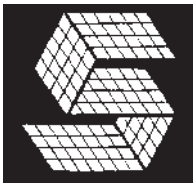
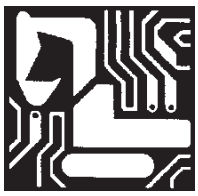
MANUAL INDEX

SAFETY PRECAUTIONS

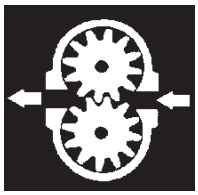
OPERATIONAL PRINCIPLE



Section 1 GENERAL



Section 2 SYSTEM



Section 3 COMPONENT OPERATION

OPERATIONAL PERFORMANCE TEST

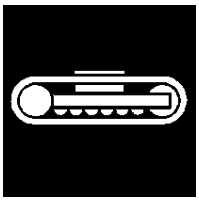
Section 4 OPERATIONAL PERFORMANCE TEST

TROUBLESHOOTING

Section 5 TROUBLESHOOTING

INDEX

REPAIR INSTRUCTIONS



ENGINE

Refer to the manual:
REPAIR MANUAL FOR CNH U.K. ENGINES
667TA/EEG - 667TA/EEC - 667TA/EBF - 667TA/EED - 667TA/EBD
Print no : 604.13.689

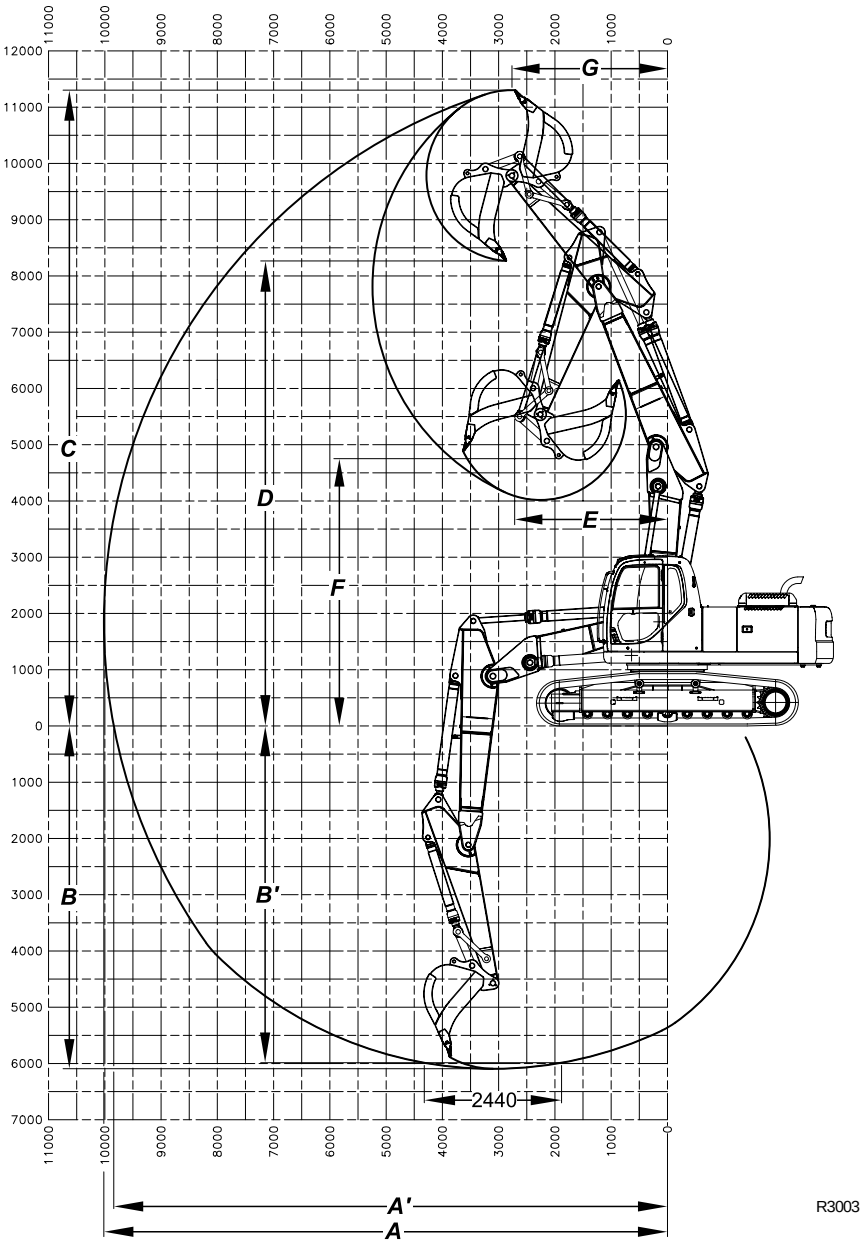
and large roots (which may act as a leverage under the machine when up-rooted and cause the unit to overturn).
Position the machine dependent upon the loading and unloading areas in order to swing leftwards to load to obtain best visibility.
Never use the bucket or attachment as a man lift or carry riders.Never use the machine as a work platform or scaffolding. The machine must not be improperly used for works not consistent with its features (such as pushing railway cars, trucks or other machines).
Always pay attention to people within the machine operating range.
Never move or stop the bucket, other loads or the attachment above ground personnel or truck cabs.
Ensure the truck driver is in a safe place before loading the truck.
Load trucks from side or rear.
Use only the type of bucket recommended considering machine type, materials to be handled, material piling up and loading characteristics, ground type and other typical conditions of the work to be performed.
When transporting a loaded bucket, keep it as rolled-back as possible. Keep boom and arm as low as possible.
Ground speed should be adequate to the load and ground conditions.
The load must always be properly arranged in the bucket; move with extreme care when transporting oversize loads.
Do not lift and move the bucket overhead where persons are standing or working, nor downhill when working on a slope as this would decrease machine stability. Load the bucket from the uphill side.
Loads to be raised using the machine should be exclusively hooked to the hitch specially provided.
The excavator is no lifting and transportation means, therefore it should not be used to position loads accurately. Should it be exceptionally used to lift and lay building components, special caution must be taken as follows:

- The machine must be equipped without failure with the appropriate variant supplied, upon request, by **NEW HOLLAND KOBELCO**. Also, totally comply with the safety precautions for the operation of the excavator as a lifting equipment.
- Secure the loads to be raised using cables or chains fastened with appropriate hooking mechanisms.
- Nobody should be allowed to remain under the raised load or within the excavator operating range for any reason whatever.

Never exceed specified loading capacity. Incorrect fastening of slings or chains may cause boom/arm failure or failure of the lifting means with consequent bodily injuries and even death.
Always ensure that slings and chains used for lifting are adequate to the load and in good condition.
All loading capacities are referred to the machine on a level surface and should be disregarded when working on a slope.
Avoid travelling across slopes. Proceed from uphill downhill and vice-versa. If machine starts slipping sideways when on a slope, lower the bucket and thrust bucket teeth into the ground.
Working on slopes is dangerous. Grade the working area if possible. Reduce work cycle time if it is not possible to grade the working area.
Do not move full bucket or a load from uphill downhill as this would reduce machine stability. Do not work with the bucket turned to the uphill side.
Do not work with the bucket turned uphill as counterweights protruding downhill would reduce machine stability on the slope and increase risk of overturning.
We recommend to work on slopes with the bucket downhill, after checking machine stability with the bucket empty and attachment retracted, by slowly swinging the upper structure by 360°.
Position the carriage at a right angle relative to slopes, hanging walls, etc. to exit the working area easily.
Standard use, provides for the travel controls at the front and travel motors at the back. Should travel motors be positioned at the front with regard to the actual travel direction. Remind relative to travel direction that controls are reversed.
Always check travel motor position before moving off.
Properly judge ground conditions with particular attention to consistency of the area you are going to work on.
Keep the machine sufficiently far from the ditch edge.
Never dig under the machine.
Should it be necessary to dig under the machine, always ensure that digging walls are opportunely propped up against landslide to prevent the machine from falling into the trench.
Do not swing the upperstructure, raise the load or brake abruptly if not required. This may cause accidents.
Prior to beginning the work near gas distribution mains or other public utilities:

- Contact the company owner of the gas mains or its nearest branch before starting the work. Look up the number in the telephone directory.
- Define together which precautions should be taken to guarantee work safety.
- Decrease work speed. Reaction time could be too slow and distance evaluation wrong.
- When working near gas mains or other public utilities installations, appoint a person in charge of signalling duties. This person will have the responsibility of observing the machine, any part of it and/or the load approaching the gas mains from a standpoint more favourable than the Operator's. This signal man (flag-man) must be in direct communication with the Operator and the Operator must pay undivided attention to the signals supplied.
- The gas distributing Company, if previously advised and involved in the work, as well as machine Operator, Owner and/or any natural person or legal entity having rent or leased the machine or being responsi-

DIGGING DATA (E265)
(Triple Articulation Version)



(Dimensions in mm)

Arm	2 160	2 500	2 980	3 660
A	9 733	10 017	10 445	11 118
A’	9 553	9 842	10 277	10 960
B	5 777	6 093	6 554	7 239
B’	5 685	5 986	6 453	7 147
C	11 098	11 302	11 633	12 218
D	8 058	8 266	8 595	9 182
E	2 882	2 715	2 477	2 463
F	5 251	4 752	4 216	3 539
G	2 468	2 763	3 118	3 475

MECHATRO CONTROLLER

Contents of the trouble history

Symbol	Display		
A	Controller relation	A-1 A-2	PUMP P1 SENSOR PUMP P2 SENSOR
B	Low pressure sensor	B-1 B-2 B-3 B-4 B-5 B-6 B-7 B-9 B-10	BOOM RAISE SENSOR BOOM LOWER SENSOR ARM OUT SENSOR ARM IN SENSOR BUCKET DIG SENSOR BUCKET DUMP SENSOR SWING (R) SENSOR TRAVEL (R) SENSOR TRAVEL (L) SENSOR
C	High pressure sensor (Hydraulic pump)	C-1 C-2	PUMP P1 SENSOR PUMP P2 SENSOR
D	Proportional valve (Control valve)	D-1 D-2 D-3 D-6 D-17 D-18	P1 BYPASS PROPO-VALVE P2 BYPASS PROPO-VALVE TRAVEL PROPO-VALVE RECIRCULAT PROPO-VALVE TRAVEL UNLOAD ATT UNLOAD
E	Proportional valve (Hydraulic pump)	E-1 E-2	PUMP P1 PROPO-VALVE PUMP P2 PROPO-VALVE
F	Solenoid valve	F-1 F-2 F-3	POWER BOOST SOLENOID SWING BRAKE SOLENOID TWO-SPEED SOLENOID
G	E/G Accessory	G-3 G-4 G-5	E/G REV. SENSOR E/G COOL. E/G OIL PRS
H	Potentio relation	H-1	ACCELERATOR POTENTIOMETER
I		I-1 I-2 I-3	RECEIVE ERROR BAT. RELAY NO. 4 CABLE DISCONNECTED
			MONITOR SYSTEM OK

HYDRAULIC PUMP ASSY

Specifications (E265)

Item			Main pump	Gear pump for pilot
Pump model			K3V112DTP1ALR-9TGL	ZX10LGRZ2-07D
Max. displacement capacity		cm^3	112 × 2	10
Revolution	Rated	min^{-1} (Clockwise seen from shaft end)	2100	←
	Hi idle		2385 or less	←
Pressure	Rated	MPa	34.3	5.0
	ATT boost		37.8	
Max. flow		L/min	235 × 2 at 7.8 MPa	21
Max. input Horse Power		kW	129	3.4
Max. input torque		N · m	588	14.7
Regulator		Model	KR3G-9TEL	
		Control function	Electric flow control, positive flowcontrol, total power control at back-up and power shift control at back-up	
		Others	With solenoid proportional reducing valve (KDRDE5K-31/30C50-102)	
Mass		kg	131	

Specifications (E305)

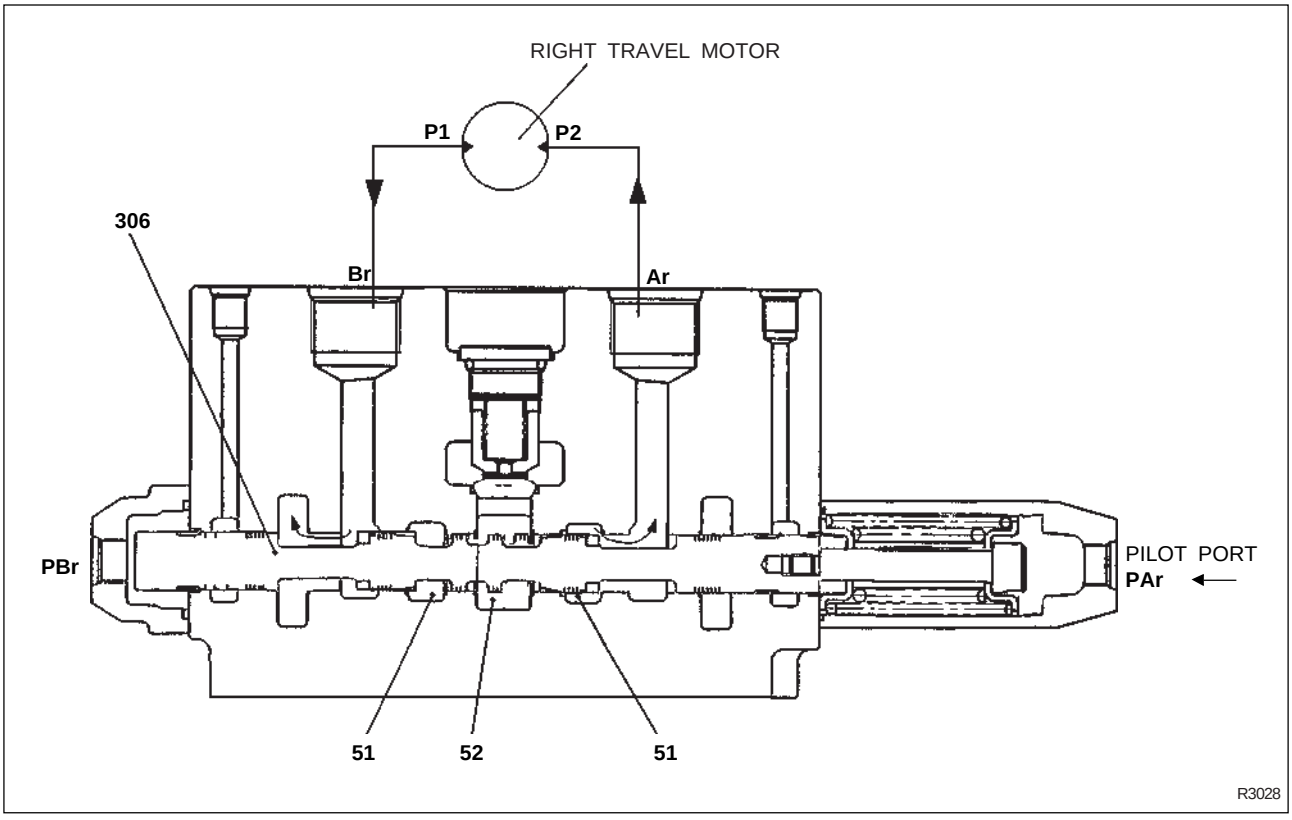
Item			Main pump	Gear pump for pilot
Pump model			K3V112DTP1CLR-9THL	ZX10LGRZ2-07D
Max. displacement capacity		cm^3	115 × 2	10
Revolution	Rated	min^{-1} (Clockwise seen from shaft end)	2100	←
	Hi idle		2150 or less	←
Pressure	Rated	MPa	34.3	5.0
	ATT boost		37.8	
Max. flow		L/min	241 × 2 at 7.8 MPa	21
Max. input Horse Power		kW	138	3.4
Max. input torque		N · m	628	14.7
Regulator		Model	KR3G-9THL	
		Control function	Electric flow control, positive flowcontrol, total power control at back-up and power shift control at back-up	
		Others	With solenoid proportional reducing valve (KDRDE5K-31/30C50-102)	
Mass		kg	131	

NOTE: *The max. input power and the max. input torque of the main pump include those of the gear pump.*

Functions for travel action (E265)

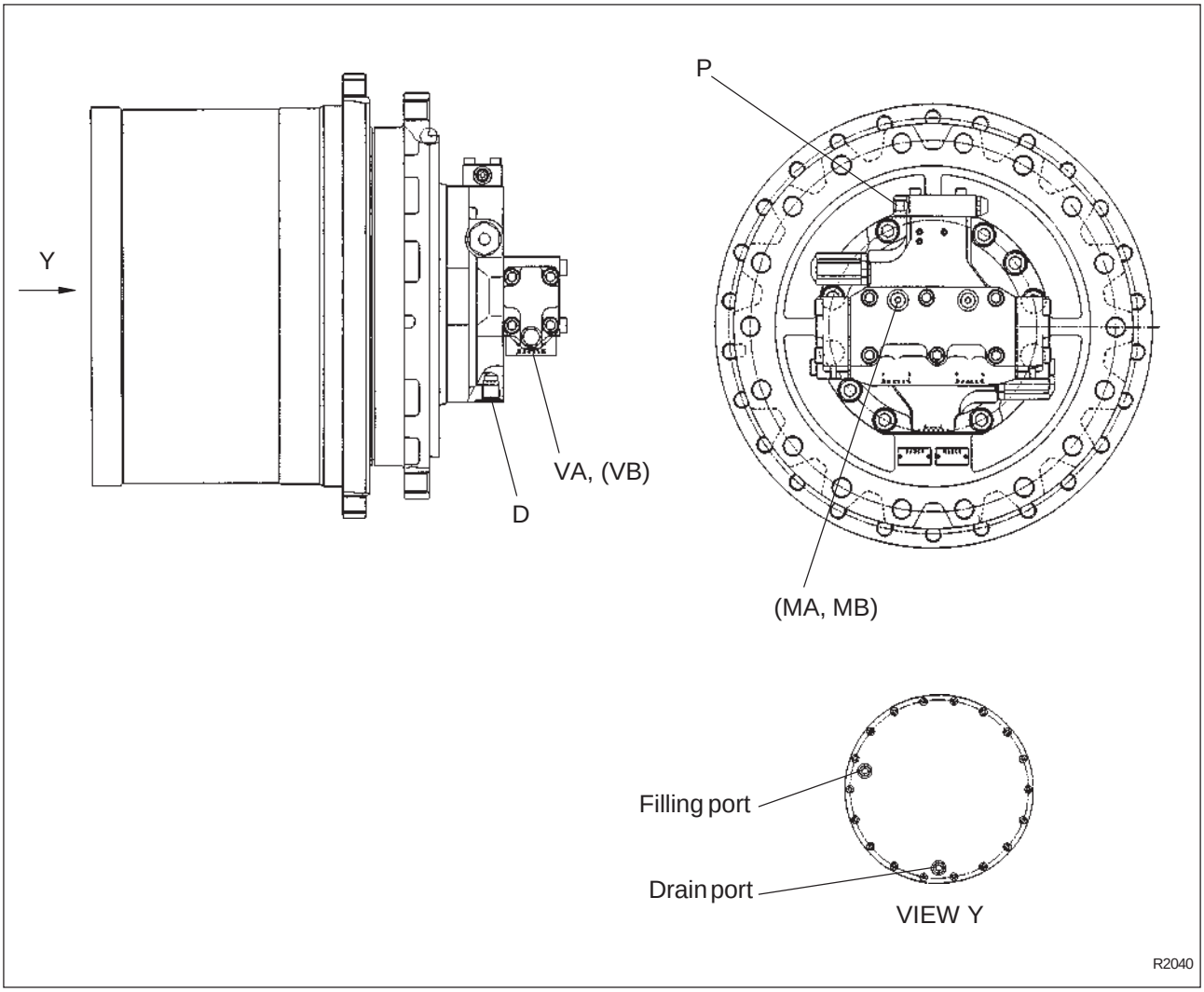
AT INDEPENDENT TRAVEL

If travel operation (forward) is performed, the secondary pilot pressure from ports 2 and 4 of the travel pilot valve acts upon ports **PAr** and **PAL** of the control valve and moves the right and left travel spools (**306**).
The pressurized oil delivered by pump **P1** flows into the main passage (**51**) past the travel straight spool (**307**), passes between the outer circumference of the right travel spool (**306**) and the casing and is supplied to the right travel motor **P2** side by way of port **Ar**.
In the meantime, the pressurized oil delivered by pump **P2** passes between the outer circumference of the left travel straight spool (**306**) and the casing, runs to port **AL** and is supplied to the left travel motor **P1** side, the same way as the pressure oil by pump **P1**.
Meanwhile, the oil which have returned from the right **P1** and left **P2** travel sides passes between the outer circumference of the right and left travel spool (**306**) and the casing and returns to the hydraulic tank via the tank port **T** of the low pressure circuit **D**.
At reverse travel action (when the secondary pilot pressure acts upon ports **PBr** and **PBL** of the control valve), the pressurized oil works the same way as in the forward travel action.



TRAVEL DEVICE

General view



Rotation direction

Oil inlet port	Oil outlet port	Rotation direction (Viewed from valve side)
VA	VB	Right (Clockwise)
VB	VA	Left (Counterclockwise)

Port name	Port size	Tightening torque N·m	Function
P	PF1/4	22	Pilot (2 speed changeover) port
D	PF1/2	88	Drain port
VA, VB	PF1	360	Motor drive port
MA, MB	PF1/4	22	Pressure measurement

TEST PROCEDURES

Procedure for adjusting relief valve

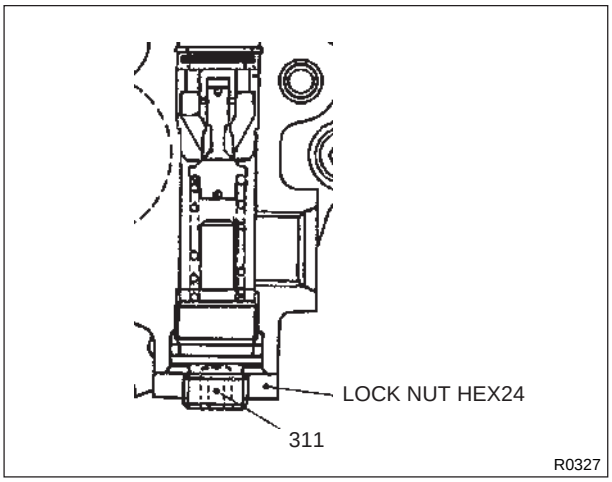
PILOT RELIEF VALVE

Adjust it with adjust screw (**311**).

: 24 mm Tightening torque: 29 Nm

: 6 mm

No. of turns of adjust screw	Pressure change MPa
1 turn	Approx. 2.1



2-STAGE MAIN RELIEF VALVE (Common for travel and ATT sections)

Start from the boosting side, first. Loosen nut (**1**), adjust the pressure with adjusting screw (**2**) and tighten nut (**1**) after completion of the adjustment on the boosting side.
Then, loosen nut (**3**), adjust the pressure on the standard side with adjusting screw (**4**) and tighten nut (**3**) after completion of the adjustment.

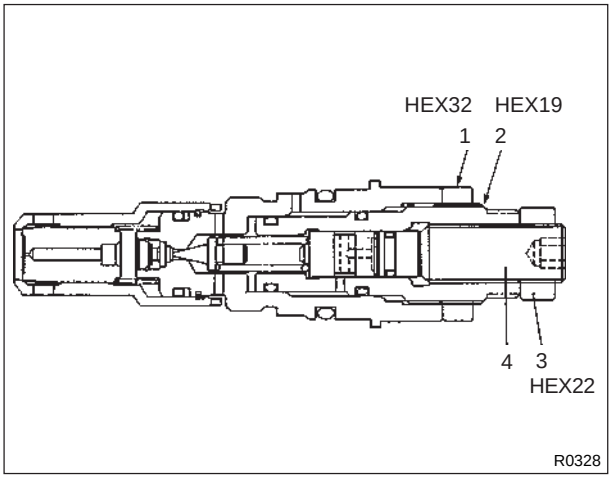
: 32 mm Tightening torque: 27~31 Nm

: 22 mm Tightening torque: 27~31 Nm

: 19 mm Adjust screw

: 6 mm

No. of turns of adjust screw	Pressure change MPa
Boosting side 1 turn	Approx. 17.6
STD side 1 turn	Approx. 17.6



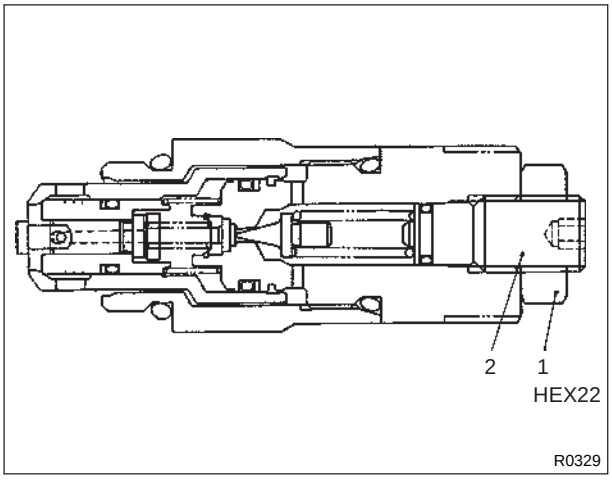
OVER LOAD RELIEF VALVE (Boom, bucket, arm sections)

Loosen lock nut (**1**) and adjust with adjust screw (**2**).

: 22 mm Tightening torque: 27~31 Nm

: 6 mm

No. of turns of adjust screw	Pressure change MPa
1 turn	Approx. 17.6



Solenoid primary pressure

Operation is not working		In operation
No. 5 SOL. VALVE F–2 SWING-BRAKE		Swing P/B Swing & arm digging
COMP.	ON	OFF indication } 5.0 MPa
MEAS.	ON	OFF indication } 5.0 MPa
RELEASE SW	OFF	ON/OFF indication
No. 6 SOL. VALVE F–3 1/2-TRAVEL		Travel 2-speed select
COMP.	OFF	ON indication } 5.0 MPa
MEAS.	OFF	ON indication } 5.0 MPa
SWITCH	OFF	ON/OFF indication
No. 7 SOL. VALVE F–1 POWER UP		Boost pressure select
COMP.	OFF	ON indication } 5.0 MPa
MEAS.	OFF	ON indication } 5.0 MPa
SWITCH	OFF	ON/OFF indication

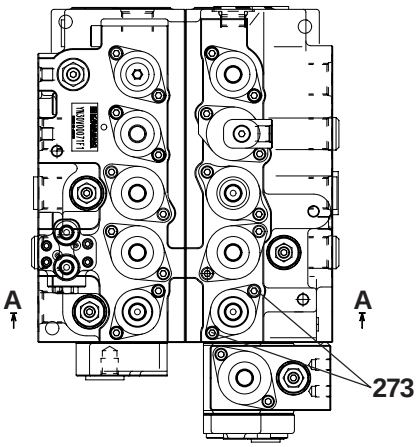
NOTE - ※ *OPERATION:*

No. 20	*ARM OUT or ARM IN relief operation*
No. 21	*BOOM UP relief operation*
No. 22	*ARM IN relief operation*
No. 23	*ARM IN operation lever turned to full (at 200 mA arm in relief)*
No. 24	*during BUCKET DIGGING operation*
No. 25	*during ARM IN operation*
No. 47 e 48	*TRAVEL full lever operation (right & left operation in the same time)*

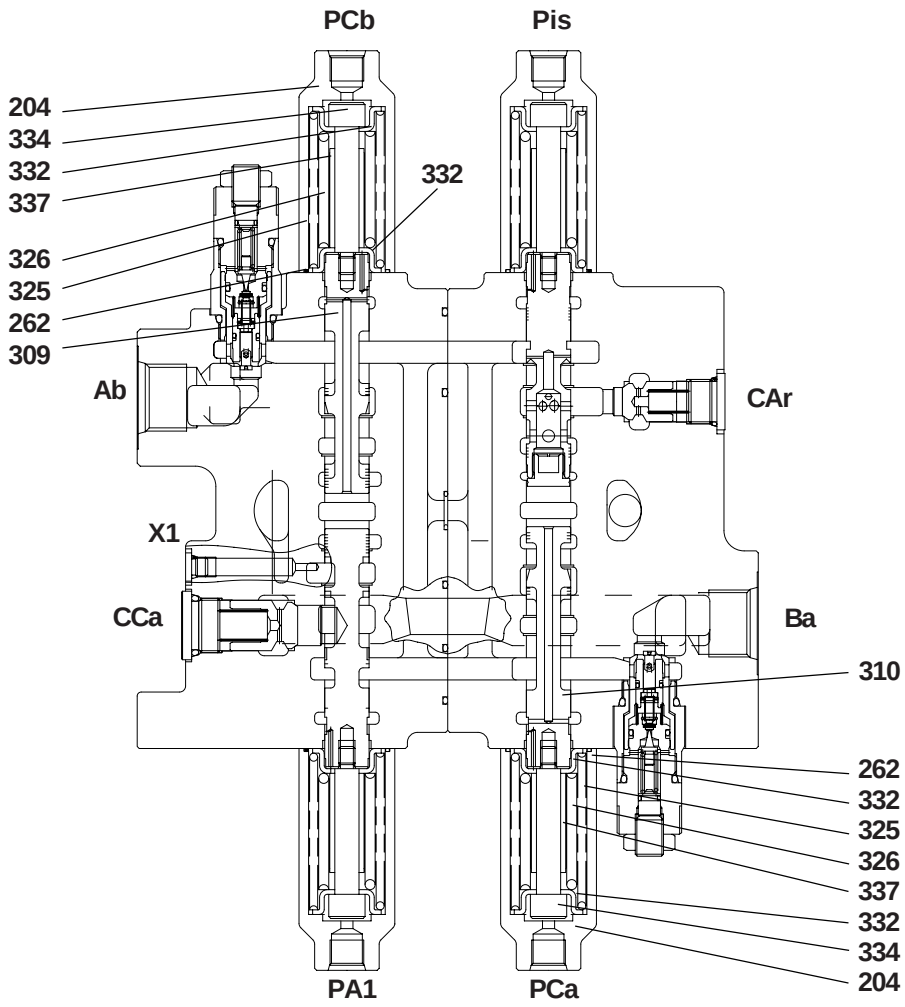
Solenoid proportional valve secondary pressure

E/G Hi, Full lever ※ operation	E/G Hi, No load, at neutral
No. 20 PROPO-VALVE D–1 P1 BYPASS	P1 bypass cut
COMP. 706 mA 2.7 MPa	200 mA 0 MPa
MEAS. 706 mA 2.7 MPa	200 mA 0 MPa
No. 21 PROPO-VALVE D–2 P2 BYPASS	P2 bypass cut
COMP. 706 mA 2.7 MPa	200 mA 0 MPa
MEAS. 706 mA 2.7 MPa	200 mA 0 MPa
No. 22 PROPO-VALVE D–3 TRAVEL STRAIGHT	Travel straight
COMP. 672 mA 2.5 MPa	350 mA 0.7 MPa
MEAS. 672 mA 2.5 MPa	345 mA 0.7 MPa
No. 23 PROPO-VALVE D–6 A-RECIRCULAT	Arm variable recirculation
COMP. 538 mA 1.8 MPa	404 mA 1.0 MPa
MEAS. 538 mA 1.8 MPa	404 mA 1.0 MPa
No. 24 PROPO-VALVE E–1 P1 PUMP	P1 pump
COMP. 770 mA 3.0 MPa	350 mA 0.7 MPa
MEAS. 770 mA 3.0 MPa	350 mA 0.7 MPa
POWER SHIFT 0 mA	
No. 25 PROPO-VALVE E–2 P2 PUMP	P2 pump
COMP. 770 mA 3.0 MPa	350 mA 0.7 MPa
MEAS. 770 mA 3.0 MPa	350 mA 0.7 MPa
POWER SHIFT 0 mA	
No. 47 PROPO-VALVE D–17 TRAVEL UNLOAD	Travel unload
COMP. 665 mA 2.6 MPa	200 mA 0 MPa
MEAS. 665 mA 2.6 MPa	200 mA 0 MPa
No. 48 PROPO-VALVE D–18 ATT UNLOAD	ATT unload
COMP. 665 mA 2.6 MPa	200 mA 0 MPa
MEAS. 665 mA 2.6 MPa	200 mA 0 MPa

CONTROL VALVE



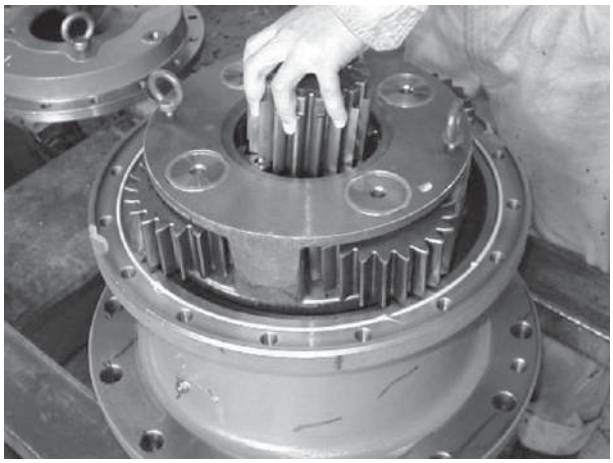
SECTION A-A



R0471

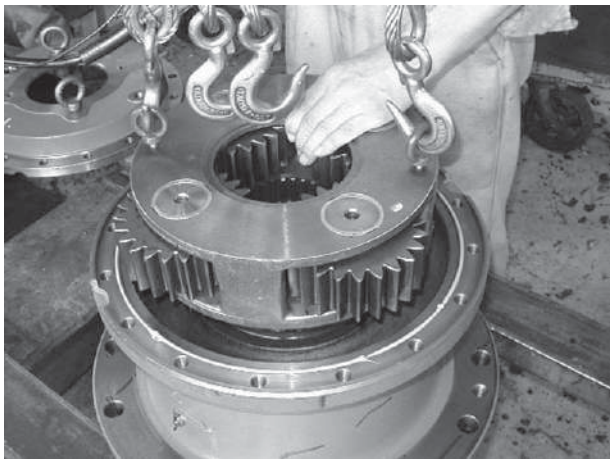
204 - Spring cover
262 - O-Ring
273 - Socket bolt (Q.ty 2)
309 - Bypass cut spool (P1)
310 - Bypass cut spool (P2)
325 - Spring
326 - Spring
332 - Spring seat (Q.ty 2)
334 - Spacer bolt
337 - Stopper

8. Remove No. 2 sun gear.



R3186

9. Remove No. 2 carrier assembly.



R3187

10. Disassemble No. 2 carrier assembly.

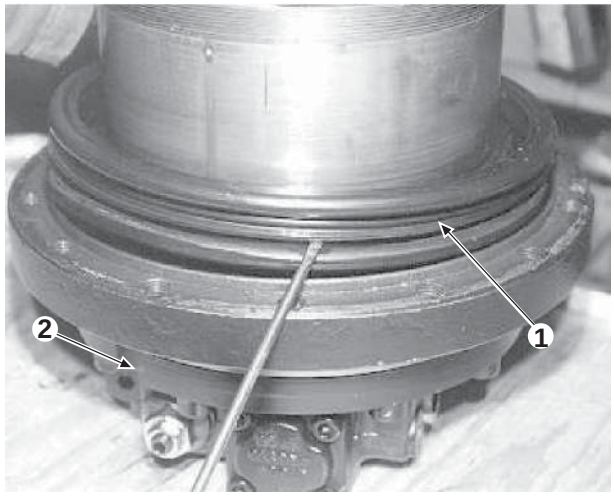
NOTE - *As far as no trouble is detected, No. 2 carrier assembly should not be disassembled further. In this condition, check on parts according to "Checking method" paragraph No. 2 carrier assembly should be replaced in one set, but if it is unavoidably necessary to replace a part of the assembly, follow the following procedure.*
Put match marks on each planetary gear and pin so as not to have an incorrect combination and assembling.

a. Push spring pin (**910**) in further, and pull out No. 2 pin (**282**).

NOTE - *The reuse of removed No. 2 pin is not allowed.*

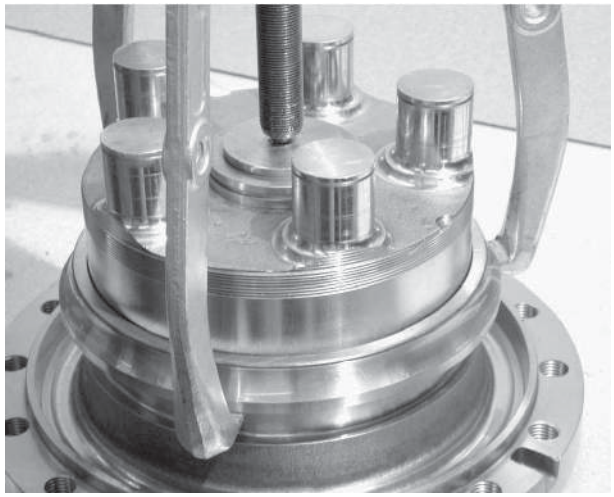
b. Pull out No. 2 planetary gear (**203**) and thrust washer (**286**) sideward.

17. By using screwdriver remove the lifetime seal (**1**) from the hydraulic motor (**2**).



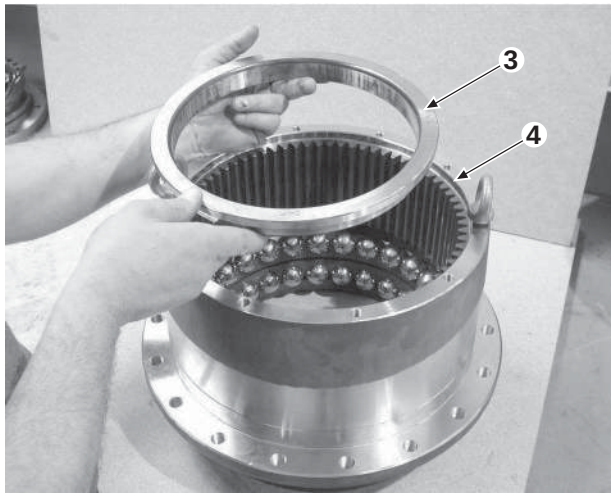
R0537

18. Place the puller in the hydraulic motor and turn the screw until the bearing inner ring comes out.



R0538

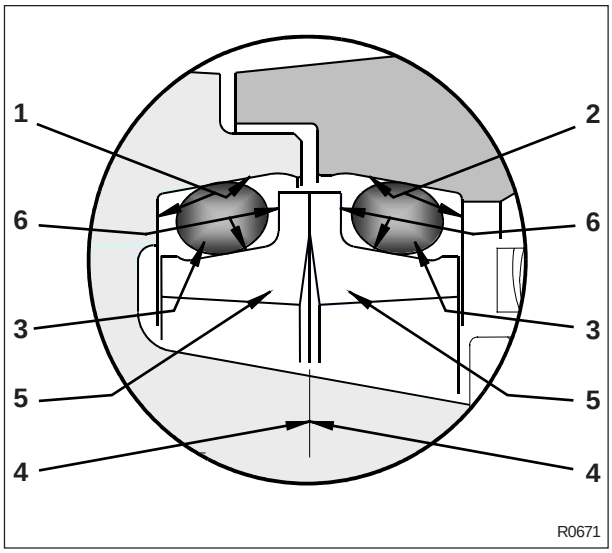
19. Take out the bearing inner ring (**3**) from the gearbox housing (**4**).



R0539

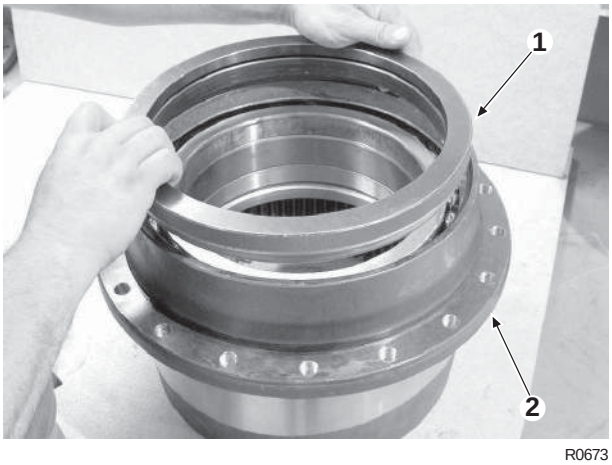
TRAVEL DEVICE

5. Makeready of the lifetime seal
   Instructions to properly assemble the lifetime seal:
   a. Carefully clean the seats (**1** and **2**) using, if necessary, metal brushes or solvent (surfaces in contact with or (**3**) must be perfectly clean and dry).
   b. Make sure that sealing surfaces (**4**) of metal rings (**5**) are free from scratches, dinges or foreign substances; metal ring surfaces must be perfectly clean and dry.
   c. Carefully clean the lapped surface (**4**) of metal rings (**5**) and remove dust or fingerprints. Then lubrificate them with a thin oil film, taking care not to oil the other components.



6. Assemble an half seal (**7**) on the tool (**380001069**).

7. Assemble the half seal (**1**) on the gearbox housing (**2**).

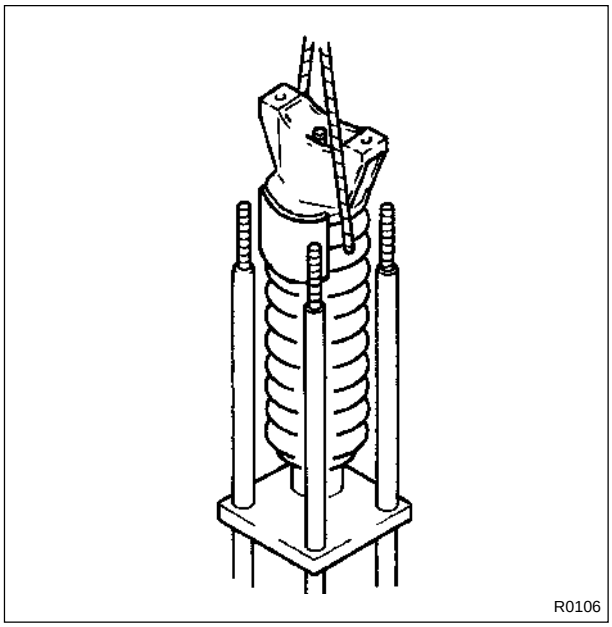


TRACK ADJUSTER

5. Remove idler adjuster assy from jig (**380001029**).

WARNING

Track adjuster mass: 143 kg (E265)
148.5 kg (E305)



6. Apply grase on the oil seal (**9**) and O-Ring (**8**) then fit them to grease cylinder (**1**).

7. Fill up grease in cylinder (**1**), remove the grease nipple from piston (**6**) in order to discharge the inside air, and press in the piston by hand.
   Direct grease nipple hole downward to make air discharge easier.

8. Tighten grease nipple (**X**) to piston (**6**).
   : 19 mm
   : 59 Nm