

# TM 265 A

*service manual*



## 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.

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## INSTALLATION




- TM265-TM265A 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 heat exchanger connection is achieved as shown in fig.1.
- The marine gear is supplied without oil; therefore, before starting it, fill it up to the maximum level marked on the dipstick; then start the engine to allow the piping system to fill up and check the oil level again.

 **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.**


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## 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 minimum 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.**

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## MAINTENANCE

- Check oil level daily.
- 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 (ref.123).
- Clutches require no adjustment.
-  **Disassembly and assembly of the gearbox or of its parts is to be made by specialized technicians only.**

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## LUBRICATION

- Use class CD (API service classification) oil SAE 20 W 40.
- Oil quantity for the marine gear with standard cooler: 6,6 l.
- Max oil temperature: 90°C.
- Oil pressure measured at 1000 RPM engine speed, oil temperature 60°C, is to be between 20 and 22 bar. Pressure gauge connections M10x1 are placed, refer to fig.1, on A (forward) and C (reverse).

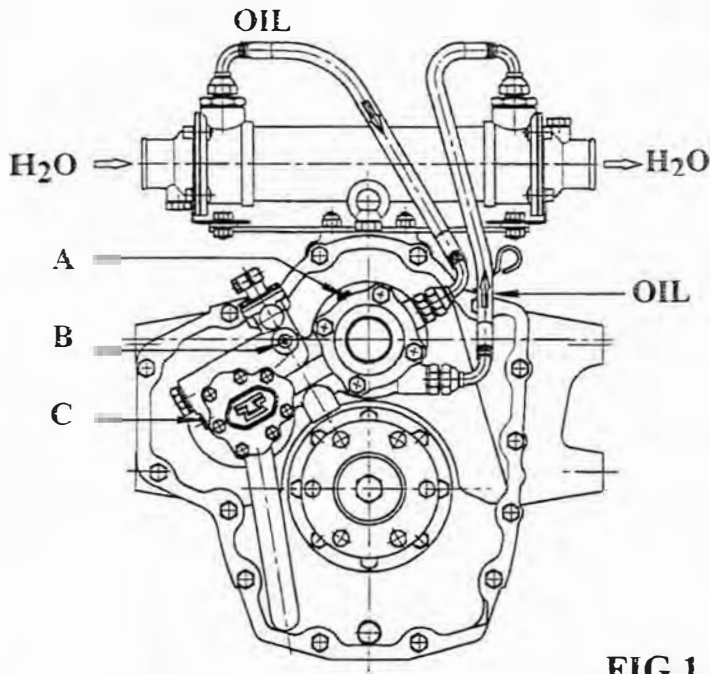


FIG.1

Schema applicazione scambiatore – Attacchi manometri

Exchanger application diagram – Pressure gauge connections

Schema d'application de l'échangeur – Fixations des manometres

**Prese per manometri: M10x1**

- A.Press.Marcia Avanti
- B.Press.Pompa
- C.Press.Marcia Indietro

**Pressure gauge intakes: M10x1**

- A.Forward speed pressure
- B.Pump pressure
- C.Reverse speed pressure

**Prises pour manometres: M10x1**

- A.Press.Marche-avant
- B.Press.Pompe
- C.Press. Marche-arrière

GUASTO-FAILURE-DEFAULT	CAUSA-CAUSE-CAUSE	RIMEDIO-SOLUTION-REMEDE
<ul style="list-style-type: none"> <li>- Pressione olio troppo bassa</li> <li>- Pressione olio troppo alta</li> <li>- Surriscaldamento</li> </ul>	<ul style="list-style-type: none"> <li>- Valvola regolatrice sporca (80)</li> <li>- Livello olio troppo basso</li> <li>- Pompa olio guasta</li> <li>- Anelli di tenuta sugli alberi frizione rotti(22),(44)</li> <li>- Valvola regolatrice sporca (80)</li> <li>- Livello olio eccessivo</li> <li>- Portata acqua di raffreddamento insufficiente</li> <li>- Scambiatore sporco o intasato</li> <li>- 1.a frizione slitta</li> <li>- Eccessivo carico sull'invertitore</li> <li>- Precarico sui cuscinetti non corretto</li> <li>- Cuscinetto danneggiato</li> </ul>	<ul style="list-style-type: none"> <li>- Smontare valvola e pulire</li> <li>- Ripristinare livello</li> <li>- Sostituire pompa</li> <li>- Smontare e sostituire</li> <li>- Smontare valvola e pulire</li> <li>- Portare olio a livello prescritto</li> <li>- Portare al giusto valore</li> <li>- Smontare e pulire</li> <li>- Verificare la pressione dell'olio nel circuito di comando. Se la pressione è troppo bassa regolarsi come detto. Se la pressione è normale occorre smontare e sostituire i dischi frizione.</li> <li>- Ridurre la potenza del propulsore</li> <li>- Ripristinare precarico alberi (max 0,05-min.0.02)</li> <li>- Sostituire il cuscinetto</li> </ul>
<ul style="list-style-type: none"> <li>- Too low oil pressure</li> <li>- Too high oil pressure</li> <li>- Overheating</li> </ul>	<ul style="list-style-type: none"> <li>- Dirty bypass valve (80)</li> <li>- Too low oil level</li> <li>- Failure in oil pump</li> <li>- Broken O rings on clutch shaft (22),(44)</li> <li>- Dirty bypass valve (80)</li> <li>- Excessive oil level</li> <li>- Insufficient cooling water intake</li> <li>- Dirty or clogged exchanger</li> <li>- Clutch slipping</li> <li>- Exchanger overload</li> <li>- Incorrect bearing preloading</li> <li>- Damaged bearing</li> </ul>	<ul style="list-style-type: none"> <li>- Remove valve and clean</li> <li>- Restore oil level</li> <li>- Replace pump</li> <li>- Remove and replace them</li> <li>- Remove valve and clean it</li> <li>- Bring oil down to required level</li> <li>- Bring up to correct quantity</li> <li>- Remove and clean</li> <li>- Check oil pressure in the transmission circuit. If the pressure is too low, proceed as indicated above. If pressure is normal, remove and replace clutch plates.</li> <li>- Reduce propulsor power</li> <li>- Reset shaft preloading (max 0,05-min.0.02)</li> <li>- Replace bearing</li> </ul>
<ul style="list-style-type: none"> <li>- Pression d'huile trop basse</li> <li>- Pression d'huile trop haute</li> <li>- Surchauffe</li> </ul>	<ul style="list-style-type: none"> <li>- Vanne de réglage sale (80)</li> <li>- Niveau d'huile insuffisant</li> <li>- Pompe à huile en panne</li> <li>- Cassure des bagues d'étanchéité sur axes embrayage (22),(44)</li> <li>- Vanne de régulation sale (80)</li> <li>- Niveau d'huile excessif</li> <li>- Débit d'eau de refroidissement insuffisant</li> <li>- Echangeur sale ou bouché</li> <li>- L'embrayage glisse</li> <li>- Charge excessive sur l'inverseur</li> <li>- Mauvaise pré-charge sur roulements</li> <li>- Roulement endommagé</li> </ul>	<ul style="list-style-type: none"> <li>- Démontez la vanne et nettoyez</li> <li>- Rétablir le niveau</li> <li>- Remplacer la pompe</li> <li>- Démontez et remplacez</li> <li>- Démontez la vanne et nettoyez</li> <li>- Amener l'huile au niveau indiqué</li> <li>- Amener à la bonne valeur</li> <li>- Démontez et nettoyez</li> <li>- Vérifier la pression de l'huile dans le circuit de commande. Si la pression est trop basse, procéder de la façon indiquée. Si la pression est normale, il faut démonter et remplacer les disques d'embrayage.</li> <li>- Réduire la puissance du propulseur.</li> <li>- Rétablir la pré-charge des axes (max 0.05-min 0.02)</li> <li>- Remplacer le roulement</li> </ul>

**RICAMBI** Per ordinare i ricambi specificare il tipo di invertitore, il numero di serie, il rapporto, il numero di riferimento del disegno, la quantità.

**SPARE PARTS** When ordering spare parts specify the gearbox model, the serial number, ratio, reference number indicated on the drawing and desired quantity

**PIECES DETACHEES** Pour la commande de pièces détachées, veuillez spécifier le type de 'inverseur, le numéro de série, le rapport, le numéro de rep. du plan ainsi que la quantité.

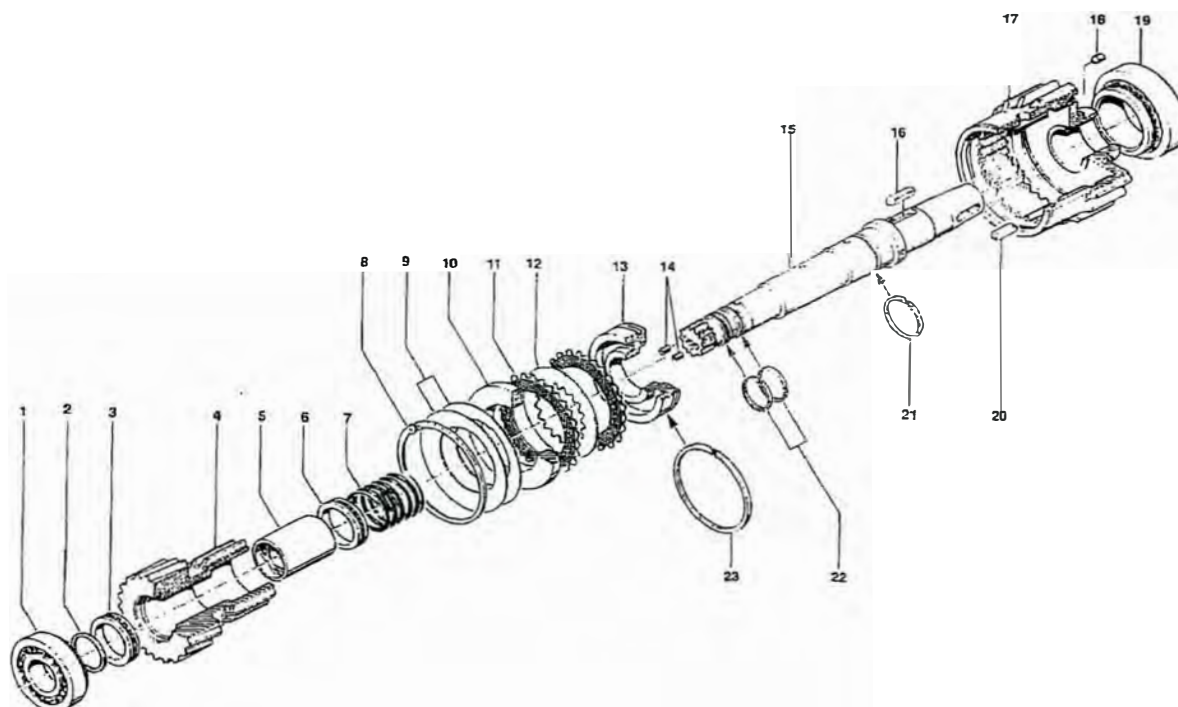
**ERSATZTEILE** Zum Bestellen von Ersatzteilen den Typ des Wendegetriebes, die Fabriknummer, die Untersetzung, die Bezugsnummer der Zeichnung und die Menge angeben.

**REPUESTOS** Para pedir los repuestos hay que especificar el tipo de inversor, el número de serie, la relación (ratio), el número de referencia del dibujo y la cantidad.

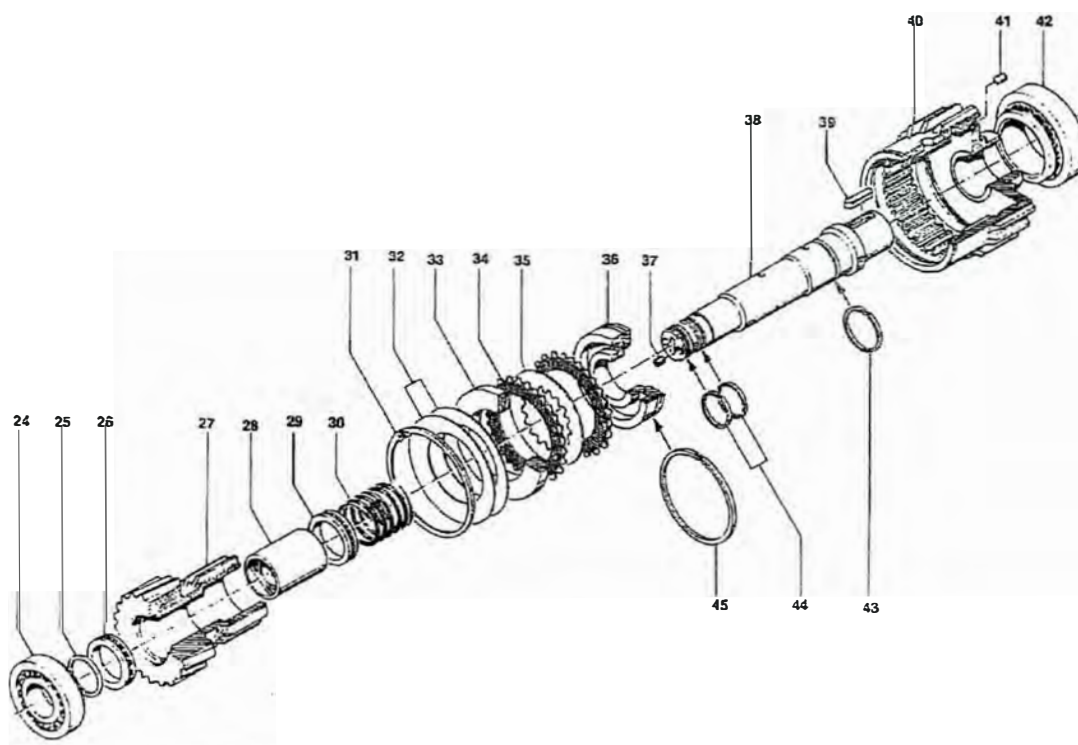
Rif. Ref.	Denominazione Denomination	Quantità Quantity	Codice Code	Rif. Ref.	Denominazione Denomination	Quantità Quantity	Codice Code	
1	Cuscinetto – Bearing	1	4622065	31	Seeger – Seeger	1	4601140	
2	Rasamento – Ring	1	2016022	32	Molle a tazza – Spring	2	4578011	
3	Cuscinetto reggispira – Thrust bearing	1	4607030	33	Disco di ritenuta – Back plate	1	2022054	
4	Pignone TM265 r.1.17-Gear.TM265 r. 1.17	1	2061548	34	Disco conduttore – Clutch plate	9	2022027	
4	Pignone TM265 r.1.50-Gear.TM265 r. 1.50	1	2061520	35	Disco condotto – Steel plate	8	2022029	
4	Pignone TM265 r.2.09-Gear.TM265 r. 2.09	1	2061519	36	Pistone – Piston	1	2017012	
4	Pignone TM265 r.2.82-Gear.TM265 r. 2.82	1	2061518	37	Tappo conico – Plug	1	4588008	
4	Pignone TM265A r.1.44-Gear.TM265A r.1,44	1	2061556	38	Albero di rinvio – Intermediate shaft	1	2021381	
4	Pignone TM265A r.2.00-Gear.TM265A r. 2.00	1	2061557	39	Chiavetta – Key	1	4620104	
4	Pignone TM265A r.2.30-Gear.TM265A r. 2.30	1	2061558	40	Campana frizione – Clutch housing	1	2061605	
5	Boccola – Bushing	1	2050019	41	Tappo forato – Plug	1	2055036	
6	Cuscinetto reggispira – Thrust bearing	1	4607030	42	Cuscinetto – Bearing	1	4622103	
7	Molla ritorno pistone – Spring	1	2020069	43	Fascia elastica – Seal ring	1	2024001	
8	Seeger – Seeger	1	4601140	44	Fascia elastica – Seal ring	2	2024013	
9	Molle a tazza – Spring	2	4578011	45	Fascia elastica – Seal ring	1	2024014	
10	Disco di ritenuta – Back plate	1	2022054	46	Spina elastica – Pin	1	4613004	
11	Disco conduttore – Clutch plate	9	2022027	47	Rosetta di fermo Washer	1	2014073	
12	Disco condotto – Steel plate	8	2022029	48	Guarnizione OR – “O” ring	1	4598136	
13	Pistone – Piston	1	2017012	49	Flangia uscita – Output flange	1	2062188	
14	Tappo conico – Plug	2	4588008	50	Spessori di registro – Shim	x	2013151	
15	Albero primario – Input shaft	1	2021380	51	Cuscinetto – Bearing	1	4622095	
16	Chiavetta – Key	1	4620104	52	Albero – Shaft	TM 265 r. 1,17	1	1012061
17	Campana frizione – Clutch housing	1	2061604	53	Chiavetta – Key			
18	Tappo forato – Plug	1	2055036	54	Corona – Gear			
19	Cuscinetto – Bearing	1	4622103	55	Rosetta – Washer			
20	Chiavetta – Key	1	4620085	56	Ghiera - Nut			
21	Fascia elastica – Seal ring	1	2024001	52	Albero – Shaft	TM 265 r. 1,50	1	1012062
22	Fascia elastica – Seal ring	2	2024013	53	Chiavetta – Key			
23	Fascia elastica – Seal ring	1	2024014	54	Corona – Gear			
24	Cuscinetto – Bearing	1	4622065	55	Rosetta – Washer			
25	Rasamento – Ring	1	2016022	56	Ghiera - Nut	TM 265 r. 2,09	1	1012063
26	Cuscinetto reggispira – Thrust bearing	1	4607030	52	Albero – Shaft			
27	Pignone TM265 r.1.17-Gear.TM265 r. 1.17	1	2061548	53	Chiavetta – Key			
27	Pignone TM265 r.1.50-Gear.TM265 r. 1.50	1	2061520	54	Corona – Gear			
27	Pignone TM265 r.2.09-Gear.TM265 r. 2.09	1	2061519	55	Rosetta – Washer			
27	Pignone TM265 r.2.82-Gear.TM265 r. 2.82	1	2061518	56	Ghiera - Nut	TM 265 r. 2.82	1	1012064
27	Pignone TM265A r.1.44-Gear TM265A r. 1,44	1	2061521	52	Albero – Shaft			
27	Pignone TM265A r.2.00-GearTM265A r. 2.00	1	2061522	53	Chiavetta – Key			
27	Pignone TM265A r.2.30-Gear TM265A r. 2.30	1	2061523	54	Corona – Gear			
28	Boccola – Bushing	1	2050019	55	Rosetta – Washer			
29	Cuscinetto reggispira – Thrust bearing	1	4607030	56	Ghiera - Nut			
30	Molla ritorno pistone – Spring	1	2020069					

Rif. Ref.	Denominazione Denomination	Quantità Quantity	Codice Code	Rif. Ref.	Denominazione Denomination	Quantità Quantity	Codice Code
52	Albero – Shaft	TM 265 A r. 1.44	1 1012051	91	Raccordo – Nipple	1	4624002
53	Chiavetta – Key			92	Spina – Pin	2	4614010
54	Corona – Gear			93	Targhetta – Plate	1	2028004
55	Rosetta – Washer			94	Rosetta – Washer	1	4609021
56	Ghiera - Nut			95	Tappo forato – Plug	1	2055033
52	Albero – Shaft	TM 265 A r 2.00	1 1012052	96	Rosetta – Washer	1	4609011
53	Chiavetta – Key			97	Golfare – Eyebolt	1	4642010
54	Corona – Gear			98	Prigioniero – Stud	2	4617086
55	Rosetta – Washer			99	Asta livello olio – Gauge	1	2070053
56	Ghiera - Nut			100	Spessori registro – Shim	x	2013264
52	Albero – Shaft	TM 265 A r 2.30	1 1012053	101	Coperchio – Cover	1	2010253
53	Chiavetta – Key			102	Rondella – Washer	1	4618010
54	Corona – Gear			103	Vite – Screw	6	4615292
55	Rosetta – Washer			104	Vite – Screw	6	4615301
56	Ghiera - Nut			105	Rondella elastica – Washer	1	4611110
57	Cuscinetto – Bearing	1	4622075	106	Coperchio – Cover	1	2010244
58	Vite – Screw	4	4615238	107	Guarnizione OR – “O” ring	1	4598088
59	Rondella elastica – Washer	4	4611108	108	Spessori registro – Shim	x	2013264
60	Corpo pompa – Oil pump body	1	2010291	109	Paraolio – Oil seal	1	4596153
61	Vite – Screw	3	4615144	110	Tappo di sfiato – Breather	1	2055032
62	Ingranaggio conduttore pompa – Pump gear	1	2061446	111	Rosetta in rame – Washer	1	4609011
63	Spina cilindrica – Pin	2	4614013	112	Scatola TM265 – Housing TM265	1	2009074
64	Boccola – Bushing	2	4584002	112	Scatola TM265A – Housing TM265A	1	2009075
65	Coperchio pompa lato motore – Cover	1	2010292	113	Paratia – Bulkhead	1	2026008
68	Tappo filtro olio – Plug	1	2055037	114	Tubo aspirazione – Pipe	1	2042045
69	Rosetta – Washer	1	4609028	115	Vite – Screw	2	4615202
70	Sfera – Ball	1	4630020	116	Raccordo – Nipple	1	4624002
71	Molla – Spring	1	2020045	117	Rosetta – Washer	1	4609030
72	Seeger – Seeger	1	4601017	118	Coperchio TM265 – Cover TM265	1	2010242
73	Filtro olio – Oil filter	1	2056039	118	Coperchio TM265A – Cover TM265A	1	2010243
74	Vite – Screw	2	4588011	119	Rosetta elastica – Washer	13	4611110
75	Rosetta in rame – Washer	2	4609011	120	Vite – Screw	13	4615301
76	Vite – Screw	1	4615302	121	Rosetta – Washer	1	4609015
77	Tappo – Plug	1	4587022	122	Tappo – Plug	1	4588034
78	Molla esterna valvola – Spring	1	2020055	123	Coperchietto – Cover	1	2010246
79	Molla interna valvola – Spring	1	2020056	124	Rosetta elastica – Washer	4	4611110
80	Valvola – Valve	1	2056073	125	Vite – Screw	4	4615296
81	Stelo distributore – Selector valve	1	2056072	126	Coperchietto asse uscita – Cover	1	2010245
82	Guarnizione OR – “O” ring	1	4598016	127	Paraolio – Oil seal	1	4596218
83	Piastrina – Plate	1	2054024	128	Rosetta elastica – Washer	8	4611110
84	Rondella – Washer	2	4611106	129	Vite – Screw	8	4615296
85	Vite – Screw	2	4615134	130	Ingranaggio condotto pompa – Pump gear	1	2061456
86	Leva di comando – Lever	1	2037036	131	Boccola autolubrificante – Bushing	2	4584002
87	Vite – Screw	1	4615214	132	Valvola by pass – By pass valve	1	1036001
88	Vite – Screw	1	4588011	134	Vite – Screw	1	4615503
89	Rosetta – Washer	1	4609011	135	Rosetta elastica – Washer	1	4611118
90	Rosetta – Washer	1	4609030				

## ALBERO DI ENTRATA – INPUT SHAFT – ARBRE D'ENTREE



## ALBERO DI RINVIO – INTERMEDIATE SHAFT – ARBRE DE RENVOI



# ALBERO DI USCITA – OUTPUT SHAFT – ARBRE DE SORTIE

