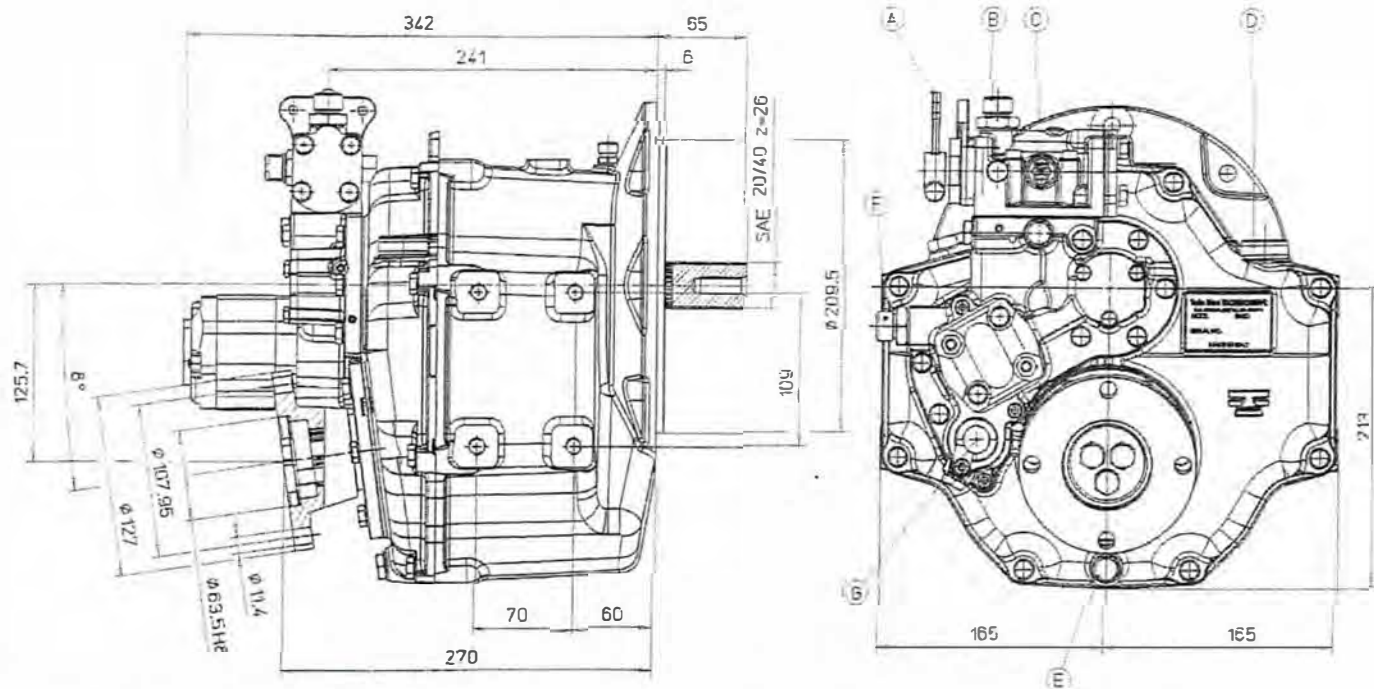


TM 485 A

manuale di servizio
service manual





- A) Leva Comando – Actuating lever
 B) Ritorno olio da Scambiatore – Oil from cooler ½" GAS
 C) Indicatore di folle – Neutral indicator
 D) Tappo carico a livello olio – Filling plug and oil dipstick

- E) Tappo scarico olio – Oil drain plug
 F) Mandata olio allo scambiatore – Oil to cooler ½" GAS
 G) Filtro olio – oil filter

CARATTERISTICHE TECNICHE – TECHNICAL DATA

RAPPORTO RATIO	POTENZA MAX MOTORE – INPUT RATINGS KW					
	DIPORTO – PLEASURE		INTERMEDIO - INTERMEDIATE		CONTINUO - CONTINUOUS	
	2600 RPM	3200 RPM	2100 RPM	2500 RPM	1800 RPM	2400 RPM
1.51	130	161	81	96	59	78
2.09	130	161	81	96	59	78
2.40	114	140	69	83	52	69

Velocità massima motore – Max engine speed: 4500 Rpm
 Potenza massima motore – Max engine power: 210 kw
 Peso a secco – Dry weight: 37 kg
 Quantità olio – Oil quantity: 2,6 l

Per la definizione dei tipi di servizio vedere
 "Tabelle di Potenza"
 Duty classification definition: see "Marine
 Transmission Capacity Table"

COMPATIBILITA' TORSIONALE

L'incompatibilità torsionale può causare danni ai componenti dell'invertitore fino a causarne la rottura. Al minimo dei giri del motore questa incompatibilità può causare rumorosità alla trasmissione. Technodrive non è responsabile per rumorosità o danni all'invertitore, al giunto o ad altre parti della trasmissione prodotti da vibrazioni dovute ad incompatibilità torsionale. L'analisi della compatibilità torsionale è responsabilità dell'assemblatore della trasmissione.

COMPATIBILITA' TORSIONALE

Disregarding propulsion system torsional compatibility could cause damage to components in the drive train resulting in loss of mobility. At minimum, system incompatibility could result in gear clatter at low speeds.
 The responsibility for ensuring that the torsional compatibility of the propulsion system is satisfactory rests with the assembler of the drive and driven equipment.

I dati tecnici possono subire variazioni senza preavviso – Subject to technical change without notice

OPERATING PROCEDURE

- In forward speed motion is transmitted by means of the clutch unit mounted on the input shaft.
- In forward speed, the rotating direction of the marine gear output flange is opposite to engine direction.
- In reverse speed, motion transmission is achieved by means of a clutch unit mounted on the intermediate shaft.
- Clutches are driven by the oil pressure raised by a pump controlled by the intermediate shaft and are able to transmit full power both in forward and in reverse speed.
- The reduction ratio is the same in forward as well as in reverse speed.

INSTALLATION

- TM485A marine gear can be connected to engine rotating counterclockwise (as seen from the flywheel side) only.
- Before connecting the marine gear output flange to the propeller axle, it is necessary to make sure that its misalignment does not exceed 0,05 mm.
- The remote control must be connected so that the control lever can rotate completely from the forward speed position to the reverse speed position and a correct neutral position can be ensured. From the neutral position, forward speed is achieved by rotating the control lever counterclockwise.
- The marine gear is supplied without oil; therefore, before starting it, fill it up to the maximum level marked on the dipstick.

 **Make sure that the control cable is easily movable.**

 **Make sure that the control cable is able to perform the complete lever stroke both in forward and in reverse and that it is well positioned in neutral.**

USE

- The engagement of forward speed and reverse speed and the shifting to neutral position must be carried out while the engine is running at idle speed.
-  **The gearbox is supplied without oil. Before the first start-up it must be filled up to the maximum level marked on the dipstick.**
-  **Before to start the engine make sure that the gearbox is in neutral position.**
-  **The gearbox should only be shifted with the engine at idle speed so as to avoid that the gearbox or the coupling may be damaged.**

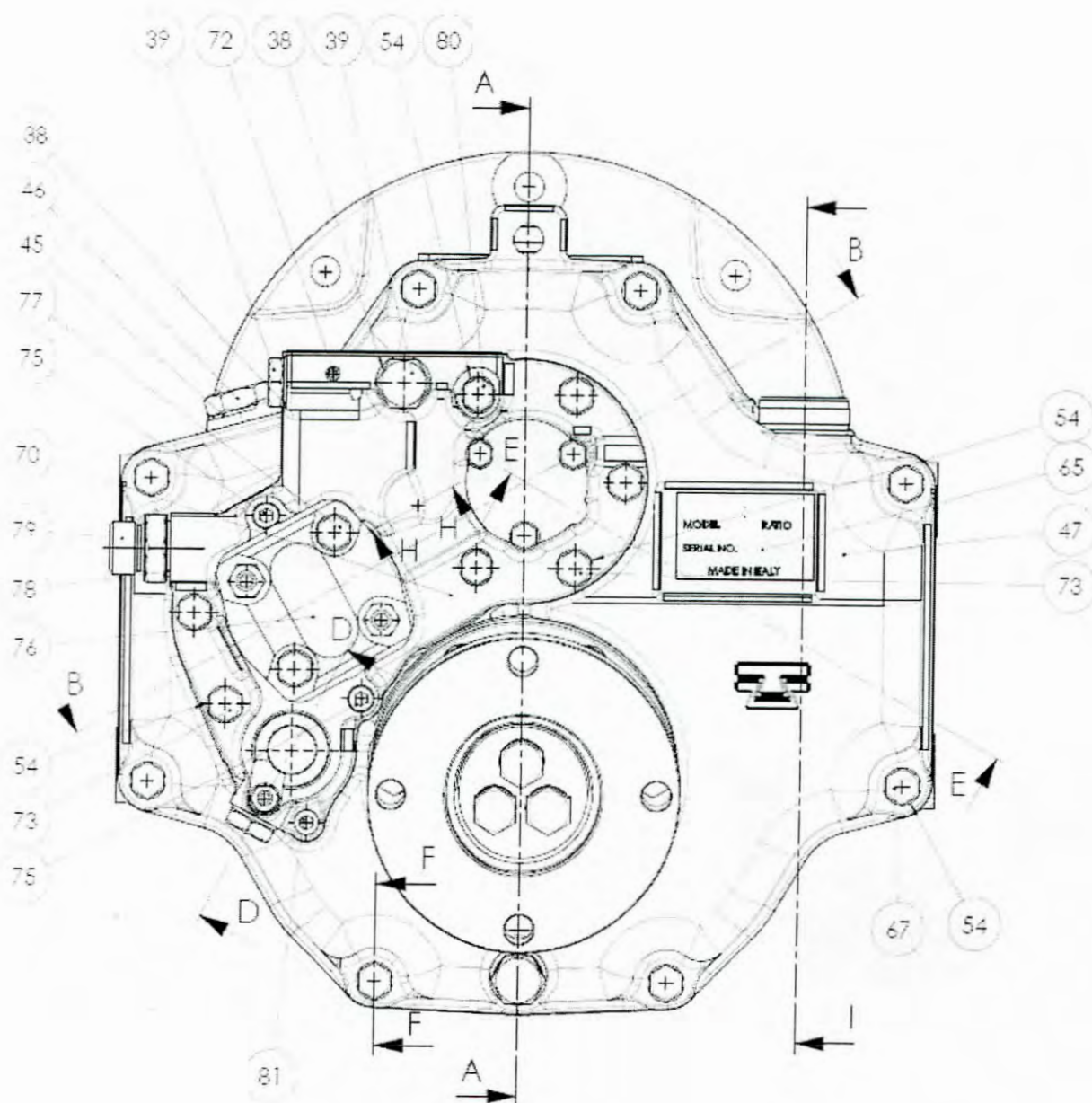
MAINTENANCE

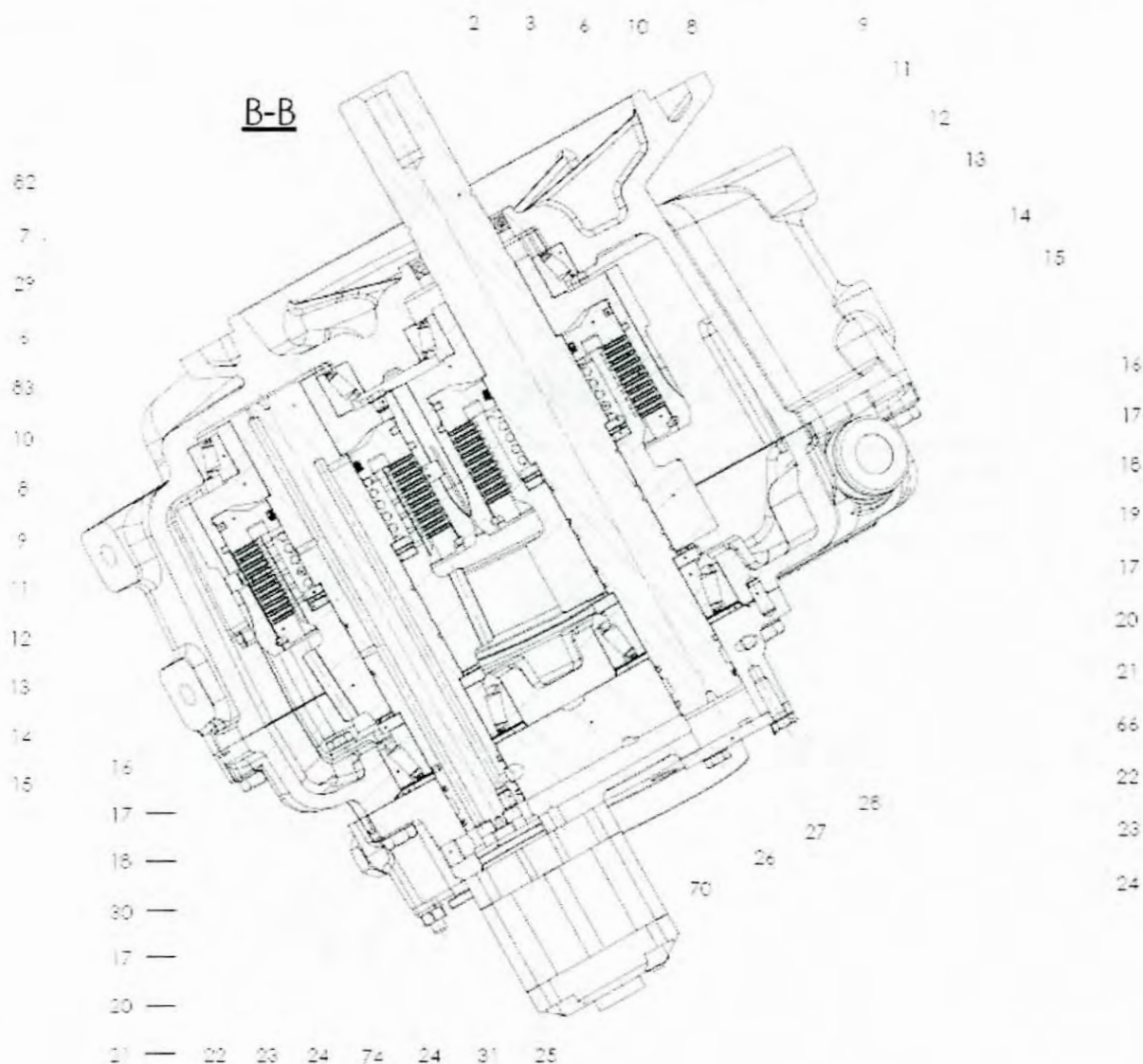
- First oil filling and following oil changes
 - With the engine off, remove the filling plug (D) with the oil dipstick.
 - Fill with 2,6 l. class CD (API service classification) oil SAE 20 W40.
We recommend an oil temperature of at least 10°C to make the filling easier and to fill in the oil slowly to avoid overflow.
 - Position the filling plug (D) with the dipstick in its seat.
The dipstick positioning needs some care: it is necessary to align the pin mounted on the bottom of the dipstick to the hole in the sump, before to screw the filling plug (D).
 - Start the engine and run it at idle speed, with gearbox in neutral position, to allow the oil cooler filling.
Turn off the engine after 2-3 minutes.
 - Remove the filling plug (D), clean the dipstick, re-tighten it and verify the oil level that is to be close to the upper mark on the dipstick. Add oil if necessary.
Do not over fill.

- Check oil level daily.
 - Start the engine and run it at idle speed, with gearbox in neutral position.
Turn off the engine after 2-3 minutes.
 - With the engine off, check the oil level that is to be close to the upper mark on the dipstick.
Add oil if necessary.
Do not over fill.
0,4 l. is the oil quantity necessary to fill the gearbox from the lower mark to the top mark on the dipstick.
- Change the oil for the first time after 50 working hours: afterwards, replace the oil after 1000 working hours (or, at the longest, every 12 months).
- Whenever the oil is replaced, clean the filter (G).
- Clutches require no adjustment.
- ⚠ **Disassembly and assembly of the gearbox or of its parts is to be made by specialized technicians only.**

LUBRICATION

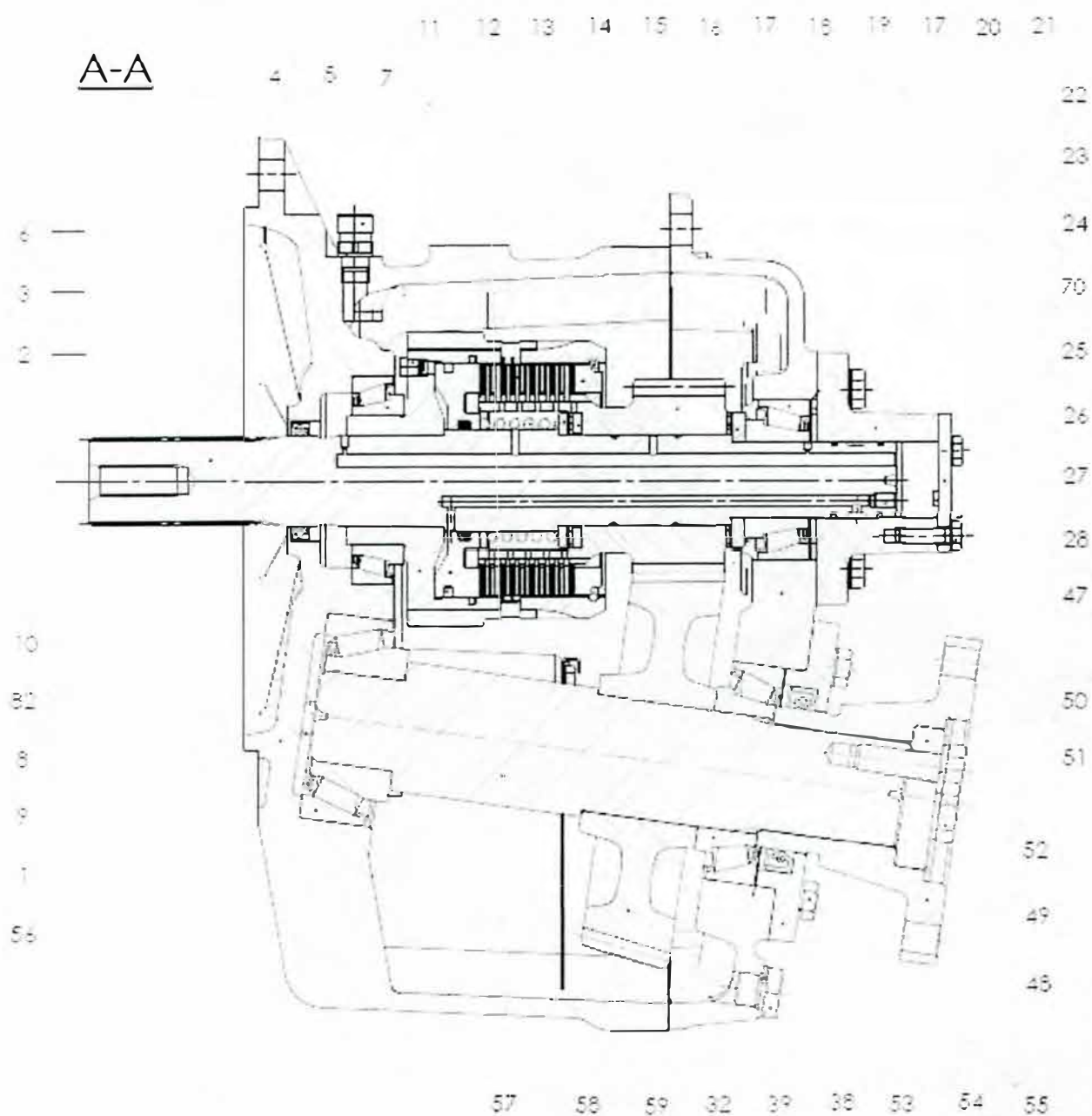
- Use class CD (API service classification) oil SAE 20 W 40.
- Oil quantity for the marine gear with standard cooler: 2,6 l.
- Max oil temperature: 90°C.
- Oil pressure measured at 1000 RPM engine speed, oil temperature 60°C, is to be between 19 and 21 bar.





POS	DESCRIZIONE	QTA	CODICE
19	Pignone M.A. rapp. 2,09 TM 485A	1	2061679 01
30	Pignone M.I. rapp. 2,09 TM 485A	1	2061676 01

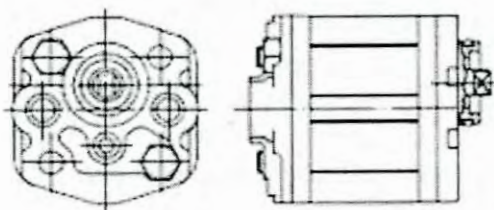
Rapp.	Pos. n° 19 Pignone MA codice n°	Rev.	Pos. n° 30 Pignone MI codice n°	Rev.	Pos. n° 58 Ingr. uscita codice n°	Rev.	Assieme invertitore codice n°	Rev.
241/27 1.519	2061678	1	2061675	1	2061681	0	1013169	2
246/22 2.09	2061679	1	2061676	1	2061682	0	1013170	2
249/20 2.40	2061680	1	2061677	1	2061683	0	1013171	2



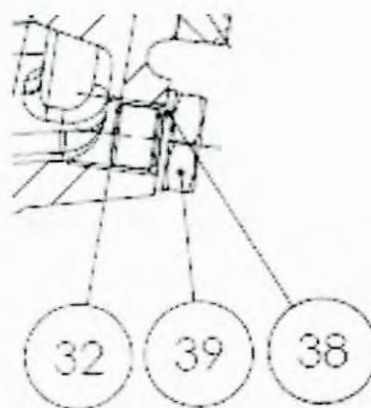
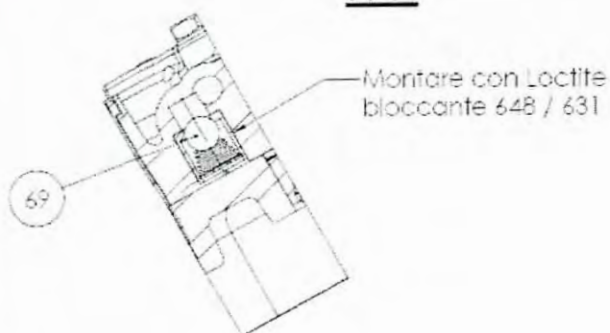
Pos n°	Descrizione	Qtà	Codice	Rev.
1	Scatola invertitore TM 485A	1	2009150	00
2	Albero primario TM 485A	1	2021599	00
3	Anello di tenuta 35x47x7	1	4595111	
4	Rosetta UNI 6592 10x14	1	4609011	
5	Tapo di sfiato	1	2055032	01
6	Cuscinetto 32010 X (50x80x20)	2	4622073	
7	Valvola scarico olio frizioni TM	2	1036003	00
8	Pistone TM 485A	2	2017020	01
9	Fascia elastica d.90	2	2024009	02
10	Guarnizione OR 144	2	4598079	
11	Disco conduttore TM 485A	20	2022064	01
12	Disco condotto TM93 TM93A TM545A	18	2022039	00
13	Molla ritorno pistone	2	2020035	00
14	Rolla FAG WS 81107	2	4603024	
15	Disco di ritenuta TM 485A	2	2022065	00
16	Anello di arresto disco di ritenuta TM 485A	2	2054035	00
17	Gabbia assiale a rullini FAG AXK 3552	4	4607019	
18	Rolla FAG GS 81107	2	4603023	
19	Pignone M.A. rapp. 2.09 TM 485A	1	2061679	01
20	Rasamento su asse frizione	2	2016019	00
21	Cuscinetto 33206 (30x62x25)	2	4622037	
22	Spessore di registro d.62	10	2013192	01
23	Distanziale di registro TM 485A	2	2013707	00
24	Fascia elastica d.30	4	2024007	02
25	Vite STEI UNI5923 M6x8	2	4581004	
26	Coperchio asse primario lato elica TM 485A	1	2010355	01
27	Rosetta ondulata DIN 137 B d.6	3	4611206	
28	Vite TE ISO 4017 M6x20	3	4615137	

Rapp.	Pos. n° 19 Pignone MA codice n°	Rev.	Pos. n° 30 Pignone MI codice n°	Rev.	Pos. n° 58 Ingr. uscita codice n°	Rev.	Assieme invertitore codice n°	Rev.	
z41/27	1.519	2061678	1	2061675	1	2061681	0	1013169	2
z46/22	2.09	2061679	1	2061676	1	2061682	0	1013170	2
z48/20	2.40	2061680	1	2061677	1	2061683	0	1013171	2

29	Albero di rinvio TM 485A	1	2021600	00
30	Pignone M.J. rapp.2,09 TM 485A	1	2061676	01
31	Mozzo di frasciamento pompa TM 485A	1	2060349	00
32	Spessore registro d.85 TM 485A	3	2013709	00
33	Paratia frangioolio TM 485A	1	2026013	01
34	Vite TE ISO 4017 M6x10	2	4615132	
35	Tubo aspirazione olio TM 485A	1	2042139	01
36	Vite TE ISO 4017 M6x16	2	4615134	
37	Rosetta elastica UNI 1751 A-6,1	3	4611106	
38	Rosetta UNI 6592 14x20	4	4609015	
39	Tappo DIN 7604 M14x1,5	4	4586034	
40	Prigioniero UNI 5911 M6x16	1	4617038	
41	Rosetta di fermo tappo filtro olio TM 485A	1	2054034	00
42	Dado esagonale UNI 5588 M6	1	4632006	
43	Tappo con filtro olio TM 485A	1	2056148	00
44	Guarnizione OR 3100	1	4596013	
45	Rosetta UNI 6592- 19x24	1	4609019	
46	Tappo DIN 7604 M18x1,5	1	4586036	
47	Coperchio invertitore TM 485A	1	2010344	00
48	Anello di tenuta 55x72x10 viton	1	4597173	
49	Flangia di uscita 5" TM 485A	1	2062308	00
50	Rosetta fermo flangia TM 485A	1	2014115	00
51	Rosetta elastica UNI 1751 A-10,2	3	4611110	
52	Vite TE ISO 4014 M10x35	3	4615305	
53	Coperchio di chiusura asse uscita TM 485A	1	2010356	00
54	Rosetta ondulata DIN 137 B d.8	23	4611208	
55	Vite TE ISO 4017 M8x25	6	4615214	
56	Cuscinetto 32307 B (35x80x32,75)	1	4622044	
57	Albero di uscita TM 485A	1	2021594	00
58	Ingranaggio uscita rapp. 2,09 TM 485A	1	2061682	00
59	Cuscinetto 32209 A (45x85x24,75)	1	4622062	
60	Tubo di lubrificazione TM 485A	1	2042140	00
61	Rosetta UNI 6592- 8,4x12	1	4609009	
62	Bocchettone UNI 7643 M8x1	1	4626003	
63	Asta livello olio TM 485A	1	2070063	00
64	Guarnizione OR 2081	1	4596034	
65	Targhetta per invertitore	1	2026008	02
66	Spina UNI-ISO 2338 B 6x16	2	4614006	
67	Vite TE ISO 4017 M8x35	8	4615221	
68	Spina di riferimento forata TM 485A	2	2035069	00
69	Valvola by-pass	1	1036001	00
70	Coperchio supporto pompa TM 485A	1	2010345	01
71	Guarnizione distributore meca./elett. TM 485A	1	2012173	00
72	Tappo conico DIN 906 M6x8	3	4586006	
73	Vite TE ISO 4017 M6x30	6	4615218	
74	Tappo DIN 908 M10x1	1	4586011	
75	Vite TCEI UNI 5931 M6x55	4	4615159	
76	Pompa K1PGR4,2KX	1	4567013	
77	Vite TE ISO 4014 M8x85	2	4615247	
78	Rosetta UNI 6592 3/8" GAS	1	4609029	
79	Nipale 3/8" M 1/2" M GAS	1	4624001	
80	Vite TE ISO 4014 M6x65	1	4615238	
81	Vite TCEI UNI 5931 M6x25	1	4615144	
82	Ingranaggio campana frizione asse primario	1	2061710	00
83	Ingranaggio campana frizione asse rinvio	1	2061711	00



Denominazione	Codice Marzocchi	Codice T.D.T.
Guarniz. centraggio	OR 3106	4567013
Guarniz. drenaggio	524980	.
Guarniz. aspirazione	524970	.
Guarniz. mandata	524970	.

H-H**D-D**