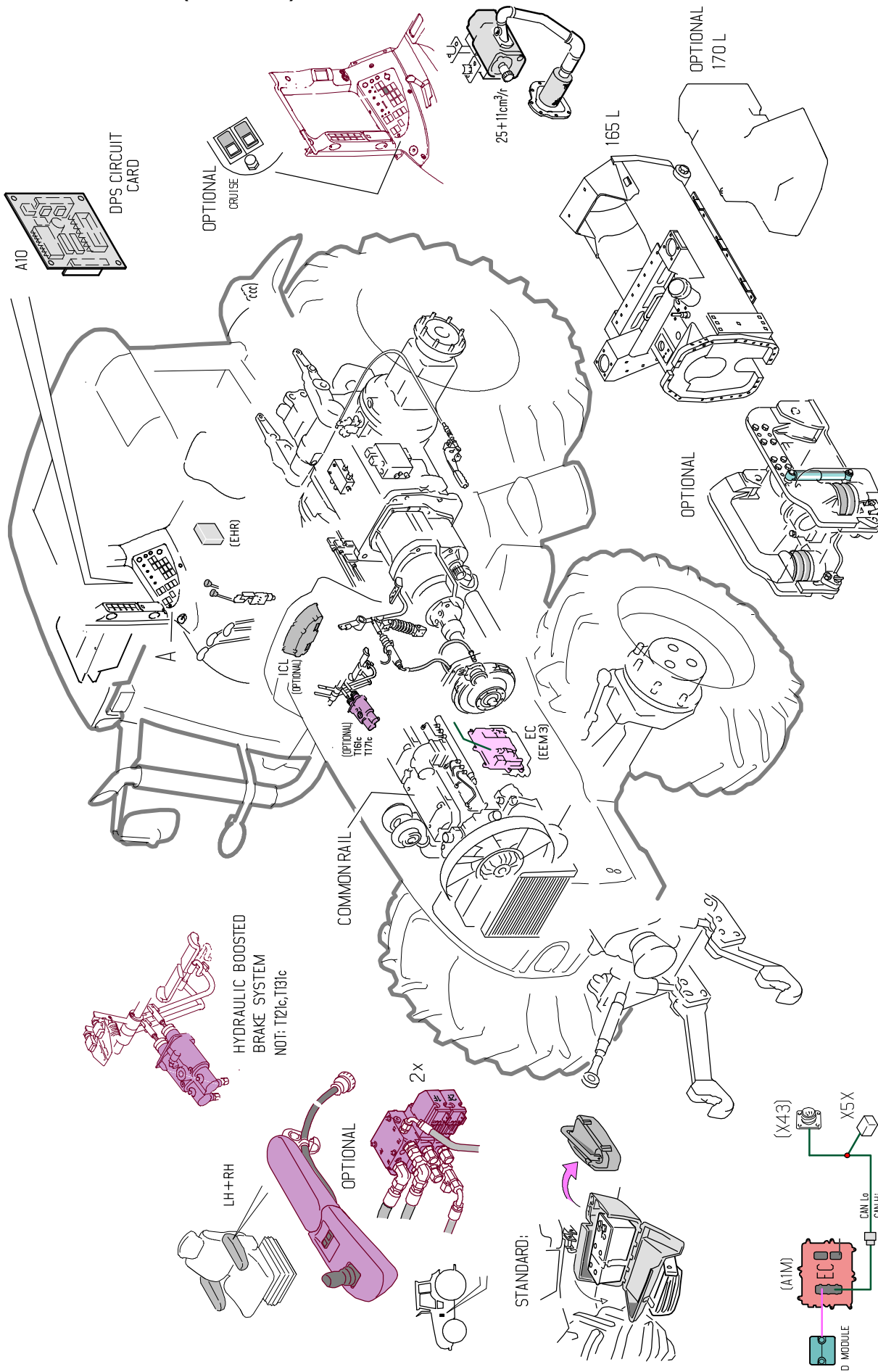
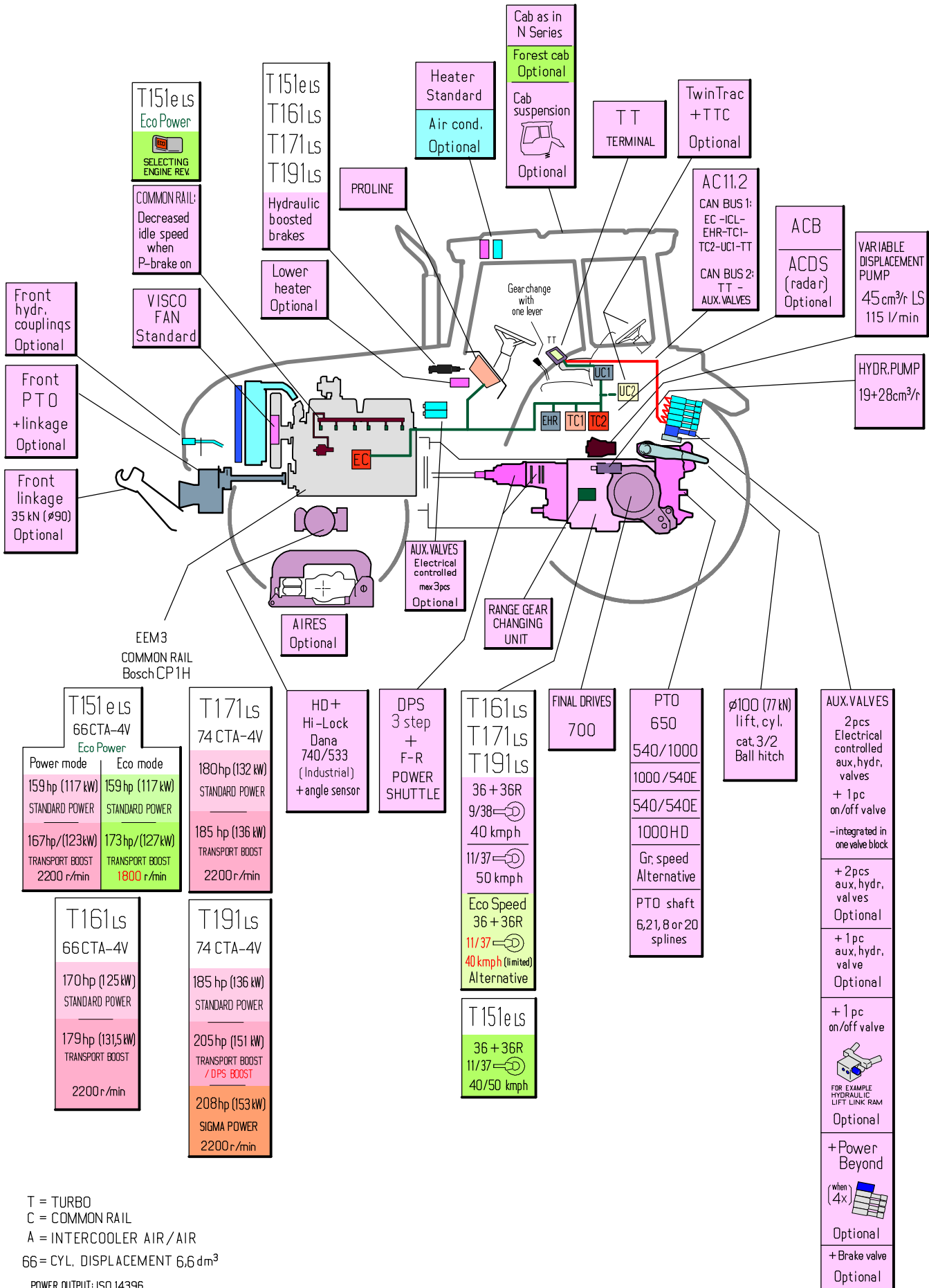


11. General	1.4.2007	Model T121c-T171c T121h-T191h T151eLS-T191LS	Code	Page
	1.8.2008		111.1	1

T1 series tractor (c models)

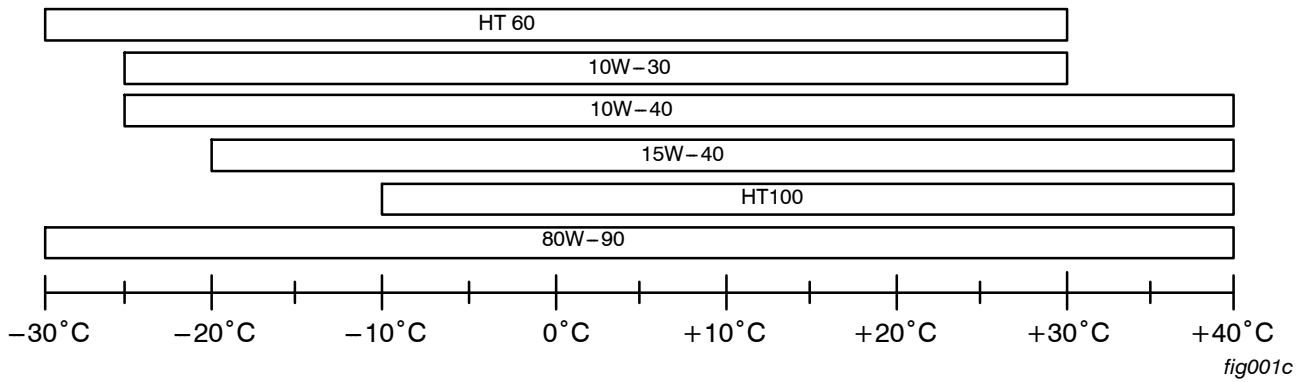


TLs models, construction



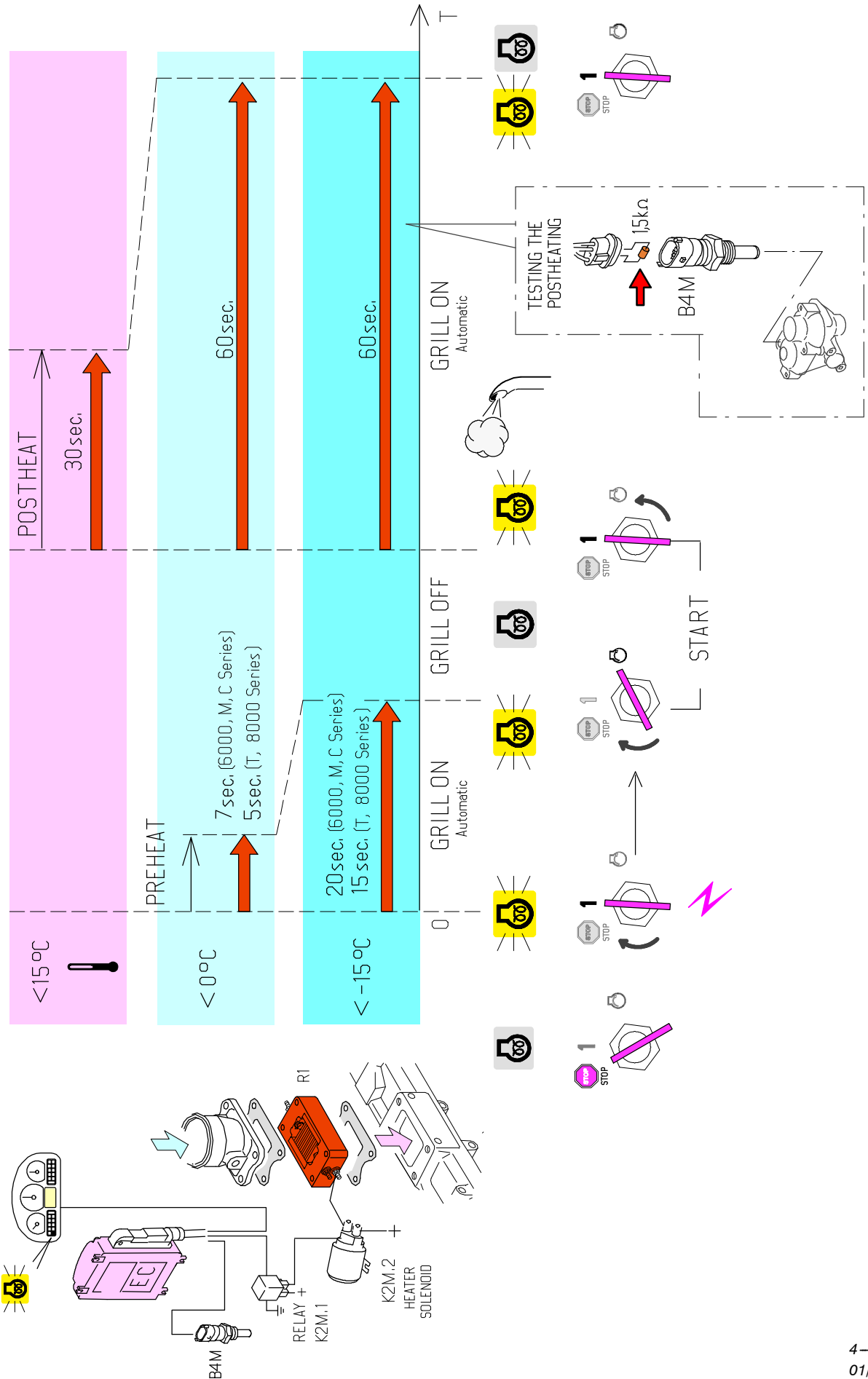
Oil recommendations according to outdoor temperature

When starting the tractor in a warm garage, oil meant for warmer areas may be used.

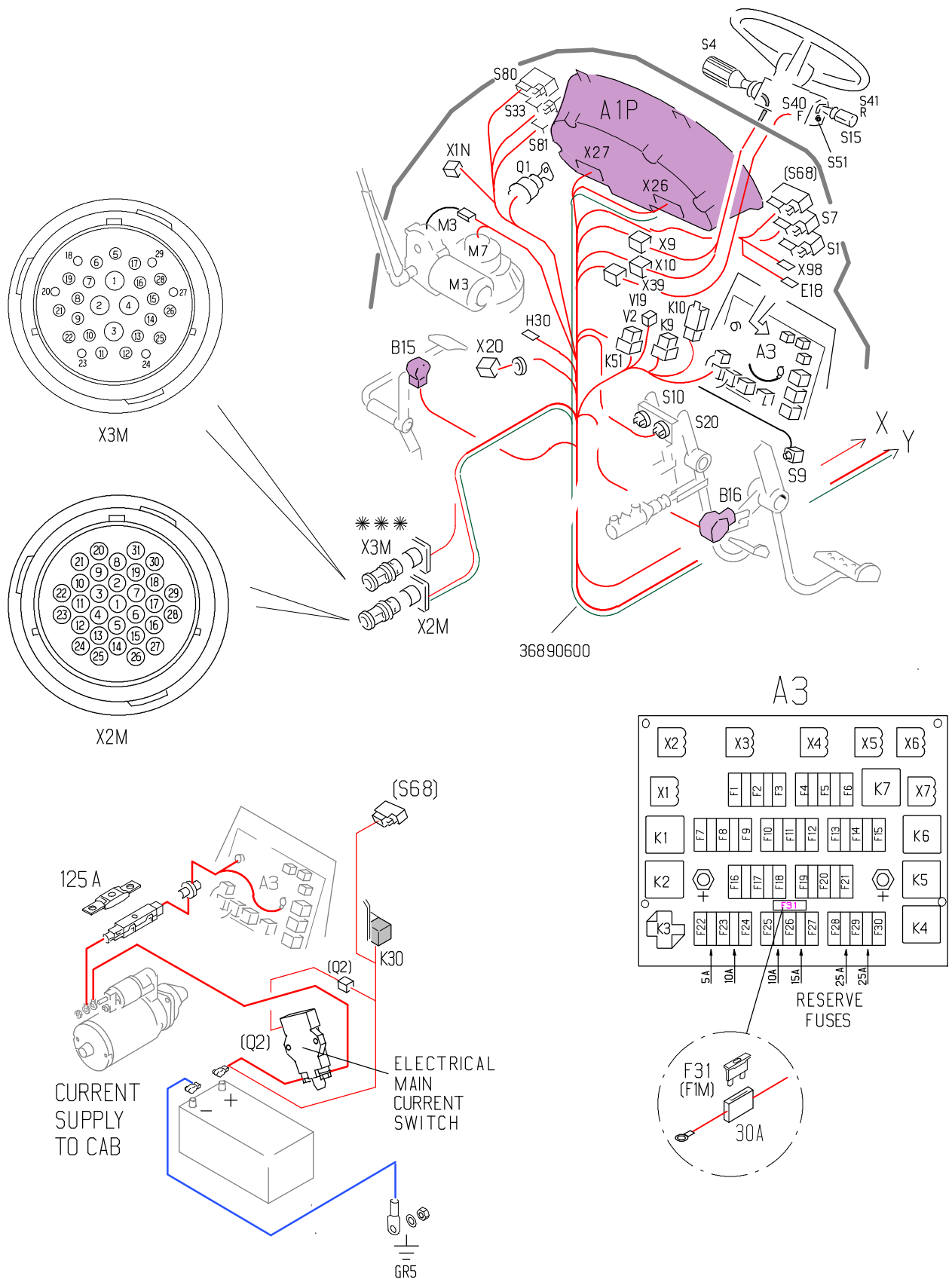


ISO 15380 class HEES (synthetic esters) bio oils can be used as transmission and hydraulic oil. The oil must fulfil the technical requirements of tractor transmission oil. The bio oil cannot be mixed with mineral oil.

Grid heater control



Electrical equipment, front housing



*** SEE PICTURE "ELECTRICAL EQUIPMENT, ENGINE"

34. Autocontrol AC11.2	1.4.2007	Model	Code	Page
	1.8.2008	T151eLS–T191LS	341.1	6

Wiring harness, outer roof (36585500)

- E9 Rear working light, right outer
- E10 Rear working light, right inner
- E11 Rear working light, left outer
- E12 Rear working light, left inner
- E13 Front working light, right inner
- E14 Front working light, left inner
- E23 Upper head light, right
- E24 Upper head light, left
- E25 Parking light, up right
- E26 Parking light, up left

Wiring harness, register plate (34165200)

- E22 Register plate light

Wiring harness, inner roof (36585200)

- E7 Cab light
- E43 Control panel light
- K56 Time–delay relay, cabin light and door step
- M2 Air conditioner
- M5 Rear window wiper
- M9 Roof window wiper
- S42 Door switch, cab light, RH
- S43 Door switch, cab light, LH
- S59 Switch, 2–pos., roof window wiper

Wiring harness, lever housing (36425420)

- A1A Control unit, TC1
- A1E Control unit, power lift
- A2A Control unit, TC2
- A5 Electric center
- E45 Step light
- M4 Windscreen washer
- M6 Rear window washer
- S2 Switch, 2–pos., rear working lights
- S2F Switch, suspension off/on/calibr.
- S5 Switch, 2–pos., front working lights
- S6 Switch, 2–pos., rot. warning light
- S28 Limit switch, PTO 540
- S29 Limit switch, PTO 1000/540E
- S31 Switch, 3–pos., floor fan
- S32 Switch 3–pos., rear window wiper& washer
- S36 Switch, 2–pos., control stop
- S49 Switch, creeper off
- S50 Switch, creeper on
- S83 Switch, 2–pos., drawhook light
- S84 Switch, 2–pos., add. front working lights

Wiring harness, switch panel (36342400)

- A1S Powerlift control panel
- H1G Indicator light, ISOBUS
- H1S Indicator light, stop, rear
- R1S Potentiometer, hand throttle
- R2S Cigarette lighter
- S1S Switch, cruise kmh / rpm
- S2S Switch, cruise +/-
- S3S Switch, cruise off
- S4S Switch, 4WD auto
- S5S Switch, differential lock, auto
- S6S Combined switch, PTO
- S7E Switch, lowering speed
- S7S Combined switch, lift / low
- S8E Switch, top limit
- S8S Switch, PTO auto stop
- S9E Switch, mixing
- S9S Switch, rear fog light
- S10S Switch, 2–pole current socket
- S11S Switch, 2–pole current socket
- S12E Switch, drive balance system / slip
- S12S Switch, lifting / lowering
- S13S Switch, lifting / lowering
- S14S Switch, front loader / linkage
- S15S Combined switch, U–pilot
- S16S Combined switch, front PTO
- S17S Switch, autotraction
- S18S Switch, DPS auto

Wiring harness, mud guard (36210900)

- E5 Rear light (indicator/parking/braking)
- E6 Rear light (indicator/parking/braking)
- S1A Push button, PTO rear start, left
- S1E Push button, rear operation, r.h., lifting
- S2A Push button, PTO rear start, right
- S2E Push button, rear operation, r.h., lowering
- S3E Push button, rear operation, l.h., lifting
- S4E Push button, rear operation, l.h., lowering

38. CAN bus	X	Model	T121c–T171c T121h–T191h T151eLS–T191LS	Code	383.1	Page	1
	1.4.2007						

CAN bus fault finding

The CAN bus of a tractor consists of two or more control units (e.g. EC, ICL and TC1). Terminal resistors (120 Ohm) are located at both ends of the CAN bus.

If a fault code concerning CAN bus appears in the display (ICL), there is a fault in CAN wires or in a control unit. The system can automatically tell which control unit can't receive any messages (the control units monitor each others).

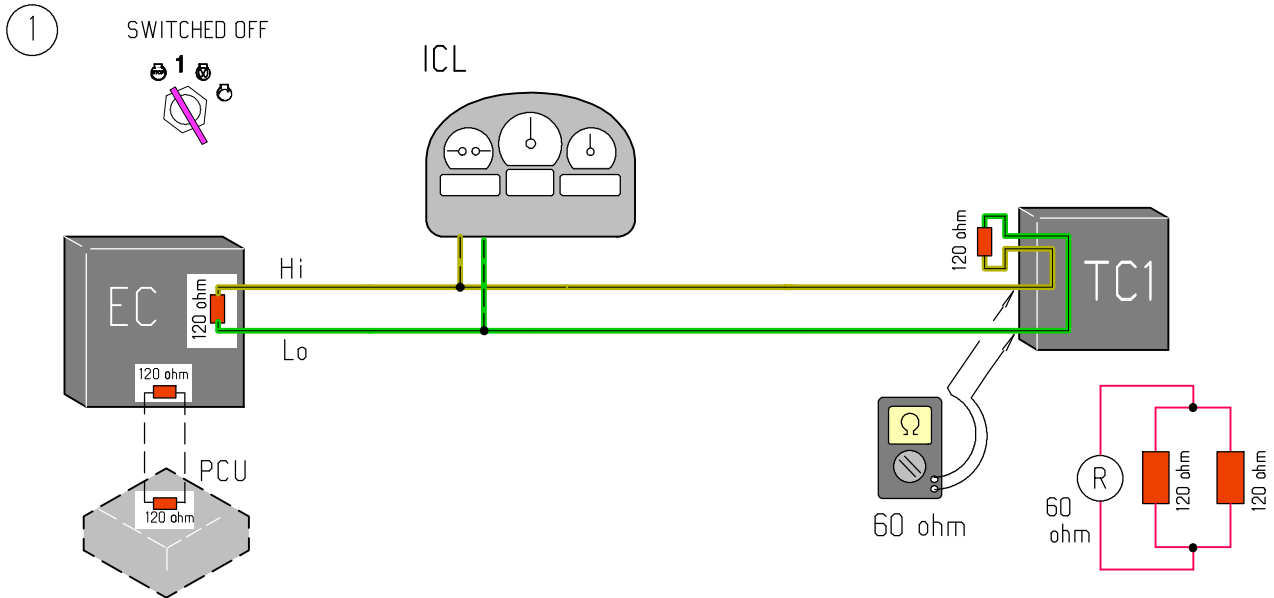


fig003c

- 1) If resistance between CAN Hi and CAN Lo wires (at any point) is about 60 Ohm, CAN bus is physically OK. The control units EC and TC1 are also OK, since terminal resistors (120 Ohm) are situated in EC and close to TC1. The ICL instrument panel is also OK, because the CAN bus goes through it.

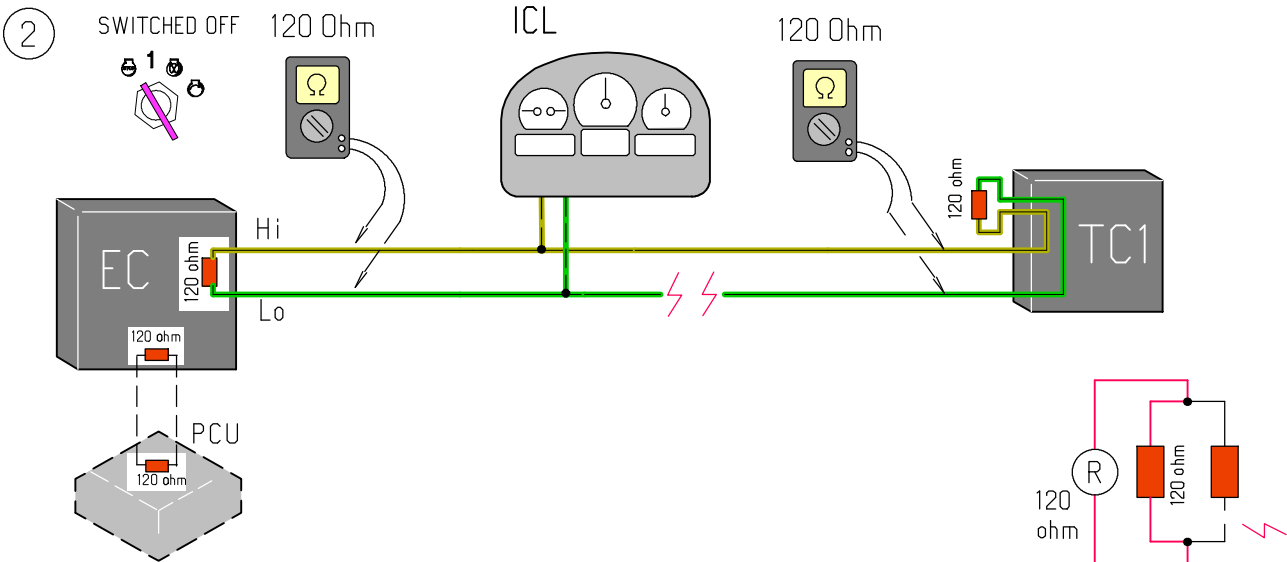


fig004c

- 2) If resistance between CAN Hi and CAN Lo wires (at any point) is about 120 Ohm, a Can bus wire is broken (one or both wires).

Drive plate

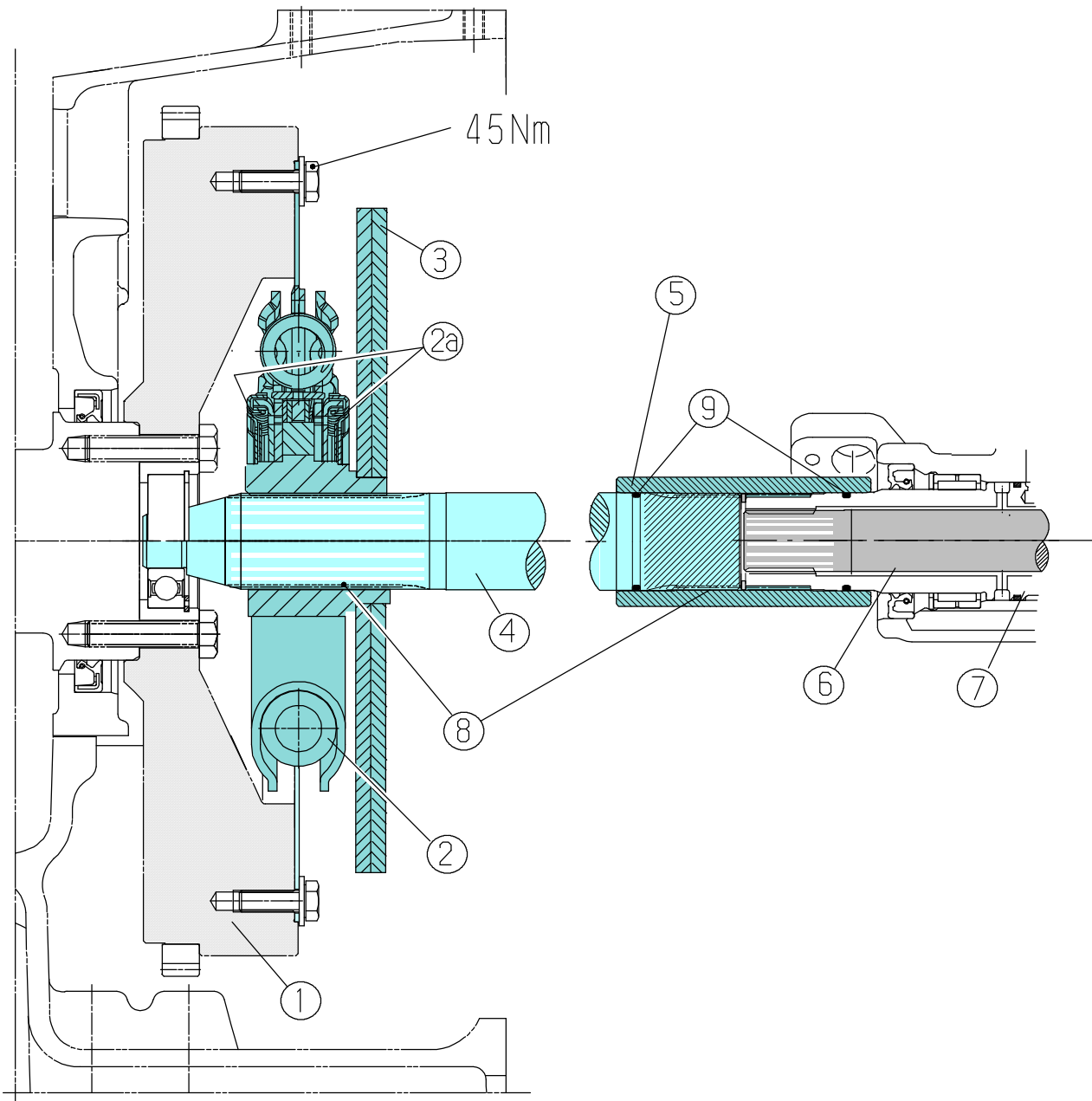
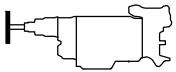


fig009

- | | |
|--|--|
| <ul style="list-style-type: none"> 1. Flywheel 2. Damper springs
These springs damper the shock between the engine and the transmission. 2a Small damper springs
Damper so-called idle running vibrations in the transmission 3. Drive plate
Plates increase the mass, and damp the vibrations 4. Drive shaft | <ul style="list-style-type: none"> 5. Coupling sleeve 6. PTO / hydr. pump shaft
The PTO drive shaft can be removed from the front end without taking away first the DPS. 7. Input shaft for DP 8. Pressure-proof grease to the splines of the shafts 9. O-ring (2x)
Function as oil seals (the space of the DPS input shafts is under lubrication pressure) |
|--|--|

42. Gearbox

1.4.2007

Model

T121c-T171c
T121h-T191h

Code

425.1

Page

4

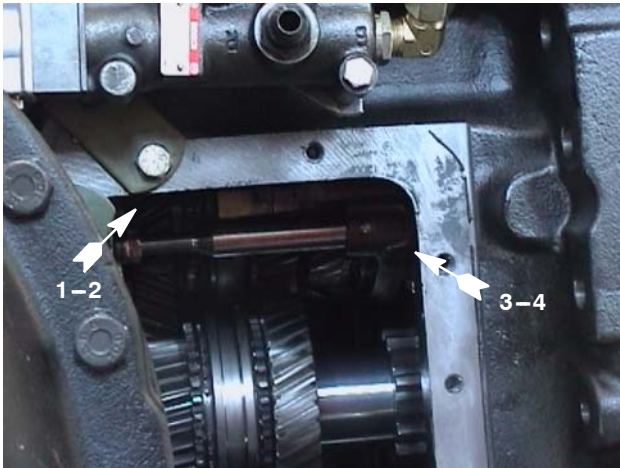


fig030

10. Installation order for the selector forks:

- first fit the 1-2 selector fork.
- the 3-4 selector fork.
- the 3-4 selector rail.
- the 1-2 selector rail.



fig031

- fit the M-H selector fork.

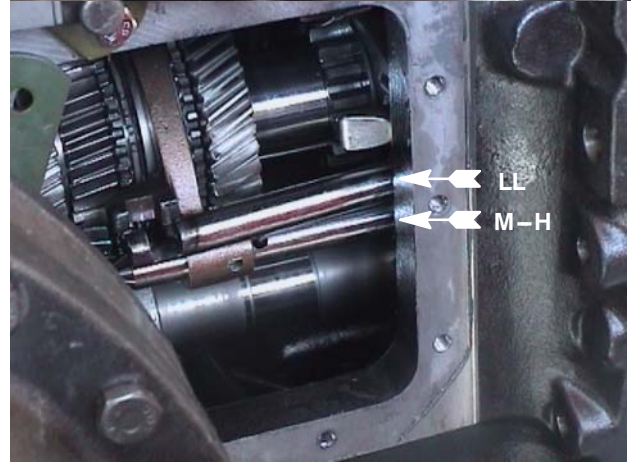
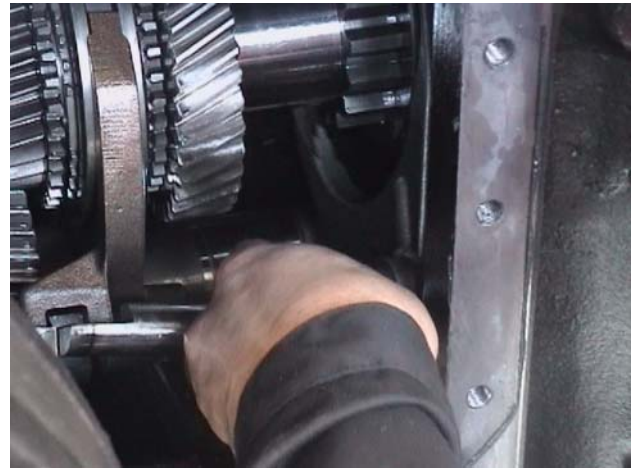


fig032

- fit / pass the LL selector fork and rail **assy** past the sliding coupler and then move it first down a bit and finally move up to the sliding coupler.
- fit the M-H selector rail.

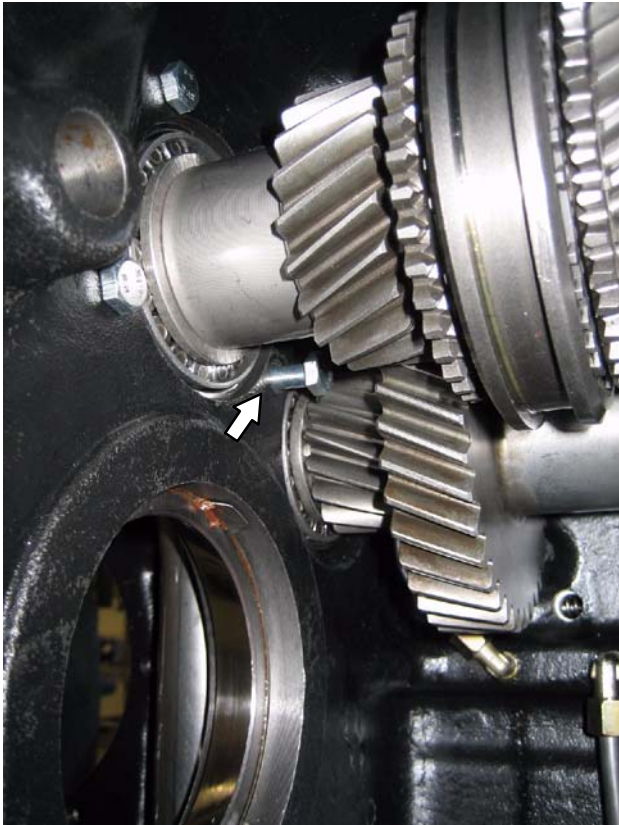


fig207

8. **Note!** Remember to install the lowest bolt for the pump drive mechanism.



fig208

9. Fit the layshaft lubricating oil pipe.



fig209

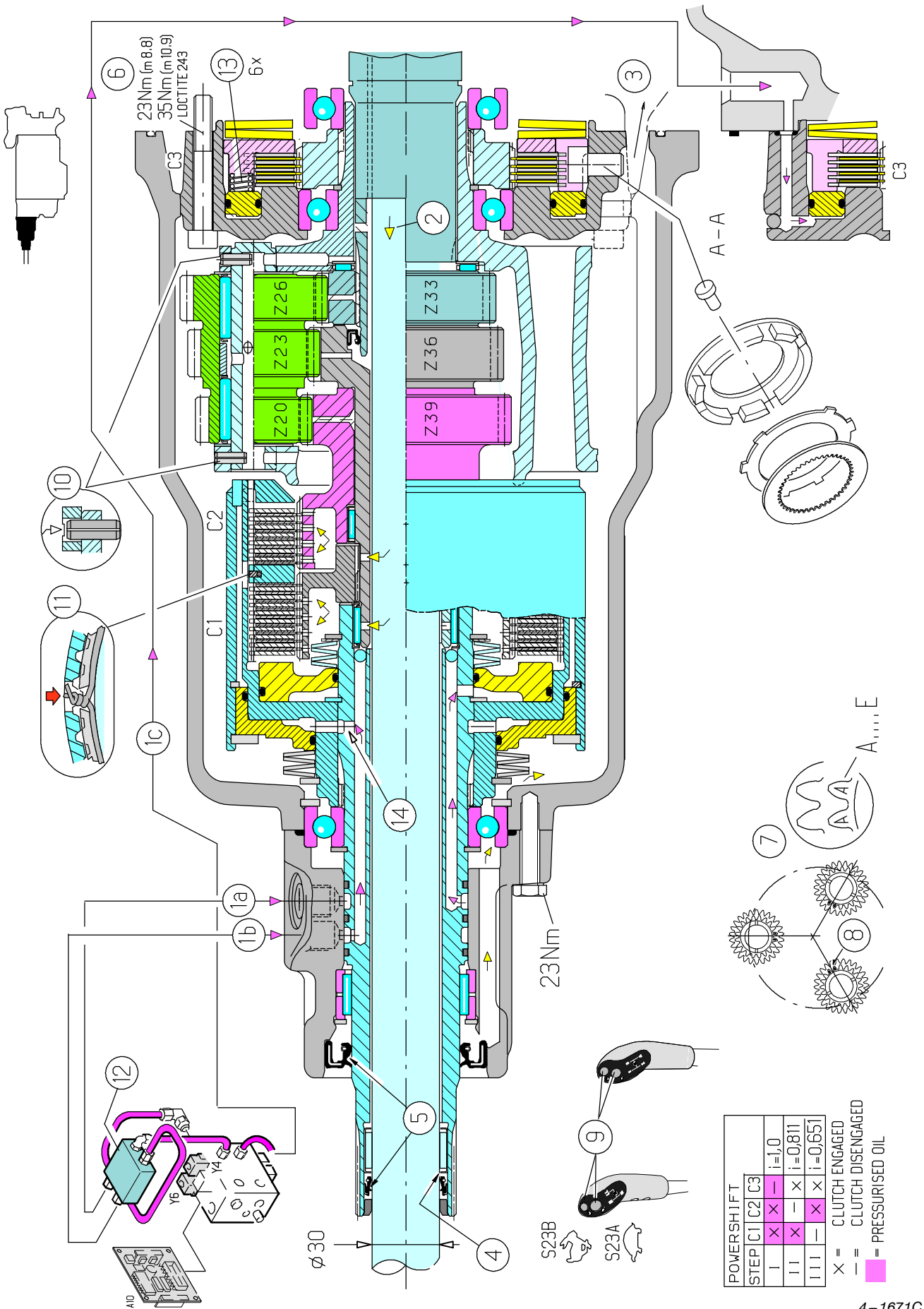
10. Fit the front circlip and spacer ring of the transmission shaft.



fig210

11. Fit the transmission shaft into the gearbox through the front bearing hole. Fit the needle bearing, gear wheel and spacer ring onto the shaft.

Powershift gear (Syncro)



44. Powershift gear, power shuttle and 4WD clutch		Model T121c–T171c T121h–T191h T151eLS–T191LS	Code 443.2	Page 6
	1.8.2008			

- Switch **S47**: DPS, man./auto
 - pins (A1A7; 8 ja 7) currentless; manual function
 - pins 8 and 7 current–carrying: AUTO 1
 - pin 8 current–carrying, pin 7 currentless: AUTO 2
- Switches **S23 (S1W)**, DPS, selector
 - Switches are placed in range gear and speed gear lever knobs.
 - When pushing the switch, an impulse (12V) goes either to pin A1A5;10 (change down) or to pin A1A5;9 (change up).
 - The number of DPS usage can be checked in the display.
- Angle sensor **B15**, accelerator pedal / hand throttle **R1M**:
 - Has an effect on the choosing of the changing program (together with the sensor **B11**: man: down, AUTO1 / AUTO2: up / down).
- Temperature sensor **B14**, gearbox (compensating of the oil viscosity):
 - The control unit supplies a 12V voltage to the sensor. The current, which goes through the sensor, changes according to the temperature. Earthing to the pin A1A1; 4.
 - Activates the fault diagnostics, if the resistance (wire + sensor) value corresponds to the temperature value over +150° (great resistance) or under –50° (little resistance).
- DPS solenoid valves **Y4** (P1/C1), **Y6** (P2/C2) and **Y17** (P3/C3).
 - During the gear coupling the control unit supplies pulse like voltage (12V) from the pins (A1A4; 2,4,6) to the proportional solenoid valves.
 - The diodes of the solenoid have been built in to the control unit A1 (preventing high voltage pulses when switching off).
- Display **P6 (P1W)**
 - The data lines go through the pins (A1A4;1,3,5,A1A3;7) to the display.
 - **NB!** The current supply for the display comes direct via the fuse F24.
- Speed sensor **B6** (F2), gearbox
 - Inductive sensor (no supply), gives pulses according to the revolution speed of the gearbox (driving speed) to the pin A1A2;2.
 - When moving, the DPS changes according to the program, when stationary, the DPS changes at once.
- Speed sensor **B11** (F1), engine speed
 - Inductive sensor (no supply), gives pulses according to the revolution speed of the engine to the pin A1A2;4.
 - Gives information about engine load to the control unit together with sensor B15 (AUTO1 / AUTO2).
- F/R sensors **B13** (F5), **B12** (F4)
 - Active sensors, supply voltage 12V (fuse F22). The sensors report the revolution speed and direction of the gearbox input shaft to pins A1A1;5 and 7.
 - Feed back: the control unit observes the development of the DPS output revolution speed, which should be according to the programmed curve.

44. Powershift gear, reverse shuttle and 4WD clutch

1.4.2007	Model	T121c-T171c	Code	Page
1.8.2008		T121h-T191h	445.3	25
		T151eLS-T191LS		

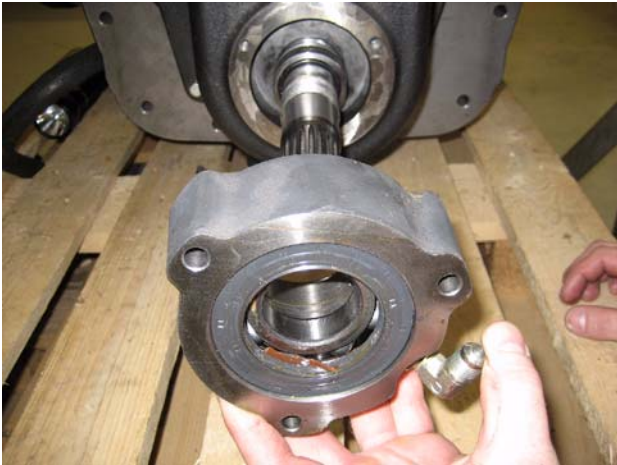


fig336

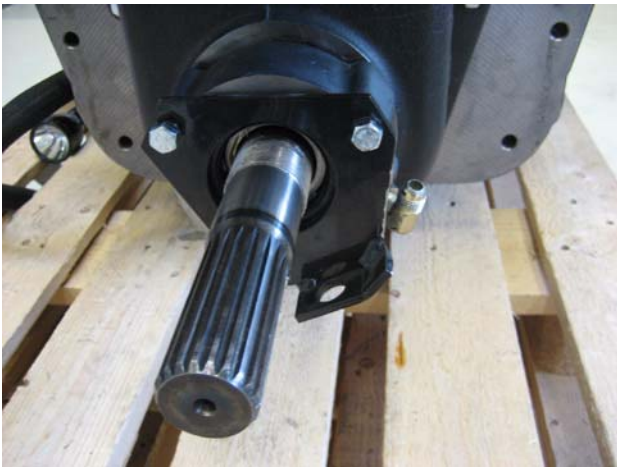


fig337

7. Fit the bearing housing and the holder for the sensor.

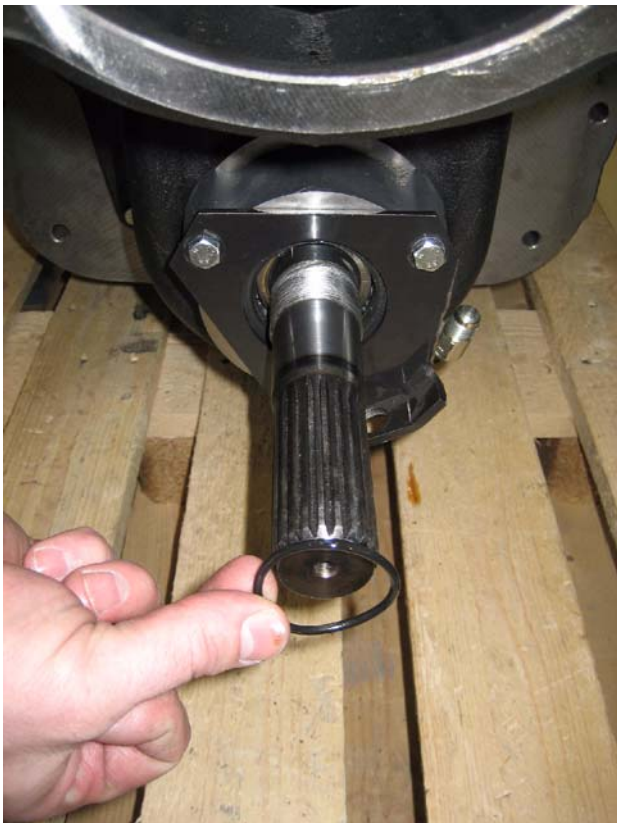


fig338

8. Fit the O-ring onto the 4WD shaft.



fig339

9. Fit the bushing onto the 4WD shaft.

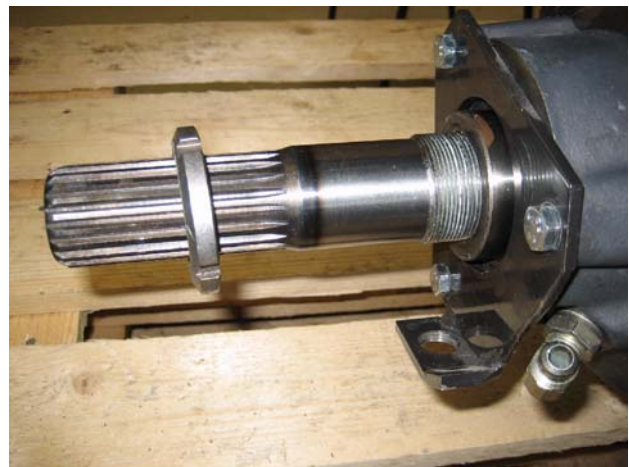


fig340

10. Fit the shaft nut.

44. Powershift gear, reverse shuttle and 4WD clutch

~~1.4.2007~~

1.8.2008

Model

T121c-T171c
T121h-T191h
T151eLS-T191LS

Code

445.3

Page

28

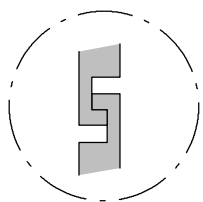


fig023

- Fit the metallic seal rings into the grooves. Ensure, that the ring ends are locked together.

Note! Use grease in the metallic seal rings.

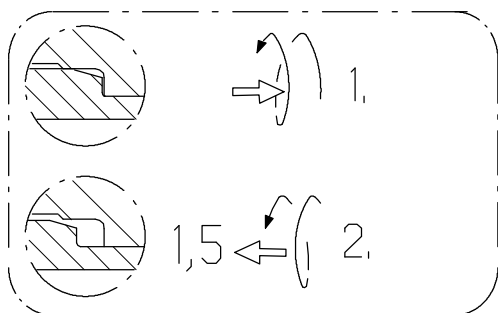


fig050

- Replace the old shaft nut with a new one (old nut stretches when used again)
- Tighten the new shaft nut first fully home and then open it by **1.5 turns**. So the necessary clearance for the clutch discs is achieved. Use **Loctite 270** on threads.

Note! Stop tightening, until the movement of the oil sleeve stops (check the sleeve between the nut and the shaft seal).

Engagement of the PTO (LS)

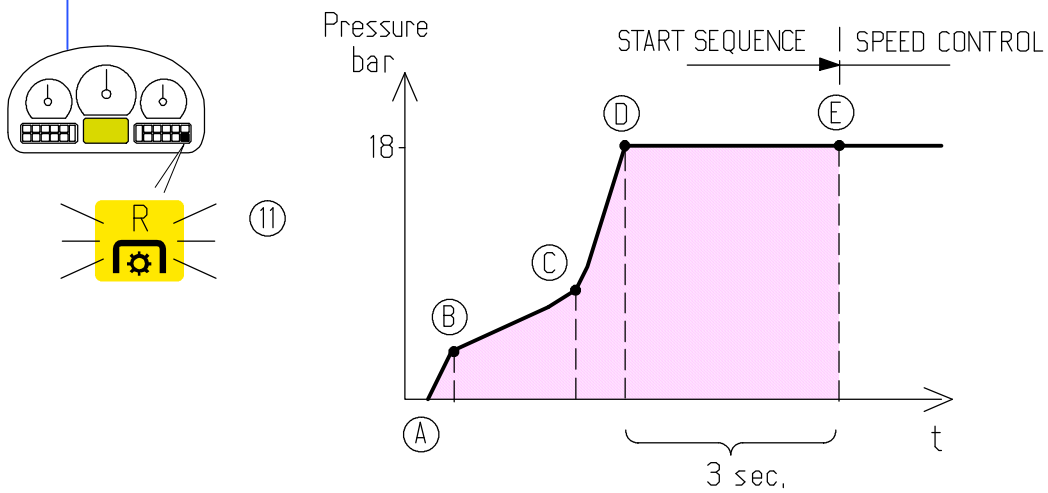
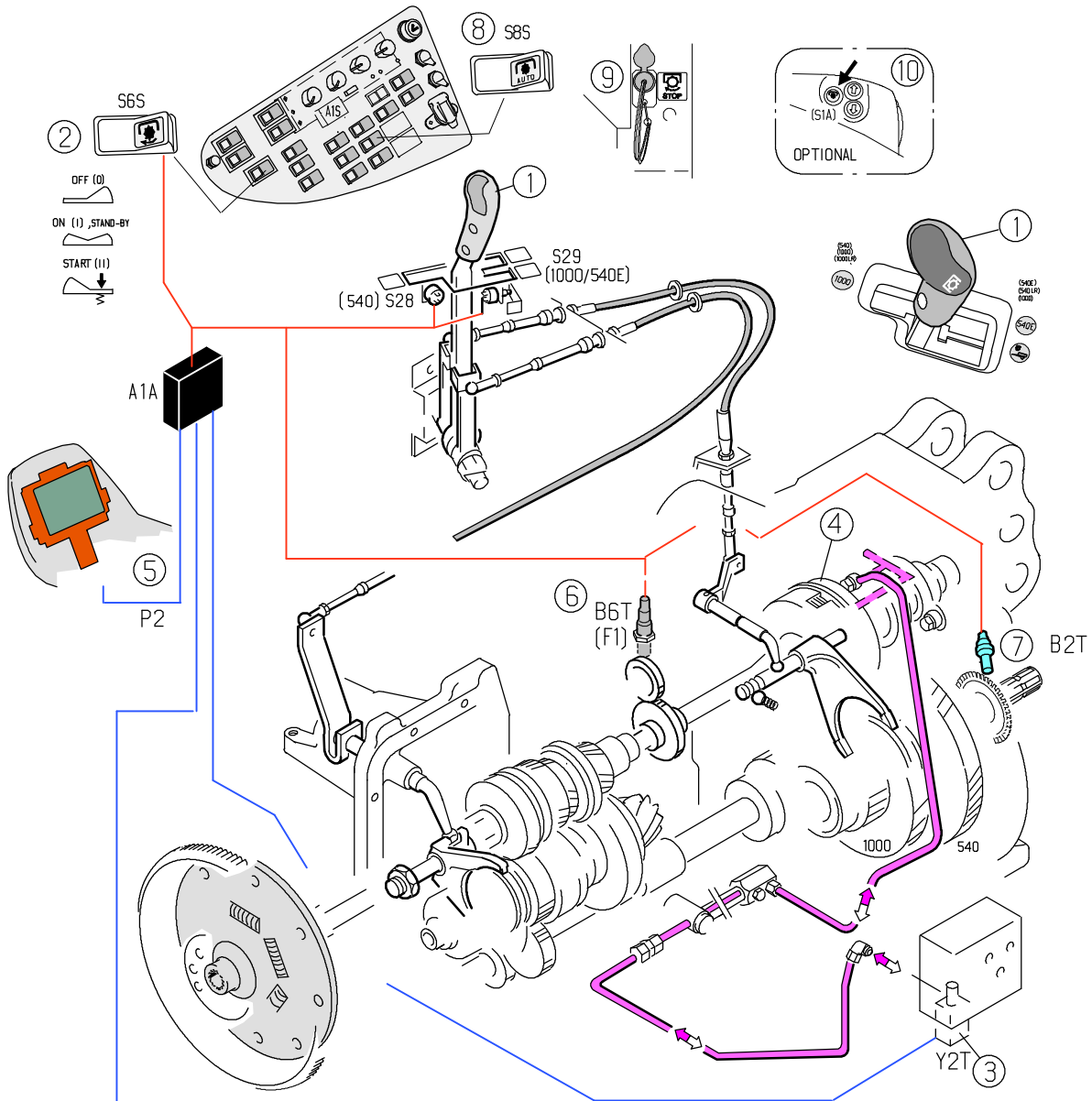


fig032