## REMOVAL AND INSTALLATION OF ENGINE AND RADIATOR

### Removal

- Position the machine on a flat and compact surface.
- Apply the parking brake and chock the wheels with wedges.
- Use only the recommended tools.
- Do not insert hands or extraneous components between parts.
- Disconnect the battery before proceeding.

**⚠ WARNING ⚠**

Do not allow unauthorized persons to repair or service this machine. Be certain to read the Use and Maintenance Manual with care before starting, operating, servicing, refuelling or repairing this machine.

Turn the **STARTER SWITCH** to the **OFF** position and display the **"DO NOT START"** warning notice.

**⚠ IMPORTANT ⚠**

From this point onwards, mark all electrical connections and hydraulic pipes to facilitate the process of RESTORING CONNECTIONS DURING REFITMENT.

Open and remove the engine hood.



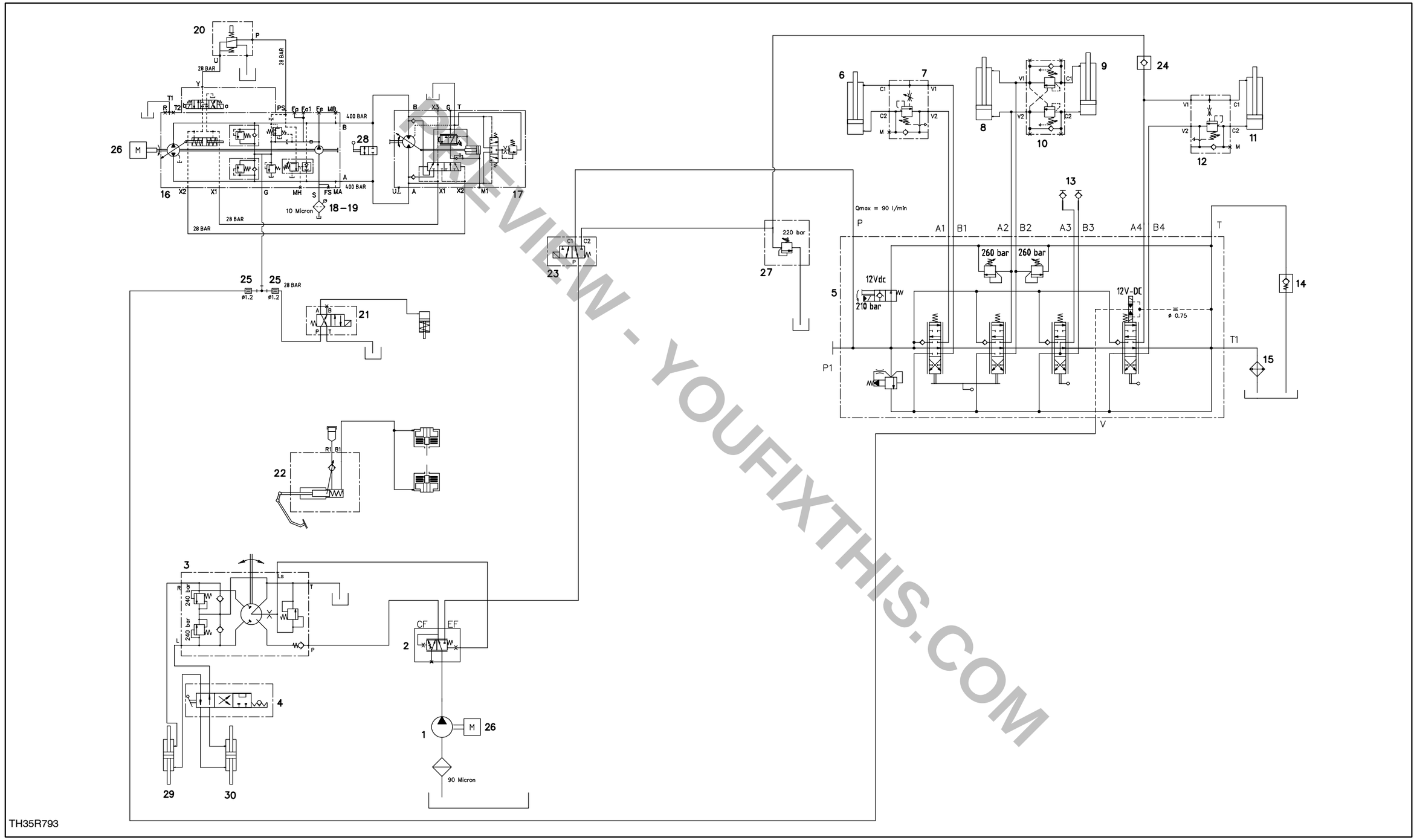

2

PREVIEW - YOUFIXTHIS.COM



Download full manual at youfixthis.com

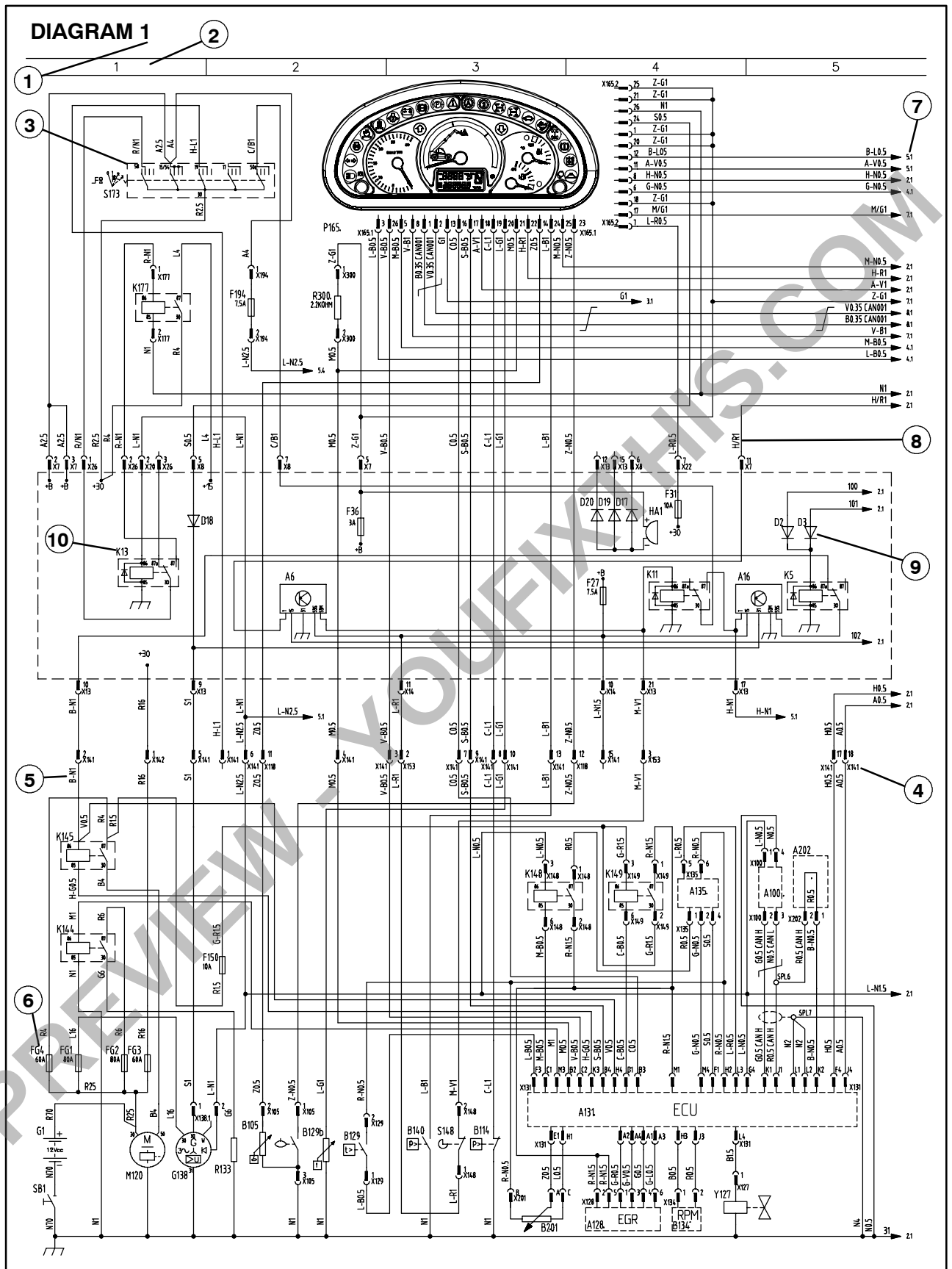
## HYDRAULIC SYSTEM CIRCUIT




TH35R793

PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com




1



PREVIEW - YOUFIXTHIS.COM
Download full manual at youfixthis.com

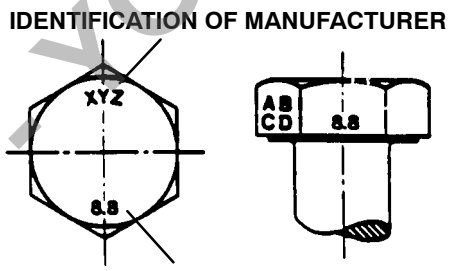
# MINIMUM TIGHTENING VALUES FOR THREADED FASTENERS

## IN NEWTON-METRES (Nm)
## FOR NORMAL ASSEMBLY APPLICATIONS

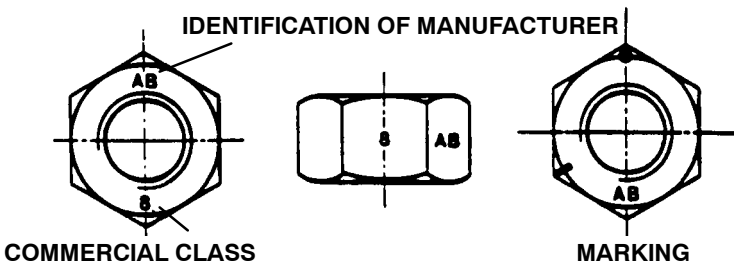
## BOLTS AND LOCK NUTS - METRIC SIZES

| NOMINAL SIZE | CLASS 5.8 | | CLASS 8.8 | | CLASS 10.9 | | LOCK NUT CL. 8 with BOLT CL. 8.8 |
|---|---|---|---|---|---|---|---|
| | NOT PLATED | PLATED Zn/Cr | NOT PLATED | PLATED Zn/Cr | NOT PLATED | PLATED Zn/Cr | |
| M4 | 1.7 | 2.2 | 2.6 | 3.4 | 3.7 | 4.8 | 1.8 |
| M6 | 5.8 | 7.6 | 8.9 | 12 | 13 | 17 | 6.3 |
| M8 | 14 | 18 | 22 | 28 | 31 | 40 | 15 |
| M10 | 28 | 36 | 43 | 56 | 61 | 79 | 30 |
| M12 | 49 | 63 | 75 | 97 | 107 | 138 | 53 |
| M16 | 121 | 158 | 186 | 240 | 266 | 344 | 131 |
| M20 | 237 | 307 | 375 | 485 | 519 | 671 | 265 |
| M24 | 411 | 531 | 648 | 839 | 897 | 1160 | 458 |

## IDENTIFICATION
### HEX SCREWS (WITHOUT NUT) AND ROUND HEAD BOLTS
### CLASS 5.6 AND HIGHER




### HEX NUTS AND LOCK NUTS
### CLASS 05 AND HIGHER






PREVIEW - YOUFIXTHIS.COM
Download full manual at youfixthis.com

**Errors State**

Both during normal Work phase and during Calibration phase, the errors can be generated by the SARL control unit (10FF80E3 Byte 7) or by the panel (18FFF017- Byte 7), but the error will be displayed in the same manner whether it comes from the control unit or from the panel.

The Panel can generate up to a maximum 10 errors varying from 90 to 99.

If during the work phase errors occur, these will be displayed in place of clock, and the message "*Er nn*" will be displayed, where Er means "Error" and nn is the decimal code of the found error, also LED L6 will switch on permanently and the buzzer will continuously sound, the displayed error code will flash for one second.

During this phase the operator can go back to displaying the clock by pressing the left key, once pressed, the panel will stop sounding but L6 LED will remain on for as long as the error remains active; by pressing the left key again it will be possible to display the error again, if still active.

**List of Errors Generated by Panel**

The Panel can generate up to a maximum 10 errors varying from 90 to 99; below is a list of the possible errors:

| ERROR CODE | Description |
|---|---|
| 90 | Counter error message (10FF80E3) |
| 91 | Timeout error message (10FF80E3) |
| 92 | Counter error message (18FFF0E3) |
| 93 | Timeout error message (18FFF0E3) |
| 94 | SARL response error, different response value |
| 95 | Calibrating pin no longer connected during calibration |
| 96 | Errors inside available panel |
| 97 | Errors inside available panel |
| 98 | Errors inside available panel |
| 99 | Errors inside available panel |

PREVIEW - YOUFIXTHIS.COM



Download full manual at youfixthis.com

# Workshop manual
# LM5020
# TELESCOPIC HANDLERS

## TABLE OF CONTENTS

## SECTION 00 - GENERAL


| Description | Page |
|---|---|
| General instructions | 1 |
| Safety rules | 3 |
| Product identification | 6 |
| Environmental considerations | 8 |
| Maintenance techniques | 9 |
| Specific sealing compounds | 10 |
| Minimum tightening valves for threaded fasteners | 11 |
| Minimum tightening torques for fasteners | 12 |
| Load tables | 14 |
| Table of lubrificating oils | 17 |


## SECTION 10 - ENGINE


| Description | Page |
|---|---|
| Main engine specifications | 2 |
| Engine model views | 3 |
| Removal and installation of engine and radiator | 5 |
| Removal | 5 |
| Installation | 12 |
| Filing the engine cooling system | 14 |
| Bleeding air from the system | 14 |
| Important warnings | 14 |


## SECTION 21 - TRANSMISSION


| Description | Page |
|---|---|
| Variable displacement motor | 2 |
| Exchanging seals | 8 |
| Exchanging the controller | 9 |
| Sealing the cover | 12 |
| Checking | 14 |
| Checking beginn of regulation control EP | 15 |
| Checking beginn of regulation control HD | 16 |
| Checking beginn of regulation control HA | 17 |
| Checking beginn of regulation control DA1/4, DA2, 3, 4, 5, 6 | 18 |
| Variable displacement pump | 20 |

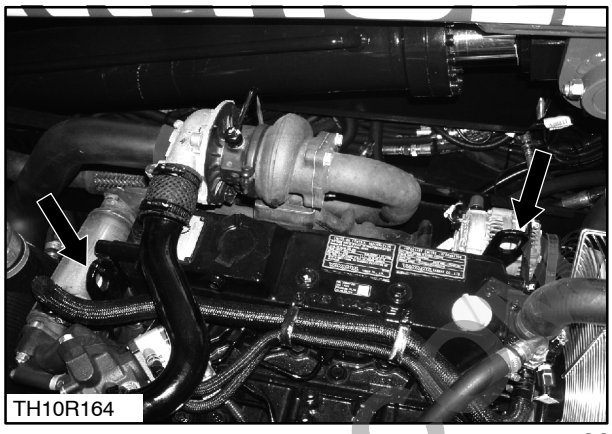

***84559130*** *- 10 - 2011*

PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

Connect suitable lifting equipment to engine lifting brackets. Take up all slack in lifting equipment.
Remove the engine mounting bolts and lift the engine.

Slowly raise engine from chassis. Be sure all harness connections and hoses have been disconnected and are clear of the engine. Remove engine from machine.



26

**⚠ WARNING ⚠**

Lift and handle all heavy parts with lifting equipment of suitable rated capacity. Make sure that the parts are secured by appropriate hooks and slings. Use the eyebolts provided for the purpose. Do not stand under suspended loads. Beware of persons standing near the load to be lifted.

## INSTALLATION

***NOTE:*** *Install new O-rings where required.*

Install the engine by reversing the order followed to remove this last and taking into account what follows:

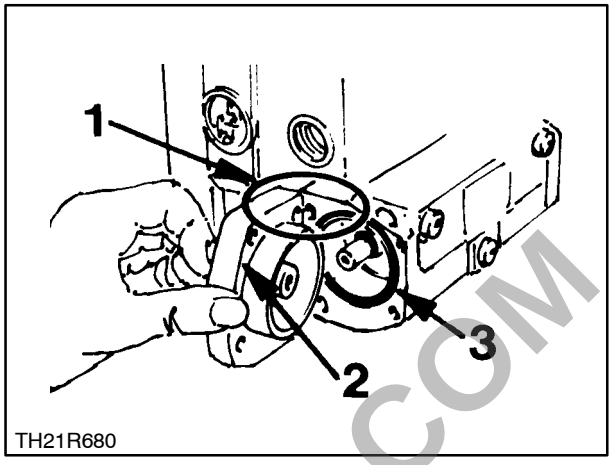
1. Check that the O-rings have not been damaged during handling.
2. Apply a film of grease or hydraulic oil on the O-rings and contact surfaces.
3. Avoid stretching the O-rings as this may permanently deform them.
4. When installing the O-rings, do not roll them into their seat. If the O-rings are rolled into position they do not easily regain their shape after assembly and may cause oil leakages.
5. Clean all parts with appropriate solvent, then, dry with compressed air.
6. Ensure that cleaned parts do not show traces of dust or foreign bodies. Handle parts with great care to avoid denting them.
7. Check disassembled parts for wear or damages by replacing those which are defective.
8. Tighten screws according to the tightening torque of each screw, which must be absolutely respected in compliance with thread Standards with regard to their resistance class.

PREVIEW - YOUFIXTHIS.COM



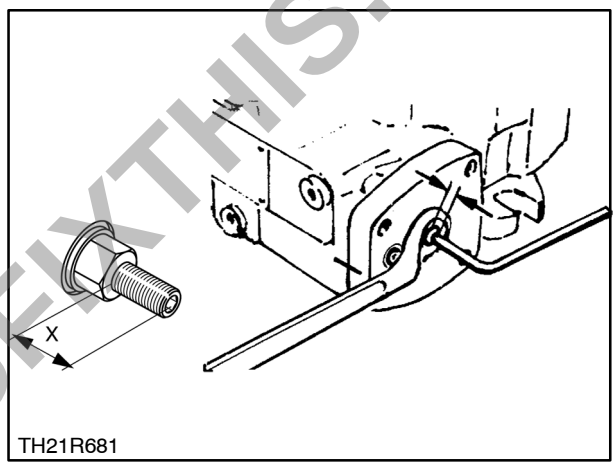
Download full manual at youfixthis.com

Check!
O-ring (1), groove (2), housing (3).




52

Remove locknut whilst holding setting screw.
Mark cover. Must be fixed, loosen counter nut.




53

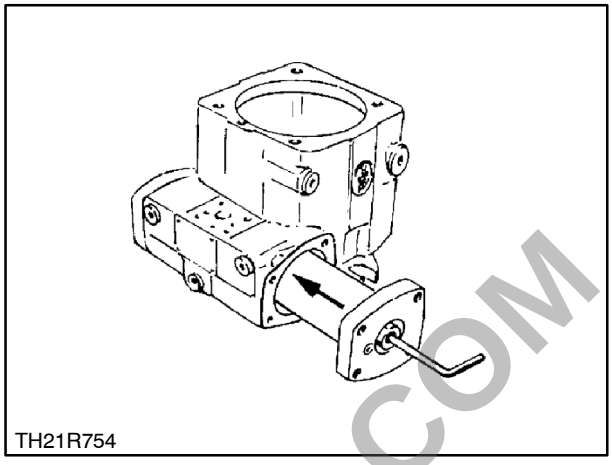
PREVIEW - YOUFIXTHIS.COM



Download full manual at youfixthis.com

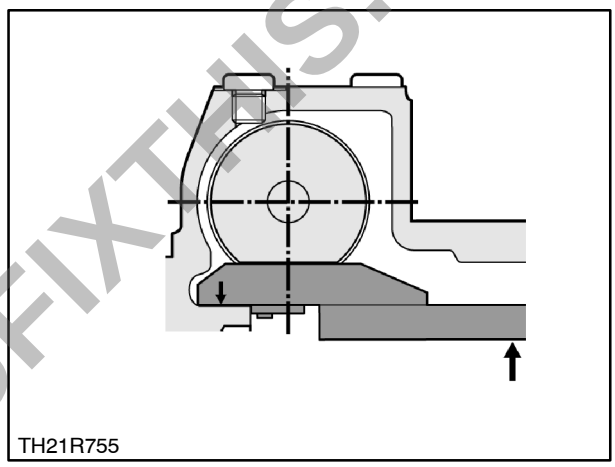
**Installation of the rotary group**

Insert positioning piston into the housing.
Instruction:
Oil positioning piston before assembly.


TH21R754

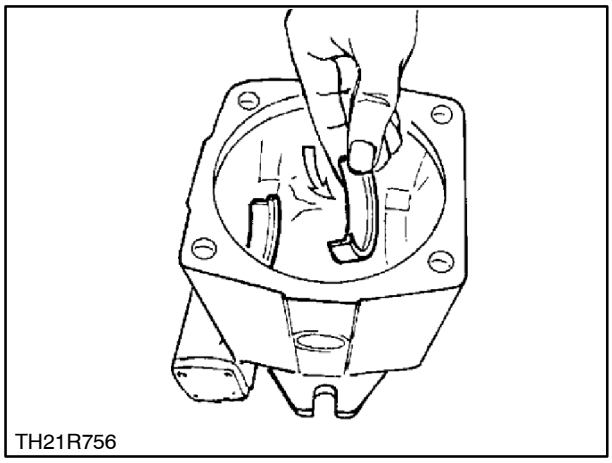
126

Position stroke piston with lever. Sliding stone guidance in the piston.


TH21R755

127

Insert bearing shells.


TH21R756

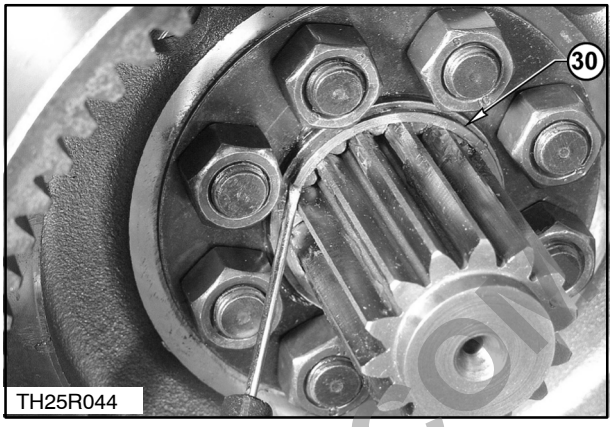
128

PREVIEW - YOUFIXTHIS.COM



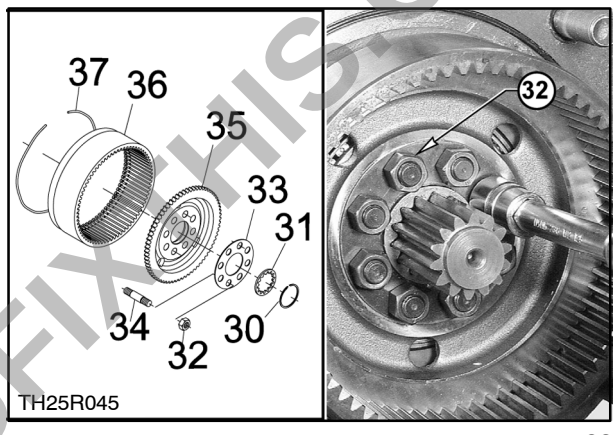
Download full manual at youfixthis.com

Remove the snap ring (30).



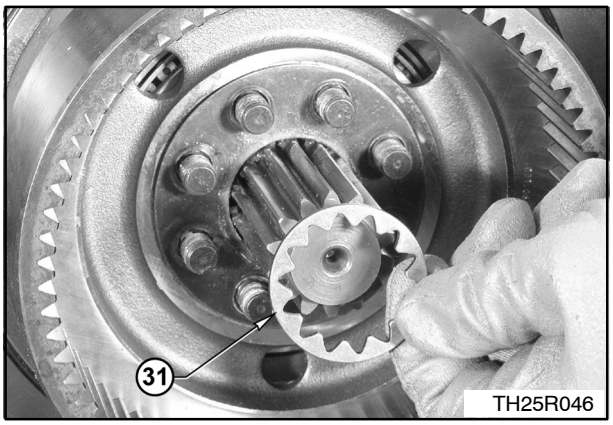

22

Unloose and remove the tightening nuts (32) from the crown flange (35).




23

Remove the shim washer (31).



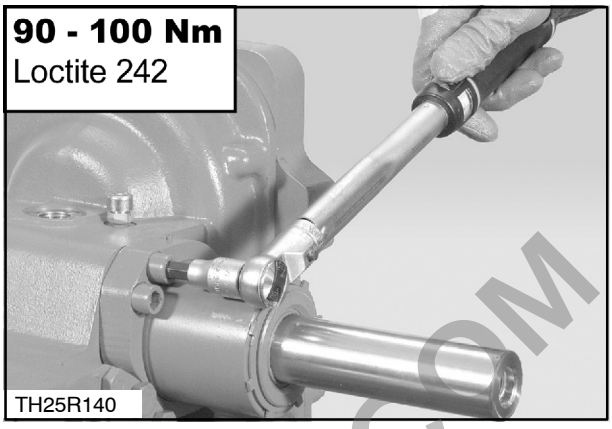

24

PREVIEW - YOUFIXTHIS.COM



Download full manual at youfixthis.com

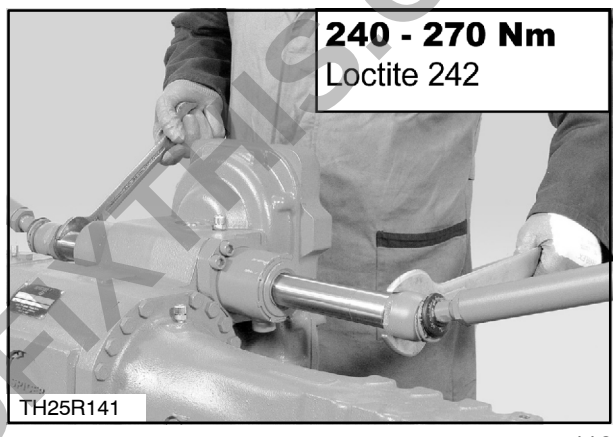
Lock the cylinder by cross- tightening the screws (3). Torque wrench setting: 90-100 Nm




118

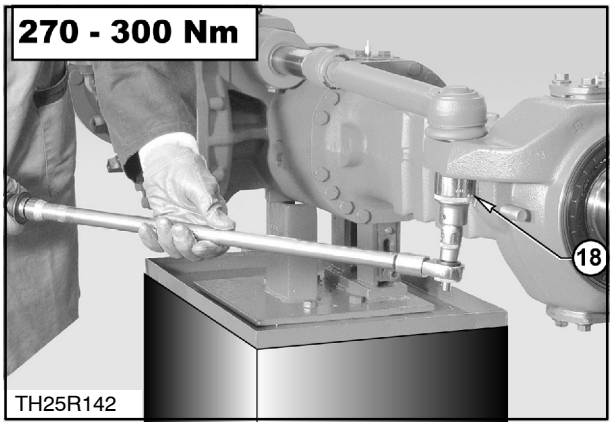
Apply Loctite 242 to the thread and connect the steering bars by screwing the terminals onto the piston stem. Torque wrench setting: 240 - 270 Nm.

***NOTE:*** *Versions with coupling require that the rim of the articulation is riveted onto the surfaces of the piston stem.*




119

Insert the pins (18) in the steering case and lock into position using a torque wrench setting of 270 - 300 Nm.




120

PREVIEW - YOUFIXTHIS.COM

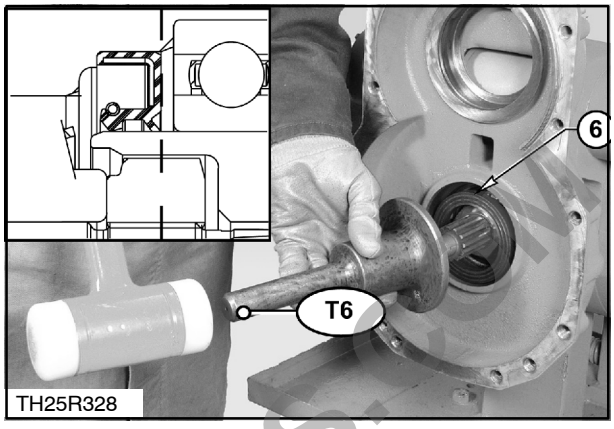


Download full manual at youfixthis.com

**ASSEMBLY FLANGED REDUCTION GEAR**
**603 TYPE: INTEGRAL 603 INPUT GEAR**

Insert the sealing ring (6) with special tool T6.

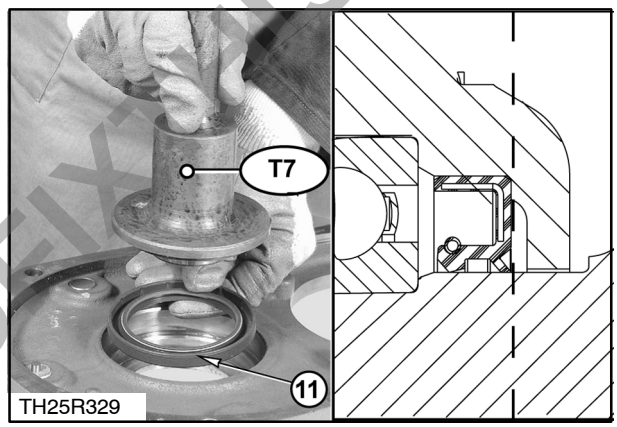
***NOTE:*** *Bring the sealing ring just to the end stop, apply grease to the sealing lips.*




200

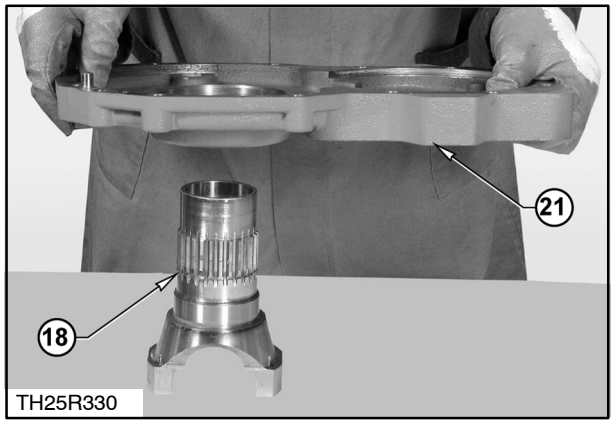
Insert the sealing ring (11) with special tool T7.

***NOTE:*** *Bring the sealing ring just to the end stop, apply grease to the sealing lips.*




201

Fit the flange (18) and fasten it.
For keying the flange (18), use a plastic hammer if necessary.



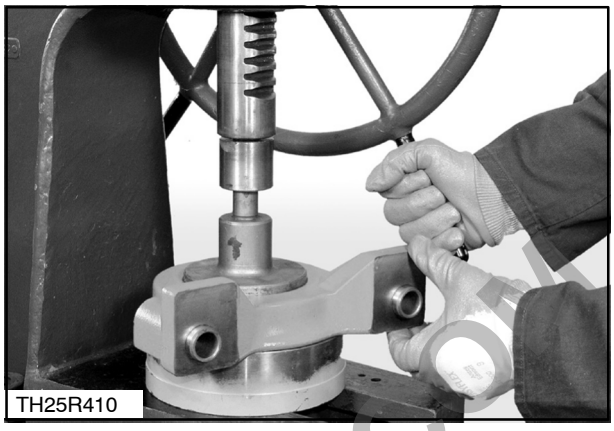

202

PREVIEW - YOUFIXTHIS.COM

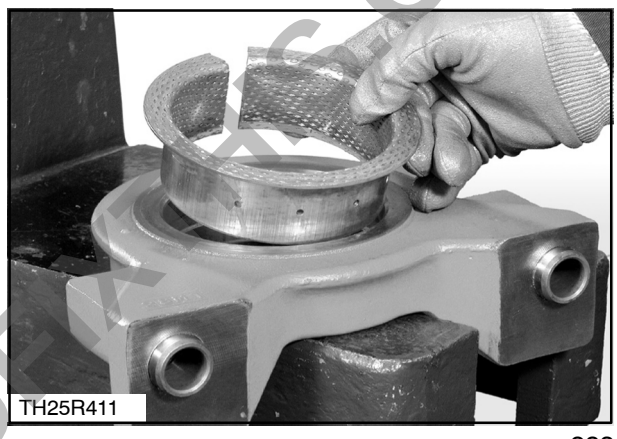


Download full manual at youfixthis.com

Position the swinging support (4) under a press and remove the complete bushing (3).




282



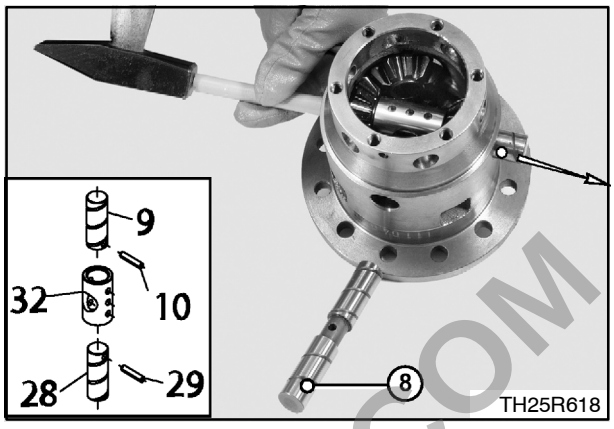

283

PREVIEW - YOUFIXTHIS.COM



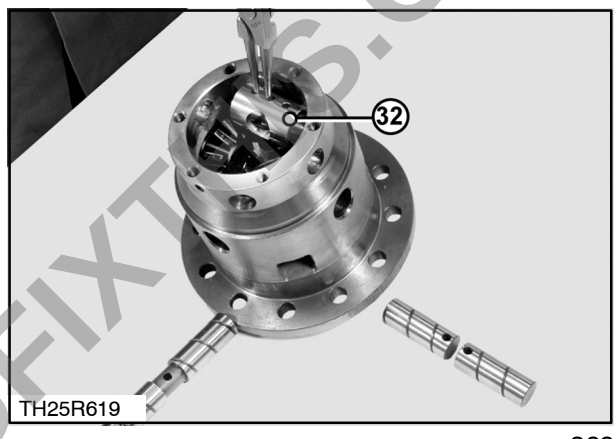
Download full manual at youfixthis.com

Remove the two halfes of the cross bolts (9) (28) with the help of a drift.



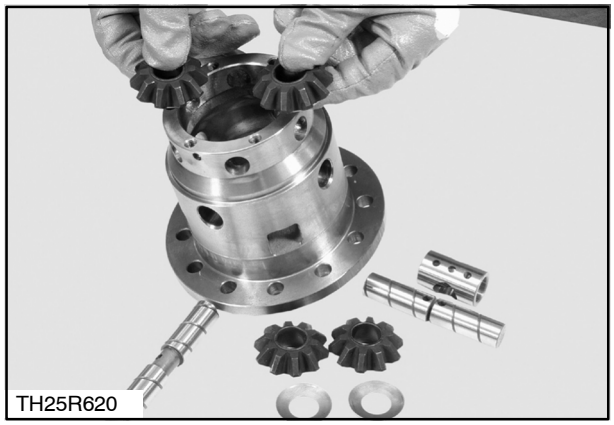

368

Remove the cross bolts (32).




369

Remove the gearwheels and the spherical washers.




370

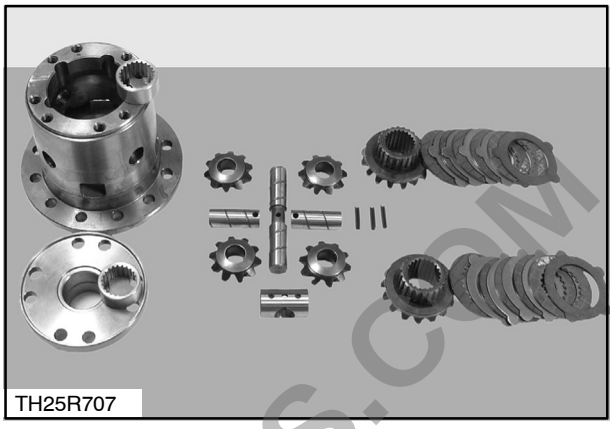
PREVIEW - YOUFIXTHIS.COM



Download full manual at youfixthis.com

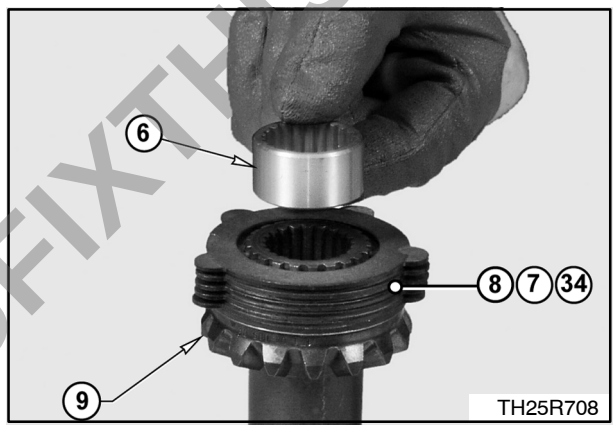
**ASSEMBLY LIMITED SLIP DIFFERENTIAL UNIT (45%)**

L.S. differential components.



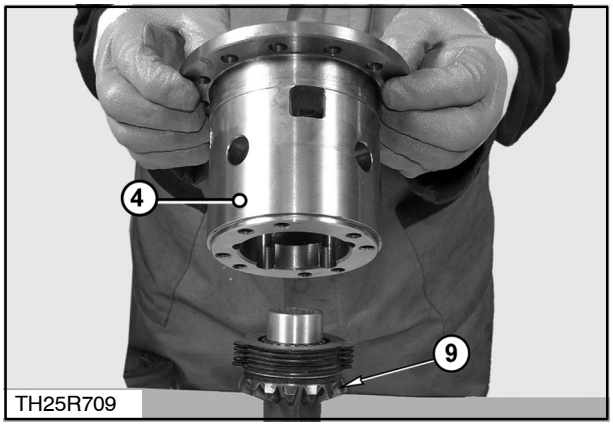

457

Align disks (8) (7) (34) and bushing (6) on the planetary gear (9) in the correct position.




458

Insert the planetary gear (9) into the differential husing (4).

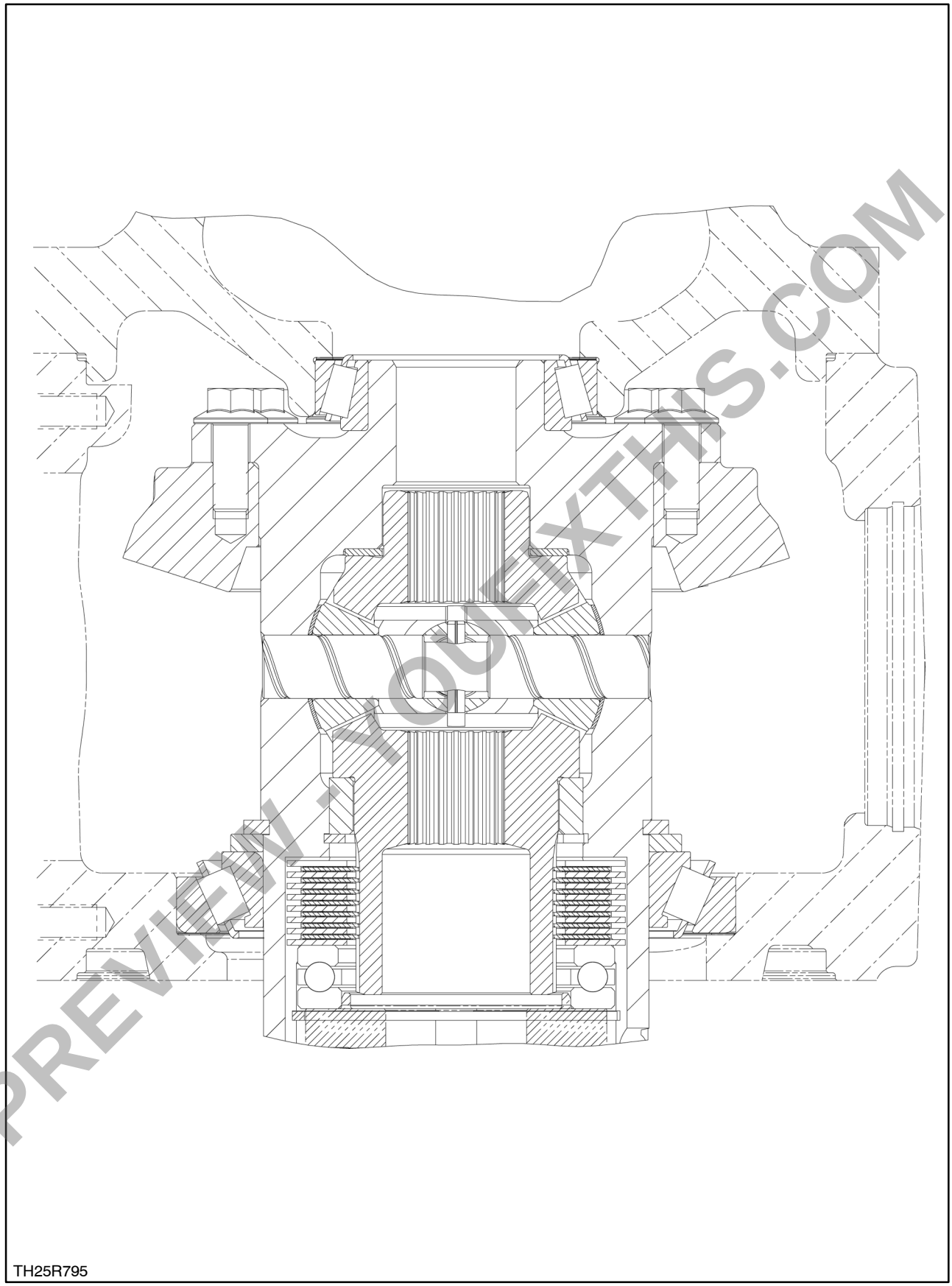



459

PREVIEW - YOUFIXTHIS.COM



Download full manual at youfixthis.com



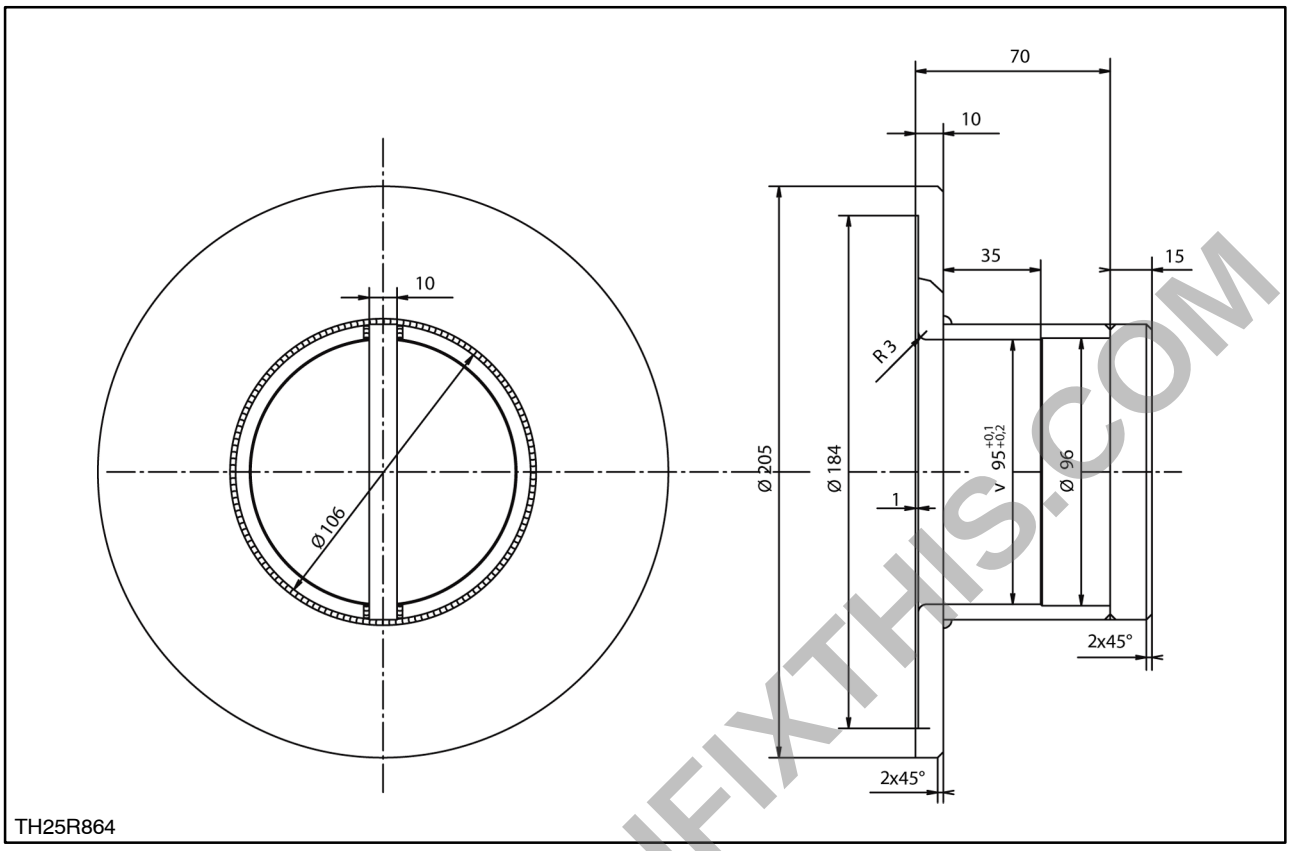
TH25R795

545

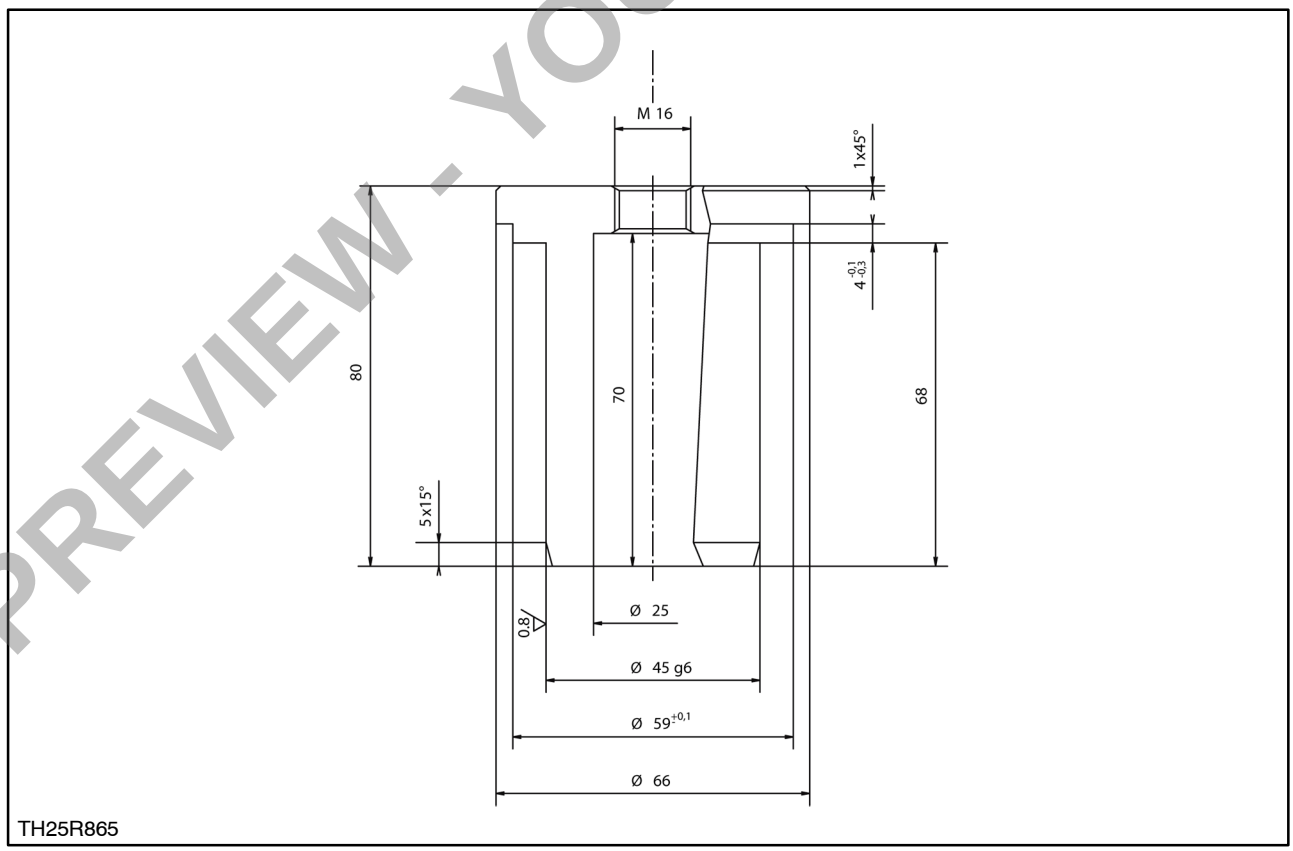


PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com




632



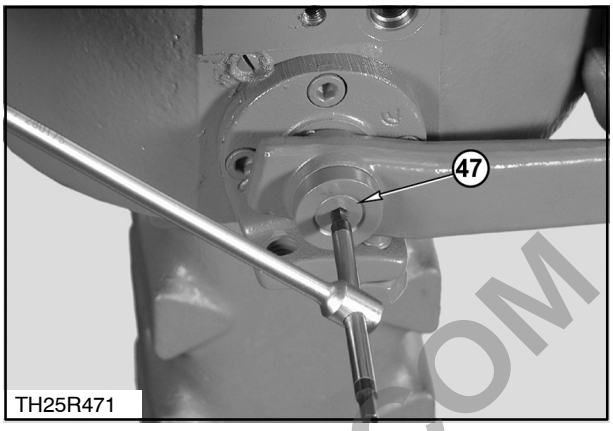

633

PREVIEW - YOUFIXTHIS.COM



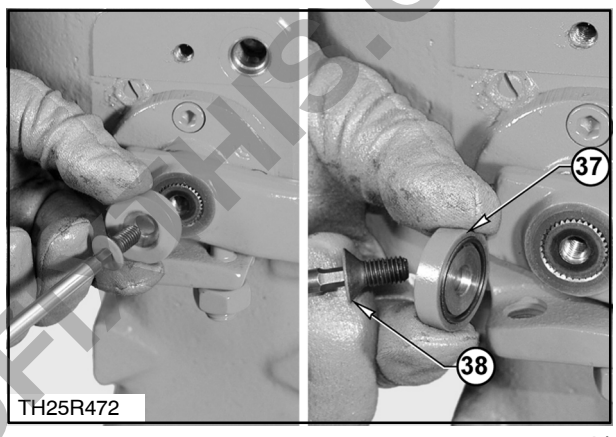
Download full manual at youfixthis.com

Remove the fixing screw of the lever brake.

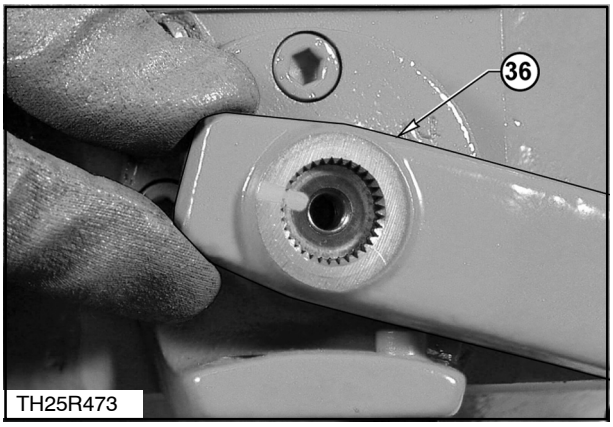



40

To remove the locking screw (37) lever brake completes of conic washer (38).




41



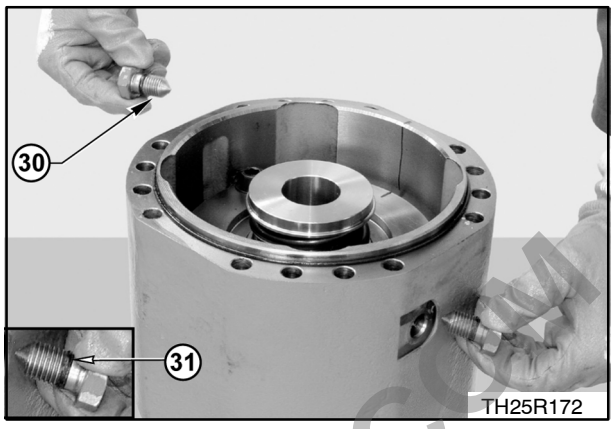

42

PREVIEW - YOUFIXTHIS.COM



Download full manual at youfixthis.com

Remove the negative brake locking screws (30). Always exchange the O-ring (31).



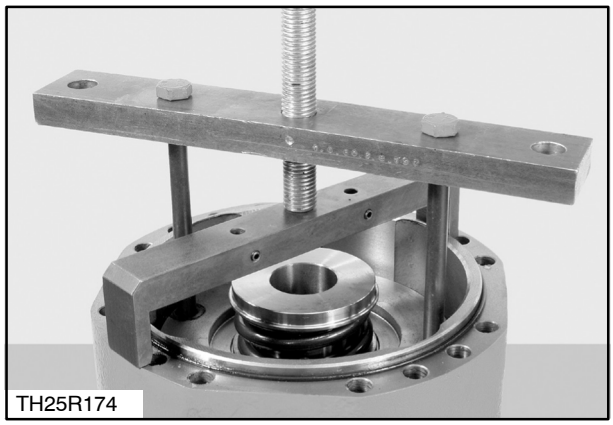

132

Loosen the before installed provisional screws in the same sequence and same measure.




133

Insert the screws of the puller (M12) into the tapholes of the negative brake and remove the pistons of the brake.




134

PREVIEW - YOUFIXTHIS.COM



Download full manual at youfixthis.com

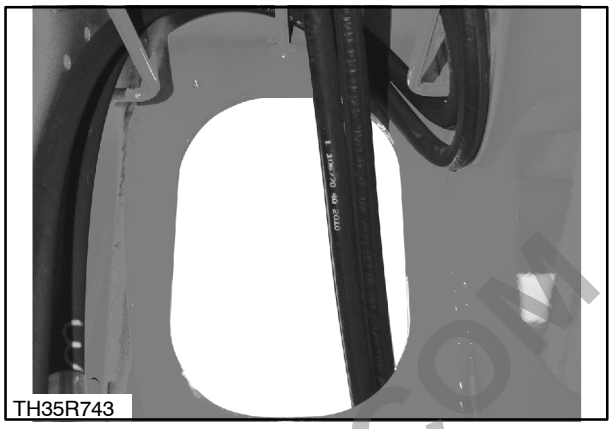
# NOTES

PREVIEW - YOUFIXTHIS.COM



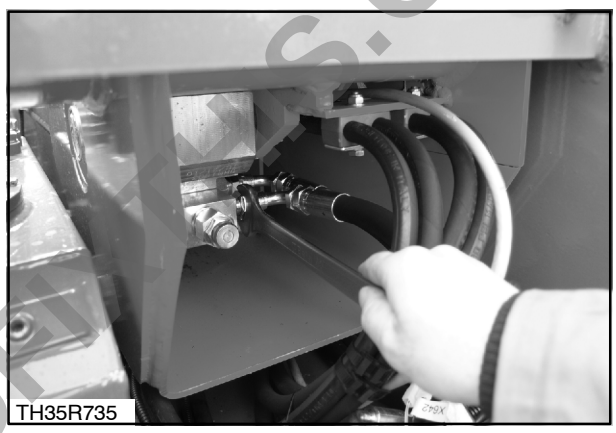
Download full manual at youfixthis.com

31. Pass to the front part of the boom, pull the tubes inside the chute, therefore remove the rope and clamps from the tubes and from the electric cable making them come out from the front hole of the extension respecting the original path.




69

32. Fix the tubes of the extension cylinder.
33. Carry out reverse operations with phase sequence 17 and 16.




70

34. Lift the boom, switch-off the engine and position the safety support.
DO NOT perform any other manoeuvre.




71

PREVIEW - YOUFIXTHIS.COM



Download full manual at youfixthis.com

57. Start-up the engine and lift the boom.
Switch-off the engine and secure the safety support to the lifting cylinder.



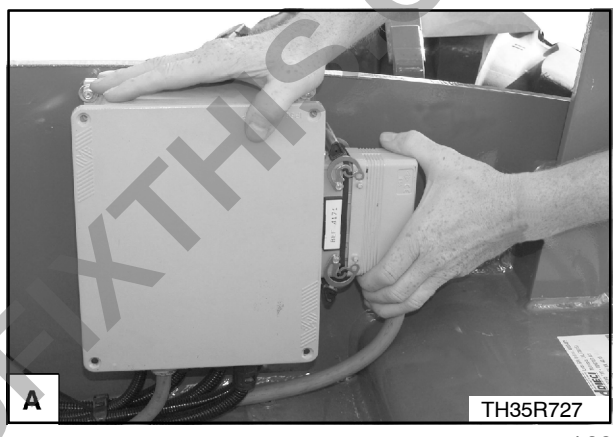

168

58. Remove the side guard of the cab and start disconnecting the cable:

A - Winch basket pre-arrangement.

B - Electric contact pre-arrangement.

59. Check the correct functioning of the boom and the clearance of the sliding blocks between the extensions.
60. Re-mount all previously removed protections and guards.




169



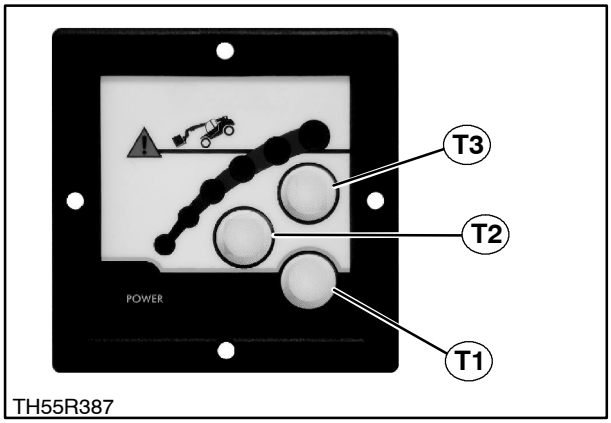

170

PREVIEW - YOUFIXTHIS.COM



Download full manual at youfixthis.com

**Button**




21

| Key | Function |
|---|---|
| T1 | Press & hold: to enter Test Mode<br>Press once: to check the buzzer |
| T2 | Not used |
| T3 | Not used |

PREVIEW - YOUFIXTHIS.COM



Download full manual at youfixthis.com

**Counter CAN Messages**

Within the three CAN messages the SARL control unit and the ALGA panel will exchange is a byte called "COUNTER"; as it is a byte the numbers within the counter will go from 0 to 255; once 255 is reached it starts again from 0, these counters are used by both devices for selfchecking.

The panel must check the number inside the counter of both messages sent by the SARL control unit (10FF80E3 and 18FFF0E3) and verify that for both messages the number is not the same for more than 1 second.

If the value read within a counter remains the same for more than 1 second, an error must be generated, see specific panel errors chapter.

Also the panel, by means of the CAN message (18FFF017) it sends to the SARL control unit, it must generate a counter, that must increase every time the SW enters the routine managing SAR, being a byte the numbers will vary from 0 to 255, once 255 is reached it starts again from 0, this is used by the SARL control unit to check the panel is working.

**Work State**

During the normal work phase the panel and Sarl control unit communicate between them by means of CAN BUS messages.

During the work phase the Sarl control unit sends information to panel by means of can message 18FFF0E3 , the panel displays this information and replies with a message 18FFF017 containing the just received information.

The information sent by the Sarl control unit is:

- The buzzer state. The Sarl control unit sends the buzzer state based on its own functioning logics.
- The alarm LED state (L6 LED). The Sarl control unit sends the state of the Alarm LED based on its own functioning logics.
- The Check state. The Sarl control unit sends the Check state to panel, the panel must execute the SAR system test (see specific chapter).
- The SAR Exclusion state. The Sarl control unit sends the state of the SAR exclusion to panel.

Information on anti-tipping is displayed on the central analogical indicator (S2), the angle scale of the indicator is of 210°<, it will be divided into three sectors: green, yellow and red; the tipping risk percentage ranges from 0 to 120%.

The panel must take information on the risk percentage from 1st message sent from the SARL control unit (10FF80E3), byte 1 and 2.

| Sector | Angular Degrees | Percentage |
|---|---|---|
| Green | 0° ÷ 90° | 0% ÷ 60% |
| Yellow | 92° ÷ 153° | 60% ÷ 90% |
| Red | 153° ÷ 210° | 90% ÷ 100% |

The values of the SAR table must be wired in software (for safety reasons).



PREVIEW - YOUFIXTHIS.COM
Download full manual at youfixthis.com

# PREVIEW ONLY

You're viewing 24 of 641 pages

## The full manual includes:

- All 641 pages, complete
- Searchable PDF (find any keyword)
- No watermarks
- Instant download
- Print-ready quality

**GET FULL MANUAL NOW**

**New Holland LM5020 Service Manual**

**Scan or click anywhere**
**youfixthis.com**

*Click anywhere on this page to get the full manual*