MODELS

EXCAVATOR EX165W

WORKSHOP MANUAL



IMPORTANT: *The information contained in this manual are valid at printing time. As the Manufacturer continuously improves his products, some information may not be updated. In case of discrepancies, apply to Sales and Service Department.*

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3.2 BRIEF INFORMATION FOR MANUAL CONSULTATION

The manual is divided into section, each of them quotes a specific portion of the machine or specific related subject.

Some section (those related to main mechanical assembly) are divided into:

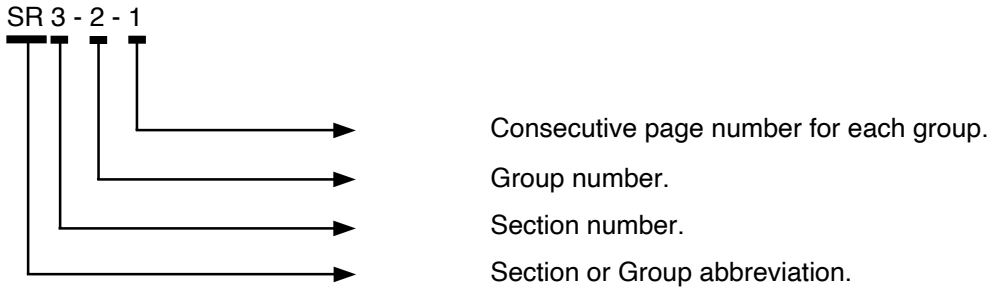
- **O/P** (Operation Principle)
- **D/A** (Disassembly/Assembly)

In the Operation Principle, the assemblies and their components are described with technical data.

In the disassembly and assembly the procedures are described to perform repair or overhaul, with special tool required and technical data.

Each section is divided into group, and the group, in turn, in pages. Each page has a number, located in the upper right corner. Each number contains the following information;

- **example:**



SAFETY PRECAUTIONS

RECOGNISE SAFETY INFORMATION

This is your **SAFETY ALERT SYMBOL.**

When you see this symbol on your machine or in this Manual, be alert of the potential for personal injury. Follow recommended precautions and safe operating practices.



F3264

UNDERSTAND SIGNAL WORDS

In this Manual you will find the following words: DANGER, WARNING, CAUTION, referring to different hazard risks.

These words are always accompanied by the safety alert symbol.

DANGER: indicates an imminent hazardous situation which, if not avoided, will result in death or serious injury.

WARNING: indicated a potential hazardous situation which, if not avoided, could result in death or serious injury.

CAUTION: indicates a potential hazardous situation which, if not avoided, may result in minor or moderate injury.

IMPORTANT: indicates a situation which, if not avoided, may cause damage to the machine.

NOTE: indicates an additional explanation for information purposes.

DANGER

WARNING

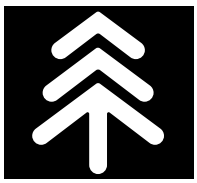
CAUTION

IMPORTANT

NOTE

ENVIRONMENTAL PROTECTION

This Manual also contains this symbol accompanying instructions for correct behaviour as regards environmental protection.

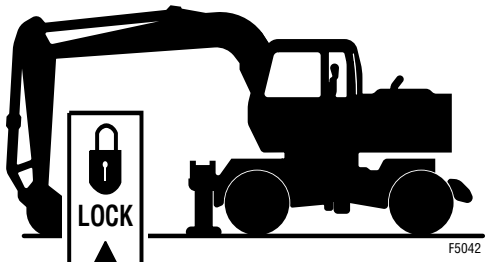


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SAFETY PRECAUTIONS

PARK MACHINE SAFELY

Before working on the machine:
- Park machine on a level surface.
- Lower bucket to the ground.
- Move turret swing lever to lock position.
- Run engine at slow idle speed without load for 3 minutes.
- Turn key switch to OFF to stop engine. Remove key from switch.
- Pull pilot control shut-off lever to LOCK position.
- Allow engine to cool.
- Close windows, roof window, and cab door.
- Lock all access doors and compartments.



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NEVER UNDERCUT A HIGH BANK

The edges could collapse or a land slide could occur causing serious injury or death.


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PROVIDE SIGNALS FOR JOBS INVOLVING A NUMBER OF MACHINES

For jobs involving several machines, provide signals commonly known by all personnel involved.

Also, appoint a signal person to co-ordinate the job site.

Make sure that all personnel obey the signal person's directions.


F3614

SAFETY PRECAUTIONS

AVOID HEATING NEAR PRESSURIZED FLUID LINES

Flammable spray can be generated by applying heat near pressurized fluid lines, resulting in severe burns to yourself and bystanders. Do not heat by welding, soldering, or using a torch near pressurized fluid lined or other flammable materials.

Pressurized lines can be accidentally cut when heat goes beyond the immediate flame area. Install temporary fire resistant guards to protect hoses or other materials when engaging in welding, soldering, etc.


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AVOID APPLYING HEAT TO LINES CONTAINING FLAMMABLE FLUIDS

Do not weld or flame cut pipes or tubes that contain flammable fluids. Clean them thoroughly with nonflammable solvent before welding or flame cutting them.


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AVOID HIGH PRESSURE FLUIDS

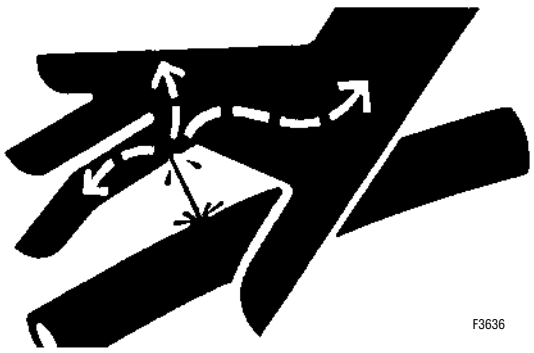
Escaping fluid under pressure can penetrate the skin causing serious injury.
Avoid this hazard by relieving pressure before disconnecting hydraulic or other lines.

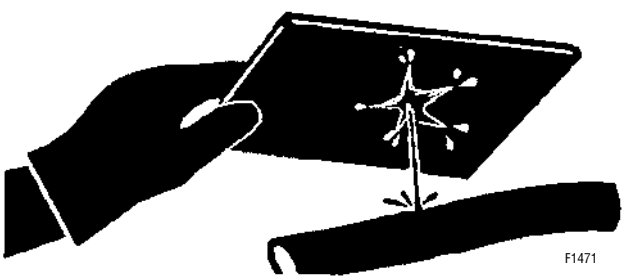
Relieve the pressure by moving the control levers several times.
Tighten all connections before applying pressure.
Wear a shield or protection glasses to protect your eyes.

Search for leaks with a piece of cardboard; take care to protect hands and body from high-pressure fluids.

If an accident occurs, see a doctor familiar with this type of injury immediately.

Any fluid injected into the skin must be surgically removed within a few hours or gangrene may result.


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SAFETY SIGNS

3. Decal, no walking.

4. Decal, window lock.

5. Decal, reference to manuals.

6. Decal, warning speed descending a slope.

7. Card, maintenance in progress.

8. Hooking point.

9. Decal, controls lock/unlock (safety lever).

10. Decal for engine hood warning.

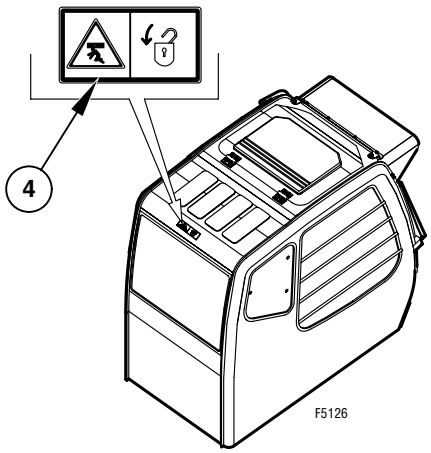
11. Boom and arm movement warning plate (triple articulation version).

12. Boom movement warning plate (monobloc version).

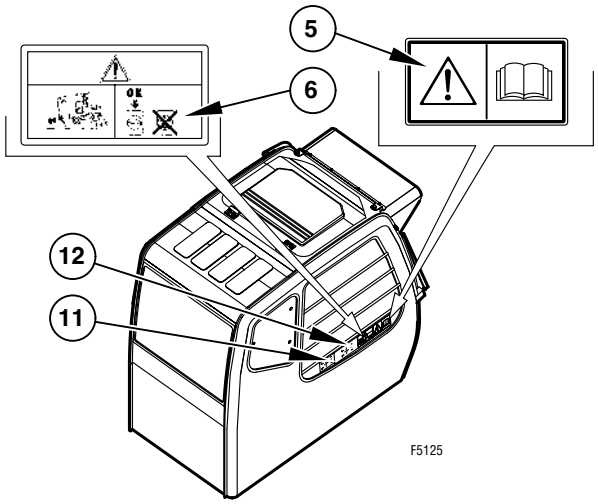
13. Hydraulic oil pump bleeding plate.



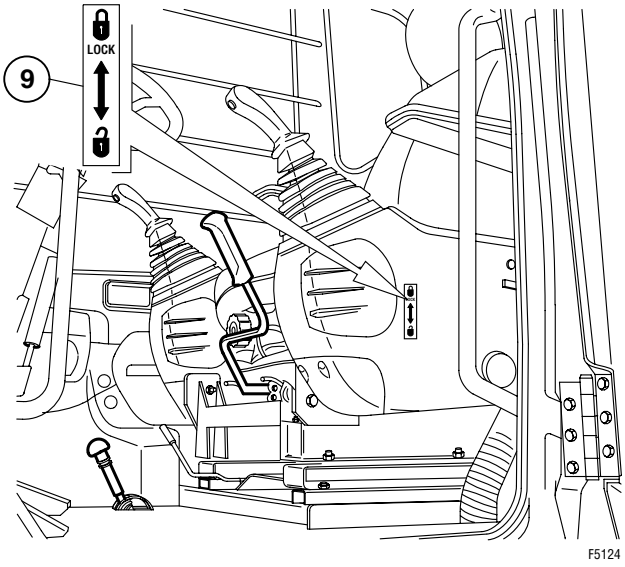
Card, maintenance in progress

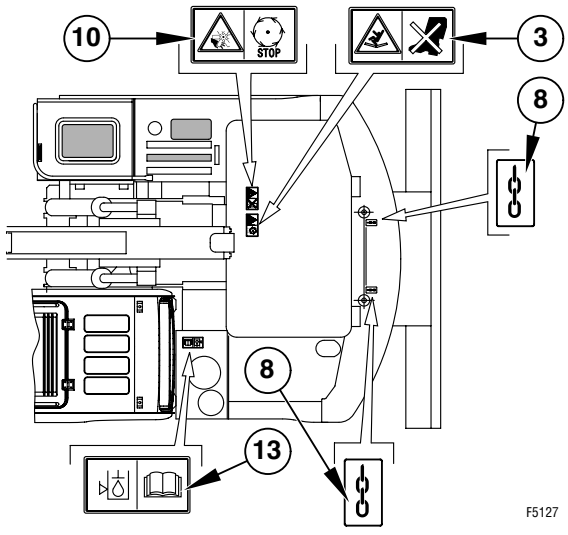


Rear glass cab, inner

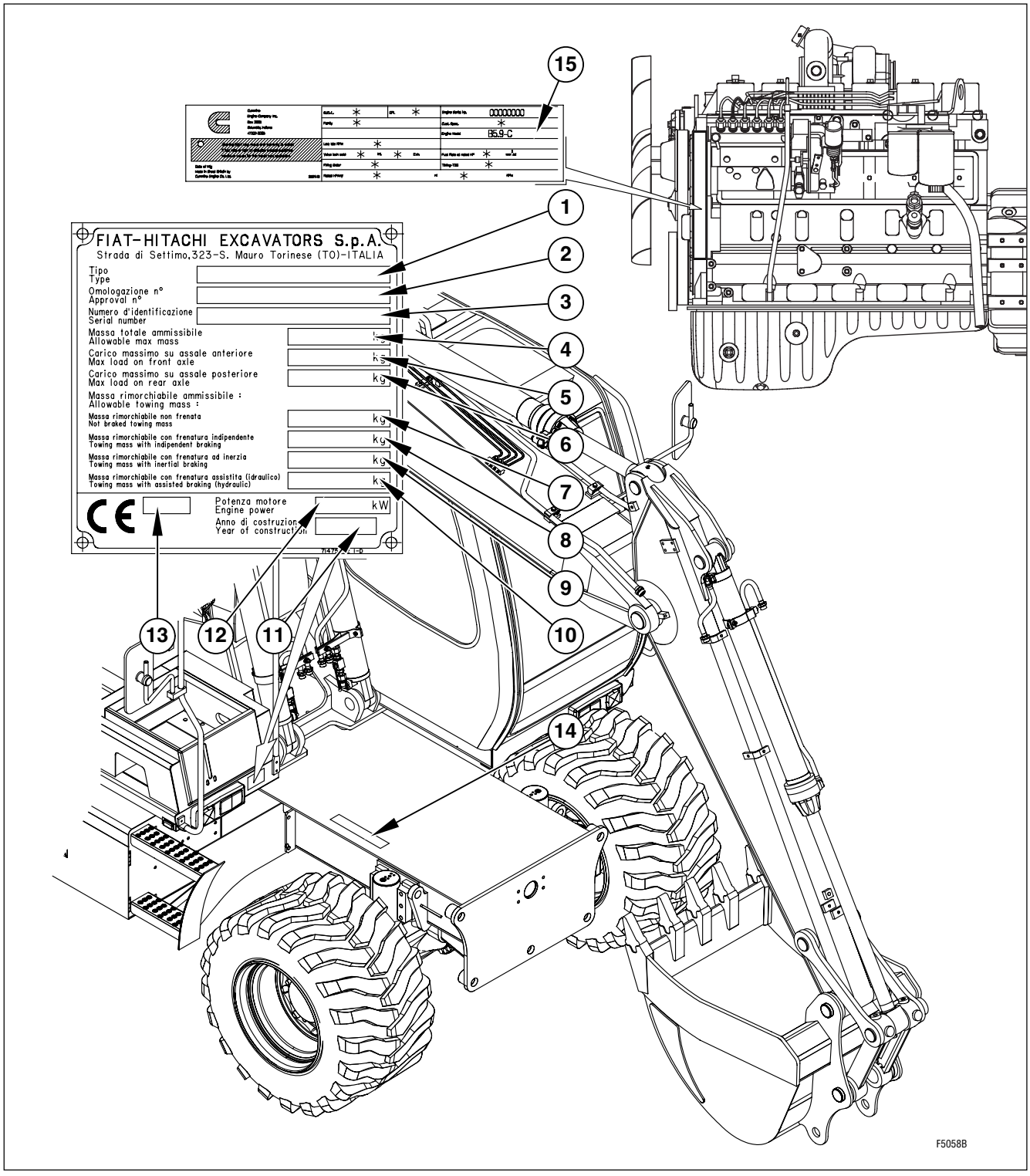


Cab right side, inner





1.4 IDENTIFICATION DATA

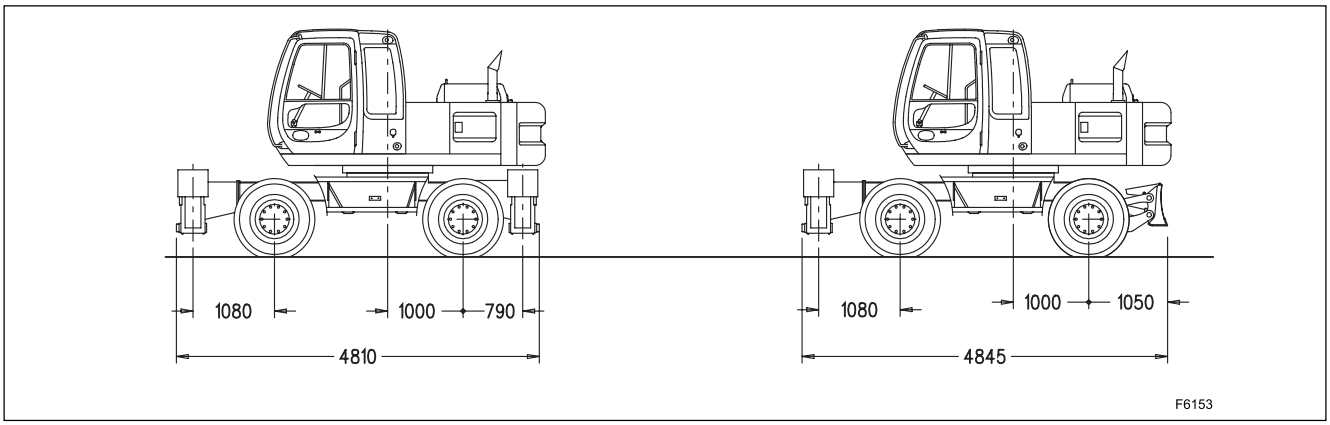


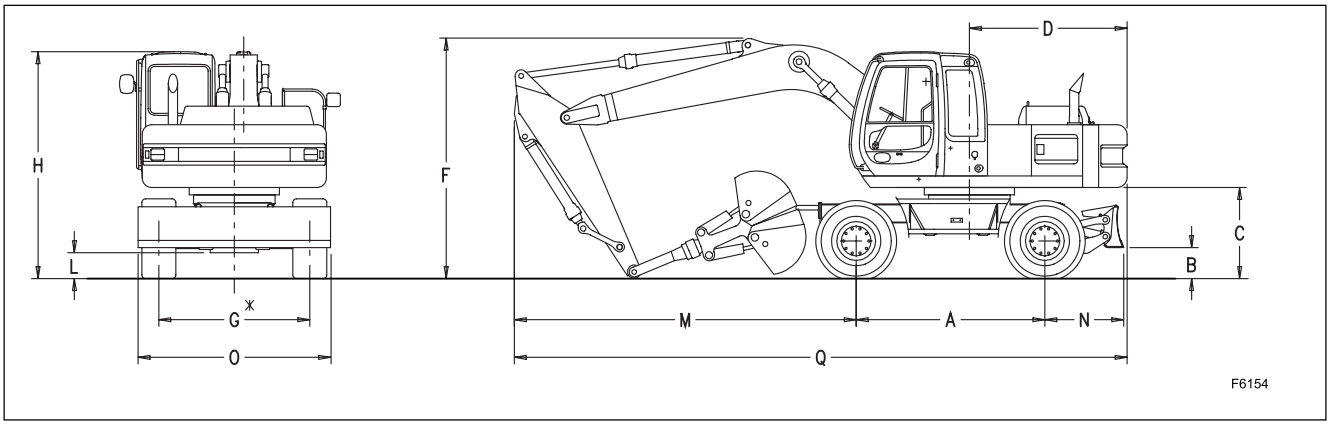
1.4.1 WHEELED EXCAVATOR MARKING DECAL

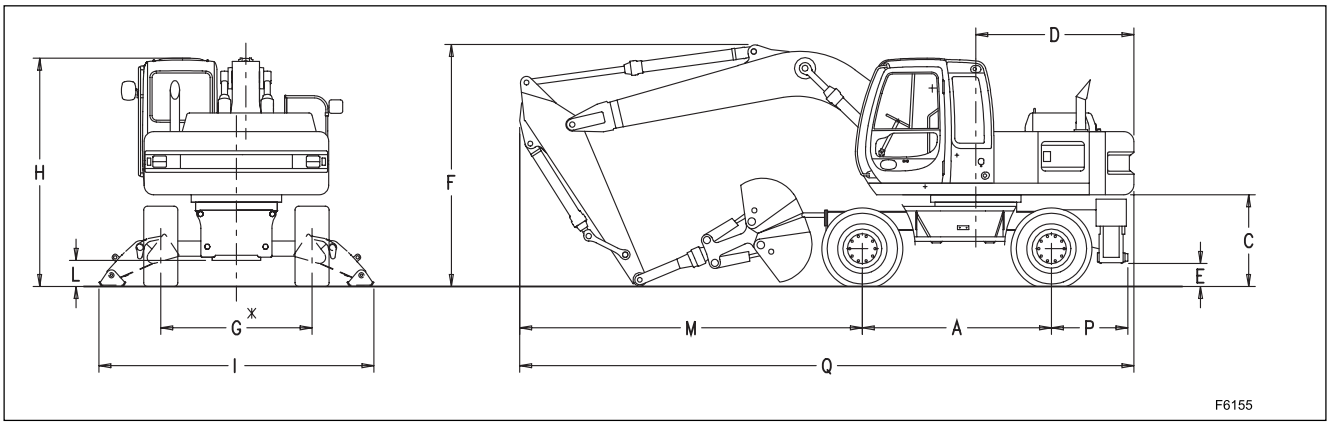
1. Machine technical type.
2. Homologation number.
3. Identification number.
4. Machine total mass allowable.
5. Max. load on front axle.
6. Max. load on rear axle.
7. Not applicable.
8. Not applicable.
9. Not applicable.
10. Not applicable.
11. Machine manufacturing year.
12. Engine power in kW.
13. Absorption coefficient.
14. Frame identification number.
15. Identification decal: diesel engine type and serial number.

2.6 DIMENSIONS (mm) - (MONOBLOC VERSION WITH CLAMSHELL BUCKET)

Version with individual tyres: 600/40 - 22.5







VERSIONS W/ DIPSTICK	A	B	C	D	E	F	* G	H	I	L	M	N	O	P	Q
2200	2500	430	1230	2090	325	3200	1930	3040	3635	365	4530	1050	2550	1010	8120
2570	2500	430	1230	2090	325	3000	1930	3040	3635	365	4380	1050	2550	1010	7970
3075	2500	430	1230	2090	325	3850	1930	3040	3635	365	4245	1050	2550	1010	7835

F6809I

*With twin tyres 10.00-20 NB38ML: ..... 1902 mm
individual tyres 600/40-22.5: ..... 1880 mm

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INDEX (continued)

Group 4 - SWING DEVICE - O/P - D/A SRD4-4-1

4.1 Swing device - O/P
4.2 Swing hydraulic motor - O/P
4.3 Swing reduction device - O/P
4.1 Swing hydraulic motor - D/A
4.2 Disassembly and assembly of swing reduction device - D/A

Group 5 - PILOT VALVES - O/P PV4-5-1

5.1 Hand pilot valve - O/P
5.2 Travel pilot valve - O/P

Group 6 - CENTER JOINT - O/P - D/A CJ4-6-1

6.1 Center joint - O/P
6.1 Disassembly and assembly of center joint - D/A

Group 7 - STEERING VALVE - O/P - D/A SV4-7-1

7.1 Steering valve - O/P
7.1 Steering unit disassembly and assembly - D/A

Group 8 - BRAKE PEDAL VALVE - O/P - D/A BRV4-8-1

8.1 Brake pedal valve - O/P
8.1 Maintenance - D/A

Group 9 - ACCUMULATORS - O/P - D/A ACC4-9-1

9.1 Accumulators - O/P
9.1 Disassembly and assembly of accumulator - D/A

Group 10 - SOLENOID VALVES - O/P - D/A SOV4-10-1

10.1 Selector solenoid valves - O/P
10.2 Services solenoid valves group - O/P

Group 11 - PRIORITY VALVE - O/P PRV4-11-1

11.1 Priority valve

O/P = OPERATION PRINCIPLE
D/A = DISASSEMBLY AND ASSEMBLY

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1.3.2 MAINTENANCE STANDARD

Refer to maintenance standard as described on Operator's Manual N. 604.03.571

1.3.3 SPECIFICATIONS

Oil tank

- Capacity	160 l (42.2 gals)
- Oil capacity	85 l (22.5 gals)
- Weight	98 kg (216 lbs)

Full-Flow Filter

- Type	paper element
- Filtration area	14,000 cm^2
- Max. filtration	10μ
- Oil flow rate	360 l/min
- Relief valve set pressure	7 kg/cm^2

Suction Filter

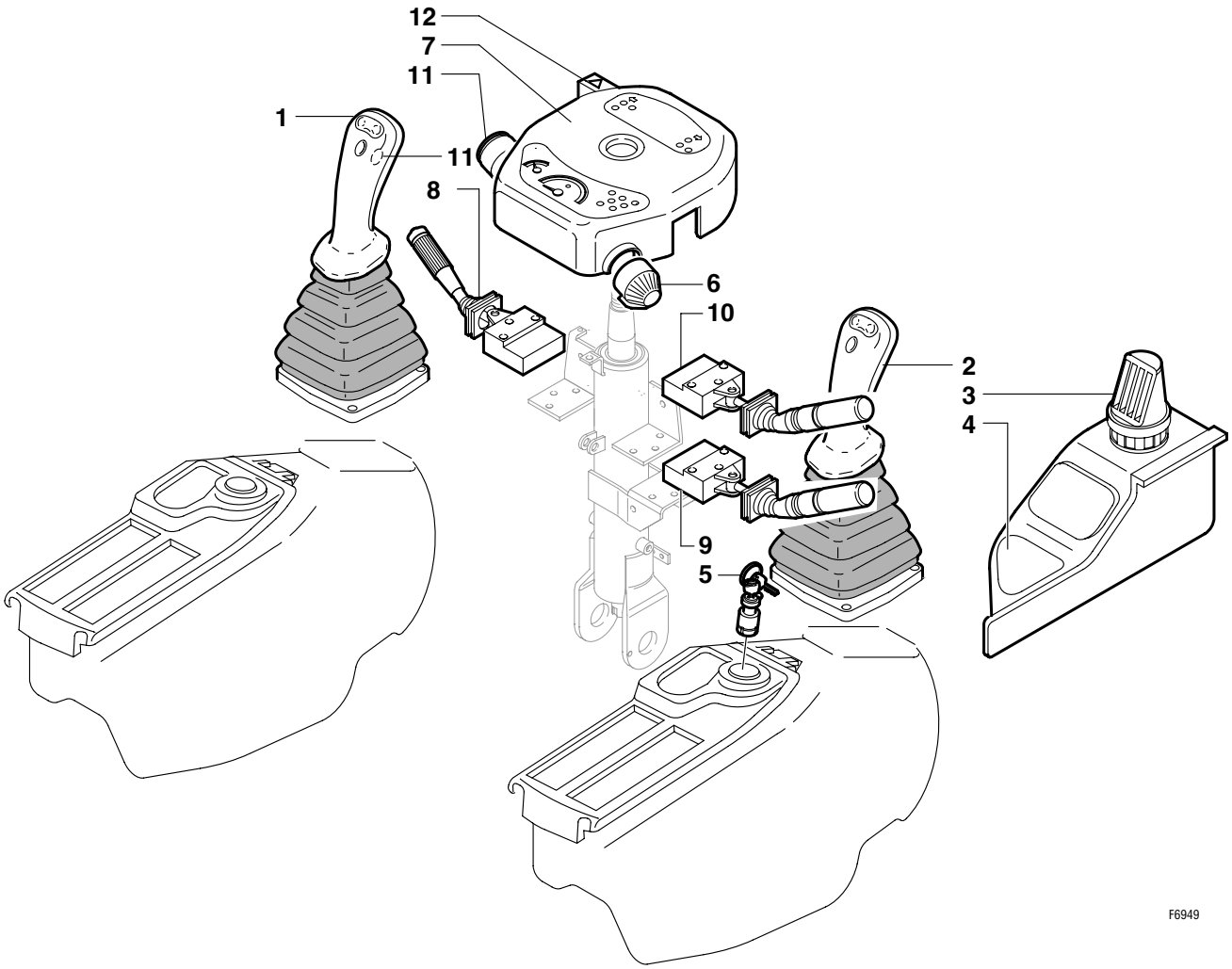
- Filtration area	1.890 cm^2
- Max. filtration	177 μ
- Oil flow rate	600 l/min

Air breather (in the oil cap)

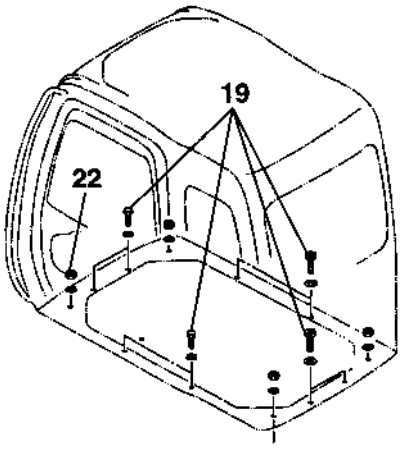
- Max. filtration		10μ
- Filtration area		160 cm^2
- Valve set:	intake	0.04 ± 0.05 kg/cm^2 at 1 l/min
	exhaust	0.5 ± 0.04 kg/cm^2 at 1 l/min

(B) Cab electric control location.

1 - Left pilot valve switches
2 - Right pilot valve switches
3 - Monitor
4 - Control panel 1
5 - Starting key switch
6 - Switch for brake and axle lock
7 - Central panel
8 - Wiper switch
9 - Speed change control
10 - Light switch
11 - Horn buttons
12 - Emergency light switch

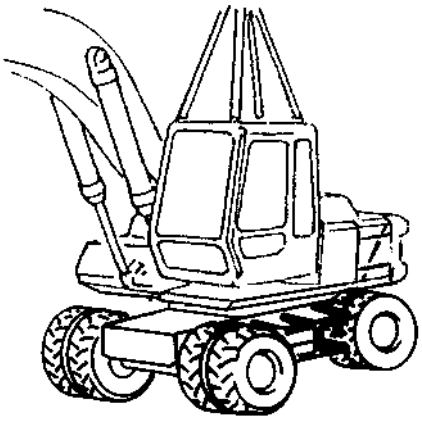


11 Remove screws (**19**) and nuts (**22**).



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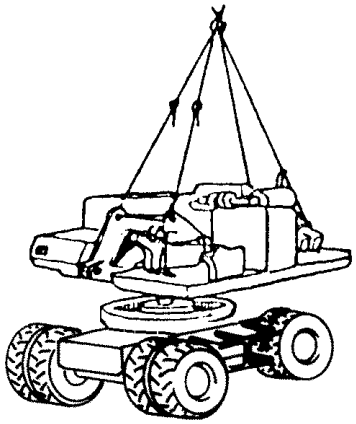
12 Carefully remove the cab.



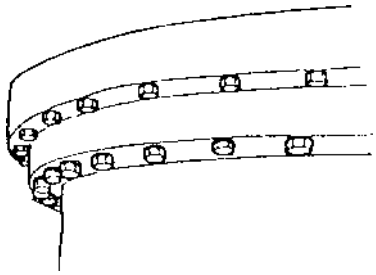
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Installation

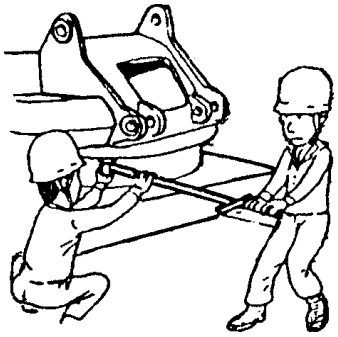
1 Secure lifting cables and blocks to the front and rear of the main frame.
Level the frame adjusting the blocks.
Lift the turret.



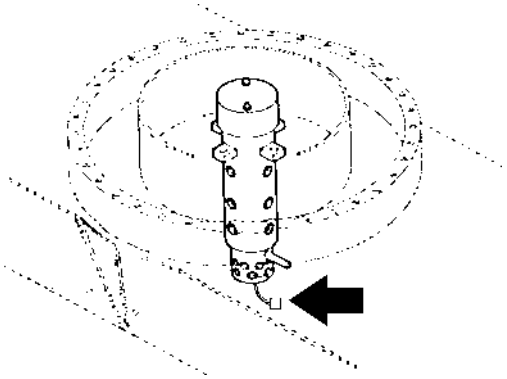
2 Place the turret on the undercarriage and mount it mounting the screws of the ring gear.
Tighten temporarily the screws.



3 Lower the turret and tighten the screws securing the ring gear.
Tightening torque: 33 ± 3 daNm.



4 Plug in the electrical connection of the central joint.



1.12 FLEXIBLE HOSES AND CONNECTIONS

1.12.1 FLEXIBLE HOSES

Description

The flexible hoses for pressurized oil include three fundamental parts (fig. 1):

- A sub-layer of extruded and vulcanized elastomer.

- One or more layers of reinforcing metal insertions.

- An outer covering layer of vulcanized elastomer.

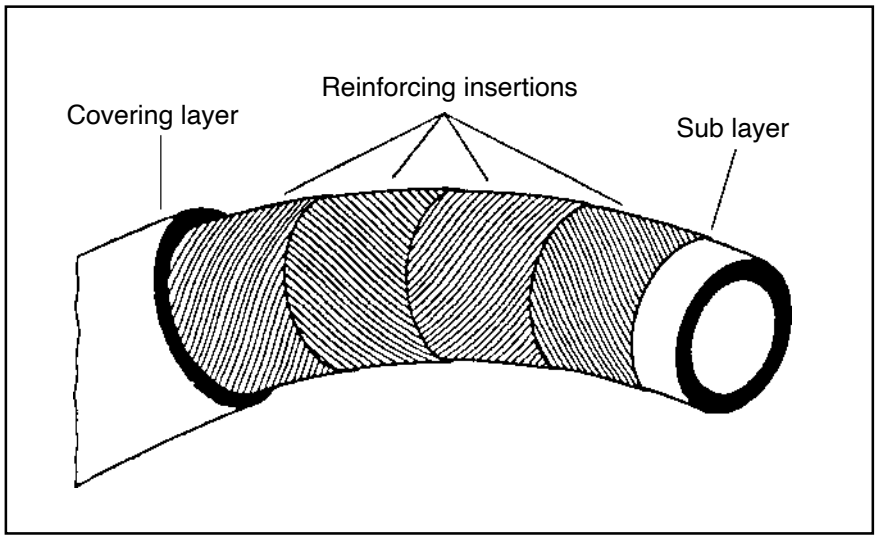
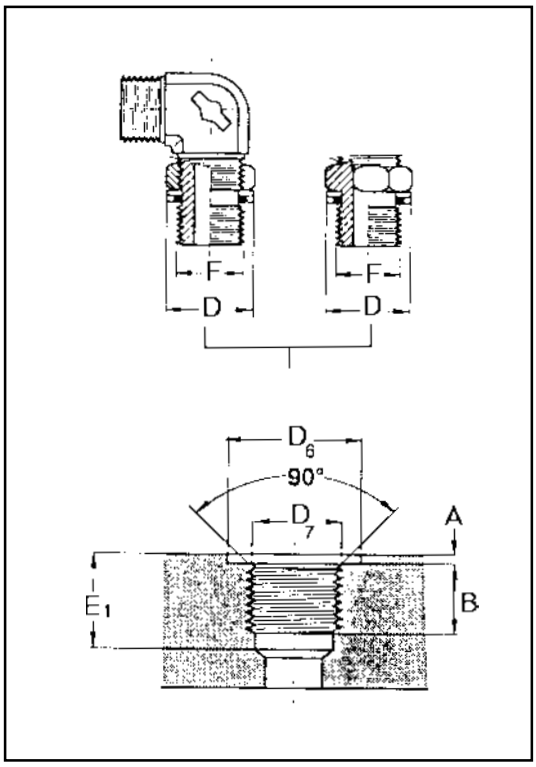


Fig. 1

Cylindrical metric thread



Dimensions in mm

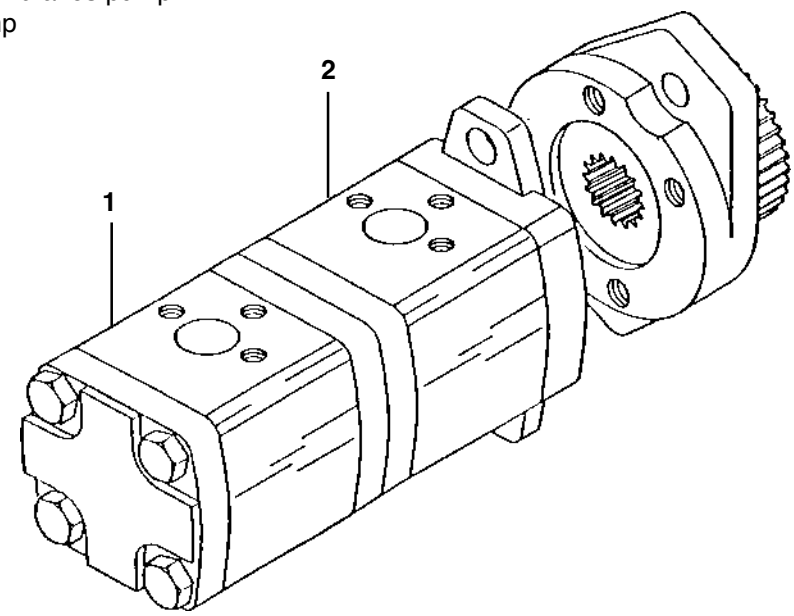
Dimensions F		10x1	12x1,5	14x1,5	16x1,5	18x1,5	20x1,5	22x1,5	26x1,5	27x2	33x2	42x2	48x2
Max. out. Ø		10	12	14	16	18	20	22	26	27	33	42	48
Min. inn. Ø		8,9	10,3	12,3	14,3	16,3	18,3	20,3	24,3	24,8	30,8	39,8	45,8
A		1	1,5	1,5	1,5	2	2	2,5	2,5	2,5	2,5	2,5	2,5
B		8	12	12	12	12	14	14	16	16	18	20	22
B_1		13,5	18,5	18,5	18,5	18,5	20,5	20,5	22,5	24	26	28	30
D_7		10	12	14	16	18	20	22	26	27	33	42	48
D		15,5	18,5	19,5	23	26	28	30	35	36	43	53	60
D_6		16,5	20	21,5	24,5	27,5	30	31,5	36,5	37,5	45	55	62,5
O-Ring	Ø I	7,66	9,13	10,78	13,10	15,08	17,13	18,72	23,47	23,4	29,75	37,69	44,04
	S	1,78	2,62	2,62	2,62	2,62	2,62	2,62	2,62	3,53	3,53	3,53	3,53

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2.2.2 GEAR DOUBLE PUMP

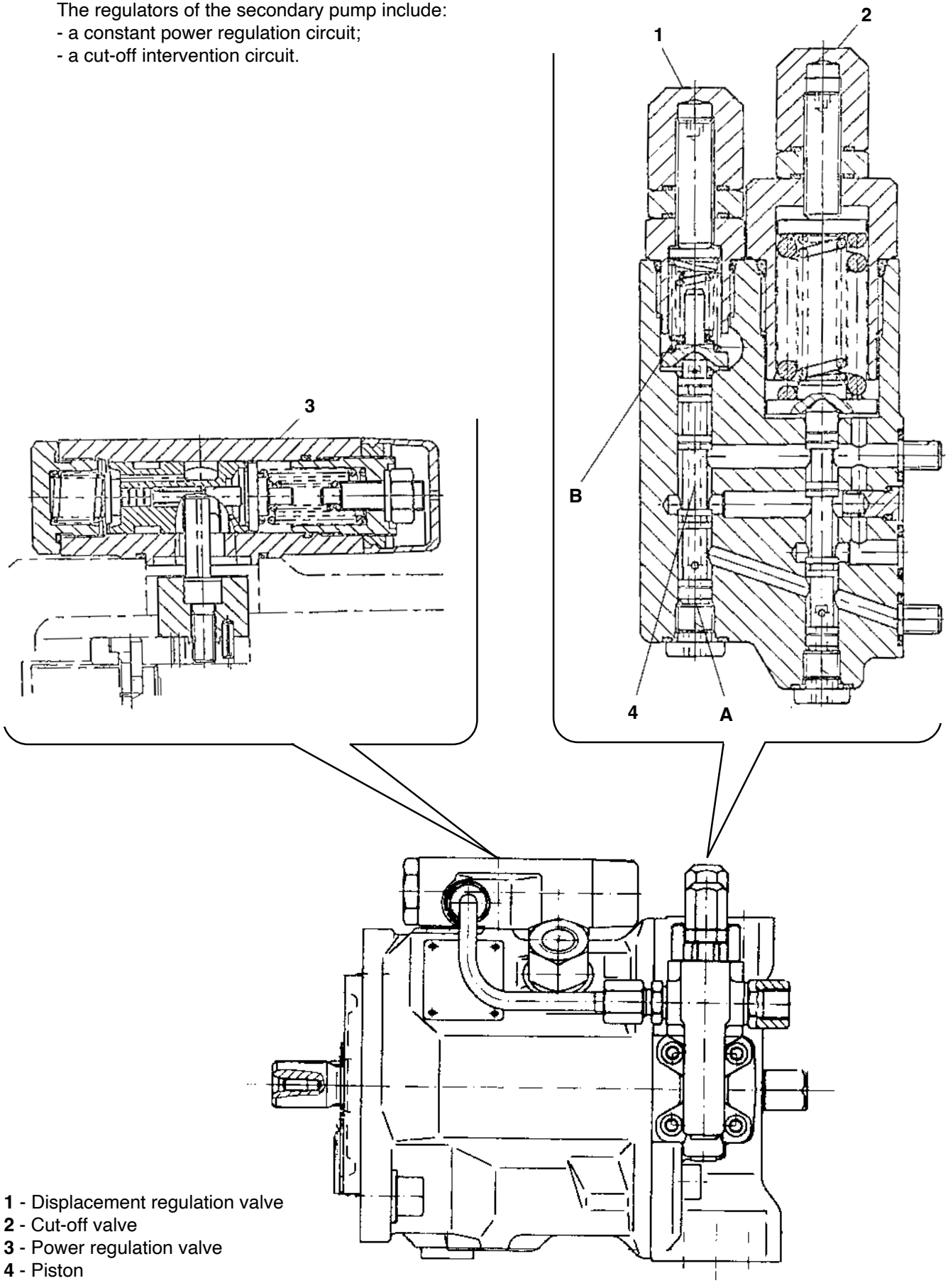
The gear double pump is mounted on the timing left side of the engine and includes two gear pumps mounted axially.

1 - Power system/brakes pump
2 - Steering pump



2.3.4 REGULATORS

The regulators of the secondary pump include:
- a constant power regulation circuit;
- a cut-off intervention circuit.



1 - Displacement regulation valve
2 - Cut-off valve
3 - Power regulation valve
4 - Piston