



TECHNICAL MANUAL

GEARBOX/ ST82LW PEUGEOT

Version : 26/05/2020

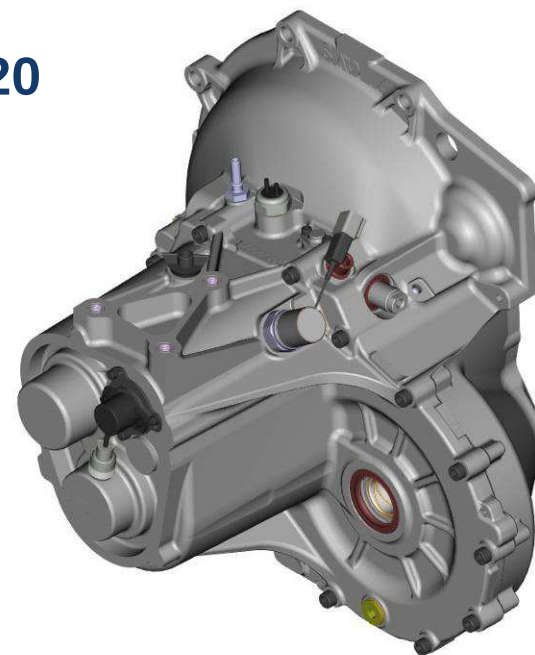


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1. GENERAL DETAILS

The transmission kit is composed of 5 forward gears + 1 reverse gear. The weight of the complete gearbox is 34.5kg.

The gearbox includes:

- the self locking differential
- the mechanical upshift sensor
- an electric reverse gear locking mechanism
- the slave cylinder
- the oil pump

2. RATIO CHARTS

PEUGEOT has homologated the ratio charts below :

	1st		2nd		3rd		4th		5th	
Primary shaft	12	Ref : D829063N01915F5F	14	Ref : D829063N01915F5F	17	Ref : C8214N1725915F	22	Ref : C8214N2226915F	21	Ref : C8214N2120915F
Secondary shaft	32		27		25		26		20	

REVERSE GEAR	
Primary	16
Idler	22
Secondary	37

DIFFERENTIAL		
Version	1	2
Driving ramp angle	27°	42°
Braking ramp angle	57°	63°
Part number	F90623711 (Tarmac spec original equipment)	F90623711(Earth spec original equipment)

FINAL DRIVES			Ref
Final drive	12	56	CPL12569062091

3. DIFFERENTIAL SET-UP

The differential is a self-locking type, with 6 frictions faces on each side and pressure plates with ramps, acting either for accelerating or braking phase.

The preload is adjusted by changing the Belleville washers stroke.

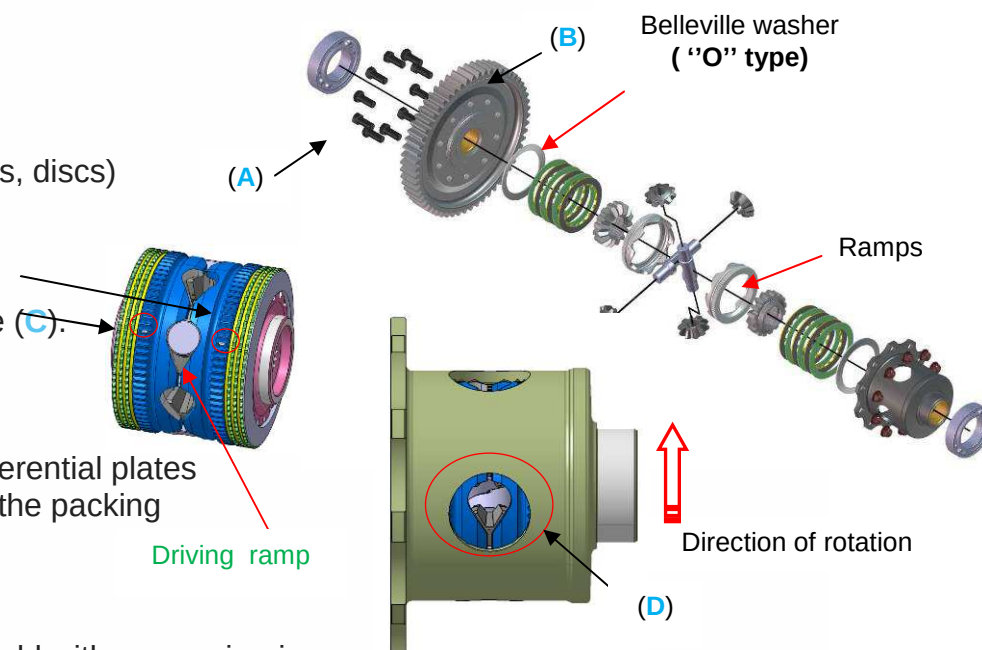
The locking ratio may be adjusted by changing the ramps. The chosen ramps are 27 ° for acceleration and to 57° for deceleration. "tarmac selection" (second option : 35°/ 63° gravel selection)

Disassembly of the differential :

- 1-Warm-up before the (10x) M10 screws removing (A).
- 2- Remove the differential crownwheel (B), then the packing (ramps, discs)

Refitting the differential :

- 1- For reassembly, which is done in reverse order, be sure to orientate the marks of the differential plates face to face (C).
- 2- Once the differential mechanism is assembled, check that the planetary gears and satellites do not crank, by manually rotating the system.
- 3-In addition, it is advisable to orientate the openings (D) of the differential plates facing the holes of the differential case to ensure the lubrication of the packing



From the factory, the preload of the differential is adjusted to 130Nm, cold with no running-in.

- If the run-in and hot, preload decreases between 35 to 40Nm, it will be necessary to remove the Belleville washer.
- If the run-in and hot, preload decreases more than 40 Nm, it will be necessary to replace the Belleville washer and the friction/plate discs.



Note: Preload decreases from approximately 15% after 50 kilometers of running.

Note: the measured preload when cold is approximately 15% higher than when measured warm.

4. LIST OF BELLEVILLE WASHERS AVAILABLE

REFERENCE	DESIGNATION
F9004241	BELLEVILLE WASHER CURVE 0,6 mm
F9004242	BELLEVILLE WASHER CURVE 0,8 mm
F9001096	BELLEVILLE WASHER CURVE 1 mm
F0085914	BELLEVILLE WASHER CURVE 1,2 mm
F9001097	BELLEVILLE WASHER CURVE 1,35 mm
F1401052	BELLEVILLE WASHER CURVE 1,5 mm
F9001098	BELLEVILLE WASHER CURVE 1,7 mm
F9001010	BELLEVILLE WASHER CURVE 1,85 mm
F9001102	BELLEVILLE WASHER CURVE 2 mm
F9001099	BELLEVILLE WASHER CURVE 2,2 mm
F9001100	BELLEVILLE WASHER CURVE 2,4 mm
F9001101	BELLEVILLE WASHER CURVE 2,6 mm

5. LUBRICATION

Oil capacity: 1,0 L (without the cooling circuit)

Lubrication: integrated pump

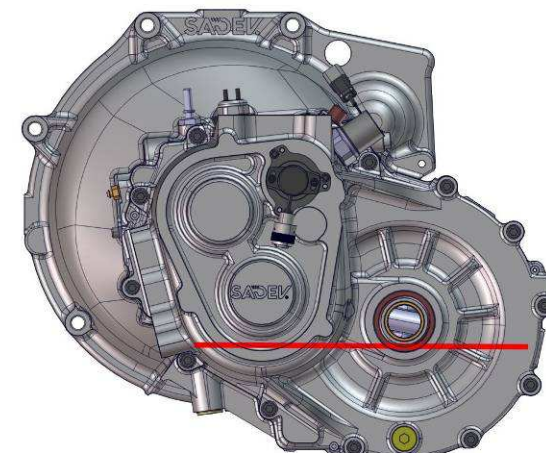
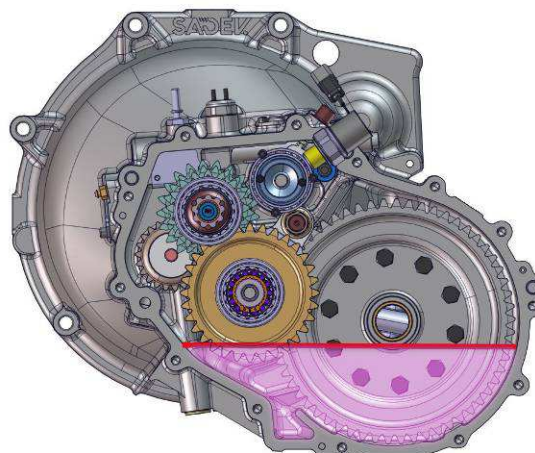
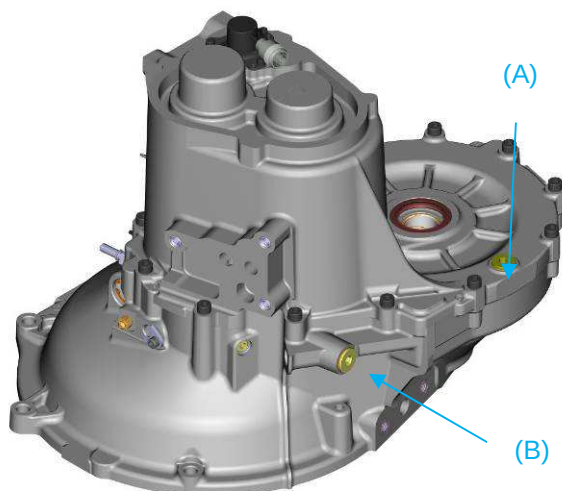
1 st oil change	Oil change	Viscosity
After a 50 km running-in	After each meeting or 200km of special stage	75W90

Gearbox cooler:

- Not delivered with the gearbox, **add oil matching the cooling circuit capacity**

TO DRAIN THE GEARBOX:

- Disassemble the drain magnet plug (A), and clean it up
- Pump suction screen : SADEV suction screen (B) ➡ **CLEAN THE SUCTION SCREEN AT EVERY OIL CHANGE**



Oil level (with 1.0Liter)

WASHING UNDER PRESSURE:

- When the gearbox is removed, seal correctly all the openings, to prevent any water getting into the gearbox.

6. SENSORS

CONTACTLESS BARREL POSITION SENSOR (F0089049): +0.5V to +4.5V

Nota Bene: Sensor adjusted in our workshop = **2.500V $\pm$ 0.05** on 2nd gear

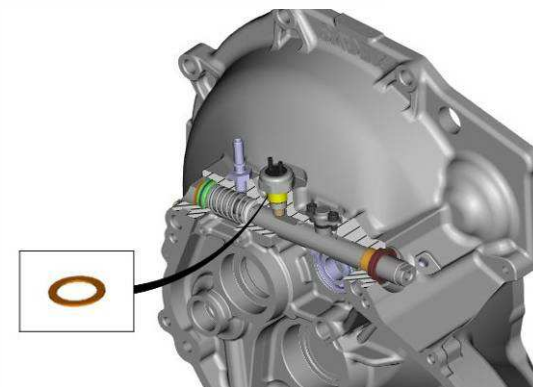
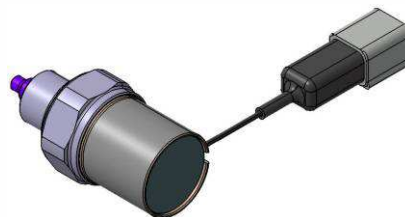
- Red wire: +5Vdc
- Black wire: Ground
- Brown wire: Signal between 10 and 90% of 5Vdc



Barrel angle °deg	Voltage (V)	Gear
0	0.500	R
57.5	1.167	N
115	1.833	1
172.5	2.500	2
230	3.167	3
287.5	3.833	4
345	4.500	5

REVERSE GEAR SOLENOID (F90534161): NOT POLARIZED

supply voltage:12V

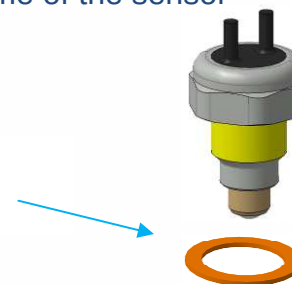


THE POWER SHIFT SENSOR (F0089068): NOT POLARIZED , power shift in => switch ON
Sensor position adjusted in our workshop

Setting : the more you increase the thickness of the washer the more you delay the detection time of the sensor

Set power shift washer, part number F9050417-1

Thickness: F9050417-1.00 ; F9050417-1.25 ; F9050417-1.50 ; F9050417-1.75 ; F9050417-2.00



7. GEAR SHIFTING

IN MANUAL: Pull on the selector shaft to shift up the gears (A).

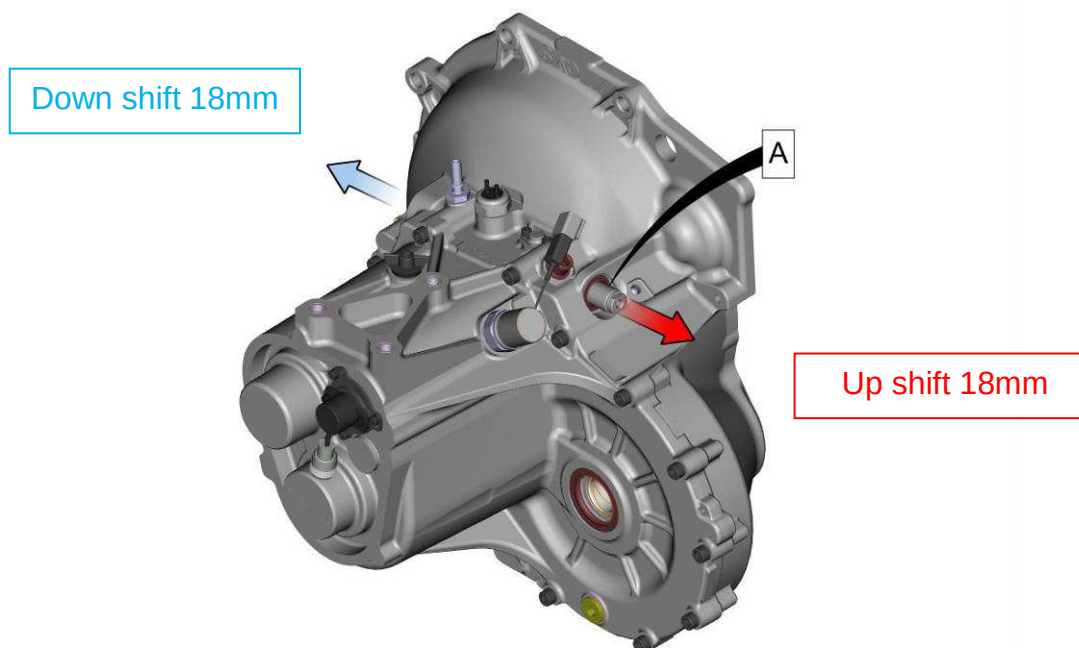
GRID: R-N-1-2-3-4-5

SELECTOR SHAFT THROW: **18mm**

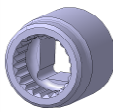
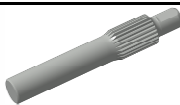
- From Reverse gear to Neutral
- From Neutral to 1st
- Each gear from 1st to 5th

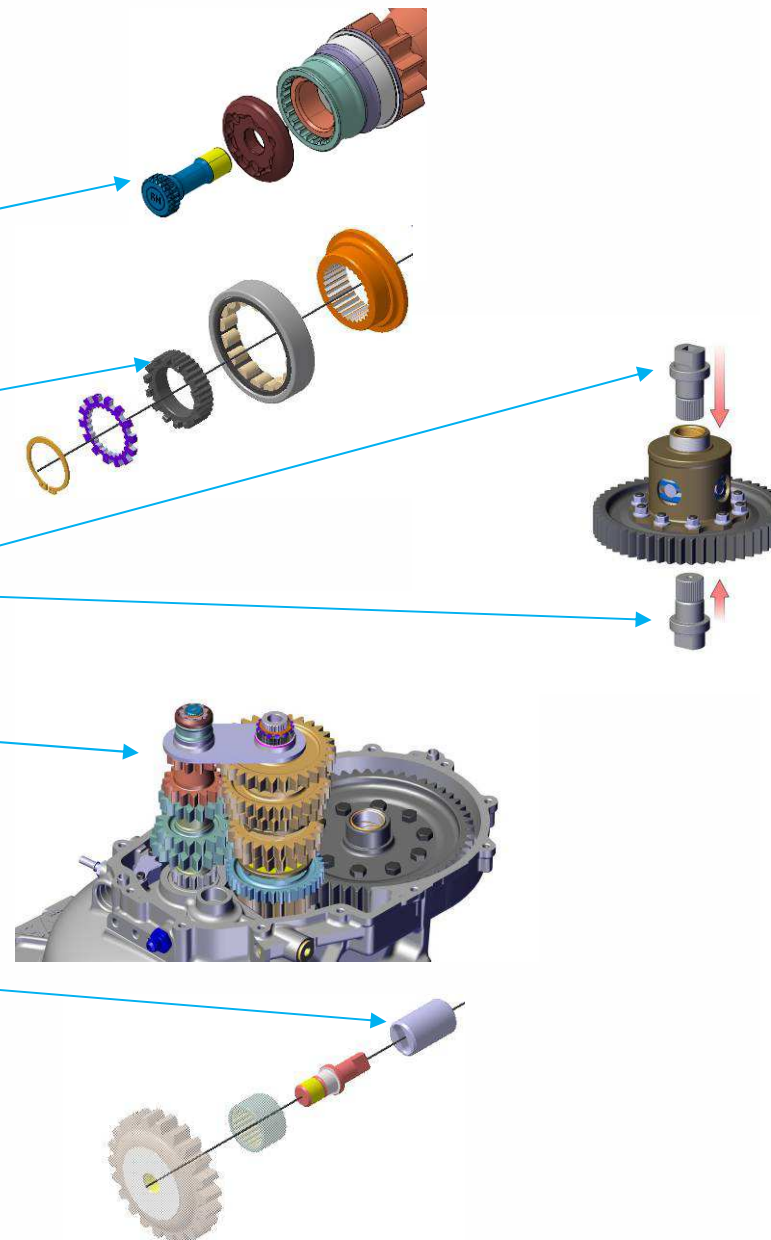
REVERSE GEAR LOCKING SYSTEM:

- From Neutral to 1st => not necessary to activate the reverse unlocking solenoid
- From Neutral to Reverse gear => use the reverse unlocking solenoid
- From Reverse gear to Neutral => not necessary to activate the reverse unlocking solenoid
- From 1st to Neutral => use the reverse unlocking solenoid



8. SPECIAL TOOLS

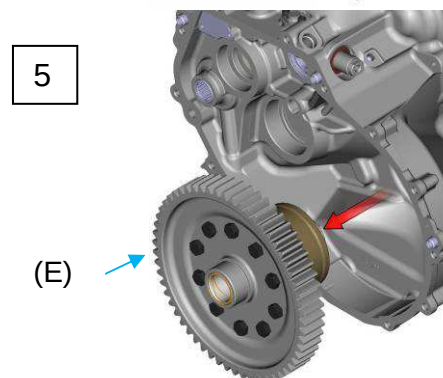
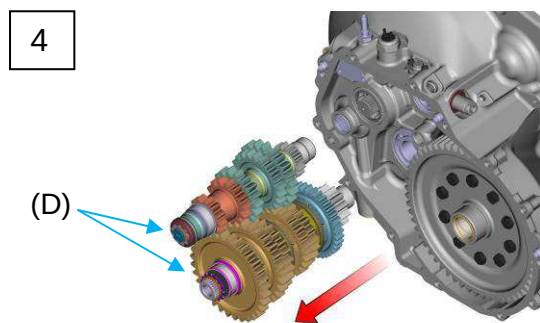
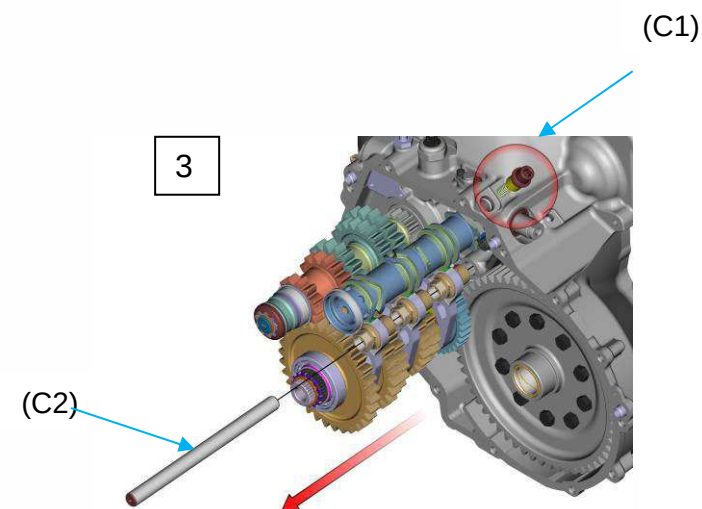
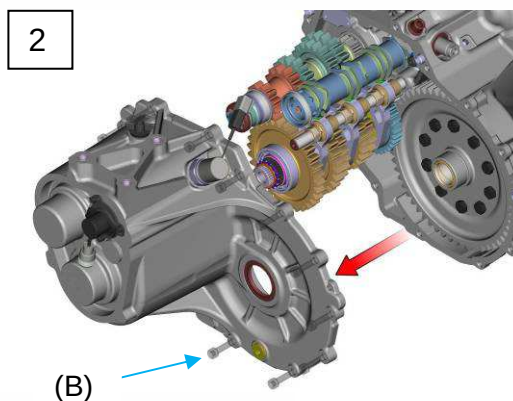
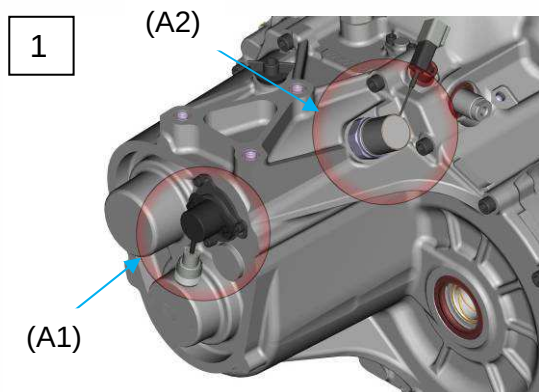
	FOUT9062100	Socket for primary shaft screw (F9062105)
	FOUT9003276	Socket for secondary shaft nut (F9062202)
	FOUT9046009 x2	Socket for diff input shaft preload (41 splines)
	FOUT9063001	Anti-splay plate (locking tool for geartrain)
	FOUT3201001	Socket for pump axle (F3201054)
	FOUT1517001	Clutch centring shaft



9. INFORMATION ABOUT DISASSEMBLY

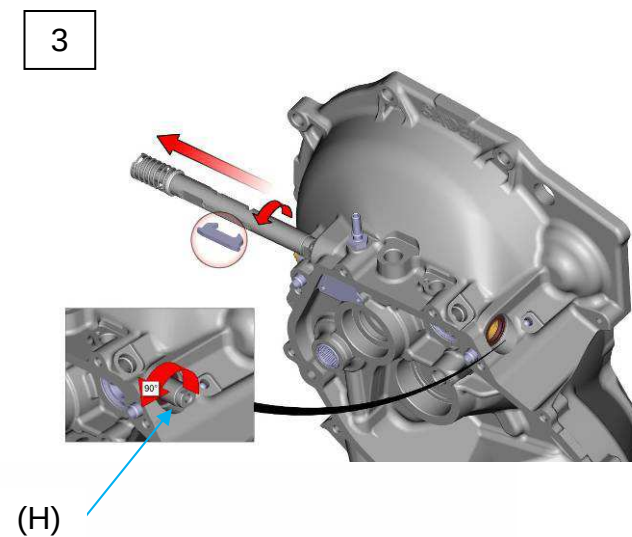
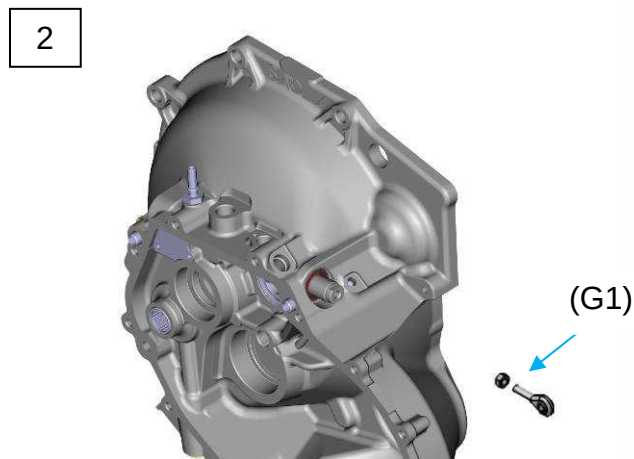
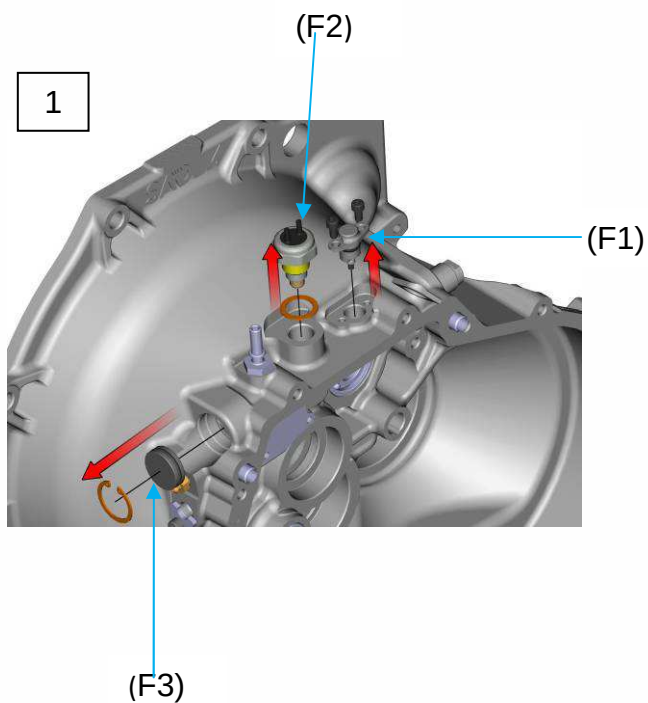
DISASSEMBLY OF THE GEAR CLUSTER :

- 1- Remove the potentiometer (A1) and the reverse gear sensor (A2) from the housing.
- 2- Unscrew the M8 bolts and remove the cluster housing (B)
- 3- Remove the indexor screw (C1) then the fork shaft (C2) to disassemble the barrel and the forks.
- 4- Remove the gear cluster (D).
- 5- Remove the differential (E).



REMOVING THE SELECTOR SHAFT :

- 1- Remove the complete ratchet spring guide (F1), the power shift sensor (F2) and the end cap (F3).
- 2- Disconnect the male rod end (G1).
- 3- Turn the selector about 90° anticlockwise **"indexor side"** (H) and remove. Be careful to keep the dual pin rock!



10. SERVICE PLANNING

The service plan of the gearbox is based on common experience of both SADEV and PEUGEOT. The information given about service plan can be updated depending on future developments.

ELEMENT	PART NUMBER	ACTION	FREQUENCY
<i>Gearbox check-up</i>	<i>all</i>	<i>Complete rebuilding in order to check all the gears and the differential</i>	<i>800 - 1000 km ES</i>

KIT	MAINTENANCE
<i>KITREVST82LW02</i>	<i>Control primary and secondary geartrain, selector, differential (all safety fixing components, shafts nuts , clips, O'rings seals)</i>
<i>KITRLTST75LW</i>	<i>Bearings :Control and/or change all bearings of the gearbox</i>

PART NUMBER KITREVST82LW02	DESIGNATION	Qty	Attribution
0206008	Viton double lip seal Ø 30 x 40 x 7	1	Primary geartrain
9907109	SW18 Seeger snap ring	1	Primary geartrain
F9062602	Ø 23 x 1,7 Snap ring	1	Primary geartrain
0601004	Ø27 Outer circlip	1	Secondary geartrain
0305111	H M10 x 25 pas de 125 cl 12.9 Screw	10	Differential
F9062314	M10 x 125 Collar nut	10	Differential
0201017	Ø 10 x 2,5 Nitrile O'ring	1	Selector
0201290	Ø 10 x 1,5 Nitrile O'ring	1	Selector
0202079	Ø 14 x 1,5 Viton O'ring	1	Selector
0205099	Ø 20 x 30 x 5 Double lip seal	1	Selector
0801026	0,6 x 5,5 x 15,5 Spring	1	Selector
0206060	Ø 42 x 55 x 7 Viton double lip seal	1	Housing
0599002	16,1 x 23 x 1 Copper washer	3	Housing
0202041	Ø 8,5 x 1,5 O'ring	1	Housing
0206024	Ø 32 x 52 x 7 Viton double lip seal	1	Housing
0201105	Ø 36 x 2 O'ring	1	lubrication

PART NUMBER KITRLTST75LW	DESIGNATION	Qty	Attribution
0103012	NU 1007 ECP Bearing	1	Primary geartrain
0103056	NU 205 ECP Bearing	1	Primary geartrain
0103012	NU 1007 ECP Bearing	1	Primary geartrain
0103018	NJ 2206 ECP Bearing	1	Secondary geartrain
0101010	6209 Bearing	1	Differential
0101041	6009 Bearing	1	Differential
0101126	61809 Bearing	1	Selector
0101004	6004 Bearing	1	Selector

PART NUMBER 02990612	DESIGNATION	Qty	Attribution
0299061	Piston O'ring 85 sh. Ø 52 x 47,5 x 3	1	Clutch bearing
0299062	Piston o'ring85 sh. Ø 40 x 44,5 x 3	1	Clutch bearing
0211012	Ø 55,25 x 2,62 O'ring	1	Clutch bearing
0211013	Ø 52 x 1,5 O'ring	1	Clutch bearing

1) SADEV workshop rebuild

- The gearboxes are delivered sealed and numbered.
- SADEV will adopt a careful attitude when receiving a gearbox without any 'SADEV' seals. This will also be valid if the gearbox shows minor or major damages.

In house gearbox rebuild :

At the time the gearboxes return to us, we follow a strict Receiving procedure, so that we can do a full service complete with bench testing of the gearbox. We must receive the complete product as described below:

- Gear box drained and cleaned
- Release bearing in place
- Oil pump in place.
- Lubrication ports closed with proper plugs
- Shifter sensor and reverse gears locking, in place
- Drain plug and drain plug seal in place
- Differential in place
- A form specifying the kilometers of the special stages and road stages since the last service.

Administrative procedure:

1. Contact Peugeot Citroën racing Shop sales department
2. APPROXIMATELY 2 TO 3 WEEKS OF DELIVERY LEAD TIME MUST BE CONSIDERED, [please confirm with our sales department.](#)

2) Rebuilt by yourself

Retail parts for to rebuild the gearbox, are available only from PEUGEOT sales service.

SADEV IS NOT RESPONSIBLE FOR ANY DAMAGE FOLLOWING A SERVICE NOT DONE AT A SADEV APPROVED AGENT/DEALER



Type of gearbox	N° of gearbox	Date
	(Visible on the top of gearbox housing)	

Team	Delivery adress

Work requested

Déline requested	Next race

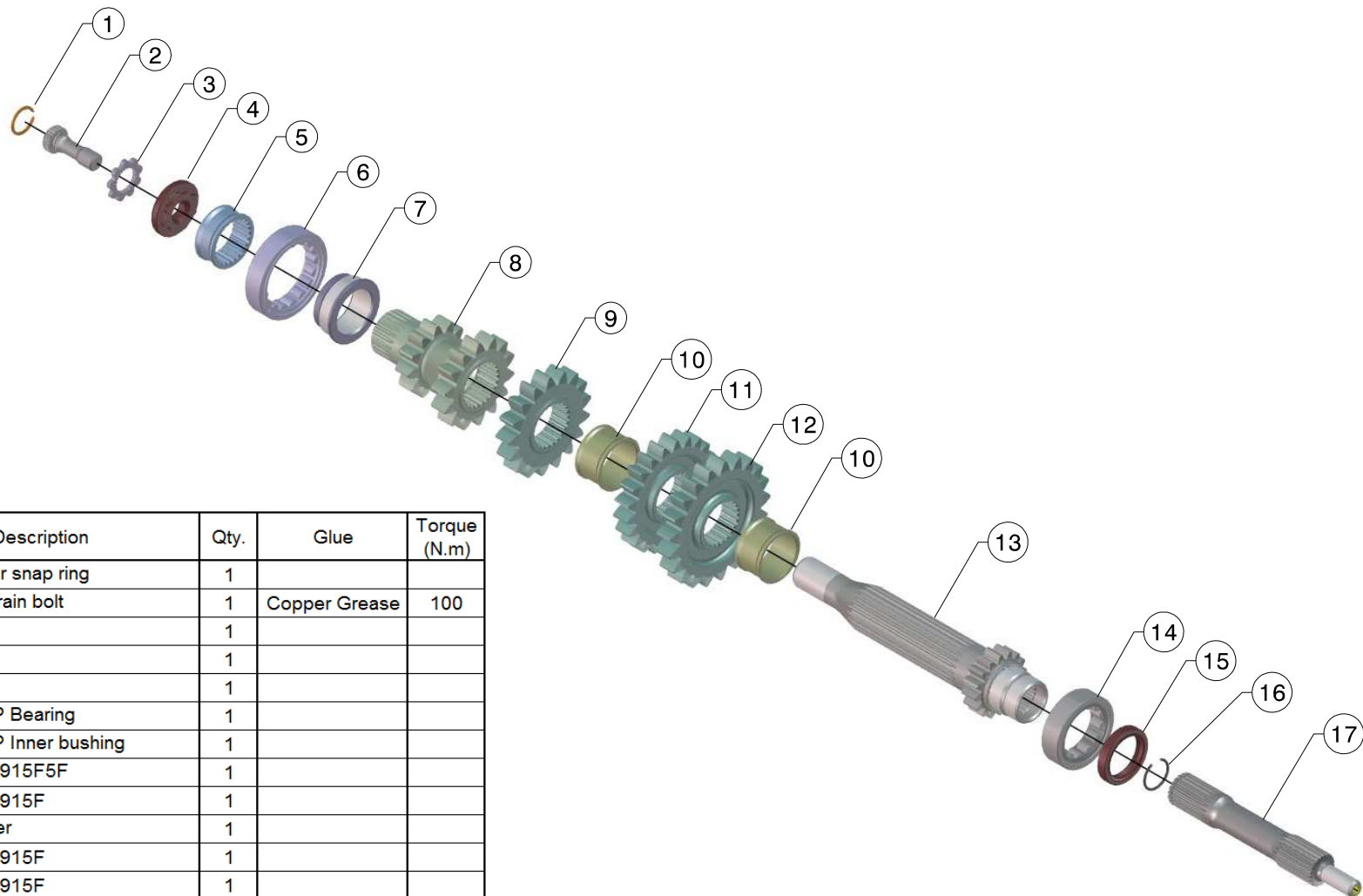
	Test	Race
Special stage		
Connection		
Total mileage		

Type of oil used

General informations
Comments:

This document must be send for servicing with the gearboxType

1 Primary Geartrain

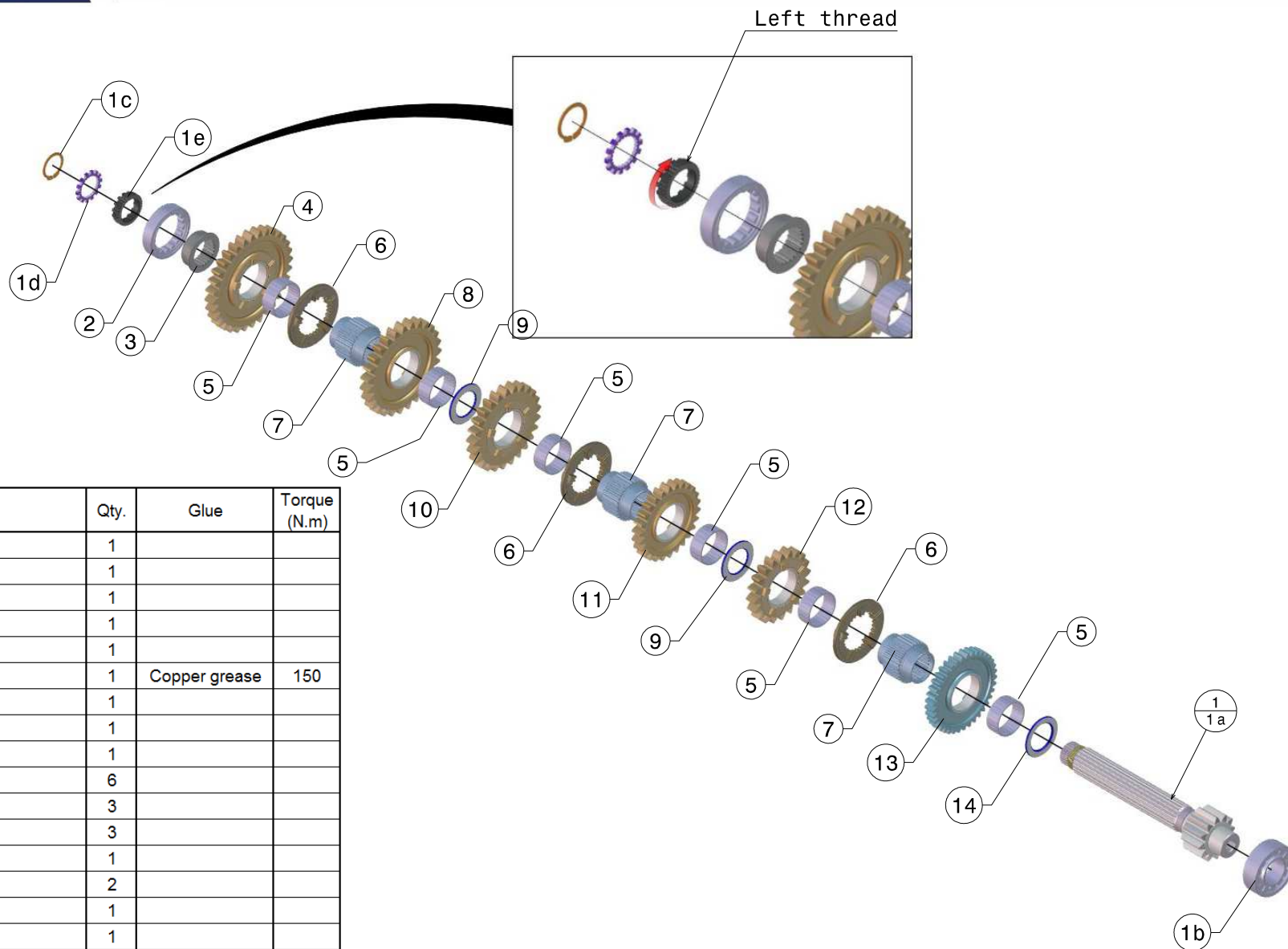


N°	Reference	Description	Qty.	Glue	Torque (N.m)
1*	9907109	SW18 Seeger snap ring	1		
2	F9062105	Primary geartrain bolt	1	Copper Grease	100
3	F9062106	Lock washer	1		
4	F9062104	Bushing	1		
5	F9062107	6th Spacer	1		
6**	0103012	NU 1007 ECP Bearing	1		
7	F9062103	NU 1007 ECP Inner bushing	1		
8	F9063100	D829063N01915F5F	1		
9	A82141725-2	C8214N1725915F	1		
10	F9062101	Primary spacer	1		
11	A82142226-2	C8214N2226915F	1		
12	A82142120-2	C8214N2120915F	1		
13	F9062108	Primary shaft "reverse 13.25"	1		
14**	0103056	NU 205 ECP Bearing	1		
15*	0206008	Ø 30 x 40 x 7 Lip seal	1		
16*	F9062602	Ø 23 x 1,7 Snap ring	1		
17	F1517601	Clutch shaft	1		

(*) parts included in the rebuilt kits :KITREVST82LW02

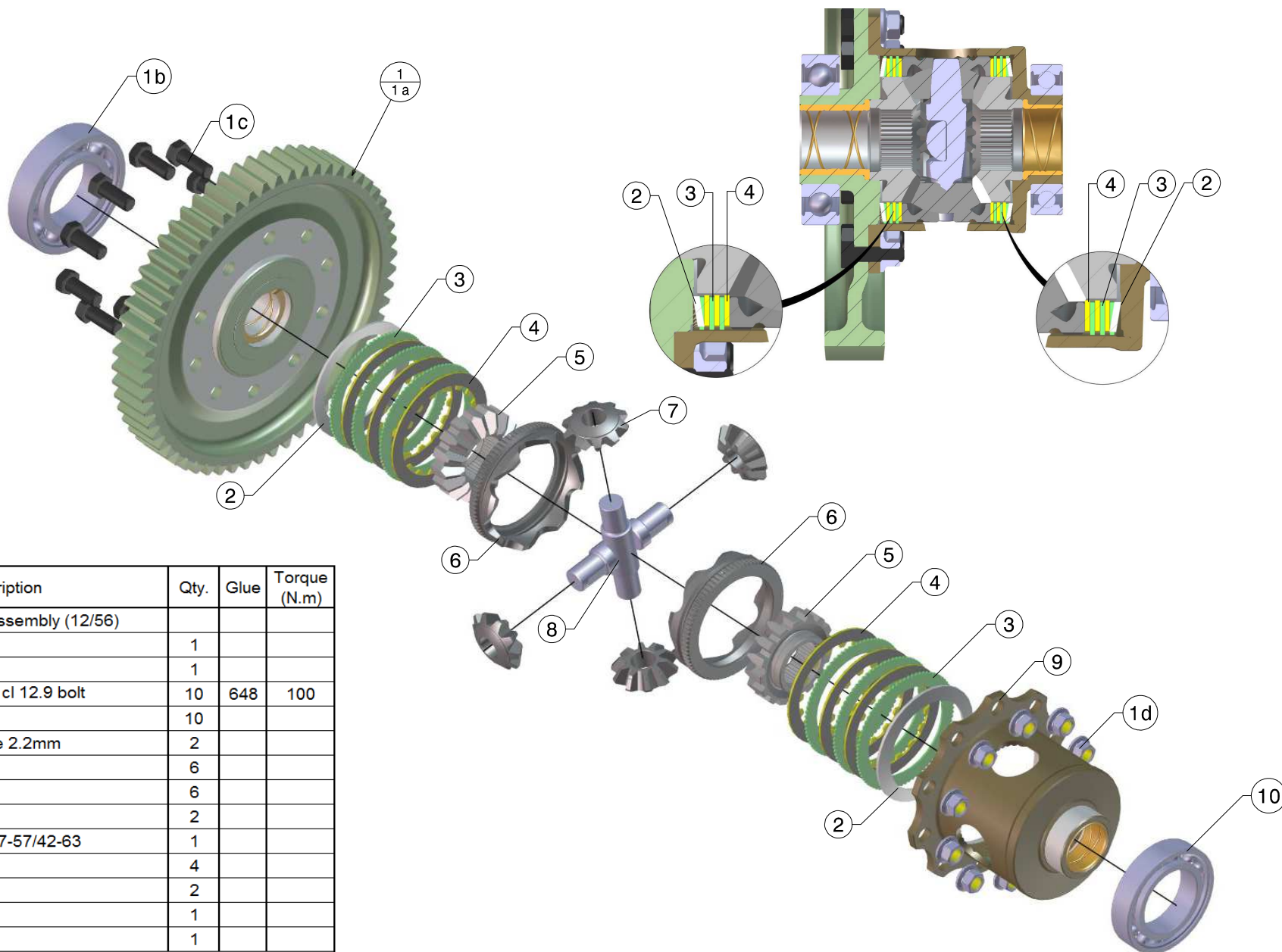
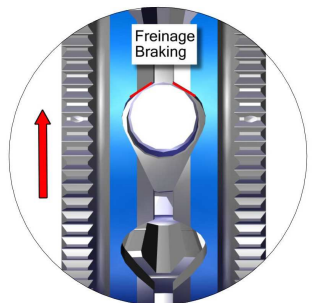
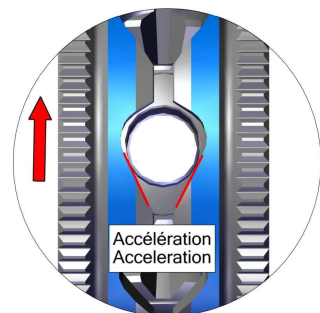
(**) parts included in the kits bearing :KITRLTST75LW

2 Secondary Geartrain



N°	Reference	Description	Qty.	Glue	Torque (N.m)
1	CPL125690620	Complete final drive (12/56)	1		
	F9062216	a Secondary shaft	1		
	0103018	b** NJ 2206 ECP Bearing	1		
	0601004	c* Ø27 Outer circlip	1		
	F1705202	d Lock washer	1		
	F9062202	e M29 x 150 Nut	1	Copper grease	150
2**	0103012	NU 1007 ECP Bearing	1		
3	F9062208	NU 1007 Inner ring	1		
4	B82141232-2	D829063N01915F5F	1		
5	0105043	38 x 43 x 17 Bearing	6		
6	F9062205	Dog ring "5°"	3		
7	F9062201	Dog ring hub	3		
8	B82141427-2	D829063N01915F5F	1		
9	F9062206	Shim	2		
10	B82141725-2	C8214N1725915F	1		
11	B82142226-2	C8214N2226915F	1		
12	B82142120-2	C8214N2120915F	1		
13	F9062215	(37x22) Reverse gear" Lenght 13.25"	1		
14	F9062207	Shim (reverse gear)	1		
(*) parts included in the rebuilt kits :KITREVST82LW02					
(**) parts included in the kits bearing :KITRLTST75LW					

3 Differential



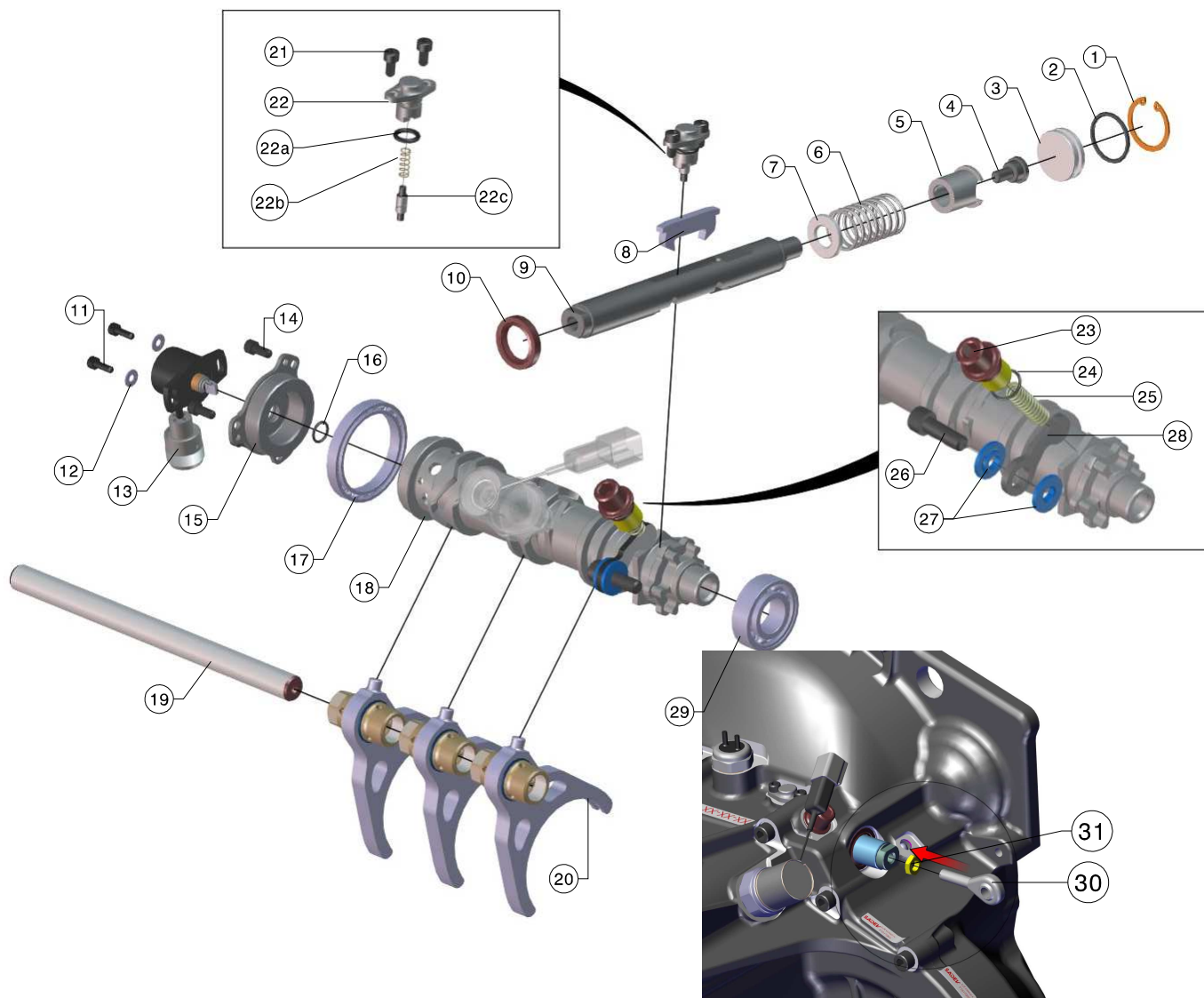
N°	Reference	Description	Qty.	Glue	Torque (N.m)
1	CPL12569062091	Complete final drive assembly (12/56)			
	F1517303	a Crown assembly	1		
	0101010	b** 6209 Bearing	1		
	0305111	c* H M10 x125 x 25 cl 12.9 bolt	10	648	100
	F9062314	d* M10x125 nut	10		
2	F9001099	Belleville washer curve 2.2mm	2		
3	F9062309	1,35 thick core disc	6		
4	F9062310	1.7 thick friction disc	6		
5	F1517300	Sun gear	2		
6	F90623711	Differential plate set 27-57/42-63	1		
7	F1401006	Planet gear	4		
8	F0085911	Planet gear axle	2		
9	F1517304	Differential case	1		
10**	0101041	6009 Bearing	1		
(*) parts included in the rebuilt kits :KITREVST782LW02					
(**) parts included in the kits bearing :KITRLTST75LW					

4 Selector

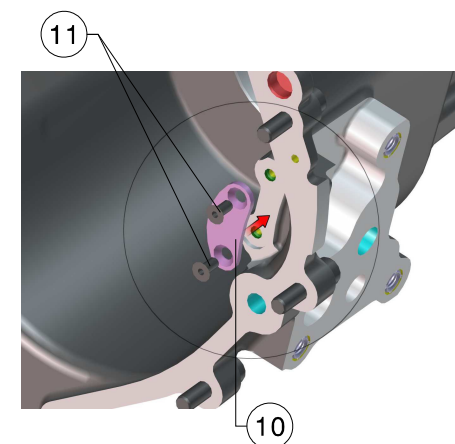
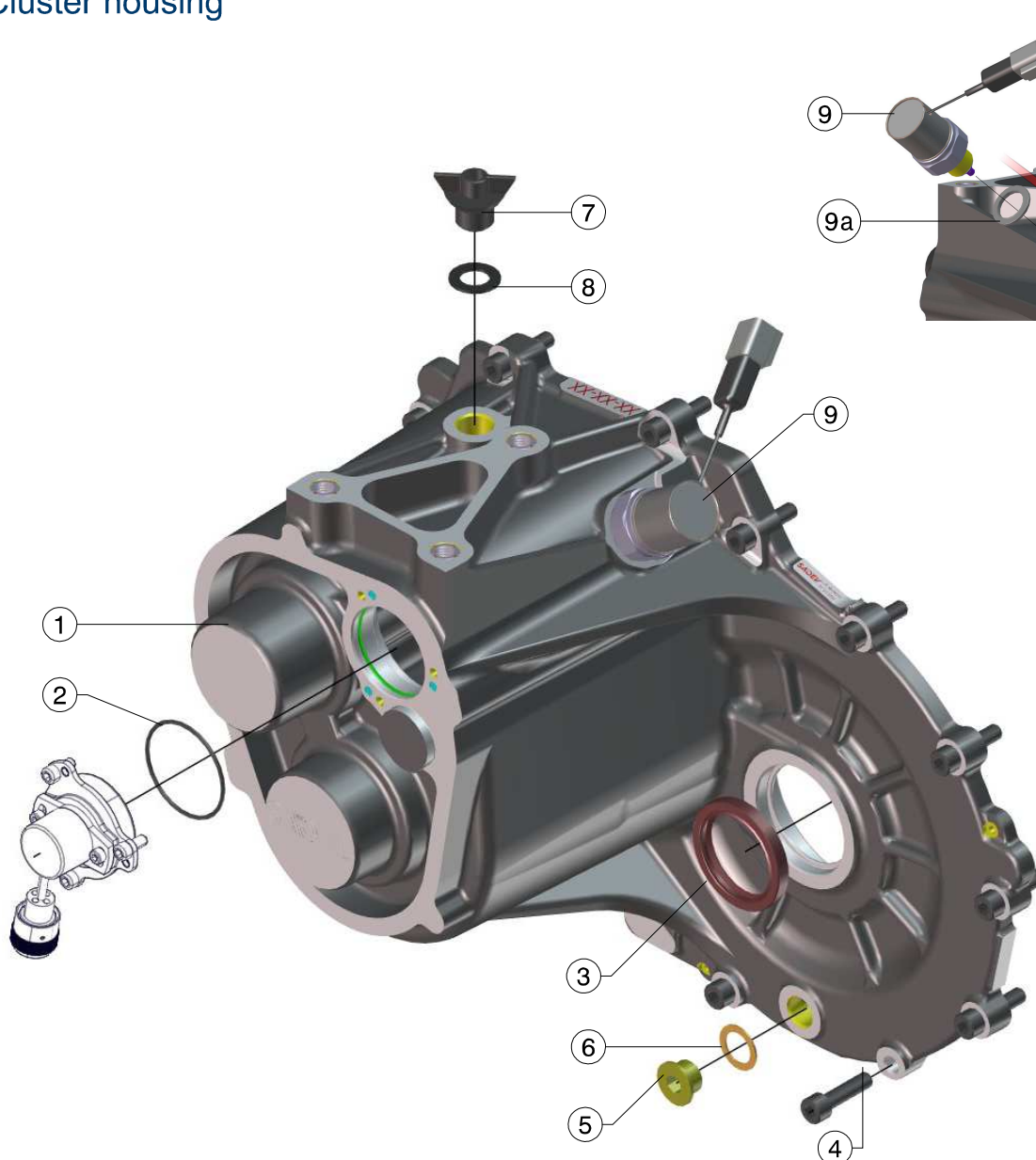
N°	Reference	Description	Qty.	Glue	Torque (N.m)
1	0602010	Ø29 inner circlips	1		
2	0201068	Ø 24,5 x 2,4 O'ring	1		
3	F9050401	Plug "closing selector"	1		
4	F0059021	Selector axle screw	1	243	22
5	F0059022	Shoulder bushing	1		
6	0801178	2 x 23,8 x 58,5 Spring "5 turns"	1		
7	F9003667	Rondelle d'appui évo.	1		
8	F0059040	Dual pin rock	1		
9	F9062414	Selector axle	1		
10*	0205099	Ø 20 x 30 x 5 Double lip seal	1		
11	0301425	M4 x 12 cl 12.9 Chc bolt	2		
12	0502023	M4 Plate washer	2		
13	F0089049	Rotary sensor	1		
14	0301514	M5 x 12 cl 12.9 Chc bolt	3	222	8
15	F9062005	Support sensor	1		
16*	0201290	Ø 10 x 1,5 O'ring	1		
17**	0101126	61809 Bearing	1		
18	F9063402	Barrel assembly (5 speed)	1		
19	F9053404	Fork axle	1		
20	F9062403	Fork	3		
21	0301513	M5 x 10 cl 12.9 Chc bolt	2	222	8
22	F14044032	Complete dual pin rock pusher	1		
	0201017	a* Ø 10 x 2,5 O'ring	1		
	0801026	b* 0,6 x 5,5 x 15,5 Spring	1		
	F9049071	c Pusher	1		
23	F9053411	Indexor screw	1		45
24*	0202079	Ø 14 x 1,5 Viton O'ring	1		
25	0801175	1,6 x 9,7 x 47 - Spring "12.5 turns"	1		
26	0301169	M8 x 25 cl 12.9Chc bolt	1	243	25
27	F9050408	Indexor shoulder bushing	2		
28	F9050407	Indexor rocker	1		
29**	0101004	6004 bearing	1		
30	0999014	Ø8 rightside male ball joint	1		
31	0401002	M8 H bichro nut	1		

(*) parts included in the rebuilt kits :KITREVST82LW02

(**) parts included in the kits bearing :KITRLTST75LW



5 Cluster housing

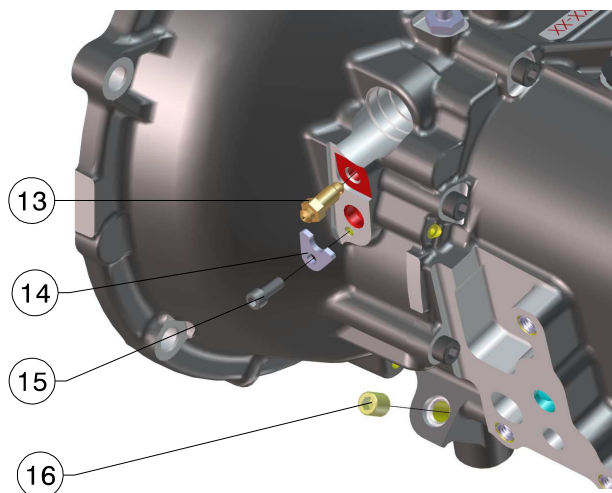


N°	Reference	Description	Qty.	Glue	Torque (N.m)
1	F15170041	ST82 LW Complete cluster housing assembly	1		
2	0201103	Ø 46 x 2 O'ring	1		
3*	0206060	Ø 42 x 55 x 7 Viton double lip seal	1		
4	0301300	M8 x 30 cl 8.8 Chc bolt	13	222	25
5	F1402058	Drain plug	1		
6*	0599002	16,1 x 23 x 1 Copper washer	3		
7	5099087	Oil filler cap	1		
8	5002026	Oil filler cap seal	1		
9	F90534161	Reverse gear solenoid assembly	1		
	0599088	a BS-18 (18,7 x 27 x 2) Seal washer	1		
	F0089215	b Plug	1		
10	F9053014	Friction plate	1		
11	0303036	M5 x 10 cl 10.9 FHC bolt	2	243	8

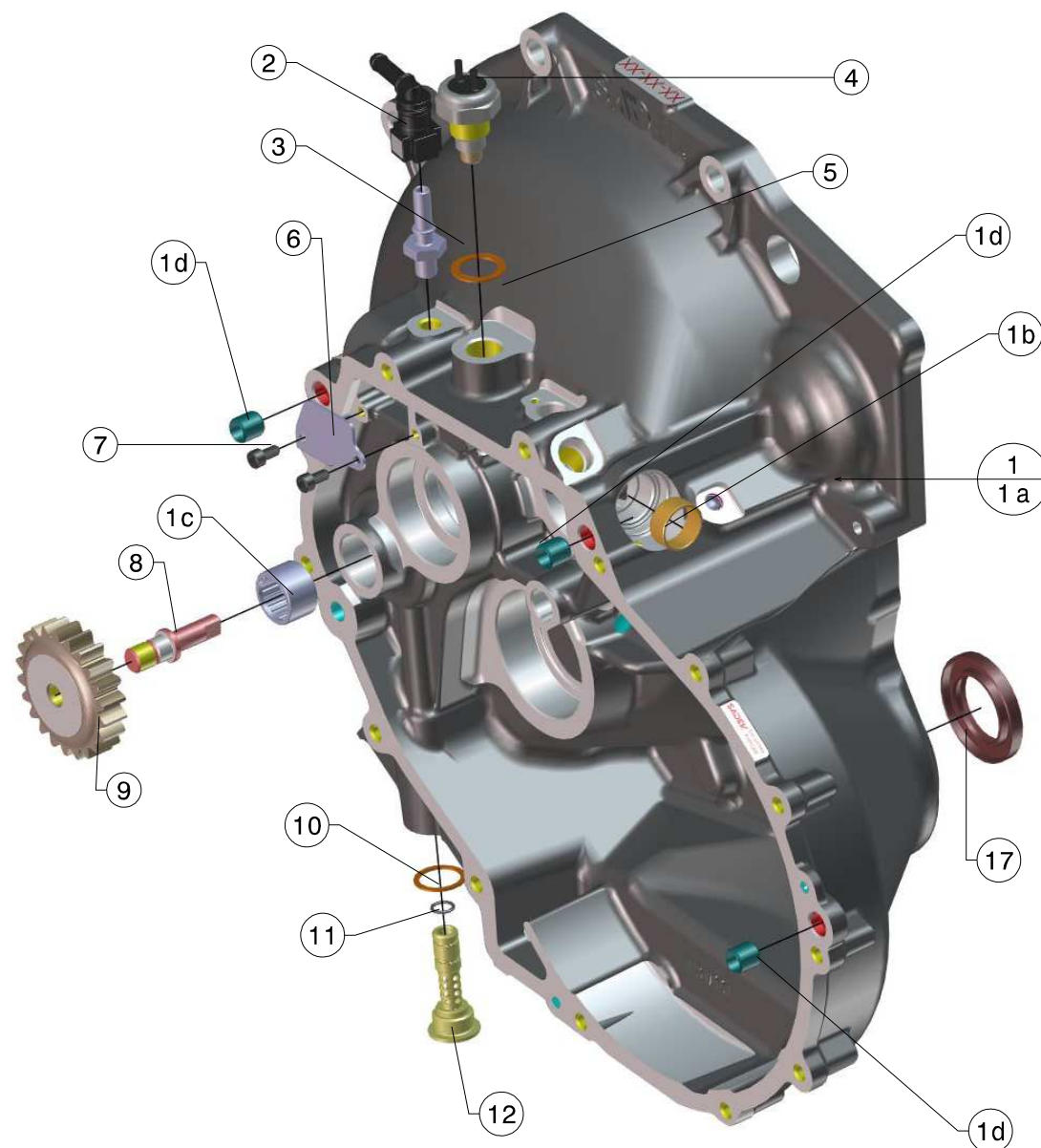
(*) parts included in the rebuilt kits :KITREVST82LW02

(**) parts included in the kits bearing :KITRLTST75LW

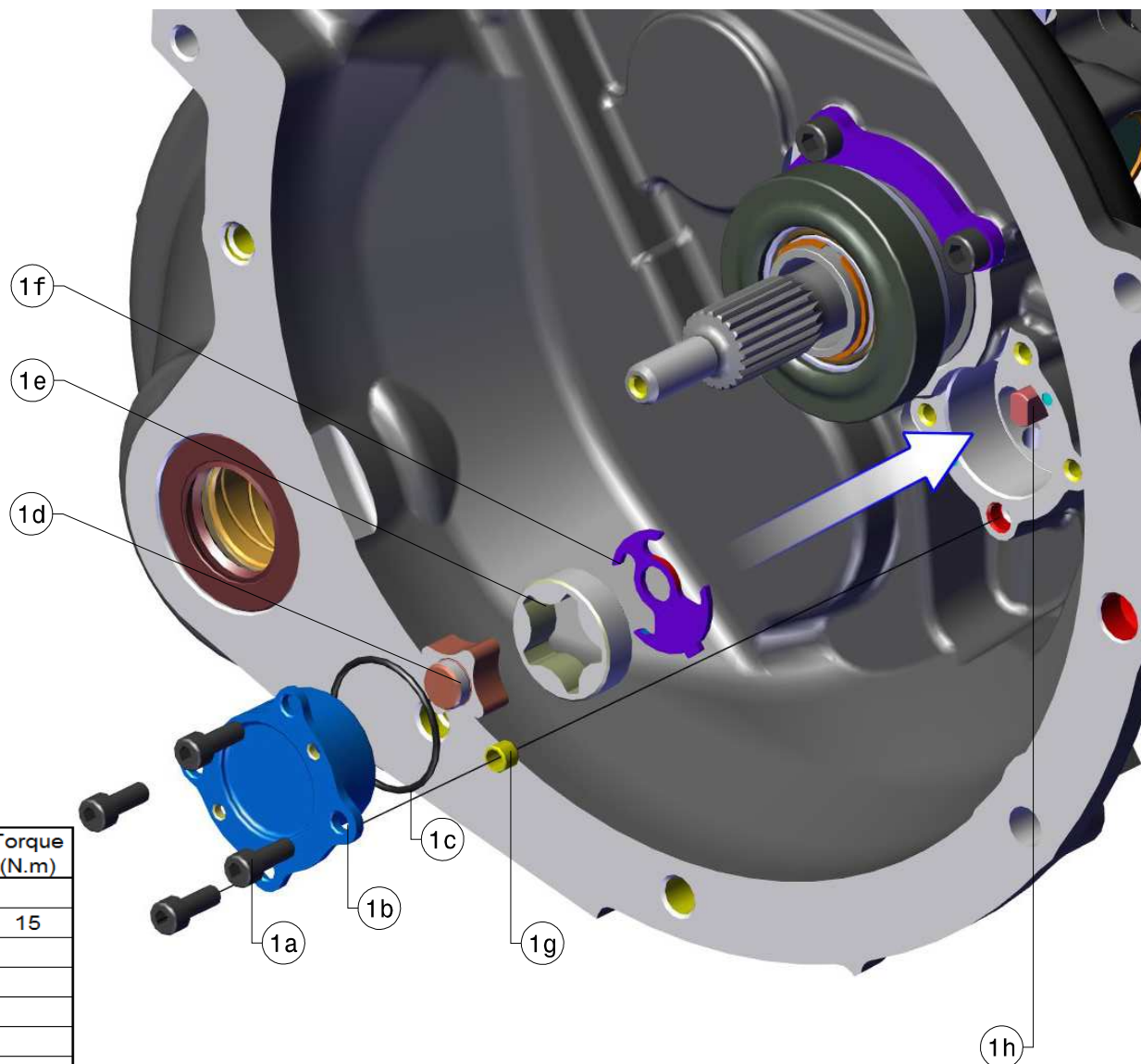
5 Main housing



N°	Reference	Description	Qty.	Glue	Torque (N.m)
1	F15170021	ST82 LW Main housing assembly	1		
	F1517002	a ST82 LW Main housing	1		
	1202028	b EGB2010-E40 Permaglide bushing	1		
	0106021	c HK 20/16 Needle sleeve	1		
	F9063008	d Ø 10 x 12 x 12 Center pin	3		
2	9999683	Venting plug	1		
3	F9022106	Venting fitting	1	542	
4	F0089071	Cutting sensor	1		
5	F90504171	Set of shim" power shift "thick 1.00;1.25;1.50;1.75;2.00"	1		
6	F9063007	Breather deflector	1		
7	0301059	M5 x 10 cl 8.8 Chc bolt	2	243	8
8	F9019050	Pump axle	1	648	80
9	F9062416	(16x22x37) Reverse idler gear	1		
10	F9037059	Ø19,2 x 24 x 1mm Copper washer	1		
11*	0202041	Ø 8,5 x 1,5 Viton o'ring	1		
12	F9037056	Strainer	1		
13	5010002	Coupling	1		
14	F1517005	Clamp	1		
15	0301468	M6 x 12 cl 12.9 CHC Bolt	1		
16	0302079	M12 x 10 pas de 125 HC Bolt	1	542	
17*	0206024	Ø 32 x 52 x 7 Viton double seal ring	1		
(*) parts included in the rebuilt kits :KITREVST82LW02					
(**) parts included in the kits bearing :KITRLTST75LW					

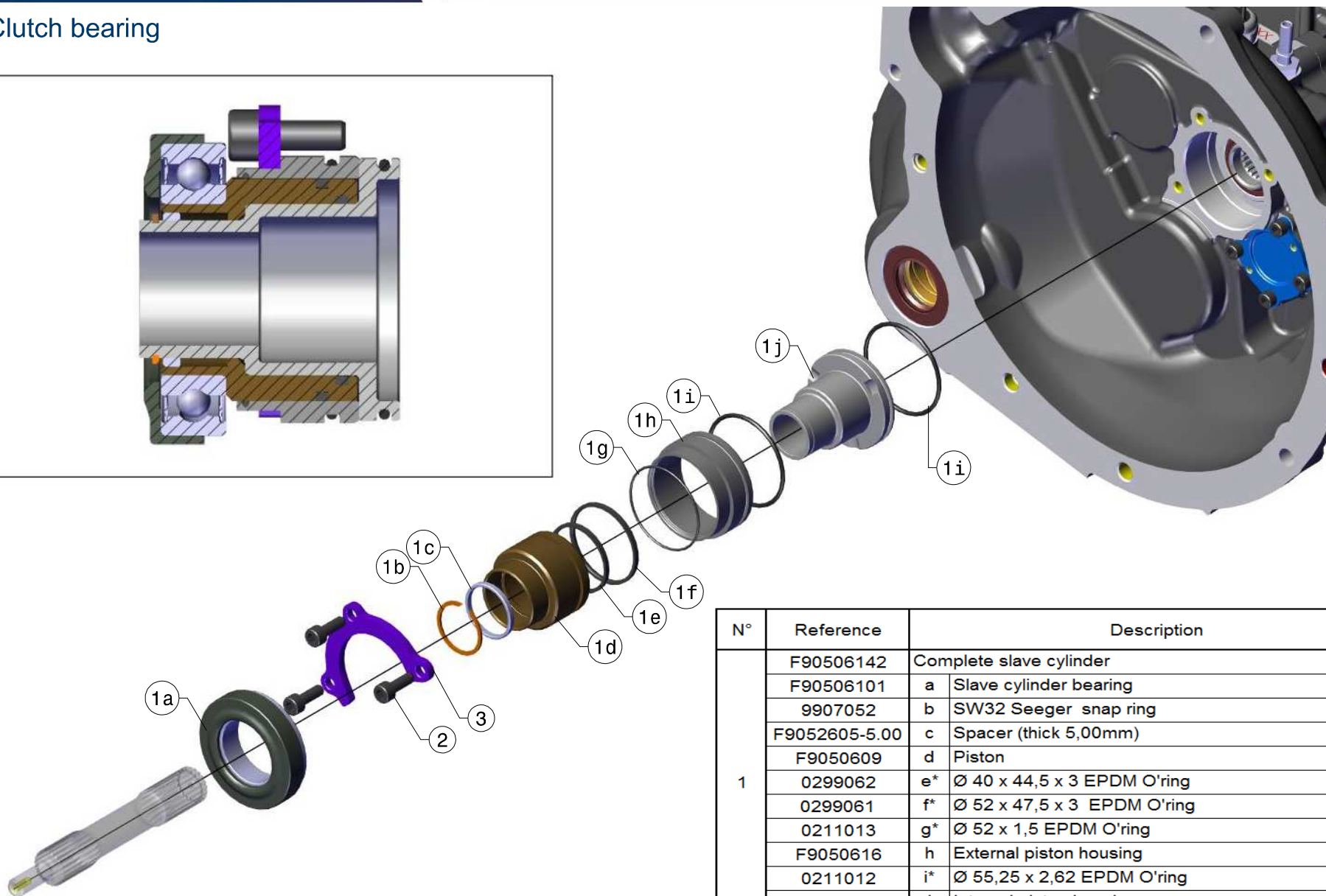
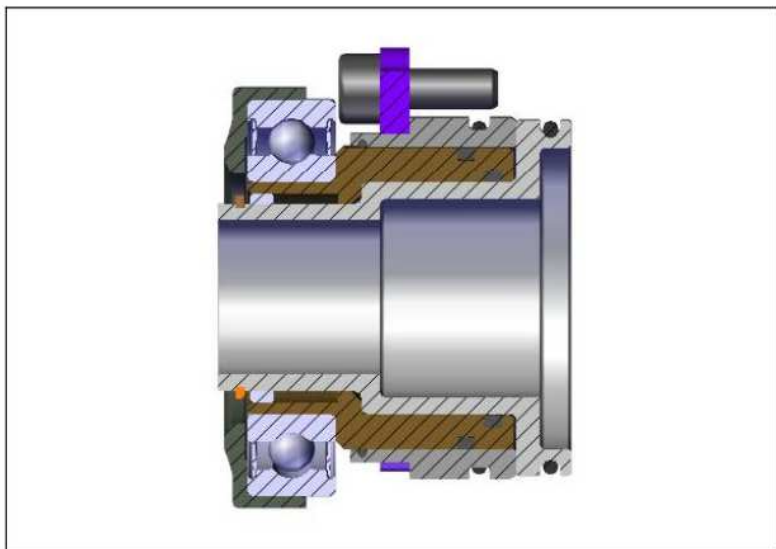


6 Lubrication



N°	Reference	Description	Qty.	Glue	Torque (N.m)
1	F90620501	Complete oil pump			
	0301422	a M6 x 16 cl 10.9 Chc bolt	4	243	15
	F3201053	b Gerotor pump housing	1		
	0201105	c* Ø 36 x 2 O'ring	1		
	F3201052	d Rotor	1		
	F3201051	e Stator	1		
	F3201050	f Pump spacer	1		
	F1404429	g Centering pin	1		
	F9019050	h Pump axle "assembly see page 5 housin	1		
(*) parts included in the rebuilt kits :KITREVST82LW02					
(**) parts included in the kits bearing :KITRLTST75LW					

7 Clutch bearing



N°	Reference	Description	Qty.	Glue	Torque (N.m)
1	F90506142	Complete slave cylinder	1		
	F90506101	a Slave cylinder bearing	1		
	9907052	b SW32 Seeger snap ring	1		
	F9052605-5.00	c Spacer (thick 5,00mm)	1		
	F9050609	d Piston	1		
	0299062	e* Ø 40 x 44,5 x 3 EPDM O'ring	1		
	0299061	f* Ø 52 x 47,5 x 3 EPDM O'ring	1		
	0211013	g* Ø 52 x 1,5 EPDM O'ring	1		
	F9050616	h External piston housing	1		
	0211012	i* Ø 55,25 x 2,62 EPDM O'ring	2		
	F9050614	j Internal piston housing	1		
2	0301302	M7 x 20 cl 10.9 Chc bolt	3	243	25
3	F9050603	Slave cylinder support plate	1		

(*) parts included in the kits clutch bearing SADEV 02990612