WSM

WORKSHOP MANUAL
BACKHOE

BH92

Kubota

KiSC issued 02, 2013 A

TO THE READER

This Workshop Manual tells the servicing personnel about the mechanism, servicing and maintenance of the KUBOTA Backhoe BH92. It contains 4 parts: **"Information"**, **"General"**, **"Mechanism"** and **"Servicing"**.

■ **Information**

This section contains information below.

- Safety First
- Safety Decals
- Terminology
- Specification

■ **General**

This section contains information below.

- Backhoe Identification
- General Precautions
- Lubricants
- Tightning Torques
- Maintenance Check List
- Check and Maintenance
- Special Tools

■ **Mechanism**

This section contains information on the structure and the function of the unit. Before you continue with the subsequent sections, make sure that you read this section.

■ **Servicing**

This section contains information below.

- Troubleshooting
- Servicing Specifications
- Tightening Torques
- Dismounting and Mounting
- Checking, Disassembling and Servicing

All illustrations, photographs and specifications contained in this manual are of the newest information available at the time of publication.

KUBOTA reserves the right to change all information at any time without notice.

Since this manual includes many models, information or illustrations and photographs can show more than one model.

November, 2009

KiSC issued 02, 2013 A

I INFORMATION

INFORMATION

CONTENTS

1. SAFETY FIRST I-1
2. SAFETY DECALS I-4
3. TERMINOLOGY I-6
4. SPECIFICATIONS I-7

1. SAFETY FIRST

⚠ SAFETY FIRST

- **This symbol, the industry's "Safety Alert Symbol", is used throughout this manual and on labels on the machine itself to warn of the possibility of personal injury. Read these instructions carefully.**
- **It is essential that you read the instructions and safety regulations before you try to repair or use this unit.**

⚠ DANGER
- **Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.**

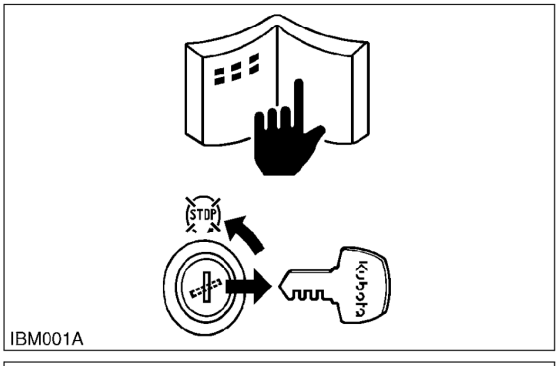
⚠ WARNING
- **Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.**

⚠ CAUTION
- **Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.**

■ IMPORTANT
- **Indicates that equipment or property damage could result if instructions are not followed.**

■ NOTE
- **Gives helpful information.**

WSM000001INI0001US1



IBM001A


IBM002A

BEFORE YOU START SERVICE

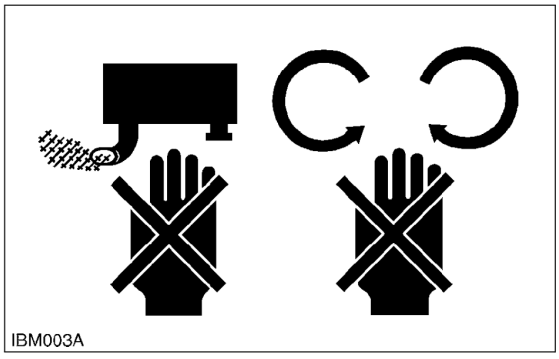
- Read all instructions and safety instructions in this manual and on your machine safety decals.
- Clean the work area and machine.
- Park the machine on a stable and level ground, and set the parking brake.
- Lower the implement to the ground.
- Stop the engine, then remove the key.
- Disconnect the battery negative cable.
- Hang a **"DO NOT OPERATE"** tag in the operator station.

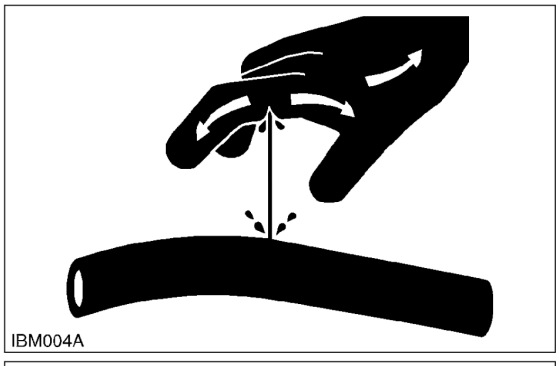
WSM000001INI0010US1

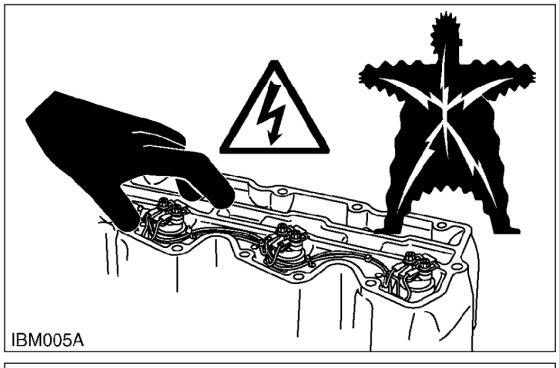
START SAFELY

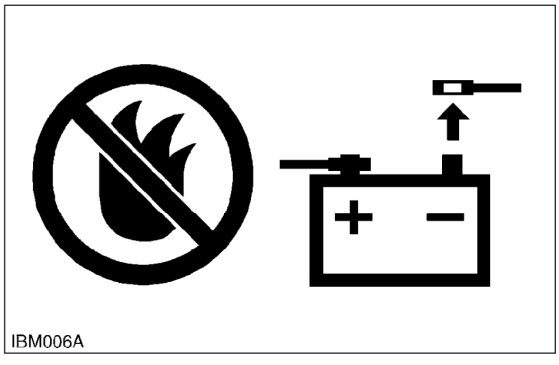
- Do not do the procedures below when you start the engine.
  - short across starter terminals
  - bypass the safety start switch
- Do not alter or remove any part of machine safety system.
- Before you start the engine, make sure that all shift levers are in neutral positions or in disengaged positions.
- Do not start the engine when you stay on the ground. Start the engine only from operator's seat.

WSM000001INI0015US0


IBM003A


IBM004A


IBM005A


IBM006A

OPERATE SAFELY

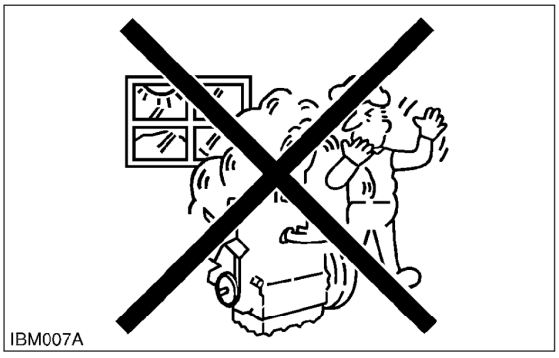
- Do not use the machine after you consume alcohol or medication or when you are tired.
- Put on applicable clothing and safety equipment.
- Use applicable tools only. Do not use alternative tools or parts.
- When 2 or more persons do servicing, make sure that you do it safely.
- Do not operate below the machine that only a jack holds. Always use a safety stand to hold the machine.
- Do not touch the hot parts or parts that turn when the engine operates.
- Do not remove the radiator cap when the engine operates, or immediately after it stops. If not, hot water can spout out from the radiator. Only remove the radiator cap when it is at a sufficiently low temperature to touch with bare hands. Slowly loosen the cap to release the pressure before you remove it fully.
- Released fluid (fuel or hydraulic oil) under pressure can cause damage to the skin and cause serious injury. Release the pressure before you disconnect hydraulic or fuel lines. Tighten all connections before you apply the pressure.
- Do not open a fuel system under high pressure. The fluid under high pressure that stays in fuel lines can cause serious injury. Do not disconnect or repair the fuel lines, sensors, or any other components between the fuel pump and injectors on engines with a common rail fuel system under high pressure.
- Put on an applicable ear protective device (earmuffs or earplugs) to prevent injury against loud noises.
- Be careful about electric shock. The engine generates a high voltage of more than DC100 V in the ECU and is applied to the injector.

WSM000001INI0012US1

PREVENT A FIRE

- Fuel is very flammable and explosive under some conditions. Do not smoke or let flames or sparks in your work area.
- To prevent sparks from an accidental short circuit, always disconnect the battery negative cable first and connect it last.
- The battery gas can cause an explosion. Keep the sparks and open flame away from the top of battery, especially when you charge the battery.
- Make sure that you do not spill fuel on the engine.

WSM000001INI0005US1


IBM007A

KEEP A GOOD AIRFLOW IN THE WORK AREA

- If the engine is in operation, make sure that the area has good airflow. Do not operate the engine in a closed area. The exhaust gas contains poisonous carbon monoxide.

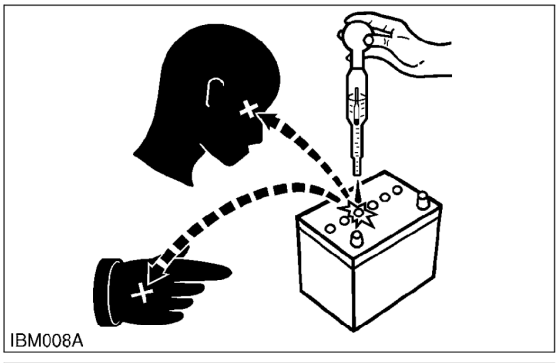
WSM000001INI0006US1


IBM009A

DISCARD FLUIDS CORRECTLY

- Do not discard fluids on the ground, down the drain, into a stream, pond, or lake. Obey related environmental protection regulations when you discard oil, fuel, coolant, electrolyte and other dangerous waste.

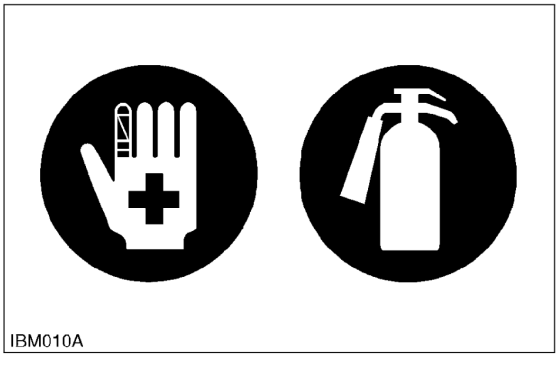
WSM000001INI0007US1


IBM008A

PREVENT ACID BURNS

- Keep electrolyte away from your eyes, hands and clothing. Sulfuric acid in battery electrolyte is poisonous and it can burn your skin and clothing and cause blindness. If you spill electrolyte on yourself, clean yourself with water, and get medical aid immediately.

WSM000001INI0008US1


IBM010A

PREPARE FOR EMERGENCIES

- Keep a first aid kit and fire extinguisher ready at all times.
- Keep the emergency contact telephone numbers near your telephone at all times.

WSM000001INI0009US1

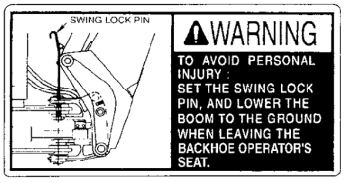
2. SAFETY DECALS

The following safety decals are installed on the machine. If a decal becomes damaged, illegible or is not on the machine, replace it. The decal part number is listed in the parts list.

WSM000001INI0013US0

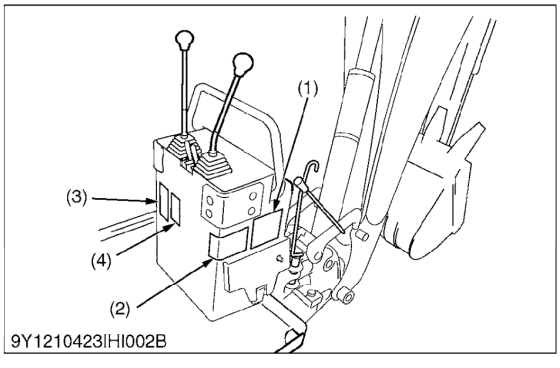
(1) Part No. 75597-7528-0

(2) Part No. 7K500-7529-0



(3) Part No. 7K500-7532-0

(4) Part No. 75595-7524-0



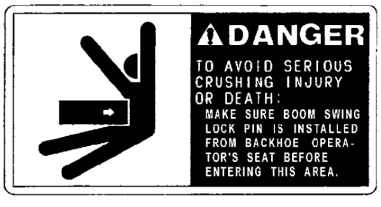
9Y1210423ICI002A

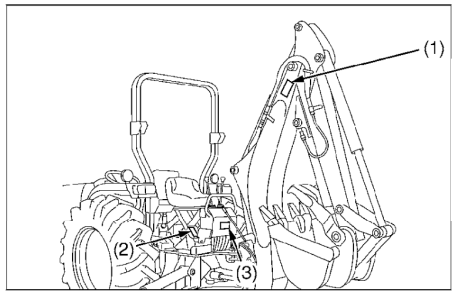
9Y1210423INI0001US0

(1) Part No. 75595-7517-0 (Both sides)

(2) Part No. 7K500-7531-0

(3) Part No. 7K500-7517-0





9Y1210423ICI001A

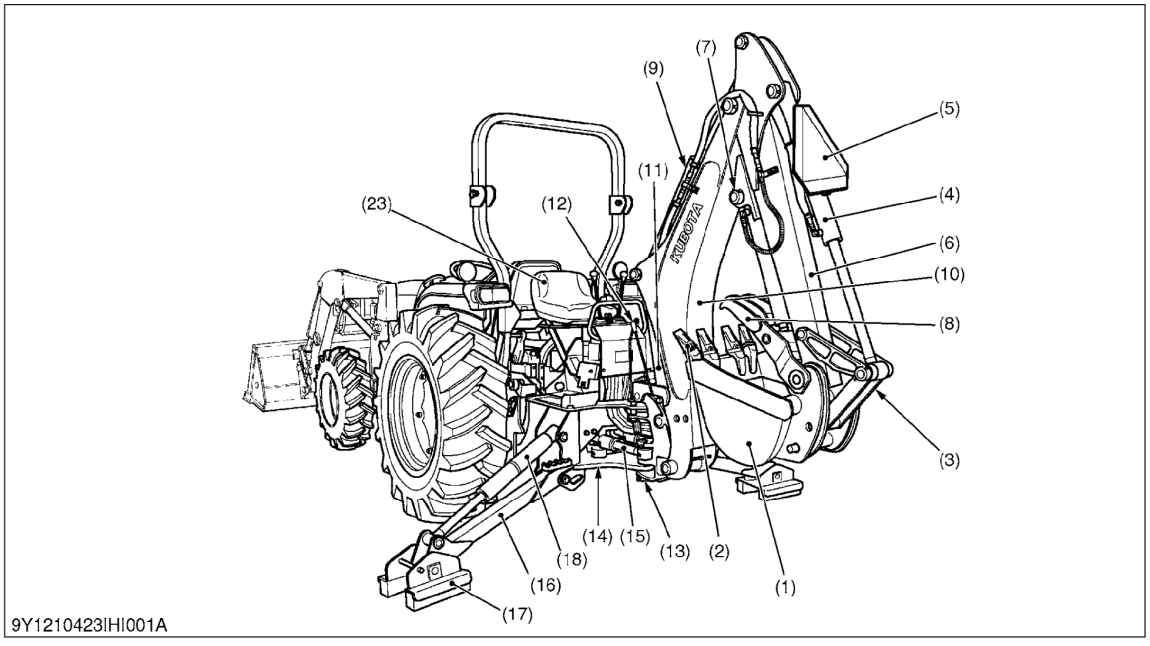
9Y1210423TNT0002US0

CARE OF DANGER, WARNING AND CAUTION LABELS

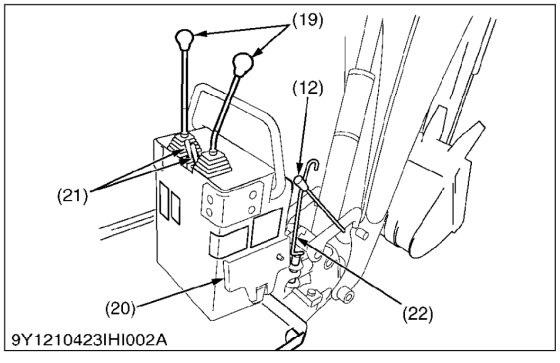
1. Keep danger, warning and caution labels clean and free from obstructing material.
2. Clean danger, warning and caution labels with soap and water, dry with a soft cloth.
3. Replace damaged or missing danger, warning and caution labels with new labels.
4. If a component with danger, warning and caution label(s) affixed is replace with new part, make sure new label(s) is (are) attached in the same location(s) as the replace component.
5. Mount new danger, warning and caution labels by applying on a clean dry surface and pressure any bubbles to outside edge.

9Y1210423INI0003US0

3. TERMINOLOGY



9Y1210423IHI001A



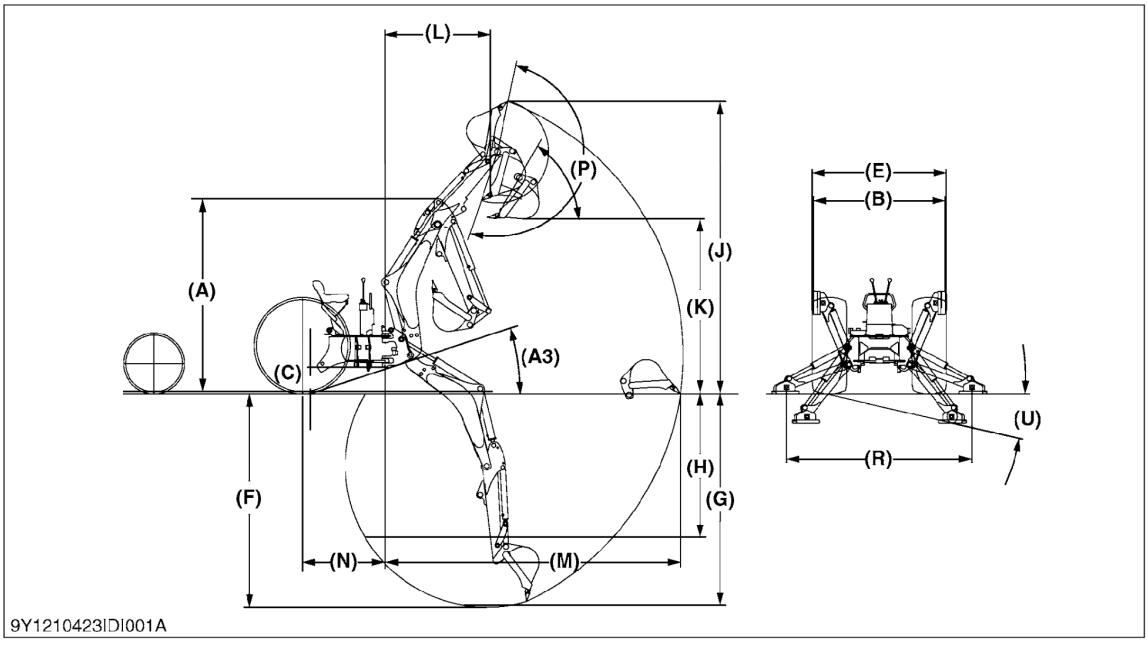
9Y1210423IHI002A

(1) Backhoe Bucket (Quick Bucket: Option)
(2) Bucket Teeth
(3) Link, Bucket
(4) Cylinder, Bucket
(5) SMV Emblem
(6) Dipperstick
(7) Thumb Bracket
(8) Thumb (Option)
(9) Cylinder, Dipperstick
(10) Boom
(11) Cylinder, Boom
(12) Boom Lock Lever
(13) Swing Frame
(14) Main Frame
(15) Cylinder, Swing
(16) Stabilizer
(17) Stabilizer Pad
(18) Cylinder, Stabilizer
(19) Joystick Control
(20) Auxiliary Hydraulic Valve Pedal (Option)
(21) Stabilizer Control
(22) Swing Lock Pin
(23) Seat

9Y1210423INI0004US0

4. SPECIFICATIONS

Operating Dimensions



	Model	BH92
(A)	Transport Height	2542 mm (100.1 in.)
(B)	Stabilizer Spread Transport	1758 mm (69.2 in.)
(C)	Ground Clearance	323 mm (12.7 in.)
(E)	Overall Width	1810 mm (71.26 in.)
(F)	Maximum Digging Depth	2816 mm (110.9 in.)
(G)	Digging Depth 2 ft. Flat Bottom	2789 mm (109.8 in.)
(H)	Digging Depth 8 ft. Flat Bottom	2312 mm (91.0 in.)
(J)	Operating Height Fully Raised	3775 mm (148.6 in.)
(K)	Loading Height	2141 mm (84.3 in.)
(L)	Loading Reach	1360 mm (53.5 in.)
(M)	Reach from Swing Pivot	3819 mm (150.4 in.)
(N)	Swing Pivot to Rear Axle Center Line	1069 mm (42.09 in.)
(P)	Bucket Rotation	180 deg.
(R)	Stabilizer Spread-Operation	2336 mm (91.97 in.)
(A3)	Angle of Departure per SAE J1234	20.6 deg.
(U)	Levelling angle	10.6 deg.
	Swing Arc	180 deg.

■ **NOTE**

- **The specifications are taken with KUBOTA L5740-3 tractor with foldable ROPS. (Tire size: Front 9.5-16, Rear 14.9-26)**

Digging Force (Per SAE J49)

With bucket cylinder	20230 N (4548 lbf)
With dipperstick cylinder	12000 N (2698 lbf)

Cycle Time (Seconds)

Boom cylinder, extend	3.9
Boom cylinder, retract	3.2
Swing cylinder, from 90 ° to center	1.8
Dipperstick cylinder, extend	3.7
Dipperstick cylinder, retract	2.7
Bucket cylinder, extend	2.9
Bucket cylinder, retract	1.9
Stabilizer cylinder, max. height to ground	1.5
Stabilizer cylinder, ground to max. height	1.2

Hydraulic Cylinders

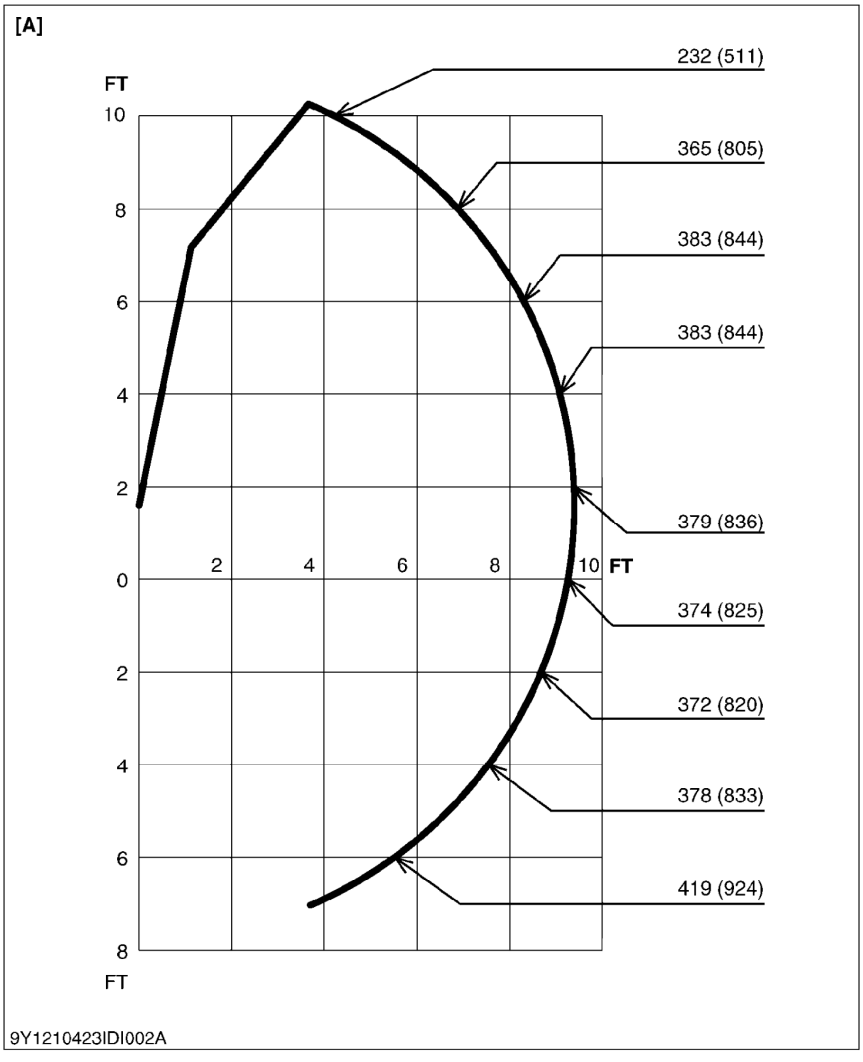
	Boom cm (in.)	Dipperstick cm (in.)	Bucket cm (in.)	Stabilizer cm (in.)	Swing cm (in.)
Rod diameter	4.0 (1.6)	4.0 (1.6)	4.0 (1.6)	4.0 (1.6)	3.5 (1.4)
Cylinder bore	8.0 (3.1)	7.5 (3.0)	6.5 (2.6)	7.0 (2.8)	6.0 (2.4)

Bucket Size

	Width cm (in.)	SAE Struck Capacity m^3 (cu-ft)	SAE Heaped Capacity m^3 (cu-ft)	Number of Teeth	Weight kg (lb)
Trenching 12"	30.5 (12.0)	0.034 (1.2)	0.042 (1.5)	3	54.0 (119)
Trenching 16"	40.6 (16.0)	0.047 (1.7)	0.061 (2.2)	4	66.0 (146)
Trenching 18"	45.7 (18.0)	0.054 (1.9)	0.071 (2.5)	4	69.0 (152)
Trenching 24"	61.0 (24.0)	0.074 (2.6)	0.102 (3.60)	5	80.0 (176)
Trenching 30"	76.2 (30.0)	0.095 (3.4)	0.133 (4.70)	6	92.0 (203)
Trenching 36"	91.4 (36.0)	0.115 (4.06)	0.164 (5.79)	7	104 (229)

9Y1210423INI0005US0

Lift Capacity (Per SAE J31)



[A] Rated Lift Capacity (Over End)-kg (lbs)

Lift capacities shown are 87 % of maximum lift force, according to SAE definition.

9Y1210423INI0006US0

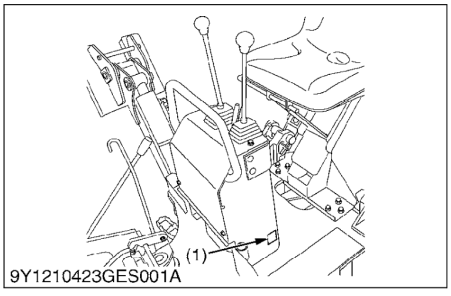
G GENERAL

GENERAL

CONTENTS

1. BACKHOE IDENTIFICATION G-1
2. GENERAL PRECAUTIONS G-2
3. LUBRICANTS G-3
4. TIGHTENING TORQUES G-4
   [1] GENERAL USE SCREWS, BOLTS AND NUTS G-4
   [2] STUD BOLTS G-4
   [3] AMERICAN STANDARD SCREWS, BOLTS AND NUTS WITH UNC OR UNF THREADS G-5
   [4] PLUGS G-5
   [5] HYDRAULIC FITTINGS G-6
      (1) Adaptors, Elbows and Others G-6
5. MAINTENANCE CHECK LIST G-7
6. CHECK AND MAINTENANCE G-8
   [1] CHECK POINTS OF EACH USE OR DAILY G-8
   [2] CHECK POINT OF EVERY 10 HOURS G-9
7. SPECIAL TOOLS G-10

1. BACKHOE IDENTIFICATION

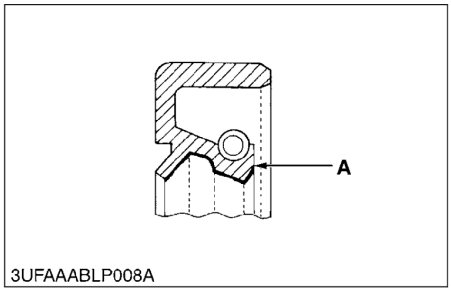


When contacting your local KUBOTA distributor, always specify backhoe serial number.

(1) Serial Number

9Y1210423GEG0002US0

2. GENERAL PRECAUTIONS



3UFAAABLP008A

- During disassembly, carefully arrange removed parts in a clean area to prevent later confusion. Screws, bolts and nuts should be replaced in their original positions to prevent reassembly errors.
- When special tools are required, use genuine KUBOTA tools. Special tools which are not used frequently should be made according to the drawings provided.
- Clean parts before measuring them.
- Use only genuine KUBOTA parts for parts replacement to maintain backhoe performance and to assure safety.
- O-rings and oil seals must be replaced during reassembly. Apply grease to new O-rings or oil seals before reassembling.
- Nipples must be tightened to the specified torque. Excessive torque may cause damages hydraulic units or nipples, and insufficient torque will result in oil leaks.
- When using a new hose or pipe, tighten nuts to the specified torque once, then loosen them (approx. by 45 °) to allow hose or pipe to settle before retightening to the specified torque (except sealtaped parts).
- When removing both ends of a pipe, remove the lower end first.
- Use two pliers in removal and reinstallation; one to hold the static side, and the other to turn the side being removed to avoid twisting.
- Check to see that sleeves of flareless connectors and tapered sections of hoses are free of dust and scratches.
- After tightening nipples, clean the joint and apply the maximum working pressure 2 to 3 times to check for oil leak.

A: Grease

9Y1210423GEG0003US0

3. LUBRICANTS

To prevent serious damage to hydraulic systems, use only specified fluid or its equivalent.

Place	Capacity					Lubricants, type of grease
	L3240(-3) L3540(-3) L3560	**L3940(-3) L4240(-3) L4740(-3) L4060 L4760**	**L5040(-3) L5240(-3) L5740(-3) L5060 L5460 L6060**	**L4400**	**MX4700 MX5100**	
Transmission case	42.0 L 11.1 U.S.gals 9.24 Imp.gals	43.0 L 11.4 U.S.gals 9.46 Imp.gals	45.0 L 11.9 U.S.gals 9.90 Imp.gals	40.0 L 10.6 U.S.gals 8.80 Imp.gals	44.0 L 11.6 U.S.gals 9.68 Imp.gals	KUBOTA UDT or SUPER UDT fluid*
Grease nipples	Until grease overflows					Moly Ep type grease**

* KUBOTA original transmission hydraulic fluid

** "Extreme pressure" and containing Molybdenum disulfide is recommended. This grease may specify "Moly Ep" on it's label.

9Y1210423GEG0004US0

4. TIGHTENING TORQUES

[1] GENERAL USE SCREWS, BOLTS AND NUTS

Tighten screws, bolts and nuts whose tightening torques are not specified in this Workshop Manual according to the table below.

Indication on top of bolt	⬡ 4 No-grade or 4T						⬡ 7 ⬡ 8.8 7T or Property class 8.8						⬡ 9 ⬡ 10.9 9T or Property class 10.9		
Material of opponent part	**Ordinariness**			**Aluminum**			**Ordinariness**			**Aluminum**			**Ordinariness**		
Unit	**N·m**	**kgf·m**	**lbf·ft**	**N·m**	**kgf·m**	**lbf·ft**	**N·m**	**kgf·m**	**lbf·ft**	**N·m**	**kgf·m**	**lbf·ft**	**N·m**	**kgf·m**	**lbf·ft**
M6 (6 mm, 0.24 in.)	7.9 to 9.3	0.80 to 0.95	5.8 to 6.8	7.9 to 8.8	0.80 to 0.90	5.8 to 6.5	9.81 to 11.2	1.00 to 1.15	7.24 to 8.31	7.9 to 8.8	0.80 to 0.90	5.8 to 6.5	12.3 to 14.2	1.25 to 1.45	9.05 to 10.4
M8 (8 mm, 0.31 in.)	18 to 20	1.8 to 2.1	13 to 15	17 to 19	1.7 to 2.0	13 to 14	24 to 27	2.4 to 2.8	18 to 20	18 to 20	1.8 to 2.1	13 to 15	30 to 34	3.0 to 3.5	22 to 25
M10 (10 mm, 0.39 in.)	40 to 45	4.0 to 4.6	29 to 33	32 to 34	3.2 to 3.5	24 to 25	48 to 55	4.9 to 5.7	36 to 41	40 to 44	4.0 to 4.5	29 to 32	61 to 70	6.2 to 7.2	45 to 52
M12 (12 mm, 0.47 in.)	63 to 72	6.4 to 7.4	47 to 53	–	–	–	78 to 90	7.9 to 9.2	58 to 66	63 to 72	6.4 to 7.4	47 to 53	103 to 117	10.5 to 12.0	76.0 to 86.7
M14 (14 mm, 0.55 in.)	108 to 125	11.0 to 12.8	79.6 to 92.5	–	–	–	124 to 147	12.6 to 15.0	91.2 to 108	–	–	–	167 to 196	17.0 to 20.0	123 to 144
M16 (16 mm, 0.63 in.)	167 to 191	17.0 to 19.5	123 to 141	–	–	–	197 to 225	20.0 to 23.0	145 to 166	–	–	–	260 to 304	26.5 to 31.0	192 to 224
M18 (18 mm, 0.71 in.)	246 to 284	25.0 to 29.0	181 to 209	–	–	–	275 to 318	28.0 to 32.5	203 to 235	–	–	–	344 to 402	35.0 to 41.0	254 to 296
M20 (20 mm, 0.79 in.)	334 to 392	34.0 to 40.0	246 to 289	–	–	–	368 to 431	37.5 to 44.0	272 to 318	–	–	–	491 to 568	50.0 to 58.0	362 to 419

WSM000001GEG0006US0

[2] STUD BOLTS

Material of opponent part	Ordinariness			Aluminum		
Unit	**N·m**	**kgf·m**	**lbf·ft**	**N·m**	**kgf·m**	**lbf·ft**
M8 (8 mm, 0.31 in.)	12 to 15	1.2 to 1.6	8.7 to 11	8.9 to 11	0.90 to 1.2	6.5 to 8.6
M10 (10 mm, 0.39 in.)	25 to 31	2.5 to 3.2	18 to 23	20 to 25	2.0 to 2.6	15 to 18
M12 (12 mm, 0.47 in.)	30 to 49	3.0 to 5.0	22 to 36	31	3.2	23
M14 (14 mm, 0.55 in.)	62 to 73	6.3 to 7.5	46 to 54	–	–	–
M16 (16 mm, 0.63 in.)	98.1 to 112	10.0 to 11.5	72.4 to 83.1	–	–	–
M18 (18 mm, 0.71 in.)	172 to 201	17.5 to 20.5	127 to 148	–	–	–

WSM000001GEG0007US0

[3] AMERICAN STANDARD SCREWS, BOLTS AND NUTS WITH UNC OR UNF THREADS

Grade	SAE GR.5			SAE GR.8		
Unit	N·m	kgf·m	lbf·ft	N·m	kgf·m	lbf·ft
1/4	11.7 to 15.7	1.20 to 1.60	8.63 to 11.5	16.3 to 19.7	1.67 to 2.00	12.0 to 14.6
5/16	23.1 to 27.7	2.36 to 2.82	17.0 to 20.5	33 to 39	3.4 to 3.9	25 to 28
3/8	48 to 56	4.9 to 5.7	36 to 41	61 to 73	6.3 to 7.4	45 to 53
1/2	110 to 130	11.3 to 13.2	81.2 to 95.8	150 to 178	15.3 to 18.1	111 to 131
9/16	150 to 178	15.3 to 18.1	111 to 131	217 to 260	22.2 to 26.5	160 to 191
5/8	204 to 244	20.8 to 24.8	151 to 179	299 to 357	30.5 to 36.4	221 to 263

WSM000001GEG0008US1

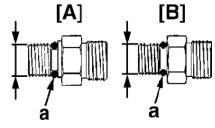
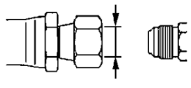
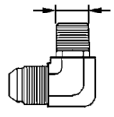
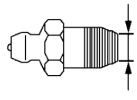
[4] PLUGS

Shape	Size	Material of opponent part					
		Ordinariness			Aluminum		
		N·m	kgf·m	lbf·ft	N·m	kgf·m	lbf·ft
Tapered screw 	R1/8	13 to 21	1.3 to 2.2	9.4 to 15	13 to 19	1.3 to 2.0	9.4 to 14
	R1/4	25 to 44	2.5 to 4.5	18 to 32	25 to 34	2.5 to 3.5	18 to 25
	R3/8	49 to 88	5.0 to 9.0	37 to 65	49 to 58	5.0 to 6.0	37 to 43
	R1/2	58.9 to 107	6.00 to 11.0	43.4 to 79.5	59 to 78	6.0 to 8.0	44 to 57
Straight screw 	G1/4	25 to 34	2.5 to 3.5	18 to 25	–	–	–
	G3/8	62 to 82	6.3 to 8.4	46 to 60	–	–	–
	G1/2	49 to 88	5.0 to 9.0	37 to 65	–	–	–

WSM000001GEG0005US1

[5] HYDRAULIC FITTINGS

(1) Adaptors, Elbows and Others

Item	Shape	Thread size	Tightening torque		
			N·m	kgf·m	lbf·ft
Adjustable elbow, Adapter (O-ring port) (UNF)	 [A] Nut Type [B] No Nut Type a: O-ring	9/16	37 to 44	3.8 to 4.4	28 to 32
		3/4	48 to 54	4.9 to 5.5	36 to 39
		7/8	77 to 85	7.9 to 8.6	57 to 62
Hose fitting, Flare nut (UNF)		9/16	25 to 28	2.6 to 2.8	19 to 20
		3/4	36 to 40	3.7 to 4.0	27 to 29
		7/8	43 to 50	4.4 to 5.0	32 to 36
Adapter (NPT)		1/4	30 to 50	3.1 to 5.0	23 to 36
		3/8	39 to 60	4.0 to 6.1	29 to 44
		1/2	49 to 58	5.0 to 5.9	37 to 42
Grease Fitting		1/8-27	4.1 to 6.7	0.42 to 0.69	3.0 to 5.0
		1/4-18	4.1 to 6.7	0.42 to 0.69	3.0 to 5.0

■ **NOTE**

- **When connecting a hose with flare nut, after tightening the nut with specified torque, return it approximately 45 degrees (0.79 rad) and re-tighten it to specified torque.**

WSM000001GEG0010US0

5. MAINTENANCE CHECK LIST

To keep the machine working in good condition as well as to avoid any accident and trouble, carry out periodic inspection and maintenance. Check the following points before use.

Service Interval	Check Points	Reference page
Daily (Each use)	Check the transmission fluid level	G-8
	Retighten the backhoe hardware to torque value	G-8
	Check the hydraulic hoses	G-8
Every 10 hours	Grease all grease nipples	G-9

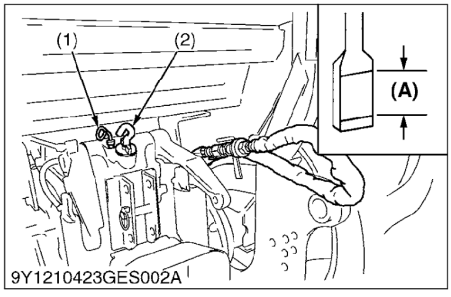
9Y1210423GEG0001US0

6. CHECK AND MAINTENANCE

CAUTION
- **When checking and repairing, park the tractor on flat ground and apply the parking brake.**
- **When checking and repairing, lower the bucket and stabilizers, and stop the engine.**

9Y1210423GEG0005US0

[1] CHECK POINTS OF EACH USE OR DAILY



Checking Transmission Fluid Level

1. Check that the tractor hydraulic fluid level.
2. To check the oil level, remove the dipstick (1), wipe it clean, replace it, and remove it again.
   Check that the oil level is between the two notches.
3. If the level is too low, replenish new oil.

■ **IMPORTANT**
- **Use only KUBOTA UDT or SUPER UDT fluid. Use of other oils may damage the transmission or hydraulic system. Refer to "3. LUBRICANTS".**

(1) Dipstick
(2) Oil Filling Port
(A) Oil level acceptable within this range.

9Y1210423GEG0006US0

Retightening Backhoe Hardware

1. Check all hardware before daily operation.
2. If the screws, bolts and nuts are loosen, retighten them to the specified torque.

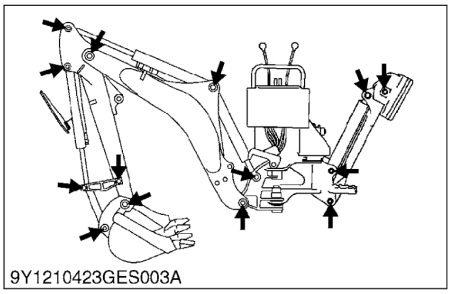
9Y1210423GEG0007US0

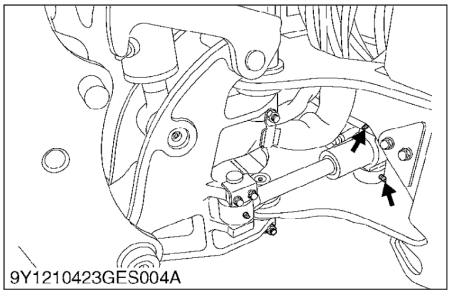
Checking Hydraulic Hoses

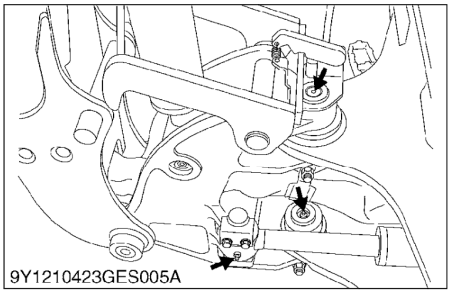
1. Check all hydraulic hoses for cuts or wear.
2. If defects are found, replace them.

9Y1210423GEG0008US0

[2] CHECK POINT OF EVERY 10 HOURS


9Y1210423GES003A


9Y1210423GES004A

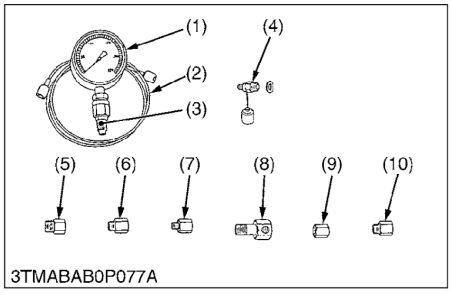

9Y1210423GES005A

Greasing

1. Inject grease all grease nipples with a hand grease gun.

9Y1210423GEG0009US0

7. SPECIAL TOOLS



Relief Valve Pressure Tester

Code No.

- 07916-50045

Application

- This allows easy measurement of relief set pressure.

(1) Gauge (07916-50322)
(2) Cable (07916-50331)
(3) Threaded Joint (07916-50401)
(4) Threaded Joint (07916-50341)
(5) Adaptor **B** (M18 × P1.5) (07916-50361)
(6) Adaptor **C** (PS3/8) (07916-50371)
(7) Adaptor **D** (PT1/8) (07916-50381)
(8) Adaptor **E** (PS3/8) (07916-50392)
(9) Adaptor **F** (PF1/2) (07916-62601)
(10) Adaptor **58** (PT1/4) (07916-52391)

WSM000001GEG0027US0

1 BACKHOE

MECHANISM

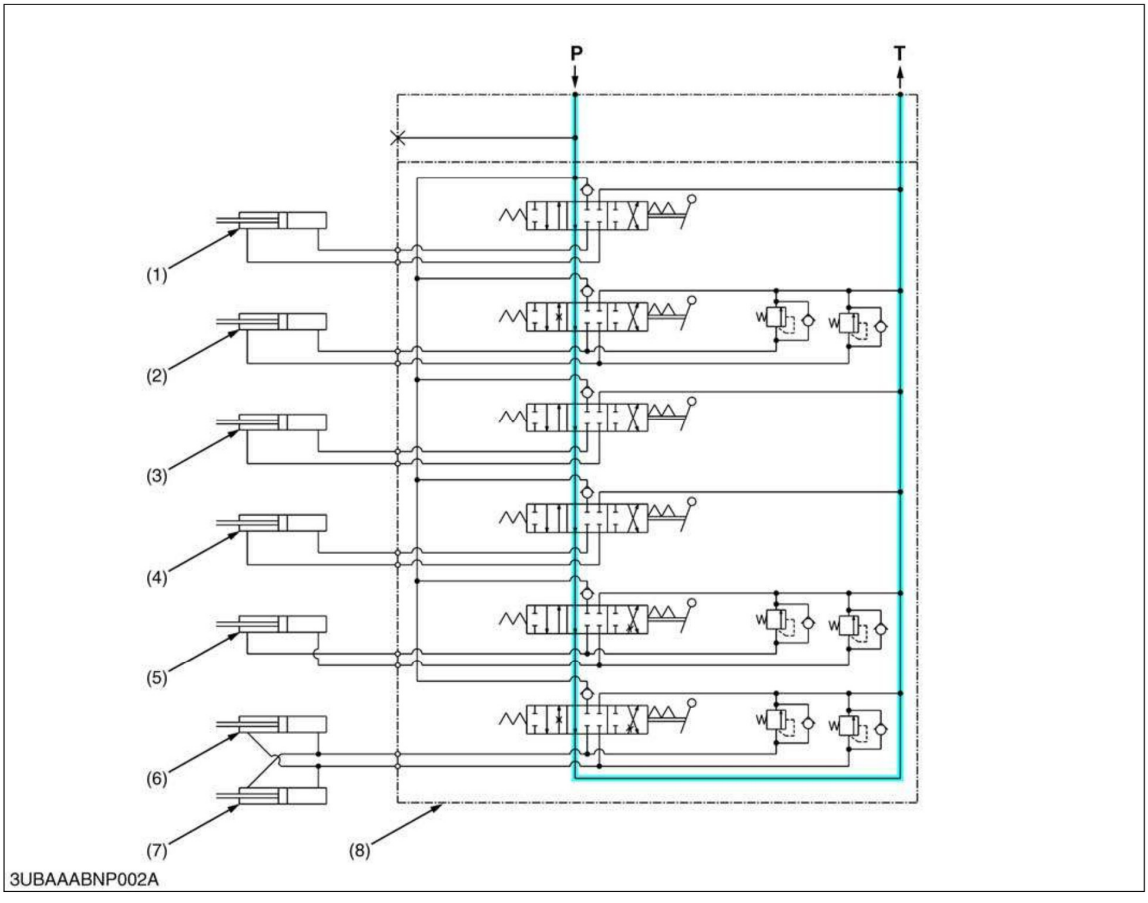
CONTENTS

1. CONTROL VALVE ASSEMBLY 1-M1
   [1] STANDARD 1-M1
      (1) Hydraulic Circuit 1-M1
      (2) Structure 1-M2
      (3) Operation 1-M3
   [2] OPTION 1-M16
      (1) Thumb (Hydraulic Type) 1-M16
   [3] OVERLOAD RELIEF VALVE 1-M21
      (1) Relief Operation 1-M22
      (2) Anti-cavitation Operation 1-M22
2. HYDRAULIC CYLINDER 1-M23

1. CONTROL VALVE ASSEMBLY

[1] STANDARD

(1) Hydraulic Circuit

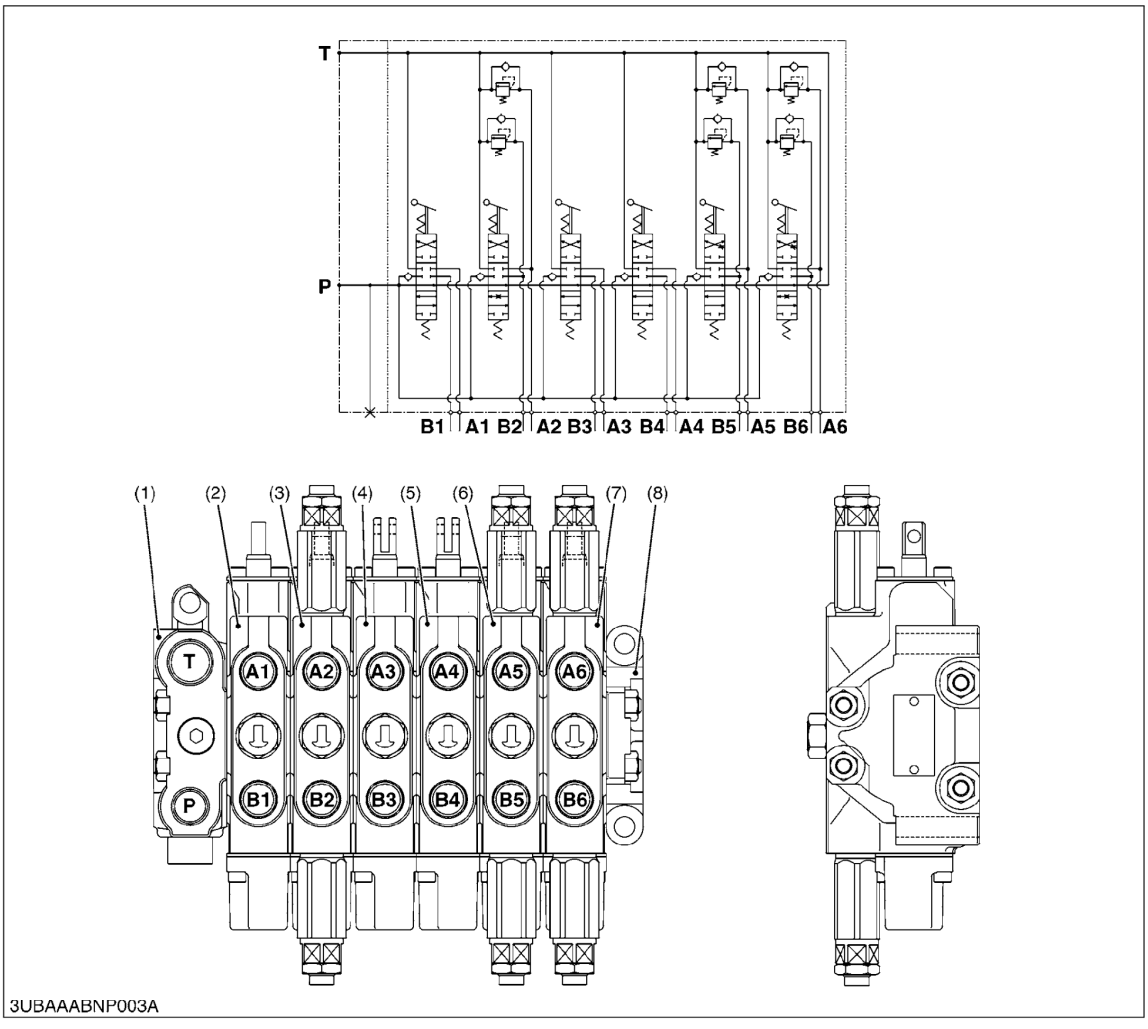


(1) Bucket Cylinder
(2) Dipperstick Cylinder
(3) Stabilizer Cylinder RH
(4) Stabilizer Cylinder LH
(5) Boom Cylinder
(6) Swing Cylinder LH
(7) Swing Cylinder RH
(8) Backhoe Control Valve

P: From Hydraulic Pump
T: To Tank Port

9Y1210423BHM0001US0

(2) Structure



(1) Inlet Section
(2) Bucket Control Valve
(3) Dipperstick Control Valve
(4) Stabilizer RH Control Valve
(5) Stabilizer LH Control Valve
(6) Boom Control Valve
(7) Swing Control Valve
(8) Outlet Section

P: Pump Port
T: Tank Port

A1: A1 Port
A2: A2 Port
A3: A3 Port
A4: A4 Port
A5: A5 Port
A6: A6 Port

B1: B1 Port
B2: B2 Port
B3: B3 Port
B4: B4 Port
B5: B5 Port
B6: B6 Port

(1) Inlet / Outlet Section

This section has **P** and **T** ports.

The **P** port is connected to the **OUTLET** port of tractor connected by the quick coupler.

The **T** port is connected to the **RETURN** port of tractor connected by the quick coupler.

(2) Control Valve Section

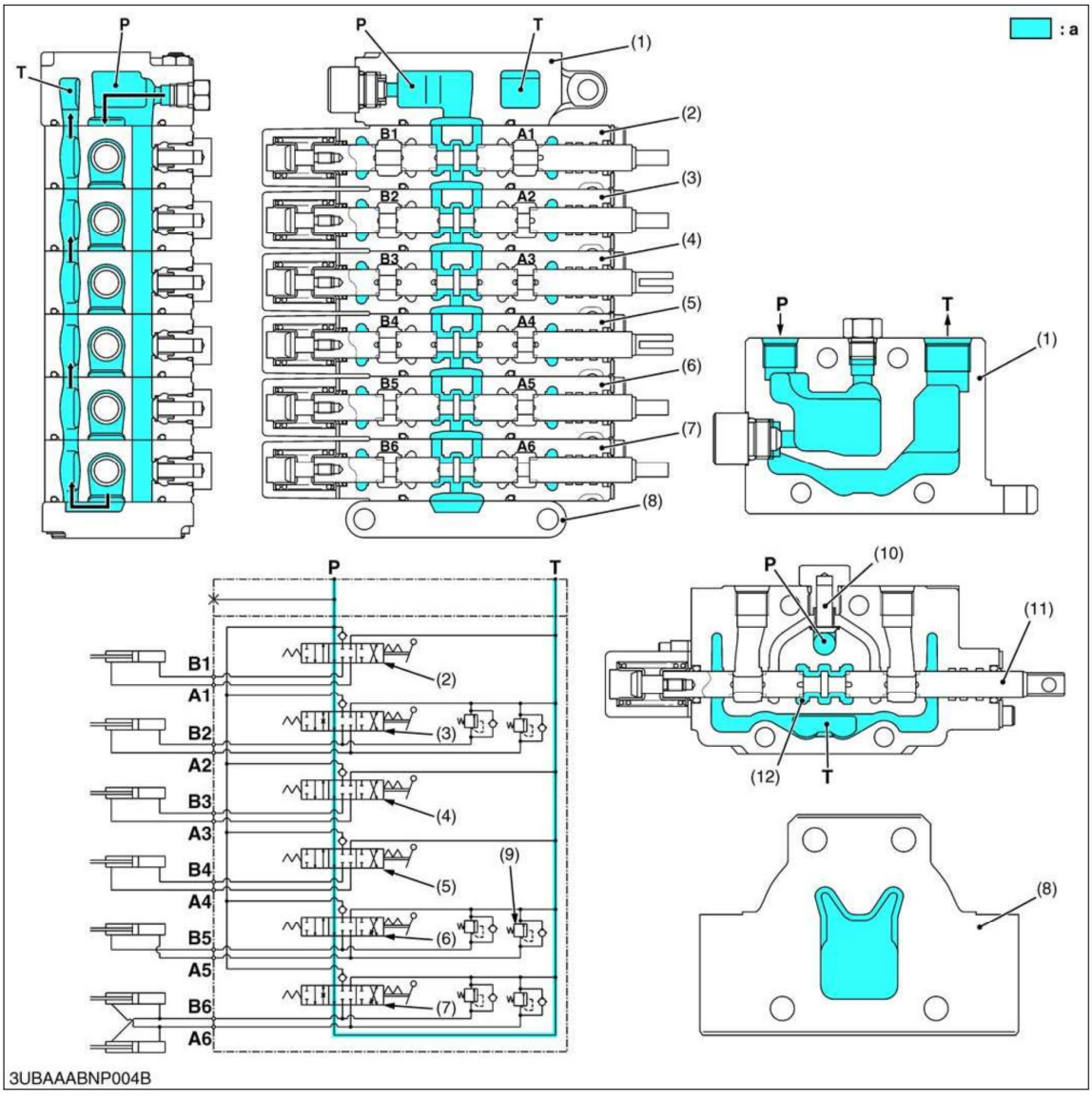
The control valves are 3 positions, 6 connections, no detent and spring center type. These valves have **A** and **B** ports and control oil flow to each cylinders.

These are consisting of a valve housing, spool, load check valve, overload relief valve, etc..

9Y1210423BHM0002US0

(3) Operation

[A] Neutral



(1)	Inlet Section	(9)	Overload Relief Valve (Port Relief Valve)	**A1:**	**A1 Port**
(2)	Bucket Control Valve	(10)	Load Check Valve	**A2:**	**A2 Port**
(3)	Dipperstick Control Valve	(11)	Spool	**A3:**	**A3 Port**
(4)	Stabilizer RH Control Valve	(12)	Neutral Passage	**A4:**	**A4 Port**
(5)	Stabilizer LH Control Valve			**A5:**	**A5 Port**
(6)	Boom Control Valve			**A6:**	**A6 Port**
(7)	Swing Control Valve	**P:**	**Pump Port**	**a:**	**Low Pressure**
(8)	Outlet Section	**T:**	**Tank Port**		

Pressure-fed oil from the hydraulic pumps is delivered into **P** port in the inlet section (1).

As the load check valves (10) are kept closed in the neutral position, oil flows along the notched section of the spools (11) to the **T** port through the neutral passage (12).

Then the oil is fed to the transmission case via the return hose and pipe from the **T** port.

9Y1210423BHM0003US0