

Shop Manual

H185S

HYDRAULIC SHOVEL

SERIAL NUMBER H185 6081

This material is proprietary to Komatsu America Corp. and is not to be reproduced, used, or disclosed except in accordance with written authorization from Komatsu America Corp.

It is our policy to improve our products whenever it is possible and practical to do so. We reserve the right to make changes or improvements at any time without incurring any obligation to install such changes on products sold previously.

Due to this continuous program of research and development, revisions may be made to this publication. It is recommended that customers contact their distributor for information on the latest revision.

Copyright 2005 Komatsu
Printed in U.S.A.
Komatsu America Corp.

February 2005

Series 06078 
- 06095

With this service manual MANNESMANN DEMAG BAUMASCHINENM provides you with the description of the construction and the function of the major systems of the hydraulic excavator H 185.

The service manual consists of 2 sections:

Section 1 General View

yellow pages

Section 2 Functional Description,
Inspections and Adjustments.

green pages

We describe for you all functions and how to carry out the inspections and adjustments.

continued

MANNESMANN DEMAG Baumaschinen	FOREWORD	0509i-00-05
---	----------	-------------

Cont'd.

How do you find "your" desired information?

In the table of contents all the functions and components are shown in sequence of description.

The number given in the right column refers to the corresponding picture.

If after reading this service manual you can give us suggestions and comments for improvements - please do not hesitate to contact us.

MANNESMANN DEMAG BAUMASCHINEN
Service Training - Abtlg.8015.30
Postfach 180361
4000 Düsseldorf 13
Tel.:0211 / 7109 - 206
Fax.:0211 / 743307

The editorial staff will be pleased about your cooperation.

-FROM THE PRACTICE - FOR THE PRACTICE-

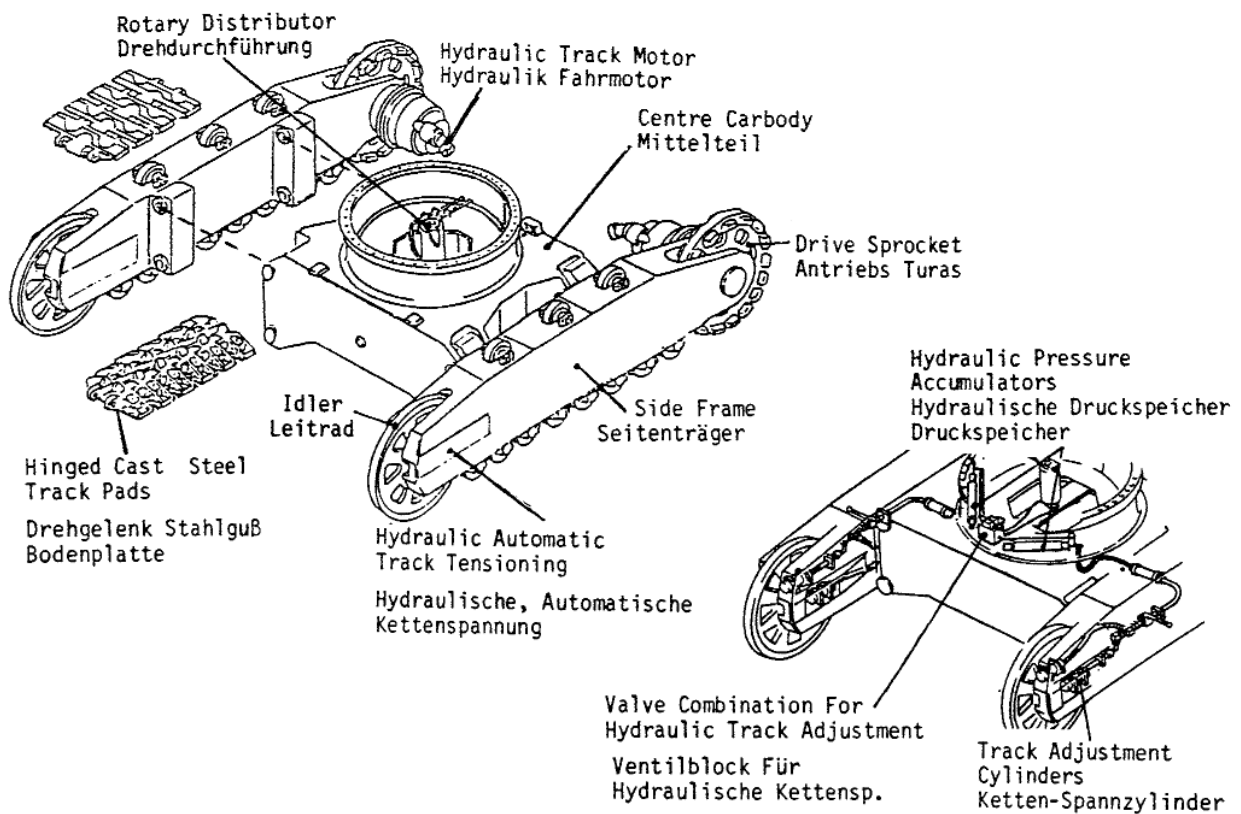
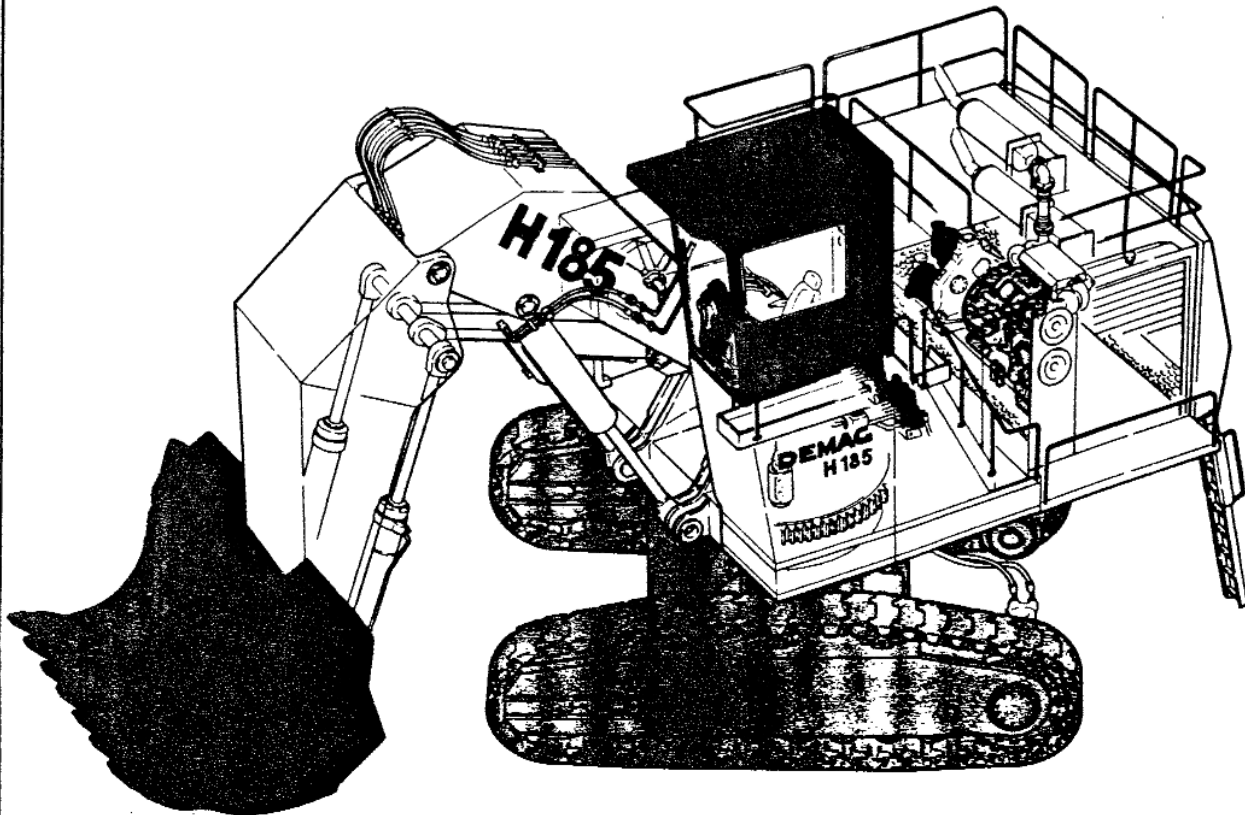
Note:

This service manual corresponds to the state of development of the machine at the time the manual was produced.

Variations based on special customers request and special equipment are not included in this manual.

Part 1

1. TECHNICAL SUMMARY
2. ASSEMBLING THE EXCAVATOR



GENERAL

9021

The DEMAG H 185 is designed as a fast cycling compact hydraulic excavator having one engine and a simple three pump hydraulic system.

Standard attachments for the basic machine are:

Shovel 13 or 14 cu.m.

Back hoe 13 cu.m.

UNDERCARRIAGE

Two track sideframes are pinned to a central carbody. These are heavy welded structures, incorporating hollow cast steel pieces at high stress points, which are stress relieved at the end of fabrication.

Each sideframe carries a set of hinged cast steel track pads run over a single path of 8 bottom rollers and 3 top rollers. Drive at one end of the track frame is provided by a cast steel sprocket and a compact planetary gearbox independently powered by a single high speed axial piston motor.

At the other end the idler wheel assembly provides track tension automatically maintained by hydraulic cylinder.

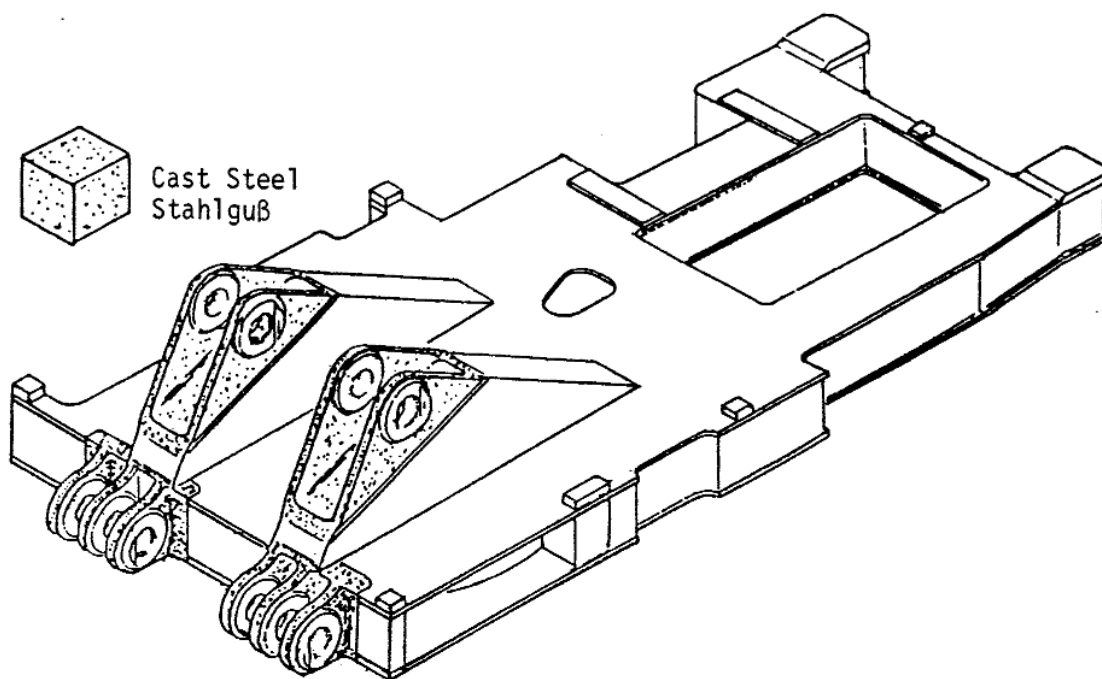
Travel speed: 2,3 km/h (1.3 miles)

Track pad width: 800mm oder 1000mm

CARBODY

The carbody is connected to each sideframe by 8 large diameter pins.

Mounted above this is the large triple roller slew bearing with external teeth. Automatic lubrication is provided.



MANNESMANN DEMAG Baumaschinen	TECHNICAL SUMMARY	00261-01-02 1.
---	-------------------	-------------------

UPPERSTRUCTURE

9022

The revolving platform is a fabricated box sectioned open-frame structure which carries the main moduls and distributes the attachment and torque forces to the slew ring mounting.

The revolving platform is machined at one multi-function tool to ensure consistant accuracy in all planes and to receive without stress the jig assembled modules.

The spread at the rear of the frame provides a wide support for the single piece cast steel counterweight.

DIESEL ENGINE

H185 = CUMMINS KTA 38C / 746KW at 1800 1/min

H185 S = CUMMINS KTTA 38C / 840KW at 1800 1/min.

Alternativ: Caterpillar or GM

The fuel tank is 3700 litres which gives a potential of about 30 hours running.

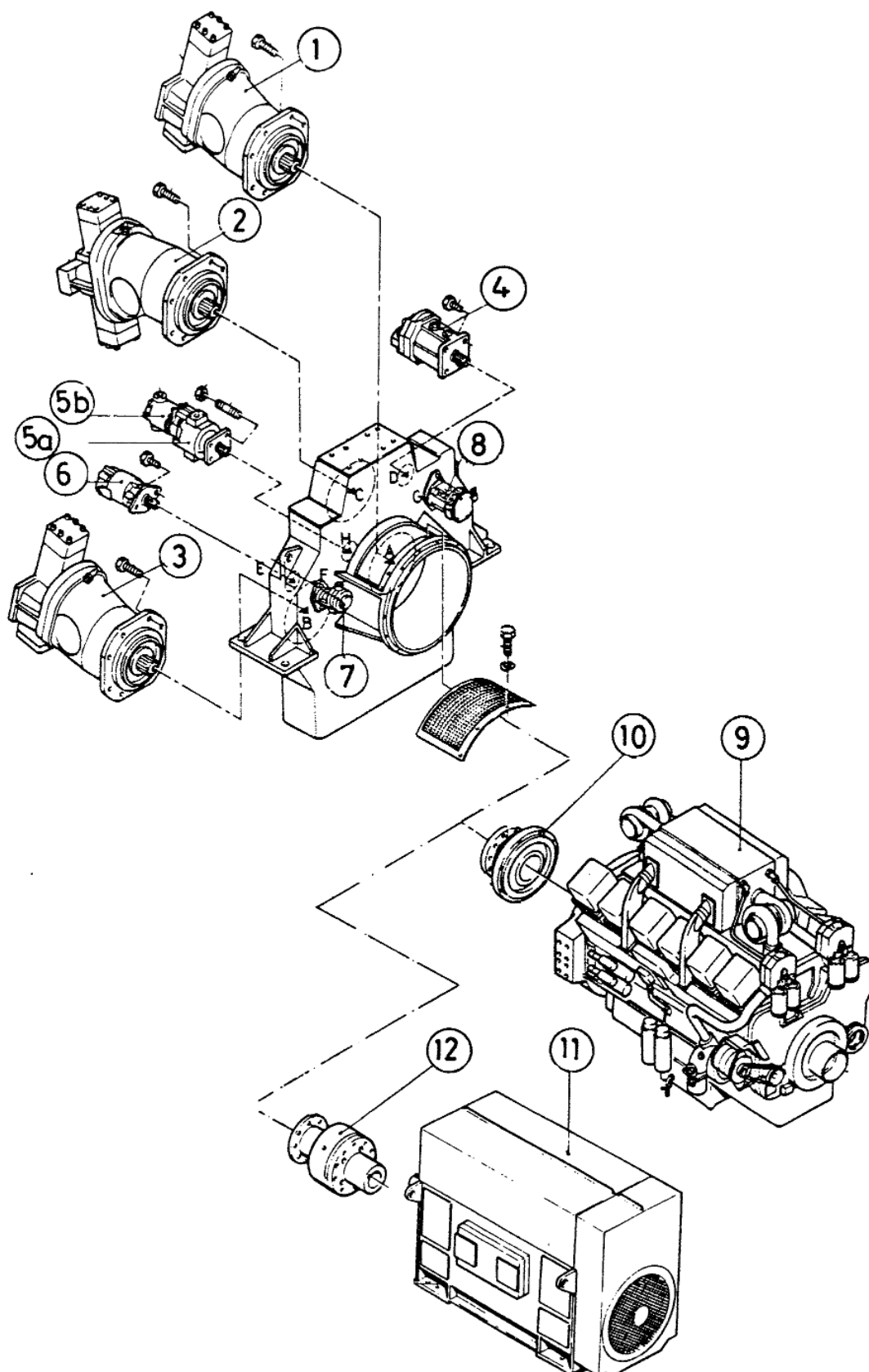
A pump distributor gearbox is bolted to the rear of the engine and the combined unit is connected to the platform with composite mounting blocks. The distributor gearbox lubricating oil is independantly cooled and filtered continuously.

ELECTRIC MOTOR

SIEMENS or Equivelants, 50HZ / 850KW at 1500 1/min.

60Hz / 850KW at 1800 1/min.

The pump distributor gearbox is connected to the motor by a solid shaft and a flexible type coupling. The distributor gearbox lubricating oil is independantly cooled and filtered continuously.



HYDRAULIC PUMPS

9023

Three identical hydraulic variable displacement axial piston pumps are set to run at 800 rpm and each deliver through a monitored screw-on 200 micron high pressure filter to one of three hydraulically actuated valve blocks.

The optimal utilization of the available engine power is managed by the LOAD LIMIT REGULATION System.

The four auxilliary pumps (4 - 6) and the two pumps (7 + 8) for optional systems are mounted to the gearbox as well

Legend:

Axial piston pump, each 796 l/min. (1 - 3)
for all working motions
Drive speed* 796 rpm

Axial piston pump, 159 l/min. (4)
for cooler fan drive
Drive speed* 1989 rpm

Gear pump, 126 l/min. (5a)
for pump bearing lubrication
Drive speed* 1800 rpm

Gear pump, 77 l/min. (5b)
pump control and pilot pressure
Drive speed* 1800 rpm

Gear pump, 85 l/min. (6)
for distributor gear lubrication
Drive speed* 1989 rpm

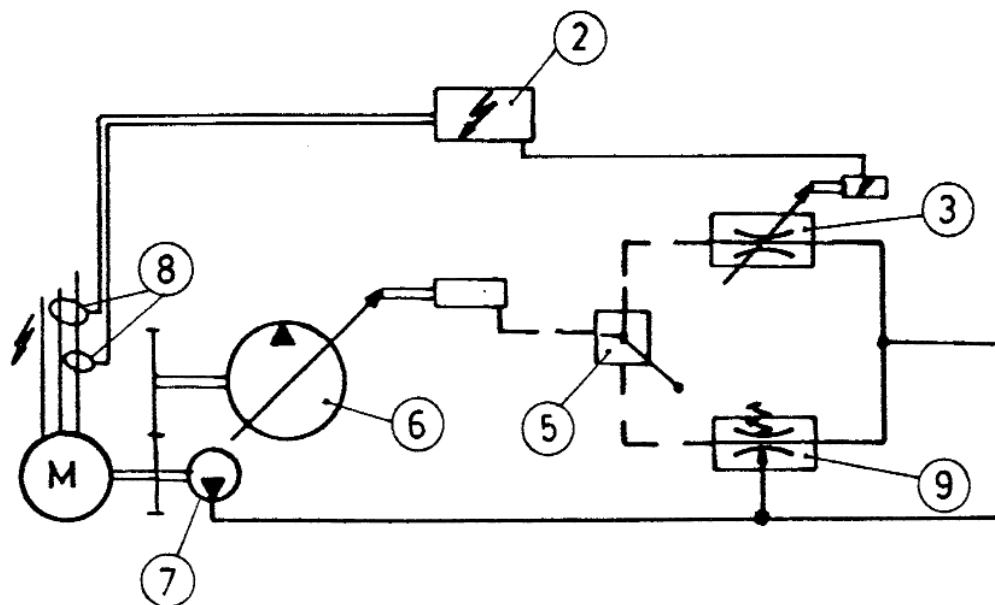
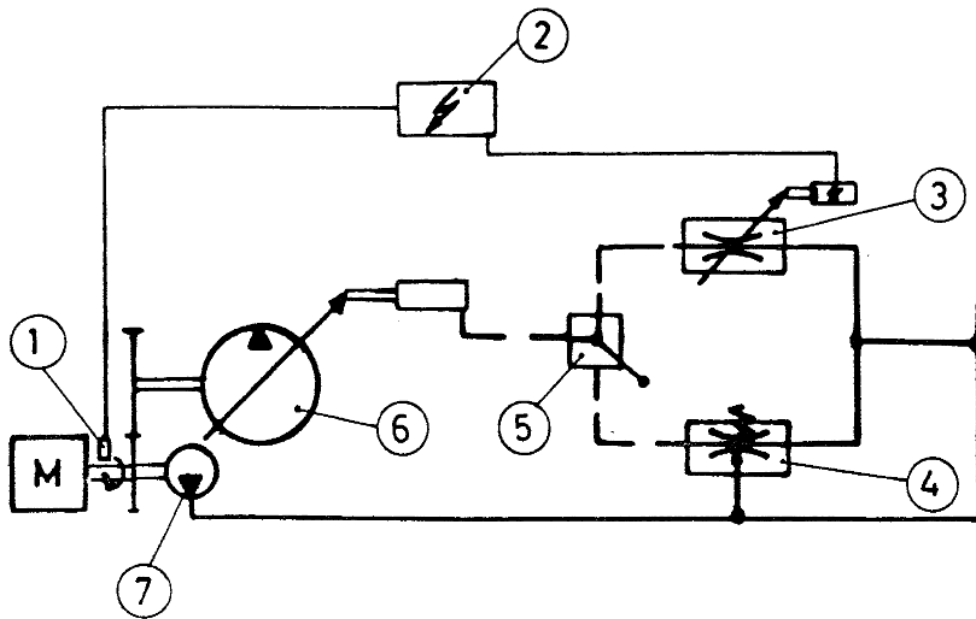
Gear pump, 29 l/min. (7) (option)
for air condition drive
Drive speed* 1989 rpm

Axial piston pump, 125 l/min. max. (8) (option)
for gen-set drive
Drive speed* 1989 rpm

Diesel engine with coupling (9 + 10)
Electric motor with coupling (11 + 12)

* Note:

Drive speed at 1800 rpm input drive speed.



MANNESMANN DEMAG Baumaschinen	TECHNICAL SUMMARY	0026I-01-04 1.
---	-------------------	-------------------

LOAD LIMIT REGULATION *

9008

Legend: DIESEL ENGINE	ELECTRIC MOTOR
Speed sensor (MPU) (1)	Voltage/Current pick up (8)
Electronic Load Limit - (2)	Electronic Load Limit - (2)
Regulation EGR	Regulation EGR
Proportional pressure (3)	Proportional pressure (3)
reducing valve	reducing valve
Load limit valve (4)	Power control valve (9)
Change over "Hydraulic (5)	Change over "Hydraulic/ (5)
Electronical" Regulation	Electronic" Regulation
Main pump (6)	Main pump (6)
Pilot pressure pump (7)	Pilot pressure pump (7)

The Load Limit Regulation System contents both: The Electronic and the Hydraulic Load Limit Regulation.

The Electronic Load Limit Regulation (EGR) is used as the standard system. The hydraulic system is installed for emergency only, in case of disturbance or break down of the EGR. Thus the machine can be used while the EGR will be repaired. The change over has to be done with the three way cock (5).

The EGR serves the purpose of hydraulic pump regulation as a function of engine (motor) load. Moreover, it assures the best possible relation between the output of the diesel engine or electric motor and the power requirement which depends upon the changing operation conditions.

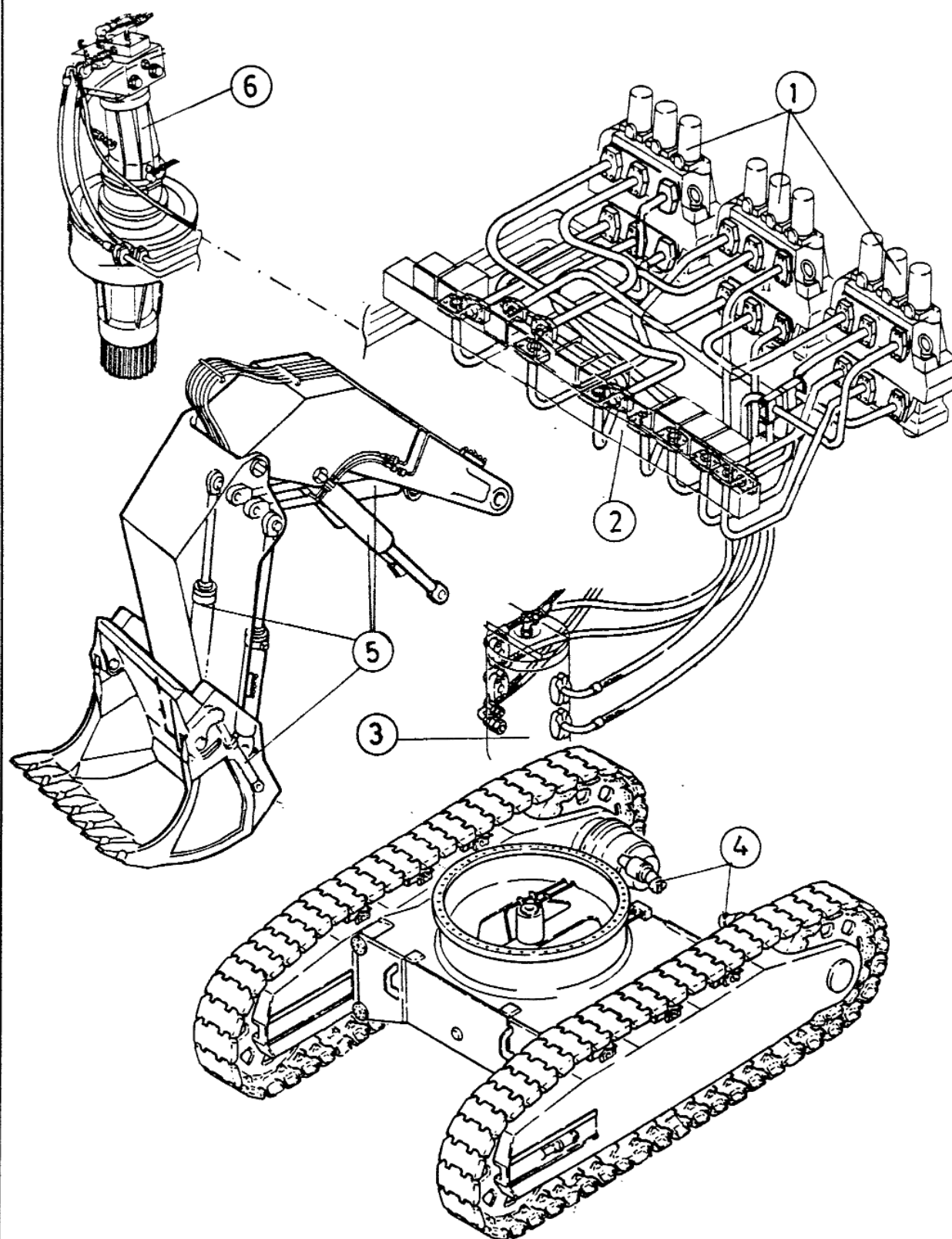
With Diesel Engine drive the engine rpm is the relevant primary Signal (Information) for the pump regulation system.

With Electric Motor drive the voltage and the current are the relevant primary Signal (Information) for the pump regulation system.

The regulation system is adjusted, that at a fixed load on the engine or the electric motor, the pumps start to destroke.

* Note:

The picture shows the simplified system. It ist not for a particular machine type.



MAIN HYDRAULIC SYSTEM

9025

Legend:

Control blocks	(1)
Distributor manifold	(2)
Rotary distributor	(3)
Travel motors	(4)
Attachment	(5)
Slew motor	(6)

Design:

The hydraulic oil coming from the MAIN HYDRAULIC PUMPS gets distributed by the function of the CONTROL BLOCKS (1) to the by the operator selected users.

The DISTRIBUTOR MANIFOLD (2) serves to distribute the hydraulic oil to the ATTACHMENT CYLINDER.

The connection is done by hoses (not shown).

The oil for the TRAVEL MOTORS (4) flows directly via the ROTARY DISTRIBUTOR (3) to the motors.

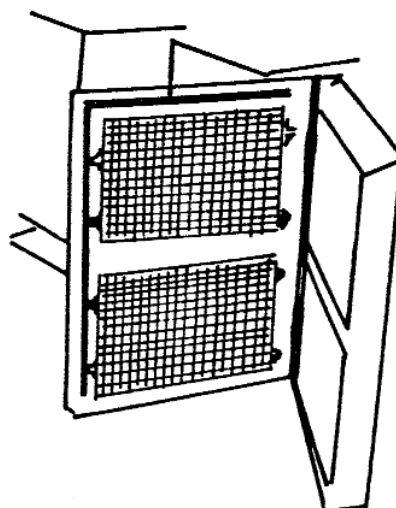
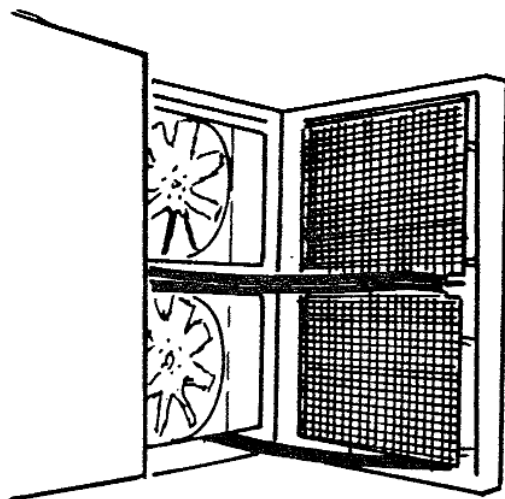
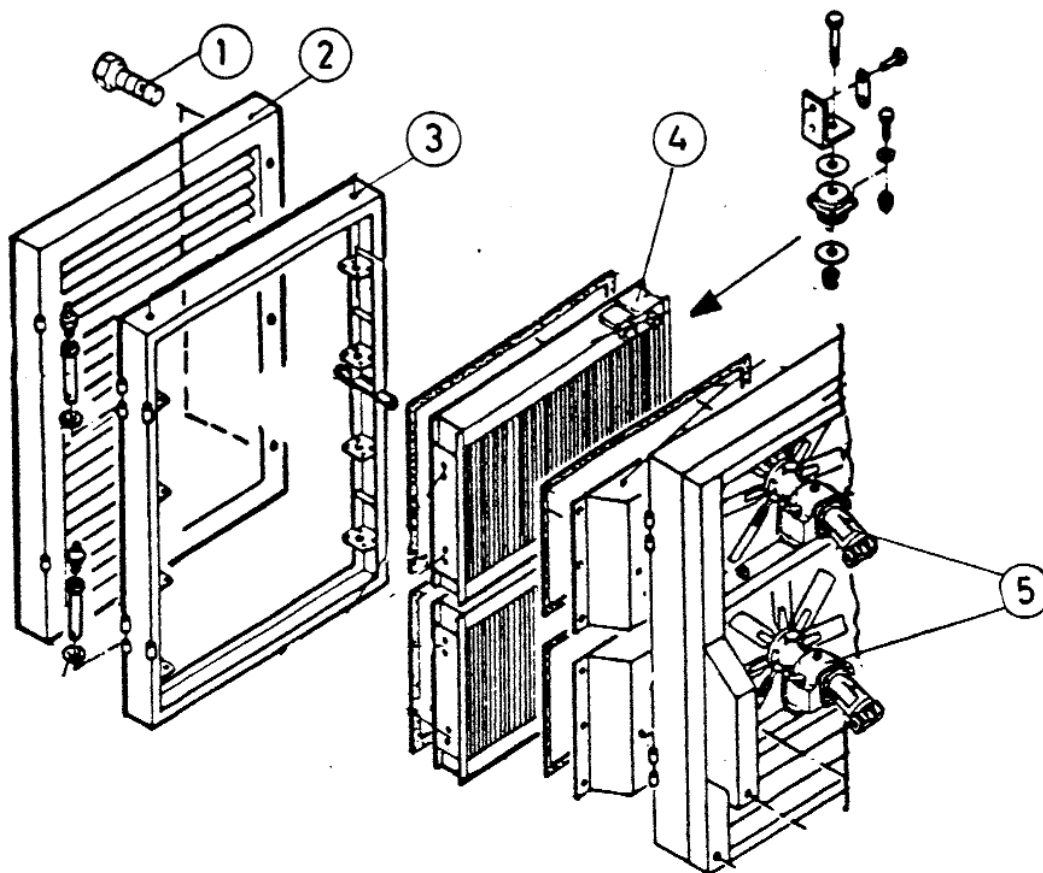
The SLEW MOTOR (6) is direct connected to the right hand control block.

Control Blocks for Loader Bucket Attachment:

Travel	Travel	Slew
Boom	Clam	Bucket
Stick	Boom	Stick
-----	-----	-----

Control Blocks for Back Hoe Attachment:

Travel	Travel	Slew
Boom	Bucket	Bucket
Stick	Boom	Stick
-----	-----	-----



HYDRAULIC OIL COOLERS

9026

Legend:

Fastening bolt	(1)
Noise shield	(2)
Frame	(3)
Radiator	(4)
Hydraulic motor with fan	(5)

Design:

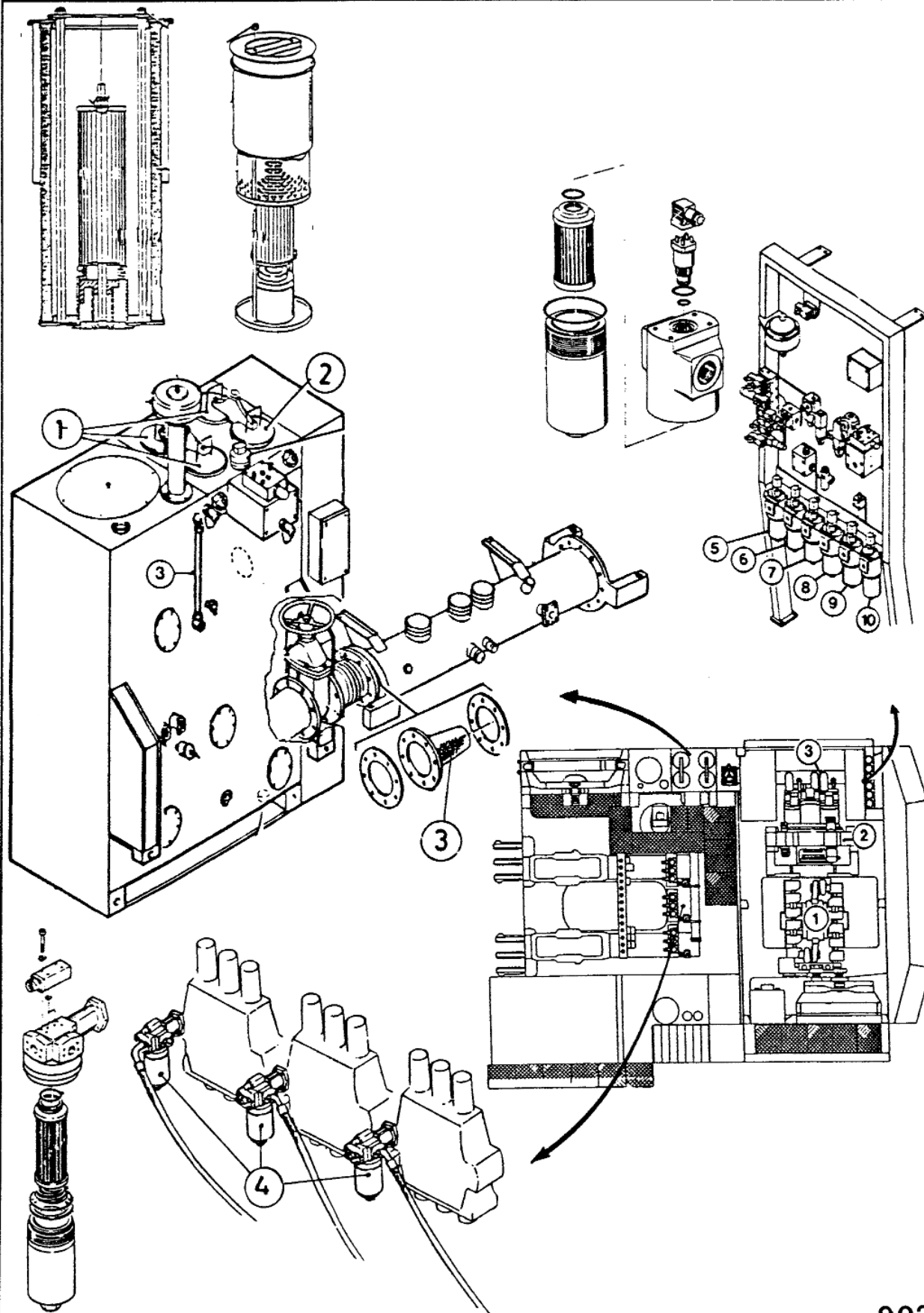
There are two hydraulic oil coolers in front of the hydraulic tank on the r.h. side of the platform.

They are both in one frame, one above the other. The for the cooling needed airstream is produced by hydraulic driven fans. The air flows from outside to inside through the coolers.

For a better cleaning, the noise shield with frame and the coolers can be moved to the side. ("Swing out cooler")

Note:

By this coolers the gear oil of the pump distributor gear gets cooled as well. Therefore some passages are seperated from the hydraulic oil part.



HYDRAULIC OIL FILTER

9027

Legend:

Filter for:

- | | |
|-----------------------------------|------|
| Return oil | (1) |
| Leak oil (case drain) | (2) |
| Oil to the pumps (strainer) | (3) |
| Main stream | (4) |
| Pumpregulation and Pilot pressure | (5) |
| Pump bearing lubrication | (6) |
| Generator drive *) | (7) |
| Cooler fan drive | (8) |
| Air condition drive *) | (9) |
| Pump distributor gear lubrication | (10) |

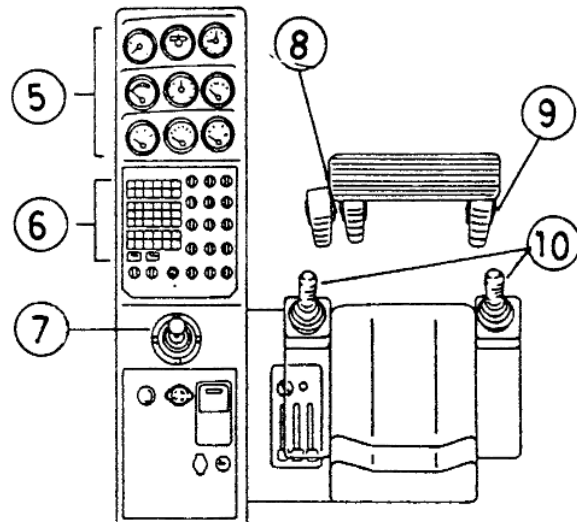
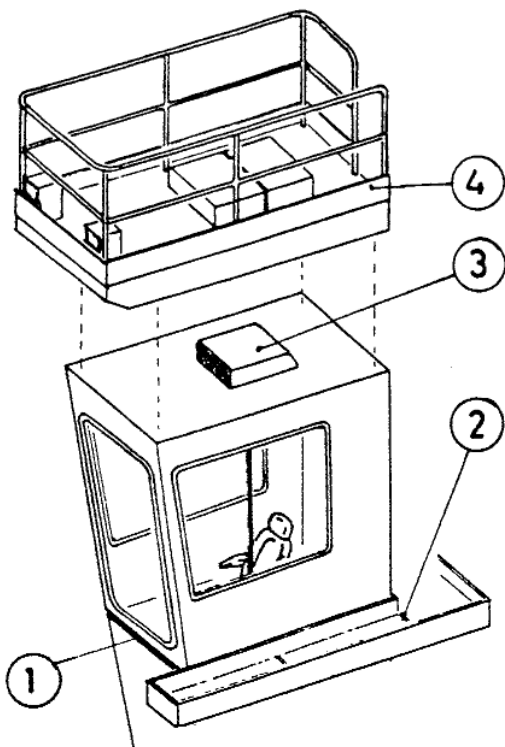
*) Optional equipment

Filtration is provided by one high pressure filter (4) in front of each valve block and 4 large volume 10 micron return line filters (1 + 2), with 100 micron safety by-pass filters mounted inside of the filter chamber of the main hydraulic oil reservoir. This cleans the oil before discharge into the main hydraulic oil reservoir chamber.

As well all auxilliary system are filtered twice. Once by the pressure filter of the pump line (5 - 10) and once by the return filters (1 + 2).

All filters are electrically monitored. At a specified grade of contamination a warning light ist switched on at the operators dashboard.

Only the strainer (3) inside the suction pipe is not monitored because of the greates mash. But this strainer is more or less only a safety device if without notice a tool or simular stuff is left in the tank after a service or repair.



OPERATORS CABIN

9028

Legend:

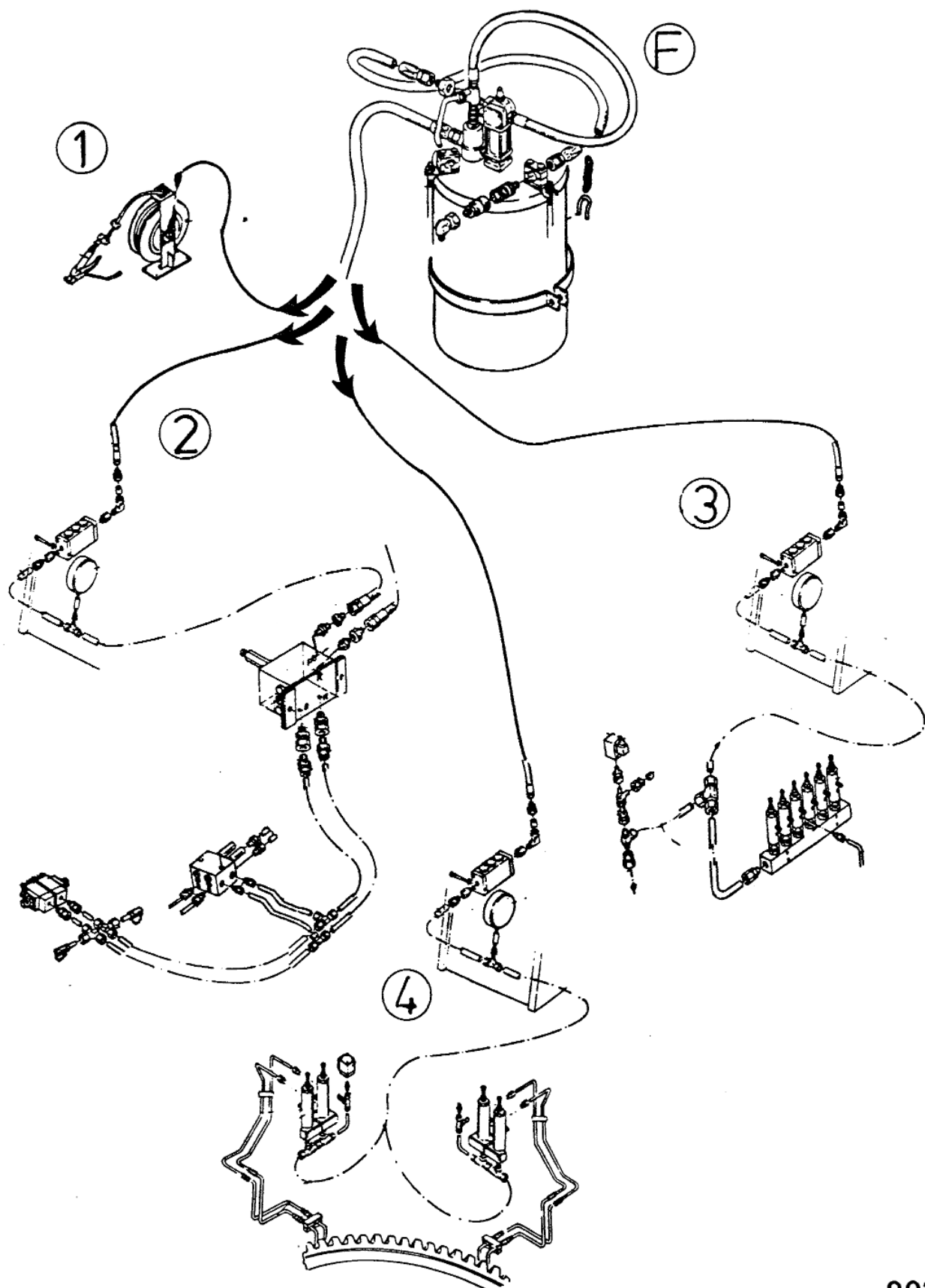
Dense rubber mounting strip	(1)
Side walk	(2)
Air condition, option	(3)
Hand rails, option	(4)
Instruments	(5)
Monitors	(6)
Travel control lever	(7)
Open/close clame (shovel only)*	(8)
Slew brake pedal	(9)
Attachment control levers	(10)
and slew	

* Or for travelling forward (switch selected)

The cab is a framed and sheet metal structure with accoustic lining mounted to a vibration absorbing composite rubber pad. The large forward sloping front window, with side windows one of which slides open, provides a high all round view for the operator, who is protected by an DIN rated Falling Objects Protection rock guard. The luxury weight compensating vibration resistant seat gives the operator full shift comfort. There is also a fold-away secondary seat.

Two hand levers (joy sticks) electrically activate the hydraulically assisted controls for all digging, and slew functions. A similar seperate lever controls all crwawler functions and an emergency accumulator is connected to each system.

Open closing the clam is done by foot pedals (shovel only) and can be used for travelling forward when selected by a switch.



MANNESMANN DEMAG Baumaschinen	T E C H N I C A L S U M M A R Y	0026I-01-09 1.
---	-----------------------------------	-------------------

LUBRICATION SYSTEMS

9029

Legend:

Hydraulic operated lube pump	(F)
Pressure lubrication with hose winder	(1)
Duo-Line centralized system	(2)
Single-Line centralized system	(3)
Slew ring teeth Drip Lubrication	(4)

One of the shown systems or a combination of them can be installed on customers request.

The Grease System for lubrication of the upper structure, attachment and slew ring bearing is automatic and centralised, although the operator can operate it manually, in addition, from his cabin.

The cab monitor also provides information;

- Operation Cycle Counter
- System Fault Grease Supply Line
- Grease Barrel Empty.

Also available is the REEL and Grease Gun, normally specified for Backhoe operations because automatic lubrication cannot be reliably maintained to the bucket, wish bone and wishbone rod.

The open Gear Lubricant for the slew ring teeth is automatic and centralised, although the operator can operate it manually, in addition, from his cabin.

The cab monitor also provides information;

- Operation Cycle Counter
- System Fault Grease Supply Line
- Grease Barrel Empty.

MANNESMANN DEMAG Baumaschinen	TECHNICAL SUMMARY	0026I-01-10 1.
---	-------------------	-------------------

OPTIONAL ACCESSORIES

SLEW RING GUARD

- a: Heavy duty rubber curtain
- b: Full sheet steel enclosure with inspection flaps.

KIM HOT START PACK

- Heaters for main hydraulic oil reservoir
- Heaters for suction oil reservoir
- Pump distributor gear box
- Engine oil pan and coolant
- Batteries

WIGGINS CENTRALIZED REPLENISHING SYSTEM

- Possibility for external refilling of:
- Hydraulic oil
 - Engine oil
 - Coolant
 - Gear oil

AUXILLIARY ELECTRICAL GENERATOR

- a: Hydraulic powered system available to suit customers request.
- b: Diesel powered system normally fitted locally.

AIR CONDITIONING

- Hydraulic powered system available to suit customers request.

CAB GUARD

- This is now integrated with the cabin, so when specified only the top horizontal part is supplied extra.

MANNESMANN DEMAG Baumaschinen	ASSEMBLING THE EXCAVATOR	6087i-02-01a 2.
---	-----------------------------	--------------------

Pre-conditions

- Manpower: 4 workers and one DBM Service Specialist
- Qualified (metric) tools
- One crane 60 - 80 MP load capacity or better two smaller one and load handling device.
- Well levelled and compacted ground (area).
- All components unloaded and placed in a way that during assembling a greater change over is not necessary.
- All pins, borings, bearings and contact surfaces of components are cleaned.
- Bolt torques have to be taken out of the chapter 6.6 of the Maintenance Manual.

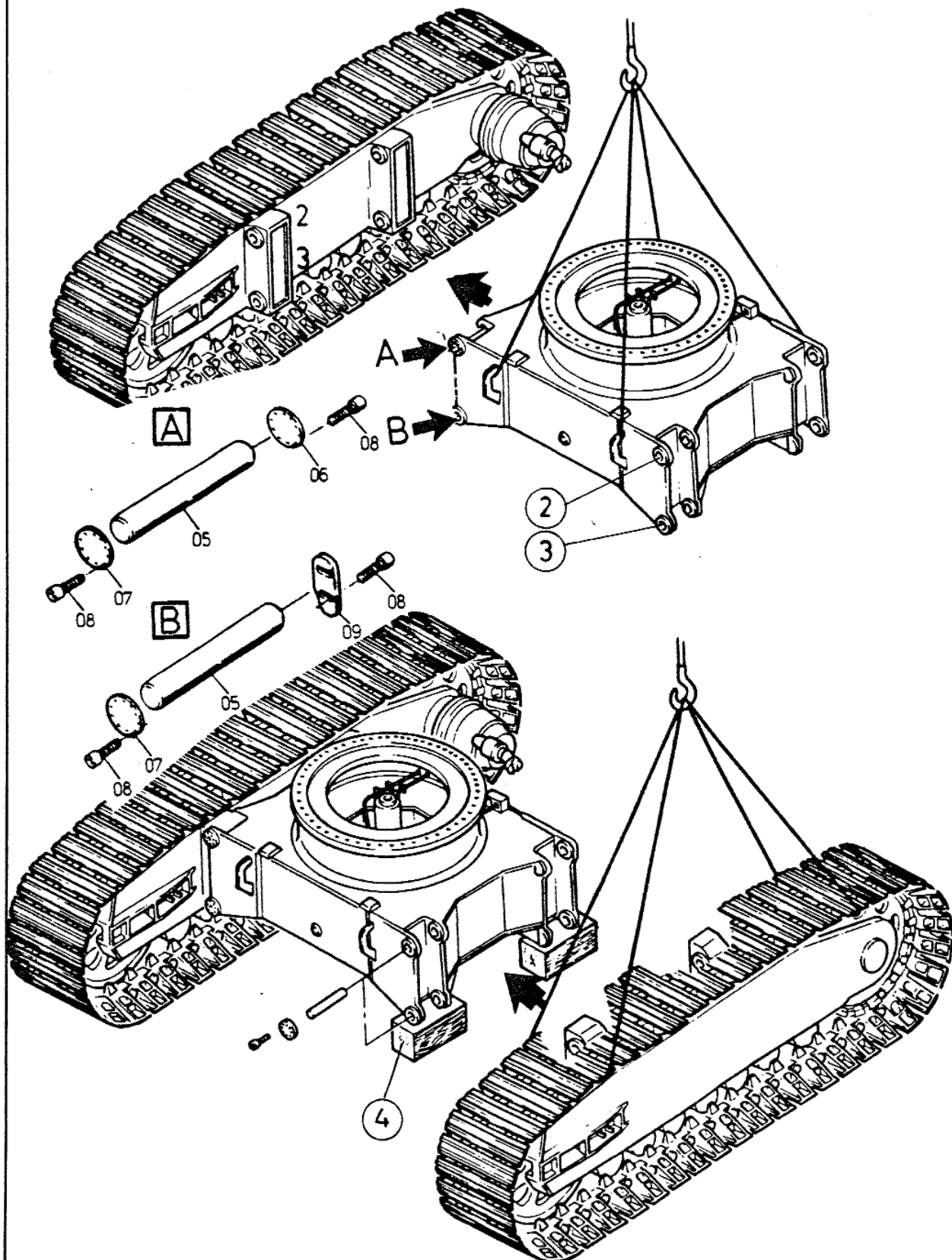
- During assembling the safety regulations for the crane operations and for the workers have to be observed!
- Please ensure that during all lifts the correct lifting procedures are followed and ensure that suitable lifting gear are only used.

There should also be available:

- Possibilities for autogenous and electr. welding
 - Power supply (various voltages)
- Any small damages caused during transport or minor extra requests of the customer can thus be attended too immediately.

The following pages showing a assembling of a standard machine and how the machine is most shipped to overseas.

It may be more or less disassembled depending on transport limits or road regulations.

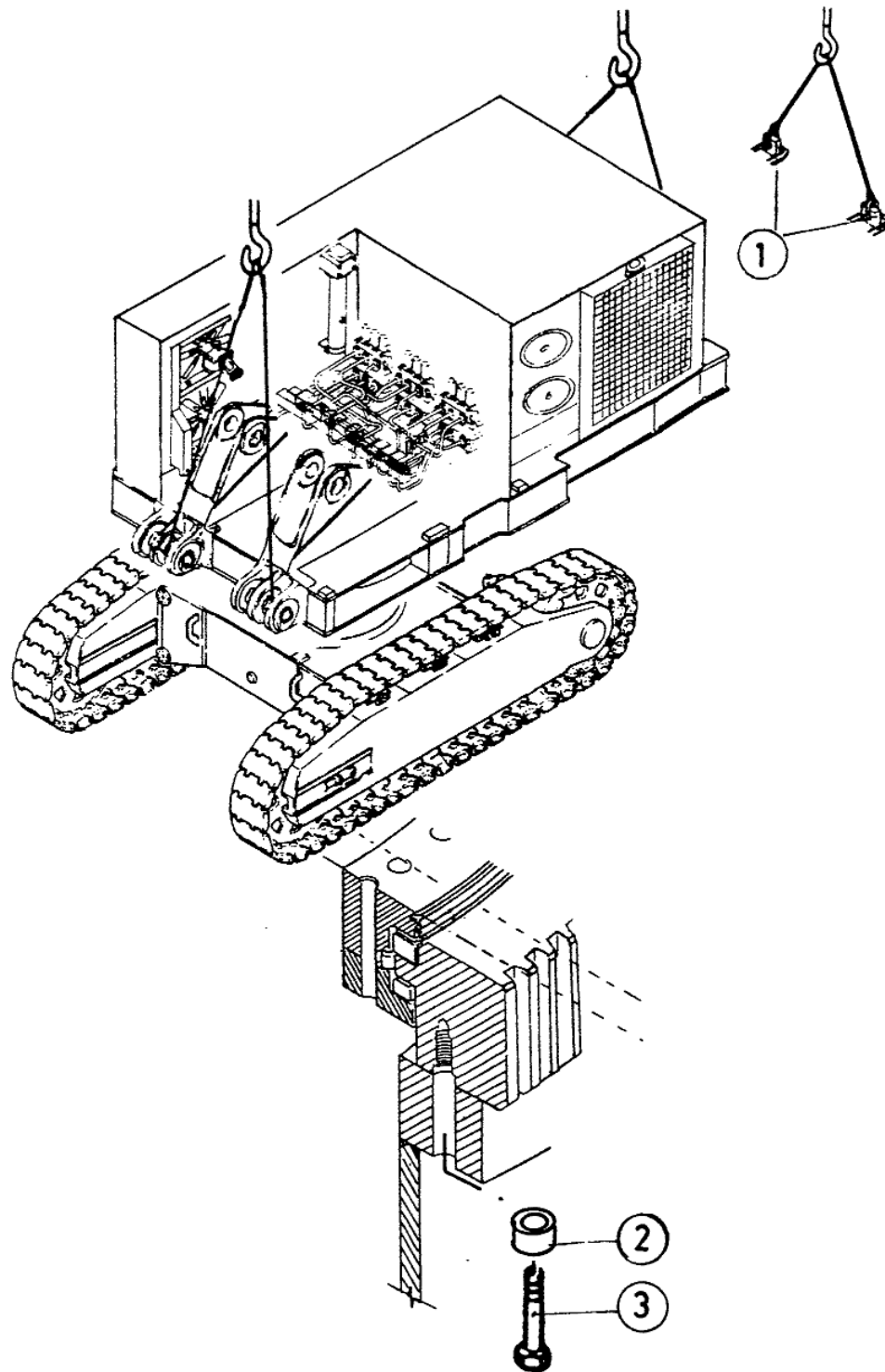


MANNESMANN DEMAG Baumaschinen	A S S E M B L I N G T H E E X C A V A T O R	6087i-02-02a 2.
---	--	--------------------

ASSEMBLING THE UNDER CARRIAGE

9030

1. Insert all 8 pins (05) into the outer boring (2+3) of the center section.
2. Attach carbody to the crane (travel brake valves of the carbody must be in direction of the travel motors).
3. Align carbody with the side frame; lower borings (3) first and insert pins (05).
4. Align upper borings (2) and insert pins (05).
5. Support carbody with wooden blocks (4) in a way that the free side is appr. 100mm higher than the attached side.(This makes it easier to attach the 2nd side frame).
6. Lift the 2nd side frame with the crane and align with the carbody. Lower borings first and insert pins.
7. Align upper borings and insert pins
8. Lift up the undercarriage a little and remove the wooden blocks.
9. Secure all pins with the retainer plates (06, 07, 09).
10. Connect pipe work between brake blocks and the travel motors.
11. Open the cocks inside the side frames for the hydraulic crawler tensioning device.
See chapter 6.9 in the Maintenance Manual.



MOUNTING THE SUPERSTRUCTURE TO THE UNDERCARRIAGE

9031

1. Attach the Superstructure to the crane(s), lift up the superstructure and carefully clean the surface (contact area) of the slew ring.

Clean very carefully the mating surface of the slew ring and the carbody.

2. Check if the "S" position of the inner and outer ring of the slew ring is left of travel direction.
3. Prepare all bolts (3), sleeves (2) and lubricate the threads as well as the head surface of the bolts, also clean off any paste of the bolts.

(See SB 21-25 last edition)

4. Align superstructure to the carbody and lower the superstructure as required to insert 4 bolts.
5. Screw in one bolt at each 90° (for guiding) and lower superstructure so that there is a very thin gap between slew ring and carbody.
6. Screw in all bolts and tighten hand tight. (Follow the SB 21-192.)
7. Tighten the bolts cross wise with the required torque (see SB 21-25 or chapter 6.9 of the Maintenance Manual)).

Note:

- If appr. 10 bolts (front and rear) are tightened the upperstructure can be unhooked from the crane.
- The Device (1) is delivered with the machine.