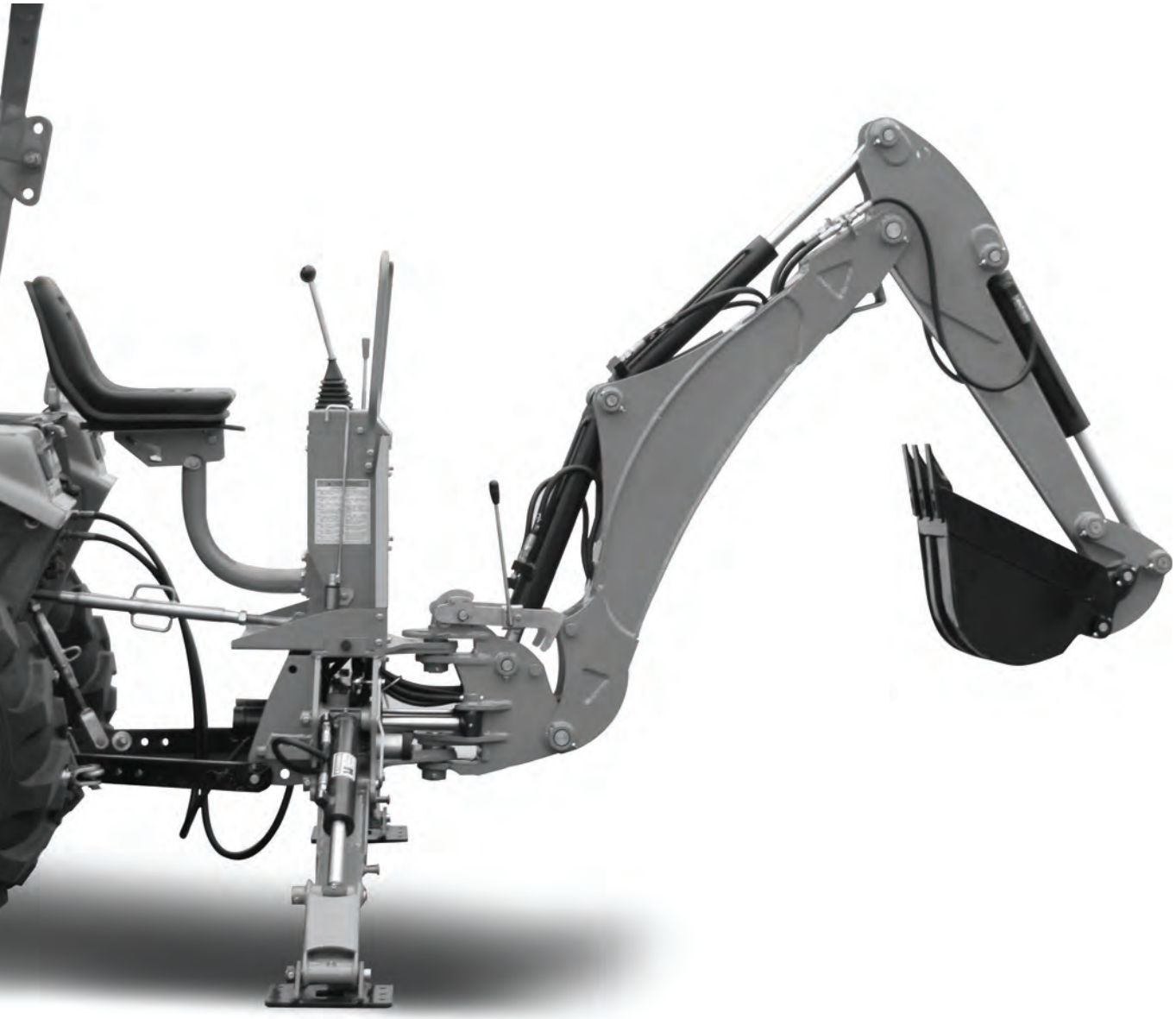
TITAN
ATTACHMENTS

3-POINT STYLE BACKHOE

BX215



Warranty Conditions

Warranty Coverage:
Titan undertakes to replace or repair any part of a BK215 Backhoe where damage has been proven to be caused by defects in material or workmanship.

This warranty is valid for a period of 1 year from the date of the original retail sale. Parts replaced or repaired under the terms of this warranty are guaranteed only until the original warranty expires. Warranty only applies to the original purchaser.

It is further understood and agreed that the defect should be immediately reported to the Selling Dealer. The Selling Dealer will generally perform warranty repairs or replacements and the Purchaser shall deliver the BK215 Backhoe to the Dealer's place of business or repair.

The obligation of Titan to the Purchaser under this warranty is limited to the repair or replacement of defective parts by an authorized Titan dealer. Repair or replacement in accordance with this warranty shall constitute fulfillment of all liabilities of Titan and the Selling Dealer in respect to BK215 Backhoes.

There are no warranties beyond those which expressly appear herein. Any implied warranty of merchantability or fitness for a particular purpose is specifically exclude here from.

Warranty Provisions:
Titan's liability under this warranty is subject to the observance by the Purchaser of the following provisions:
1. The purchaser shall at all times in the operation of any Titan Product, use those brands and grades of lubricating oils, lubricants or fuel and spare parts officially approved by Titan

2. The BK215 Backhoes shall have been used in accordance with the procedures specified in the Operator's Manual. This warranty does not extend to damage resulting from misapplication, abuse, misuse, failure to perform maintenance, negligence, fire, accidents or changes or faulty mounting carried out by the Purchaser. When making a Warranty exchange of parts, the Purchaser shall compensate Titan for the time that the parts have been used if they have been exposed to extreme wear.

3. Compensation is not paid for physical harm, deadlock, resulting damages or other losses.

4. To obtain warranty service, the Purchaser must (1) report the product defect to an authorized Titan dealer and request repair within the applicable warranty term and (2) present evidence of purchase.

5. The warranty shall be void if the BK215 Backhoe has been altered or repaired outside of a Titan dealership or travel of dealer personnel to customer location for warranty repair. The customer shall also pay any premium for overtime labor requested by the customer.

6. Temporary repairs or additional costs due to the work being performed after normal working hours will not be compensated.

7. The above warranty is in lieu of all other warranties on Titan's behalf and neither party assumes any other liability in connection with Titan's Products.

8. Any dispute arising between Titan and the Purchaser concerning the liability of Titan under this warranty shall be subject to the laws of in the United States of America.

Right To Make Design and Product Changes:

Titan reserves the right to make changes in the design and other changes in its Titan Products at any time without incurring any obligation with respect to any product previously ordered, sold or shipped.

Please Note

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

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

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1. SAFETY PRECAUTIONS

SAFETY
Understand that your safety and the safety of other persons is measured by how you service and operate this Backhoe. Know the position and operations of all controls before you they to operate. Make sure you check all controls in all safe area before starting.

Read this manual completely and thoroughly and make sure you understand all controls. All equipment has a limit. Make sure you are aware of the stability and load characteristics of this Backhoe before you begin operation.

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.

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

SAFETY PRECAUTIONS
Before starting the engine of your tractor, make sure all operation controls are in park lock or neutral position.

Operate controls only when seated in the operator's seat.

Equip your tractor with a ROPS cab or frame for your protection. See your tractor operator's manual for correct Seat belt usage.

A frequent cause of personal injury or death is persons falling off and being run over. Do not permit others to ride on your tractor. Only one person, the operator, should be on the machine when it is in operation.

Before leaving the tractor, stop the engine, put all controls in neutral, engage the parking brake and remove the key from the ignition.

When using remote hydraulic tractor valves on some tractors, the Backhoe’s cylinders will continue moving unless the control levers are manually returned to neutral, or until relief pressure is reached at the ends of piston strokes. Observe the bucket movement and maintain control with the control levers.

Stop the backhoe arms gradually when lowering or lifting loads. Stay off of slopes too steep for safe operation. Shift down before you start up or down a hill with a heavy load. Avoid "free wheeling".

Travel speed should be such that complete control and machine stability is maintained at all times. Where possible, avoid operating operation near ditches, embankments and holes. Reduce speed when turning, crossing slopes, and on rough, slick or muddy surfaces.

Never use your hand to check for suspected leaks under pressure. Use a piece of cardboard or wood for this purpose. Escaping hydraulic oil or diesel fuel leaking under pressure can have sufficient force to penetrate the skin and cause infection or other injured by leaking fluid , seek medical attention immediately.

To prevent personal injury , relieve all pressure before disconnecting fluid lines.

Before applying hydraulic pressure, make sure all hydraulic connections are tight and components are in good condition.

Contact with overhead power lines can cause severe electrical burn or death from electrocution. Make sure there is enough clearance between raised equipment and overhead power lines.

Add recommended rear tire liquid weight or rear wheel weights for increased stability.

A backhoe attachment should be transported in a low position at slow ground speeds. Make turns slowly and use the tractor brakes cautiously. A loaded attachment in the raised position alters the center of gravity location of the machine and increases the possibility of mishaps.

Do not stand, walk or work under a raised backhoe or attachment unless it is securely blocked or held in position. Accidental movement of a control lever or leak in the hydraulic system could cause the backhoe to drop, or attachment to dump, causing severe injury.

Make sure all parked backhoes on stands are on a hard level surface with all safety devices engaged to prevent backhoe from falling and being damaged or injuring someone.

When using a backhoe, be alert of bucket, boom and arm position at all times.

2. SAFETY DECALS

Safety Decal Locations

Important: Warning decals are visible when getting on backhoe.Refer to the left and right hands used in this manual, It's the position of the operator when seated in the operating position of backhoe.

Care of Safety Decals.

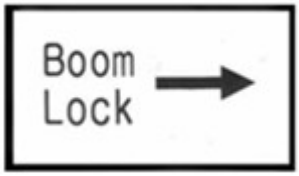
1. Keep safety decals clean and free of obstructing material.
2. Clean safety decals with soap and water and dry with a soft cloth.
3. Replace damaged or missing safety decals with new decals from your Titan Dealer.
4. If a component with a safety decal(s) affixed is replaced with a new part, make sure new safety decal(s) are attached in the same location(s) as the replaced components.
5. Mount new safety decals by applying on a clean dry surface and pressing air bubbles to outside edges.

Location : Mainframe

Location : Both of Mainframe sides

Location : Both Leg Cylinders

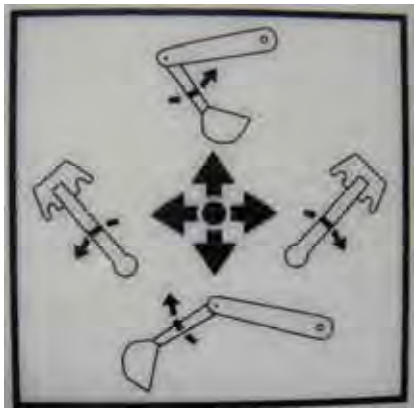
Location : Both side of Mainframe



Location : Beside of the locking hole at the Boom Mainframe

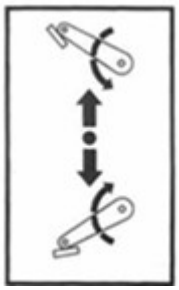
Location : Main Valve Cover

Location : Right Leg Guard



Location : Left side Valve Lever

Location : Right side Valve Lever



Location : Side of Left Inner Lever

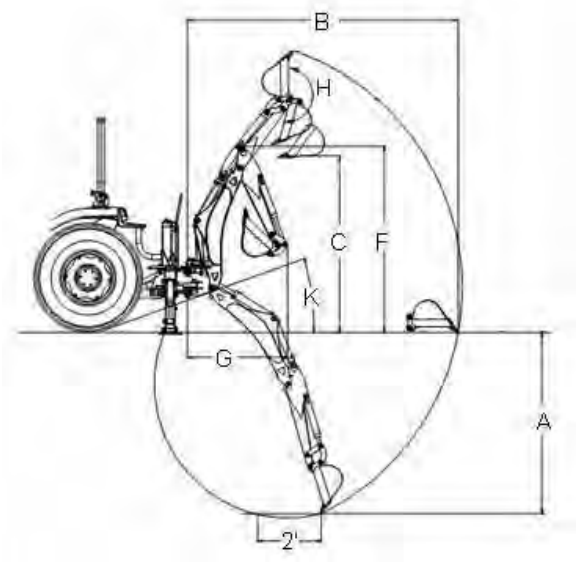
Location : Side of Right Inner Lever

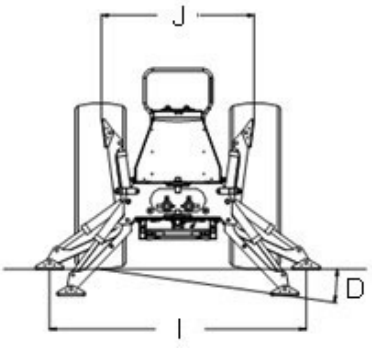
BK-215

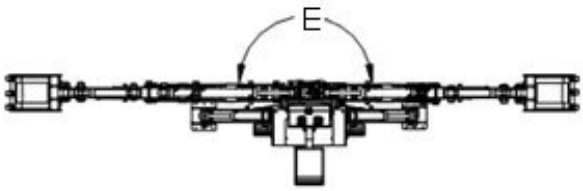
Location : Both side of Dipperstick

Location : Main Valve cover

3. BACKHOE SPECIFICATIONS







Backhoe Model		BK215	
A	Digging Depth (two foot flat bottom)	2200mm	86.6”
B	Reach from center line of Swing Pivot	3200mm	126”
C	Loading Height(bucket at 60°)	1850mm	72.8”
D	Maximum Leveling Angle	10°	10°
E	Swing Arc	180°	180°
F	Transport Height (maximum)	2120mm	83.5”
G	Transport Overhang	1230mm	48.4”
H	Bucket Rotation	180°	180°
I	Stabilizer Spread (down position)	1750mm	68.9”
J	Stabilizer Spread (up position)	1180mm	46.5”
K	Angle of Departure	21°	21°
	Shipping Weight (without bucket)	415kg	916(lbs)
	Bucket Digging Force	1175kg	2592(lbs)
	Dipperstick Digging Force	895kg	1975(lbs)
	Operating Pressure	160bar	2320psi

Cylinder	Bore Diameter		Retracted Length		Stroke		Rod Diameter	
	mm	inch	mm	inch	mm	inch	mm	inch
Boom	70	2.75”	620	24.41”	384	15.12”	40	1.57”
Bucket	60	2.36”	535	21.06”	299	11.77”	35	1.38”
Dipperstick	60	2.36”	597	23.5”	377	14.84”	35	1.38”
Swing	60	2.36”	398	15.67”	223	8.78”	35	1.38”
Stabilizer	60	2.36”	446	17.56”	262	10.31”	35	1.38”

Bucket	Teeth Qty	Struck Capacity	Heaped Capacity	Shipping Weight	
12”	3	1.01 cu.ft.	1.24 cu.ft.	35kg	77(lbs)

Specifications may vary depending on tractor model, tire size and bucket used.

4. INTRODUCTION

The purpose of this manual is to assist you in maintaining and operating your BK215 backhoe. Read it carefully, it furnishes information and instructions that will help you achieve years of dependable performance. 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.

The photos, illustrations and data used in this manual are current at the time of printing, but due to possible in-line production changes, your machine may vary slightly in detail. The manufacturer reserves the right to redesign the machine as may be necessary without notification.

Important:
Illustrations used in this manual may not show all safety equipment that is recommended to ensure safe operation of tractor and backhoe. Refer to the Safety Precautions section of this manual for information concerning safety. consult your dealer for further information.

Warranty Registration
The Delivery and Warranty Registration forms must be filled out and signed to validate your warranty protection. The items on the form under "I hereby Acknowledge" should be read and understood. The terms and conditions of the warranty on this machine are specified in the front of this manual.

Serial Number and Location
The serial number is important information about the machine and it may be necessary to know it before obtaining the correct replacement part. The serial number is located on the right side of backhoe mainframe. The serial number should be recorded on the Delivery and Registration form and also below for your reference.

5. TRACTOR PREPARATION

Rear Counterweight

⚠ CAUTION
Do not exceed the manufacturer's rating for maximum gross vehicle weight. Refer to Operator's Manual or ROPS serial plate provided with tractor. Certain specific conditions may not permit safe use of backhoe at backhoe rating or may require more careful restricted operation at the rated load.

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 increase demands on the tractor Hydraulic System. Check the tractor Hydraulic system fluid level daily. Refer to your tractor Operator's Manual maintenance section for instructions regarding tractor hydraulic system maintenance.

Adhere to recommendation in your Tractor Operator's Manual concerning hydraulic fluid and filter specifications, and change intervals.

⚠ CAUTION
The tractor/backhoe must only be operated with allsafety equipment properly installed.

Tire Inflation

Front tires must be maintained at the maximum recommend-ed inflation to maintain normal tire profile with the added weight of backhoe/material.

Rear tires must be maintained at equal pressure within the recommended tire inflation range. Unequal rear tire inflation can prevent backhoe attachment from contacting the ground across its full width.

Wheel Tread Settings

Tractor front wheel tread setting must be restricted to wheel tread spacing recommended in the tractor Operator's Manual.

6. BACKHOE OPERATION

BACKHOE OPERATION

⚠ CAUTION
The tractor/backhoe should only be operated with all safety equipment properly installed. Keep assistants or by standers a safe distance from the equipment operating area.

Precautionary Notes
-Check below items before operating for your safety.
-Read and understand this manual to avoid accidents.
-Check the hydraulic fitting lines to be correct and set tightly.
-Maintain and repair (if it is needed) the parts or assemblies, check bolts and pins to be sure they are positioned tightly.
-Check tractor with the tractor operator's manual that it can prepared for operating.
-Warm up and operate the tractor and backhoe carefully. Purge any air in the hydraulic lines and cylinders by fully cycling all cylinders several times.
-Check hydraulic level in the tank. It should be full (Refer to the Tractor Operator's Manual).
-Do not operate the hydraulics when not seated in the back-hoe operator's seat.
-Keep all assistants out of area of operation.
-Do not operate rapidly.
-Do not allow riders other than the operator to be on the tractor while operating.

Important:
Use tractor engine speed that your experience permits. At first set PTO RPM of the tractor to slow.
Do not use the boom, dipperstick, swing and stabilizers to lift, push or full objects. Use only to maneuver and operate the bucket.

Important:
Practice quickly turning off the engine or stopping the backhoe immediately in case of an emergency situation.

Important:
Do not operate while the rear tractor wheels are off the ground by stabilizer. It is dangerous to operate the backhoe while rear wheels are off the ground.
Position vehicle so that the backhoe is as near to the pile as possible and in such a direction as to minimize the amount of tractor turning required to dump.

Keep the unit clean and perform regular service. Observe safety messages whenever cleaning, servicing, or lubricating.

We urge you to follow this advice:
1. Read and understand this manual as well the Tractor Operator's Manual.
2. Remember and observe the Safety Precautions brought to your attention in this manual, the tractor manual and on the machinery itself.
3. Use good common sense in the everyday operation of this unit. Safety recommendations can never be all-inclusive and you are responsible for watching out for and avoiding unsafe conditions.
4. Never exceed the limits of a piece of machinery. If its ability to do a job, or to do so safely, is in question, don't try it.
5. Don't hurry the learning process or take the unit for granted. Ease into it and become familiar

with your new backhoe and tractor.

CAUTION
When lowering a heavy load, ease it downward slowly. Never drop a loaded attachment and "catch it hydraulically". Stopping a load after it has gained downward momentum places undue strain on the unit and may cause unnecessary damage to the backhoe or tractor or even worse, personal injury. Before disconnecting hydraulic lines, relieve all hydraulic pressure. Escaping hydraulic oil under pressure can have sufficient force to penetrate the skin causing serious personal injury. If injured by escaping hydraulic oil, seek medical attention immediately.

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, or dipperstick bucket to drop suddenly, causing damage to the tractor or backhoe or injury to personnel.

Initial Backhoe Operation

Before operating the backhoe, fully raise and lower the boom, arm, swing and stabilizers two or three times. Then raise the bucket above the ground and cycle the bucket cylinders three times. Lower the bucket to the ground.

Check the tractor hydraulic oil and the correct oil level.

CAUTION
Before leaving the machine, stop the engine, remove the key, place all controls in neutral, and either set the parking brake or place tractor in park as equipped.

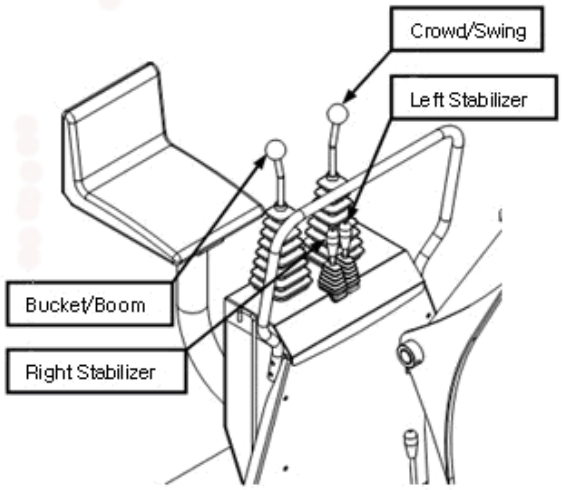
Always keep cylinders in a retracted position when the backhoe is not in use to guard against rust and contamination which may cause damage to the cylinder rods or hydraulic system. Also, lock the swing and boom while tractor is moving and storing for an extended period of time.

Cold Weather Operation

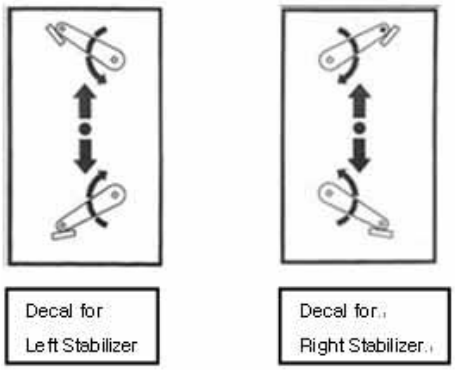
For smooth operation in cold weather, let the tractor warm up. Slowly cycle all of the cylinders several times to warm the oil in the hydraulic system. The backhoe may operate erratically until the hydraulic oil has warmed to operating temperatures.

CAUTION
Operate controls only when seated in the operator's seat.

Left and Right stabilizer controls

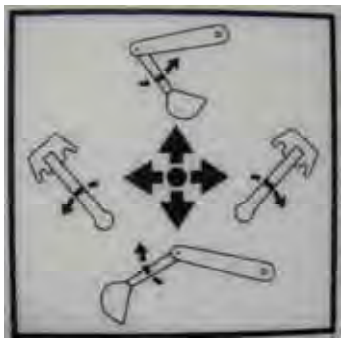


Left and Right Stabilizer controls



Push the left hand inner control lever, left stabilizer lowers. And pull up the lever, left stabilizer raises.
Push the right hand inner control lever, right stabilizer lowers. And pull up the lever, right stabilizer raises.
Do not dig near the stabilizers to avoid possible accident. Do not lift the tractor rear wheels by stabilizers. Also, be sure the stabilizers are seated on hard ground to support.
The backhoe/tractor.

Crowd and Swing controls

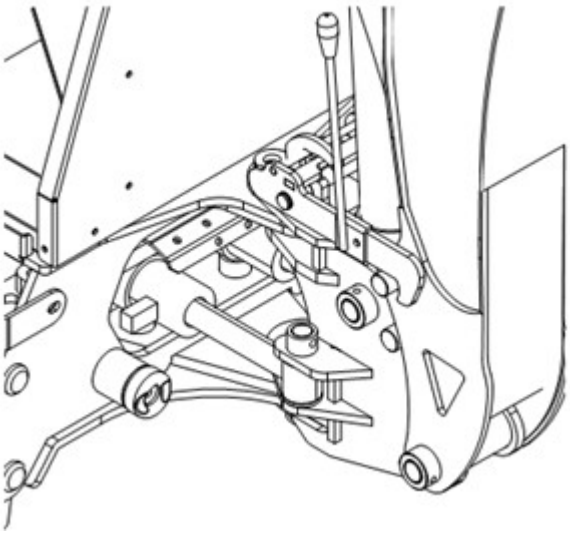


Push the left hand outer control lever, arm (dipperstick) moves toward the operator, and pull back the lever, arm (dipperstick) moves away from operator.
Move the left hand outer control lever to the left, boom swings moves to the left. Move lever right, boom swing moves to the Right.

Bucket and Boom controls

Push the right hand outer control lever, boom moves down, and pull back the lever, boom moves up.
Move the right hand outer control lever to the left, bucket curls in. Move lever right, bucket extends out from operator.

These two levers (Crowd and swing control lever, Bucket and Boom control lever) provide four simultaneous operations. Both experience and practice are needed to eliminate excess motion and increase operating efficiency.



Swing Lock and Boom Lock When transporting or dismounting backhoe, you must lock the backhoe's swing and boom. Position boom straight back and drop pin through holes in swing frame and boom. When not in use, store pin in hole provided on swing frame and boom. Observe the following safety warnings when working with your new backhoe/tractor.

⚠ CAUTION
When using a backhoe, be aware of bucket and boom location at all times. When raising a arm (dipperstick) with bucket rolled forward, material can spill onto non target area causing injury to assistant or damage other objects. Do not dig near stabilizers. Ground under stabilizers could collapse. Make all movements slow and gradual when practicing operation. Operate from backhoe operators seat only. Pay attention, be ready to stop, immediately in case of an emergency. To help prevent roll-over, adjust the rear wheels to their widest setting to maximize stability. Refer to your Tractor Operator's Manual for recommendations.

7. BACKHOE MOUNTING

8. BACKHOE REMOVAL

BACKHOE REMOVAL

⚠ CAUTION
Move the backhoe to flat, firm and wide place to remove the equipment. Do not allow to be removed without bucket and stabilizers. Also, Dump the remaining material from the bucket to empty. Use other lifting equipment to remove when the backhoe has damage.

STEP 1. Move the tractor to backhoe storage place.
STEP 2. Use the inner two levers to lower the stabilizers until they contact to the ground. Use the boom and dipperstick control lever to raise the boom & dippers-tick completely.
STEP 3. Center the boom and then lock the swing with lock pin.
STEP 4. Using the control levers, position the dipperstick vertically, curl the bucket until its bottom is level with the ground, and lower the boom until bottom of the bucket rest on the ground.
STEP 5. Remove pins that secure the backhoe. Subframe in the mounting brackets on the tractor.

⚠ CAUTION
Remove the backhoe on firm level ground. Also, Do not allow the other person in the area. Be careful to avoid injury during removal of the backhoe. The hydraulic oil is dangerous for skin or eyes. Wash the skin and seek medical service if it is necessary.

STEP 6. Using both the stabilizer and boom control, set the backhoe subframe horizontally to relieve the weight of the backhoe from the mounting brackets of the tractor.

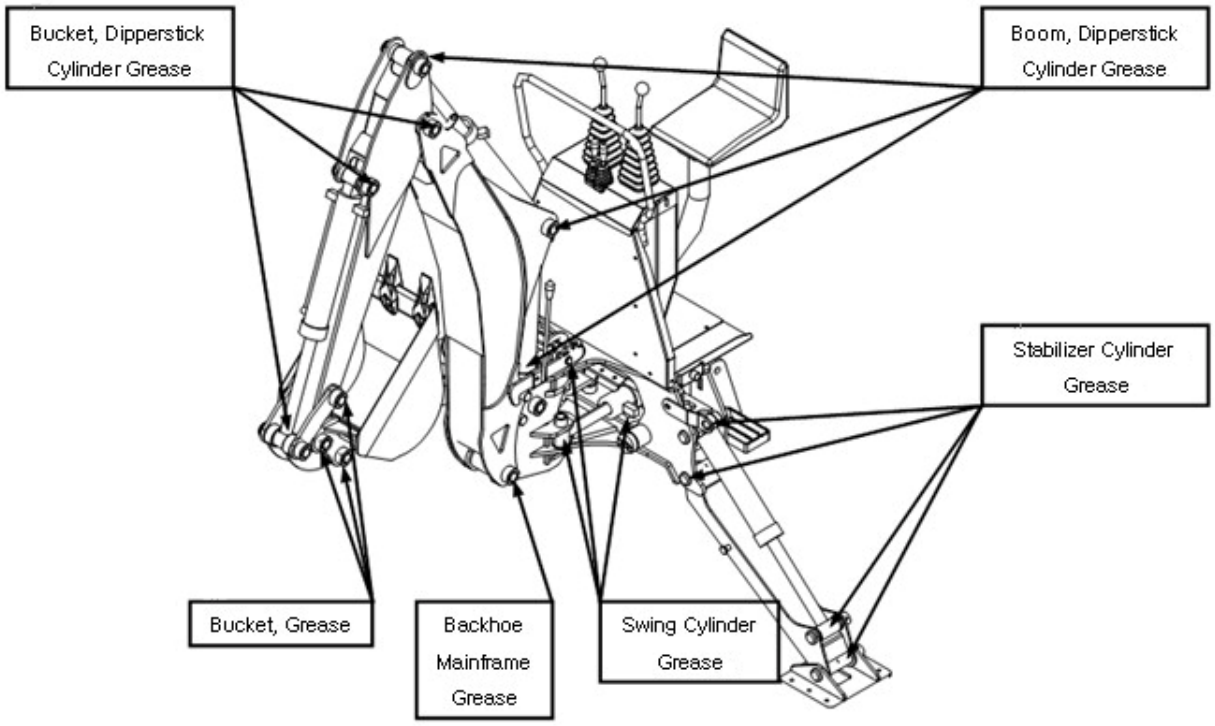
STEP 7. Move the tractor forward slowly until the backhoe subframe disengages of the mounting brackets.

STEP 8. Lower the backhoe mainframe to the ground by raising stabilizers and boom. Use the wood plate or block if necessary.

STEP 9. Turn off the tractor engine. Relieve hydraulic pressure by actuating all the control levers in each direction, then disconnect the backhoe hose couplers from the tractor hydraulic couplers.

9. LUBRICATION AND MAINTENANCE

LUBRICATION AND MAINTENANCE



ITEM	SERVICE	SERVICE INTERVAL
Hydraulic System Oil Level	Check	Daily/10 hours
Hydraulic System Oil/Filter	Replace	As specified in Tractor Operator's Manual
Tire Inflation	Check	Weekly/50 hours
Backhoe Pivot Points	Lubricate	Daily/10 hours
Backhoe Hydraulic Lines, Hoses, Connections	Check for leaks, wear	Daily/10 hours
Boom, Arm, Swing and Bucket cylinder rod packing	Check for seepage, service as needed	Daily/10 hours
Pivot pin bolts and dust covers	Check, replace if missing	Daily/10 hours
Friction of All pins	Check, replace if necessary	Daily/10 hours
Backhoe mount hardware	Check visually	Daily/10 hours
Bolts and Nut release	Re-torque	Every 25 hours

⚠ CAUTION
Do not perform service or maintenance Operations with backhoe raised off the ground. For additional access to tractor components remove backhoe.

Important:

Lower the backhoe to the ground and relieve pressure in backhoe hydraulic lines prior to performing any service or maintenance operations on the tractor or backhoe.

CAUTION
Escaping fluid under pressure can have sufficient force to penetrate the skin , causing serious injury . Before disconnecting lines, be sure to relieve all pressure. Before applying pressure to the system, be sure all connections are tight and that lines, pipes and hoses are not damaged. Fluid escaping from a very small hole can be almost invisible. Use a piece of cardboard or wood rather than your hands to search for suspected leaks. If injured by escaping fluid, seek medical attention immediately. Serious infection or reaction can develop if correct medical treatment is not administered immediately.

Refer to "Lubrication and Maintenance Chart" for quick reference to Maintenance Operations.

CAUTION
Do not operate the backhoe if the fittings are leaking or if the hoses are damaged. A sudden line burst could cause the boom, dipperstick or bucket to drop suddenly, causing damage to the tractor or backhoe or injury to personnel. Operate the backhoe from the operator seat only. Do not stand or walk under a raised backhoe. Accidental movement of control lever or leak in hydraulic system could cause boom or dipperstick to drop, causing severe injury.

Check the tractor hydraulic system as outlined in the Tractor Operator's Manual.

NOTE
When checking hydraulic system oil level, the backhoe should be on the ground and bucket fully retracted(all cylinders in retracted position).

Grease all backhoe pivot points daily(10 hours). Refer to Tractor Operator's Manual for lubricant recommendations.

Inspect hydraulic hoses, connections, control valve and cylinders for evidence of leakage.

Tractor tires should be maintained at maximum recommended inflation to maintain normal tire profile with added weight of backhoe/material. Unequal rear tire inflation can result in bucket not being level to the ground.

10. TROUBLE SHOOTING

TROUBLE SHOOTING

This Trouble Shooting Chart is provided for reference to possible backhoe operational problems. Determine the problem that best describes the operational problem being experienced and eliminate the possible causes as listed by following the correction procedures.

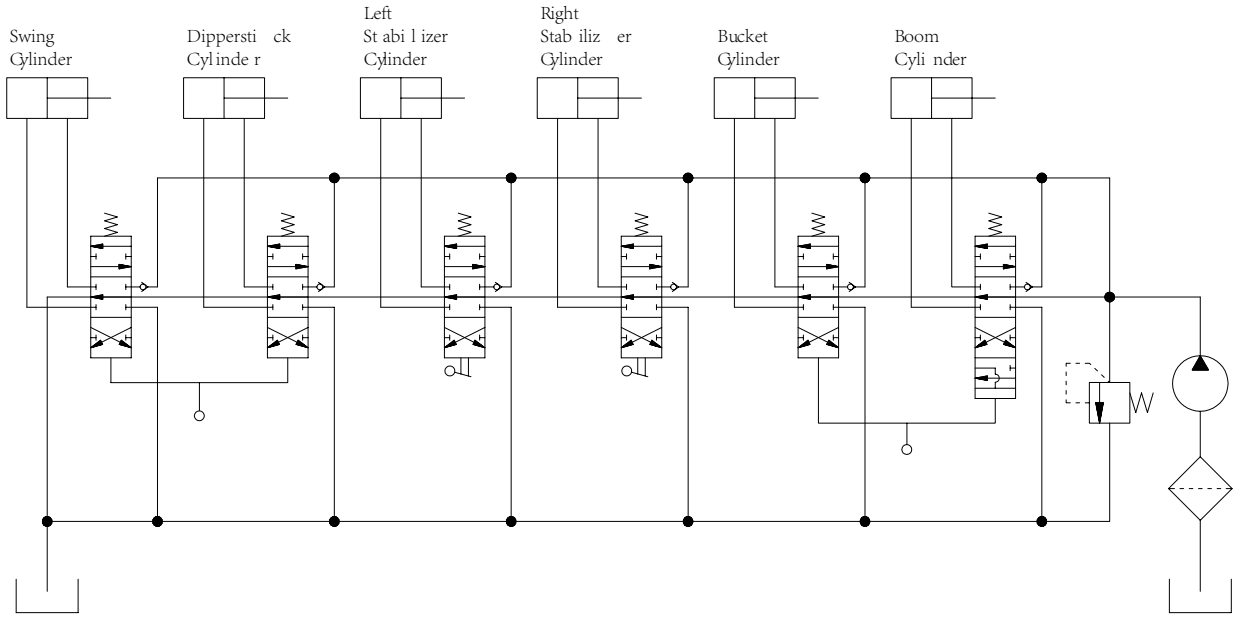
PROBLEM	POSSIBLE CAUSE	CORRECTION
Swing, Boom, Dipperstick and Bucket Cylinders Not operating properly	Low hydraulic fluid level.	Check and replenish hydraulic fluid.
	Hydraulic hoses connected improperly	Check and correct hydraulic hose connections
	Hydraulic hoses to/from control valve blocked	Check for damage (kinked) hoses, etc
	Backhoe control valve or tractor main relief valve stuck open	Check system pressure. Repair or replace relief valve. Refer to the Tractor Operator's Manual
	Low system pressure supplied from hydraulic pump	Check system pressure. Repair or replace pump
	Control valve linkage broken	Inspect. Repair as required
	Quick disconnect coupler(s) are not fully connected or "Flow Check"	Check coupler connections. Replace coupler(s) if necessary
	Hydraulic hose or tube line blockage	Check for evidence of damage to hoses or tube lines that would block flow of oil between cylinders and control valve
	Cylinder piston assembly defective (not sealing)	Check cylinders for internal leakage as described in service section under cylinder leakage tests.
	Control valve blockage	Inspect for blockage. Disassemble valve if necessary.
Cylinders operate in wrong direction relative to control valve lever position	Hydraulic hoses connected incorrectly	Correct hydraulic hose connections

Slow or erratic movement of Cylinders (Noisy operation of cylinders)	Low hydraulic fluid level.	Check and replenish hydraulic fluid
	Cold hydraulic fluid	Allow hydraulic system to warm up to operating temperature
	Hydraulic Oil viscosity too heavy or Incorrect oil	Check oil number and viscosity, Refill correct hydraulic oil
	Engine R.P.M. too slow (hydraulic pump R.P.M. too slow)	Increase engine speed to obtain satisfactory backhoe operation
	Excessive weight in bucket. Material weight exceeds maximum specified backhoe capacity	Reduce material load. (Digging load)
	Control valve linkage binding/defective	Check control valve linkage and repair if worn/defective.
	Aeration of hydraulic fluid	Refer to "Aeration of Hydraulic Fluid"
	Quick disconnect coupler restriction or coupler "Flow checks"	Check coupler connections. Repair or replace
	Hydraulic hose or tube line restriction (hoses/tube line) kinked or pinched	Check hoses and tube lines for evidence of restriction
	Boom, Dipperstick or Bucket cylinder piston assembly leakage	Check cylinders for leakage. Repair as needed
	Relief valve erratic or set below specifications	Check and reset relief valve. Setting as needed.
	Control valve leaking internally.(hypassing fluid within valve).	Replace control valve and recheck operation.
Inadequate lifting capacity	Engine R.P.M. too slow.	Increase engine R.P.M
	Excessive load. Material loading exceeds specified backhoe capacity	Reduce Load
	Relief valve setting below specifications	Check and reset relief valve setting as needed.
	Bucket, Boom and Dipperstick cylinder piston assembly leakage	Check cylinders for leakage. Repair as needed
	Control valve leaking internally	Replace control valve and recheck operation
	Hydraulic pump defective	Refer to "Hydraulic Pump Capacity Inadequate".
Aeration of Hydraulic Fluid(Generally indicated by foamy appearance of fluid)	Low hydraulic fluid level	Check and refill hydraulic system to proper level.
	Air leaking into suction side of hydraulic pump.	Check for loose or defective connections between reservoir and hydraulic pump
	Hydraulic fluid foaming due to improper hydraulic oil usage	Refer to Tractor Operator's Manual and replace hydraulic oil using recommended hydraulic oil.

System relief valve squeals.	Cold Hydraulic Fluid	Allow hydraulic fluid to warm up to operating temperature
	Hydraulic Oil viscosity too heavy or Incorrect oil	Check oil number and viscosity, Refill correct hydraulic oil.
	Excessive load in bucket. Loading exceeds specified backhoe capacity	Reduce load
	Relief valve setting below specifications	Check and reset valve setting as needed
	Hydraulic hose, tube line or quick disconnect coupler restriction	Check for evidence of restriction in hydraulic oil flow. Repair or replace defective components
Backhoe drops with valve spool in "centered" position (no external oil leakage evident) Note: A gradual drop over an extended period of time is a normal condition.	Cylinder piston assembly leakage	Check cylinders for leakage
	Control valve internal leakage	Replace control valve and recheck
Control valve spool(s) will not return to centered position	Control lever linkage binding	Determine origin of binding and repair
	Control valve spool centering is broken	Replace centering spring
	Control valve spool binding in valve body spool bore	Disassemble valve for inspection and repair.
External hydraulic fluid leakage	Loose hydraulic connection	Tighten loose connections
	Defective hydraulic hose, tube line, adapter fitting or adapter fitting o-ring	Check for origin of oil leak and replace defective part.
	Control valve o-rings defective	Replace defective o-rings
	Control valve spool or body damaged or worn	Replace control valve
	Cylinder rod packing set leakage	Check cylinders for leakage. Repair as needed
Hydraulic pump capacity inadequate	Cold hydraulic fluid	Allow hydraulic fluid to warm up to operating temperature
	Engine R.P.M. too slow	Increase engine R.P.M
	Low hydraulic fluid supply	Refer to Tractor Operator's Manual for service recommendations
	Hydraulic hose restriction	Check for evidence of restriction in hydraulic hoses
	Hydraulic pump defective	Refer to Tractor Operator's Manual for recommended service procedures. Replace hydraulic pump if determined to be defective
Cylinder rod bend when cylinders extended	Excessive shock load on cylinders during transport	Replace defective parts. Review and observe proper and safe operational practices

11. HYDRAULIC SYSTEM SCHEMATIC

HYDRAULIC SYSTEM SCHEMATIC AUXILIARY HYDRAULIC VALVE PACKAGE



12. TORQUE TIGHTENING CHART

TORQUE TIGHTENING CHART 1

Note:Use these torques, unless special torques are specified. Values are for UNF thread fasteners, plasted or unplated as received from supplier. Fasteners can be dry or lubricated with normal engine oil. Values do not apply if graphite, moly-disulphide or other extreme pressure lubricant is used.

SAE Grade No.	2				5				8*			
Bolt head identification (see note 1)												
Bolt size	LB - FT		Nm		LB - FT		Nm		LB - FT		Nm	
	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
1/4	5	6	7	8	9	11	12	15	12	15	16	20
5/16	10	12	14	16	17	20.5	23	28	24	29	33	39
3/8	20	23	27	31	35	42	48	57	45	54	61	73
7/16	30	35	41	47	54	64	73	87	70	84	95	114
1/2	45	52	61	70	80	96	109	130	110	132	149	179
9/16	65	75	88	102	110	132	149	179	160	192	217	260
5/8	95	105	129	142	150	180	203	244	220	264	298	358
3/4	150	185	203	251	270	324	366	439	380	456	515	618
7/8	160	200	217	271	400	480	542	651	600	720	814	976
1	250	300	339	406	580	696	787	944	900	1080	1220	1464
1 1/8					800	880	1085	1193	1280	1440	1736	1953
1 1/4					1120	1240	1519	1681	1820	2000	2468	2712
1 3/8					1460	1680	1980	2278	2380	2720	3227	3688
1 1/2					1940	2200	2631	2983	3160	3560	4285	4827

Note 1: Bolt head identification marks as per grade. Manufacturing marks will vary. *Thick nuts must be used with Grade 8 bolt

TORQUE TIGHTENING CHART 2

METRIC FASTENER (ISO) TORQUE CHART

Note: Use these torques, unless special torques are specified. Values are UNC and UNF thread fasteners,plated or unplated as received from supplier. Fasteners can be dry or lubricated with normal engine oil. Values do not apply if graphite, moly-disulphite or other extreme pressure lubricant is used

ISO Class No.	8.8				10.9				12.9			
Bolt head identification (see note1)												
Bolt Size	Nm		LB - FT		Nm		LB - FT		Nm		LB - FT	
	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
M4	3	4	2	3	4	5	3	4				
M5	6 .5	8	5	6	9 .5	11	7	8				
M6	10 .5	12	8	9	15	17 .5	11	13				
M8	26	31	19	23	37	43	27	32				
M10	52	61	38	45	73	87	54	64				
M12	90	107	66	79	125	150	93	112				
M14	144	172	106	127	200	245	149	179				
M16	217	271	160	200	310	380	230	280				
M20	434	515	320	380	610	730	450	540				
M24	675	815	500	600	1050	1275	780	940				
M30	1250	1500	920	1100	2000	2400	1470	1770				
M36	2175	2600	1600	1950	3500	4200	2580	3090				

Because of the low ductility of these fasteners, the torque range is to be determined individually for each application. As a general rule, the torque ranges specified for grade 10,9fasteners can be used satisfactorily on 12,9 fasteners

*M14 is not a preferred size.

Note 1: Bolt head identification marks as per grade. Manufacturing mark will vary.

13. PART ILLUSTRATIONS

GENERAL INFORMATION

Illustrations

The individual parts in their normal relationship to each other. Reference numbers are used in the illustrations. These numbers correspond to those in the "Number" column and are followed by the quantity required and description.

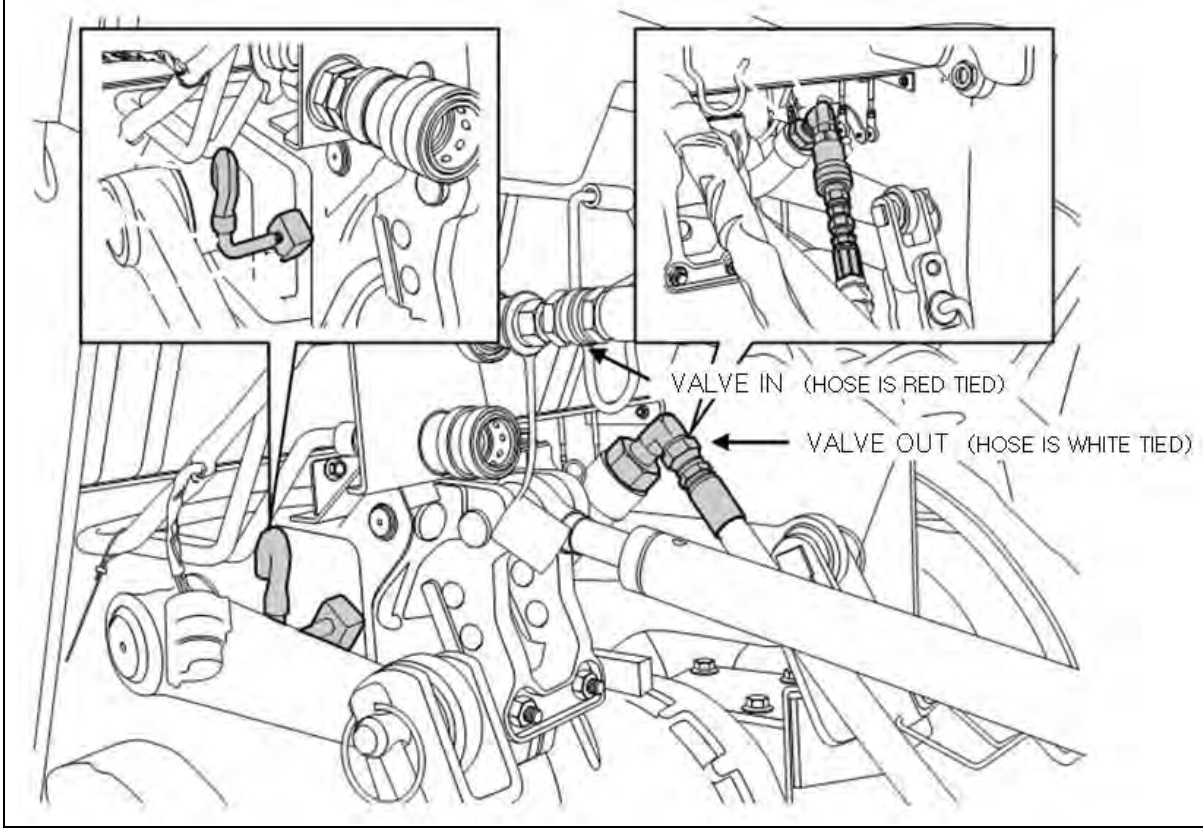
Directional Reference

"Right hand" and "left hand" sides are determined by standing at the rear of the unit and facing in the direction of forward travel.

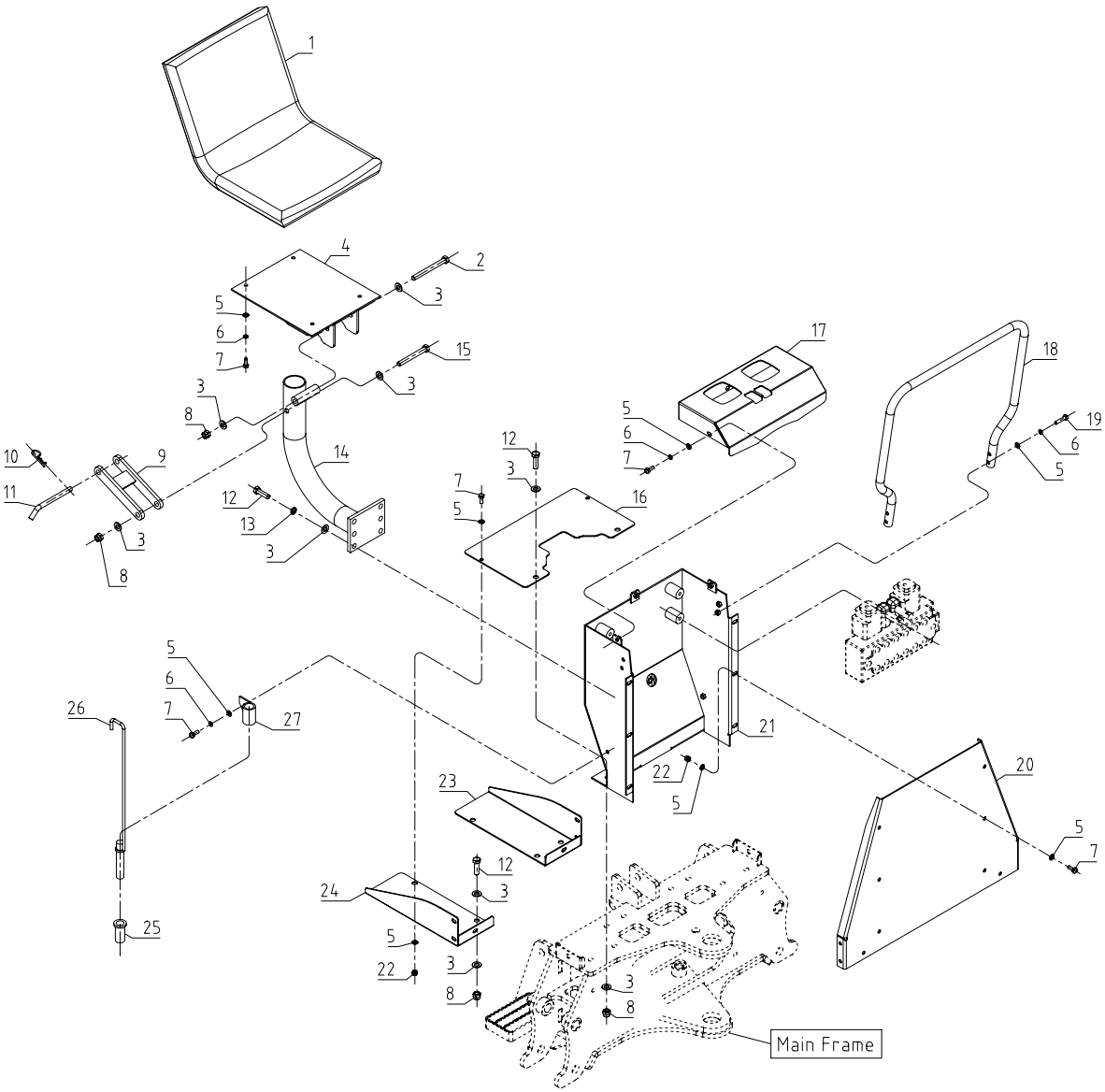
Part Order

Orders must give the complete description, correct part number, the total amount required, the product model, all the necessary serial numbers, the method of shipment and the shipping address.

13.1 IN-OUT HOSE KIT



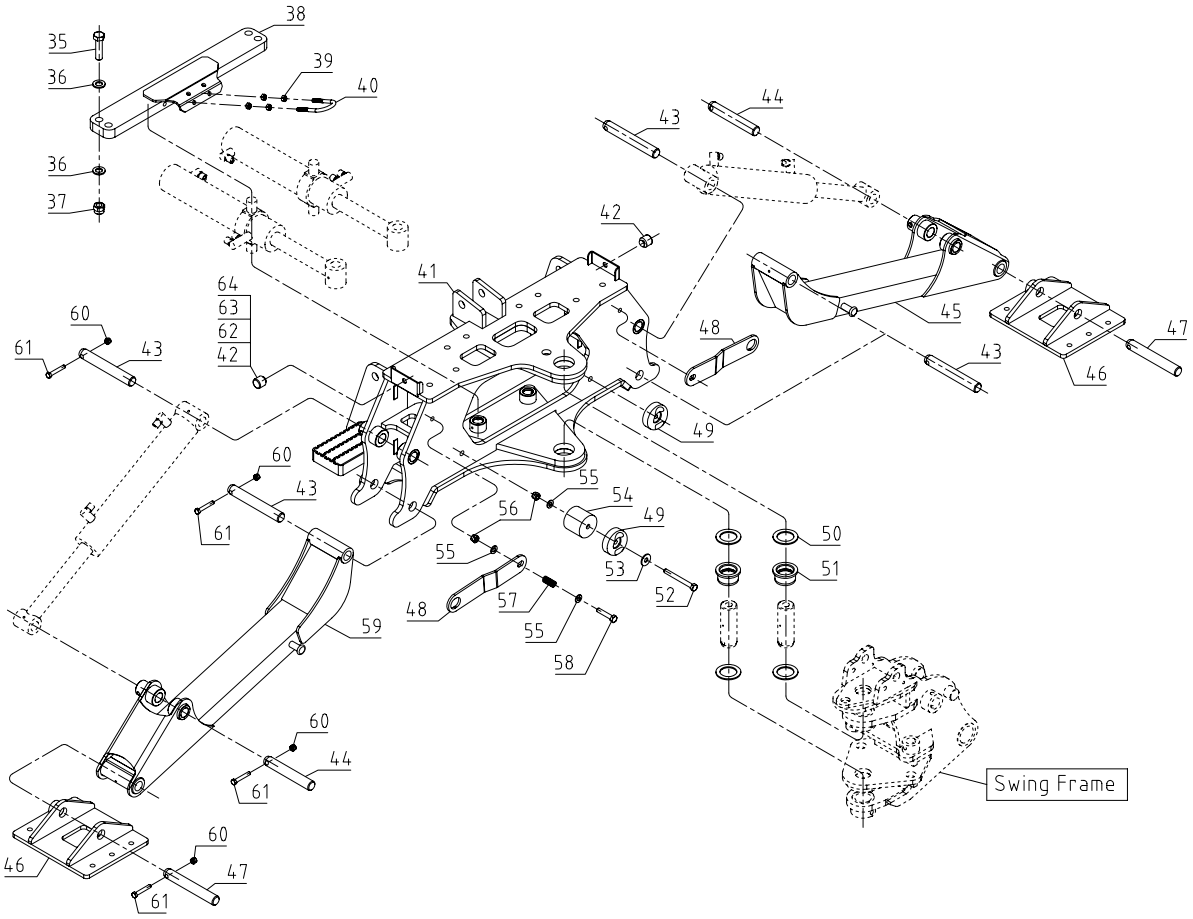
13.2 SEAT，CONTROL ASSEMBLY



No	PART No	DESCRITION	名称	Q'TY	REMARK
1	BK215.033	Seat	座椅	1	
2	GB5782-M12x115	Bolt-M12x115	螺栓 M12x115	1	
3	GB97.1-12	Washer-Plain 12	平垫 12	24	
4	BK215.016	Seat Plate	座椅支座焊合件	1	
5	GB97.1-8	Washer-Plain 8	平垫 8	40	
6	GB93-8	Washer-Spring 8	弹垫 8	12	
7	GB5782-M8x20	Bolt-M8x20	螺栓 M8x20	22	
8	GB889.1-M12	Nut Lock -M12	自锁螺母 M12	10	
9	BK215.015	Link Assembly	座椅连接板焊合件	1	
10	BL25.10.110	R-Pin, ϕ3.2	ϕ3.2R 销	1	
11	BK215.106	Pin,ϕ12	座椅销	1	

No	PART No	DESCRITION	名称	Q'TY	REMARK
12	GB5782-M12x40	Bolt-M12x40	螺栓 M12x40	12	
13	GB93-12	Washer-Spring 12	弹垫 12	4	
14	BK215.013	Support Seat	座椅撑管焊合件	1	
15	GB5782-M12x100	Bolt-M12x100	螺栓 M12x100	1	
16	BK215.104	Foot Plate-Center	踏脚板	1	
17	BK215.105	Top Cover	阀上盖	1	
18	BK215.107	Guide Bar	手扶管	1	
19	GB5782-M8x35	Bolt-M8x35	螺栓 M8x35	4	
20	BK215.124	Front Cover	阀前盖	1	
21	BK215.014	Valve Room Assembly	阀座焊合件	1	
22	GB889.1-M8	Nut Lock -M8	自锁螺母 M8	14	
23	BK215.103	Foot Plate-LH	踏板-左	1	
24	BK215.102	Foot Plate-RH	踏板-右	1	
25	BK215.123	Rubber Boss	拉杆橡胶套	1	
26	BK215.027	Swing Bin	拉杆	1	
27	BK215.028	Swing Pin Hanger	拉杆固定座	1	

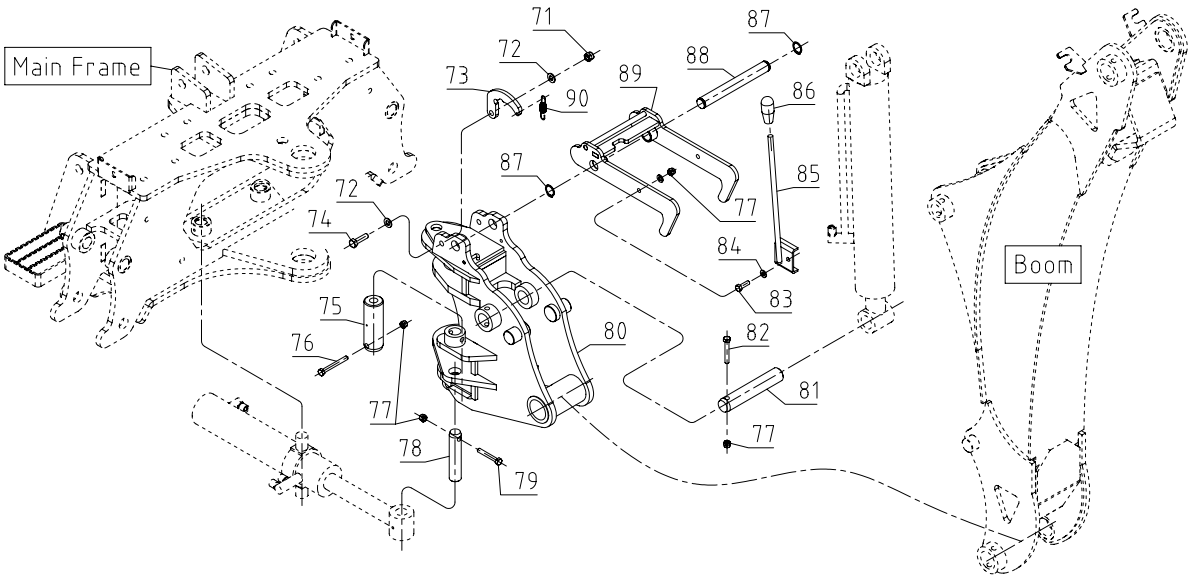
13.3 MAIN FRAME ASSEMBLY



No	PART No	DESCRITION	名称	Q'TY	REMARK
35	GB5782-M16x60	Bolt-M16x60	螺栓 M16x60	4	
36	GB97.1-16	Washer-Plain 16	平垫 16	8	
37	GB889.1-M16	Nut Lock-M16	自锁螺母 M16	4	
38	BK215.026	Cross Bar	摆动油缸座	1	
39	GB6172.1-M8	Nut-M8	六角螺母 M8	4	
40	BK215.402	U-bolt	U形抱箍	1	
41	BK215.011	Main Frame Assembly	底座焊合件	1	
42	BK215.128	Rubber Stop	撑脚橡胶垫	2	
43	BK215.127	Pin, ϕ24.5x173	撑脚油缸销二	4	
44	BK215.126	Pin, ϕ24.5x154	撑脚油缸销一	2	
45	BK215.031	Stabilizer Assembly-LH	撑脚焊合件-左	1	
46	BK215.029	Foot Plate	撑板焊合件	2	
47	BK215.125	Pin, ϕ24.5x166	撑板销	2	
48	BK215.121	Stabilizer Lock	撑脚固定板	2	
49	BK215.131	Rubber Cushion	摆座防撞橡胶垫	2	

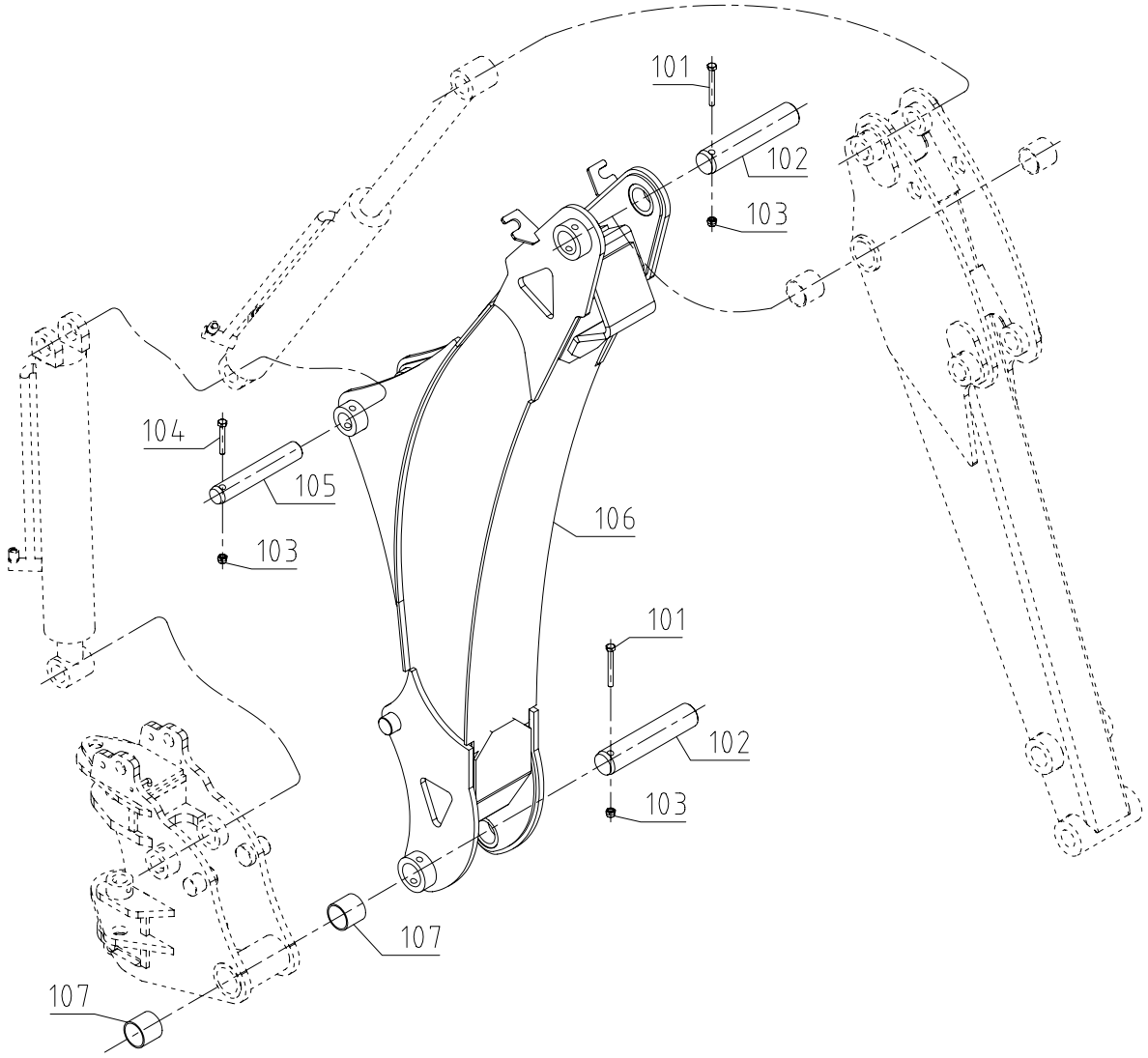
No	PART No	DESCRITION	名称	Q'TY	REMARK
50	BK215.130	Washer	摆座垫圈	4	
51	BK215.129	Bushing	摆座衬套	2	
52	GB5782-M10x95	Bolt-M10x95	螺栓 M10x95	2	
53	GB96.2-10	Big Washer-Plain 10	大垫片 10	2	
54	BK215.032	Bracket-Cushion	摆座防撞座	2	
55	GB97.1-10	Washer-Plain 10	平垫 10	6	
56	GB889.1-M10	Nut Lock-M10	自锁螺母 M10	4	
57	BK215.122	Spring	压簧	2	
58	GB5782-M10x50	Bolt-M10x50	螺栓 M10x50	2	
59	BK215.030	Stabilizer Assembly-RH	撑脚焊合件-右	1	
60	GB889.1-M8	Nut Lock-M8	自锁螺母 M8	8	
61	GB5782-M8x50	Bolt-M8x50	螺栓 M8x50	8	
62	GB/T97.1-6	Plain Washer 6	平垫 6	2	
63	GB/T889.1-M6	Nut Lock-M6	尼龙自锁螺母 M6	2	
64	GB/T70.1-M6x20	Bolt-M6x20	内六角螺钉 M6x20	2	

13.4 SWING FRAME ASSEMBLY



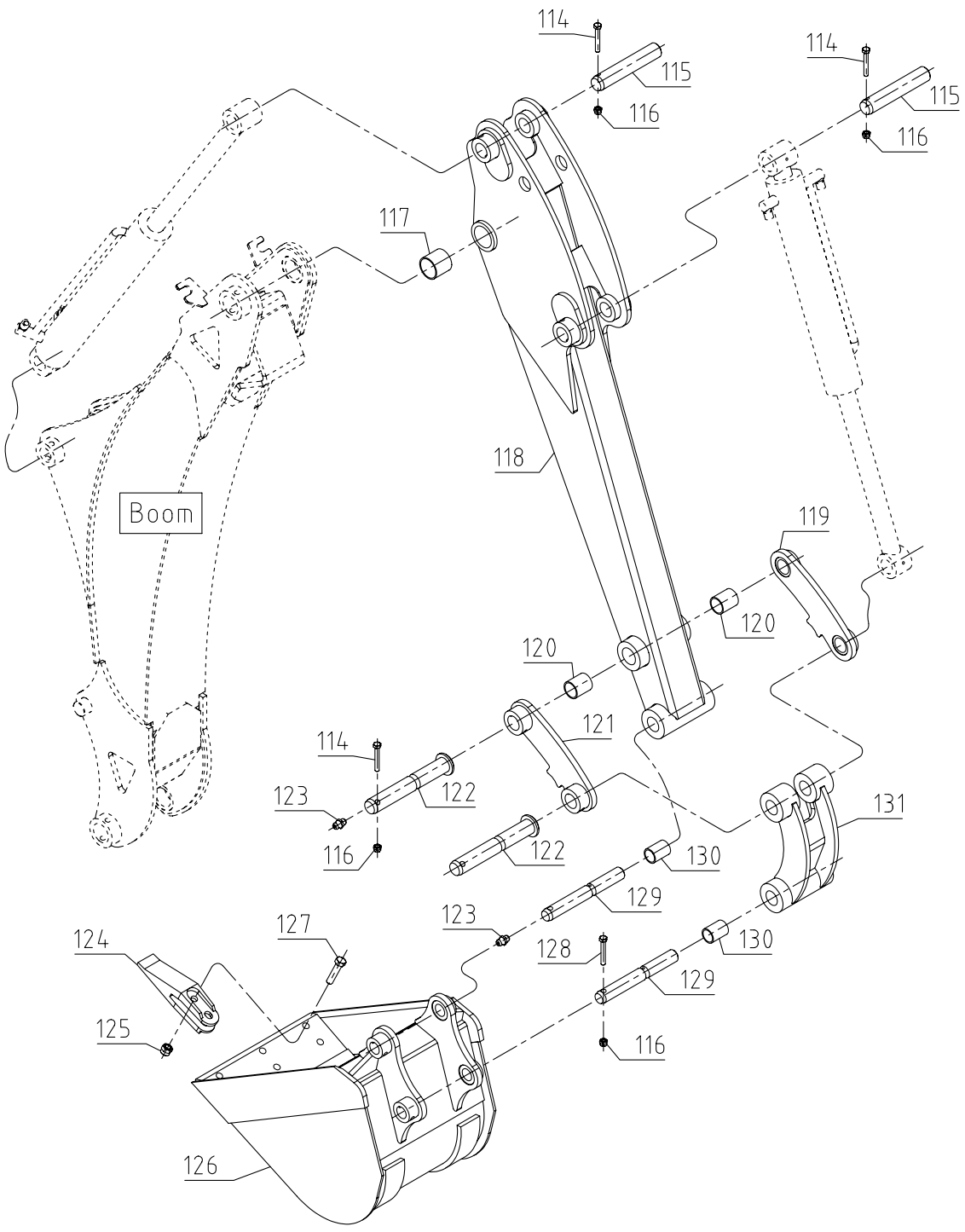
No	PART No	DESCRITION	名称	Q'TY	REMARK
71	GB889.1-M10	Nut Lock-M10	自锁螺母 M10	1	
72	GB97.1-10	Washer-Plain 10	平垫 10	2	
73	BK215.118	Lock Plate	锁架铰链板	1	
74	GB5782-M10x35	Bolt-M10x35	螺栓 M10x35	1	
75	BK215.101	Pin, ϕ39.5x115	摆座销	2	
76	GB5782-M8x70	Bolt-M8x70	螺栓 M8x70	2	
77	GB889.1-M8	Nut Lock-M8	自锁螺母 M8	6	
78	BK215.120	Pin, ϕ24.5x117	摆动油缸销	2	
79	GB5782-M8x55	Bolt-M8x55	螺栓 M8x55	2	
80	BK215.012	Swing Frame Assembly	摆座焊合件	1	
81	BK215.112	Pin, ϕ29.5x161	小臂销	1	
82	GB5782-M8x60	Bolt-M8x60	螺栓 M8x60	1	
83	GB5782-M8x25	Bolt-M8x25	螺栓 M8x25	1	
84	GB97.1-8	Washer-Plain 8	平垫 8	2	
85	BK215.022	Handle Set	锁架手柄	1	
86	BK215.114	Plastic Ball	锁架手柄套	1	
87	GB894.1-22	Snap Ring, 22	轴用卡簧 22	2	
88	BK215.117	Pin, ϕ22x190	锁架销	1	
89	BK215.023	Lock Frame Assembly	锁架焊合件	1	
90	BK215.119	Spring	拉簧	1	

13.5 BOOM ASSEMBLY



No	PART No	DESCRITION	名称	Q'TY	REMARK
101	GB5782-M8x70	Bolt-M8x70	螺栓 M&70	2	
102	BK215.115	Pin, ϕ39.5x193	大臂销	2	
103	GB889.1-M8	Nut Lock-M8	自锁螺母 M8	3	
104	GB5782-M8x60	Bolt-M8x60	螺栓 M&60	1	
105	BK215.113	Pin, ϕ29.5x180	大臂油缸销	1	
106	BK215.017	Boom Assembly	大臂焊合件	1	
107	BK215.116	Bushing, ϕ40	铜套 40	2	

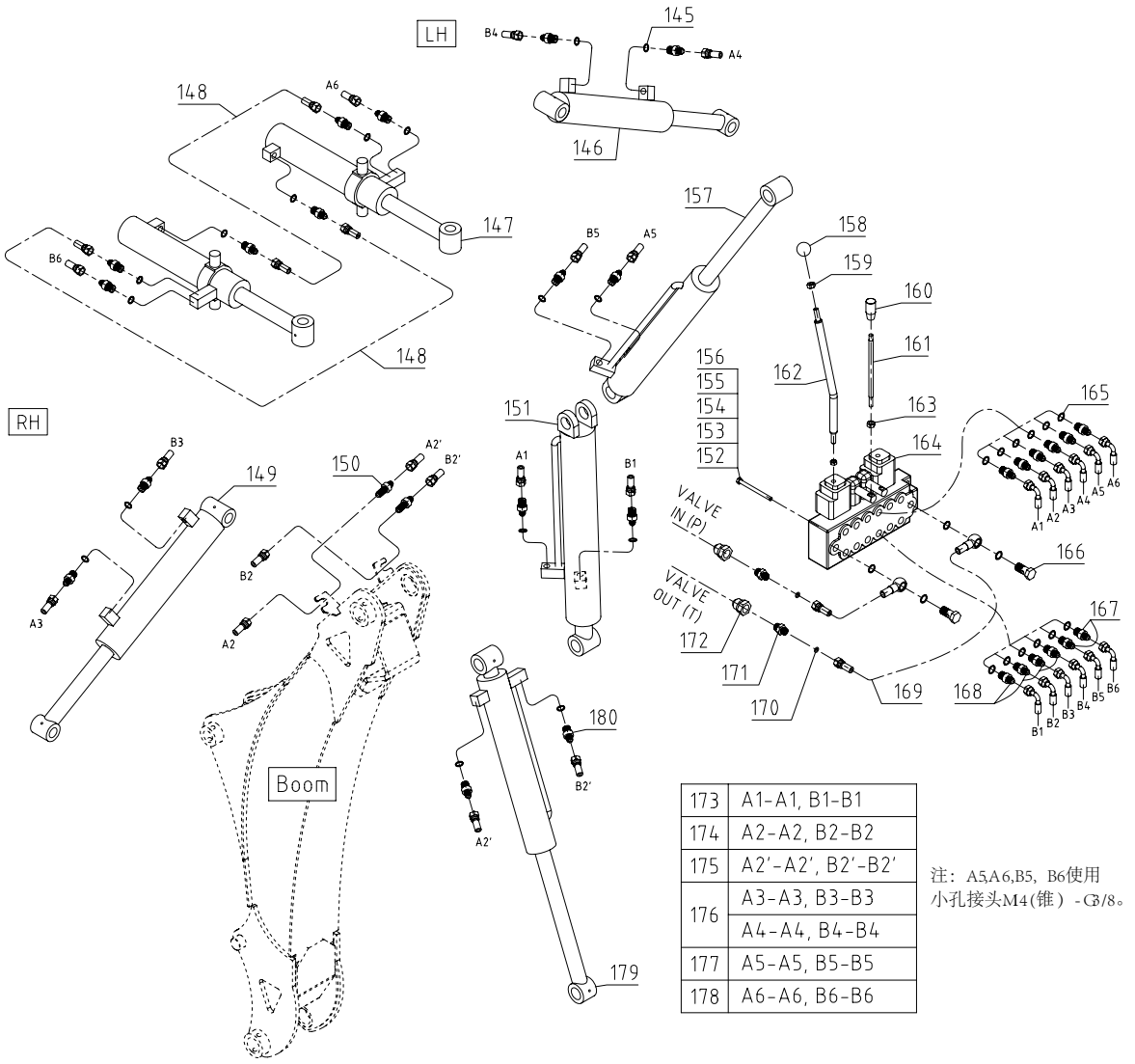
13.6 BUCKET, DIPPERSTICK ASSEMBLY



No	PART No	DESCRITION	名称	Q'TY	REMARK
114	GB5782-M8x60	Bolt-M8x60	螺栓 M8x60	4	
115	BK215.112	Pin, ϕ29.5x161	小臂销	2	
116	GB889.1-M8	Nut Lock-M8	自锁螺母 M8	6	
117	BK215.116	Bushing, ϕ40	铜套 40	2	
118	BK215.021	Dipperstick Assembly	小臂焊合件	1	

No	PART No	DESCRITION	名称	Q'TY	REMARK
119	BK215.019	Link-LH	外连接板焊合件-左	1	
120	BK215.111	Bushing, ϕ30	铜套 30	2	
121	BK215.018	Link-RH	外连接板焊合件-右	1	
122	BK215.110	Pin, ϕ29.5x198	连接板销	2	
123	JB7940.1-M6	Grease Nipple-M6	油杯 M6	26	
124	BK6N.01.105	Bucket Teeth	挖斗铲齿	3	
125	GB889.1-M12	Nut Lock-M12	自锁螺母 M12	6	
126	BK215.025	Bucket Assembly	挖斗焊合件	1	
127	GB5782-M12x45	Bolt-M12x45	螺栓 M12x45	6	
128	GB5782-M8x55	Bolt-M8x55	螺栓 M8x55	2	
129	BK215.108	Pin, ϕ24.5x200	挖斗销	2	
130	BK215.109	Bushing, ϕ25	铜套 25	4	
131	BK215.020	Link Assembly	内连接板焊合件	1	

13.7 HOSE FITTING ASSEMBLY



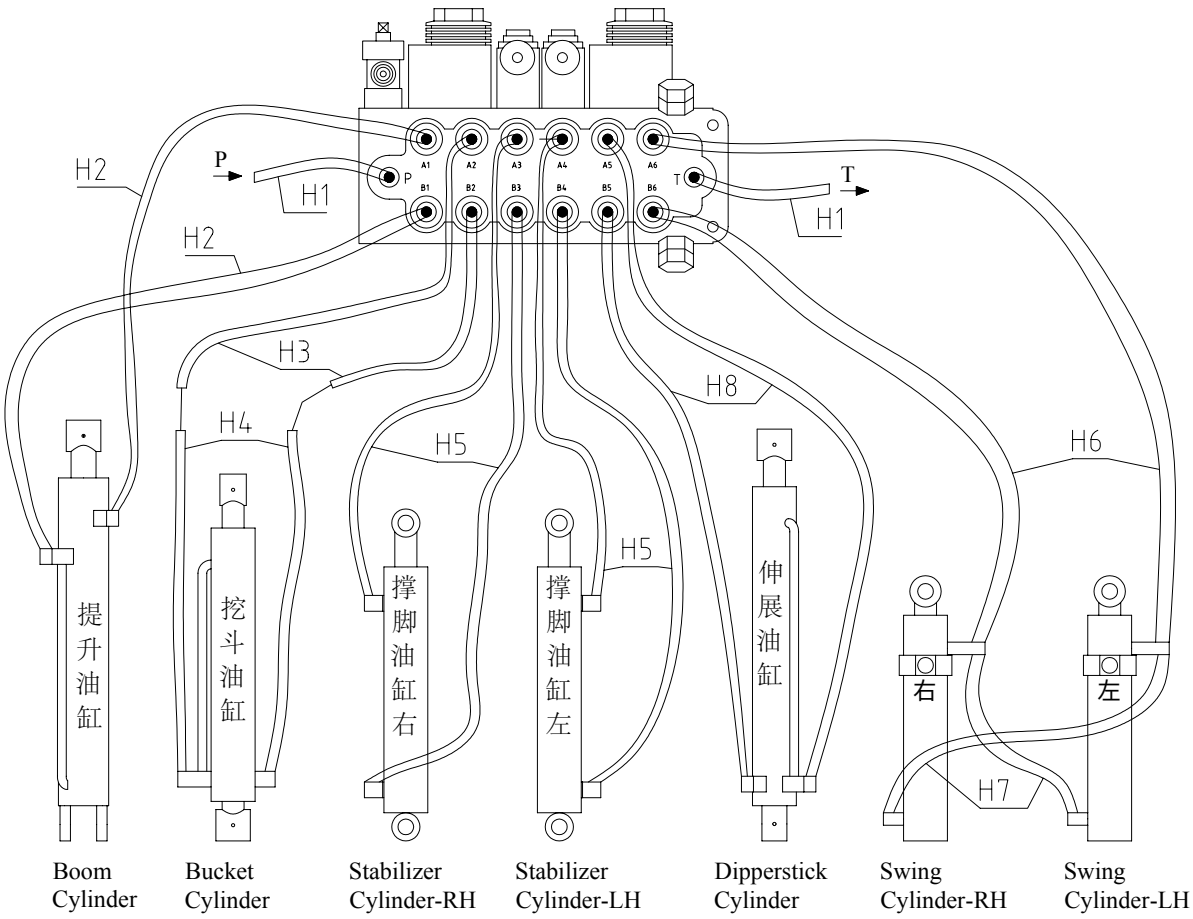
173	A1-A1, B1-B1
174	A2-A2, B2-B2
175	A2'-A2', B2'-B2'
176	A3-A3, B3-B3
	A4-A4, B4-B4
177	A5-A5, B5-B5
178	A6-A6, B6-B6

注：A5,A6,B5, B6使用
小孔接头M14(锥）-G3/8。

No	PART No	DESCRITION	名称	Q'TY	REMARK
145	JB/T982-14	Combination Washer 14	组合垫圈 14	16	
146	BK215.044	Stabilizer Cylinder-LH	撑脚油缸-左	1	
147	BK215.045	Swing Cylinder	偏摆油缸	2	
148	BK215.416	Hose, Swing To Swing	偏摆胶管	2	
149	BK215.043	Stabilizer Cylinder-RH	撑脚油缸-右	1	
150	BK215.406	Long Adapter, M14Z-M14Z	长接头 M14 锥-M14 锥	2	
151	BK215.041	Boom Cylinder	提升油缸	1	
152	GB5782-M8x100	Bolt- M8x100	螺栓 M8x100	2	
153	GB97.1-8	Plain-Washer 8	平垫 8	5	
154	GB889.1-M8	Nut Lock-M8	自锁螺母 M8	2	
155	GB5782-M8x60	Bolt- M8x60	螺栓 M8x60	1	

No	PART No	DESCRITION	名称	Q'TY	REMARK
156	GB93-8	Spring-Washer 8	弹垫 8	1	
157	BK215.046	Dipperstick Cylinder	伸展油缸	1	
158	JB7271.1-M10x32	Plastic Ball-M10x32	手柄球	2	
159	GB6172.1-M10	Nut-M10	六角螺母 M10	4	
160	JB7271.5-M10x50	Plastic Ball-M10x50	长手柄套	2	
161	BK215.401	Lever stick	操作手柄二	2	
162	BK215.040	Hand Lever	操作手柄一	2	
163	GB/T6172.1-M8	Nut-M8	六角螺母 M8	2	
164	HC-TR55/6	Control Valve	选择阀	1	
165	JB/T982-18	Combination Washer 18	组合垫圈 18	16	
166	BK215.403	Hollow Bolt-G3/8	G3/8 空心螺栓	2	
167	BK215.408	Adapter-2, M14Z-G3/8	小孔接头 M14锥-G3/8	4	
168	BK215.405	Adapter-1, M14Z-G3/8	接头 M14(锥) -G3/8	8	
169	BK215.410	Hose, Valve To In Out	进出油管	2	
170	GB3452.1-13x2.4	O-Ring, 13x2.4	O形圈 13x2.4	2	
171	BL25.40.102	Adapter, M18-R1/2	接头 M8- R1/ 2	2	
172	GB8606-G1/2-M	Quick Coupler-G1/2-M	快换接头 XZG1/2(阳)	2	
173	BK215.411	Hose，Valve To Boom	提升油缸-阀胶管	2	
174	BK215.412	Hose，Valve To Adapter	接头-阀胶管	2	
175	BK215.413	Hose，Adapter To Bucket	挖斗油缸-接头胶管	2	
176	BK215.414	Hose，Valve To Stabilizer	撑脚油缸-阀胶管	4	
177	BK215.417	Hose,Valve To Dipperstick	伸展油缸-阀胶管	2	
178	BK215.415	Hose, Valve To Swing	偏摆油缸-阀胶管	2	
179	BK215.042	Bucket Cylinder	挖斗油缸	1	
180	BK6N.06.104	Adapter, M14Z-M14	油缸直接头	16	

13.8 HYDRAULIC SYSTEM ASSEMBLY



No	PART No	DESCRITION	名称	Q'TY	REMARK
H1	BK215.410	Hose, Valve To In Out	进出油管	2	
H2	BK215.411	Hose，Valve To Boom	提升油缸-阀胶管	2	
H3	BK215.412	Hose，Valve To Adapter	接头-阀胶管	2	
H4	BK215.413	Hose，Adapter To Bucket	挖斗油缸-接头胶管	2	
H5	BK215.414	Hose，Valve To Stabilizer	撑脚油缸-阀胶管	4	
H6	BK215.415	Hose, Valve To Swing	偏摆油缸-阀胶管	2	
H7	BK215.416	Hose, Swing To Swing	偏摆胶管	2	
H8	BK215.417	Hose,Valve To Dipperstick	伸展油缸-阀胶管	2	