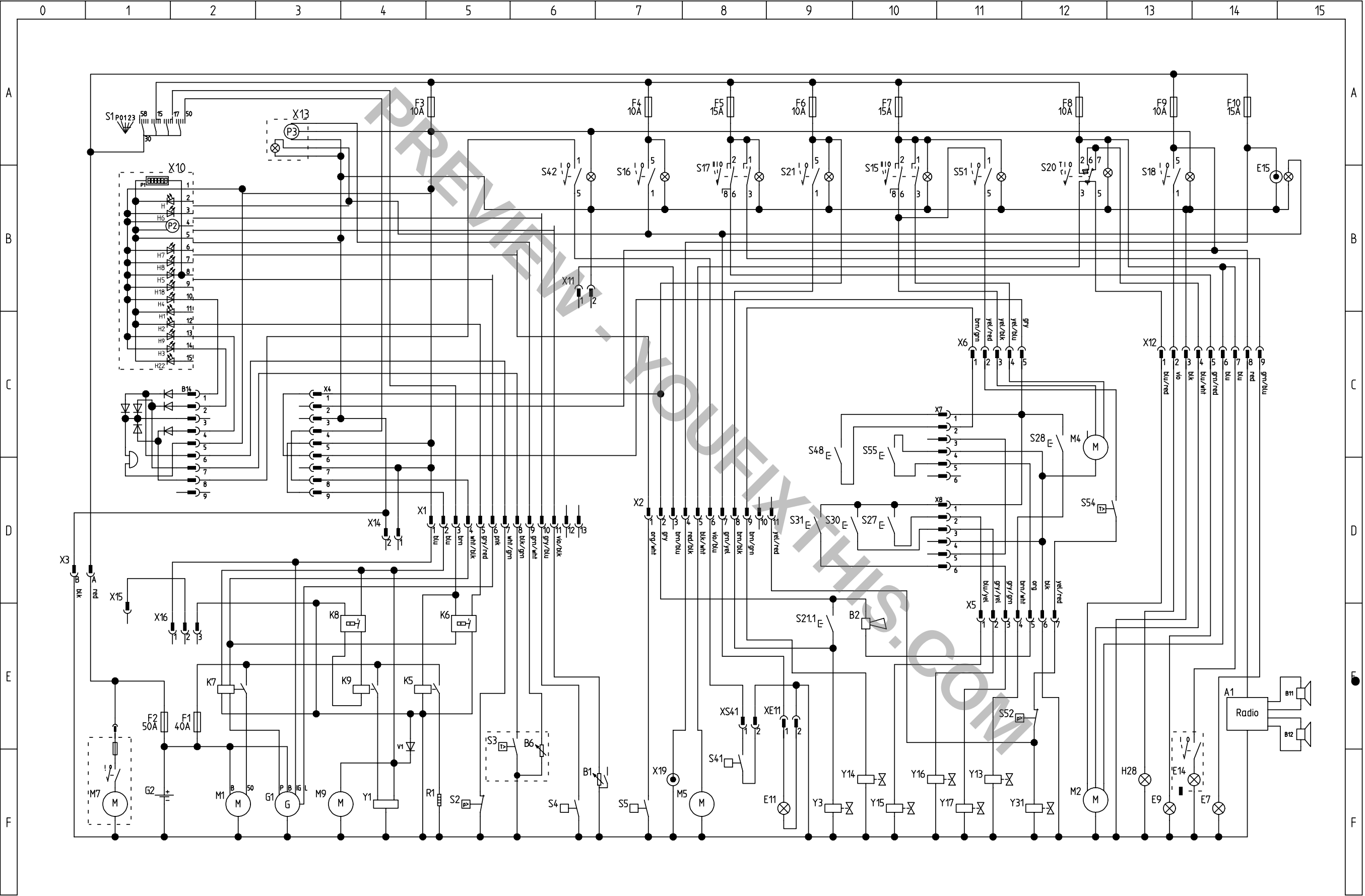


Wiring diagram (SN AC02890 and up)

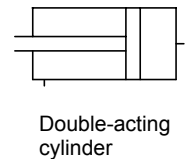
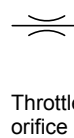
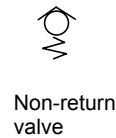
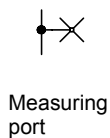
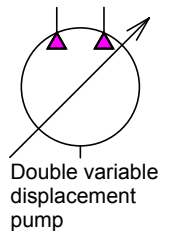
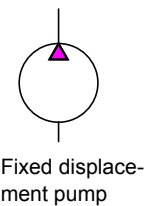
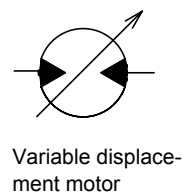
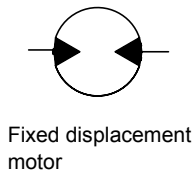
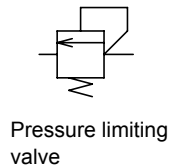
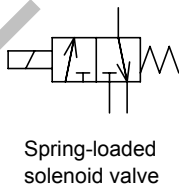


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## Hydraulics diagram (legend)

NOTE: Use this legend with the hydraulics diagrams on the following pages.

| Ref. No. | Description                                        |
|----------|----------------------------------------------------|
| 1        | Diesel engine                                      |
| 2        | Variable-displacement pump and gear pump           |
| 3        | Pilot oil supply unit                              |
| 4        | Left-hand joystick pilot valve                     |
| 5        | Right-hand joystick pilot valve                    |
| 6        | Main valve block                                   |
| 7        | Left side drive pilot valve                        |
| 8        | Right side drive pilot valve                       |
| 9        | Dozer blade pilot valve                            |
| 10       | Boom swivel pilot valve                            |
| 11       | Changeover valve: boom swivel/auxiliary hydraulics |
| 12       | Oil filter                                         |
| 13       | Oil cooler                                         |
| 14       | Shuttle valve block                                |
| 15       | Swivel unit                                        |
| 16       | Travel drive (left)                                |
| 17       | Travel drive (right)                               |
| 18       | Offset cylinder                                    |
| 19       | Dipper arm cylinder                                |
| 20       | Boom cylinder                                      |
| 21       | Bucket cylinder                                    |
| 22       | Dozer blade cylinder                               |
| 23       | (Option not available)                             |
| 24       | Pilot control filter                               |
| 25       | Throttle non-return valve                          |
| 26       | Breather filter                                    |
| 27       | Measurement ports                                  |
| 28       | Throttle non-return valve                          |
| 29       | Swivel joint                                       |

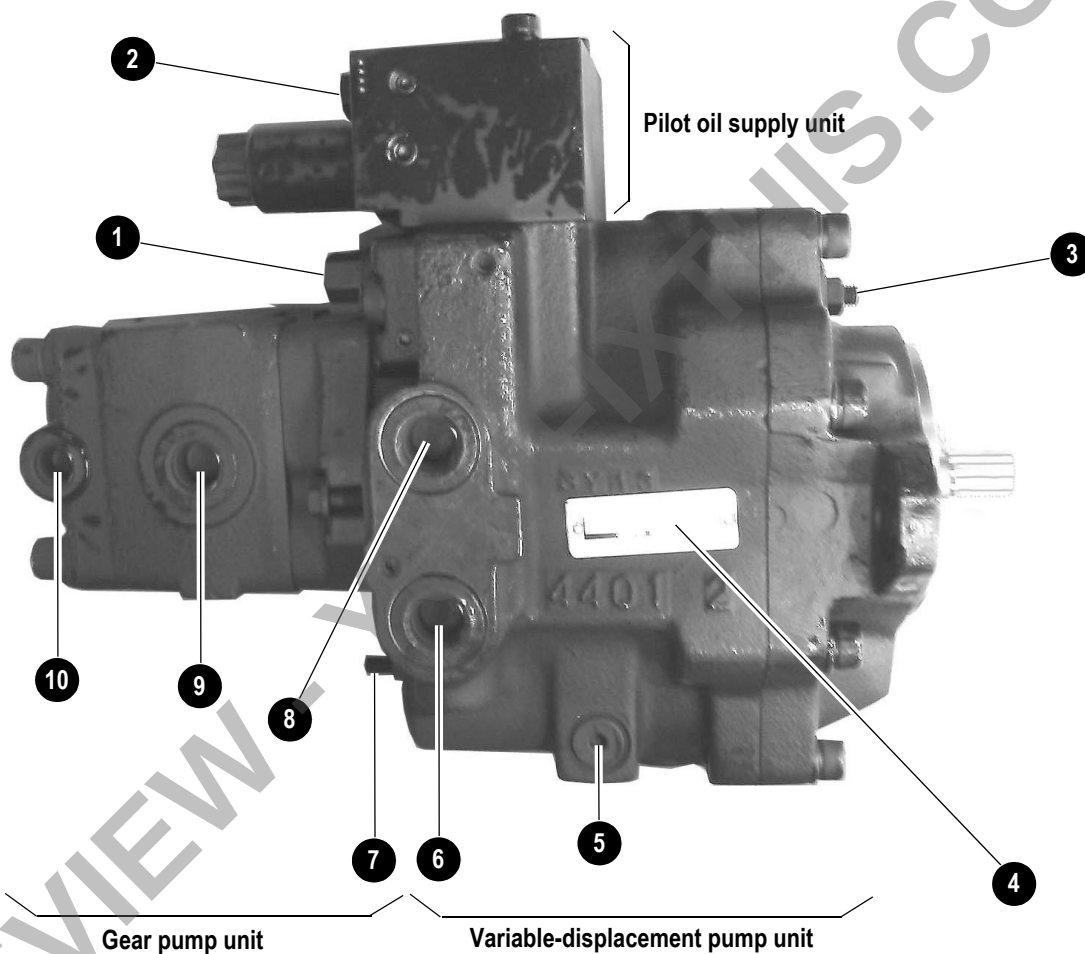


## Hydraulic system

The hydraulic system is governed by a throttle.

**Hydraulic pump: PVD-2B-41BP-16G5-4713F (SN AH00579 and up)  
PVD-2B-44BP-16G5-4713F (AD07125 and before)**

Double variable-displacement pump and two gear pumps.



| Ref. No. | Description                             |
|----------|-----------------------------------------|
| 1        | Oil flow set screw Qmax                 |
| 2        | Pressure limiting valve PLV 4           |
| 3        | Oil flow set screw Qmin                 |
| 4        | Type decal                              |
| 5        | Bleed screw                             |
| 6        | Port P2                                 |
| 7        | Control initiation set screw            |
| 8        | Port P1                                 |
| 9        | Port P3                                 |
| 10       | Port P4 (drive counterbalancing system) |

## Electrical system

### Electrical system

|            |                                        |
|------------|----------------------------------------|
| Alternator | 12V, 55A                               |
| Starter    | 12V, 3.1 hp (2.3 kW)                   |
| Battery    | 12V, 88 Ah                             |
| Socket     | 15A max. (e.g., for cigarette lighter) |

### Fuse box in instrument panel

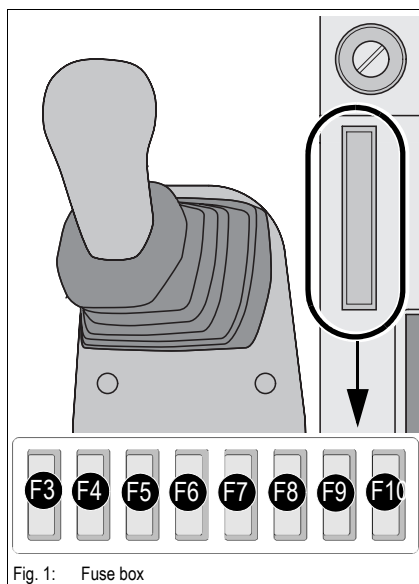


Fig. 1: Fuse box

| Fuse no. | Rated current | Protected circuit           |
|----------|---------------|-----------------------------|
| F3       | 10A           | – Indicators, engine relay  |
| F4       | 10A           | – Boom working light        |
| F5       | 15A           | – Cab working light         |
| F6       | 10A           | – Valves, horn              |
| F7       | 10A           | – Heating, air conditioning |
| F8       | 10A           | – Wiper, interior light     |
| F9       | 10A           | – Rotating beacon, radio    |
| F10      | 15A           | – Socket, cigarette lighter |

### Main fuse box with relays under the cab

The main fuse box is located under the cab, next to the swivelling console.

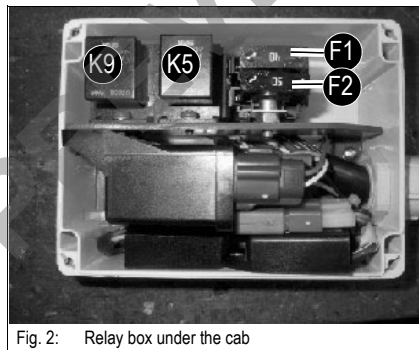


Fig. 2: Relay box under the cab

| Fuse no. | Rated current | Protected circuit                  |
|----------|---------------|------------------------------------|
| F1       | 40A           | – Start, preheat, cut-off solenoid |
| F2       | 50A           | – Main fuse, ignition lock         |

| Relay no. |                    |
|-----------|--------------------|
| K 9       | – Cut-off solenoid |
| K 5       | – Preheating       |

## Diagnostic display

The control valve status is displayed to the user by means of a flashing code. The following errors are identified by the number of flash pulses:

| No. | Pin no.  | Description               | Error                                        | Troubleshooting                                              | Critical error |
|-----|----------|---------------------------|----------------------------------------------|--------------------------------------------------------------|----------------|
| 0   | -        | -                         | No error                                     | -                                                            | -              |
| 1   | B 5      | Channel 1 input (left)    | Defective input voltage                      | Check voltage, home position: 2.5 V deflected: 0.7 V – 4.3 V | -              |
| 2   | A4, A9   | Channel 1 output; Y16/Y17 | Overload or overheating (output stage)       | Check magnet on valve                                        | -              |
| 3   | A4, A9   | Channel 1 output; Y16/Y17 | Short circuit on ground or operating voltage | Check wiring                                                 | x              |
| 4   | B4       | Channel 2 input (right)   | Defective input voltage                      | Check voltage, home position: 2.5 V deflected: 0.7 V – 4.3 V | -              |
| 5   | A7, A8   | Channel 2 output; Y18/Y19 | Overload or overheating (output stage)       | Check magnet on valve                                        | -              |
| 6   | A7, A8   | Channel 2 output; Y18/Y19 | Short circuit on ground or operating voltage | Check wiring                                                 | x              |
| 7   | -        | -                         | System start                                 | -                                                            | x              |
| 8   | A10, A11 | Motor output              | Overheating (output stage)                   | Check motor                                                  | x              |
| 9   | -        | -                         | EEPROM data error                            | -                                                            | x              |
| 10  | B6       | +5V joystick              | Defective 5V supply                          | -                                                            | x              |

The system switches off automatically if a critical error is detected. Activating the control unit is only possible by repeatedly switching on the supply voltage.

Only the error occurring last is displayed if several errors occur at the same time. Troubleshoot one error after another until the diagnostic indicator no longer flashes.

In order to obtain a detailed status of the output stage for channels no. 1 and 2, the hammer operation input must be activated during system start. The system flashes only briefly if there are no errors.

In case of an error, the error code is issued in the following order of the pulse modulation outputs:

☛ Channel 1/Magnet 1 > Pause > Channel 1/Magnet 2 > Pause > Channel 2/Magnet 1 > Pause > Channel 2/Magnet 2

An error code (number of flash pulses) is assigned to each of the pulse modulation outputs:

| Error code | Error                   |
|------------|-------------------------|
| 1          | No error                |
| 2          | overload, overtemp      |
| 3          | open load               |
| 4          | Short circuit on ground |

The error code ends at the last output stage by displaying an error.

Examples:

➡ A: channel 2/magnet 1 has an “open load” interruption. The following flash sequence is then issued:

1 > Pause > 1 > Pause > 3

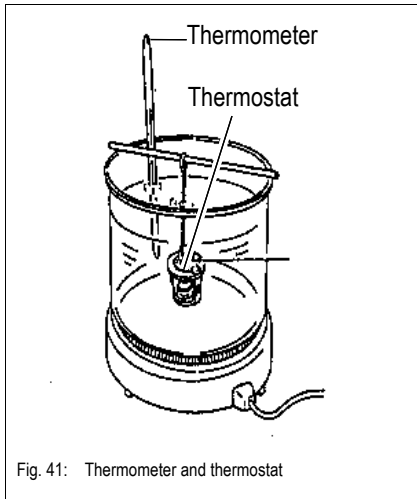


Fig. 41: Thermometer and thermostat

- ☞ Warm up the thermostat in a container filled with water.
- ☞ Check if the thermostat opens at the prescribed temperature (check by using a temperature gauge).
- ☞ Thermostat opening temperature: 157.1 – 162.5° F (69.5 – 72.5° C).

## Checking the thermal switch

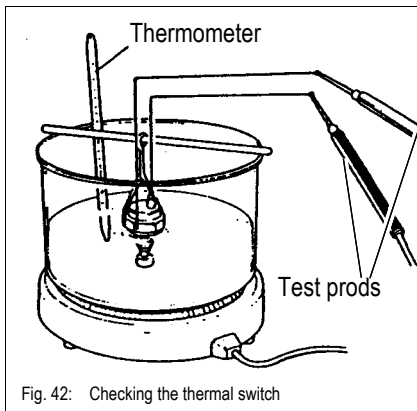


Fig. 42: Checking the thermal switch

- ☞ Remove the thermal switch.
- ☞ Warm up the thermal switch in a container with antifreeze or oil.
- ☞ Measure the resistance of the thermal switch as shown by using an ohmmeter.
- ☞ The switch must allow the coolant to pass at a temperature of 224.6 – 235.4° F (107 – 113° C).

## Oil pressure switch

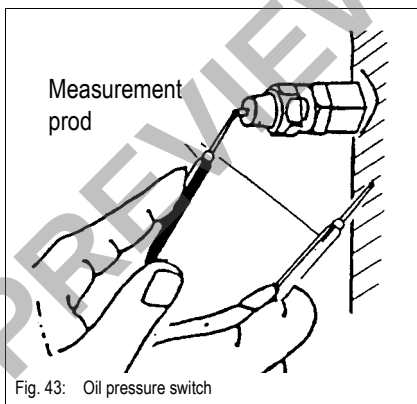


Fig. 43: Oil pressure switch

- ☞ Remove the cable connection from the oil pressure switch (in the area of the cut-off solenoid).
- ☞ Start the engine, check for the correct idling speed ( $1100 \pm 25$  rpm).
- ☞ Measure the resistance of the oil pressure switch as shown by means of an ohmmeter
- ☞ Oil pressure switch OK: infinite resistance.
- ☞ The oil pressure switch is defective if the oil can pass.

# Specifications

## Frame

Sturdy steel sheet chassis, rubber-mounted engine

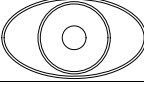
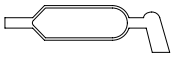
## Engine

| Engine                                                          | European tier 3A / EPA Tier 4 interim (SN AH00579 and up)        | Tier 2 (SN AD07125 and before)                                   |
|-----------------------------------------------------------------|------------------------------------------------------------------|------------------------------------------------------------------|
| Product                                                         | Yanmar diesel engine                                             |                                                                  |
| Model                                                           | 4TNV88-BPNS                                                      | 4TNV88-PNS                                                       |
| Type                                                            | Water-cooled 4-stroke, 4-cylinder diesel engine                  |                                                                  |
| Fuel injection system                                           | Direct injection                                                 |                                                                  |
| Aspiration                                                      | Naturally aspirated                                              |                                                                  |
| Cooling system                                                  | Water-cooled / aspirating fan                                    |                                                                  |
| Lubrication system                                              | Force-feed lubrication with trochoidal pump                      |                                                                  |
| Displacement                                                    | 134 cu. in. (2190 cm <sup>3</sup> )                              |                                                                  |
| Nominal bore and stroke                                         | 3.5 x 3.5 in. (88 x 90 mm)                                       |                                                                  |
| Output                                                          | 37.7 hp (28.1 kW)<br>at 2400 rpm                                 | 37.8 hp (28.2 kW)<br>at 2400 rpm                                 |
| Max. torque                                                     | 105 lb.-ft. (142 Nm)<br>at 1440 rpm                              | 102 lb.-ft. (138 Nm)<br>at 1100 rpm                              |
| Max. engine speed without load                                  | 2590 ± 25 rpm                                                    |                                                                  |
| Idling speed                                                    | 1100 ± 25 rpm                                                    |                                                                  |
| Valve clearance (intake = outlet)                               | 0.0059 – 0.0098" (0.15 – 0.25 mm) cold                           |                                                                  |
| Compression                                                     | 483 – 512 psi (33.3 – 35.3 bar) at 250 rpm                       |                                                                  |
| Engine oil pressure                                             | 46 – 68 psi (3.2 – 4.7 bar)                                      | 42 – 57 psi (2.9 – 3.9 bar)                                      |
| Pressure switch for engine oil pump                             | 7.3 ± 1.5 psi (0.5 ± 0.1 bar)                                    |                                                                  |
| Thermostat opening temperature                                  | 157.1 – 162.5°F (69.5 – 72.5°C)                                  |                                                                  |
| Thermal switch                                                  | 224.6 – 235.4°F (107 – 113°C)                                    |                                                                  |
| Firing order                                                    | 1 – 3 – 4 – 2                                                    |                                                                  |
| Direction of rotation                                           | Counter-clockwise<br>(as seen from the flywheel)                 |                                                                  |
| Starting aid                                                    | Glow plug<br>(preheating time 15 sec)                            | Intake manifold preheating<br>(preheating time 15 sec)           |
| Max. inclined position<br>(engine no longer supplied with oil): | 30° in all directions                                            |                                                                  |
| Fuel consumption                                                | 1.6 gal/hr (5.9 L/hr)<br>(without air conditioning) <sup>1</sup> | 1.7 gal/hr (6.3 L/hr)<br>(without air conditioning) <sup>1</sup> |
|                                                                 | 1.6 gal/hr (5.9 L/hr)<br>(with air conditioning) <sup>1</sup>    | 1.7 gal/hr (6.3 L/hr)<br>(with air conditioning) <sup>1</sup>    |
| Specific fuel consumption                                       | 0.409 lb/hph (249 g/kWh)                                         | 0.434 lb/hph (264 g/kWh)                                         |
| Exhaust values according to                                     | 97/68/EC tier 3A;<br>EPA Tier 4 interim                          | 97/68/EC tier 2;<br>EPA Tier 2                                   |

1. Values based on an average 70% load of the excavator and a diesel fuel density of 0.83 kg/dm<sup>3</sup> and cannot be used for comparison with competitors. Specific fuel consumption should be used for this. The air conditioning system has been taken into account with 100% operating time.

## Maintenance decal

Explanation of symbols on the maintenance decal

| Symbol                                                                              | Assembly         | Explanation                                                   |
|-------------------------------------------------------------------------------------|------------------|---------------------------------------------------------------|
|    | General          | Visual check                                                  |
|    | General          | Grease instructions                                           |
|    | Fuel system      | Drain condensation water                                      |
|    | Fuel system      | Replace the fuel filter, clean the fuel pre-filter            |
|    | Radiator         | Check the coolant level                                       |
|    | Radiator         | Drain and fill in new coolant                                 |
|   | Engine           | Check valve tip clearance. Adjust if necessary                |
|  | Engine           | Check the engine oil level                                    |
|  | Engine           | Change engine oil                                             |
|  | Engine           | Replace the oil filter                                        |
|  | Engine           | Check V-belt tension                                          |
|  | Travel drive     | Change oil                                                    |
|  | Travel drive     | Check oil                                                     |
|  | Undercarriage    | Check track tension                                           |
|  | Hydraulic system | Check oil level                                               |
|  | Hydraulic system | Change hydraulic oil                                          |
|  | Hydraulic system | Replace the hydraulic oil filter, replace the breather filter |

# Operation

## General information

Your decision to purchase the Mustang compact excavator was a good one. We are sure that your decision was carefully considered and that you are looking forward to many years of reliable performance from the machine.

Mustang Company has invested much time and effort in developing its lines of equipment. The equipment you have purchased is built with a great deal of pride, and designed to provide long life, efficient operation, durability and dependability.

Modern machinery has become more sophisticated and, with that in mind, Mustang Company asks that you read and COMPLETELY understand the contents of this manual and become familiar with the new machine, BEFORE attempting to service it.

This manual was developed specifically for the machine you have purchased. The information within is for your assistance in preparing, adjusting, maintaining and servicing the machine. More important, this manual provides a service plan for safe and proper servicing of the machine. Refer to the Table of Contents for an outline (by chapters) of this manual. Use the Index, located at the back of this manual, for specific chapter and topic/page number references.

If the machine is resold, Mustang Company recommends that this manual be given to the new owner.

If the machine was purchased "used," or if the owner's address has changed, please provide your Mustang dealer or Mustang Company with the owner's name and current address, along with the machine model and serial number. This will allow the registered owner information to be updated, so that the owner can be notified directly in case of an important product issue, such as a safety update program.

"Right" and "left" are determined from the position of sitting in the operator's seat, facing forward.

Mustang Company reserves the right to make changes or improvements in the design or construction of any part without incurring the obligation to install such changes on any unit previously delivered.

Throughout this manual information is provided that is introduced by the word NOTE or IMPORTANT. Be sure to read carefully and comply with the message or directive given. Following this information will improve your maintenance efficiency, help you to avoid costly breakdowns or unnecessary damage, and extend your machine's life.

Operational safety and readiness of the machine depend partially on maintenance and service of the machine. This is why regular maintenance and service work is absolutely necessary. Extensive maintenance and repair work must always be carried out by a qualified technician with appropriate training. Insist on using Mustang original service parts when carrying out maintenance and repair work. This ensures operational safety and readiness of your machine, and maintains its value.

Our wide dealership network stands ready to provide any assistance required, including genuine Mustang service parts. All parts should be obtained from or ordered through your Mustang dealer. Give complete information about the part as well as the model number and serial number of your machine. Record numbers, in the spaces provided, as a handy record for quick reference.

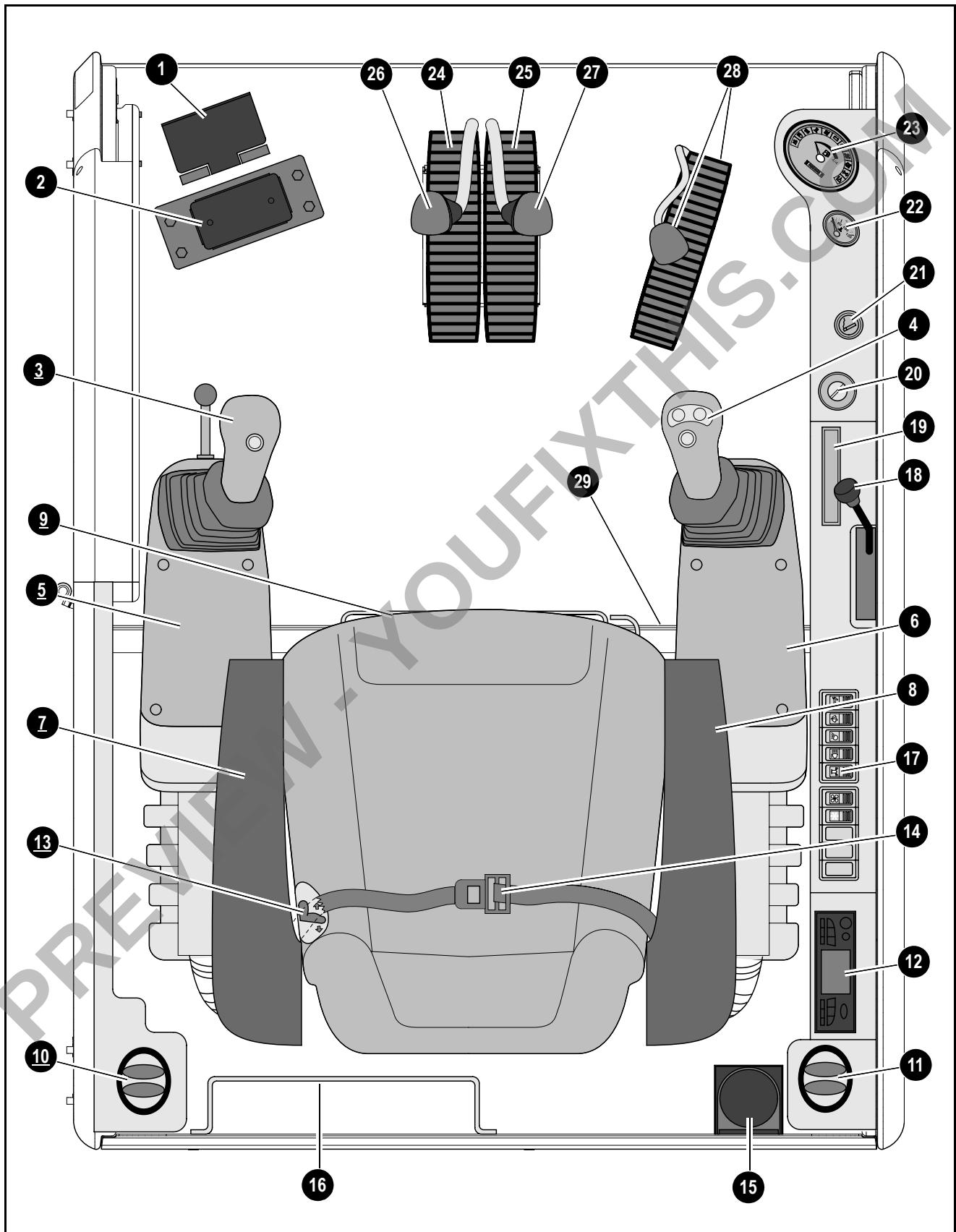
Purchased from: \_\_\_\_\_

Date of Purchase: \_\_\_\_\_

Model No.: \_\_\_\_\_

Serial No.: \_\_\_\_\_

Cab: overview



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# **5003ZT**

## **Compact Excavator**

# **SERVICE MANUAL**

**PART #918178**

**Revision B - 04/09**



Mustang Manufacturing Company, Inc.

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