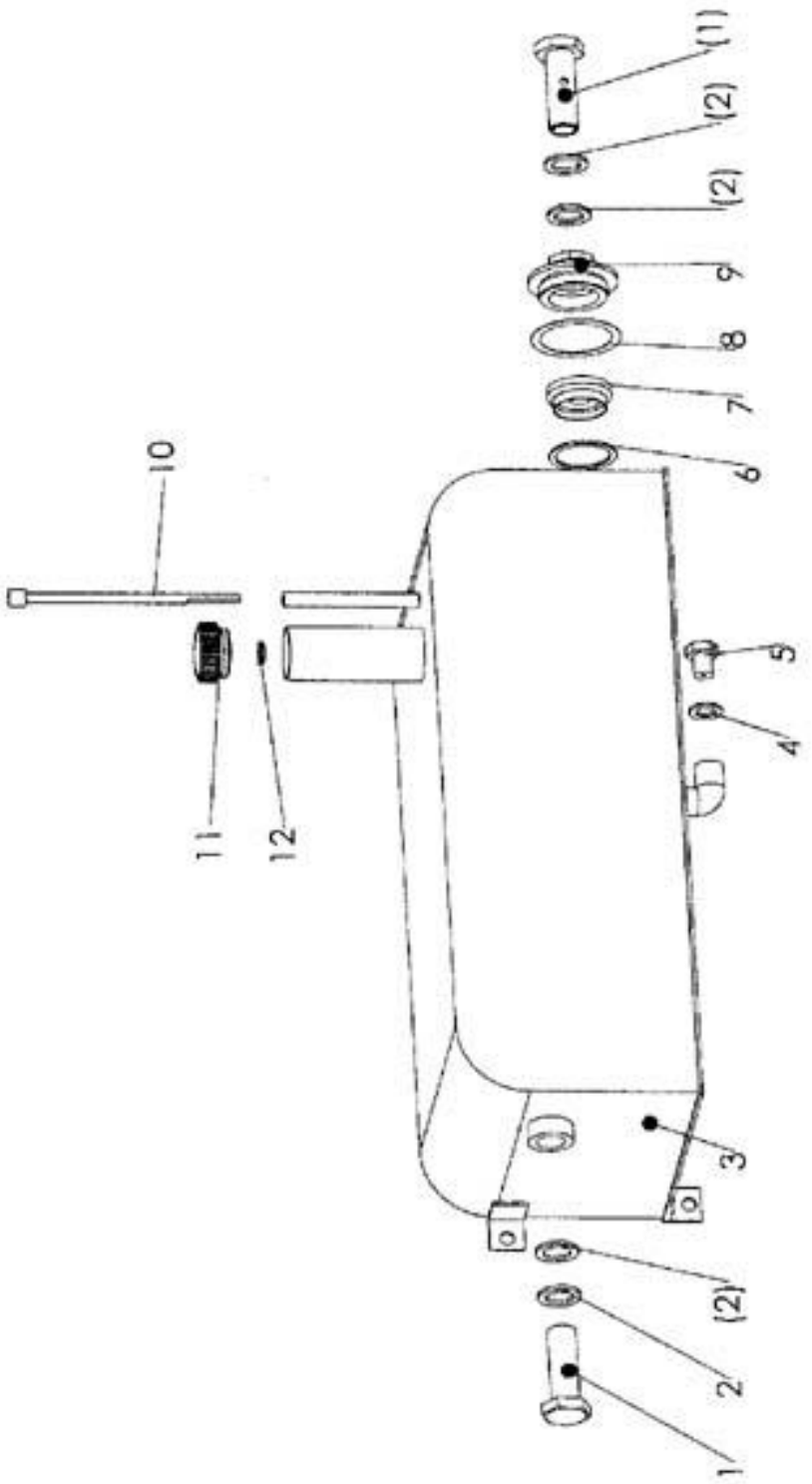
6.7 Bracket for Control Valve Assembly



6.7 Bracket for Control Valve Assembly 控制阀支撑总成

序号 Ser.No.	代号 Part No.	名称及规格	Name & Specifications	数量 Quantity	备注 Remarks
1	LW-7.04.106	右地板	Foot rest-right	1	
2	LW-7.04.105	左地板	Foot rest-left	1	
3	LW-7.04.011	控制阀支撑焊合件	Bracket weldment for control	1	
4	LW-7.04.103	隔套	Sleeve	4	
5	GB6170-86	螺母 M10	Hex. Nut M10	3	
6	LW-7.04.104	前面板	Front Cover Board	1	
7	GB5783-86	螺栓 M12*35	Hex. Nut M12	4	
8	GB93-87	弹簧垫圈 12	Spring lock washer12	4	
9	GB6170-86	螺母 M12	Hex. Nut M12	4	
10	GB97.1-85	垫圈 6	Plain washer 6	8	
11	GB93-87	弹簧垫圈 6	Spring lock warsher6	8	
12	GB818.85	螺钉 H M6*12	Screw M6*12	8	
13	LW-7.04.101	扶手	Handrail	1	
14	LW-7.04.102	上面板	Up Cover Board	1	
15	GB97.1-85	垫圈 10	Plain washer 10	4	
16	GB5780-86	螺栓 M10*90	Hex. Head bolt M10*90	3	
17	GB5780-86	螺栓 M10*40	Hex. Head bolt M10*40	1	

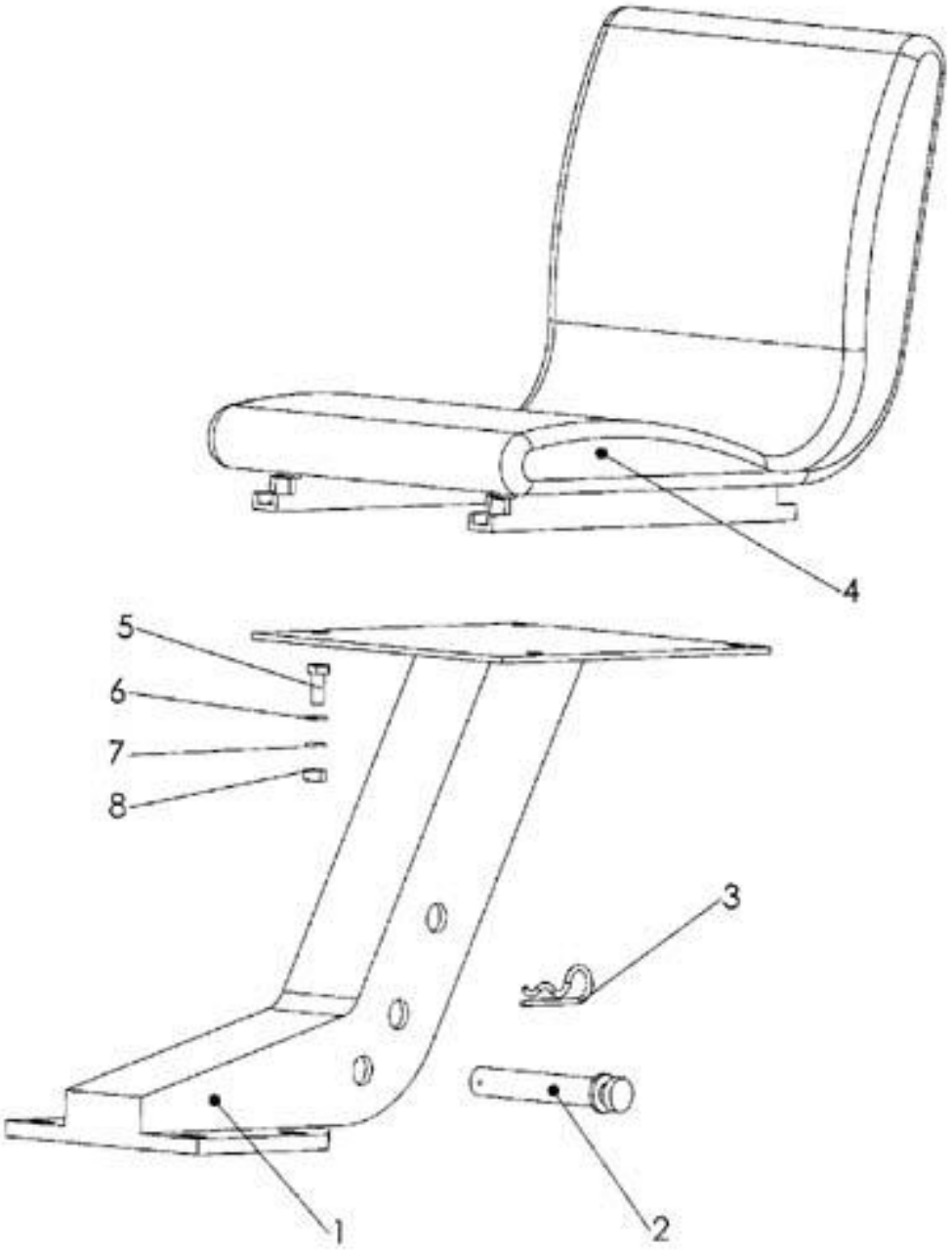
6.8 Tank Assembly (for special order)



6.8 Tank Assembly (for special order) 油缸总成

序号 Ser.No.	代号 Part No.	名称及规格	Name & Specifications	数量 Quantity	备注 Remarks
1	GB3541-83	铰接螺栓 M24*	Hollow hex. Head bolt M24*	2	
2	GB3541-83	垫圈 24	Washer24	4	
3	LW-7.05.011	油箱焊合件	Tank weldment	1	
4	12.37.149	组合密封垫圈	Combined seal washer	1	
5	200.38.024	放油螺栓总成	Oil drain plug	1	
6	LW-7.05.103	橡胶垫圈	Nylon Washer	1	
7	LW-7.05.104	滤网座	Filter seat	1	
8	LW-7.05.105	垫圈	Washer	1	
9	LW-7.05.107	滤网弹簧座	Spring seat	1	
10	LW-7.05.013	油尺总成	Dipstick	1	
11	LW-7.05.012	油箱盖	Tank cover	1	
12	LW-7.05.118	堵片	Blocked patch	1	

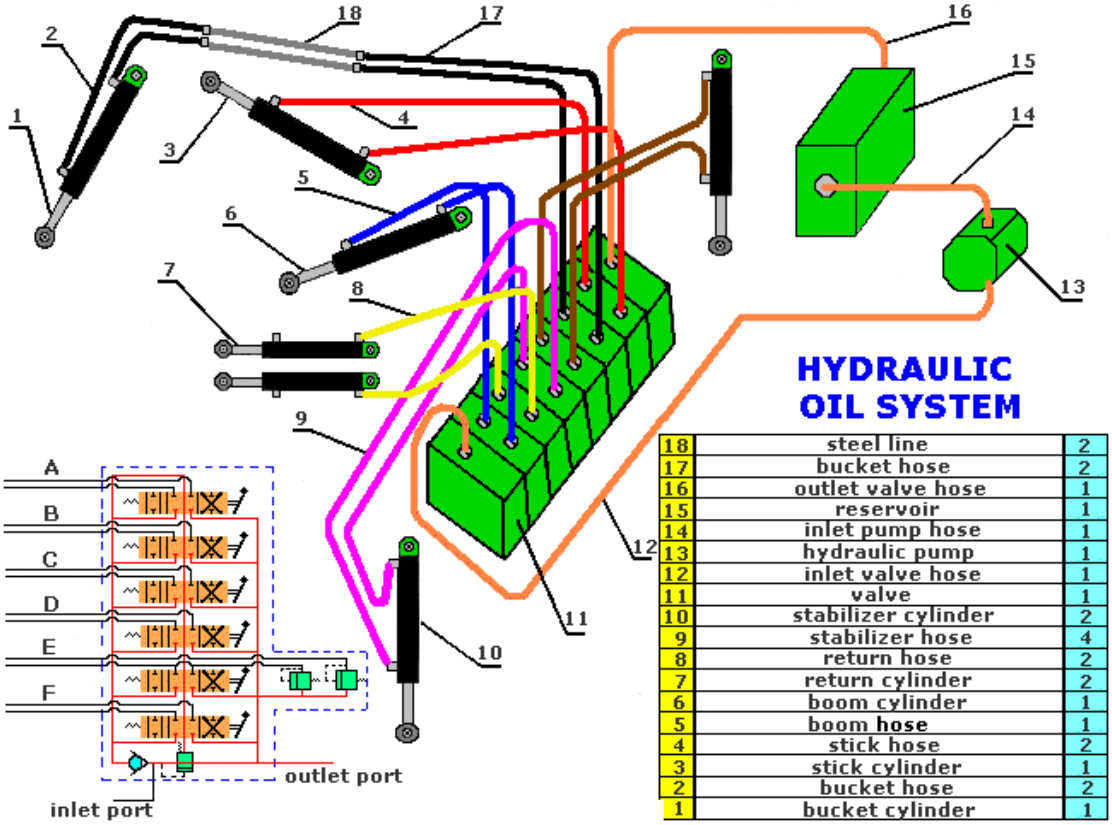
6.9 Seat Assembly



6.9 Seat Assembly 座椅总成

序号 Ser.No.	代号 Part No.	名称及规格	Name & Specifications	数量 Quantity	备注 Remarks
1	LW-7.06.011	支架焊合件	Bracket weldment	2	
2	LW-7.06.102	座椅插销	Pin Shaft	2	
3	LW-7.06.106	R 销	“R” Pin	2	
4	LW-7.06.101	座椅	Seat	4	
5	GB5783-86	螺栓 M8*20	Hex. Head bolt M8*20	1	
6	GB93-87	垫圈 8	Spring lock washer 8	1	
7	GB97.1-85	垫圈 8	Plain washer 8	1	
8	GB6170-86	螺母 M8	Nex. Nut M8	1	

APPENDIX 2 HYDRAULC SYSTEM SCHEMATIC



18	steel line	2
17	bucket hose	2
16	outlet valve hose	1
15	reservoir	1
14	inlet pump hose	1
13	hydraulic pump	1
12	inlet valve hose	1
11	valve	1
10	stabilizer cylinder	2
9	stabilizer hose	4
8	return hose	2
7	return cylinder	2
6	boom cylinder	1
5	boom hose	1
4	stick hose	2
3	stick cylinder	1
2	bucket hose	2
1	bucket cylinder	1