REPAIR MANUAL

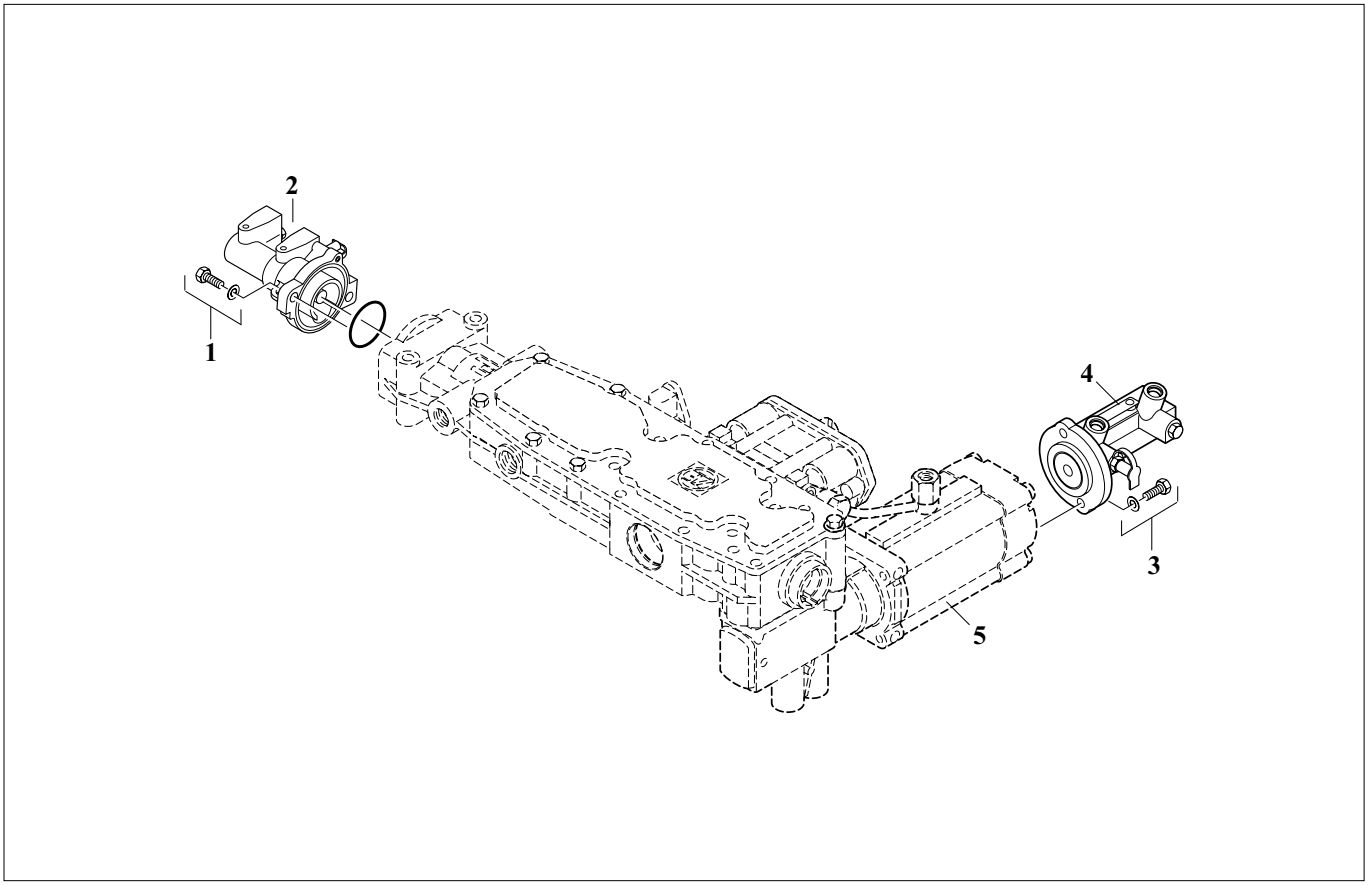
ZF-ECOSPLIT®

Shift system with PSU
(Pneumatic Servo Unit)

1315 751 110a

Withdrawn DIN	Title	Substitute ISO standard	Result of check/measures [1)]
DIN 965	Countersunk bolts	ISO7046	- cannot be replaced as a result of modified head dimensions → documented as DIN 965 OLD
DIN 980	Locking nuts	ISO 7042 ISO 10513	- cannot be replaced → documented as DIN 980 OLD
DIN 985	Locking nuts	ISO 10511	- cannot be replaced → documented as DIN 985 OLD
DIN 1440	Washers	ISO 8738	- some can be replaced → changed to ISO 8738 - parts which cannot be replaced documented as DIN 1440 OLD
DIN 1443	Bolts	ISO 2340	- can be replaced → changed to ISO 2340
DIN 1444	Bolts	ISO 2341	- can be replaced → changed to ISO 2340
DIN 1471	Grooved pins	ISO 8744	- some can be replaced → changed to ISO 8744 - parts which cannot be replaced (e.g. 1 = 6 mm) documented as DIN 1471 OLD
DIN 1472	Grooved pins	ISO 8745	- some can be replaced → changed to ISO 8745 - parts which cannot be replaced (e.g. 1 = 6 and 25 mm) documented as DIN 1472 OLD
DIN 1473	Grooved pins	ISO 8740	- some can be replaced → changed to ISO 8740 - parts which cannot be replaced (e.g. 1 = 4, 5, 6, 25 and 50 mm) documented as DIN 1473 OLD
DIN 1474	Grooved pins	ISO 8741	- can be replaced → changed to ISO 8741
DIN 1475	Grooved pins	ISO 8742	- can be replaced → changed to ISO 8742
DIN 1476	Grooved stud	ISO 8746	- can be replaced → changed to ISO 8746
DIN 1477	Grooved stud	ISO 8747	- can be replaced → changed to ISO 8747
DIN 1481	Clamping pins	ISO 8752	- some can be replaced → changed to ISO 8752 - parts which cannot be replaced (e.g. 1 = 36) documented as DIN 1481 OLD
DIN 6325	Cylindrical pins	ISO 8734	- some can be replaced → changed to ISO 8734 - parts which cannot be replaced (e.g. 1 = 36) documented as DIN 6325 OLD
DIN 7346	Clamping pins Flange	ISO 13337	- some can be replaced → changed to ISO 13337 - parts which cannot be replaced (∅ 7, 11 and 23 mm) documented as DIN 6325 OLD
DIN 7976	Self-tapping screws	ISO 1479	- can be replaced → changed to ISO 1479
DIN 7978	Tapered pins	ISO 8736	- some can be replaced → changed to ISO 8736 - parts which cannot be replaced (e.g. 1 = 36) documented as DIN 7978 OLD
DIN 7979	Cylindrical pins	ISO 8733 ISO 8735	- some can be replaced → changed to ISO 8733/8735 - parts which cannot be replaced documented as DIN 7979 OLD
DIN 7981	Self-tapping screws	ISO 7049	- can be replaced → changed to ISO 1479
DIN 7982	Self-tapping screws	ISO 7050	- cannot be replaced → documented as DIN 7982 OLD
DIN 7985	Cheese-head screws	ISO 7045	- can be replaced → changed to ISO 7045

1) refers to the productive components numbered at ZF



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2 Selector cylinder/shift cylinder
Shifter tower with HTC

Removal

1 Unfasten two hex bolts **(1)** and washers.

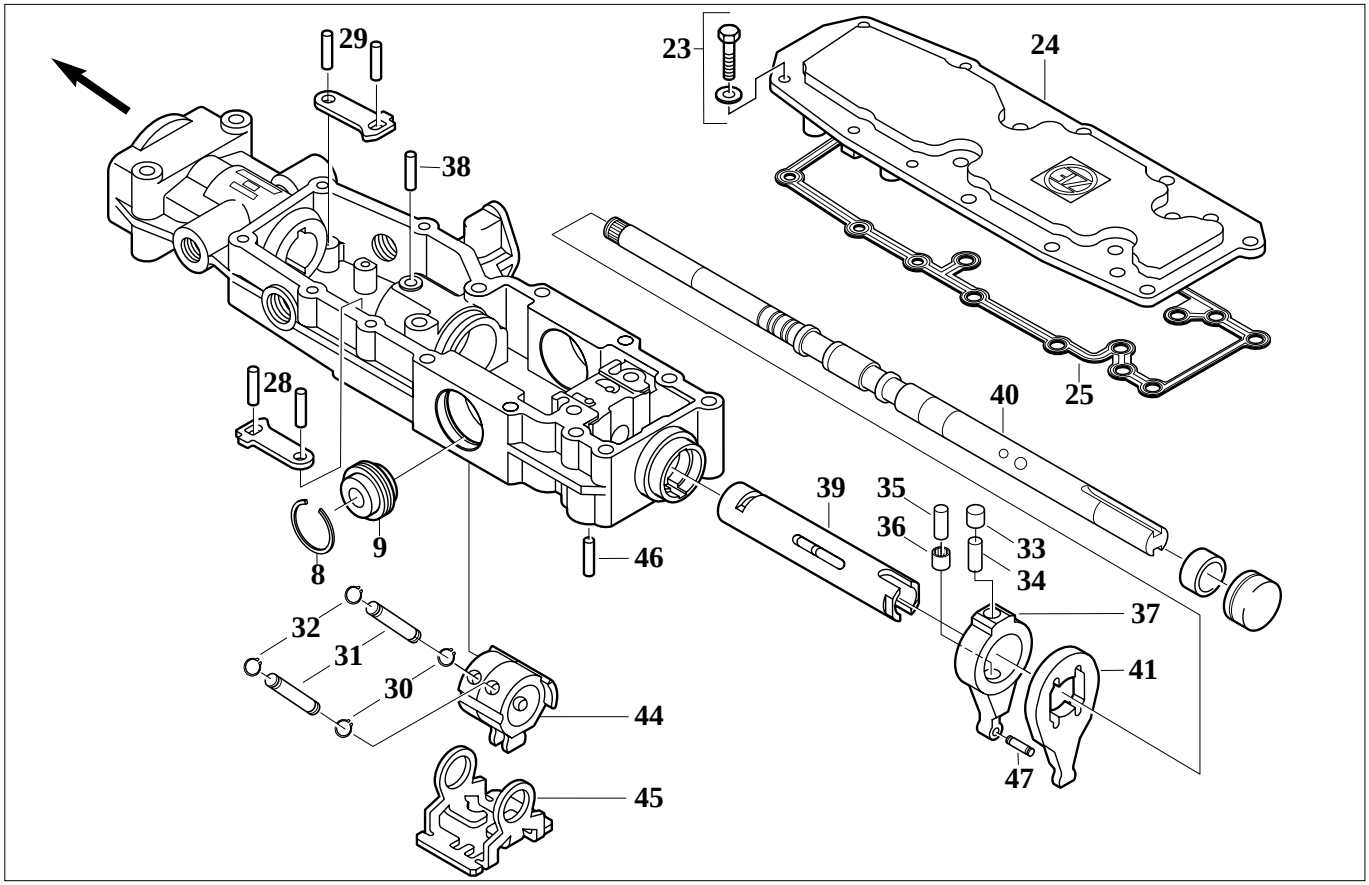
2 Pull off selector cylinder **(2)** with O-ring, remove piston rods of selector cylinder from driver groove in selector shaft.

NOTE
Move shift lever into the gate so that the selector cylinder can be pulled out.

3 Unfasten two hex bolts **(3)** and washers

4 Pull off shift cylinder **(4)**, remove piston rods of shift cylinder from driver groove of shaft in pneumatic servo unit **(5)**.

NOTE
The selector cylinder **(2)** and the shift cylinder **(4)** are connected to a separate hydraulic circuit and remain in the vehicle when the transmission and/or shift turret are removed.



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9 Unfasten hex bolts **(23)**, take off cover **(24)** and gasket **(25)**.

10 Snap out V-ring **(8)** and remove. Press detent **(9)** and O-ring out of gear shift housing. Press from inside to outside.

NOTE
Check O-ring and replace if necessary (cf. consumables).

11 Note down position of detent levers **(28 and 29)**. Take detent lever out of gear shift housing. If necessary, remove cylindrical pins.

CAUTION
Circlips (30 and 32) must not be overstretched – use adjustable pliers.

12 Snap out circlips **(30)**.

13 Remove cylindrical pins **(31)** and if necessary remove circlips **(32)**.

14 Remove pin **(38)**.

15 Slide quill shaft **(39)** towards the shift lever until it engages.

16 Fix impact adaptor **1X25 139 783** above the needle bush **(33)** and drive valve lever **(37)** downwards.

17 Use gripper pliers to remove needle bush **(33)**.

18 Remove pin **(34)**.

19 Remove gear shift shaft **(40)** in the direction indicated by the arrow and in so doing take out the valve lever **(37)** and lever **(41)**.

NOTE
If the bores on the gear shift shaft show signs of raised edges after long operating hours, the gear shift shaft cannot be removed as described above. In such instances, the spring package (step 22) must be removed with the gear shift shaft still installed and the gear shift shaft then removed in the opposite direction to that indicated by the arrow. The raised edges should be levelled before the gear shift shaft is refitted.

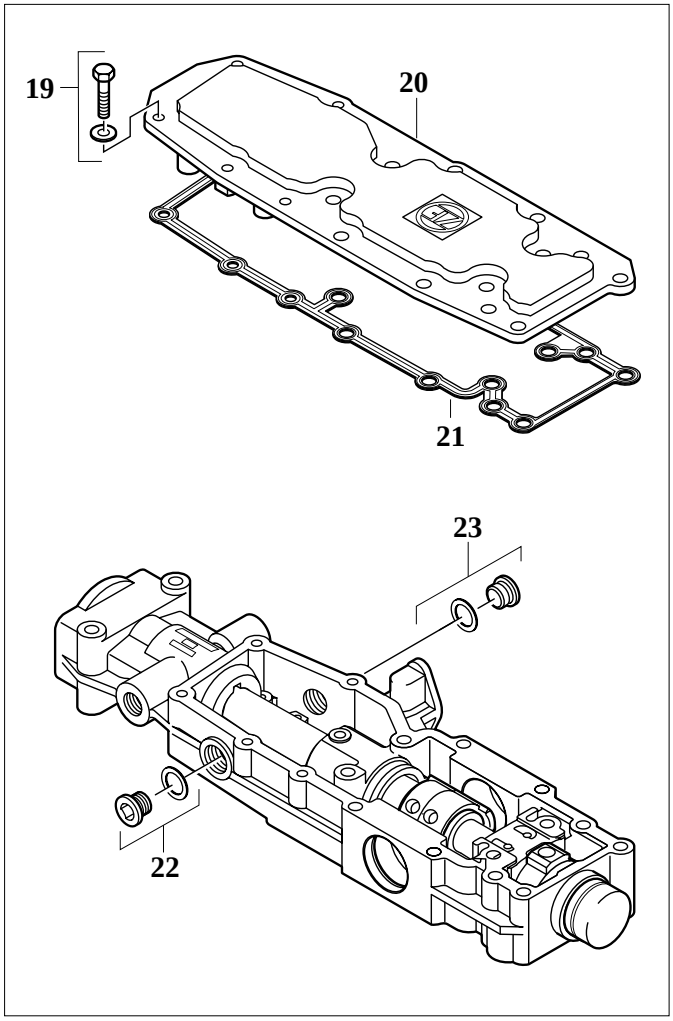
20 Take pin **(35)** out of valve lever, do not remove lower needle bush **(36)**. If the needle bush is faulty, replace the entire valve lever and needle bush.

21 If necessary, remove cylindrical pin **(47)**.

9 Attach new gasket **(21)** and cover **(20)**.

10 Insert hex bolts **(19)** and tighten.
Tightening torque = 23 Nm.

11 Insert screw plugs **(22 and 23)** with new sealing rings and tighten.
Tightening torque = 60 Nm.



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