MODEL 2800 & 3400
SERIES QUANTUM SERIES
BOOK NO. 845
SERIAL NO _____

CALIFORNIA

Proposition 65 Warning

Diesel engine exhaust and some of its constituents are known to the State of California to cause cancer, birth defects, and other reproductive harm.

MACHINE SERIAL NUMBER

The machine serial number is stamped on the serial number plate which is located inside the Operator's Cab, to the right of the operator The serial number is the only means the distributor or factory has of ensuring that the correct parts will be furnished

In the event that the serial number plate is lost, there is another number stamped on the right hand boom foot mounting lug on the upper revolving frame On hydraulic cranes and excavators, the number is stamped between and below the boom hoist cylinder mounting lugs This number , A, B, C, etc , _____ should then be furnished, as this will enable us to determine the machine serial number

⚠ SAFETY Warning Signs and Labels

Always keep the warning signs and labels in readable condition.

[If they get dirty]

Use water or detergent and remove the dirt Do not use gasoline or organic solvents If the dirt cannot be removed, replace the label

When replacing, check to see that the new one is the same as the one being replaced

[If they are damaged or lost]

Obtain a new one from your local distributor

When replacing, check to see that the new one is the same as the one being replaced

(Front-window)

NOTICE

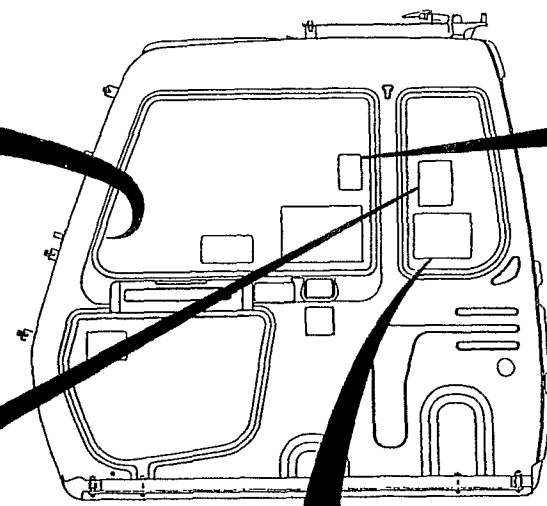
WHEN CLEANING THE CAB WINDOWS, USE ONLY MILD DETERGENT, CLEAN WATER AND A SOFT CLOTH HARSH OR ABRASIVE CLEANERS WILL SCRATCH THE WINDOW

⚠ CAUTION

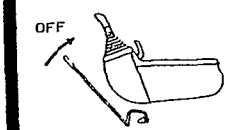
FALLING WINDOW MAY CAUSE BODILY INJURY. AFTER REMOVING OR REPLACING FRONT WINDOW, ENSURE THAT AUTOLOCK IS ENGAGED AND LOCK WINDOW IN PLACE WITH PINS PROVIDED.

KHP1008-00

Inside cab Right side



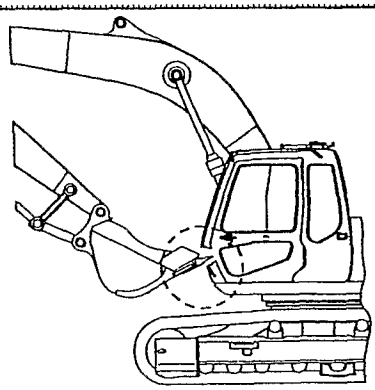
NOTICE



RAISE LEVER TO SHUT OFF CONTROLS BEFORE LEAVING THE CAB FOR ANY REASON

KHP1005 00

⚠ CAUTION

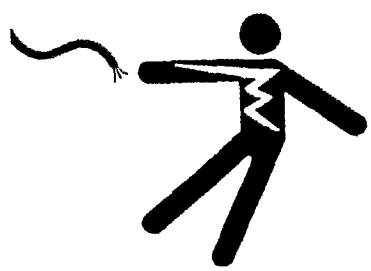


Attachment interference.
Machine damage may result.

Do not allow the attachment, load or other divices to contact the cab or machine.

KHP1295 – 00

⚠ DANGER



ELECTROCUTION HAZARD

CONTACT WITH EXCAVATOR OR GROUND MAY CAUSE DEATH OR BODILY INJURY

KEEP ALL PARTS OF MACHINE AND LOAD AT LEAST 15 FEET (4 57M) AWAY FROM ALL ELECTRICAL POWER LINES OR SUCH DISTANCE AS SPECIFIED BY LOCAL SAFETY CODES

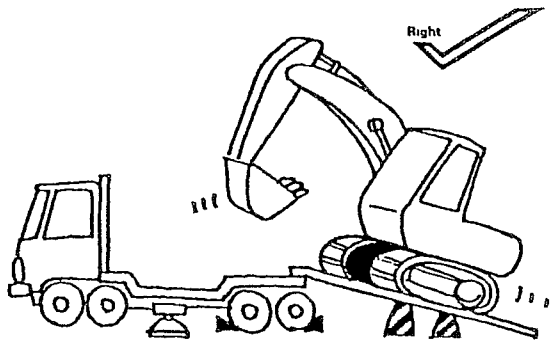
IMPROPER EXCAVATOR OPERATION AND MAINTENANCE CAN CAUSE INJURY OR DEATH READ AND STUDY THE OPERATOR'S MANUAL AND ALL SAFETY MESSAGES LEARN AND PRACTICE SAFE USE OF CONTROLS OPERATE PROPERLY INSPECT AND MAINTAIN EXCAVATOR DAILY

KHP1004-00

⚠ SAFETY During Transportation

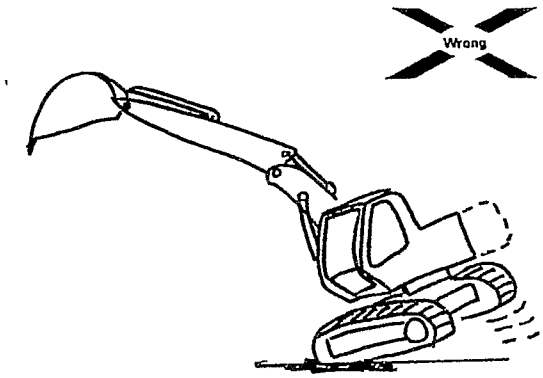
■ Caution during loading and unloading

- When loading or unloading the machine on the trailer truck, use proper ramps



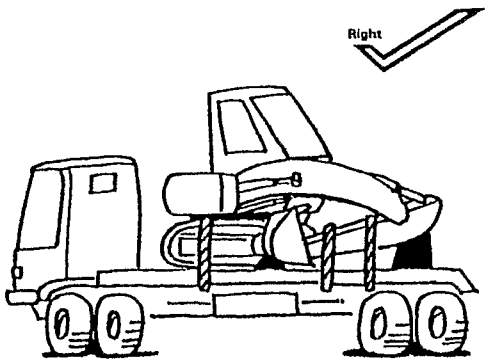
■ Caution during removal of the counterweight

- When the counterweight is removed from the machine the attachment should not be fully extended The machine may tip if the attachment is extended



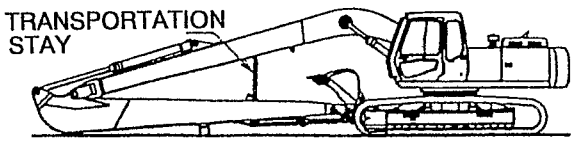
■ Caution during transportation

- Securely fasten the machine to the trailer to prevent it from moving during transportation



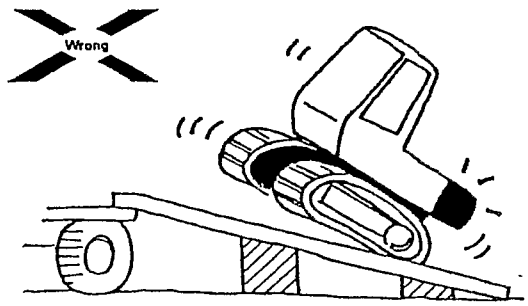
■ Caution during transporting and inspecting machine.

- When transporting and inspecting machine Transportation stay to be fitted as shown Failure to fit the stay will cause damage to the attachment Refer to operator's manual for correct installation procedure



■ Caution during removal of the front attachment

- The center of gravity will shift to the back when the front attachment is removed
- Take sufficient caution when running the machine



Face the counterweight towards the upper side of the slope when running the machine without the front attachment

■ One Touch/Auto Change Switch

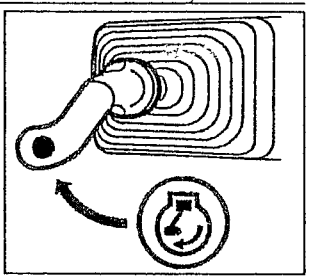
○ **One Touch** (When switch lamp is on)

When the idle switch is pressed the engine revolutions can be put in low idling (When the engine is started, it is in one touch)

Auto (When the switch lamp is off)

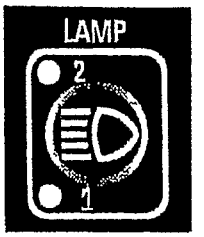
With the operation lever in neutral (interrupting work temporarily), after about 15 seconds the engine revolutions automatically go into low idling Also, if the idle switch is pressed, low idling can be obtained

■ Idle Switch (One Touch Idle Switch)



By pressing this switch, the engine r p m can be switched back and forth between low idling and the original r p m amount with each push of the switch When it is in low idling, the message "ENG IDLING" is indicated

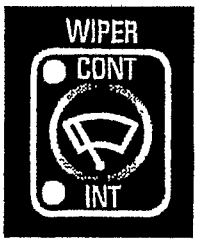
■ Work Lamp Switch



The switch to turn on and off the work lamp.

Swich Lamp	Work Lamp
Off	All Off
○ 1 On	House Light On Only
○ 2 On	House and Boom Light On

■ Wiper Switch



The switch that controls the windshield wiper

Switch Lamp	Wiper Function
Off	Stop
○ INT	Works intermittent
○ CONT	Works continuously

◆ **Using the wipers when the windshield is dry or when it is soiled with dirt or with snow can cause damage to them. Use caution in such cases.**

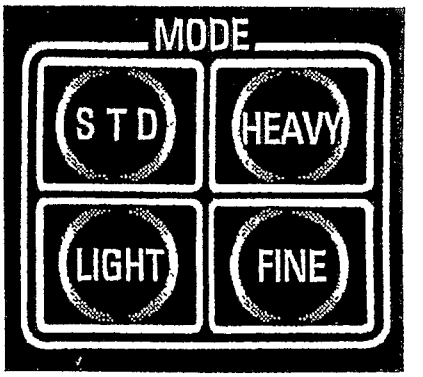
■ Washer Switch

The switch that controls the spraying of washer fluid Washer fluid is sprayed and the wipers move as long as the switch is pressed

◆ **Do not press when there is no washer fluid or the motor may seize.**

• The washer fluid tank is located in the tool box in front of the fuel tank

■ Work Mode Selection Switch



The switch to choose the movement and strength of the machine suitable to the work contents and purpose The mode chosen is indicated

◦ When the engine is started, the standard mode is indicated

H: HEAVY MODE

For heavy digging or when increase in the work load is desired

S: STANDARD MODE

For standard digging and loading work

L: LIGHT MODE

For accurate and safe lifting work rather than greater speeds

F: FINE MODE

For slow, precise controlled operation.

■ Cushion Switch

The switch to choose the attachment stopping condition

• When the engine is started, the machine is in cushion

Switch Lamp	Stopping Condition
Lamp Off	Cushioned
○ Lamp on	Cushion is off

■ Travel Caution Alarm Switch

"ON" position the alarm sounds when the travel controls are actuated

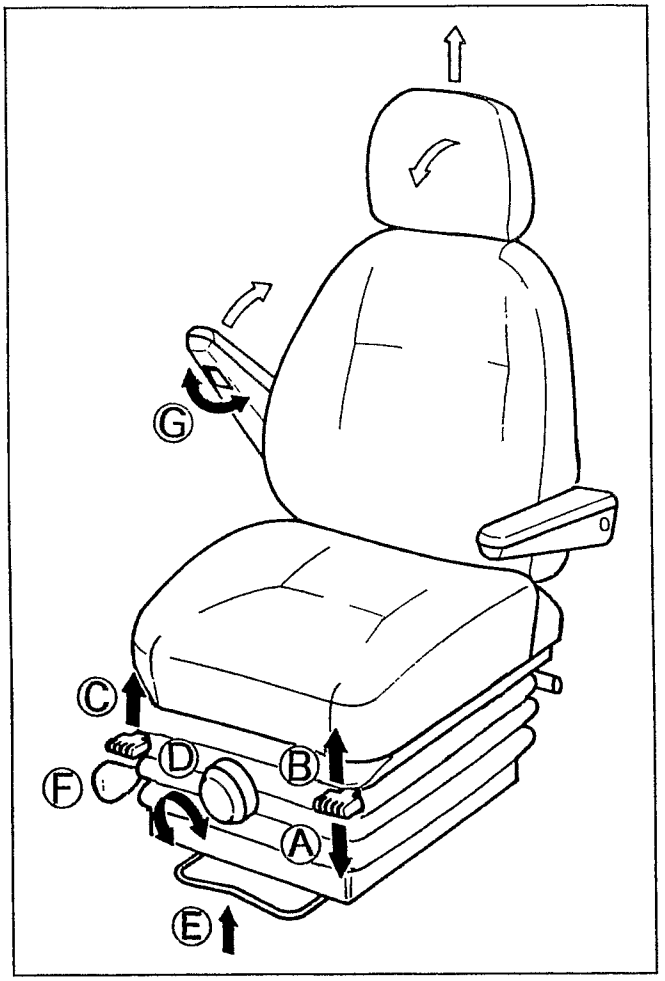
"AUTO OFF" position, when the travel controls are actuated, the alarm sounds for 15 seconds and then stops Each time you stop the travel and then start again the alarm will sound for 15 seconds and then stop

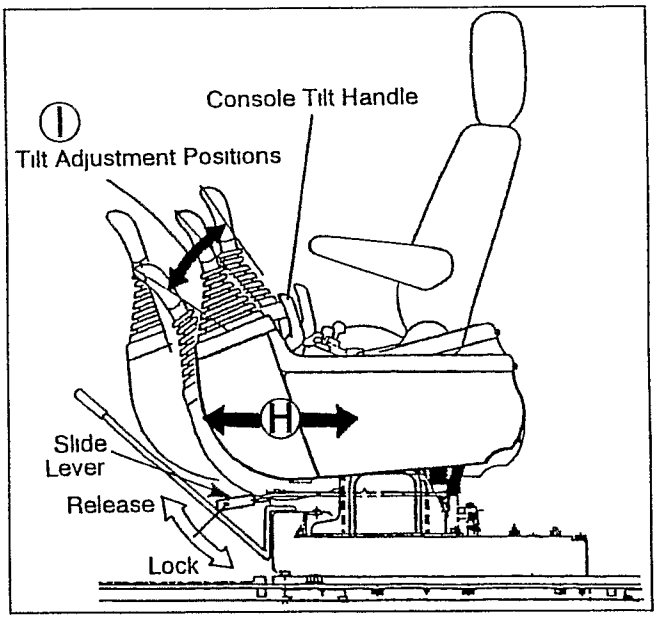
OPERATOR'S SEAT

Adjust the seat to allow the reach to easily reach the operation pedals and levers

⚠ WARNING

Before adjusting the seat, lower the bucket to the ground and stop the engine or put the machine in control lock condition.
Always verify that the seat is locked after adjusting it.





■ A Seat Height Adjustment (front)

■ B Seat Height Adjustment (rear)

■ C Backrest angle Adjustment

■ D Weight Adjustment

■ E Horizontal Adjustment (sliderails)

■ F Lumbar Support Adjustment

■ G Armrest Adjustment

■ H Seat Position Adjustment

Pull the slide lever to release the lock and adjust the position After completing adjustment, always verify that it is locked

■ I Console Tilt Adjustment

1) When the left (right) console tilt handle is turned to the outside, the left (right) console tilt can be adjusted
2) When the left console is fully raised, it turns off all lever controls (the machine cannot be operated even if the levers are moved)

⚠ WARNING

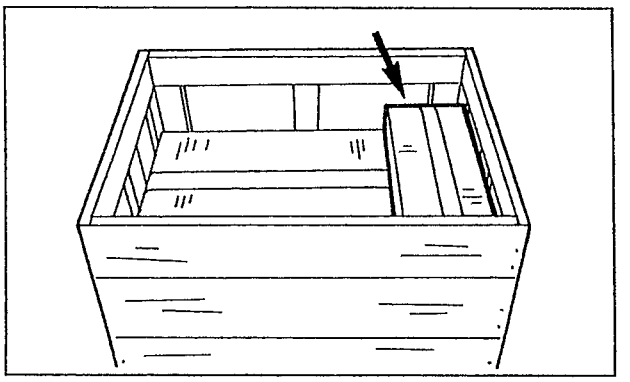
Always fasten the seat belt and adjust the seat before starting the engine.

Installation and Adjustment of Rear View Mirror

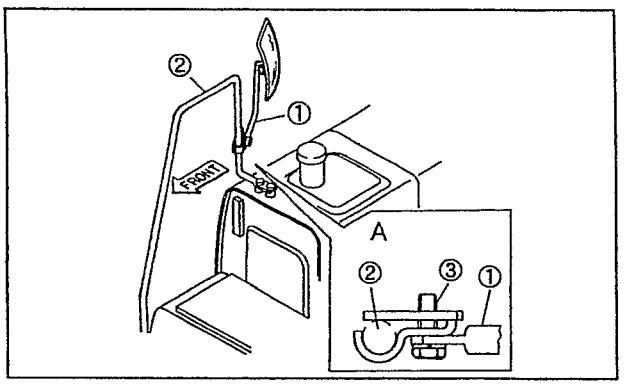
For safety during transportation, the rear view mirror has been removed before shipment.

Install and adjust the mirror using the following procedures.

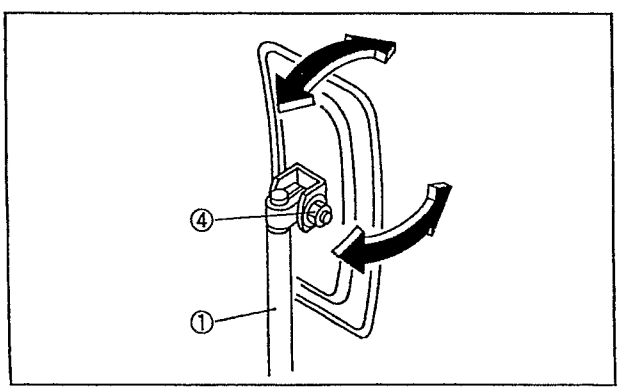
1. Rear view mirror is inside the accompanying box.



2. Install rear view mirror stay ① to the house right side stay ② with bolt ③.



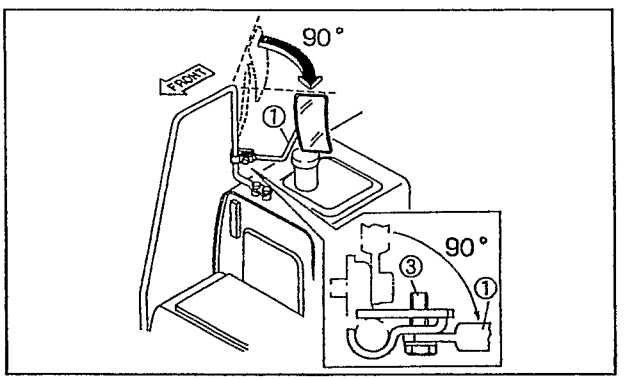
3. Loosen bolt ④ and attach mirror to stay ①.
   Adjust the mirror angle so that the rear of the machine can be seen well from the driver's seat.
   Tighten bolt ④ and fix the mirror.



Precautions during transportation

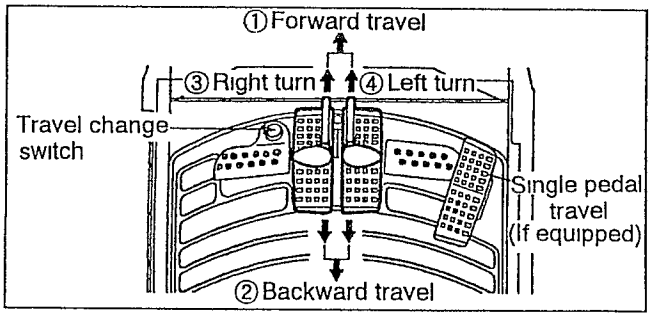
To prevent accidents during transportation, position the rear view mirror so that it is not protruding.

1. Loosen installation bolt ③ for rear view mirror and fold the mirror towards the inside.
   Tighten bolt ③ and fix stay ①.



2. After transporting, adjust the rear view mirror position so that the rear of the machine can be seen well from the driver's seat

Travel Levers



① Simultaneously push the left and right travel levers and the machine will move forward
② Simultaneously pull the left and right travel levers and the machine will move backward.
③ Push the left travel forward and the machine will turn right
④ Push the right travel forward and the machine will turn left
- Simultaneously operate the left and right travel levers in opposite directions and the machine will turn on the spot .. Spin turn

⚠ WARNING

Before operating the travel levers, verify the direction of the travel motors.

When the travel unit is in the rear and the travel lever is pushed forward, the machine moves forward. When the levers are pulled toward you, the machine moves backward.

◆ **When not traveling, don't place your feet on the travel pedals.**

⚠ CAUTION

◆ **Avoid rapidly turning the machine if possible. Before spin turning the machine, come to a full stop.**
◆ **Traveling the machine on rough ground can cause damage and cause shock loadings to the machine. Reduce the engine speed and travel slowly.**

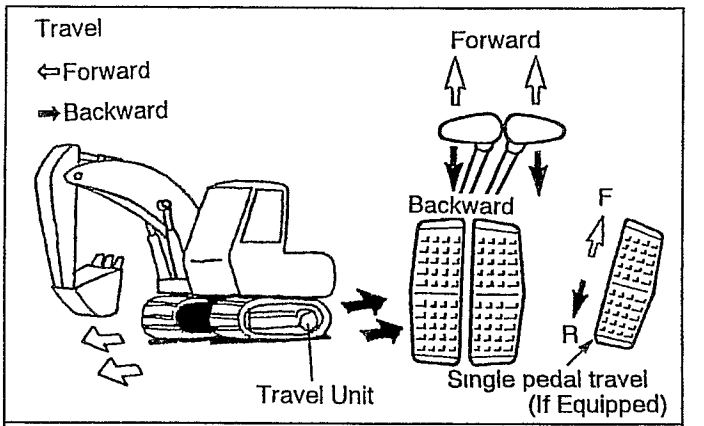
Selection of Travel Speed

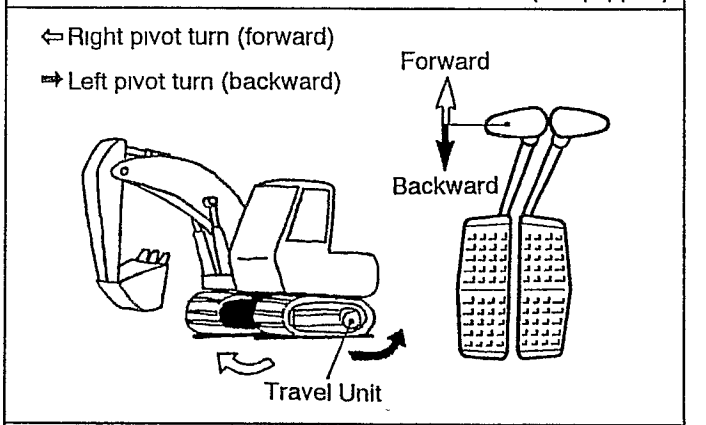
(Travel Change Switch)

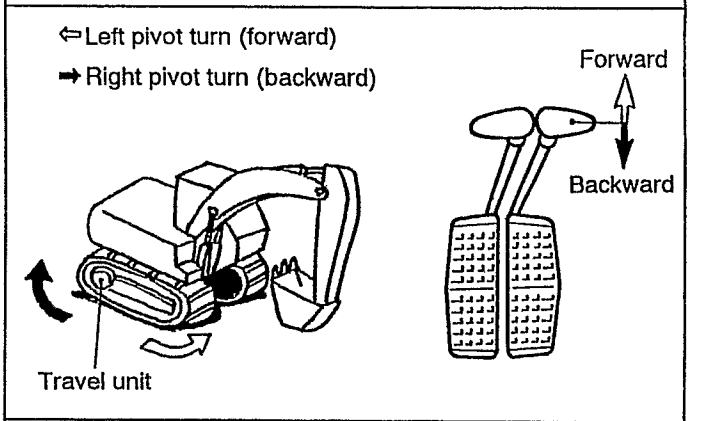
Travel Mode	Choice Contents
High Speed	Use when the ground is level When climbing a slope and the power required becomes greater, it automatically changes to medium and when the power required becomes less, it returns automatically to high.
Medium Speed	Use when climbing or descending a slope or when the ground is rough. It does not change automatically.
Low Speed	Use when greatest power and low speed is required. It does not change automatically

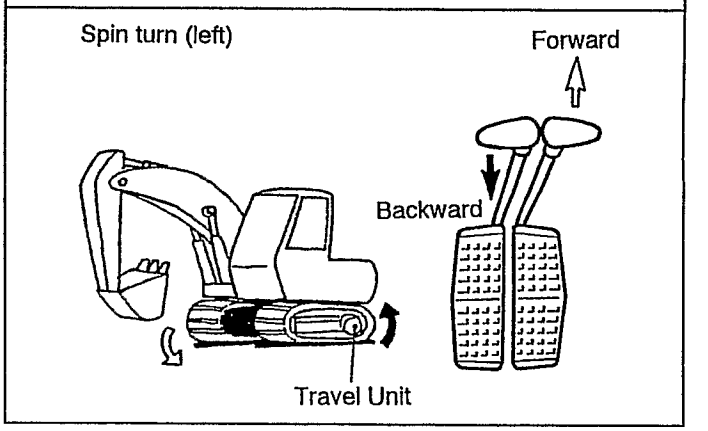
⚠ CAUTION

Do not change travel modes during traveling. Stop the machine and then change speeds.





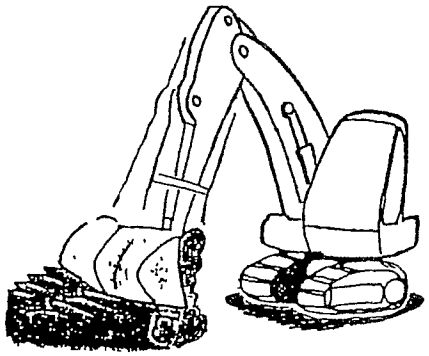




NOTE An oil damper has been included to make the travel lever operations smooth. In extremely cold weather, the oil viscosity increases and operation of the travel levers may seem harder, but this is not abnormal.

Operating Instructions (Operation Procedures)

BACKFILLING



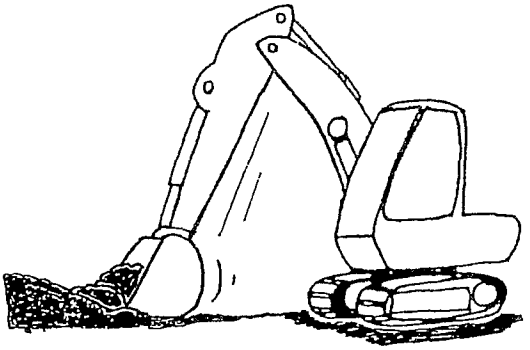
Backfilling and ground leveling after digging are performed by moving the bucket horizontally back and forth

When leveling toward the machine, slowly pull the arm toward the machine and slightly raise the boom

If the arm passes the vertical position, slowly lower the boom and maneuver so the bucket can move horizontally

Bucket movement can also be added

SHOVEL OPERATION



Shovel operation procedures (when the bucket is reversed) differ from that for backhoe digging

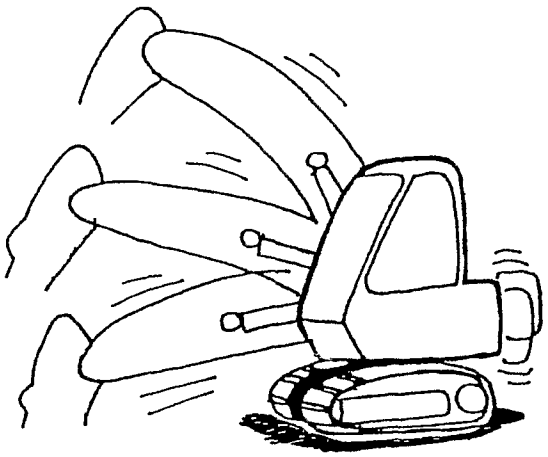
Because the bucket is reversed, bucket operations are opposite

Digging is done mainly with the arm cylinder

Be careful of interference with the cab

Digging power is slightly reduced compared to backhoe digging

BOOM OPERATION



When lowering the boom, lower it as smoothly as possible to reduce shock loadings

(3) Contamination countrol standard

Particle contamination of new hydraulic oil is normally approximately NAS, Class 7 As its operating time becomes longer, oil is contaminanted by contaminats or contaminants are generated within, to degrade its class.

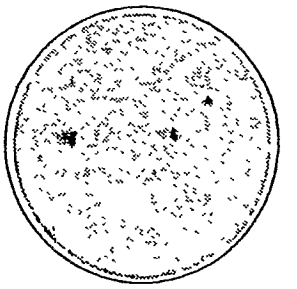
Control Standard.....Within NAS Class 10

It is desirable that the class of hydraulic oil be maintained within the above mentioned standard. Oil beyond Class 12 must be replaced

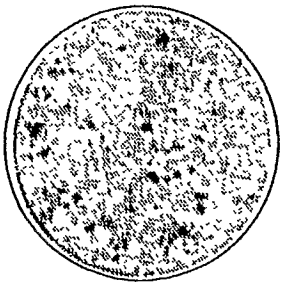
Particle contamination of hydraulic fluid is normally indicated by the weight or size and number of solid particle contaminant (hereinafter called "particles") contained in 100 ml For construction machinery, National Aerospace Standard (NAS) (counting method) is popularly applied.

NOTE: NAS 1638 for particle contamination (counting method) counts the number of particles in 100 ml of sample fluid according to the size and classify them in twelve classes as outlined in Table 4.

NAS Class 7



NAS Class 10



NAS Class 12

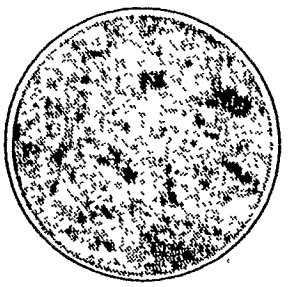


Table 4. Degree of Contamination Indicated According to NAS 1638 (within 100 ml.)

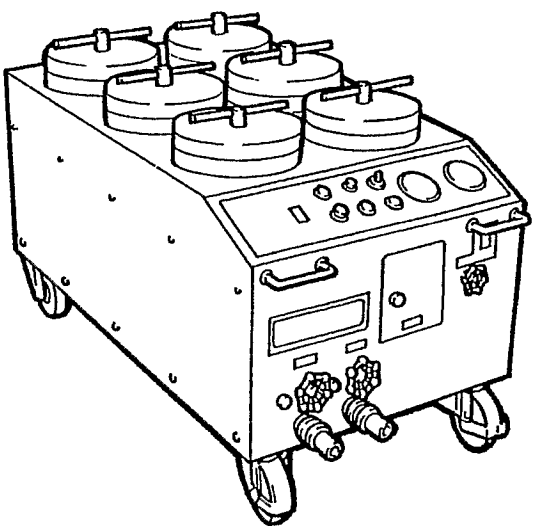
Contamination Class		Class 00	Class 0	Class 1	Class 2	Class 3	Class 4	Class 5	Class 6	Class 7	Class 8	Class 9	Class 10	Class 11	Class 12
Size (micron) of particles and the Number of particles	5–15μ	125	250	500	1,000	2,000	4,000	8,000	16,000	32,000	64,000	128,000	256,000	512,000	1,024,000
	15–25μ	22	44	89	178	356	712	1,425	2,850	5,700	11,400	22,800	45,600	91,200	182,400
	25–50μ	4	8	16	32	63	126	253	506	1,012	2,025	4,050	8,100	16,200	32,400
	50–100μ	1	2	3	6	11	22	45	90	180	360	720	1,440	2,880	5,700
	Over 100	0	0	1	1	2	4	8	16	32	64	128	256	512	1,024

Cleaning Operation

The purpose of cleaning oil is to remove the contaminants and sludge by filtering hydraulic oil through a cleaning device

Normally, the hydraulic system of a construction machine is installed with various filters, and if they are maintained properly, most of the contaminants and sludge is exhausted out of the circuits. However, fine partcles (approximately 10 micron or smaller) that cannot be collected by the filters continues to circulate through the circuits.

An oil cleaning device is extremely effective since it can collect fine particles (approx. 5 micron) that passes freely through the filters installed inside the hydraulic system.



⚠ General Cautions for Inspection

For proper inspection an maintenance of the machine, read through "Inspection and Maintenance". As for the engine, refer to the operator's manual supplied by the engine manufacturer.

■ SAFETY

Carefully read through the ⚠ marked areas which are very important for safety.

■ Inspection and maintenance schedule

The intervals between periodic inspection and maintenance are based on the hour meter located inside the operator's cab Since the intervals are determined on the basis of the standard operational conditions, perform the inspection and maintenance earlier than specified when the machine is used under severe conditions or when the work contents, load size and weather are severe (Perform at the shorter times listed)

■ General cautions for inspection and maintenance.

⚠ DANGER

Always bleed all hydraulic pressure from circuits when performing checks or maintenance. Pressurized oil can be hot and cause burns, or the pressure itself can cause accidents.

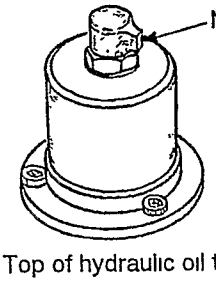
⚠ How to release hydraulic pressure.

Before inspection an maintenance, be sure to release the hydraulic pressure from the circuit.

Hydraulic pressure releasing procedure.

1. Lower the attachment to the ground.
2. Turn the starter switch to OFF and stop the engine.
3. Turn the starter switch to ON.
4. Lever lock should be released (the mark is not displayed on the monitor.)
5. Move the left and right operation levers back and forth, left and right about 10 times
6. Turn the starter switch to OFF.
7. Release the pressure from the hydraulic oil tank. (Remove the nut from the breather on top of the hydraulic oil tank and push the button inside to release the pressure

⚠ Release the hydraulic pressure before performing inspection or maintenance.



Top of hydraulic oil tank

⚠ CAUTION

HOT HYDRAULIC FLUID MAY CAUSE SEVERE BURNS AND BODILY INJURY.

BEFORE REMOVING HYDRAULIC TANK CAP, SHUT OFF ENGINE AND COMPLETELY RELEASE TANK PRESSURE BY DEPRESSING CAP BUTTON.

KHP1012-00

Lubrication and Element Chart

3400 Quantum Lubrication Chart

Ref No.	Description		No Points	Specification	Interval (hr)					
					50	250	500	1000	3000	5000
①	Front Attachment Pin		16	E P.Grease No. 2	○					
②	Turntable Bearing		3			○				
③	Swing Ring Gear		20kg, 44lb				○			
④	Engine Oil Pan		25ℓ , 6 6gal	Engine Oil			◎			
⑤	Swing Gear Reducer		6ℓ , 1.6gal	Gear Oil		△		◎		
⑥			1ℓ , 0.3gal	E P Grease No 2					○	
⑦	Travel Gear Reducer		4 7ℓ ×2, 1 2gal ×2	Gear Oil		△		◎		
⑧	Hydraulic Sump Tank		216ℓ , 57 1gal	Hydraulic Oil						◎
⑨	Engine Radiator		27ℓ , 7.1gal	Water with Long Life Coolant	Every 2 years					
⑩	Fuel Tank		310ℓ , 81.9gal	Light Oil	When required					
A	Pilot Line Filter		1	Element	△			◎		
B	Fuel Filter		1	Element			◎			
C	Engine Oil Filter	By-pass	1	Element			◎			
D		Full-flow	1	Element			◎			
E	Return Filter		1	Element	△			◎		
F	Suction Filter		1	Element				□		◎
G	Drain Filter		1	Element	△			◎		
H	Air Cleaner	Outer	1	Element		□		◎		
I		Inner	1	Element		□		◎		
J	Air Breather		1	Element				◎		
K	Nephron Filter		1	Element				◎		

○ : Lubricate grease
△ . Change initially
◎ . Change oil or replace element
□ . Clean

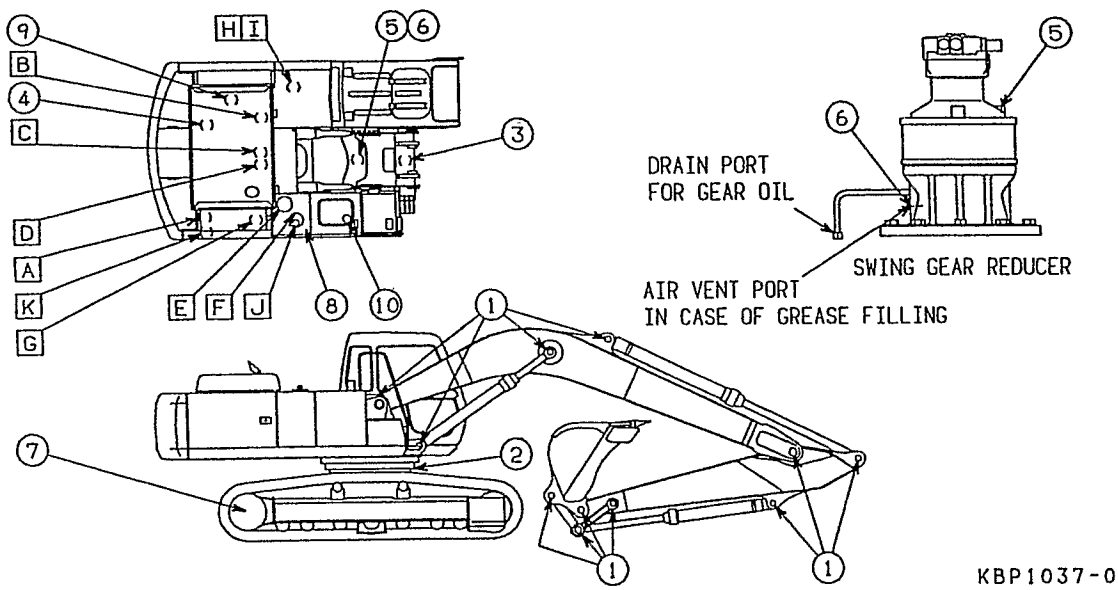
Recommended grease and oil specifications are as follows.
E P. Grease : Lithium Grease No 2
Engine Oil : API CD SAE 15W – 40
Gear Oil : API GL-4 SAE 90
Hydraulic Oil :ISO VG 32

Notes 1. Attachment should be lubricated daily when used in dusty environments or under water.
2 Refer to recommended oil specifications in detail shown in the operator's manual.
3 Refer to the engine instruction manual.
4. Interval - Hours on this chart are based on SAE J752B asfollows

50 (or weekly) *	1000 (or 6 months) *
250 (or monthly) *	3000 (or 1.5 years) *
500 (or 3 months) *	5000 (or 2 5 years) *

*whichever occurs first

5 Remove the air deflation plug in lubricating grease for swing gear reducer
Refer to the operator's manual for details.



KBP1037-00

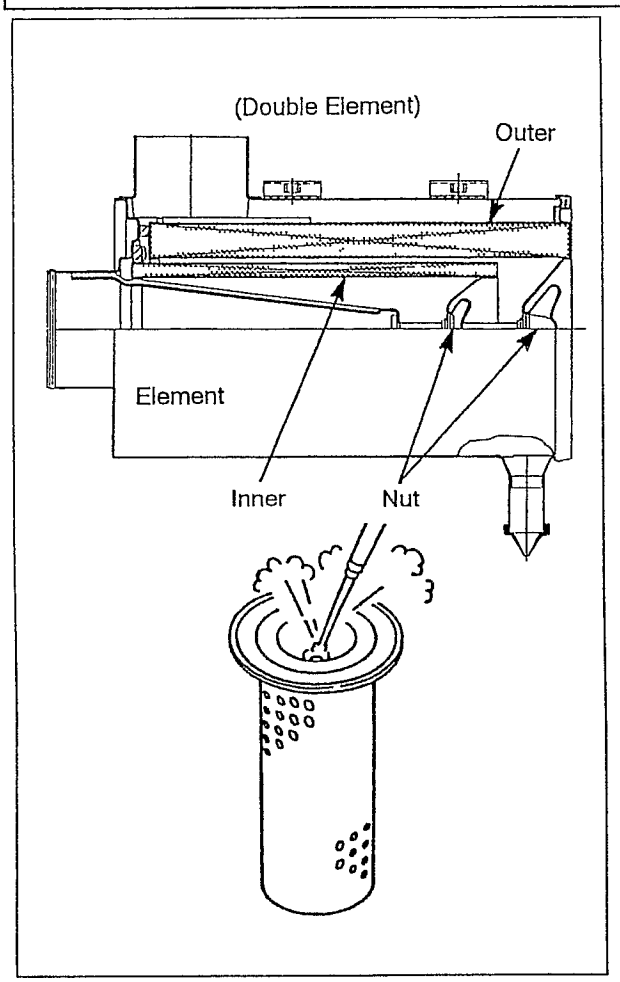
Cleaning and Replacing The Air Cleaner 【Cleaning Interval: Every 250 Hours】【Replacing Interval: Every 1000 Hours】

⚠ CAUTION

(1) Before maintaining the element, stop the engine.

(2) When cleaning the element, don't hit it or knock it against other objects.

(3) When the air cleaner filter clogging warning indicator lights up on the monitor system, clean or replace the element.



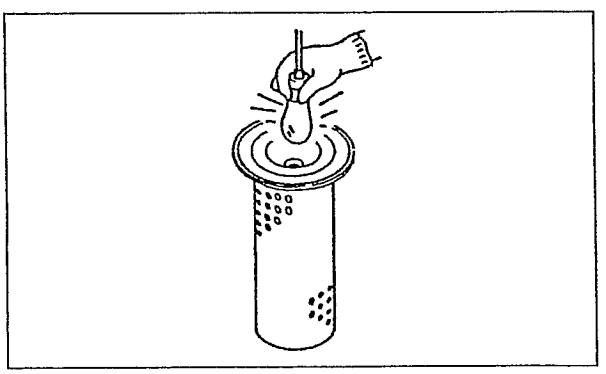
■ Cleaning the Air Cleaner

1) Remove the cover or nut and take out the element
2) Before cleaning inside the body, cover the engine intake port so contaminants do not get inside
3) Clean the element
   ① When using compressed air,
   Blow compressed air (100psi (7kg/cm²) or less) to the element along its flutes from the inside

⚠ CAUTION **When using compressed, air use safety goggles.**

   ② When washing with water
   (1) If the element is contaminated due to smoke, soot, oily materials, etc , wash it with element detergent Use of warm water of about 100°F (40°C) makes washing more effective
   (2) After washing off the dirt and detergent with clean water, dry the element in a well-ventilated place
   Use a fan to speed up drying
   Do not use heat for drying
   Since it takes time to dry the element after washing, it is recommended that a spare element be used for replacement.
   (3) After cleaning, project a light from the inside of the element. Do not reuse if there air holes, damage or thin area

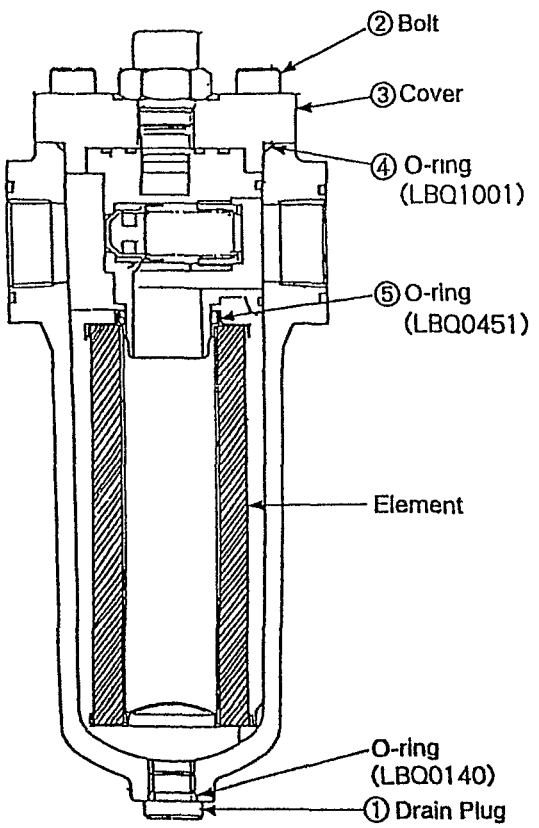
(When an element is cleaned 6 times or used for 1000 hours, replace it with a new one.)



■ Installing the Air Cleaner

1) Securely fasten the element with the installation nut or cover

Replacement Of Return Filter For Hydraulic Breaker (if equipped) 【Maintenance Interval: Every 100 hours of hydraulic breaker use】



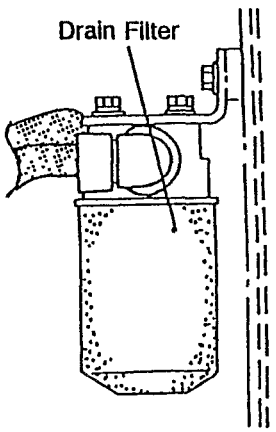
(Next to swing motor.)

⚠ Release hydraulic pressure remaining inside the circuit. (refer to pg. 3-1)
Operate the service pedal instead of the operation levers to release hydraulic pressure remaining inside the hydraulic breaker circuit.

Replacement Method

1) Release hydraulic pressure
2) Loosen the drain plug ① at the bottom of the filter case and drain the hydraulic oil inside the case
3) Remove the four bolts ② on top of the case and remove the cover ③ with indicator and O-ring ④.
4) Replace the element with a new one
5) Replace the damaged O-ring
6) Insert O-ring in the groove and assemble
7) Tighten the installation bolts ② for the cover at 35–40 ft lb (5–6 kg•m) torque
8) Tighten the drain plug ①.
9) Start the engine at low speed and move the hydraulic breaker and confirm that there is no oil leakage.

Changing The Drain Filter Element 【Intial Change After the first 50 hours】【Maintenance Interval: Every 1000 hours】



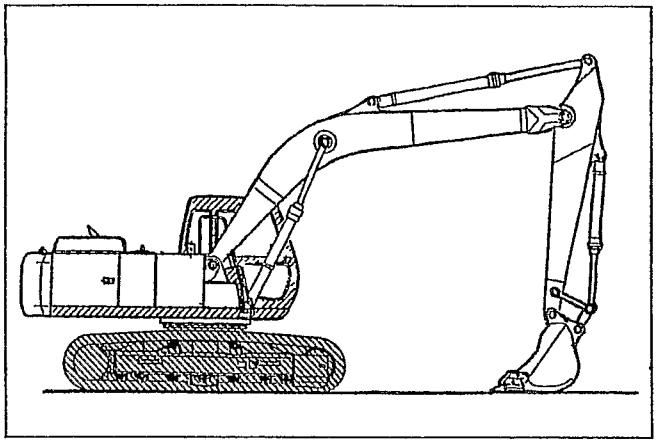
(Sump Tank Rear)

⚠ WARNING

The hydraulic oil is hot right after stopping the engine. Wait until it has cooled down (less than 100°F (40°C)) before beginning work.
Release the internal pressure of the tank before beginning work.

1) Remove the nut of the breather on the top of the hydraulic oil tank, press the button and release the internal pressure of the tank.
2) This is a cartridge type oil filter It must be replaced with a new cartridge each time it is changed.

Adjustment of Bucket Backlash 【As necessary】



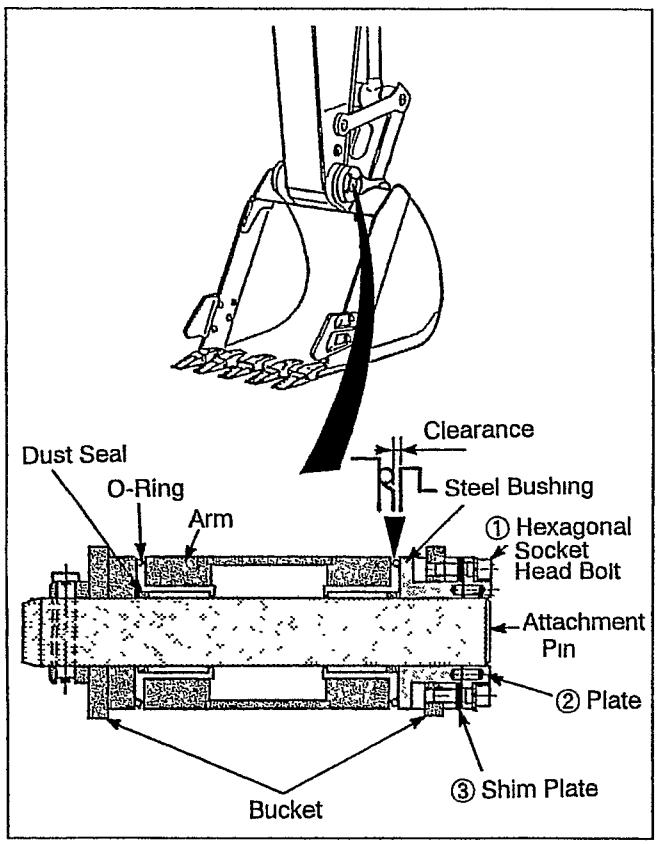
⚠ CAUTION

Stop the engine before adjusting the bucket backlash.

■ Bucket Backlash Adjustment

The machine is provided with a bucket adjustment mechanism which eliminates the backlash of the bucket-to-arm joining area caused by wear. This delays the wear and thereby increases the service life of the bushings and pins

Note) If the bucket backlash adjustment is not carried out properly, scuffing, unusual noise and backlash will occur which causes damage to the O-rings.



■ Adjustment Method

1 Set the hydraulic bucket as shown in the left figure and have it lightly touch the ground

2 Turn it slightly to the left and position it so the arm end is pressed to the side which is not to be adjusted. (When the bucket is turned over, turn it to the right)

3 Stop the engine

4. Measure the clearance between the bucket and the arm joining portion

5 If the clearance is more than 1/16in (1 7mm), remove the shim plate and adjust

6 Adjusting method

1) Loosen the hexagonal socket head bolt ① and remove the plate ②

2) Remove the shim plates ③ (as required), the amount corresponding to the backlash amount of the joining area (wear amount)

3) Install the plate ② and tighten the hexagonal head socket bolt ①.

4) As the hexagonal socket head bolt ① is tightened, the plate ② will be pressed against the steel bushing to reduce the clearance

Clearance amount of about 3/64in (1mm) is preferable.

【SPECIFICATIONS】

Contents

ARM

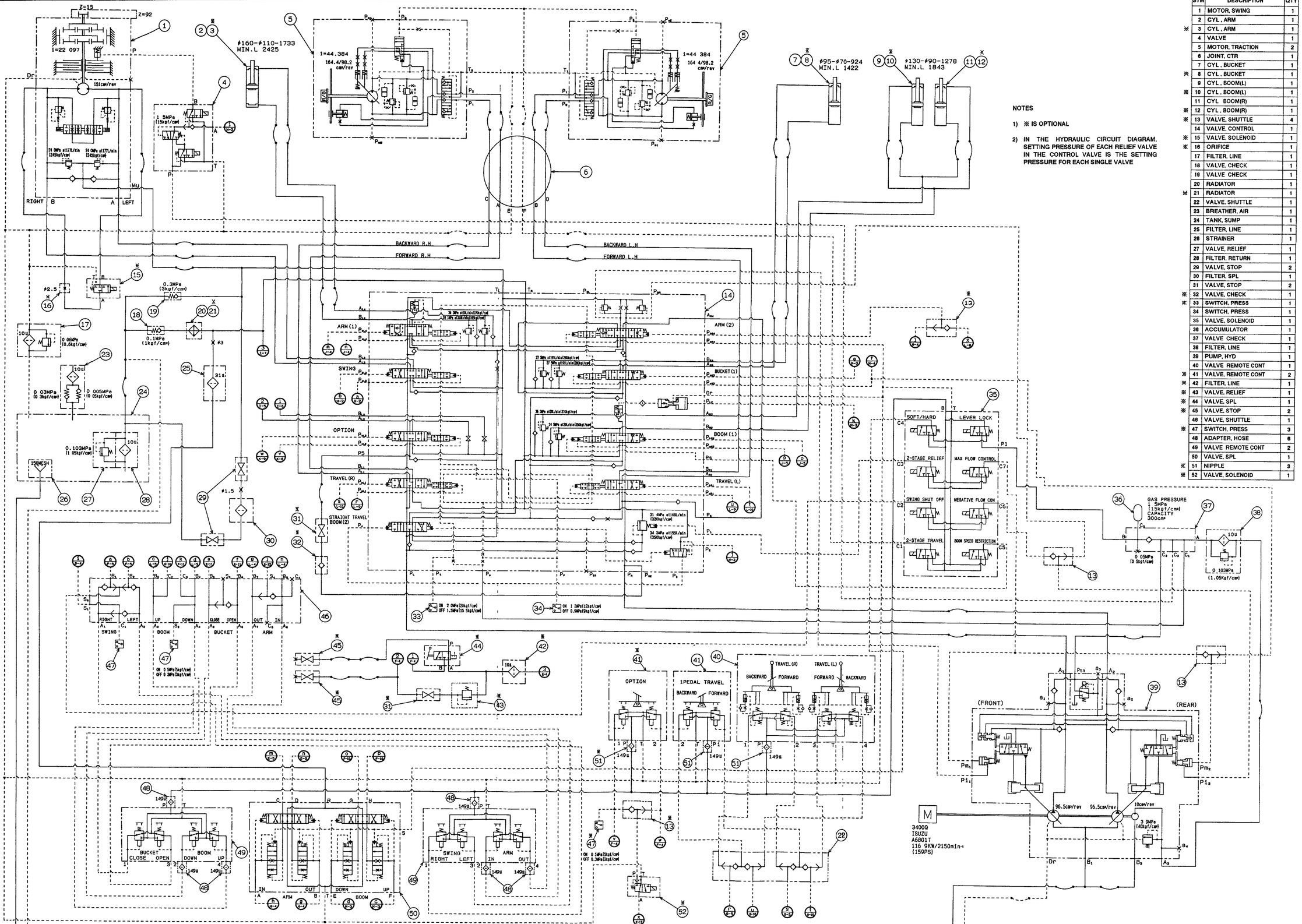
	2800Q	3400Q
7' 10" (2 4m)	OPT	OPT
9' 10" (3 0m)	STD	——
10' 2" (3.1m)	——	STD
11' 6" (3 5m)	——	OPT

CONTROLS

	2800Q	3400Q
Auxiliary valve control	OPT	OPT
Auxiliary lines for crusher (Upper)	OPT	OPT
Auxiliary line for breaker (Upper)	OPT	OPT
Auxiliary line (Attachment)	OPT	OPT

	2800Q	3400Q
Air conditioner	OPT	OPT

Hydraulic Circuit Diagram



NOTES

1) ※ IS OPTIONAL

2) IN THE HYDRAULIC CIRCUIT DIAGRAM, SETTING PRESSURE OF EACH RELIEF VALVE IN THE CONTROL VALVE IS THE SETTING PRESSURE FOR EACH SINGLE VALVE

SYM		DESCRIPTION	QTY
	1	MOTOR, SWING	1
	2	CYL , ARM	1
※	3	CYL , ARM	1
	4	VALVE	1
	5	MOTOR, TRACTION	2
	6	JOINT, CTR	1
	7	CYL , BUCKET	1
※	8	CYL , BUCKET	1
	9	CYL , BOOM(L)	1
※	10	CYL , BOOM(L)	1
	11	CYL BOOM(R)	1
※	12	CYL , BOOM(R)	1
※	13	VALVE, SHUTTLE	4
	14	VALVE, CONTROL	1
※	15	VALVE, SOLENOID	1
※	16	ORIFICE	1
	17	FILTER, LINE	1
	18	VALVE, CHECK	1
	19	VALVE CHECK	1
	20	RADIATOR	1
※	21	RADIATOR	1
	22	VALVE, SHUTTLE	1
	23	BREATHER, AIR	1
	24	TANK, SUMP	1
	25	FILTER, LINE	1
	26	STRAINER	1
	27	VALVE, RELIEF	1
	28	FILTER, RETURN	1
	29	VALVE, STOP	2
	30	FILTER, SPL	1
	31	VALVE, STOP	2
※	32	VALVE, CHECK	1
※	33	SWITCH, PRESS	1
	34	SWITCH, PRESS	1
	35	VALVE, SOLENOID	1
	36	ACCUMULATOR	1
	37	VALVE CHECK	1
	38	FILTER, LINE	1
	39	PUMP, HYD	1
	40	VALVE REMOTE CONT	1
※	41	VALVE, REMOTE CONT	2
※	42	FILTER, LINE	1
※	43	VALVE, RELIEF	1
※	44	VALVE, SPL	1
※	45	VALVE, STOP	2
	46	VALVE, SHUTTLE	1
※	47	SWITCH, PRESS	3
	48	ADAPTER, HOSE	6
	49	VALVE REMOTE CONT	2
	50	VALVE, SPL	1
※	51	NIPPLE	3
※	52	VALVE, SOLENOID	1

[3400LF]

Standard Main Relief Pressure Setting

9 Loosen 22mm locknut for standard pressure setting

10 Loosen 19mm standard pressure adjusting screw below final setting

11 While holding "arm in" function over relief, tighten the 19mm standard pressure adjusting screw to achieve final setting If adjustment exceeds final setting, lower below specification and retighten to final setting Disengage "arm in" function

12. After final setting is achieved, tighten the 22mm locknut while holding the 19mm adjusting screw to prevent inadvertent movement

13 After tightening the 22mm locknut, reconfirm the final setting by again engaging "arm in" function If adjustment is not to specification, repeat steps 10 through 13

14 Stop the engine

Reconfirmation of Pressure Setting

15 Start engine and advance to full engine rpm Engage "arm in" function, press power up button in right lever, and check for leaks. Return control to neutral

16. Engage "arm in" function and reconfirm "standard pressure" setting Next, press the power up button and reconfirm the "power up" pressure setting

17 If above pressure check does not meet specification, repeat steps 1 through 16.