

60/75/90/115/160

Operators Manual

9-8670

Reprinted

CASE



This symbol means ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED. The message that follows the symbol contains important information about your safety. Carefully read the message. Make sure you fully understand the causes of possible injury or death.

SB001

IF THIS MACHINE IS USED BY AN EMPLOYEE, IS LOANED, OR IS RENTED, MAKE SURE THAT THE OPERATOR UNDERSTANDS THE TWO INSTRUCTIONS BELOW.

BEFORE THE OPERATOR STARTS THE ENGINE:

1. GIVE INSTRUCTIONS TO THE OPERATOR ON SAFE AND CORRECT USE OF THE MACHINE.
2. MAKE SURE THE OPERATOR READS AND UNDERSTANDS THE OPERATOR'S MANUAL FOR THIS MACHINE.

WARNING

IMPROPER OPERATION OF THIS MACHINE CAN CAUSE INJURY OR DEATH.

BEFORE STARTING THE ENGINE, DO THE FOLLOWING:

1. READ THE OPERATOR'S MANUAL.
2. READ ALL SAFETY DECALS ON THE MACHINE.
3. CLEAR THE AREA OF OTHER PERSONS.

LEARN AND PRACTICE SAFE USE OF MACHINE CONTROLS IN A SAFE, CLEAR AREA BEFORE YOU OPERATE THIS MACHINE ON A JOB SITE.

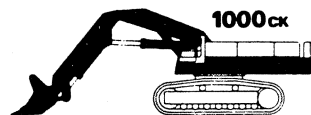
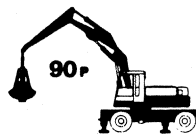
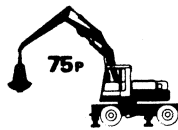
It is your responsibility to observe pertinent laws and regulations and to follow manufacturer's instructions on machine operation and maintenance.

See your Authorized Case dealer for additional operator's manuals, parts catalogs, and service manuals.



Poclair

hydraulic excavators



You are now the owner of a POCLAIN.

All the components of this unit have been thoroughly checked and tested to meet the standards of quality you are entitled to expect in this field.

Your machine will remain a highly reliable tool provided you carefully observe the operating and servicing recommendations outlined in this manual, which covers the following items :

- Features and specifications of the machine*
- Operation*
- Basic safety rules*
- Maintenance*
- Quick repair instructions on : Hydraulic, Mechanical and Electrical Systems*
- Attachments*

Our representatives (POCLAIN Distributors) are at your disposal to assist you in maintaining your machine in perfect working condition. Our personnel will carry out THREE MACHINE SERVICE INSPECTIONS :

- Excavator Delivery Service Inspection*
- 150 Hour Service Inspection*
- End of Warranty Service Inspection*

These three inspections are COMPULSORY and FREE OF CHARGE

After the expiry of the WARRANTY PERIOD, our AFTER SALES SERVICE personnel will remain at your disposal for any assistance and or supply of "ORIGINAL SPARE PARTS", the interchangeability and quality of which are guaranteed.

Our International Technical Training Centre organizes training courses for future operators :

- rapid course in machine operation*
- practical knowledge of maintenance methods*
- attachment changeover procedure.*

Wherever you may be, our Representative (POCLAIN Distributor) is at your disposal for any information you may require.

This manual has been expressly prepared for the benefit of operators and mechanics. Consult it frequently and keep it in the special compartment provided in the machine cab.

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General description 5

The track-mounted excavator is a fully hydraulic machine, consisting of a carrier frame, which incorporates the track drive assembly and supports the upperstructure, mounted on the swing gear. The attachments are mounted at the front of the upperstructure, which also incorporates the engine, hydraulic power units and operator's cab.

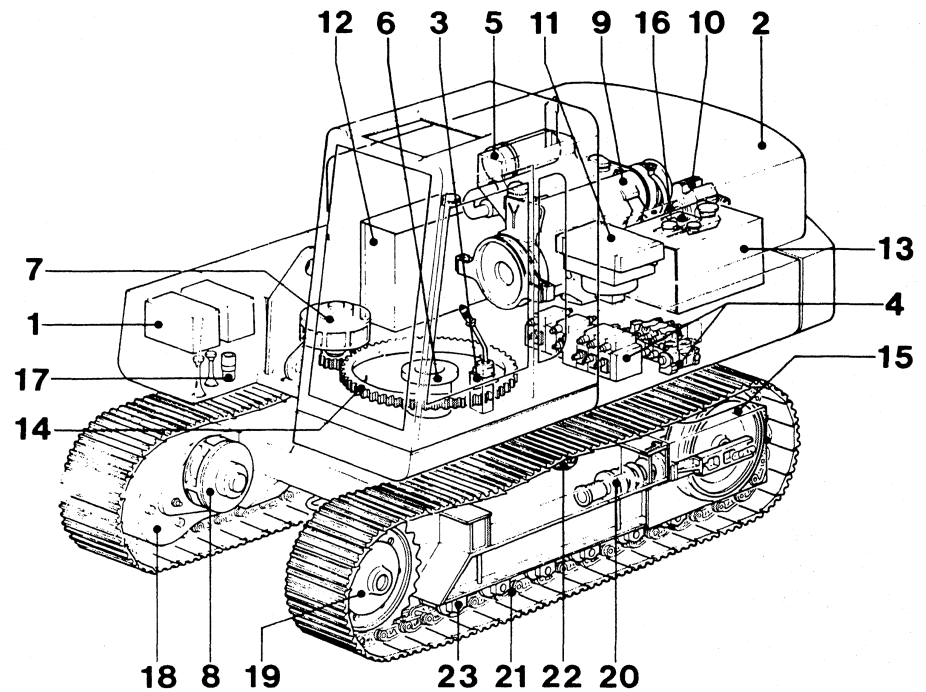
The pumps, driven by the engine, supply the hydraulic power by feeding the valve banks with hydraulic fluid.

When the operator actuates the control levers, the valve banks direct the fluid towards the different cylinders or motors concerned.

The cooling system, comprising a circulating pump and an independent ventilated cooler, maintains the fluid at a normal operating temperature.

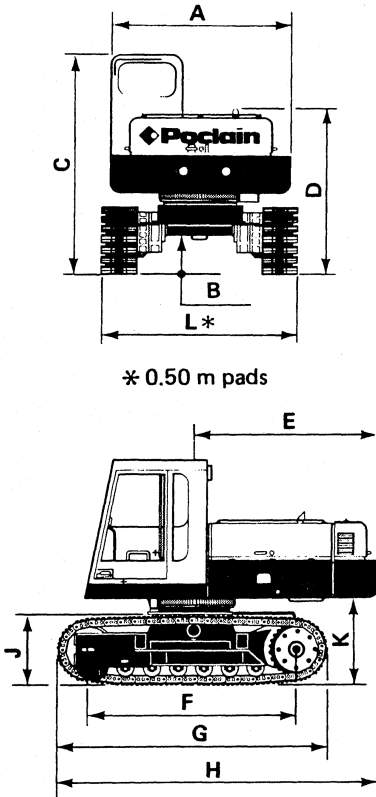


6 General description



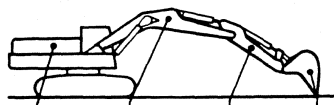
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|--|--------------------------------------|
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| 2 Upperstructure | 14 Swing gear |
| 3 Attachment and swing motion controls | 15 Carrier frame |
| 4 Valve banks | 16 Engine/pump coupling |
| 5 Air filter | 17 Horn compressor |
| 6 Swing joint | 18 Track drive reduction gears |
| 7 Hydraulic swing motor | 19 Sprocket wheel |
| 8 Hydraulic track drive motor | 20 Hydraulic track tension mechanism |
| 9 Engine | 21 Links |
| 10 Hydraulic pump | 22 Upper roller |
| 11 Hydraulic cooler | 23 Lower rollers |
| 12 Fuel tank | |

Dimensions 7



	60 _{CL}	75 _{CL}	90 _{CL}	90 _{CK}	115 _{CL}	160 _{CK}
A m	2,42	2,49	2,49	2,49	2,73	2,79
B m	0,40	0,49	0,49	0,45	0,45	0,50
C m	2,96	2,96	3,06	3,17	3,20	3,25
D m	2,23	2,23	2,32	2,43	2,72	2,80
E m	2,01	2,26	2,60	2,60	2,89	3,16
F m	2,52	2,86	2,91	3,01	3,18	3,33
G m	3,31	3,65	3,82	3,92	4,10	4,31
H m	3,65	4,08	4,51	4,56	4,93	5,31
J m	0,85	0,84	0,93	1,03	1,03	1,12
K m	1,03	1,03	1,13	1,24	1,27	1,32
L m	2,49	2,75	2,75	2,75	2,91	3,11

▲ LOADER ATTACHMENT BACKHOE ATTACHMENT



60 CL	: 4,10 m	2,00 m	450 L
75 CL	: 4,40 m	2,10 m	620 L
90 CL	: 4,80 m	2,30 m	765 L
▲ 90 CK	: 3,00 m	2,20 m	950 L
115 CL	: 5,15 m	2,50 m	950 L
160 CK	: 5,70 m	2,75 m	1250 L
▲ 160 CK	: 3,00 m	3,20 m	1500 L

WEIGHT MACHINE + ATTACHMENT

0,50 m	11,1T	14,2T	17,5T	19 T▲	22,6T	29,4T▲
0,60 m	—	14,4T	17,8T	19,3T▲	22,9T	—
0,70 m	11,5T	14,7T	18,1T	19,6T▲	23,2T	29,2T
0,85 m	11,8T	15 T	18,4T	—	23,6T	—
1,10 m	—	14,8T	18,2T	—	—	—

8 Characteristics

UPPERSTRUCTURE

- **FRAME**

- All-welded unit
- Weight of upperstructure
- Wide, non-slip catwalks
- Fully soundproofed upperstructure cowling. Meets all current regulations.

- **SWING**

- Hydraulic motor acting directly on external ring gear
- Torque
- Swing speed
- Automatic braking of swing
- Ring gear with external teeth and alternate rollers
- Lubrication of bearing races

- **CAB**

- Removable; sound-proofed
- Up-and-over windshield; no blind spots
- Options : cab guard; raised cab

- **OPERATION**

- Hydraulic power controls
- Attachments and swing
- Travel
- Automatic hydraulic braking
- Two, twin-speed windshield wipers, windshield washer, heating and defrosting dome light, cigarette-lighter
- Working lights : on upperstructure
on attachment
- Air conditioning
- Sunshade

- **SAFETY FEATURES**

- Upperstructure swing lock for road travel or transportation
- In the event of engine failure attachment can be grounded
- Safety glass, horn, warning flashing indicators
- Cab guard
- Safety belt
- Control panel featuring :
Engine temperature gauge, hourmeter
- Warning lights :
Oil pressure, belt failure (turbocharger), battery charging, engine temperature, engine oil and air filter clogging indicator.

Characteristics 9

	60	75	90	115	160
.....	4,7 t	6,4 t	8,1 t	10,3 t	12,3 t
.....	opt.mot.w.brake 2020 m.daN	opt.mot.w.brake 3100 m.daN	opt.mot.w.brake 3350 m.daN	opt.mot.w.brake 5280 m.daN	opt.mot.w.brake 6900 m.daN
.....	5,7 rpm	5,3 rpm	6,1 rpm	4,9 rpm	6,2 rpm
.....	centralized	centralized	centralized	centralized	centralized
.....	optional	optional	optional		
.....	2 levers	2 levers	2 levers	2 levers	2 levers
.....	2 pedals	2 pedals	2 pedals	2 pedals	2 pedals
.....	optional	optional	optional	optional	optional
.....	2 x 70 W	2 x 70 W	2 x 70 W	2 x 70 W	2 x 70 W
.....	optional	optional	optional	optional	optional
.....	optional	optional	optional	optional	optional
.....	optional	optional	optional	optional	optional

10 Characteristics

HYDRAULIC CIRCUIT

- Variable flow circuit offering independent and simultaneous operation of all functions
 - Maximum operating pressure
 - Maximum pressure (effort, reduced speed and precision)
 - Flow rate
 - Hydraulic reservoir capacity
 - Total circuit capacity
 - Function selector
- Multibody constant displacement pump with excellent suction characteristics
- Total hydraulic horsepower
- Feedback valve banks for attachment functions
- Forced-air oil cooler on main independent circuit
 - H. P. multispiral hoses min. safety factor 2 to 4 times operating press.
- Double-acting cylinders
- Cylinder thrusts
 - Backhoe attachment } Boom
 - } Dipperstick
 - } Bucket
 - Loader attachment } Boom
 - } Dipperstick
 - } Bucket
- **MOTORS**
 - Low-speed high-torque hydraulic motors with automatic braking
- **SWING JOINT**
 - Self-lubricating

ENGINE

- Number of engines 1 DEUTZ engine
 - Total engine power (SAE) at 2 800 rpm.
 - Diesel 4 stroke
 - Displacement
 - Bore
 - Stroke
 - Cooling
 - Battery starting 2 batteries of 12 volts = 24 volts
- **POWER RATING UNDER POCLAIN CONDITIONS OF UTILISATION :**
 - Rpm
 - HP SAE
 - HP DIN 70020
 - HP DIN 6270 B.
- Service capacities
 - Engine crankcase
 - Fuel tank
 - Average hourly fuel consumption
- Engine/pump unit fitted on rubber shock absorbers
- Heavy duty engine air filter

Characteristics 11

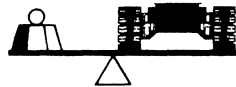
	60	75	90	115	160
.....	320 bar	320 bar	320 bar	320 bar	320 bar
.....	400 bar	400 bar	400 bar	400 bar	400 bar
.....	81 l/min	38 to 152 l/min	47 to 188 l/min	61 to 244 l/min	46 to 276 l/min
.....	100 L	120 L	165 L	220 L	300 L
.....	145 L	180 L	250 L	320 L	400 L
.....	42,9kW(58,3ch)	52,6kW(71,5ch)	66,2kW(90ch)	85,4kW(116ch)	92kW(125ch)
.....	41500 daN	49000 daN	66000 daN	83300 daN	114700 daN
.....	31900 daN	45400 daN	52900 daN	69600 daN	79400 daN
.....	26200 daN	38500 daN	45400 daN	52900 daN	52900 daN
.....	—	49000 daN	66000 daN	83300 daN	114700 daN
.....	—	52500 daN	64000 daN	69600 daN	79400 daN
.....	—	45500 daN	53000 daN	69600 daN	76400 daN
.....	opt.mot.w.brake	opt.mot.w.brake	opt.mot.w.brake	opt.mot.w.brake	opt.mot.w.brake
.....	F4L 912	F5L 912	F6L 912	BF6L 913	BF6L 913
.....	64kW (87ch)	79,5kW (108ch)	95,7kW (130ch)	128,8kW (175ch)	128,8kW (175ch)
.....	2770 cm ³	4710 cm ³	5652 cm ³	6128 cm ³	6128 cm ³
.....	100 mm	100 mm	100 mm	102 mm	102 mm
.....	120 mm	120 mm	120 mm	125 mm	125 mm
.....	air	air	air	air	air
.....	116 A/h	160 A/h	160 A/h	160 A/h	160 A/h
.....	2150 rpm	2150 rpm	2150 rpm	2150 rpm	2300 rpm
.....	51,5kW (70ch)	64,8kW (88ch)	77,3kW (105ch)	110,4kW (150ch)	116,2kW (158ch)
.....	49,3kW (67ch)	61,8kW (84ch)	73,6kW (100ch)	106 kW (144ch)	111,8kW (152ch)
.....	46,4kW (63ch)	58,1kW (79ch)	69,9kW (95ch)	95,7kW (130ch)	104,5kW (142ch)
.....	9 L	12 L	17 L	17 L	17 L
.....	114 L	200 L	230 L	305 L	410 L
.....	10,4 L	13 L	15,6 L	21,3 L	25,4 L
.....	optional	optional	optional	optional	optional

12 Characteristics

CARRIER FRAME

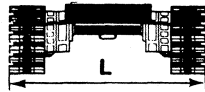
- Structure
tractor-type, all-welded components
- Lifetime greased rollers : Upper roller
Lower roller
- Tractor-type tracks; hydraulic track tensioning; spring-type shock absorber

- **Weight of carrier frame :**



- 0.50 m pads
- 0.60 m pads
- 0.70 m pads
- 0.85 m pads
- 1.10 m box-type pads

- **Width of carrier frame :**



- 0.50 m pads
- 0.60 m pads
- 0.70 m pads
- 0.70 m offset pads
- 0.85 m pads
- 1.10 m box-type pads

- **Ground bearing pressure :**



- 0.50 m pads
- 0.60 m pads
- 0.70 m pads
- 0.85 m pads
- 1.10 m box-type pads

* 60 CL
4,10m-2m-450L

* 75 CL
4,40m-2,10m-620L

* 90 CL
4,80m-2,30m-765L

* 90 CK
3m-2,20m-950L

* 115 CL
5,15 m - 2,50 m - 950 L

* 160 CK
5,70 m - 2,75 m - 1250 L

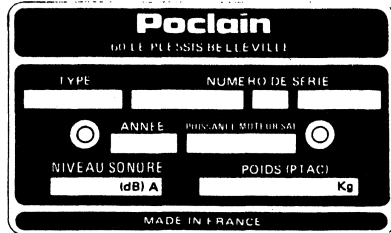
TRAVEL

- Sprocket drive by high torque hydraulic motors
Single stage gear reduction
- Independent crawler drive
Machine can pivot on the spot
- Travel speeds optional
- Braking-type motors
- Gradability temporary
- Gradability continuous
- Tractive effort
- Automatic, hydraulic travel speed limiter prevents downhill runaway

Characteristics 13

	60CL	75CL	90CL	90CK	115CL	160CK
.....	2	2	2	2	2	2
.....	10	12	12	14	14	14
.....	4,7 t	5,4 t	6,7 t	8 t	8,4 t	11,2 t
.....	—	5,6 t	7 t	8,3 t	8,7 t	—
.....	5,2 t	5,9 t	7,3 t	8,6 t	9 t	12,1 t
.....	5,5 t	6,3 t	7,6 t	—	9,4 t	—
.....	—	6,1 t	7,4 t	—	—	—
.....	2,49 m	2,75 m	2,75 m	2,75 m	2,91 m	3,11 m
.....	—	2,85 m	2,85 m	2,85 m	3,01 m	—
.....	2,69 m	2,95 m	2,95 m	2,95 m	3,11 m	3,31 m
.....	2,49 m	2,75 m	2,75 m	—	—	—
.....	2,84 m	3,10 m	3,10 m	—	3,26 m	—
.....	—	3,34 m	3,34 m	—	—	—
.....	0,380 bar	0,320 bar	0,535 bar	0,560 bar	0,630 bar	0,760 bar
.....	—	0,360 bar	0,445 bar	0,475 bar	0,535 bar	—
.....	0,285 bar	0,430 bar	0,395 bar	0,415 bar	0,465 bar	0,555 bar
.....	0,240 bar	0,270 bar	0,330 bar	—	0,390 bar	—
.....	—	0,205 bar	0,255 bar	—	—	—
.....	0 to 1,60 km/h	0 to 2,10 km/h	0 to 2,50 km/h	0 to 2,50 km/h	0 to 5,00 km/h	0 to 4,8 km/h
.....	0 to 3,20 km/h	0 to 4,20 km/h	0 to 5,00 km/h	0 to 5,00 km/h	—	—
.....	optional	optional	optional	optional	optional	optional
.....	69 %	76 %	70 %	65 %	67 %	60 %
.....	51 %	36 %	53 %	53 %	31 %	31 %
.....	7300 daN	10000 daN	11800 daN	11800 daN	15200 daN	18400 daN

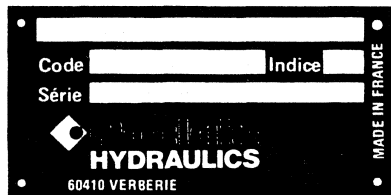
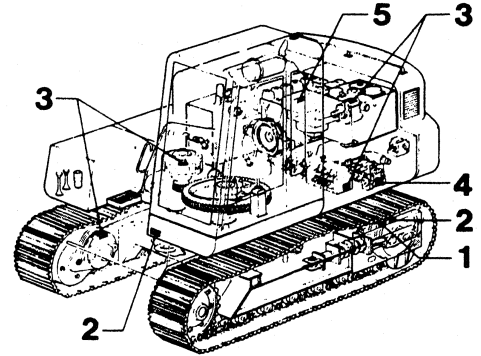
14 Identification



1



2

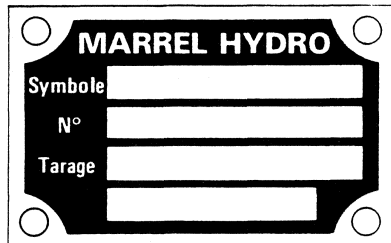


3

Your excavator is assigned a serial number which is stamped in three places :

- The upperstructure
- On manufacturer's plate, on the inside of the side member
- On carrier frame, close to manufacturer's plate

Some components (engine, hydraulic pump, valve banks, hydraulic motors) bear a manufacturer's plate. Please quote the particulars given on the plate including the number of your machine, when servicing one of the above components.



4

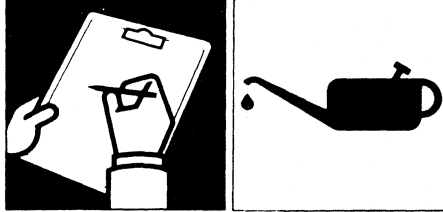
Note : The weight shown on the plate is the maximum authorized weight (Machine + attachments + options, etc.)



5

test

''Test and service''



The "Test and Service" consists of a programme of preventive inspections during which the Poclairn mechanic first carries out an overall examination of the machine, followed by the standard regular maintenance operations, specified in the Poclairn machine maintenance manuals.

An inspection report is provided, indicating which faults have been detected during the examination.

You are perfectly free to use this information as you wish and we never carry out a repair without first having your agreement.

"Test and Service" inspections are charged on a lumpsum basis.

This test system offers you two advantages : the assurance of having your machine examined regularly by a specialized mechanic and your release from the responsibilities imposed by maintenance operations.

Usually, inspections are carried out at 100 hour intervals, i.e., a machine working for a period between 1000 and 1500 hours per annum is inspected 12 times a year. Other frequencies can be considered, depending on your requirements and how the machines are used.

We can also propose a programme consisting of alternance full-scale "Service Test" inspections and inspections covering only machine maintenance.

Thanks to the Poclairn "Test and Service" your machines will always be ready.

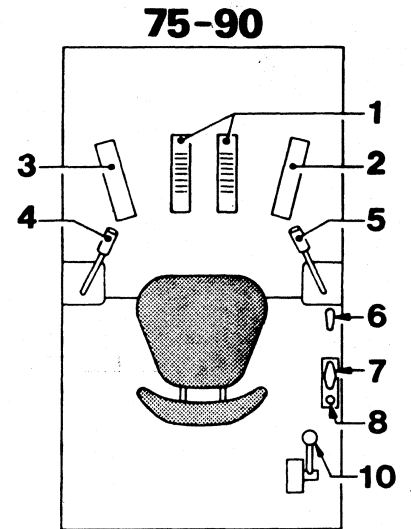
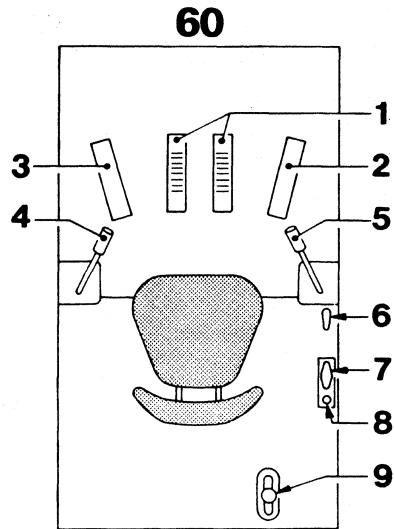
The repairs revealed by the inspection can be included in the visit programme ; this is the "Test and Repair".

The inspection remains very general and it can sometimes be useful to make a more thorough check of the engine or the hydraulic circuit ; specialized inspections are carried out to meet these requirements : "Engine Test" and "Hydraulic Test".

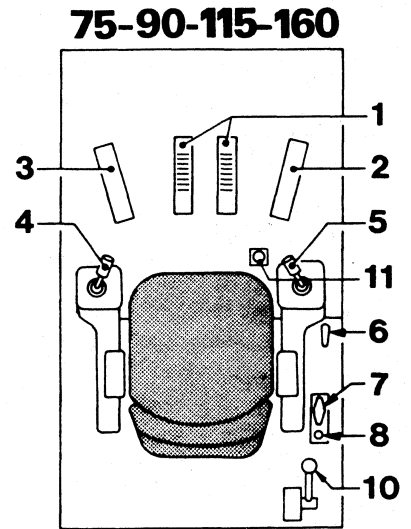
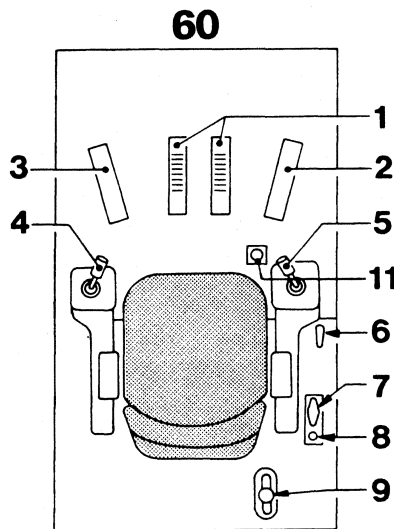
"Test" inspections will always be an opportunity for your staff to become better acquainted with their machine, due to the operating and servicing advice given by the Poclairn specialist.

16 Cab control equipment

MECHANICAL CONTROLS



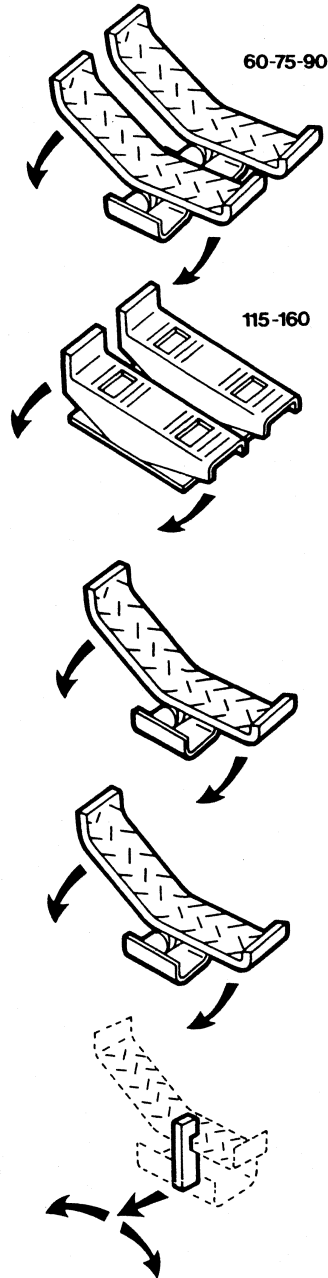
HYDRAULIC CONTROLS



Cab control equipment 17

- 1 – Track drive pedals
- 2 – Clamshell swing pedal (*optional*)
- 3 – Jib cylinder or offset backhoe pedal (*optional*)
- 4 – Dipperstick and swing motion control lever
- 5 – Boom and bucket (or clamshell) control lever
- 6 – Upperstructure locking handle
- 7 – Accelerator lever
- 8 – Stop control
- 9 – Flow selector (*machine 60 only*)
- 10 – Flow selector (*75 - 90 - 115 - 160*)
- 11 – Emergency pump

18 Cab control equipment



1 TRACK DRIVE PEDALS

Toe down : the machine moves forward in a straight line.

Heel down : the machine moves backwards in a straight line.

During forward drive, the hydraulic track drive motors are behind the operator.

Each pedal is independent in relation to the other.

To change direction, either press on only one pedal, or toe down on one pedal and heel down on the other (pivoting on the spot).

2 CLAMSHELL SWING PEDAL

(OPTIONAL)

Toe down to swing the clamshell to the right.

Heel down to swing the clamshell to the left

3 JIB CYLINDER OR OFFSET BACK-HOE PEDAL

(OPTIONAL)

– Jib cylinder

Toe down : the boom draws close to the main boom

Heel down : the boom moves away from the main boom.

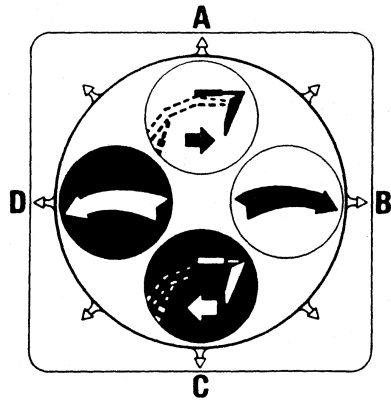
– Offset backhoe

Toe down : the attachment moves to the right

Heel down : the attachment moves to the left

– Locking option pedal

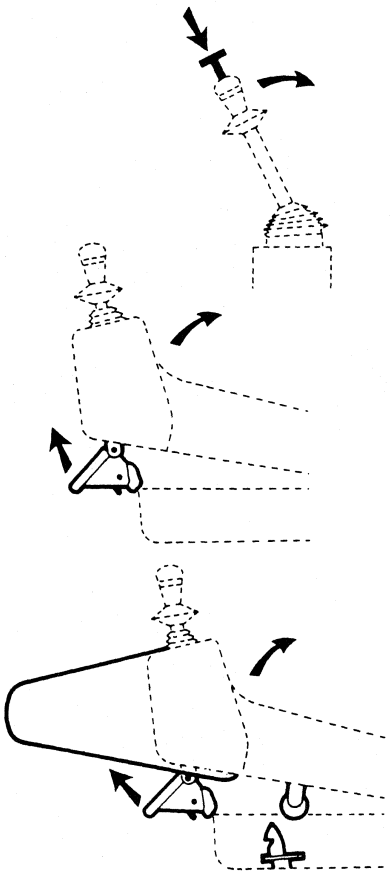
(special to some countries).



4 DIPPERSTICK AND SWING MOTION CONTROL LEVER

- A The dipperstick "extends"
- B The upperstructure turns to the right
- C The dipperstick "retracts"
- D The upperstructure turns to the left

When the lever is in a half-way position, two functions are obtained at the same time. These functions take place more slowly.

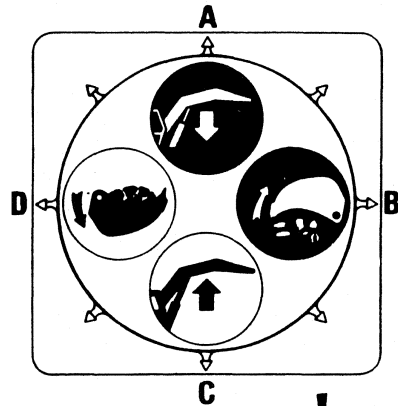


- Mechanically-operated control lever
To enable the operator to pass freely, the dipperstick and swing motion control lever is retractable
Press the button at the tip then tilt the lever backwards

- Hydraulically-operated control lever
To unlock the hinged left arm rest, pull the latch under the arm

- Hydraulically-operated control lever safety device (*special to certain countries*)
When this lever is raised, all manoeuvres with this control are cut, due to an electric contactor which cuts out the pilot circuit.
To re-start, make sure that the appliance is correctly locked.

20 Cab control equipment

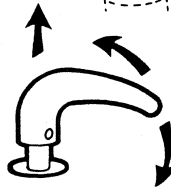


5 BOOM AND BUCKET CONTROL LEVER

- A The boom lowers
- B The bucket (or clamshell) opens
- C The boom rises
- D The bucket (or clamshell) closes.

When the lever is in a half-way position, two functions are obtained at the same time. These functions take place more slowly.

Machines 115 and 160 have a button at the tip of the lever which controls the horn.



6 UPPERSTRUCTURE LOCKING HANDLE

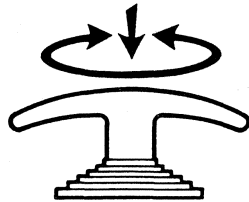
Upperstructure pointing forwards.

Raise the locking handle, rotate it a quarter turn, then release.

Actuate swing lever to facilitate positioning of locking pin

The upperstructure is locked when travelling on the highway.

It is imperative to carry out this manoeuvre, for safety's sake and to comply with the regulations.



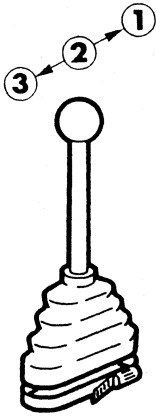
7 ACCELERATOR LEVER

Push handle downwards to increase engine speed and turn handle to lock.



8 STOP CONTROL

To stop the engine, pull upwards; push it back after complete shut-down of engine.



9 FLOW SELECTOR

(machine 60 only)

1 "Track drive" position

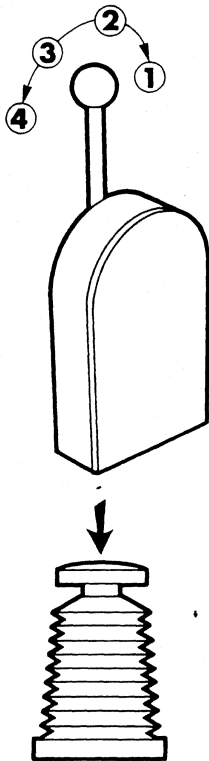
When in this position, the 3 flows are directed towards the track drive function, which increases travel speed.

2 "Work" position

When in this position, the 3 flows are directed towards the attachment, so increasing speed of movements. However, the machine can travel when in this position, but at reduced speed.

3 "Heavy lift" position

This position makes for highly accurate movements and higher attachment force. However, the machine can travel when in this position, but at reduced speed.



10 FLOW SELECTOR

(75 - 90 - 115 - 160)

1 Flow cutout position

When in this position, the speed of the attachment is reduced.

2 Work position

When in this position, the 4 flows are directed towards the attachment, so increasing speed of movements. However, the machine can travel when in this position, but at reduced speed.

3 Track drive position, 1st speed.

When in this position, the machine can travel as indicated on page 12

4 Track drive position, 2nd speed

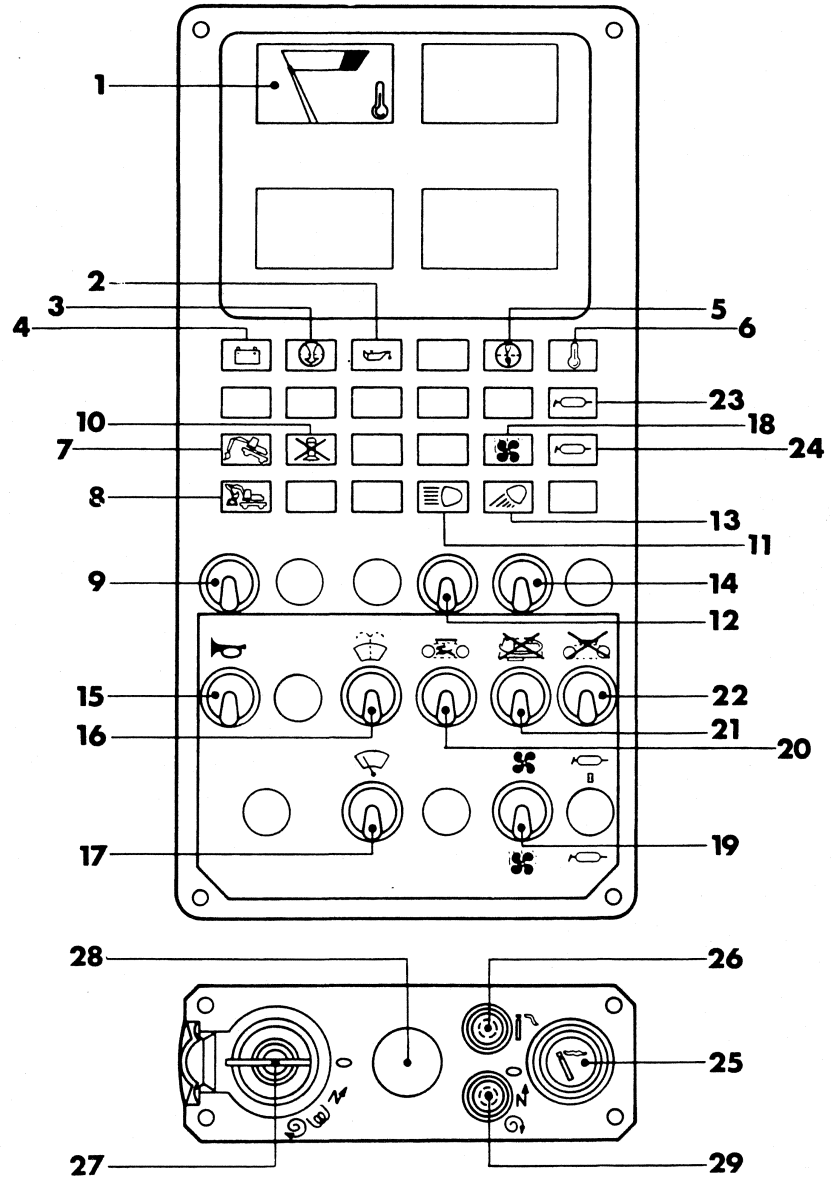
(optional)

When in this position, the machine can travel as indicated on page 12

11 EMERGENCY PUMP

In the event of engine failure, actuate attachment levers 4 and 5 and operate emergency pump to lower the attachments to the ground. This can be used to release pressure. Special to machines with hydraulic controls.

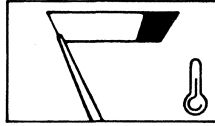
22 Control panel



Control panel 23

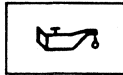
- 1 – Engine temperature indicator
- 2 – Engine oil pressure warning light
- 3 – Air filter clogging warning light
- 4 – Battery charging warning light
- 5 – Oil filter clogging warning light
- 6 – Belt failure warning light
- 7 – Heavy lift function warning light (*does not operate on machine 60*)
- 8 – Heavy lift function warning light (*does not operate on machine 60*)
- 9 – Heavy lift function control (*does not operate on machine 60*)
- 10 – Pilot pressure warning light (*special to certain countries*)
- 11 – Upperstructure working light warning light (*optional on machines 60 - 75 - 90*)
- 12 – Upperstructure working light control (*optional on machines 60 - 75 - 90*)
- 13 – Attachment working light warning light
- 14 – Attachment working light control
- 15 – Horn control
- 16 – Windshield washer control
- 17 – Windshield wiper control
- 18 – Heating and ventilation warning light (*optional*)
- 19 – Heating and ventilation control (*optional*)
- 20 – Track drive speed control (*machine 60 only*) (*optional*)
- 21 – Swing brake control (*optional*)
- 22 – Track drive brake control (*optional*)
- 23 – Dummy warning light
- 24 – Dummy warning light
- 25 – Cigarette-lighter
- 26 – Cigarette-lighter fuse
- 27 – Ignition and startup switch
- 28 – Preheating warning light (*machines 115 - 160 only*)
- 29 – Starter fuse

24 Control panel



1 ENGINE TEMPERATURE INDICATOR

If the pointer enters the red area **shut down the engine IMMEDIATELY** and find the cause of the fault, using the troubleshooting table.



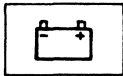
2 ENGINE OIL PRESSURE WARNING LIGHT

The warning light comes on when the engine oil pressure is too low. When this happens, **shut down the engine IMMEDIATELY** and find the cause of the fault, using the troubleshooting table.



3 AIR FILTER CLOGGING WARNING LIGHT

The warning light comes on when the cartridges must be cleaned or replaced. See "Air Filter" chapter.



4 BATTERY CHARGING WARNING LIGHT

During normal operation, this warning light should be out, which shows that the batteries are charged.

It comes on when contact is made without starting the engine.

When operating, if the warning light comes on this shows that the alternator belt is broken.

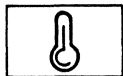
Shut down the engine IMMEDIATELY and replace the belt (*see page 70*).



5 OIL FILTER CLOGGING WARNING LIGHT

When the warning light comes on, the hydraulic oil filter (s) is (are) clogged. Replace them (*see page 60*).

Remark : When cold or during some sharp manoeuvres, the warning light may flicker.



6 BELT FAILURE WARNING LIGHT

When this warning light comes on, this shows that the cooling turbine belt is broken.

Shut down the engine IMMEDIATELY and replace the belt (*see page 48*).

Control panel 25

7. 8. 9 HEAVY LIFT FUNCTION WARNING LIGHTS AND CONTROL

(Does not operate on machine 60)



- 1 Normal "work position"
- 2 Heavy "lift position". This position makes for more accurate movements and especially greater attachment force. When the switch is in position 2 both warning lights come on.

10 PILOT PRESSURE WARNING LIGHT

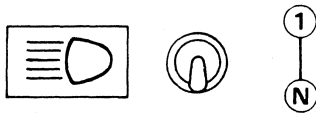
(special to certain countries)



The warning light comes on when the pilot pressure is too low. When this happens, check the pilot circuit.

11. 12. UPPERSTRUCTURE WORKING LIGHT WARNING LIGHT AND CON- TROL

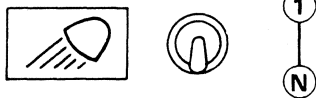
(optional on machines 60 - 75 - 90)



- N Neutral
 - 1 Lighting
- The warning light comes on when the control is in position 1

13. 14. ATTACHMENT WORKING LIGHT WARNING LIGHT AND CONTROL

- N Neutral
 - 1 Lighting
- The warning light comes on when the control is in position 1



15 HORN CONTROL

- This control operates temporarily.
- 1 Horn
- Release to stop operation.



26 Control panel



16 WINDSHIELD WASHER CONTROL

This control operates temporarily
1 Windshield washer
 Release to stop operation.



17 WINDSHIELD WIPER CONTROL

N Neutral **1** 1st speed **2** 2nd speed



18. 19 HEATING AND VENTILATION WARNING LIGHT AND CONTROL (OPTIONAL)

N Neutral **1** Ventilation (*only if option is installed*)

2 Heating

The warning light is on when the control is in position **2**

It goes out when the control is returned to neutral position.

OPTION : Independent heater (*see page 34*)



20 TRACK DRIVE SPEED CONTROL

(*optional*) (*machine 60 only*)

1 Slow speed **2** Fast speed



21 SWING BRAKE CONTROL

(*OPTIONAL*)

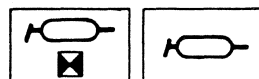
1 Braking **2** Brake release



22 TRACK DRIVE BRAKE CONTROL

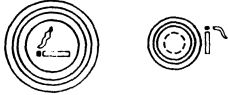
(*OPTIONAL*)

1 Braking **2** Brake release

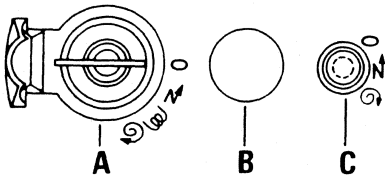


23. 24 DUMMY WARNING LIGHTS

Control panel 27



25. 26 CIGARETTE-LIGHTER – FUSE



27. 28. 29 STARTER – FUSE

- A : Ignition and startup switch
- B : Preheating warning light
(*machines 115 - 160 only*)
- C : Starter fuse

Positions of switch

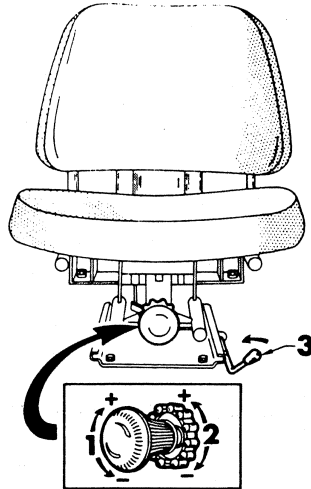
○ General shutdown

⚡ Ignition

⊞ Preheating (*machines 115 - 160 only*)

⊞ Startup

28 Seat



ADJUSTMENT IN ACCORDANCE WITH WEIGHT OF OPERATOR

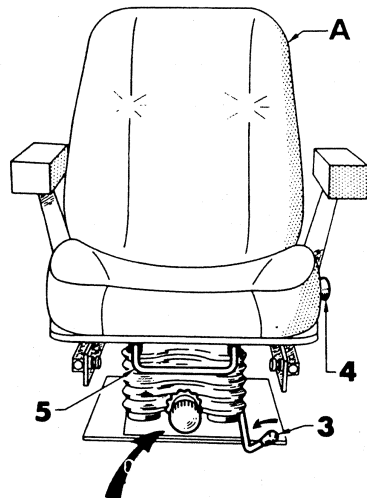
Adjust seat suspension, using handle 1.

ADJUSTING HEIGHT

Turn handle 2 to increase or reduce height of seating.

ADJUSTING DISTANCE (FORWARDS OR BACKWARDS)

Raise handle 3 and choose desired position.



ADJUSTMENT IN ACCORDANCE WITH WEIGHT OF OPERATOR

Adjust seat suspension, using handle 1. To achieve correct adjustment, the indicator A must be flush with the guide, with the operator seated.

ADJUSTING HEIGHT

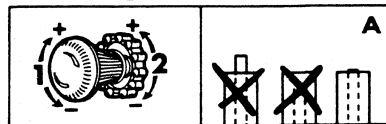
Turn handle 2 to increase or reduce height of seating.

ADJUSTING DISTANCE (FORWARDS OR BACKWARDS)

Raise handle 3 and choose desired position.

ADJUSTING BACKREST INCLINE

Raise lever 4, place backrest in selected angle, then release the lever.



ADJUSTING SEAT CUSHION

To raise the front, pull catch 5 upwards and raise seat cushion.

Release catch at desired level.

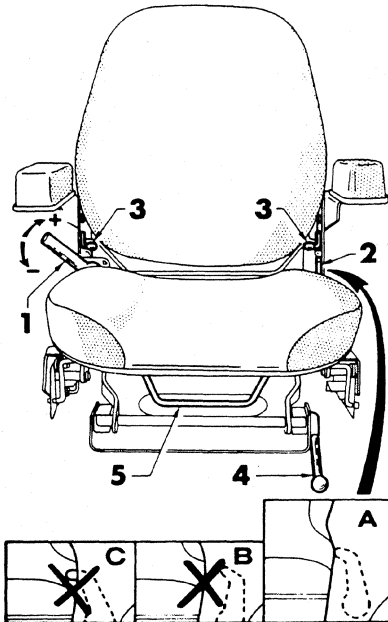
Seat 29

ADJUSTMENT IN ACCORDANCE WITH WEIGHT OF OPERATOR

Sit down and look at the position of indicator 2. If the seat is placed correctly, the indicator lug should be flush with the edge of the frame **A**.

If the lug is behind the edge of the frame **fig. B**, actuate the adjusting lever 1 with the mark + above until the indicator lug is flush with the seat edge.

If the lug is in front of the frame **fig. C**, actuate the adjusting lever 1 with the sign - above, then actuate this lever until the correct position is obtained, with the operator seated.



ADJUSTING BACKREST INCLINE

Sit well back against the backrest
Press one or other of the two levers 3, place the backrest in one of the three incline angles and release the lever.

ADJUSTING DISTANCE (FORWARDS OR BACKWARDS)

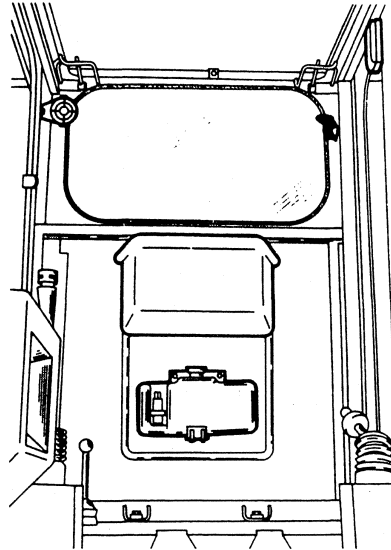
Push lever 4 inwards and slide the seat until the desired position is obtained, then release the lever.

ADJUSTING SEAT CUSHION

To raise the front, pull catch 5 upwards and raise seat cushion. Release catch at desired level. There are four positions.

To raise or lower the rear part of the cushion, push it fully back and engage it in one of the three notches provided for this purpose.

30 Cab



CAB LIGHTING

(5 W bulb)

COAT HOOK

GLOVE COMPARTMENT

CAB VENTILATOR

(OPTIONAL)

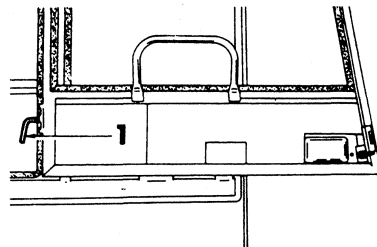
Control 19 on control panel.

WINDSHIELD-WASHER TANK

Located behind the operator's seat, under the glove compartment.

This tank contains about 3 litres and is fitted with an electric pump operated from the control panel (ref. 16)

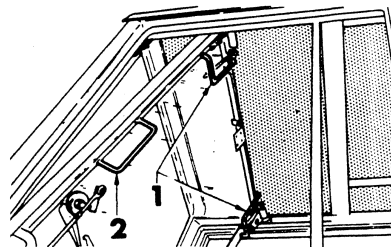
Note : During cold weather, add anti-freeze to the windshield-washer water.



CAB DOOR

The door can be kept open by means of a locking device.

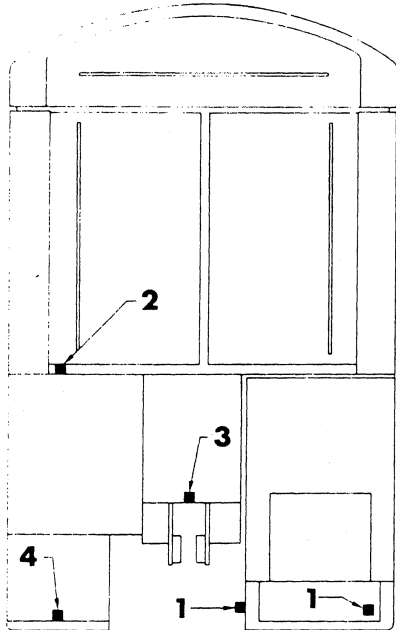
To unlock, pull lever 1



OPENING WINDSHIELD

Important : the windshield wiper blades must be positioned horizontally before raising the windshield.

– Pull handles 1 towards each other and slide windshield upwards until it locks, using handles 2.

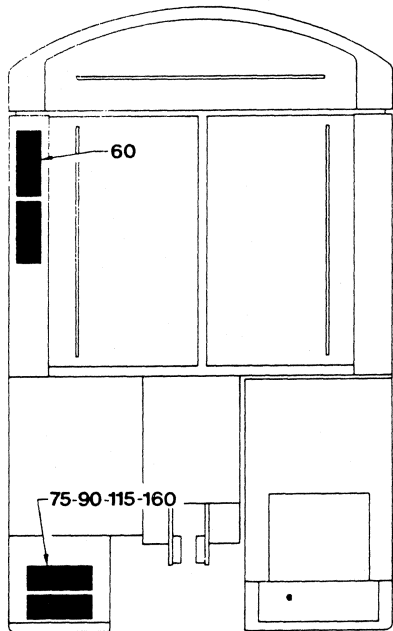


POWER-LINE CONNECTIONS

Power-line connection 1, which is fixed on the outside of the cab, to the right (60, 75, 90, 115), or under the cab floor (160), can be used for connecting an inspection light or any other 24 volt electrical appliance.

There is a second power-line connection for the attachment lights ; its position varies according to the machine.

- 60 - 75 ref. 2, beneath the upperstructure, at the front, on the right-hand side.
- 90 - 160 ref. 3, between the attachment feed pipes
- 115 ref. 4, beneath the upperstructure, at the front, on the right-hand side.



BATTERIES

Each machine is equipped with two 12-volt series-connected batteries. The capacity of each battery is as follows :

- 116 A/h on machine 60
- 160 A/h on machines 75, 90, 115, 160

STARTING UP WITH A SPARE BATTERY

First make sure that the spare battery has the same voltage as the original battery.

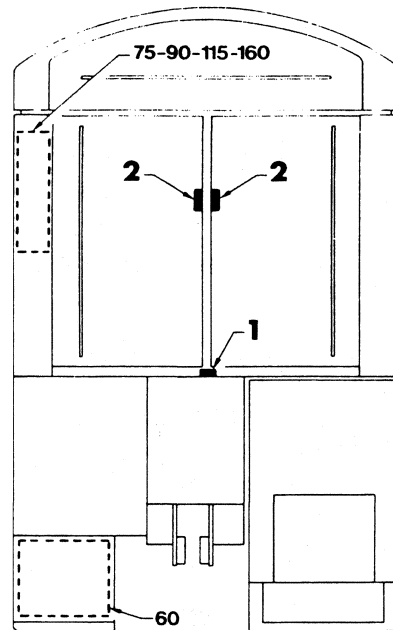
Connect the spare battery to the original battery, + to + and - to -.

After starting the engine, remove the spare battery but never disconnect the original battery.

Precautions to be taken :

Do not invert the battery terminals
Carry out these operations well away from any source of heat (cigarettes, naked light, etc.) which could cause an explosion.

32 Other components



TOOL BOX

60

Located at front of upperstructure, on right-hand side.

75 - 90 - 115 - 160

Located on right-hand side of upperstructure.

ENGINE COMPARTMENT LIGHTING

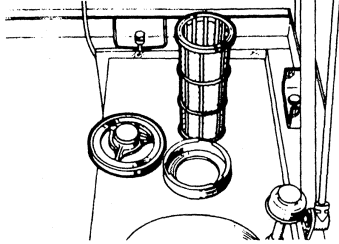
(special to certain countries)

The lighting, which is located under the cowlings, is controlled by a switch built into the bulb support.

60 Ref. 1

75 - 90 - 115 Ref. 2

(not mounted on machine 160)

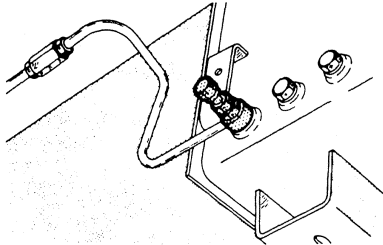


FUEL TANK

Located under the upperstructure right-hand cover
When filling, do not remove the filter. Remove the filter from time to time and clean in fuel.

Capacity of tank :

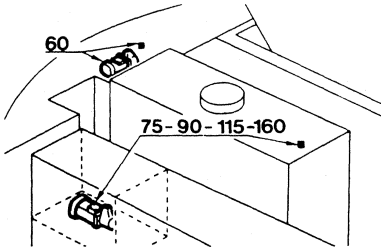
60 : 114 L 90 : 230 L 160 : 410 L
75 : 200 L 115 : 305 L



HEATER FEED SHUTOFF

(OPTIONAL)

This is located at the base of the fuel tank, and enables the heating feed circuit to be opened or closed.



FUEL FILLER PUMP

(OPTIONAL)

This pump is located near the fuel tank, and is used only for filling with fuel.

Operation :

- Switch on (control panel)
- Install the suction and delivery pipes and actuate the switch.

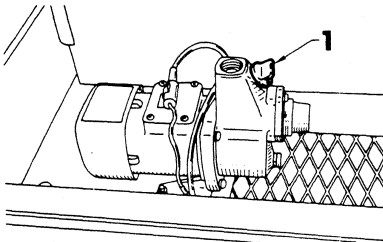
REMARKS :

Never operate the pump when empty.

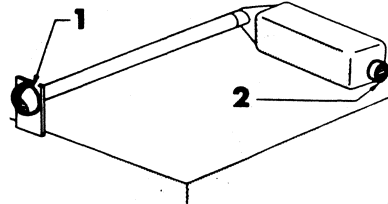
Check that the pump contains fuel (plug 1)

If not, install the suction pipe, remove plug 1, then fill the pump. Remount the plug.

If this filling operation is not carried out, the suction pipe cannot be primed.



34 Independent heating



HEATER (OPTIONAL)

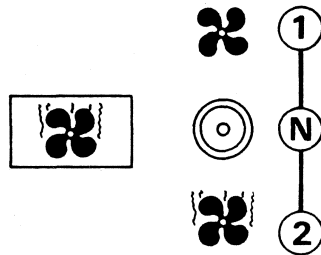
The heater can work independently of the engine. There is a swivel pipe 1 to the right of the seat, for varying the position of the hot air outlet. Never block up suction port 2.

REMARKS

The year when the heater is first used must be shown clearly and permanently on the manufacturer's plate. The heat exchanger can be used for ten years and after this time has expired, it must be replaced by an authorized distributor.

TECHNICAL CHARACTERISTICS

- Heating capacity 1700 Watts \pm 10 %
- Fuel fuel oil
- Fuel consumption 0.21 L/h \pm 5 %
- Electricity consumption 40 Watts
- Voltage 24 V



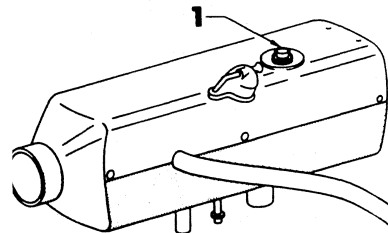
OPERATION

When the control is in position 2, the warning light comes on, and the heater operates. To stop the heater, put control in position N, the warning light goes out, however, the blower motor continues running until the heater has cooled.

OPERATING FAILURES

When started up, the turbine remains silent :
Check the 25 Amp. fuse on the control panel.
After starting, the turbine runs for only about three minutes, heating does not start and has stopped automatically :

- a) Start heating after quickly shutting down and starting up (not more than twice)
- b) Press overheating switch button 1
If the heating still does not start, have the failure put right by your Poclair distributor.



MAINTENANCE

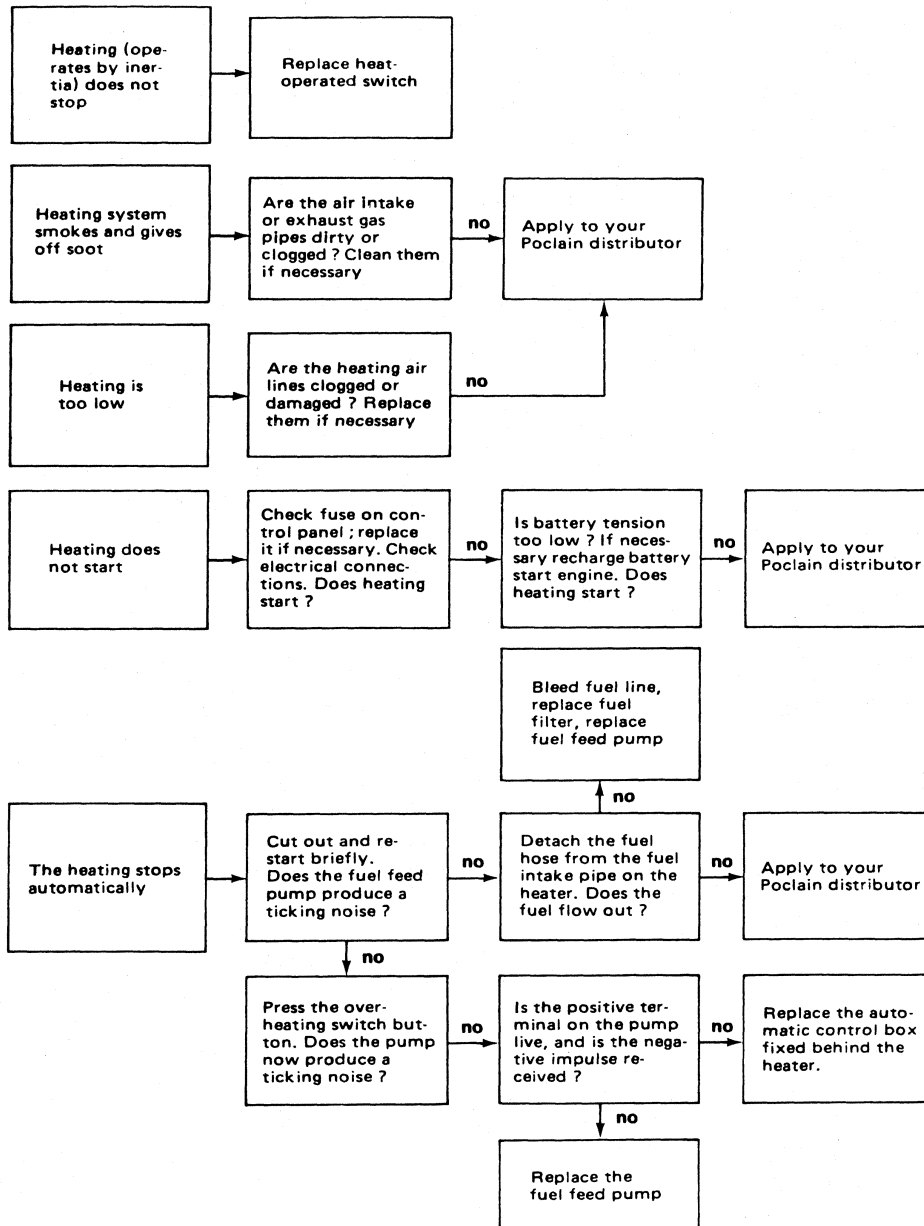
When not used regularly, operate the heater for a short time at least once a month.

When refuelling, the heating must always be shut down.

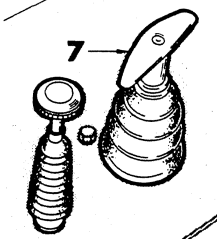
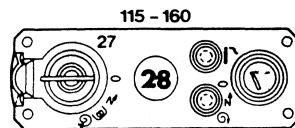
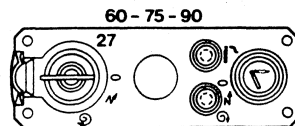
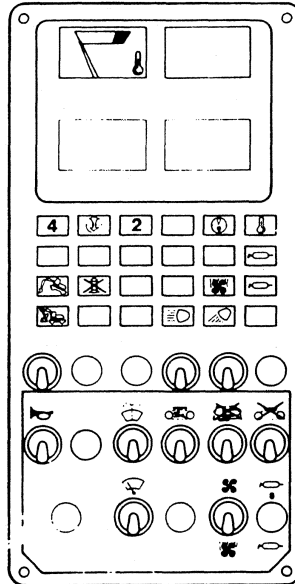
When the machine is not used, the heater must be shut down.

Independent heating 35

TROUBLESHOOTING TABLE



36 Starting and stopping engine



STARTING ENGINE

- Push accelerator lever 7 a quarter of its stroke
- Turn ignition key 27 up to position "N"
- Warning lights 2 and 4 come on
- Drive in ignition key and turn it up to position "R" and release it as soon as the engine is running
- In the case of an engine equipped with a pre-heater (115 - 160) maintain ignition key in position "R" wait for warning light 28 to come on, drive in then turn key in position "R" and release it as soon as the engine is running
- As soon as the engine is running satisfactorily, reduce its speed.
- Warning lights 2, 4 and 28 are out.

With a low load, by alternatively increasing and reducing the speed, the engine will quickly reach its normal temperature.

If white smoke is given off at exhaust, reheat for a short period.

Turn ignition key and keep it in position "R", with the engine running at very low idling speed.

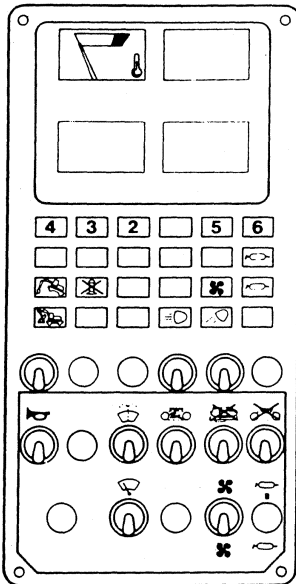
STARTING IN COLD WEATHER

Before starting, preheat for at least 2 minutes. After starting, allow the engine to run for 5 minutes without operating the excavator.

PRECAUTIONS FOR USE

- Do not actuate the starter for more than 5 consecutive seconds.
- When attempting to start the engine, wait for 1 minute before trying again.
- Do not actuate the starter with the engine running.

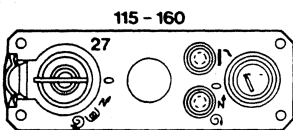
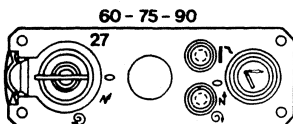
Starting and stopping engine 37



ENGINE RUNNING

During cold weather, warning light 5 on the control panel comes on. Actuate the bucket to heat the oil until the warning light goes out.

- As far as possible, work with the engine running at full speed
- Watch the control panel; if one of the warning lights 2, 3, 4, 5 or 6 comes on **shut down the engine IMMEDIATELY**. Find the cause of the failure and put it right in accordance with the troubleshooting table.

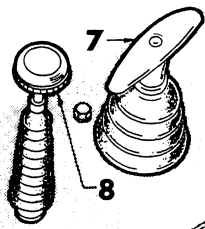


STOPPING THE ENGINE

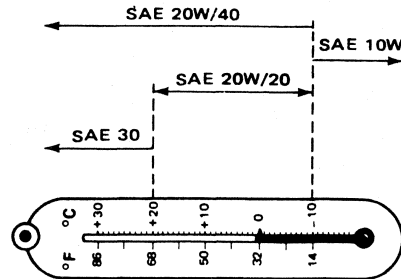
Do not stop the engine suddenly when it is running at full load, but allow it to run some time with no load so that the temperature can equalize.

Procedure :

- Lower the attachment on the ground
- Turn accelerator lever 7 to slow idling position
- Allow the engine to run 4 to 5 minutes
- Actuate stop lever 8 until the engine shuts down completely
- Warning lights 2 and 4 come on
- Turn ignition key 27 to position "0"
- The warning lights go out
- Push stop lever 8 then remove ignition key



38 Practical hints



HINTS ON OPERATING MACHINE IN WINTER

CHOICE OF OIL

The degree of viscosity of the oil to be used depends on the outside temperature at the time when the engine is started, and not on the temperature expected during the day.

Refer to the table to the left.

Temperature (° C)	Fuel (L)	Anti-freeze (L)
0° - -15°	100	0,1
- 20°	100	0,2
- 25°	100	0,3

CHOICE OF FUEL

To prevent the filters from clogging, due to the formation of paraffin crystals, pour an additive in the fuel.

It is advisable to pour additive before the crystals form (-20° C).

Refer to the table to the left to have the right proportions in accordance with the temperature. Fill the fuel tank after the day's work is over, to prevent condensation from forming.

OTHER RECOMMENDATIONS

- Every day drain off the decantation sediment at the bottom of the fuel tank.
- Make sure that the batteries are always well charged.
- Apply grease to the starter pinion when the surrounding temperature is less than -20° C. This operation should be carried out from time to time, using a grease resistant to cold.

HINTS ON THE USE OF ATTACHMENTS

- Use progressivity of controls to prevent all fierce movements.
- Rest the attachment on the ground during short stops with the engine running.
- With loader mounting, retract attachment, close bucket fully and lay it on the ground.
- With backhoe and clam mounting, extend the attachment in the machine centreline, anchor the bucket in the ground or open the clam and swing it so that it is perpendicular to the attachment.
- Never leave the bucket or clam in digging position in the trench or any excavation, *which might cave in accidentally*.
- Under no circumstance must be attachment be swept along the ground to spread out spoil or push objects (*transversal stresses on attachment*).

40 Safety

The safety provisions applicable to individual or public contracts, regardless of job site location and working conditions, are those which comply with safety regulations prevailing in the country and in the field.

The material contained in this chapter is a summary of basic rules to be observed at all times and does not free the user from the obligation to abide by the legal provisions outlined above

WHEN WORKING

THE OPERATOR MUST :

- Request all site personnel to keep clear of the machine attachment and counterweight sweeping area.
- Be alert and keep watch over the machine surrounding area : digging face, ground stability, truck locations and nearby obstructions.
- Require the assistance of a signalman if the operator cannot see the end of the attachment
- Request the truck drivers to leave their cab while loading, regardless of whether the cabs are provided with roof guards.
- Whenever practicable, site the machine on level ground suitably prepared and far enough from the excavation banks.
- If working on a slope :
 - Work with the attachment pointing downgrade
- SIGNAL the limits of the machine working area on public property job sites.

LOADING THE MACHINE ON A LOW-BED TRAILER OR RAILWAY CAR

- Align the machine opposite the tailgate ramps
- Double up attachment
- Engage machine on tailgate ramps
- Once the machine is on the platform, swing upperstructure so that it points rearwards and lower attachment
- Loader attachment : lay down bucket (or not) depending on length of platform and trailer
- Backhoe attachment : fold dipperstick and bucket
- Mount upperstructure lock bar
- Moor the machine

UNLOADING

- Remove moorings and upperstructure lock bar
- Start up engine
- Raise attachment and swing upperstructure so that it points forward.

- Manoeuvre slowly when descending whilst lowering attachment.

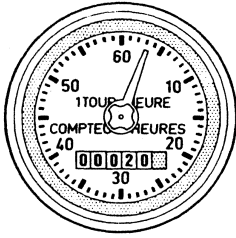
TRAVELLING

- Do not attempt to drive the machine with the boom removed
 - Mount upperstructure lock bars
- Ensure that visibility is unimpaired :
- If necessary, remove part of the attachment
 - Brake swing motion (*if mounted*)
 - Require a signalman's assistance to negotiate hazardous or tricky spots
 - Do not drive on slopes exceeding 60 %
 - Drive down steep gradients with engine at full throttle

WHEN WAITING

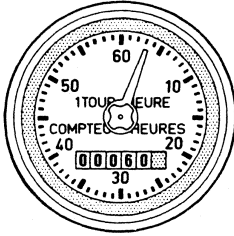
- Park the machine on a firm level supporting surface, away from any unstable ground area or inadequately shored up excavation
 - Apply the swing motor brake *depending on mounting*
 - Align the attachment with the centerline of machine, retract the cylinder rods fully and dig the bucket or clam teeth in the ground.
 - Shut down the engine
 - Relieve the pressure in the hydraulic system
 - Be sure all cowling panels and covers are locked
 - Lock the cab door
- On public property job sites
- Make certain that every part of the machine stands clear of the carriage-way
 - When this cannot be avoided, provide for approved traffic signalling equipment.

During the running-in period, the following maintenance operations should be carried out more frequently :



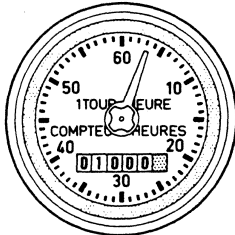
AT 20 METERED HOURS

- Engine crankcase oil change
- Rocker arm adjustment
- Alternator belt



AT 60 METERED HOURS

- Engine crankcase oil change
- Rocker arm adjustment
- Replacement of oil filter cartridge
- Checking inflation pressure of hydro-pneumatic accumulator



AT 1000 METERED HOURS

- Oil change of entire hydraulic circuit

42 Maintenance intervals

MAINTENANCE OPERATIONS ARE ESSENTIAL

The frequencies indicated are based on the assumption that the machine works 10 hours per day, 50 hours per week and 2000 hours per year.

Carry out the servicing required by consulting the hourmeter every day.

The hourmeter of your machine, located on the side control panel, enables you to determine when servicing operations should be carried out.

Its electric control is connected to the engine oil pressure circuit.

It accumulates hours exactly like a clock when the engine is running.

To carry out maintenance operations, swing the upperstructure across the carrier frame.

When carrying out these servicing operations, tighten nuts, bolts, etc. where required.

			10 h	50 h	100 h	200 h	1000 h	2000 h
LEVEL		Page						
Engine oil	47		●					
Hydraulic fluid	59		○					
Track drive reduction gears	65					◆		
Batteries	69				●			
LUBRICATION								
Swing gear	68			▲				
Swing gear teeth	68			■				
Horn compressor	68				●			
Engine-pump coupling (machine 115 only).	68					▲		
Attachments.	72		▲					
DRAINAGE								
Engine oil	47					●		
Complete hydraulic circuit	62							○
Track drive reduction gears	65							◆
OTHER MAINTENANCE OPERATIONS								
Replacement of engine oil filter	47					●		
Cleaning cooling fins	48				●			
Adjusting rocker arm play	49					●		
Replacing fuel filter	50					●		
Cleaning feed pump filter	50				●			
Injectors	52						●	
Injection pump	52							●
Cleaning air filter dust bowl.	53-55		●					
Hydraulic fluid tank suction filter.	60					●		

OTHER MAINTENANCE OPERATIONS

		10 h	50 h	100 h	200 h	1000 h	2000 h
Breather plug filter	60					●	
Belt tension	61 - 70			●			
Hydraulic cooler	62			●			
Hydropneumatic accumulator	62					●	
Track tension	65			●			
Batteries	69				●		
Starter - Temperature gauge.	69					●	
Alternator	70					●	

44 Ingredients



Poclain
hydraulic excavators

MANUFACTURER'S RECOMMENDATIONS

- ELF PERFORMANCE 2B or 3C SAE 10W, SAE 20W/20, SAE 30 SAE 20W/40
Depending on ambient temperature
- ◆ TRANSELF EP 80 W 90
- ▲ POCLAIN GREASE EP
- POCLAIN GEAR MS 2 FLUID
- POCLAIN HYDRAULIC FLUID

LUBRICANTS

Specifications of lubricants in use must comply with application requirements.

HYDRAULIC FLUID

The Poclain Hydraulic Fluid is especially designed for high pressure applications and use in hydraulic systems of our Brand.

J 00 032 - 28 hydraulic fluid (25 kg drum)
J 00 032 - 05 hydraulic fluid (50 kg drum)
G 00 032 - 03 hydraulic fluid (190 kg drum)

Note : For operation at temperatures below - 30° C (-21° F) use POCLAIN special HYDRAULIC FLUID "Extreme cold".

Any claim on the warranty applicable to all our excavators is subject to the exclusive use of the POCLAIN HYDRAULIC FLUID with which the machines are provided when leaving the factory.

ENGINE OIL

The SAE number varies, depending on the components involved, and climatic and seasonal conditions.
Above 20° C SAE 30
Between - 10 and 20° C . . . SAE 20W/20

DEUTZ FL912 - FL 413 engine
Use ELF PERFORMANCE 2B/SAE 20W/20 or SAE 30 oil or ELF MULTI-PERFORMANCE 2B/SAE 20W/40 at all seasons.

DEUTZ BFL 912 - 913 - 413 - BFL 413 F engine
Use ELF PERFORMANCE 3C SAE 20W/20 or 30 or ELF MULTIPERFORMANCE 3C SAE 20W/40 at all seasons.

EP, OIL

Extreme pressure oil is utilized for fully enclosed transmission gears.
Use TRANSELF EP 80 W 90

AUTOMOTIVE GENERAL PURPOSE GREASE

This grease is utilized for all bearings, ball or roller bearings and bushing.
Use POCLAIN GREASE EP
K 00 032 - 29 Cartridge

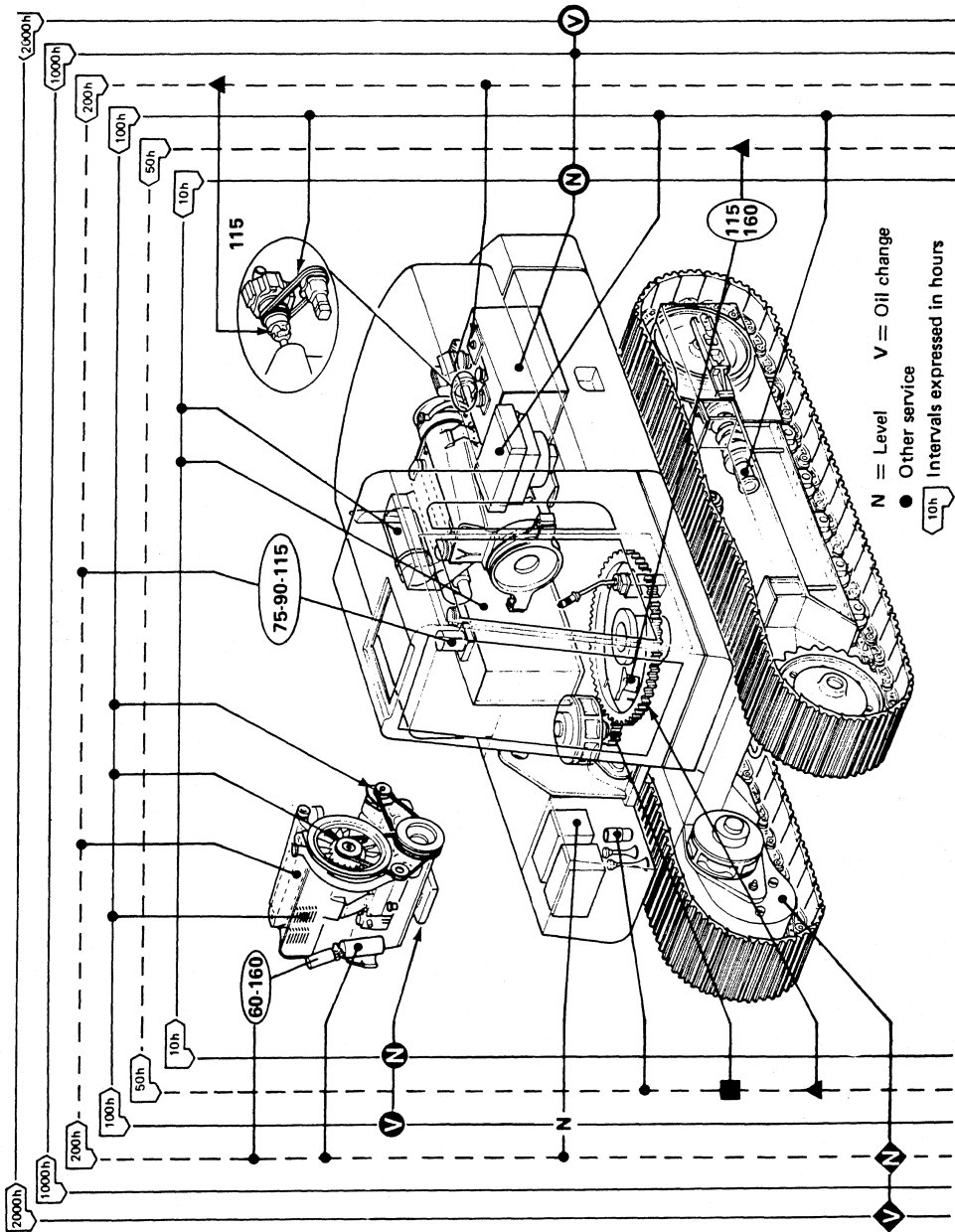
FLUID GREASE FOR EXPOSED BEARINGS

In addition to the usual protective properties, this grease protects and lubricates the non-protected gears.
Use POCLAIN GEAR MS 2 grease.
G 00 032 - 26 Aerosol can
T 00 032 - 14 2 l can

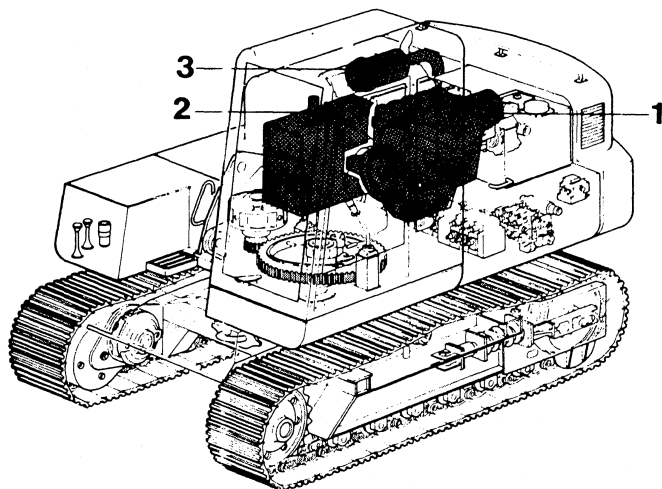
CLEANLINESS IN SERVICE OPERATIONS

- When handling lubricant products use clean suitable containers, covered or closed
- Always clean filler caps, spouts and orifices before refilling
- Always clean the grease fittings before lubricating
- Avoid undesirable entry of dust and sludge in the hydraulic system components.

Maintenance table 45



46 Engine



1 - ENGINE

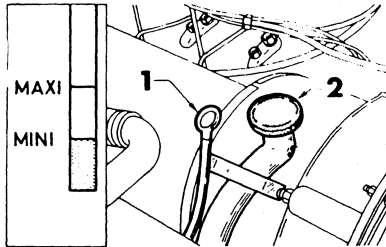
Oil filter
Turbine belts

2 - FEED SYSTEM

Fuel tank
Fuel filters
Fuel circuit

3 - AIR FILTER

Engine 47

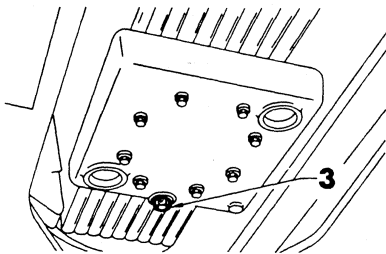


LEVEL CHECK

This check is to be carried out every day or every 10 working hours, with the engine shut down and the machine well horizontal.

Extract the oil gauge 1, wipe it with a dry rag, introduce it into the guide tube as far as it will go then take it out once again.

The level should reach the MAXI mark.
If not, top up through port 2.



DRAINING

Drain the oil every 100 hours

The oil is drained through bleed plug 3 under the engine crankcase. Drain the oil when the engine is still warm ; the oil flows more easily.

Fill up through port 2.

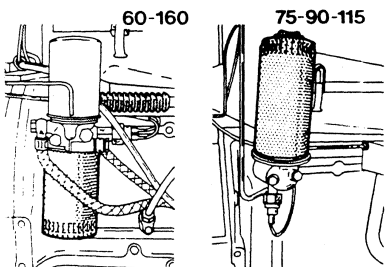
Total capacity (*with replacement of filter*).

60 : 9 L 75 : 12 L

90 - 115 - 160 : 17 L

The right level is that shown by the marks on the gauge.

OIL FILTER



REPLACEMENT

The oil filter must be replaced every 200 hours.

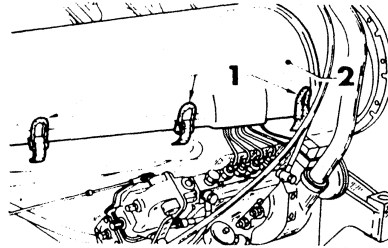
Using the appropriate tool (*strap-type wrench*) or a drift, loosen the filter and unscrew it by hand.

Before installing the new filter, moisten the rubber seal with oil.

Screw the filter by hand until the seal bears well, then tighten by another half-turn.

Start up the engine and check that there are no leaks.

48 Engine

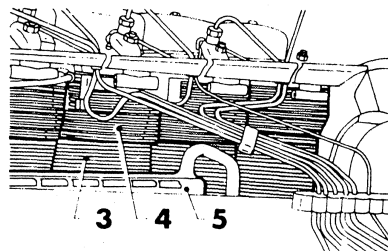


ENGINE COOLING BLADES

IMPORTANT

A crust of dust and oil, caked hard by heat from the engine, coating the cylinder and head assembly cooling blades, will considerably reduce the overall efficiency of the engine cooling system.

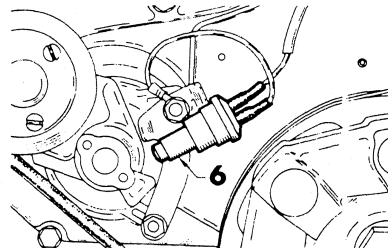
When operating under very dusty or sticky soil conditions, the engine cooling blades must necessarily be cleaned more frequently.



CLEANING

To be done every 100 hours

- Snap down clamps 1 and remove shroud 2
- Clean the cooling blades of the cylinder 3, heads 4 and oil cooler 5
- Use a steel wire to loosen the caked dirt and apply compressed air
- After cleaning the blades in fuel oil, rinse them liberally with a soda-type detergent and run the engine for a few moments to allow the water to steam off.

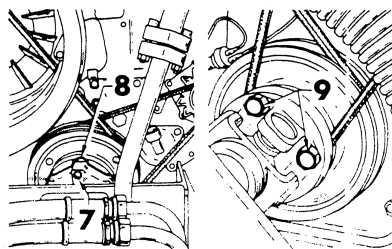


TURBINE DRIVE BELT

In the event of belt failure, the tension roller causes warning light 6 on control panel to come on, by means of the contactor.

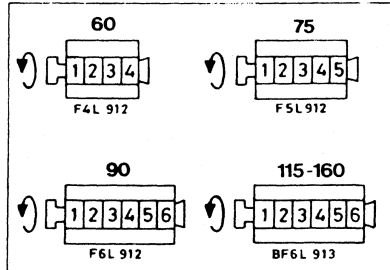
CHECK

- Engine shut down
- Battery shut off in "contact" position
- Maintain contactor 6 in "pushed", using shim
- Warning light 6 on control panel should come on, if not, check bulb and circuit.



REPLACEMENT

- If elastic coupling is mounted :
- Remove the four securing screws 7
- Remove the four spacers 8
- Disengage compressor belt
- If universal-joint coupling is mounted : remove the four securing screws 9, and pull the universal joint to disengage the pulley
- Remount in reverse order.



ENGINE ROCKER ARMS

Check to be made every 200 hours

Always check the rocker arm play with the engine cold
(Engine stationary for at least 7 hours)

CHECKING PLAY 60 - 90 - 115 - 160

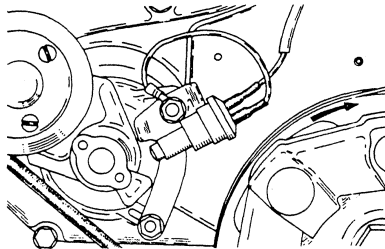
Remove cylinder head covers :

- Crank engine in normal direction of rotation so that both valves of the same cylinder balance.

F4L 912		F6L 912 - BF6L 913	
CYLINDER VALVES			
in balance	to be adjusted	in balance	to be adjusted
4	1	6	1
2	3	2	5
1	4	4	3
3	2	1	6
		5	2
		3	4

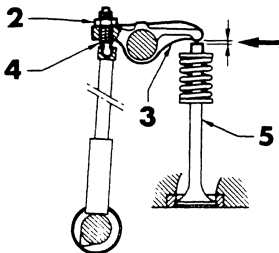
Valves in balance :

- The exhaust valve is not yet fully closed and the intake valve starts to open
- The table to the left shows the cylinder where the rocker arm play can be adjusted.



CHECKING PLAY 75

- Crank the engine in the same way as the machines above.
- Put the valves of the same cylinder in position so that they balance.
- Make a mark to show the position of the pulley in relation to the mark showing the dead centre on the engine crankcase.
- Turn the cranksaft 360° (one full revolution) in the normal direction of rotation
- Adjust
- Follow above procedure for each cylinder



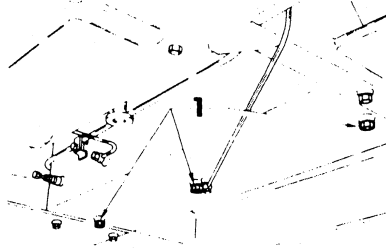
ADJUSTING PLAY 60 - 75 - 90 - 115 - 160

Insert 0.15 mm feeler gauge between the valve pushrod 5 and the rocker arm end 3

To increase or decrease the valve clearance, loosen the locknut 2 one turn and, using a screwdriver, turn the adjusting screw 4, until a light frictional drag is felt when passing the feeler blade.

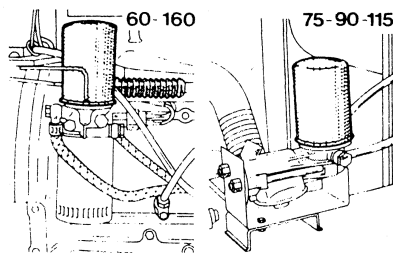
Retighten the locknut and check play again.

50 Feed system



FUEL TANK

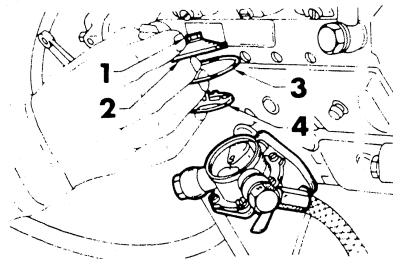
Carefully clean all round the tank plug before removing it and avoid splashing when filling. During cold weather, fill the tank after each day's work to prevent condensation from forming. Every 10 hours loosen drain plugs 1 by one or two turns and allow the dirty fuel to run out.



FUEL FILTER

REPLACEMENT

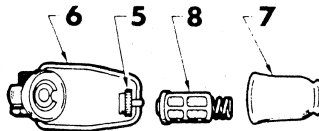
Replace the filter every 200 hours. When removing, handle the filter carefully so as not to spill the fuel it contains. Wipe the seal contact face, then screw the new filter in place. After maintenance, bleed and reprime the fuel circuit (see page 51)



FEED PUMP

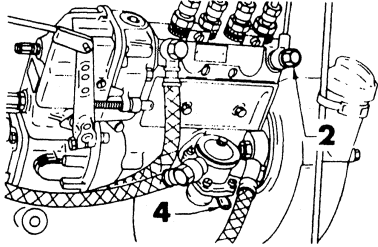
CLEANING FILTER FIXED TO INJECTION PUMP 60 - 75 - 90 - 115 - 160

Every 100 working hours. Remove securing screw 1 and cover 2. extract seal 3 and sediment bowl screen 4 ; rinse the screen in fuel oil. When remounting, check for perfect tightness.



CLEANING FILTER FIXED TO FUEL TANK 75 - 90 - 115

Every 100 working hours. Loosen nut 5 and snap back stirrup-piece 6. Remove bell-piece 7, then clean screen 8 in fuel-oil. When remounting, check for perfect tightness. — After having done these maintenance operations, bleed and re-prime the fuel circuit (see page 51)



FUEL CIRCUIT

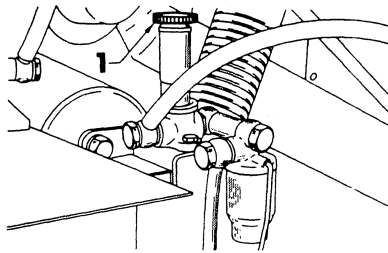
Bleeding and repriming : these operations must be carried out after the machine has been standing for several days, after replacing cartridges, when the reservoir has been completely drained or after carrying out any other servicing to the unit.

AFTER SERVICING THE ENGINE CIRCUIT

BLEEDING AND REPRIMING 60 - 160

- Engine shut down
- Loosen injection pump bleeder screw 2
- Actuate feed pump priming lever 4 until fuel flows free from air bubbles
- Retighten bleeder screw

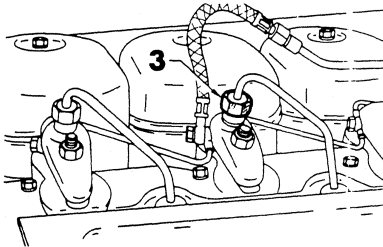
To bleed the injection lines, actuate the starter until the fuel flows freely at a connection 3, slightly loosened beforehand (this operation is to be carried out successively on all injection lines).



BLEEDING AND REPRIMING 75 - 90 - 115 - 160

- Engine shut down
- Loosen injection pump bleeder screw 2
- Unscrew handle of priming pump 1 and actuate it until the fuel flows free from air bubbles.
- Tighten bleeder screw
- After using the priming pump, it is essential to tighten the knurled handle.

To bleed the injection lines, actuate the starter until the fuel flows freely at a connection 3, slightly loosened beforehand (this operation is to be carried out successively on all injection lines).



AFTER REPLACING CARTRIDGES

BLEEDING 60 - 160

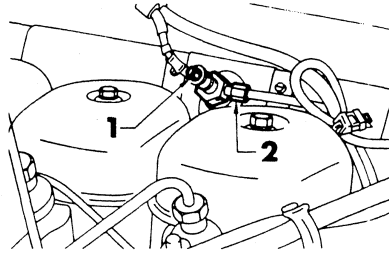
The cartridges are bled in the same way as the circuit.

BLEEDING 75 - 90 - 115

- Do not tighten the cartridge fully home
- Unscrew priming pump handle 7 by several turns and actuate it to and fro until the fuel flows free from air bubbles at the cartridge
- Tighten the cartridge and the priming pump handle.

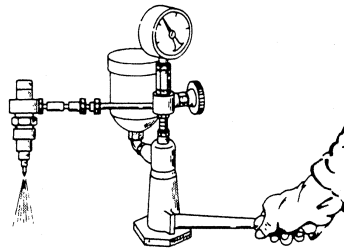
52 Feed system

STARTER SYSTEM 115 - 160



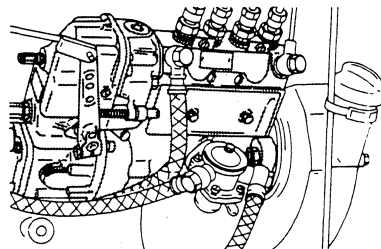
Checking before winter sets in

- Maintain ignition key in position " (∞) " until warning light 28 comes on.
- When laying the hand on the intake manifold close to the plug 1, the operator should feel the metal becoming appreciably warm
- Check fuel intake : loosen union 2 by a few turns and turn ignition key in position " (⊙) " to actuate the engine ; the fuel should seep at the union
- Remove and clean plug 1, especially fuel passage.



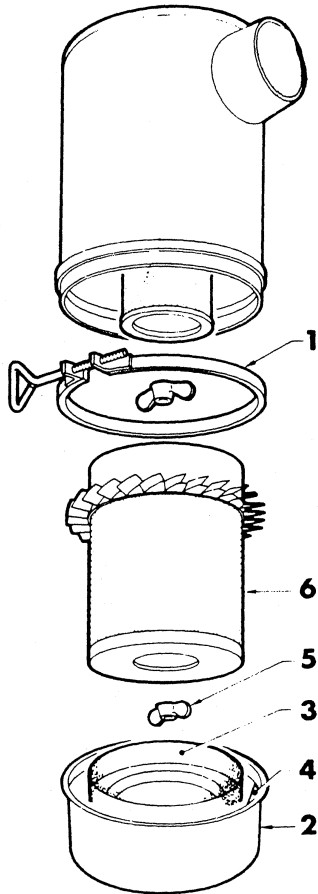
INJECTORS

Every 1000 working hours, have injectors checked (condition)
This check can only be done with precision tools
We therefore recommend you apply to your Poclair distributor.



INJECTION PUMP

Every 2000 working hours, have this pump checked by your Poclair distributor.



STANDARD FILTRATION

CLEANING :

Every 10 hours :

Loosen clamp 1, remove dust cup 2 and then bowl 3.

Clean dust cup 2, wipe the rubber bowl and then remount it.

When remounting the dust cup, make sure that the opening 4 points upwards.

SERVICING CARTRIDGE :

This operation must be carried out when warning light 3 on control panel comes on.

- Remove dust cup
- Unscrew nut 5 and extract cartridge 6

If the cartridge is dry :

- Apply compressed air, blowing from the inside out, using very low pressure (*maximum 7 bars*)
- Shine a light inside the cartridge to ensure that there are no holes.

If the cartridge is greasy : replace it

Do not touch the central emergency cartridge.

Only check to see that the nut is tight.

- Remount and check that warning light 3 on control panel is out (*engine running*)

REPLACING CARTRIDGES

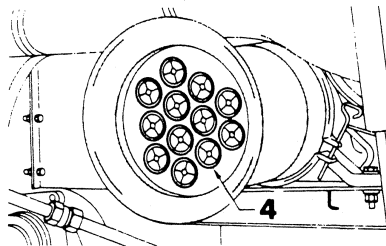
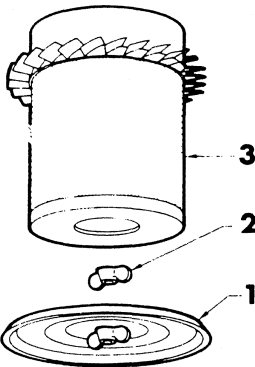
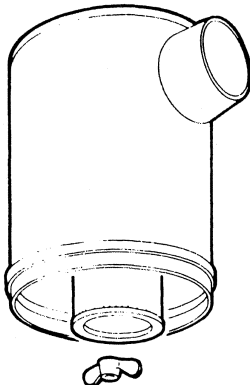
The cartridge must be replaced after six cleanings or every year. Do not clean the central cartridge. Replace it every third cleaning of the main cartridge.

HEAVY DUTY FILTRATION 60

(OPTIONAL)

The maintenance procedure is the same as that for standard filtration.

54 Air filter



HEAVY DUTY FILTRATION 75 - 90 (OPTIONAL)

SERVICING CARTRIDGE

This operation must be carried out when warning light 3 on control panel comes on.

- Remove cover 1
- Unscrew nut 2 and extract cartridge 3

If the cartridge is dry :

- Apply compressed air, blowing from the inside out, using very low pressure (*maximum 7 bars*)
- Shine a light inside the cartridge to ensure that there are no holes.

If the cartridge is greasy : replace it

Do not touch the central emergency cartridge. Only check to see that the nut is tight.

- Remount and check that warning light 3 on control panel is out (*engine running*)

SERVICING PREFILTER

In addition to cleaning the cartridge, also clean the prefilter tubes.

- Clean inside of tubes 4, using hard fibre brush (similar to the kind used for cleaning bottles)

If it is very dirty, remove prefilter body and clean it in hot water (maximum 70° C) or compressed air.

Never blow into prefilter tubes when it is mounted and with cartridges removed.

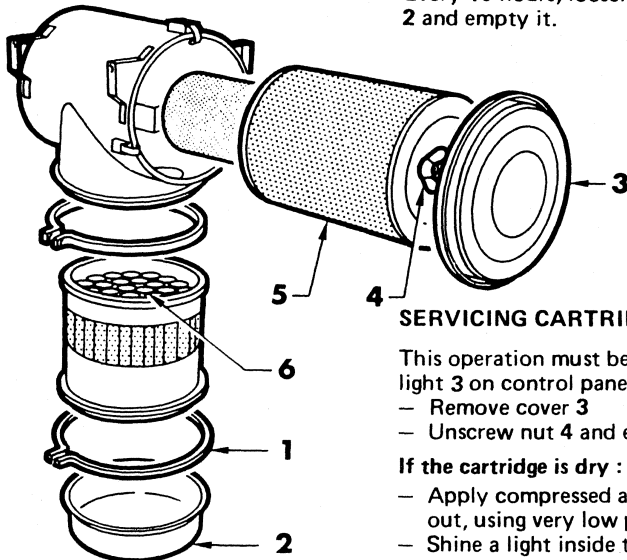
Do not use steam to clean.

REPLACING CARTRIDGES

The cartridge must be replaced after six cleanings or every year. Do not clean the central cartridge. Replace it every third cleaning of the main cartridge.

HEAVY DUTY FILTRATION 115 - 160 (OPTIONAL)

Every 10 hours, loosen clamp 1, remove dust cup 2 and empty it.



SERVICING CARTRIDGE

This operation must be carried out when warning light 3 on control panel comes on.

- Remove cover 3
- Unscrew nut 4 and extract cartridge 5

If the cartridge is dry :

- Apply compressed air, blowing from the inside out, using very low pressure (*maximum 7 bars*)
- Shine a light inside the cartridge to ensure that there are no holes.

If the cartridge is greasy : replace it

Do not touch the central emergency cartridge.
Only check to see that the nut is tight.

- Remount and check that warning light 3 on control panel is out (engine running)

SERVICING PREFILTER

In addition to cleaning the cartridge, also clean the prefilter tubes

- Remove dust cup 2
- Clean inside of tubes 6, using hard fibre brush (similar to the kind used for cleaning bottles)

If it is very dirty, remove prefilter body and clean it in hot water (*maximum 70° C*) or compressed air.

Never blow into prefilter tubes when it is mounted, and with cartridges removed

Do not use steam to clean.

REPLACING CARTRIDGES

The cartridge must be replaced after six cleanings or every year. Do not clean the central cartridge. Replace it every third cleaning of the main cartridge.

56 Engine

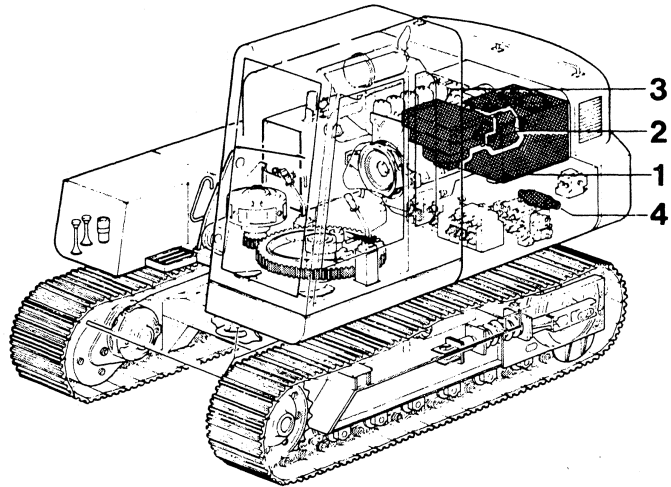
TROUBLESHOOTING TABLE

FAILURES	POSSIBLE CAUSES	REMEDY
Contact on : no start-up	Battery discharged	Recharge or change battery
	Cables cut or terminals badly connected	Repair or clean terminals
Engine fails to start	Shut-down control not pushed back (drawback spring broken)	Repush fully (replace spring)
	Tank empty	Top up, bleed and prime fuel supply lines
	Feed pump filter clogged	Clean it
	Filter cartridge clogged (paraffin precipitation in very cold weather)	Change cartridge and bleed fuel supply lines
	Leakage or presence of air in fuel supply lines	Check and tighten all connections
Engine is hard to start	Battery capacity too weak, terminals loose or rusty	Check battery Clean terminals and lubricate them
	In winter, oil too viscous	Use suitable oil
	Insufficient fuel intake	Clean feed pump filter and change filter cartridge
	Leakage or presence of air in fuel supply lines	Check and tighten all connections
The engine does not run smoothly and does not give top power	Air filter clogged	Clean filter
	Insufficient fuel intake	Clean fuel filters
	Rocker arm clearance badly adjusted	Adjust clearance
	Valve spring broken	Refer to your Poclairn serviceman
	Injector needle seized	Refer to your Poclairn serviceman

Engine 57

FAILURES	POSSIBLE CAUSES	REMEDY
Exhaust smokes heavily	Excessive engine oil level	Reduce level to maxi mark on dipstick
	Piston rings seized or broken	Refer to your Poclairn serviceman
Engine becomes too hot Warning light 6 on control panel comes on and pointer of indicator 1 is in red area STOP THE ENGINE IMMEDIATELY	Cooling fins dirty	Clean fins, especially those of head assembly
	Defective injector	Refer to your Poclairn serviceman
	Injection pump delivery offset	Refer to your Poclairn serviceman
	Air turbine inlet blocked	Clean
	Turbine belt broken	Replace belt
Oil pressure warning light 2 on control panel comes on STOP THE ENGINE IMMEDIATELY	Leak on circuit	Check filter and oil pump connections
	Excessive bearing clearance	Refer to your Poclairn serviceman
Charging warning light 4 on control panel comes on	Alternator does not charge	Check belt tension

58 Hydraulic components



1 – TANK

Filters

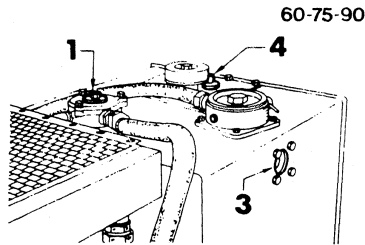
2 – PUMPS

High pressure
Circulating pump

3 – COOLER

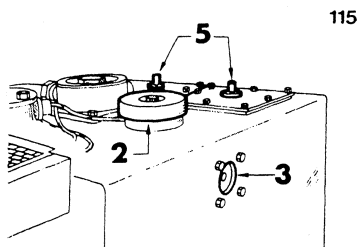
4 – ACCUMULATOR

Tank 59



FILLING 60 - 75 - 90

To fill the hydraulic fluid tank, park the excavator on horizontal ground, operate all cylinder rods to half-way out position then shut down the engine. Remove plug **1** at the centre of the hydraulic fluid filter and screw the funnel supplied with the machine. When remounting, be careful with the seal.



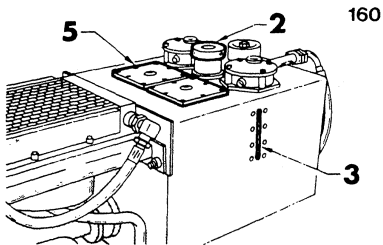
FILLING 115 - 160

To fill the hydraulic fluid tank, park the excavator on horizontal ground, operate all cylinder rods to half-way out position then shut down the engine. Unlock the breather plug, and check the cleanliness of the filter screen before filling. When remounting, check the condition of the plug seal.

LEVEL CHECK 60 - 75 - 90 - 115 - 160

Every **10** hours, park the excavator on horizontal ground, operate all cylinder rods to half-way out position then shut down the engine.

The oil level should be at the centreline of the sightglass **3** on the left-hand side of the tank. If not, top up.

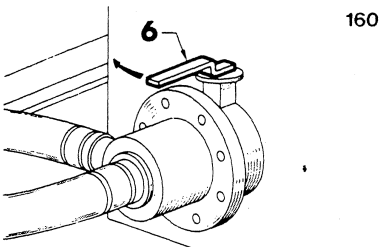


CLOSING HYDRAULIC FLUID TANK 60 - 75 - 90 - 115

The hydraulic fluid tank is equipped with a manually-controlled valve **4** on models **60 - 75 - 90** and two valves **5** on machine **115**.

To close, screw the threaded end of the square-end handle in the rod of each valve, pull upwards and remove the split washer. Let the rod fall to seal off the tank valve.

To open the tank, proceed in reverse order.



CLOSING HYDRAULIC FLUID TANK 160

The shutoff valve is flanged to the base of the hydraulic fluid tank. Rotate the handle **6** a quarter-turn to close.

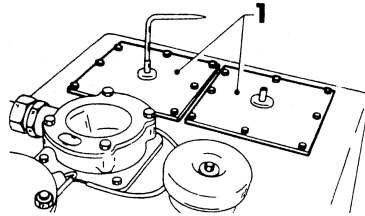
After closing the valves to service the machine, it is imperative to re-open them before restarting.

60 Tank

FILTERS

SUCTION FILTERS

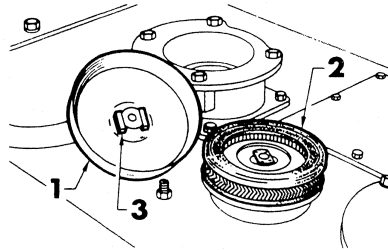
(machines 115 - 160 only)



CLEANING

Every 200 hours

- Loosen the nuts that secure the cover plates 1
- Using the square-end handle supplied with the machine tool kit, lift off each cover plate supporting the filter assembly.
- Soak the filters in fuel oil.
- Apply compressed air to dry, blowing from the outside in, with the open end facing down.



BREATHER PLUG FILTER

REPLACEMENT

Every 1000 hours

Every 500 hours under dusty working conditions. Remove the screw at the centre of the plug and cover 1, then replace filter 2.

Remount the cover with plates 3 at the centre of the plug

HYDRAULIC FLUID FILTERS

Replace cartridges when warning light 5 on control panel remains lit.

REPLACING CARTRIDGES

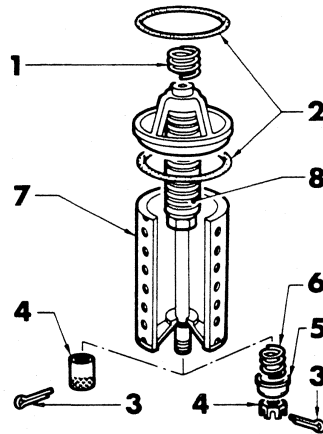
Remove cover and spring 1

Lift out filter assembly. Keep seals 2 for re-use.

Remove dowel 3 and nut 4. If necessary, remove cup 5 and its spring 6. Throw away used cartridge 7 and clean the magnetic core 8.

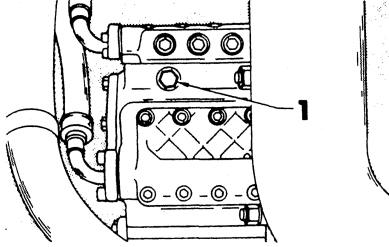
Install a new cartridge and remount.

Check that warning light 5 on control panel is out (*engine running*)



CHECK

From time to time, check bulb of warning light 5 on control panel by earthing a pressure transducer, using a screwdriver (*contact on*).



HIGH PRESSURE PUMP

When servicing the pump, or replacing a hose, etc ..
Bleed the pump (*engine shut down*)

- Tank valve open
- Loosen bleeder screw 1
- Tighten as soon as the oil flows regularly and free from air bubbles.

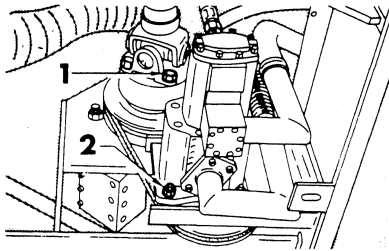
CIRCULATING PUMP

(*machine 115 only*)

Every 100 hours

CHECK

If correctly tensioned, the belt should deflect by about 6 mm when thumb-pressed half-way. Adjust the belt if tension exceeds 10 mm.

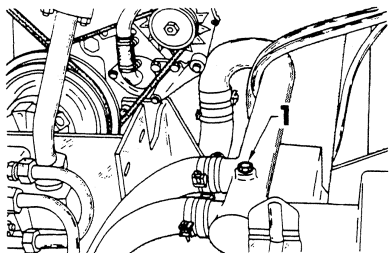


TENSION

Loosen the pump securing bolts 2
Tighten by actuating pump, using lever

REPLACEMENT

Slacken the belt.
Remove the four universal joint securing screws 1, pull universal joint to disengage it from the pulley and extract belt through the resulting space.
Remount in reverse order.



CIRCULATING PUMP

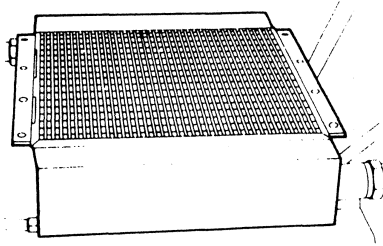
(*machine 160 only*)

When servicing the pump or replacing a hose, flexible pipe, etc.

Bleed the pump (*Engine shut down*)

- Tank shutoff open
- Loosen bleeder screw 1 on manifold fixed to hydraulic fluid tank
- Tighten when the oil flows regularly and without air bubbles.

62 Cooler - accumulator



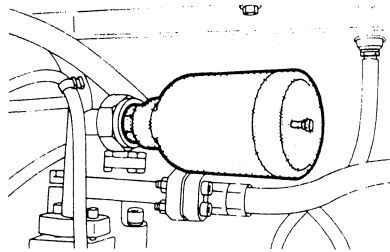
HYDRAULIC COOLER

Every 100 hours

CLEANING

Presence of :
- Mud : clean with a jet of water
- Dry dust : clean with compressed air
- Greasy dust : clean with perchlorethylene

Never use trichlorethylene, as this may contaminate the coolant.



HYDRO-PNEUMATIC ACCUMULATOR 60 - 75 - 90

PRESSURE CHECK

Every 100 hours

To carry out this check, apply to your Poclain distributor.

HYDRAULIC CIRCUIT

Every 2000 hours

DRAINING COMPLETE CIRCUIT

Replacement of the hydraulic fluid in the circuit consists of systematically draining the oil contained in the main components of the hydraulic system ;

Tank, pumps, cylinders, valve banks, hydraulic motor, cooler.

We recommend that this service check be carried out by your Poclain distributor.

CYLINDERS

OIL TIGHTNESS CHECK

The piston rod of any cylinder must always be slightly oily.

- Operate the unit long enough to allow the hydraulic system oil to reach its normal working temperature prior to oil tightness test run
- Carefully wipe the cylinder rod and gland bore dry
- Operate the cylinder to be tested normally for 5 to 10 minutes.
- Extend the cylinder rod
- Proceed to tests shown in the table.

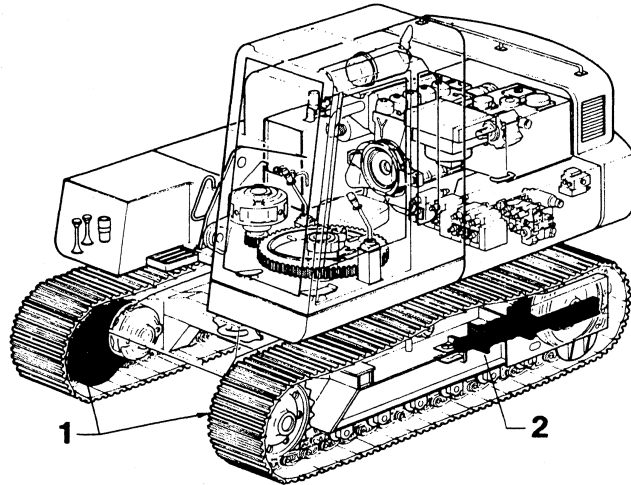
ASPECT OF ROD	TEST	CONDITION
Very dry	No trace of oil is visible when passing a piece of paper over the rod	Apply to your POCLAIN distributor
Dry	Slight traces of oil are visible when passing the paper over the rod (about 20 cm)	Normal
Slightly oily	The paper remains stuck when passed over the rod	Normal
Fairly oily	The paper sticks when touching the rod	Normal
Very oily or seepage	After each rod extension an oil ring is visible on the rod	Apply to your POCLAIN distributor
Leakage	At each rod retraction oil leaks at the gland bore	Apply to your POCLAIN distributor

HOSES

DISMANTLING – REASSEMBLING

- Before dismantling, release pressure
 - After dismantling, blank off its ends as well as the end of the corresponding line
- These plugs are included in the machine servicing kit
- When replacing a hose, it is essential to replace it by one of the same length
 - Make sure the hose is correctly positioned to prevent it from twisting and chafing against any component

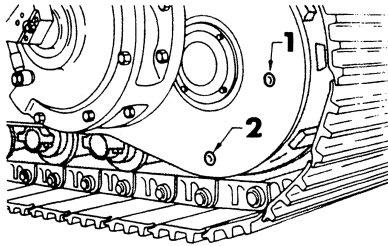
64 Mechanical components



1 – TRACK DRIVE REDUCTION GEARS

2 – TRACK TENSION

Reduction gears and track tension 65



TRACK DRIVE REDUCTION GEARS

Park the machine on level ground

LEVEL CHECK

Every 200 hours

Housings cold. Remove plug 1, the oil must be flush with the level plug hole, if not, add make-up oil.

DRAINAGE

Every 2000 hours

Housings warm. Remove plugs 1 and 2, ensure that the drained oil does not contain any metal particles. Remount plug 2 and refill at port 1

Capacities in litres :

60CL : 2x7 90CL : 2x16 115CL : 2x15
75CL : 2x9 90CK : 2x17 160CK : 2x13

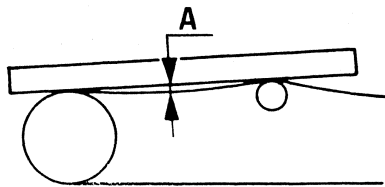
TRACK TENSION

CHECK :

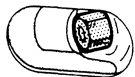
Every 100 hours

The clearance A between the straight edge and the top face of the lowest pad should be :

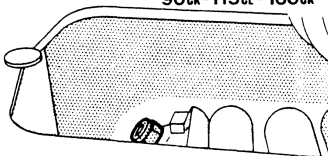
- on soft ground surface 20 mm
- on hard ground surface 40 mm
- on normal ground 30 mm



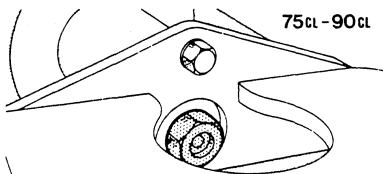
60cl



90ck-115cl-160ck



75cl-90cl



TENSION

Pump grease into grease fittings to obtain the required track tension.

SLACKENING

- Loosen grease-fitting carrier valve 2 by three turns minimum to ensure flow of grease and tighten when the required tension has been achieved.

WARNING :

Never unscrew completely to facilitate outflow of grease.

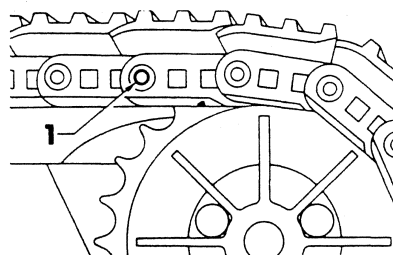
66 Replacing tracks

RECOMMENDATIONS

- Detach the clamshell if in use, as it is not equipped with a hitching point.
- The following procedure for track replacement aims at minimizing any manual intervention while the machine is in motion and the track being rolled up for safety.
- Both tracks can be replaced simultaneously. This procedure applies to one track only.
- Select a clean, firm and level supporting surface of about 25 meters in length and free of obstructions, to operate the attachment.
- Move the machine, drive sprocket first, onto the selected area through a distance twice as long as the length of the machine so the track(s) can be conveniently unrolled.

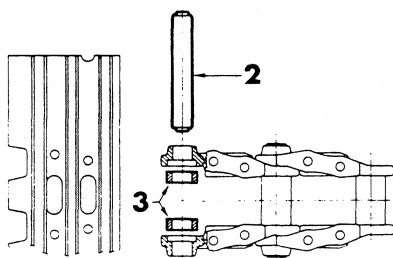
TOOL REQUIREMENTS

- Adjustable sling chain length 10 m
- Crow bar 1.50 m long
- Wooden blocks
- Master pin press (*Track service tool set*) or 5 kg sledge hammer and steel master pin drift.

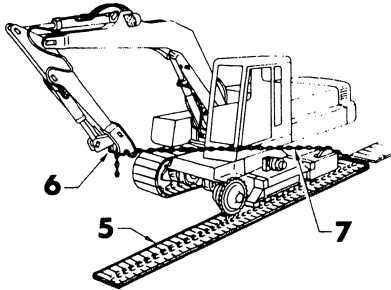


REMOVING THE TRACK

- Jack the track to be removed clear off the ground, using the attachment swung over the side.
- Rotate the track to bring the notched pad with the removable link master pin to position 1 on top of the sprocket wheel, the next pin remaining engaged on the sprocket tooth.
- Lower the track to the ground
- Slacken the track (*page 65*)
- Knock out the removable link master pin 2
- Keep the steel bushings 3 for reuse
- Unroll the old track by driving the machine.
- Place the replacement track near the sprocket, with the pad overlap side in the proper direction
- Start unrolling the new track in line with the one still mounted on the machine.

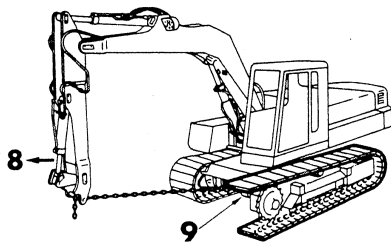


Replacing tracks 67



INSTALLING THE TRACK

- Start driving the machine onto the new track 5, leaving 1,50 m clearance between the idler wheel and the forward end of the track.
- Clean and lubricate lightly the link bushings, pin and pin holes
- Swing the upperstructure around and move the (*hoe, clam or loader*) stick in until its end 6 is over the track centerline
- Attach the hauling chain to the end of the track
- Attach the other end of the chain to the stick end
- Start extending the stick until the track 7 engages the idler wheel
- Drive the machine and keep extending the stick 8 until the tight track 9 engages the sprocket wheel
- Install the steel bushings
- With the lever, raise the end of the track resting on the ground
- Install the pin
- Tension the track (*page 65*)



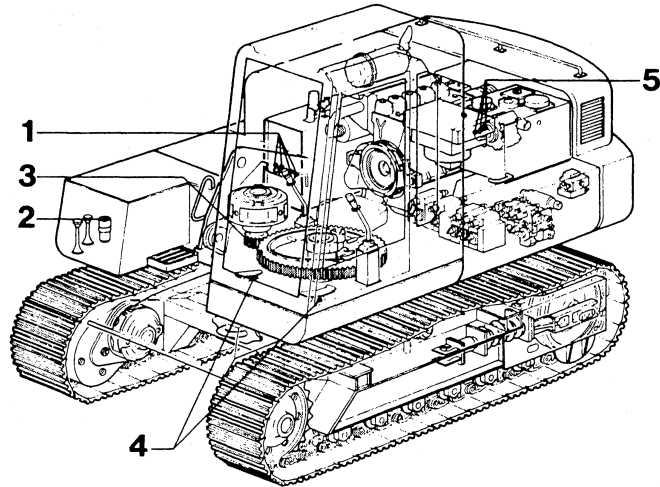
MASTER PIN PRESS

If a press is used for servicing the tracks, observe the following procedural recommendations :

- Enter the area selected for track removal with the idler wheels first
- Install the press between the idler wheel and carrier frame cross member : Press out the master pin and insert a drift into the end links
- Bring these around the sprocket wheel into low position before unrolling the track
- At installation, roll up the track around the sprocket wheel first and then over the idler wheel.

68 Mechanical components

LUBRICATION DIAGRAM



	50 h	100 h	200 h
1 Swing gear 4 grease fittings	▲		
2 Horn compressor A few drops of vaseline oil		●	
3 Swing gear teeth Lubricate, using a brush or aerosol can	■		
4 Track drive pedals and option pedals (<i>machines 115 - 160 only</i>) 1 grease fitting on each pedal	▲		
5 Engine/pump coupling (<i>machine 115 only</i>) 3 grease fittings			▲

When carrying out these operations, lubricate all points such as linkages, levers, cable sheathes, etc., using an oil can.

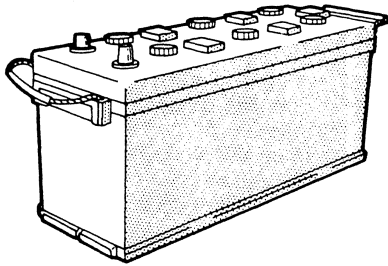
BATTERIES

Every 100 hours

LEVEL CHECK

Check the level in each cell, which must be 10 to 15 mm above the plates. If necessary, top up with distilled water.

Check the level more frequently in summer
Make sure that the connecting and cable terminals are quite clean, tight and coated with vaseline.



CHECKING CHARGING CONDITION

Every 200 hours

To make this check, use an acid hydrometer.
In winter, it is particularly important for the battery to be well charged, as the electrolyte in a discharged battery freezes more easily than in a battery which is well charged.

PRECAUTIONS TO BE OBSERVED

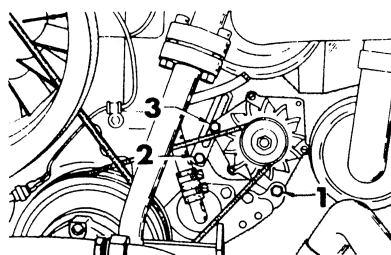
A warning light bulb which has burnt out must be replaced immediately
Handle the wrench carefully to avoid touching the battery housing or the connector strips on the top of the batteries.
Never approach the batteries with a naked light

STARTER-TEMPERATURE GAUGE

Every 1000 hours

Have this checked by your Poclair distributor.

70 Electrical components



ALTERNATOR BELT

CHECK

Every 100 hours (*engine shut down*)

If correctly tensioned, the belt should deflect by about 8 mm when thumb-pressed midway. Adjust the belt if tension exceeds 15 mm

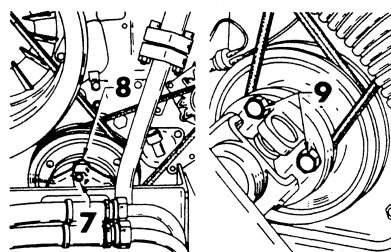
TENSION

Bolts 1, 2 and 3

REPLACEMENT 60 - 75 - 90 - 160

- In the case of an elastic coupling :
- Remove the four securing screws 7
- Remove the four spacers 8
- Disengage the turbine belt
- Remount in reverse order

The new belt must be tightened again after 20 hours' operation.



REPLACEMENT 115

- Remove the four universal joint securing screws 9 and pull joint to disengage pulley
- Slacken turbine belts and extract them through space between pulley and joint
- Remount and tighten belts

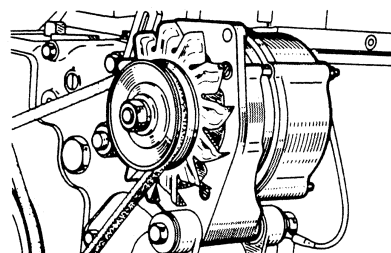
ALTERNATOR

Every 1000 hours

To be checked by your Poclair distributor.

Ensure that the alternator leads are properly connected :

D + : Tag 24
B + : Tag 10



OPERATING PRECAUTIONS

Never disconnect battery or alternator wires with engine running.

For the same reason, if battery failure calls for re-starting, using another machine, leave batteries connected.

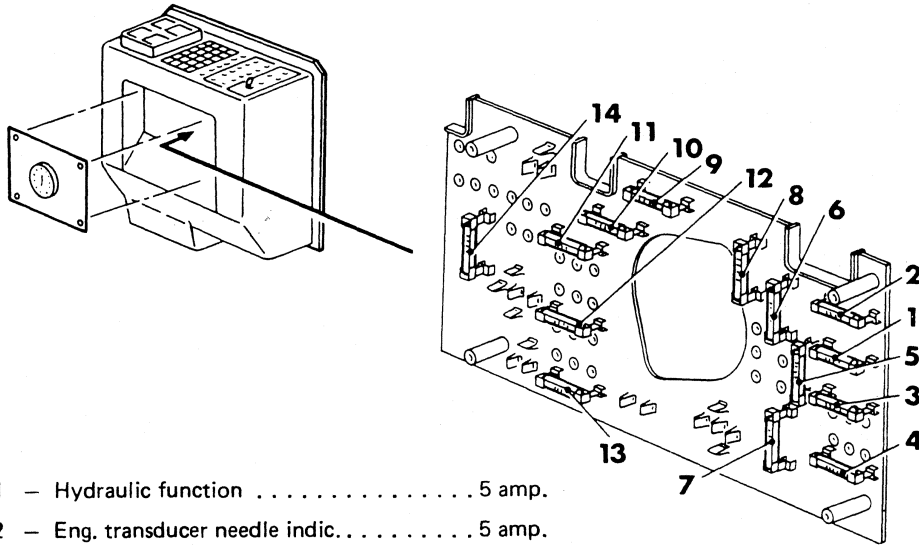
Never connect charger to battery without disconnecting the battery.

VERY IMPORTANT

Before starting any welding operations on the machine or repairs to the electrical circuit, disconnect wires B + and D + from alternator.

FUSES

When one or several receivers do not work, check the fuses.
 If replacing, mount fuses of corresponding values.
 Regularly check warning light bulbs for efficient operation.
 Replace faulty bulbs by bulbs of the same voltage and wattage.



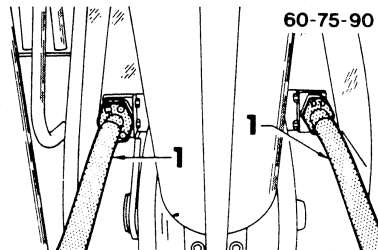
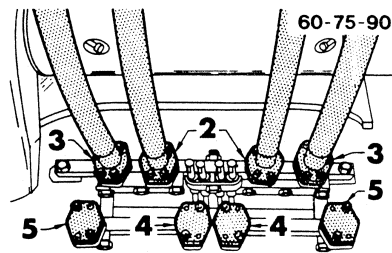
- 1 – Hydraulic function 5 amp.
- 2 – Eng. transducer needle indic. 5 amp.
- 3 – Not used 5 amp.
- 4 – Heating 25 amp.
- 5 – Cab - floor 5 amp.
- 6 – Not used 25 amp.
- 7 – Not used 8 amp.
- 8 – Lighting. 8 amp.
- 9 – Auxiliary lighting 10 amp.
- 10 – Left-hand lever safety. 8 amp.
(specific to certain countries)
- 11 – Fuel pump 16 amp.
- 12 – Not used 16 amp.
- 13 – Horn. 16 amp.
- 14 – Not used 25 amp.

72 Attachments

MAINTENANCE

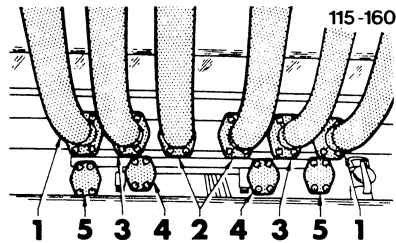
Lubricate each linkage fully every **10** hours or every day.

Depending on the ground, lubricate the most exposed linkages (*bucket, clamshell*) several times a day.

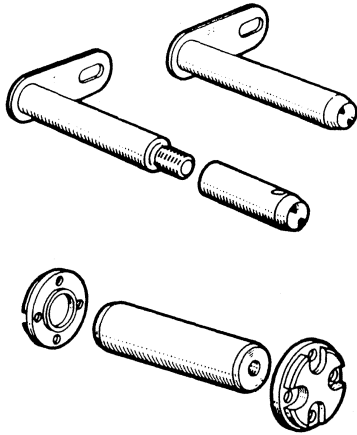


ATTACHMENT HOSE CONNECTIONS

- 1 – Boom cylinder power-supply
- 2 – Dipperstick cylinder power-supply
- 3 – Bucket or clamshell cylinder power-supply
- 4 – Clamshell swing motion power-supply
- 5 – Jib cylinder power-supply

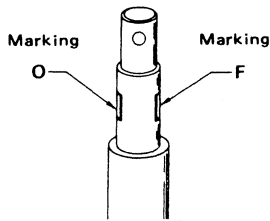


MOUNTING - REMOVAL OF PINS



- Place the attachment or component to be disassembled in a safe position
- Provide a stable and solid support or hoist for the component to be removed
- Release pressure and disconnect hoses. Blank the orifices using the special plugs provided for this purpose
- Knock out the pins. In the case of threaded pins, first screw the corresponding sleeve
- In the case of loader bucket pins, remove covers.
- Screw a threaded rod at the end of the pins to extract them

Never remount a scored link pin, eliminate scores with emery cloth, if required. Unacceptable metal shearing will result if the pin is forced into its location.

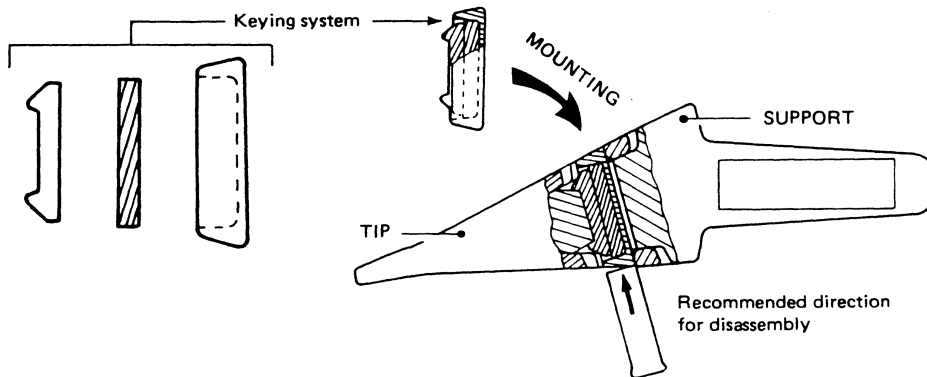


MOUNTING CLAMSHELL

For all clamshells :

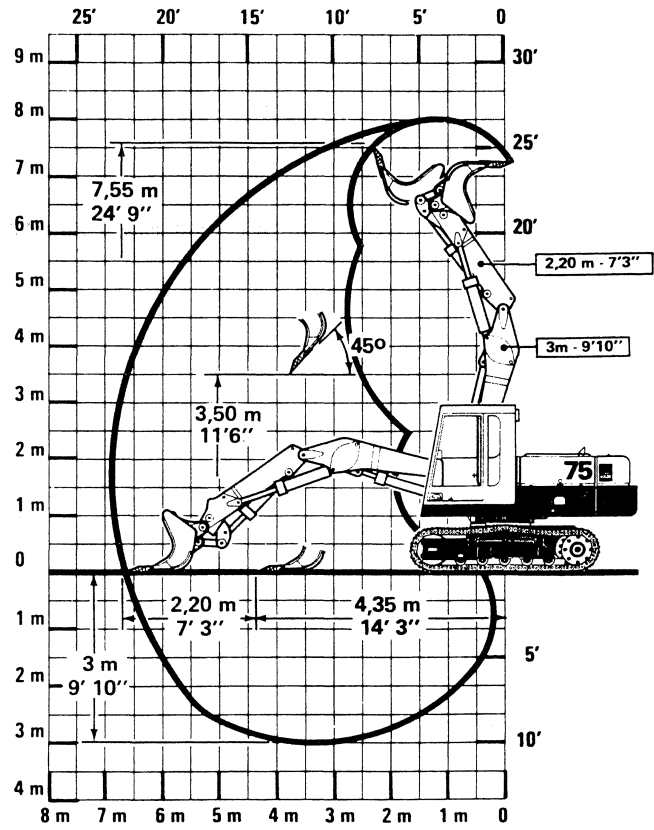
- Place open clamshell on the ground so that the letter O engraved on the cylinder rod corresponds with the hose on the cab side.
- Mount pin and hoses

REPLACING A TOOTH TIP



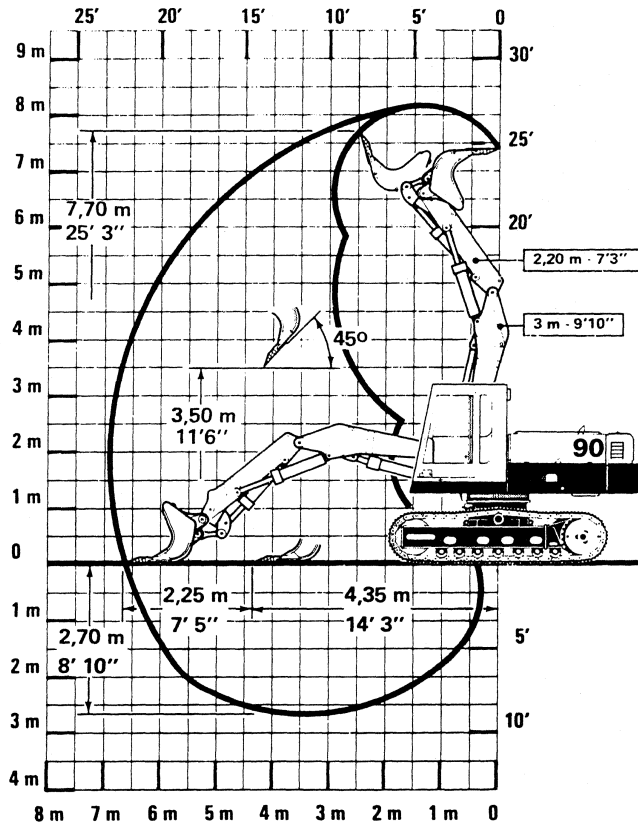
74 Working ranges

LOADER 75



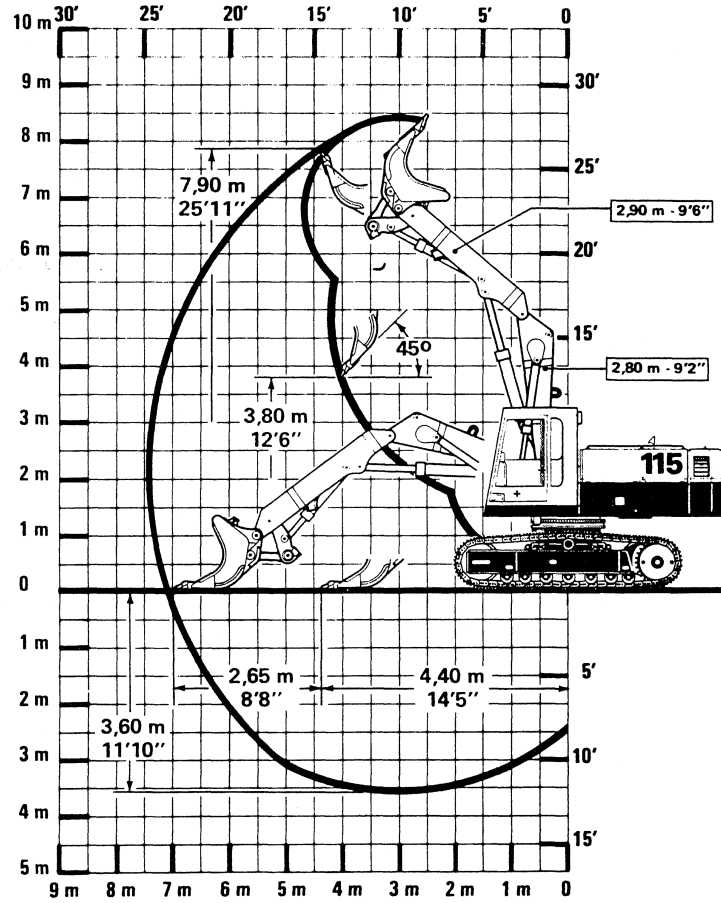
Working ranges 75

LOADER 90



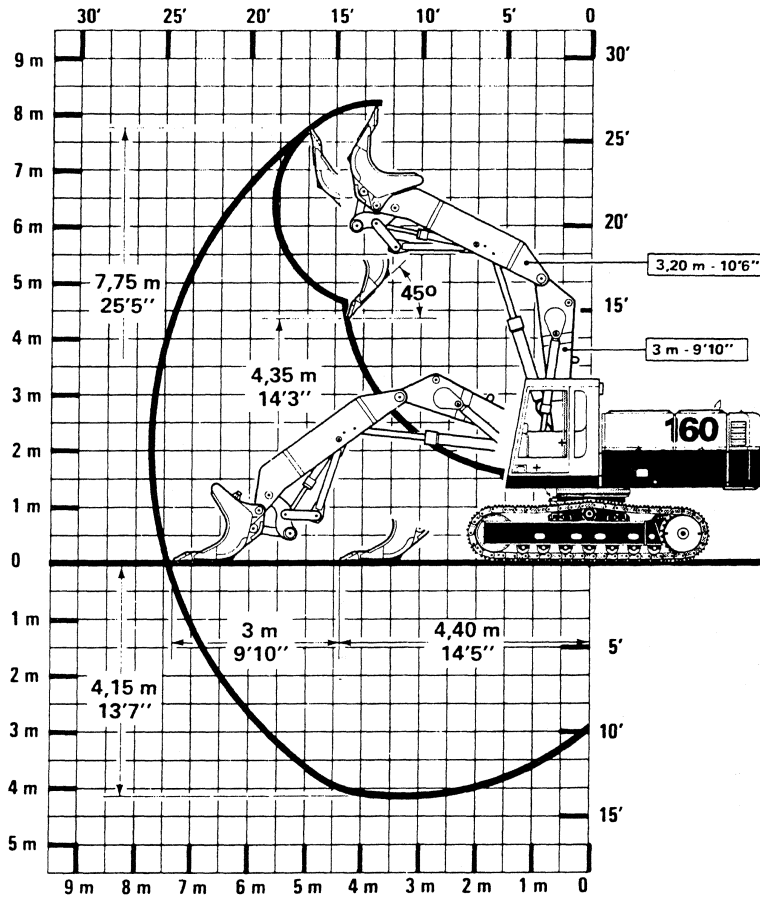
76 Working ranges

LOADER 115



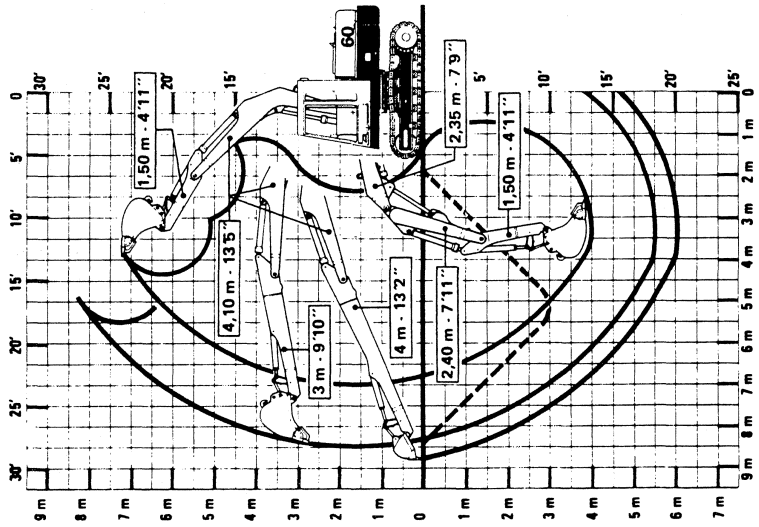
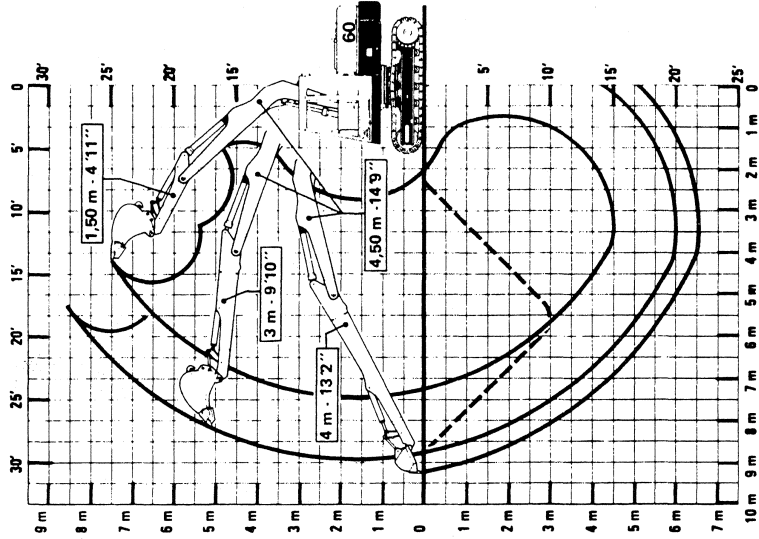
Working ranges 77

LOADER 160



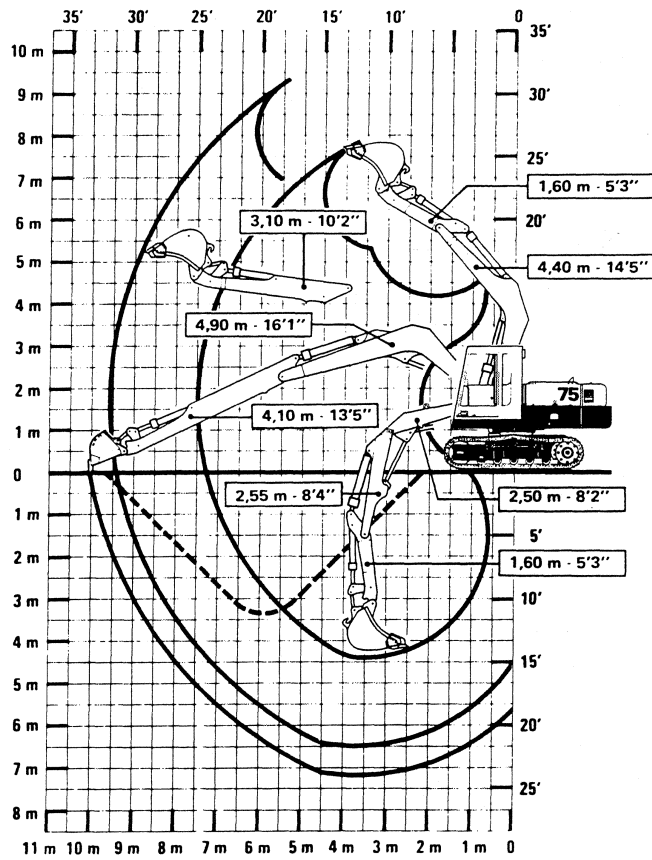
78 Working ranges

BACKHOE 60



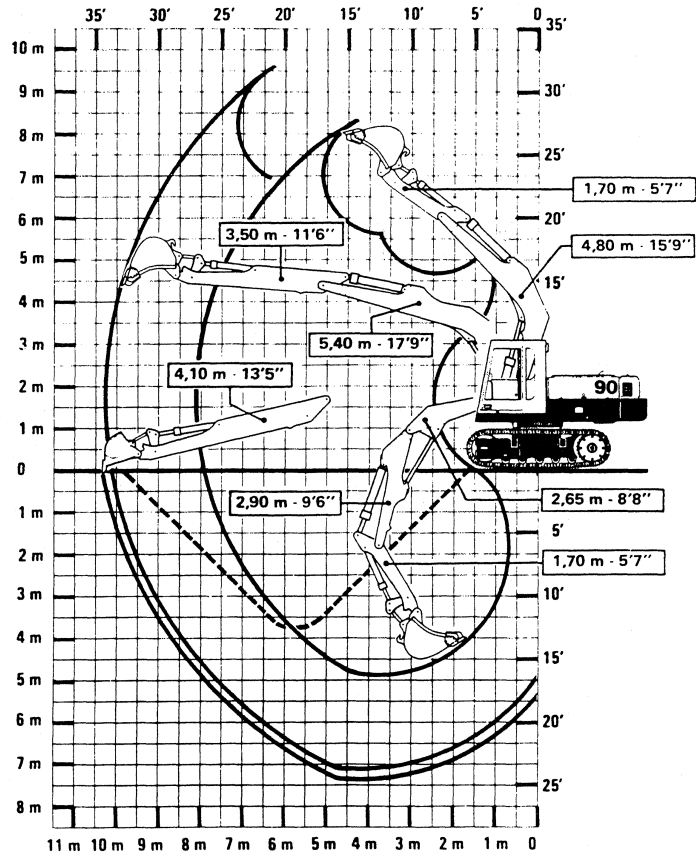
Working ranges 79

BACKHOE 75

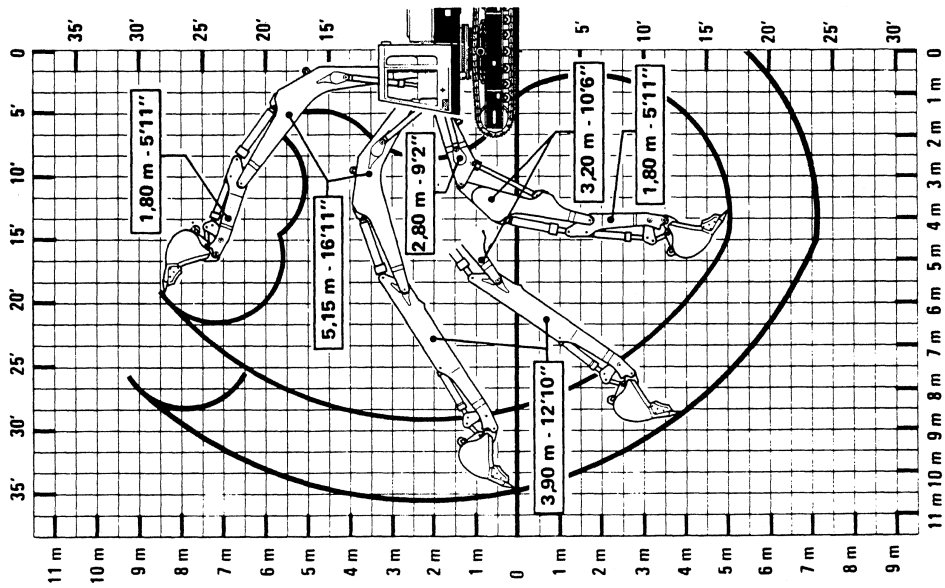
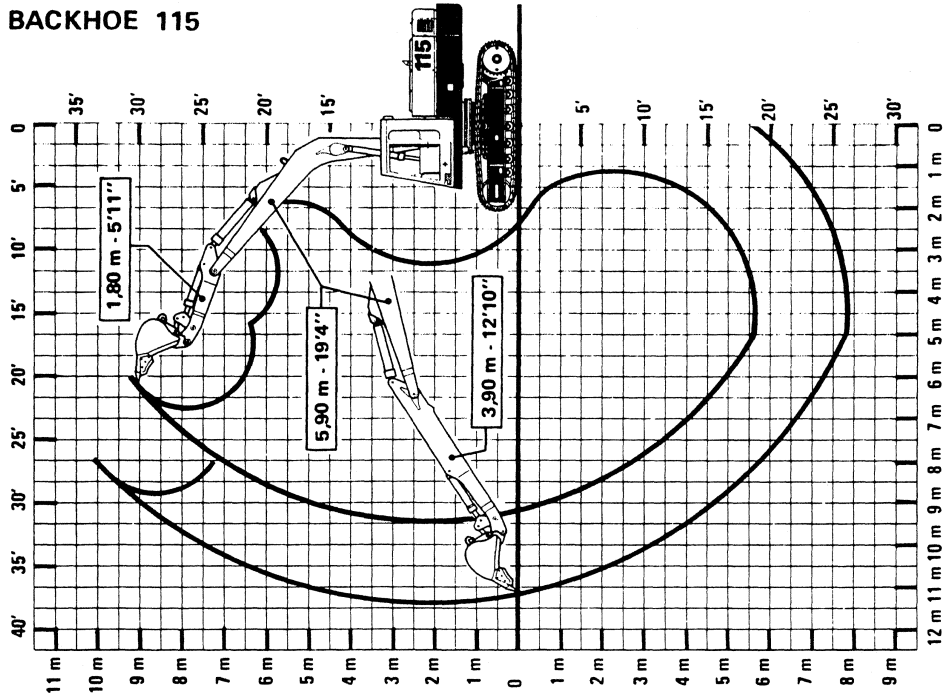


80 Working ranges

BACKHOE 90

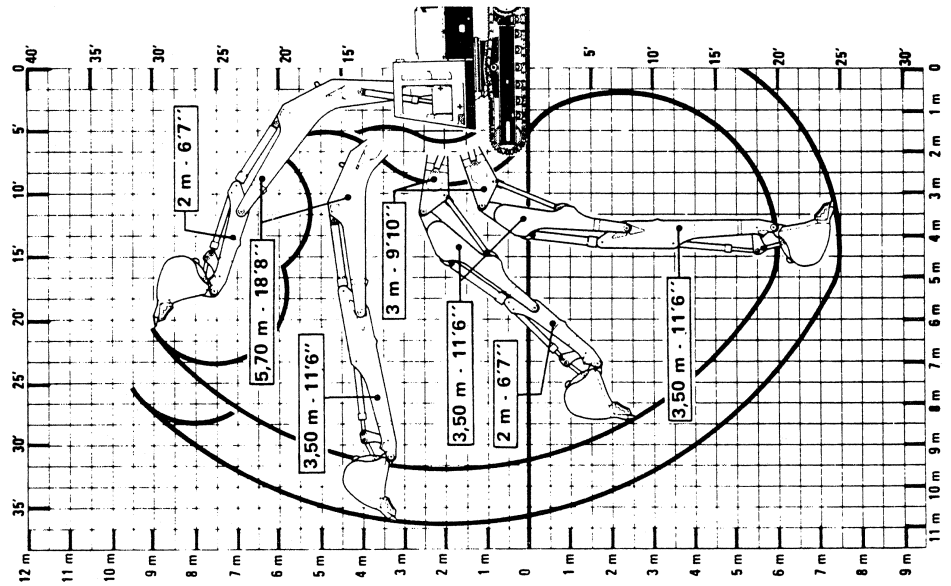
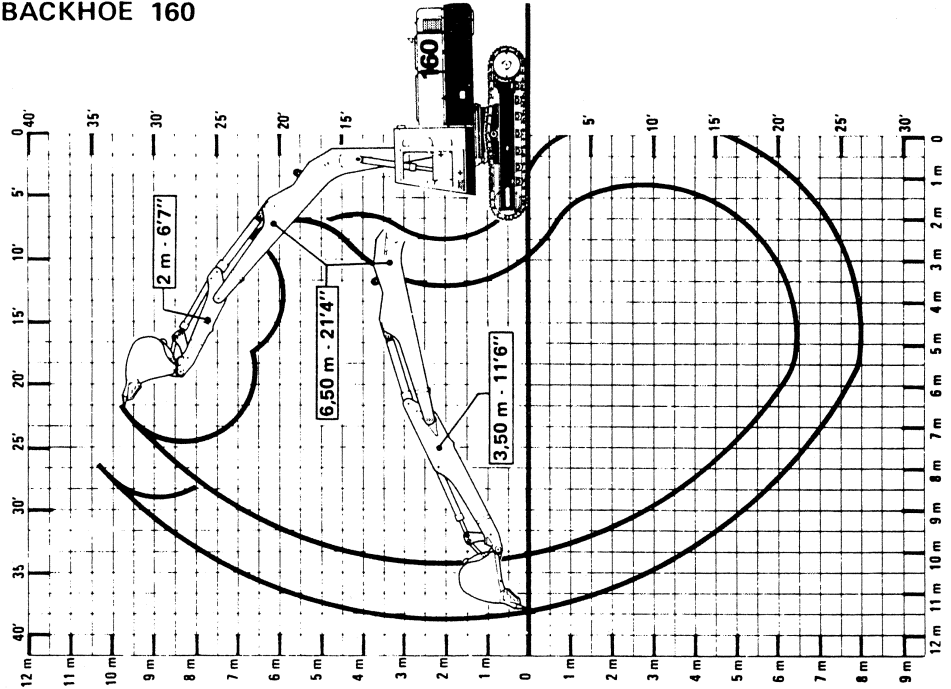


BACKHOE 115

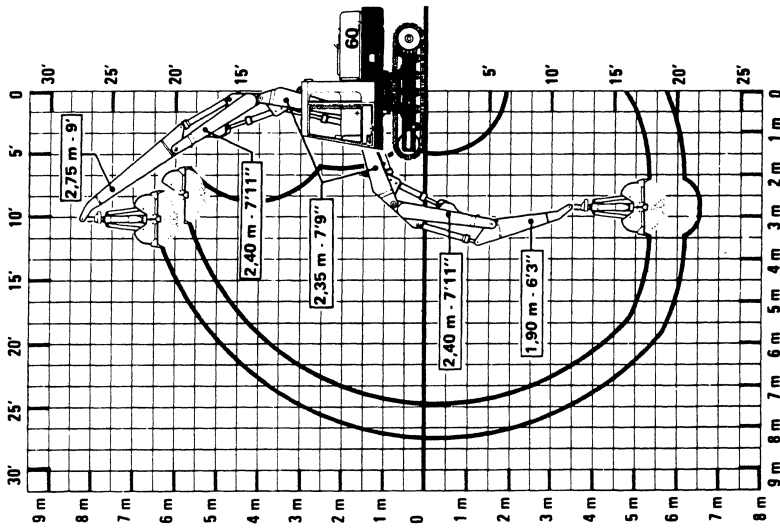
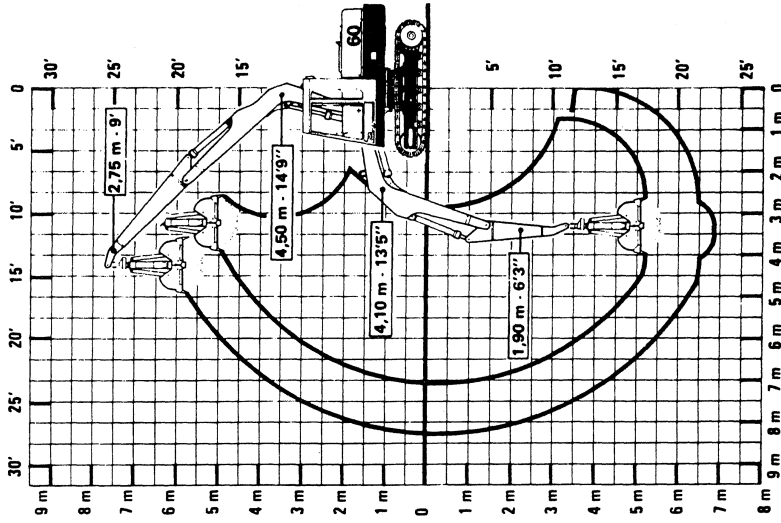


82 Working ranges

BACKHOE 160

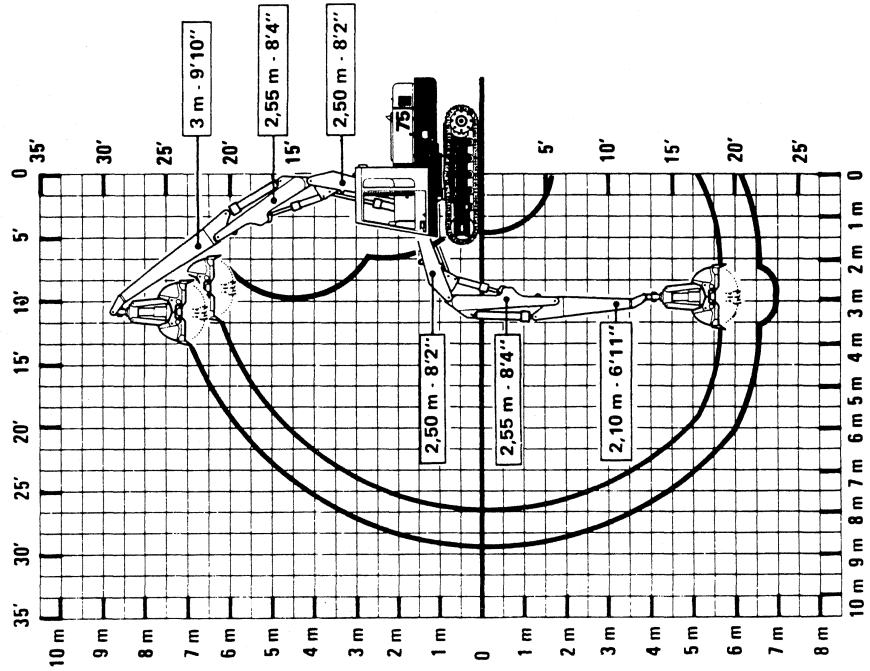
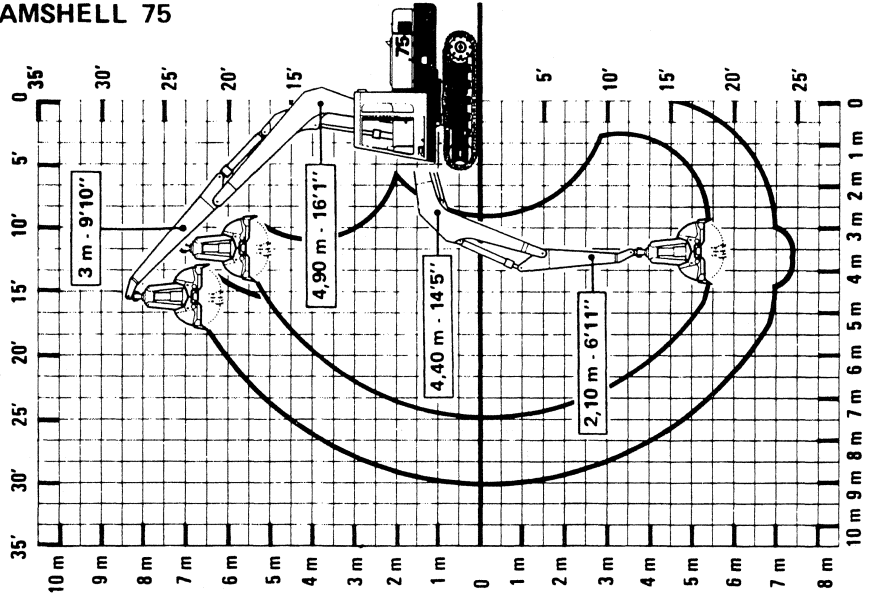


CLAMSHELL 60

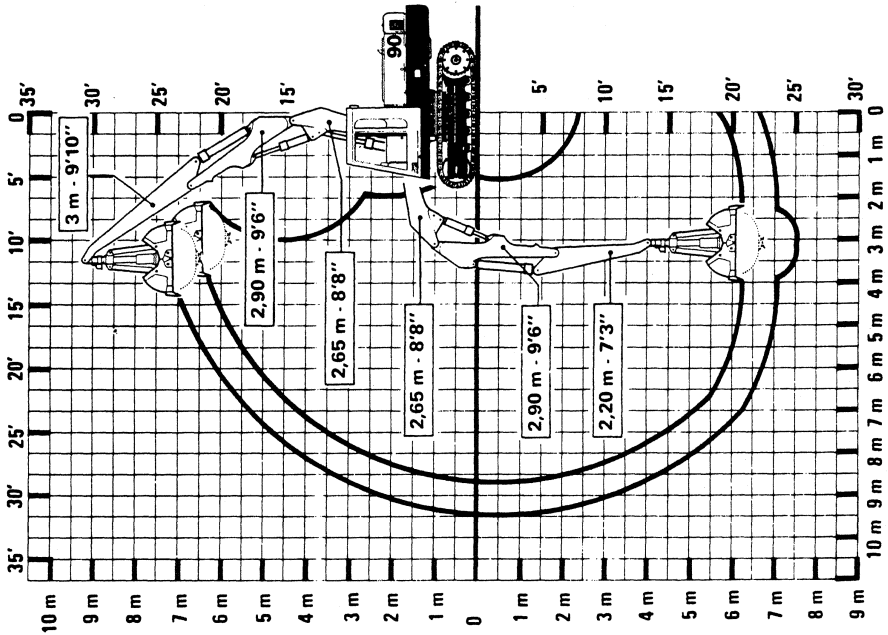
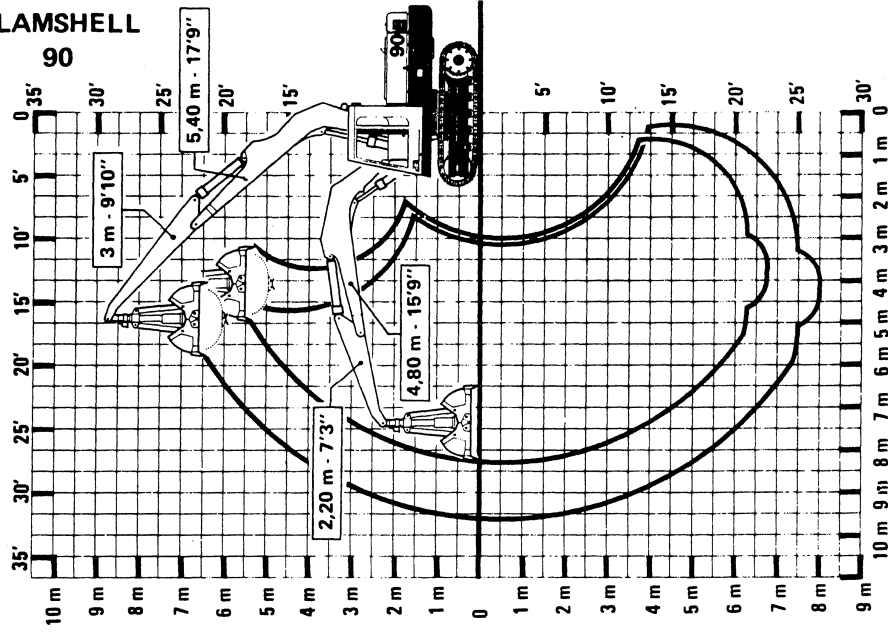


84 Working ranges

CLAMSHELL 75

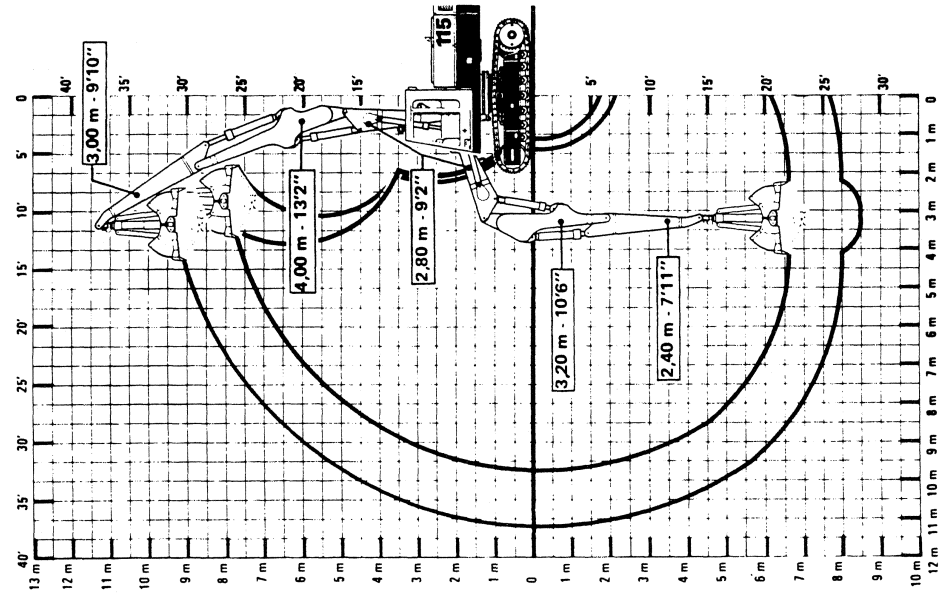
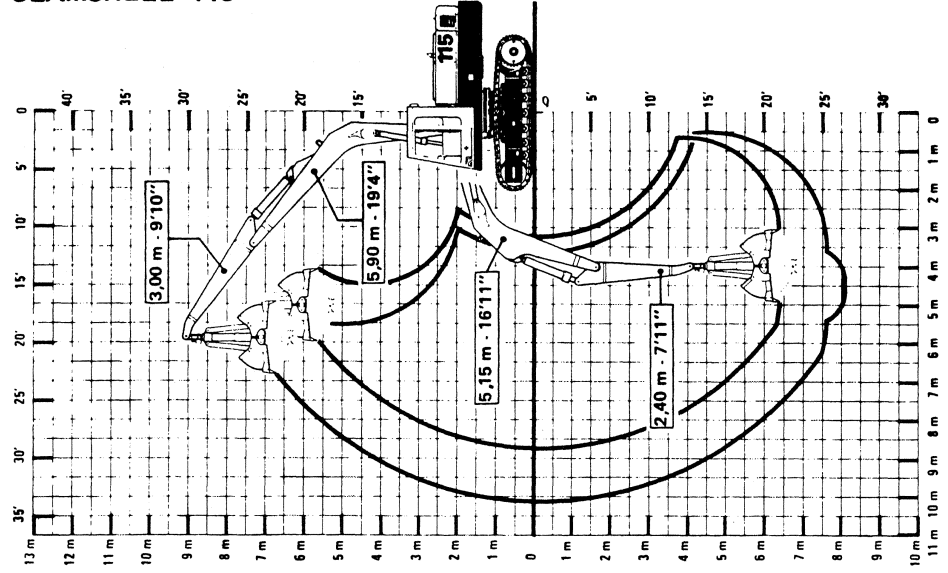


CLAMSHELL

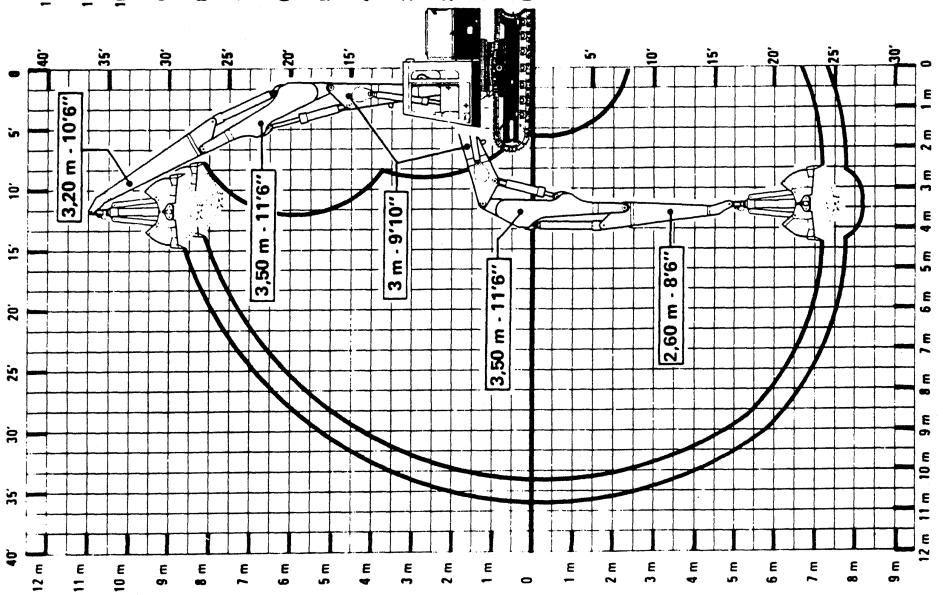
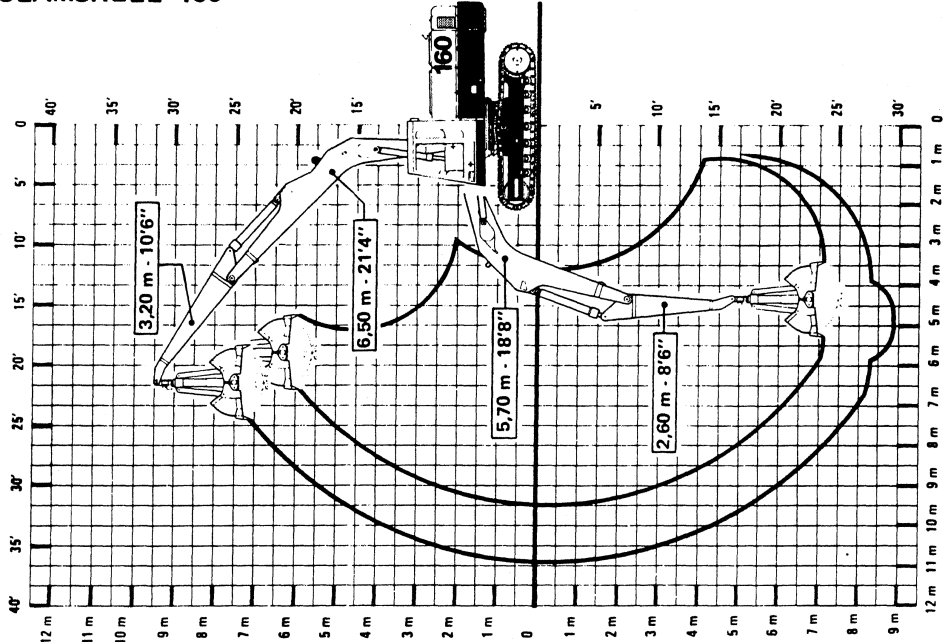


86 Working ranges

CLAMSHELL 115



CLAMSHELL 160

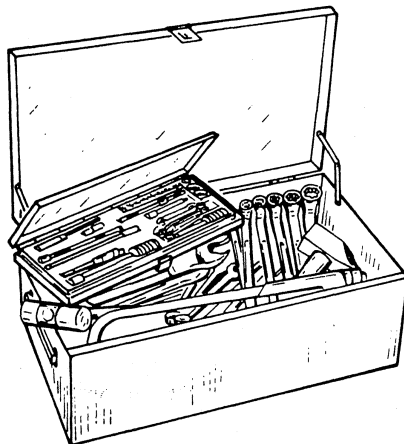


88 Tool set - Spare parts

MACHINE TOOL SET

The following are supplied with the machine :

- 1 square-end handle
- 1 grease gun
- 1 funnel 60 - 75 - 90



TOOL SETS

- K 28 444 - 19 Tool box
- L 28 444 - 20 Mechanic's standard tool box
- K 26 444 - 80 Mechanic's site tool box

POCLAIN TOOLS

- A 26 444 - 25 Servicing kit for "60" machine
- B 24 444 - 18 Servicing kit for "75" machine
- C 24 444 - 19 Servicing kit for "90" machine
- U 24 444 - 35 Servicing kit for "115" machine
- B 26 444 - 26 Servicing kit for "160" machine

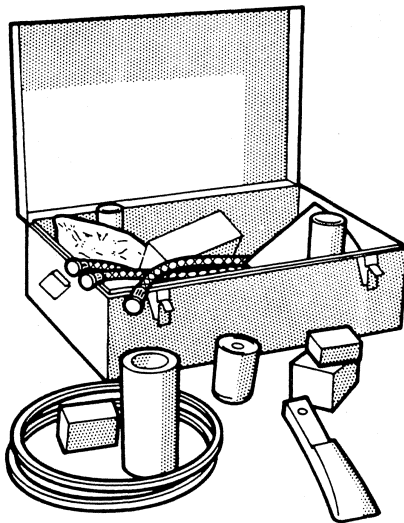
A USEFUL HINT REGARDING SPARE PARTS

To ensure complete availability of your machine, we recommend that you always have ready a set of the most frequently used spare parts :

- 1 set engine belts
- 1 air filter main cartridge
- 1 set hydraulic filter cartridges
- 1 engine oil filter cartridge
- 1 fuel filter cartridge
- 10 straight grease fittings
- 10 attachment and pin dowels
- 1 set electric bulbs
- 1 set of fuses
- 1 set of teeth
- hoses
- cylinder and attachment pins and bushes
- unions
- male and female type blanking plugs

This list can be varied depending on your circumstances.

The engineers who design Poclain excavators carefully select all parts of the machine. By replacing a Poclain part by another Poclain part, you can rest assured that you will get the best from your machine and it will give top output.



CASE TECHNICAL MANUALS

Manuals are available from your Dealer for the operation, service and repair of your machine. For prompt convenient service, contact your Dealer for assistance in obtaining the manuals for your machine.

Your Dealer can expedite your order for operators manuals, parts catalogs, service manuals and maintenance records.

Always give the Machine Name, Model and P.I.N. (product identification number) or S.N. (serial number) or your machine so your Dealer can provide the correct manuals for your machine.

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.

NOTE: Case Corporation reserves the right to make improvements in design or changes in specifications at any time without incurring any obligation to install them on units previously sold.

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