

TECHNICAL TRAINING 2018





LUBRICANTS AND VARNISHES CHART

ENGINE OILS

SAE 30 OIL (petrol)	item no. 53086 (Ltr. 4)	API: SJ
15W40 OIL ENGINE (diesel)	item no. 53035 (Ltr. 4)	API: CF-4 CI-4

GEARBOX OILS

OLIO BLASIA 220	item no. 53114 (Ltr. 2)	ISO 6743- 6/CKT
	,	•

OILS FOR HYDRAULICS AND HYDROSTATIC AXLES

item no. 53094 (Ltr. 2)	DIN 51524-3
item no. 53112 (Ltr. 2)	DIN 51524-2 HPL
item no. 53140 (Ltr. 2 can)	API: SL; ACEA: A3/B4
item no. 53141 (Ltr. 5 can)	API: SJ
item no. 53049 (Ltr. 1)	DIN 51524-3 HVLP-ISO- L-HV
item no. 53133 (Ltr. 1)	ISO 11158-LHM / SAE: MS1004 / DIN 51524
item no. 53139 (Ltr. 5 can)	ACEA: A3/B3, A3/B4
	item no. 53112 (Ltr. 2) item no. 53140 (Ltr. 2 can) item no. 53141 (Ltr. 5 can) item no. 53049 (Ltr. 1) item no. 53133 (Ltr. 1)

CUTTER DECK BACK GEAR AND PTO

LSX 75W90 SYNTHETIC OIL CUTTER	item no. 53096 (Ltr. 1)	API GL5 - MT-1. MIL-L-
DECK BACK GEAR AND PTO		2105D

VARNISHES

	SPRAY 400 ml	POT 1 KG
"GRILLO" GREEN	item no. 55023	item no. 55029
WHITE (white aluminium)	item no. 55047	
BRILLIANT BLACK	item no. 55038	item no. 55040
METALLISED GREY	item no. 55033	item no. 55026
ANTHRACITE GREY	item no. 55042	item no. 55041





ENGINE OILS CHART

HONDA

Model	Oil type	Quantity
GX 160	SAE 30 (API SJ)	0,6 Lt
GX 200	SAE 30 (API SJ)	0,6 Lt
GX 270	SAE 30 (API SJ)	1,1 Lt
GX 390	SAE 30 (API SJ)	1,1 Lt
GCV 160	SAE 30 (API SJ)	0,55 Lt
GXV 340	SAE 30 (API SJ)	1,1 Lt

ROBIN SUBARU

Model	Oil type	Quantity
EX17	SAE 30 (API SJ)	0,6 Lt
EX27	SAE 30 (API SJ)	1 Lt

KOHLER

Model	Oil type	Quantity
3000	SAE 30 (API SJ)	0,6 Lt

KAWASAKI

Model	Oil type	Quantity
FJ180V	SAE 30 (API SJ)	0,7 Lt

BRIGGS & STRATTON

Model	Oil type	Quantità
575 EX	SAE 30 (API SJ)	0,44 Lt
INTEK 950E	SAE 30 (API SJ)	0,59 Lt
16 VANGUARD	SAE 30 (API SJ)	1,42 Lt
18 VANGUARD	SAE 30 (API SJ)	1,7 Lt
7180 INTEK	SAE 30 (API SJ)	1.9Lt
7220	SAE 30 (API SJ)	1.9Lt
8270	SAE 30 (API SJ)	1.9Lt
3130 INTEK	SAE 30 (API SJ)	1,4 Lt





LOMBARDINI

Model	Oil type	Quantity
15LD225	15W40 (API CF-4 CI-4)	0,9Lt
15LD350	15W40 (API CF-4 CI-4)	1,2LT
15LD440	5W40 (API CF-4 CI-4)	1,5Lt
FOCS 1003	15W40 (API CF-4 CI-4)	2,4Lt
FOCS 1404	15W40 (API CF-4 CI-4)	3,2Lt
3LD510	15W40 (API CF-4 CI-4)	1,75Lt

YANMAR

Model	Oil type	Quantity
3TNV76	15W40 (API CF-4 CI-4)	3 Lt
3TNV82	15W40 (API CF-4 CI-4)	3,5 Lt
4TNV88	15W40 (API CF-4 CI-4)	6,5 Lt

Attention: the oils in this chart are recommended for temperatures higher than 4°C, for gasoline engine. As for diesel engines, the oils in this chart are recommended for temperatures between -15°C and 40°C.





OIL CHARTS

WALKING TRACTORS	GEAR BOX	OIL	TILLER OIL	
G45	80W90 (API GL5)	0,750 Lt	80W90 (API GL5)	0,4Lt
G46	80W90 (API GL5)	1,8 Lt	80W90 (API GL5)	0,4Lt
G52	80W90 (API GL5)	1,8 Lt	80W90 (API GL5)	0,5Lt
G55	80W90 (API GL5)	2,2 Lt	80W90 (API GL5)	0,5Lt
G 84	80W90 (API GL5)	2,2 Lt	80W90 (API GL5)	0,5 Lt
G85D	80W90 (API GL5)	1,9Lt	80W90 (API GL5)	0,5 Lt
G107	80W90 (API GL5)	1,9 Lt	80W90 (API GL5)	0,5 Lt
G110 - G108	80W90 (API GL5)	1,9 Lt	80W90 (API GL5)	0,5Lt
G131	80W90 (API GL5)	3,3 Lt	80W90 (API GL5)	0,4 Lt

TILLERS	GEAR BOX	OIL
GZ1 – GZ2 - GZ3	Synthetic, BLASIA 220S	0,25 Lt.
PX31 - PX32	BLASIA 220S	
PRINCESS M1 – MR	/	/
MP3 – MP3PRO	80W90 (API GL5)	0,14 Lt.
2500	80W90 (API GL5)	1,35 Lt.
3500	80W90 (API GL5)	1,35 Lt.
11500	80W90 (API GL5)	1,35 Lt.

SICKLE BARS	ARS GEAR BOX OIL	
GF1	80W90 (API GL5)	0,80 Lt.
GF2	80W90 (API GL5)	2,20 Lt.
GF3	80W90 (API GL5)	2,20 Lt.





DUMPER	GEAR BOX OIL		
D406	80W90 (API GL5)	1,350 Lt.	
D507	80W90 (API GL5)	1,700 Lt.	

BRUSHCUTTERS	REDUCTOR O	IL	HYDR. AXLE OIL	
GH 7	80W90 (APIGL5)	0,200 Lt.	20W50 (API-SJ)	
CL 62/ CL62M			20W50 (API-SJ)	
CL 75			10W60 (API -SL)(ACEA A3/B4)	1,85 Lt.
CLIMBER 7			10W60 (API -SL)(ACEA A3/B4)	1,85 Lt.
CLIMBER 8			20W50 (API-SJ)	2,5 Lt.
CLIMBER 9			20W50 (API-SJ)	1 Lt.
CLIMBER 10 MD 24			5W50 (API SM) ACEAA3/B4	5 Lt.
MD13 MD16			10W60 (API -SL)(ACEA A3/B4)	1,85 Lt.
MD22N			20W50 (API-SJ)	2,5 Lt.

	HYDR. AXLE OIL	HYDR. AXLE OIL	
FD220R	10W60 (API -SL)(ACEA A3/B4)	/1,85 Lt.	
FD280	10W60 (API-SL) (ACEA A3/B4)	/1,85 Lt.	
FD450	20W50 (API-SJ)	/6 Lt.	





	HYDR. TRANSMISSION OIL		DECK TRANSMISSION OIL	
FD900	OSO 46 (DIN 51524 TEIL 3 HVLP) (ISO-L-HV)	9,5 Lt	75W90 S (API GL5 -MT-1) (MIL-L-2105D)	0,112Lt
FD1309	OSO 46 (DIN 51524 TEIL 3 HVLP) (ISO-L-HV)	20 Lt.	75W90 S (API GL5 -MT-1) (MIL-L-2105D)	1,5 Lt CM 132 1,55Lt CM 155
FD2200	OSO 46 (DIN 51524 TEIL 3 HVLP) (ISO-L-HV)	36 Lt.	75W90 S (API GL5 -MT-1) (MIL-L-2105D)	1,55 Lt.
FD2200TS	OSO 46 (DIN 51524 TEIL 3 HVLP) (ISO-L-HV)	36 Lt.	75W90 S (API GL5 -MT-1) (MIL-L-2105D)	1,8 Lt.

	HYDR. TRANSMIS	SION OIL	DECK TRANSMIS	SSION	HYDR. O	(L
FX 27	20W50 (API-SJ)	4,9 Lt.	75W90 S (API GL5 -MT-1) 2105D)	(MIL-L-	Hydraulic 10	0,2 Lt
	GEAR BOX					
PK 600	80W90 (API GL5)	2,3Lt	Front and rear axle 80w90 (API GL5)	1,8 Lt each 1	OSO 46	7,5Lt
PK 1400	80W90 (API GL5)	23Lt	Front axle 80w90 (API GL5)	6Lt	OSO 46	18Lt





YANMAR ENGINE OIL

Engine oil used for industrial engines varies with engine application and environmental temperature. Engine oil properties are classified according to the required functions. Engine manufacturers typically recommend the appropriate engine oil according to the API (American Petroleum Institute) service classification and SAE (Society of Automotive Engineers) service grades. The engine oil class varies with the operating conditions, environment and the type of fuel to be used. If the fuel has a high sulfur content, it is important to use high-grade engine oil, as the corrosive products generated by combustion must be neutralized by the engine oil.

Selection of Engine Oil

Engine oil should comply with the following specifications.

Classification

API classification CD, CF, CF-4, CI-4

TBN value: ≥9 (CD), ≥9 (CF), ≥7 (CF-4), ≥7 (CI-4)

ACEA classification E-3, E-4, E-5

TBN value: ≥10 (E-3), ≥10 (E-4), ≥10 (E-5)

JASO classification DH-1

TBN value: ≥10 (DH-1)

Definitions

API Classification [American Petroleum Institute]. ACEA Classification [Association des Constructeurs Européens d'Automobiles]. JASO [Japanese Automobile Standards Organization].

Additional Guidelines

- The engine oil must be changed when the Total Base Number (TBN) has been reduced to 1.0.
 TBN (mgKOH/g) test method; JIS K-2501-5.2-2 (HCl), ASTM D4739 (HCl).
- · Standard engine oil service interval is 250 hours or every 12 months.
- NEVER add any additives to the engine oil.
- NEVER mix the different types (brands) of engine oil.

NEVER Use the Following Engine Oils

ACEA: E-1, E-2, B grade

Engine oil grade E-1 was developed for naturally aspirated diesel engines and for light duty applications. Engine oil grade E-2 was developed for naturally aspirated diesel engines. Engine oil grade B was only developed for light duty application (e.g., passenger car).

JASO: DH-2, DL-1

Engine oil grade DH-2 was developed for diesel engines fitted with a Diesel Particulate Filter (DPF) device. Engine oil grade DL-1 was developed for diesel engines fitted with a DPF device and it was only designed for light duty applications.





TYRES PRESSURE CHART

MODEL	FRONT AXLE	REAR AXLE
G 45	1,1 Bar	/
G 46	1,1 Bar	/
G 52	2,2 Bar	/
G 55	1,1 Bar (tyres 4.00-8) 1,5 Bar (tyres 5.00-10) 1,2 Bar (tyres 16-6.50/8)	/
G 84	1,1 Bar (tyres 4.00-8) 1,1 Bar (tyres 4.00-10) 1,5 Bar (tyres 5.00-10)	/
G 85d / G107	1,1 Bar (tyres 4.00-8) 1,1 Bar (tyres 4.00-10) 1,5 Bar (tyres 5.00-10) 1,5 Bar (tyres 5.00-12) 1,5 Bar (tyres 20x10.00-8) 0,6 Bar (tyres 21x11.00-8)	/
G 108 / G 110	1,1 Bar (tyres 4.00-10) 1,5 Bar (tyres 5.00-10) 1,5 Bar (tyres 5.00-12) 1,5 Bar (tyres 20x10.00-8) 0,6 Bar (tyres 21x11.00-8)	/
G 131	1,5 Bar (tyres 5.00-12) 1,5 Bar (tyres 6.5/80-12)	/
GF 1	1,1 Bar (tyres 13×5.00-6)	/
GF 2	1,1 Bar (tyres 4.00-8) 1,2 Bar (tyres 16-6.50/8)	/
GF 3 / GF 3DF	1,1 Bar (tyres 4.00-8) 1,1 Bar (tyres 4.00-10) 1,5 Bar (tyres 5.00-10) 1,5 Bar (tyres 20×10.00-8) 0,6 Bar (tyres 21x11.00-8)	/
GH 7	1,2 Bar (tyres 16×6.50-8)	/
CL 62 / CL 62 M	1,5 Bar (tyres 4.00-8)	/
CL 75	1,5 Bar (tyres 4.00-8)	/
CLIMBER 7	1 Bar (tyres 13×5.00-6)	1,2 Bar (tyres 16×6.50-8)
CLIMBER 8.22	1,2 Bar (tyres 3,50-6)	1,2 Bar (tyres 18×9.50-8)
CLIMBER 9.18 / 9.22	1 Bar (tyres 13x5.00-6)	1,5 Bar (tyres 17×8.00-8)
CLIMBER 9.27	1,2 Bar (tyres 3,50-6)	1,2 Bar (tyres 18x9,50-8)
CLIMBER 10AWD22	1,2 Bar (tyres 4.00-8)	1,5 Bar (tyres 20×10.00-8)
CLIMBER 10AWD27	1,2 Bar (tyres 16x6.50-8)	1,5 Bar (tyres 20×10.00-8)
MD 13/ MD 18	1 Bar (tyres 13×5.00-6)	1,2 Bar (tyres 16×7.50-8)





MD 22N	1 Bar (tyres 15X6.00-6)	1 Bar (tyres 20X10.00-8)
MD24AWD	1,2 Bar (tyres 16x6,50-8)	1 Bar (tyres 20x10.00-8)
FX 27	1,2 Bar (tyres 20x10.00-8) 0,6 Bar (tyres 21x11.00-8)	1 Bar (tyre 15X6.00-6)
FD 220R	1,2 Bar (tyres 16×7.50-8)	1,2 Bar (tyres 13x5.00-6)
FD 280	0,8 Bar (tyres 18×9.50-8)	1,2 Bar (tyres 13x6.50-6)
FD 450	1 Bar (tyres 20x10.00-8)	1 Bar (tyres 15x6.00-6)
FD 900	1,4 Bar (tyres 23×10.50–12)	1,4 Bar (tyres 18x8,50-8)
FD 13.09 / FM 13.09	1,4 Bar (tyres 23×10.50-12) 1,5 Bar cutting deck tyres	1,4 Bar (tyres 18x8,50-8)
FD 2200 / FM 2200	1,6 Bar (tyres 24×12.00-12) 1,5 Bar cutting deck tyres	1,6 Bar (tyres 20x10.00-10)
FD 2200TS	1,6 Bar (tyres 24×12.00-12)	1,6 Bar (tyres 20x10.00-10)
PK 400	2 Bar (tyres 23x10.50-12)	2 Bar (tyres 23x10.50-12)
PK 600	2 Bar (tyres 23x10.50-12)	2 Bar (tyres 23x10.50-12)
PK 1400	6,4 Bar with max load.(tyres 27×10.50-15) 2,5 Bar with load lower than 50%	6,4 Bar with max load. (tyres 27×10.50-15) 2,5 Bar with load lower than 50%





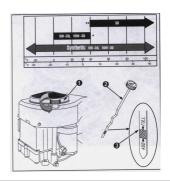
CLIMBER 7 LUBRICATION CHART

INTEK 3.130 ENGINE

(see Engine Manual)

Select the SAE viscosity of the oil with the aid of the table. For temperatures above 4°C always use SAE 30 oil, change after the first 5 working hours, than every 50 hours.

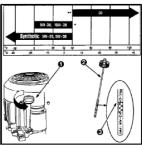
Quantity: 1,7 litre



VANGUARD 16 ENGINE

(see Engine Manual)

Select the SAE viscosity of the oil with the aid of the table. For temperatures above 4°C always use SAE 30 oil, change after the first 8 working hours a 1,6 litre quantity.



HYDROSTATIC AXLE K46

Use Valvoline 10 W 60 oil.

Change after the first 50 hours, then every 200 hours.

Quantity: 1,85 litre.

To replace proceed as follows:

- 1) Remove the 2 plugs (fig.2).
- 2) Remove, by using a screwdriver, the plug (fig.3).
- 3) Screw the 2 plugs, (fig.2, tightening torque 13-17 N.m).
- 4) Insert the oil, replace the plug (fig.3).
- 5) Check if the expansion tank is empty, the level is 12mm under the bottom of the expansion tank (fig.4).

With the engine cold, check the expansion tank (fig.1), it must be empty.

Clean the hydraulic motor cooling fans often, every 4 working hours in summer when conditions are very dusty (fig.1).



Fia.



Fig. 2

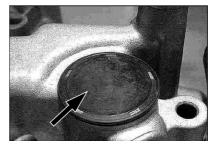


Fig. 3





CLIMBER SERIES 7, CLIMBER 8.22

CUTTER DECK ADJUSTMENT

In order to verify the cutting deck height from the ground, please put the cutter deck at the minimal height from ground, using the special lever. Doing this operation, the lower cutting deck edge must be at 110/112 mm from ground (100 mm for the Climber 8.22), as represented in FIG. 1. The measure must be done where there are the four cutting deck inspection doors connections (see FIG. 2). In order to adjust this height, use the front brackets (see FIG. 2), which fix the cutting deck, letting them run forward or backward, and the rear adjustment devices (see FIG. 3).

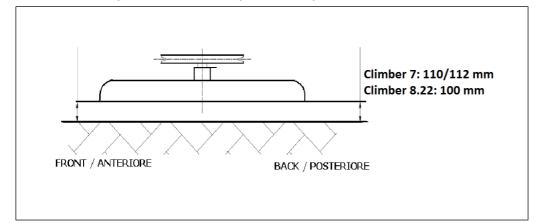
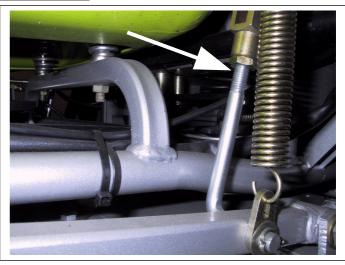
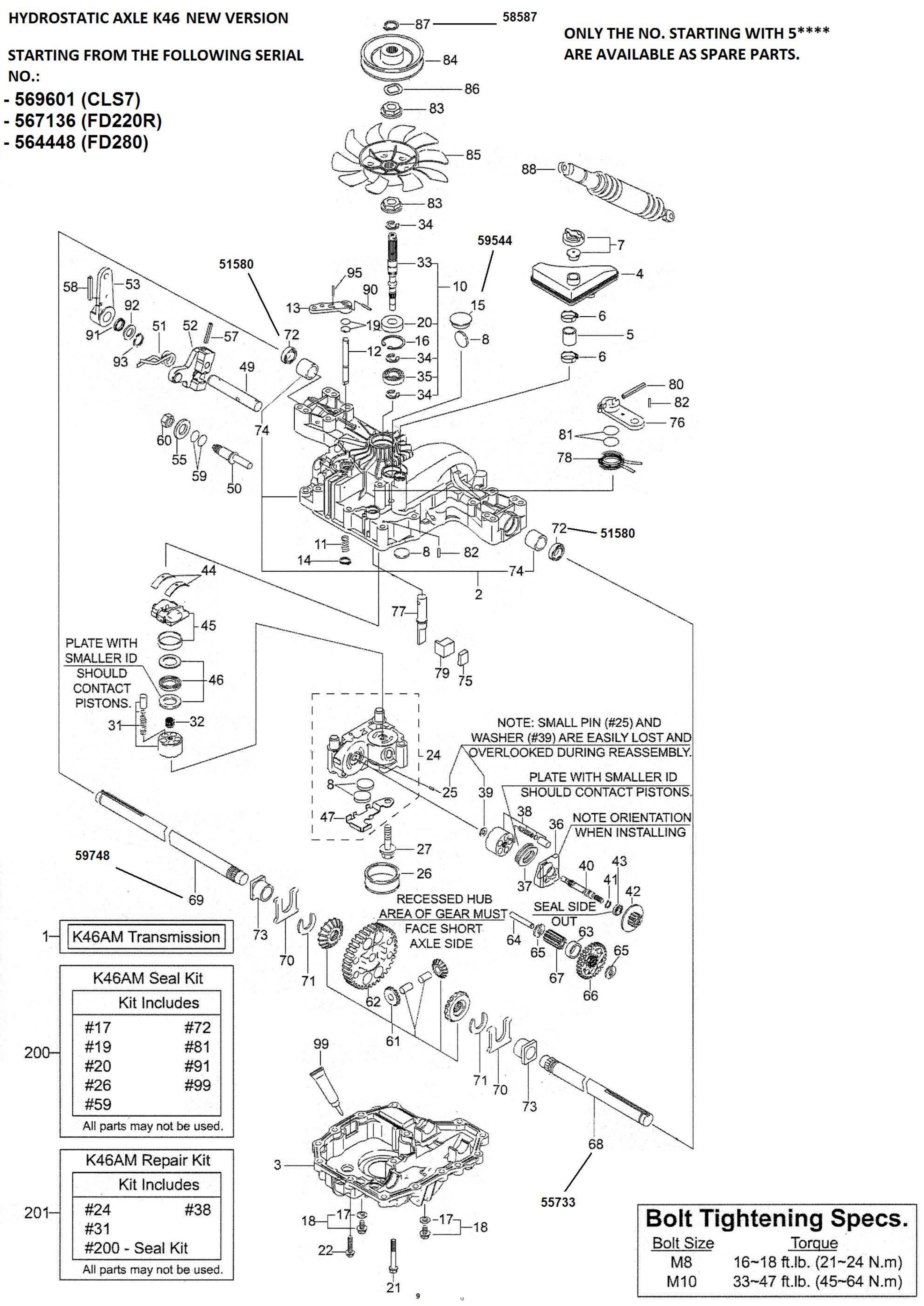


FIG. 1



FIG. 2









LUBRICATION CHART CLIMBER 9.10/CL9.16/CL9.21 CL9.22/MD22

ENGINES:

- VANGUARD 16
- VANGUARD 21
- INTEK PROFESSIONAL SERIES 7220

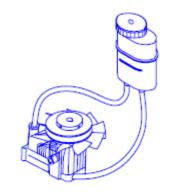
(consult the engine manual)

Choose the SAE oil viscosity degree following the chart. For temperatures exceeding 4° always use SAE 30 oil. Change it after the first hours of work.

Quantity: approx. 1,6 litres (VANGUARD 16-21) - 2 litres (INTEK 7220)

HYDROSTATIC TRANSMISSION

Use oil 20W50. Change it every 200 hours. Quantity 1 litre



1st version up to serial number 270077 mod. 910 and serial number 276372 mod. 850

REDUCER - DIFFERENTIAL

Use SHELL OMALA RL 460 oil Change it the first time after 30 working hours Successively, after 200 hours.

Quantity: 2,3 litres

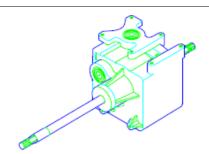


2nd version

REDUCER - DIFFERENTIAL

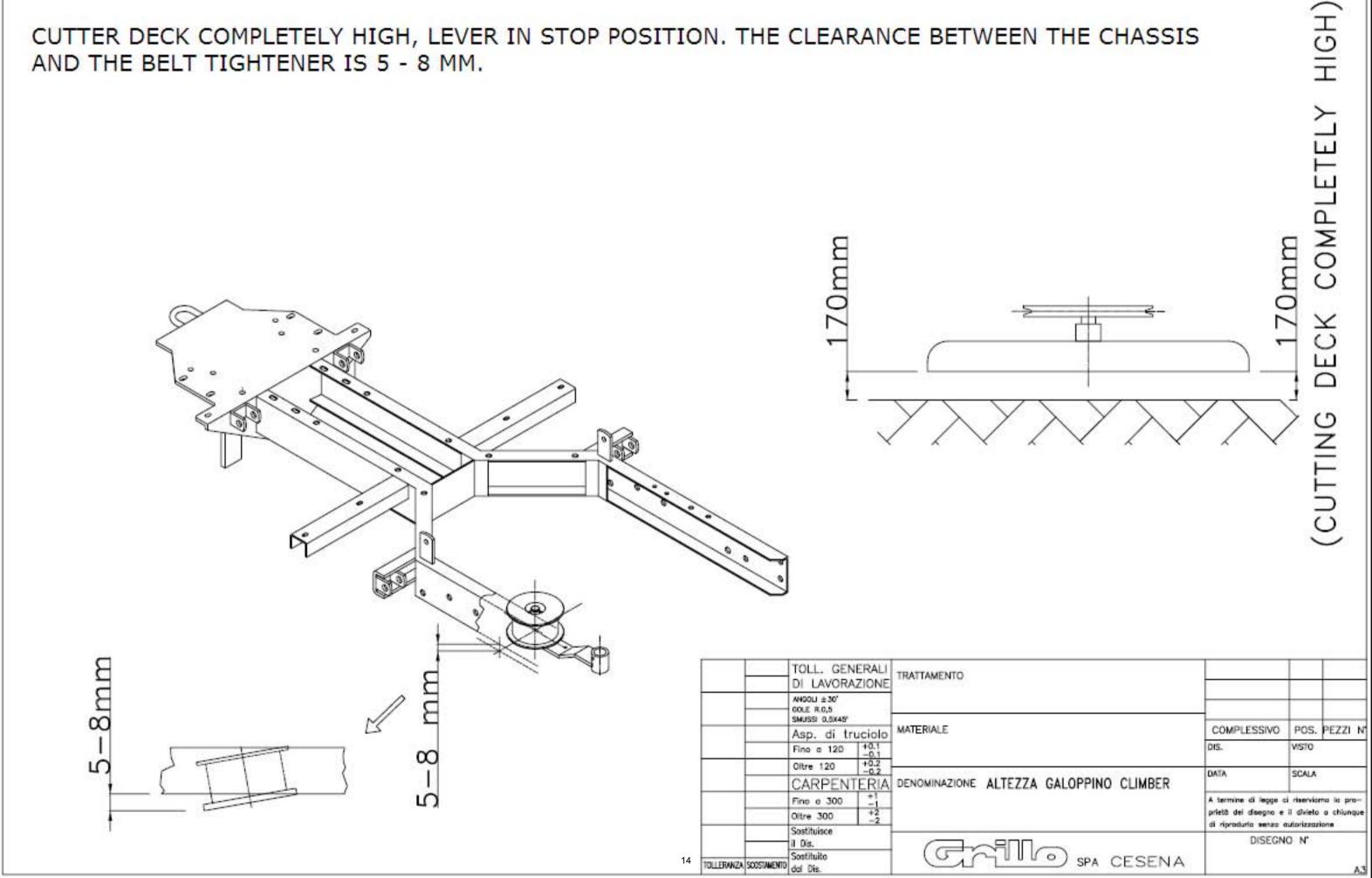
Use 80W90 (API GL-5) oil. Change it every 1000 working hours.

Quantity: 1,9 litres



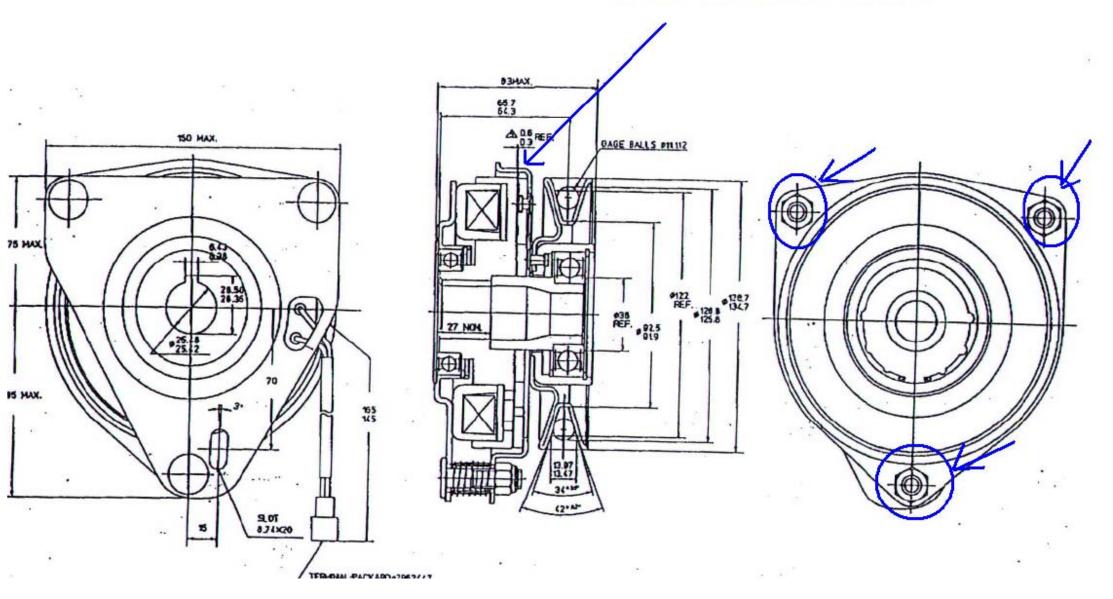
CLIMBER 850 - 910 - 9.16 - 9.21

CUTTER DECK COMPLETELY HIGH, LEVER IN STOP POSITION. THE CLEARANCE BETWEEN THE CHASSIS AND THE BELT TIGHTENER IS 5 - 8 MM.



OGURA CLUTCH REGULATION

The clutch must have 0,3 mm of clearance. Insert a shim and regulate the nuts.





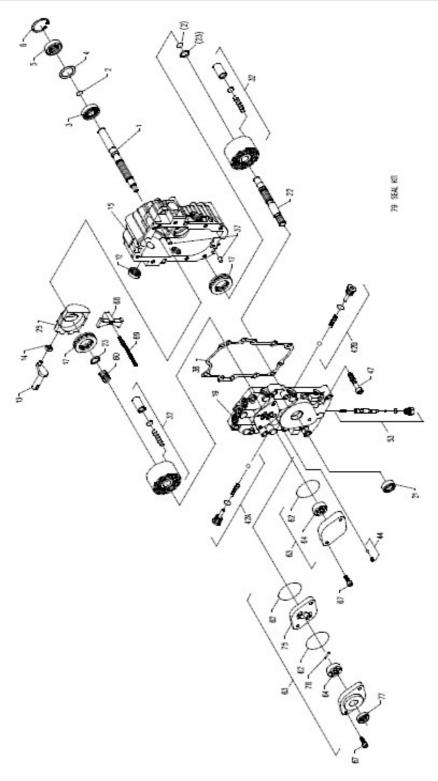


CLIMBER 850 - 9.10 - 9.16 - 9.21 - 9.22 BDU EXPLODED VIEW

Repair kit p/n RSS2513013

BDU-10

BDU-10L Parts Drawing & Parts List







CLIMBER 10AWD: PRE-DELIVERY INSTRUCTIONS

CAUTION! BEFORE DELIVERING A CL10 MAKE THE FOLLOWING CHECKS:

- 1. Check the engine oil level (SAE30).
- 2. Check the oil level of the hydrostatic transmissions. The tank must be filled up to a half (5W50). The tank is located below the front cowling.
- 3. Check the safeties.
- 4. Check the cutter deck's functions: blade rotation engaging, cutting height adjustment.
- 5. Check the pressure of the tires.
- 6. Check the front light's functioning.
- 7. Check the functioning of the brake pedal with return into neutral position of the forward lever.
- 8. Check the battery charge.

DURING THE DELIVERY OF THE MACHINE IT IS IMPORTANT TO EXPLAIN FOLLOWING POINTS:

- Always use the machine with caution; read the operator's manual and let the client familiarize with the functions.
- Explain the engine's start, stop and turning off as well as all controls.
- The first cut in areas with high grass or shrub must be carried out by keeping the cutter deck in a high cutting position. This avoids that the blade is hit by debris.
- The rotation of the blades is extremely dangerous: keep hands and feet away!
- Explain the maintenance and cleaning of the following components: air filter, engine cooling grid, hydrostatic transmissions, exhaust and manifolds.
- Point out that the first check must be carried out within the first 20 working hours (oil change and engine oil filter replacement); the hydrostatic oil must be changed within the first 50 hours (motor oil 5W50).
- Explain the functions of the hour meter.
- The machine is equipped with a safety device which automatically turns the engine off when the engine oil level is low.
- Explain the use and the position when assembling the cutter deck's deflector.
- Explain use and assembly of the cutter deck baffle.
- Explain how to move the machine, in neutral position, with the engine OFF.
- Explain that the blade rotation must be engaged outside the area to be cut and woth the throttle lever half-way.





LUBRICATION CHART CLIMBER 10 AWD 22/27

	TYPE	QUANTITY	
ENGINE OIL	SAE30	2 LITRES	Change oil and replace the filter within the first 20 hours, then after each 100 hours.
FRONT AND REAR HYDRAULIC AXLES	5W50		First oil change after 50 hours, then after each 200 hours or once a year.
LUBRICATION POINTS	GREASE (EA3)		Lubricate with grease each 40 hours the forward levers, the lift cutter deck parallelogram, the 2 point coupling pin of the cutter deck and the ball joints (follow the lubrication scheme).

Climber 10 towing capacity

Max allowable weight: **150 Kg** on a max **10%** slope.





CLIMBER 10 AWD 22 – AWD 27 WORKSHOP MANUAL

ENGINE

For the lubrication intervals, follow the instructions provided in the engine manual. However, it is necessary to **replace both the engine oil and the filter within the first 20 working hours and subsequently every 100 working hours**. Use SAE 30 oil. Unscrew the tap (fig. 1, A) and replace the oil filter, too. It is necessary to remove the rear right wheel and the baffle. Check the engine oil level each 8 hours.

FRONT AND REAR HYDROSTATIC AXLE

The front and rear hydrostatic axles are connected through steel pipes (fig. 2) to let the oil flow into the system and cool. The oil tank is located under the front hood (fig. 3). Check the engine oil every 50 working hours from the openings under the hood. Add synthetic engine oil 5W50 if necessary. Replace the oil after the first 50 working hours then every 200 working hours (quantity 5 litres). To drain the oil remove the lower side plugs on the front axle (fig. 4). In addition remove the filter on the rear axle (fig. 5) and both screws under the axle (fig. 6) to completely drain the oil from the differential and hydrostatic axle. After having tightened the two screws under the rear hydrostatic axle, cleaned or replaced the filter and tightened the two lower screws on the front hydrostatic axle, put the oil in the tank. To fill the oil in, remove the two plugs on the front hydrostatic axle (fig. 7) and the yellow plug under the right platform (fig. 8). In addition loosen the purge valve (fig. 9) on the rear hydrostatic axle, to let air out. The oil will come out firstly form the two side plugs, then from the yellow plug and eventually from the purge valve. Therefore when the oil is draining, tighten first of all the two side plugs, then the yellow plug on the front hydrostatic axle and then purge valve located on the rear axle. Check that at least half of the tank is full, start the engine and move the forward lever (fig. 5) repeatedly forward and backwards for about 5 minutes. Switch the engine off. Loosen again the purge valve located on the rear hydrostatic axle to let the oil drain and purge the hydraulic system (fig. 9). Fill the tank again with fresh oil until a half is full.

AIR FILTER

Check the air filter every 4 hours or more frequently if working in a very dusty environment (fig. 10). Check the engine cooling grid. Always keep the engine inner and outer grids clean not to prevent the passage of the air. Keep the engine casing and the hydrostatic axle clean. Loosening the screw (fig. 10, ref. A) on both sides, the operator has access to the engine cylinder fins to carry out regular cleaning.

CHECKING BLADES AND CUTTING DECK

A blunt blade tears the grass, leaving it unattractive. The cutting edges of both blades must always be well-sharpened. To remove a blade, take hold of it firmly, wearing working gloves, and unscrew the central screw. IMPORTANT: the screw has a right-hand thread. Sharpen both cutting edges using a medium-grain grinding wheel and check that the blade is balanced by placing it on a round bar inserted in the central hole. Fit the two cutting blades following the diagram.

IMPORTANT: Tighten the fixing screw firmly. Always replace damaged or crooked blades, never attempt to repair them! **USE GENUINE BLADES ONLY**! If they are worn they can be turned round since they have two cutting edges.





CUTTING DECK

Levelness of the cutting deck is essential to obtain an evenly mown lawn. Park the mower on a flat surface and check first that the tyre pressure is correct. Then, use the left and right adjusting screws and those of the front cutting deck arms (fig. 13) to set the cutting deck at 210 mm from the ground on both sides, with the operator on board and the cutting deck at the highest cutting position.

BLADE - ENGINE BELT

The engine – blade belt is self-adjusting and it is a special B-type belt. It is sufficient to check the spring tension. If the belt twists or comes out of its position, carry out the following controls setting the cutting deck at the highest cutting position:

- 1) the distance between the front border of the cutting deck and the ground is 210 mm.
- 2) the distance between the rear border of the cutting deck and the ground is 210 mm.
- 3) use the adjusting screws.
- 4) **IMPORTANT**: beside the cutting deck pulley there is a belt guide equipped with bearings (fig. 11) that prevent the belt from going out of its position should this oscillate. This belt guide must not continuously touch the belt. The belt guide is fixed and the cutting deck has to be set perfectly parallel to the ground or slightly inclined to the front.
- 5) to replace the belt unhook the spring of the belt tightener

ENGINE BELT - HYDROSTATIC AXLE

This belt is self-adjusting through a spring. To replace the belt detach the spring of the cutting deck belt tightener and remove the clutch stop bracket. **USE GENUINE BELTS ONLY.**

BLADE ROTATION

To engage and disengage the blade push the button on the dashboard. When rotation is engaged the engine must be running at medium r.p.m. (see throttle label) and the machine must be placed outside to area to be cut. Never start the blades with the engine at maximum r.p.m. The machine is equipped with an electromagnetic clutch which also brakes the blade during disengagement. The blade must stop within 5 seconds with the engine at max. r.p.m. Should this not be the case, remove the spacer mounted under the brake of the blade brake. IMPORTANT: This operation must be carried out by an authorized service center. Do not use the machine if the blade does not stop within 5 seconds after disengagement with the engine at max. r.p.m.

TRACTION RELEASE LEVER

The traction release device is located at the back of the hydrostatic axle (fig. 5). If the machine breaks down, use the lever under the rear bumper to allow the machine to be towed or moved by hand.

DIFFERENTIAL LOCK ADJUSTMENT

The differential lock must engage when the pedal is half its way. To adjust the differential lock engagement, use the adjusting screw under the platform.

ELECTRICAL SYSTEM

The electrical system is protected by a 20A fuse which cuts out the entire electrical system if blown. After finding and repairing the fault, replace the fuse with another of the same rating. Never replace the fuse with one of a different rating. The electrical system fuses are located behind the driver's seat (fig. 30, ref. A). If problems persist after all procedures described above have been carried out, contact the nearest authorized service centre. Never attempt to make difficult repairs unless you have the necessary equipment and technical expertise. Next to the electrical system main fuse there is another 10A fuse, always located





behind the operator's seat, which protects the 12V cigar lighter plug. The micro-switch on the forward lever detects if the machine is in neutral position.

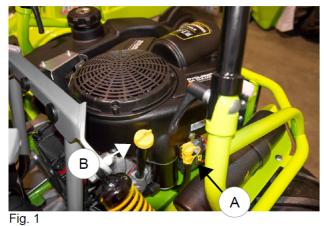




Fig. 2



Fig. 3



Fig. 4







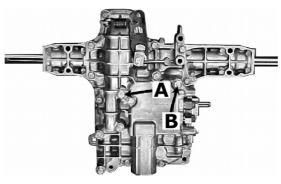


Fig. 5





Fig.7



Fig. 6



Fig.9









Fig 10

Fig 11





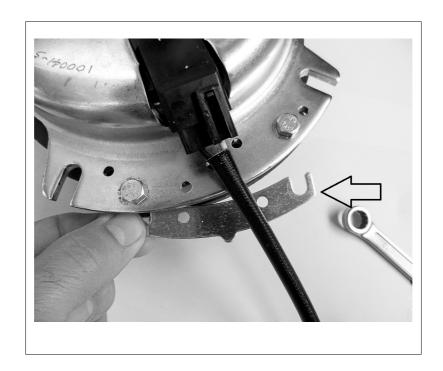


Fig 13





CLIMBER 10 AWD 22 - 10 AWD 27 CLUTCH BRAKE ADJUSTMENT



CAUTION!

Blade rotation has to stop within 5 seconds after disengagement in both following cases:

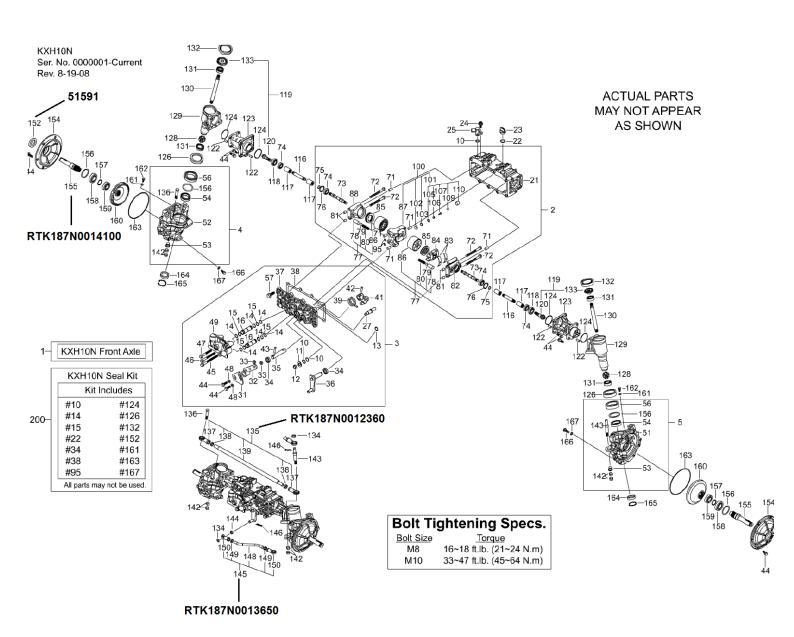
- blade disengagement via push button
- operator isn't sitting on the seat

If this doesn't happen, remove the spacer marked with an arrow, mounted under the brake pad.

Test must be carried out with the engine at maximum r.p.m.



CLIMBER 10 FRONT AXLE EXPLODED VIEW



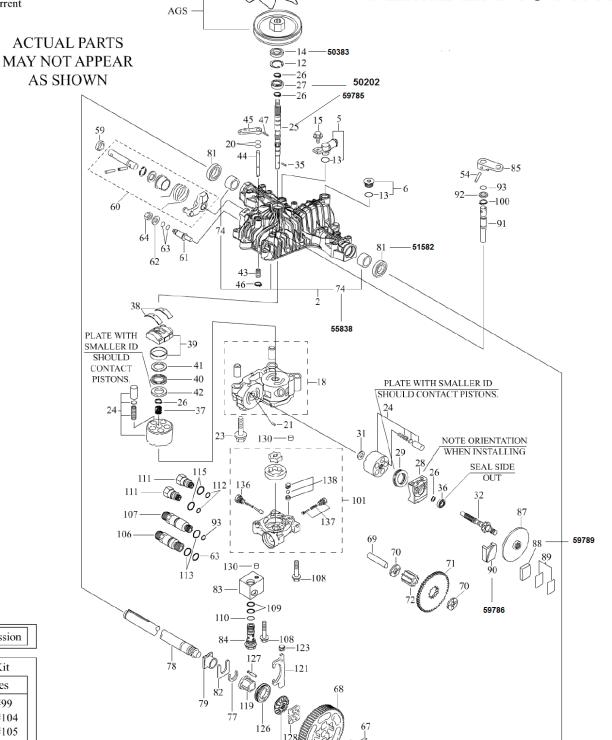


K664E3

Ser. No. 0005001 - Current

Rev. 8-06-15

CLIMBER 10 AWD



K664E Transmission

	K664E Seal Kit		
	Kit Includes		
	#8	#99	
	#11	#104	
	#13	#105	
:00	#14	#109	
	#20	#110	
	#59	#112	
	#63	#113	
	#81	#115	
	#93	#129	
	All parts ma	y not be used.	

M664E Repair Kit

Kit Includes

#18 (2) #24

#200 - Seal Kit

All parts may not be used.

Bolt Tightening Specs.

Bolt Size Torque

M8 16~18 ft.lb. (21~24 N.m) M10 33~47 ft.lb. (45~64 N.m)

⇒129

59788

59787

103



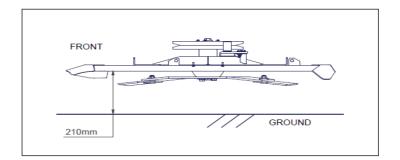


FIG.1

CLIMBER 10 AWD 22 /27 : CUTTING DECK HEIGHT ADJUSTMENT

To check the cutting height from the ground proceed as follows:

- Bring the cutter deck to the highest position.
- Clearance from the front side to the ground must be 210 mm (fig. 1)
- Clearance from the rear side to the ground must be 210 mm (fig. 2)
- To adjust the cutting height use the 4 adjustment devices (Fig. 3 and 4).



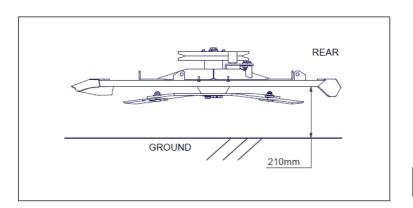


FIG.2



FIG.3

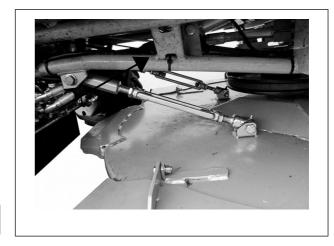


FIG.4





FD450 - PRE-DELIVERY INSTRUCTIONS

ATTENTION! FD450 PRE-DELIVERY - CHECKS:

- 1) Engine oil level (SAE 30);
- 2) Hydraulic oil level (15W50);
- 3) Grass catcher proper functioning (lifting and tipping)
- 4) Cutting deck proper functioning (cutting height and hydraulic lifting)
- 5) Cutting deck belt's proper assembly

EXPLANATION FOR CUSTOMER DURING THE MACHINE DELIVERY:

- 1) The blades can be engaged only when the grass catcher is closed, empty and the operator sits on the machine.
- 2) The blades disengage automatically when the grass catcher is full.
- 3) During work the cutting deck must be in the floating position (low floating front position).
- 4) Air filter cleaning (explanation).
- 5) Grass catcher grid and grass chute cleaning (explanation).
- 6) Cutting deck dismounting for maintenance (explanation).
- 7) Keep the button pushed for some seconds to put the grass catcher into the working position.
- 8) Machine must be serviced after the first 20 working hours (engine oil and filter change).

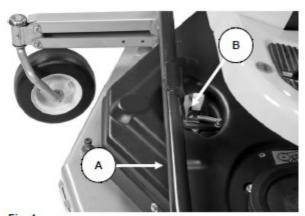




FD450 - CUTTER DECK ASSEMBLY

The mower FD450 has already been assembled and tested by the Grillo SPA technicians. However, in the packing some parts are disassembled. In order to reassemble the cutting deck, follow the described procedure:

- 1. Bring the cutting deck near the machine, lower the trolley by hand (fig. 1, ref. A) until the feather (fig. 2, ref. B) is inserted into the trolley ram (fig. 2, ref. C). Then, hook the cutting deck pin (fig. 1, ref. B).
- 2. Remove the split pin (fig. 3, ref. A) and make sure that the lever (fig. 3, ref. B) is turned counterclockwise.
- 3. Insert the belt (fig. 3, ref. C), following the scheme (fig. 3).
- 4. Turn the lever clockwise and block it by inserting the split pin as shown (fig. 3).
- 5. **IMPORTANT**: Make sure that the belt is inside the pulley groove (fig. 4, ref. B) and make sure that the guide-lever stays in the middle of both arms of the belt as shown (fig. 4).



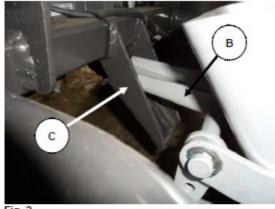


Fig. 1

Fig. 2

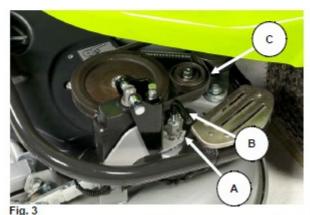




Fig. 4



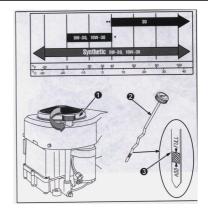


FD 450 LUBRICATION CHART

INTEK PROFESSIONAL SERIES 7220 ENGINE

(see Engine Manual)

Select the SAE viscosity of the oil with the aid of the table. For temperatures above 4°C always use SAE 30 oil, change after the first 8 working hours, than every 100 hours. Quantity: 2,2 litres.



K66 HYDROSTATIC AXLE

Change the oil after the first 50 working hours, successively every 200 hours; use 20W50 oil, indicative quantity 6 litres; proceed as follows to replace the oil:

- 1. Remove the two bolts ref. fig. 1 to drain the oil.
- 2. Remove the filter by taking away the cap shown in fig. 2, check and replace it if necessary.
- 3. Reinstall the two bolts ref. Fig. 1.
- 4. Remove the cap ref. fig. 3 on the hydrostatic transmission, thus allows the air to flow away.
- 5. Fill in the oil and reinstall the cap ref. fig. 4.
- 6. Start the engine. Activate bypass valve fig. 5 (Neutral) and push the drive pedal forward and reverse gear to allow oil to drain the hydrostatic circuit.
- 7. Check the oil level through the inspection glass fig. 6.

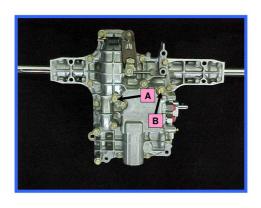






Fig. 1



Fig. 4

Fig. 2

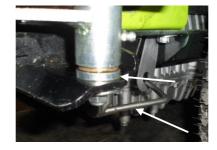
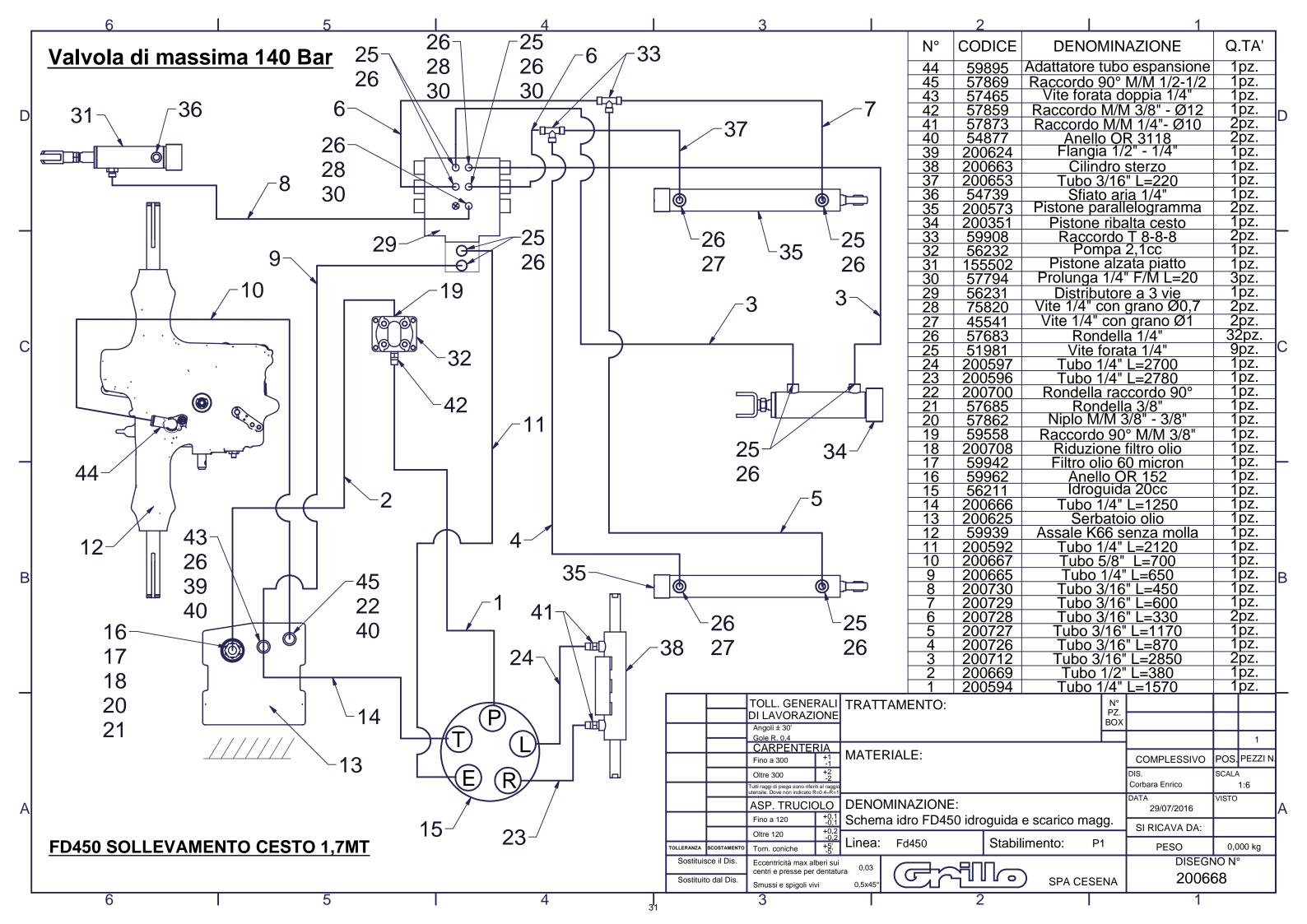


Fig. 5



Fig. 6

Fig. 3







FD450 - HYDRAULIC SCHEME LEGEND

Position no.	Item description
1	1/4" pipe Length = 1570
2	1/2" pipe Length = 380
3	3/16" pipe Length = 2850
4	3/16" pipe Length = 870
5	3/16" pipe Length = 1170
6	3/16" pipe Length = 330
7	3/16" pipe Length = 600
8	3/16" pipe Length = 450
9	1/4" pipe Length = 650
10	pipe Length = 700
11	1/4" pipe Length = 2120
12	K66 hydrostatic axle
13	Hydraulic oil tank
14	1/4" pipe Length = 1250
15	20cc hydraulic steering
16	Oil retainer 152
17	60 micron oil filter
18	Oil filter connection
19	90° M/M 3/8" adapter
20	M/M 3/8" 3/8" nipple
21	3/8" washer
22	90° washer
23	1/4" pipe Length = 2780
24	1/4" pipe Length = 2700
25	1/4" drilled screw
26	1/4" washer
27	1/4" screw with 1 diameter pin
28	1/4" screw with 0,7 diameter pin
29	Three-way distributor
30	1/4" extension shaft F/m Length = 20
31	Cylinder for the raising of the cutter deck
31	2,1 cc pump
33	8-8-8 T-piece





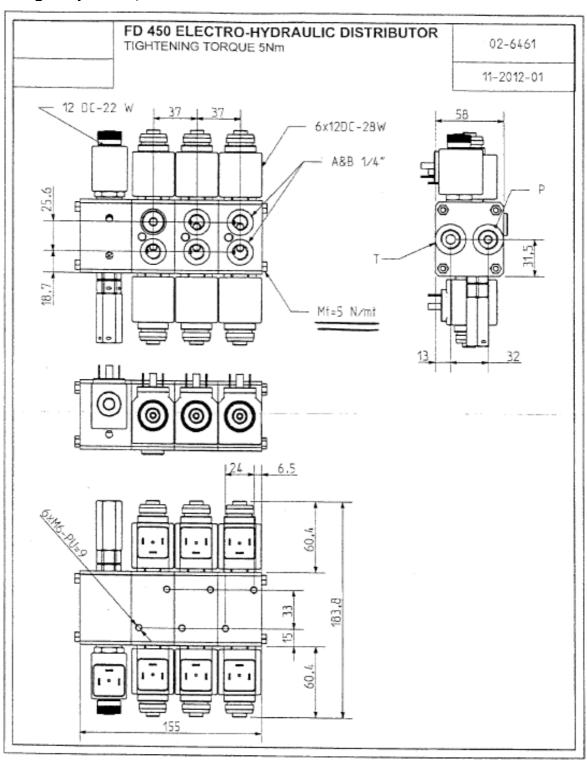
34	Cylinder for the tipping of the grass catcher
35	Parallelogram cylinder
36	1/4" air vent
37	3/16" pipe Length = 220
38	Steering cylinder
39	1/2" - 1/4" flange
40	Oil retainer 3118
41	M/M 1/4" adapter – Ø10
42	M/M 3/8" adapter – Ø12
43	1/4" double drilled screw
44	Pipe adapter
45	90° M/M 1/2-1/2 adapter





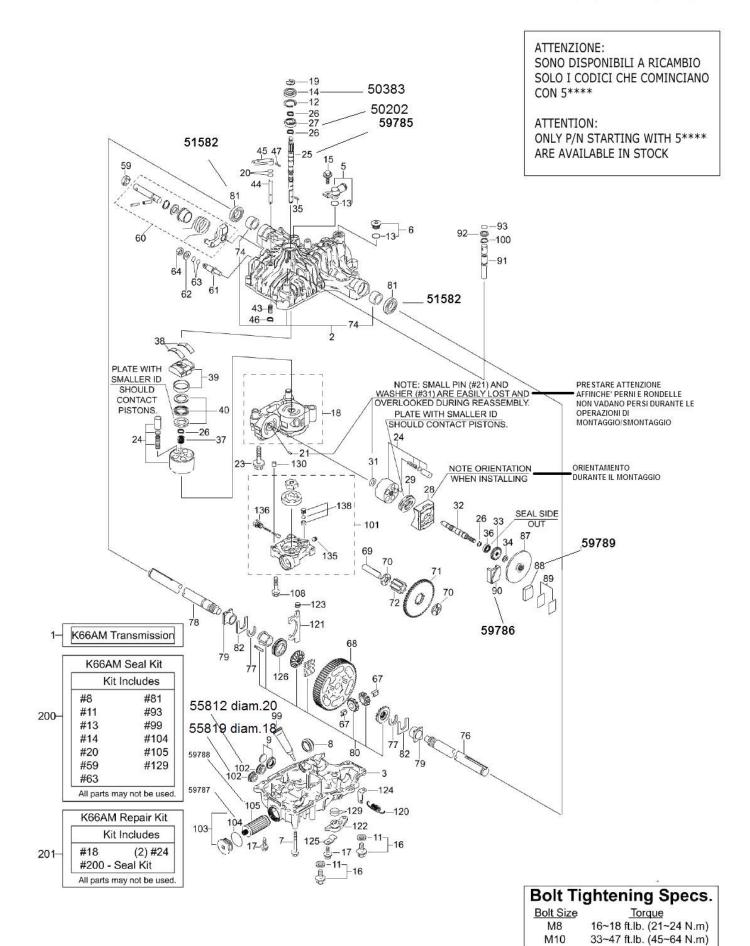
FD450 - ELECTRO-HYDRAULIC DISTRIBUTOR

Tightening torque: 5N/mt



K 66 EXPLODED VIEW









CLIMBER - FD450

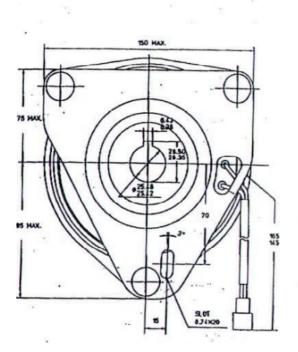
OGURA CLUTCH REGULATION REGOLAZIONE FRIZIONE OGURA REGLAGE EMBRAYAGE OGURA REGULACIÓN EMBRAGUE OGURA OGURA KUPPLUNG

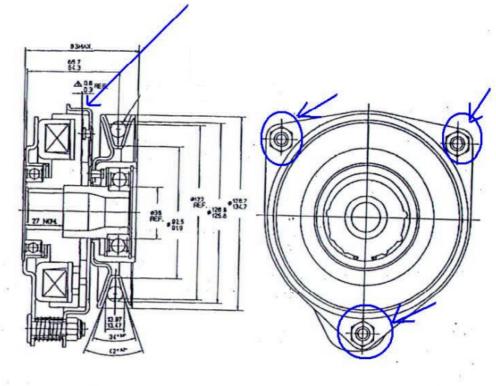
The clutch must have $0.3 \ \text{mm}$ of clearance. Insert a shim and adjust the nuts.

L'embrayage doit avoir 0,3 mm de jeu. Insérer une entretoise et régler les écrous.

La frizione deve avere 0,3 mm di gioco. Inserire uno spessore e regolare i bulloni.

El embrague debe tener 0,3 mm de juego. Meter un espesor y regular los bulones.







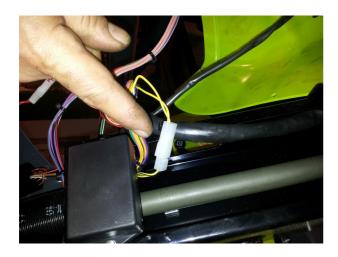


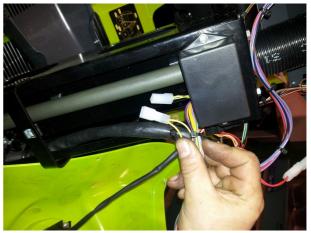
AGRIGARDEN MACHINES

HOW TO DISABLE THE AUTOMATIC DISENGAGEMENT OF THE BLADES WITH FULL GRASS CATCHER AND ACTIVATE THE ACOUSTIC WARNING

- Unscrew the 4 screws of the dashboard.
- Unscrew the 4 screws of the light support frame.
- Unscrew the central screw on the steering column. In this way, you will be able to access the electrical unit which controls all the electrical functions of the machine.
- Disconnect the white connector (see pictures).

In this way, the automatic disengagement of the blade will be off, the acoustic warning will be on.







02428_FD1309 PREDELIVERY INSTRUCTIONS

FD13.09

Α	<u>TT</u> I	ENTION! FD1309 PREDELIVERY – CHECKS:
		Engine oil level (15W40);
		Hydraulic oil level (OSO 46);
ı		Radiator blower inversion: pressing and releasing the push button on the dashboard check that the cleaning
		cycle is done completely;
		Charging accelerator proper functioning;
		Cutting deck proper functioning;
ı		Radiator liquid.

EXPLANATION FOR CUSTOMER DURING THE MACHINE DELIVERY:

- 1) The blades and the charging accelerator can be engaged only when the grass catcher is closed.
- 2) The machine is equipped with a double security which is activated when the engine is overheated. The double security provokes the sound of a horn and the immediate switch-off of the engine. When these security devices are activated you need to check the radiator liquid level (Attention, in order to avoid burns do not take off the expansion reservoir plug).
 - We advise you the workshop assistance intervention if you have to do the cooling system cleaning or check the functioning of the electrical master box and the radiator blower electric engine.
- If the cooling liquid temperature in the instrument gets high, please do no cleaning cycles manually (the cycle must be automatic).
 - If you want to clean it manually, please press for a moment the press button (do not keep it pressed).
- 4) Emergency brake. This pedal must not be used as normal brake, but only in case of emergency; during the machine operation, always use the feed and reverse gear pedals as brake.
- 5) During work the cutting deck hydraulic distributor push button has to be in the floating position (low floating front position).
- 6) Blades check and cutting deck cleaning, after putting the deck in a vertical position (explanation).
- 7) Grass catcher grill cleaning (explanation).
- 8) Towing in case of engine failure (please see the handbook).
- 9) Machine must be serviced after the first 50 working hours (engine oil and filter change).
- 10) You can work in two different ways with the machine:
 - A) Push button under the seat in position 1.
 - Activating the PTO switch-on button first the grass charging accelerator is engaged and after 2 seconds the blades engage. When the grass catcher is full the blades disengage automatically and after 2 seconds also the accelerator disengages.
 - B) Push button under the seat in position 2.
 - The accelerator is excluded completely and pressing the PTO switch-on button the blades start immediately.
 - In this condition the grass remains on the ground without being charged into the grass catcher.
 - 11) In case of engine overheating the cooling circuit cleansing has to be done.





FD13.09

LUBRICATION CHART

Engine oil	15W40	3,5 litres	Please change the oil and the filter after the first 50 working hours; after that every 250 hours.
Cooling fluid	/	6 litres	Drain and wash the tank and change the fluid every 1000
Cooling Italu			hours or once a year.
Hydraulic oil	OSO 46 20 litre	20 litros	Change the oil after the first 500 hours; after that every
пушашіс оп		20 littes	1000 hours.
Deck gearboxes	LSX75W90	1,5 litres	Change every 300 hours.
PTO gearbox	LSX75W90	0,4 litres	Change every 200 hours.

SCHEDA LUBRIFICANTI

Olio motore	/ 6 litri		Sostituire l'olio e il filtro la prima volta a 50 ore di lavoro e successivamente ogni 250 ore.
Liquido radiatore			Svuotare, lavare e sostituire il liquido ogni 1000 ore o una volta all'anno.
		20 litri	Sostituire l'olio la prima volta a 500 ore e successivamente ogni 1000 ore.
Rinvii piatto	LSX75W90	1,5 litri	Sostituire ogni 300 ore.
Rinvio PTO	LSX75W90	0,4 litri	Sostituire ogni 200 ore.

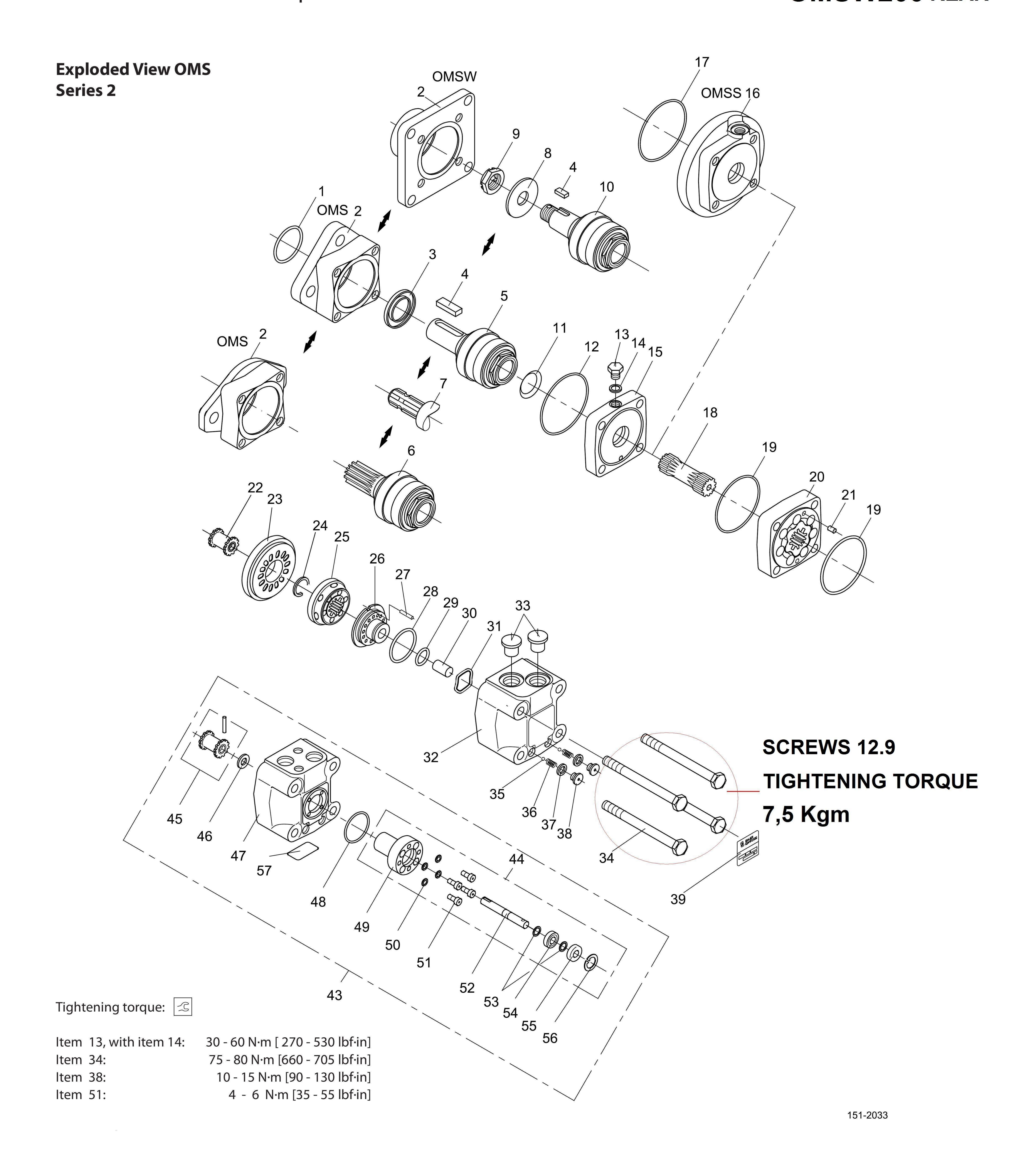
FICHE LUBRIFIANTS

Huile moteur	15W40	3,5 litres	Vidanger l'huile et changer le filtre après les 50 premières heures de travail et ensuite toutes les 250 heures.		
Liquide radiateur	/ 6 litres		Vidanger, laver et remplacer le liquide toutes les 1000 heures ou une fois par an.		
Huile hydraulique	OSO 46 20 litres		Vidanger l'huile après ler 500 premières heures de travail et ensuite toutes les 1000 heures.		
Renvois plateau de coupe LSX75W90 1,5 litres		1,5 litres	Remplacer toutes les 300 heures.		
Renvoi prise de force	LSX75W90	0,4 litres	Remplacer toutes les 200 heures.		



SAUER OMS/OMSW Orbital Motor Service and Parts Manual OMS/OMSW Orbital Motor Exploded View OMS Series 2

HYDRAUL. MOTOR OMSW250 FRONT OMSW200 REAR





LPV Closed Circuit Axial Piston Pumps Repair Instructions Disassembly

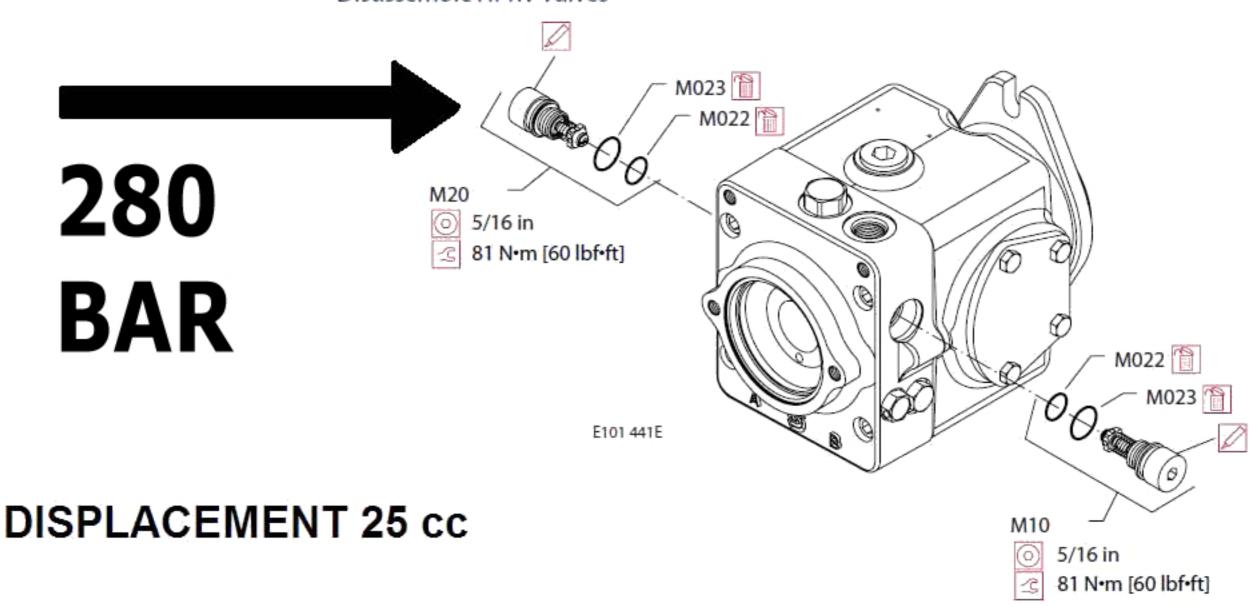


HIGH PRESSURE RELIEF VALVES

Removal

- 12. Mark the location of each valve for proper reassembly.
- 13. Using a 5/16 internal hex wrench, remove the valves (M10) and (M20).
- 14. Remove and discard O-rings (M022) and (M023).

Disassemble HPRV valves



CHARGE PRESSURE RELIEF VALVE

Removal

- Using a 1 in hex wrench, remove the charge pressure relief valve plug (H01). Discard O-ring (H01A).
- Charge relief valve shims (H06) may remain in plug (H01). Remove shims by tapping plug on the workbench.
- 17. Use a magnet to remove the spring (H07).
- Use a magnet to remove the charge relief poppet (H08).

Remove the H01 assembly and ensure the max. valve is not obstructed

81 N·m [60 lbf·ff) H06 H07 H08

E101 440E

Charge pressure relief valve

FILTER FD13.09

COMPLETE FILTER > p/n 59947 FILTER ELEMENT ONLY > p/n 59954

TECHNICAL DATA: MATERIALS:

- Uand.

Head:

Bowl:

Bypass valve:
 Seals:

TECHNICAL DATA:

- NAMEPLATE

(Scale 1,5 : 1)

With per dieadinamica

Filter Code : LMP1101SAA3A10NPxx

WORKING PRESSURE IN 62

Element Code : CU1101A10ANP01

• Max working pressure:

Proof pressure:
 Burst pressure:

Working temperature:

Bypass setting:

Compatibility with fluids:
 INLET/OUTLET thread:

FILTER ELEMENT:

Filter element:

Hardware material:

Filter media:
 Filtration efficency:

_ 🚊 - Max pressure drop:

CU1101A10ANP01 Zinc plated steel / Nylon

NBR

G 3/4"

Aluminium

NBR

80 bar

120 bar

290 bar

Mineral oil

-25°C ÷ +110°C

Without bypass valve

in according to ISO 2943

Cataphoresis painted steel

Inorganic microfibre 10µm absolute

ß 9.0©>1000 in according to ISO 16889

20 bar

MP1101SAA3A10NPxx	Cantrollato/Checked	Osta/Osle	Prescrizioni generali ved. UNI EN 22768-1/1996 - 1 For the permissible errors on the
stomer: MP I for GRILLO	Pese/Weight 1,690 Kq	Cla'/Oly 1	for other general specifications . See UNI EN 22768-1/1996 - /
ILLO code: will advise	Scala/Scale 1:1		
tjamento/Treatment	€-7-@	GI	RILLO

Destantinazione/Description

IN Disagne/Description

I

Skatien - RFV D1 - Modificats to posizione dolts press di pressione do 6 178" - 1670772013 - Harring

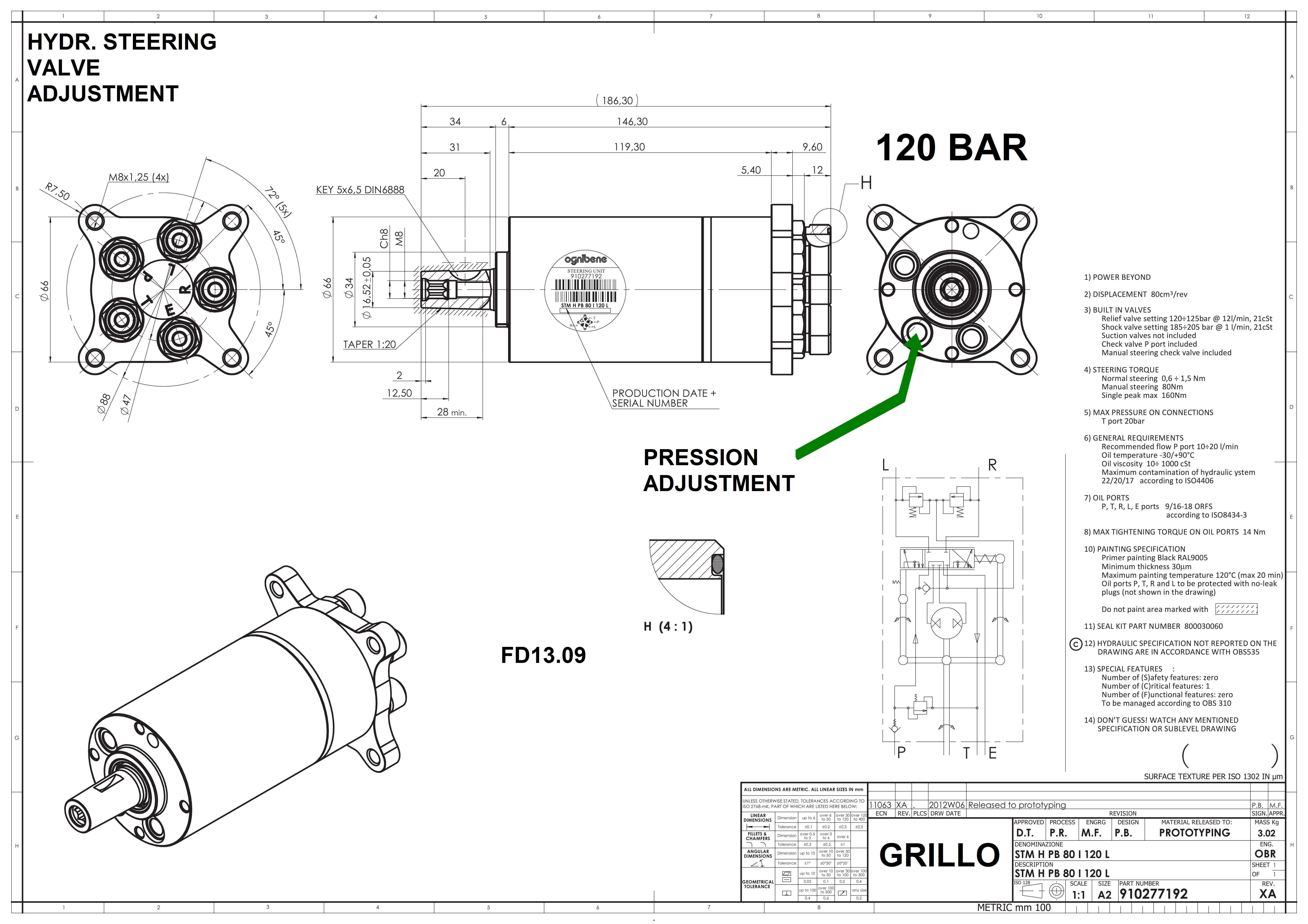
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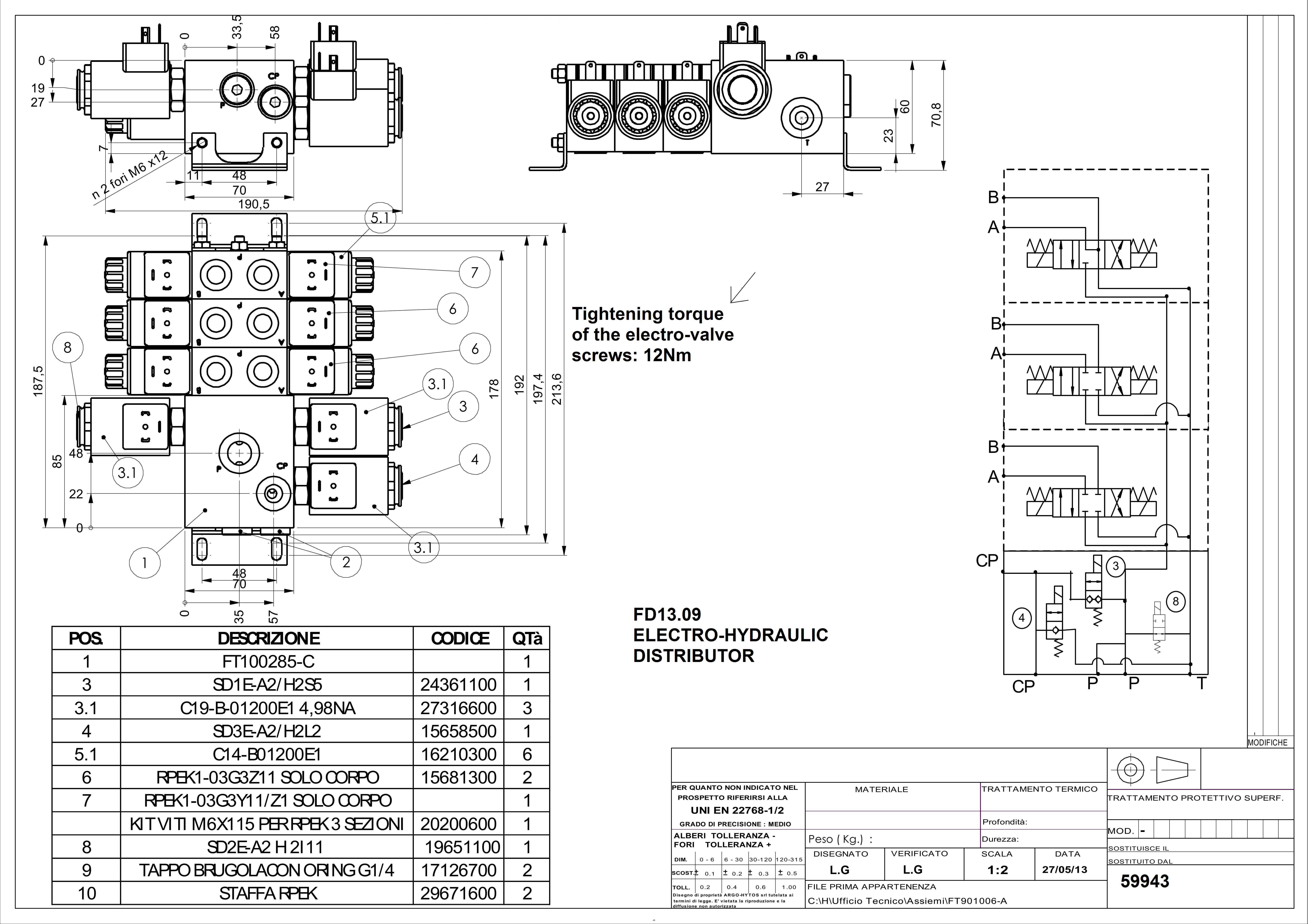




FD 13.09 FILTERS - FILTRI - FILTRES - FILTER

P/N - CODICE- REF. ARTNR.	DESCRIPTION - DESCRIZIONE DESCRIPTION - BESCHREIBUNG
54560	Air filter cartridge – Cartuccia filtro aria – Cartouche filtre à air- Luftfiltereinsatz
59954	Hyrdr. oil filter cartridge – Cartuccia filtro olio idraulico – Cartouche filtre à huile hydraulique – Hydraulikölfiltereinsatz
59947	Complete hydr. filter – Filtro olio idraulico completo Filtre à huile complet – Kompletter Hydraulikölfilter
Y11980255801	Diesel filter – Filtro gasolio – Filtre à gasoil – Dieselfilter
Y12915035153	Motor oil filter – Filtro olio motore – Filtre à huile moteur – Motorölfilter









GB - FD13.09 LIGHTS&FAN ELECTRONIC CONTROL UNIT ITA - FD13.09 CENTRALINA VENTOLA E LUCI FRA - FD13.09 BOITIER ELECTRONIQUE VENTILATEUR ET ECLAIRAGE DE - FD13.09 ELEKTRONISCHE STEUEREINHEIT LICHTER u. GEBLÄSE SPA - FD13.09 UNIDAD DE CONTROL ELECTRÓNICA LUCES y VENTILADOR

PIN	INPUT	ТҮРЕ
A7	49 direction arrows	Activated via toggle switch
C2	Neutral position	Activated via microswitch
В3	Seat	Activated via microswitch
C4	Dipped headlights	Activated via selector switch
C6	Beam headlights	Activated via selector switch
C5	D+	Signal D+ alternator
C3	Fan cycle	Activated via temp. toggle switch
В7	Bulb 90°	Activated via thermocouple
PIN	ОИТРИТ	ТҮРЕ
B2	+stop lights	+12 volt stop lights relay
A6	Stop lights	Lamp max n.2x21w
A8	+ dipped headlights	+12 volt dipped headlights relay
В8	Dipped headlights	Lamp max n.2x55w
A1	+ beam headlights	+12 beam headllights relay
C1	Beam headlights	Lamp max n.2x60w
В6	+ Fan	+12 volt fan relay
A5	Fan relays	Solenoid 60W 12v
А3	+ fan inversion	+12 volt inverted fan relay
A2	Fan inversion relay	Solenoid 60W 12v
В1	49a hazard lights	Lamp max n.4x21w
В4	Hazard lights warning light	Warning light lamp max 3W





GB – FD13.09 MICRO-SWITCHES ELECTRONIC CONTROL UNIT ITA – FD13.09 CENTRALINA SICUREZZE FRA – FD13.09 BOITIER ELECTRONIQUE SECURITES DE – FD13.09 ELEKTRONISCHE STEUEREINHEIT MIKROSCHALTER SPA – FD13.09 UNIDAD DE CONTROL ELECTRÓNICA SEGURIDADES

PIN	INPUT	ТҮРЕ
В7	Seat	Activated via microswitch
C6	PTO	Activated via button
C5	Turbine exclusion	Activated via button
C3	N.C.	
A2	Empty grass-catcher	Activated via microswitch
A4	Raised grass-catcher	Activated via microswitch
C4	Brake	Activated via microswitch
C2	Neutral position	Activated via microswitch
В3	D+	D+ alternator
B4	H2O bulb	H2O high temp. sensor
PIN	ОИТРИТ	ТҮРЕ
A1	+PTO	+12 volt PTO relay
C1	PTO clutch	60W 12 v solenoid
A8	+ Turbine	+12 volt turbine relay
В8	TURBINE CLUTCH	60W 12 v solenoid
В6	GND starting	Earth/ starting relay
A5	Consent to engine starting	500mA max coil
B2	+ engine switch off	+12 volt engine switch off relay
A6	Engine switch off	2amp max coil



<u>Grillo S.p.A.</u> Via Cervese, 1701 - 47023 Cesena (FC) - Italia Tel ++ 39 0547 633111 Fax ++ 39 0547 632011 grillo@grillospa.it <u>www.grillospa.it</u>

02364_PREDELIVERY INSTRUCTIONS/ COLLECTING BANDS / BATTERY
02364_ISTRUZIONI PRIMA DELLA CONSEGNA/BANDELLE PIATTO/BATTERIA
02364_INSTRUCTIONS AVANT LIVRAISON/DEFLECTEURS PLATEAU/BATTERIE
02364_ANLEITUNGEN VOR LIEFERUNG/SCHUTZBLECHE FÜR MÄHWERK/BATTERIE
02364_INSTRUCCIONES ANTES ENTREGA/DEFLECTORES CORTE/BATERIA

FD2200

ENGLISH

ATTENTION! FD2200 PREDELIVERY - CHECKS:

- 1) Engine oil level (15W40);
- 2) Hydraulic oil level (ISO VG 46);
- 3) Radiator blower inversion: with the steering at the top of its travel and the engine at minimum rpm's press the push button on the dashboard for a moment and check that after the cleaning cycle the blower engine re-starts properly;
- 4) Impeller proper functioning;
- 5) Cutting deck proper functioning;
- 6) Radiator liquid.

EXPLANATION FOR CUSTOMER, DURING THE MACHINE DELIVERY:

- 1) The blades and the impeller can be engaged only when the grass catcher is closed and the operator is sitting on the driving seat.
- 2) The machine is equipped with a double security which is activated when the engine is overheated. The double security provokes the immediate switch-off of the engine and the sound of a horn. When these security devices are activated you need to check the radiator liquid level (Attention, do not take off the expansion reservoir plug in order to avoid burns).
- 3) We advise you the workshop assistance intervention if you have to do the cooling system cleaning or check the functioning of the electrical master box, the radiator blower as well as hydraulic engine.
- 4) If the cooling liquid temperature in the instrument gets high, please do no cleaning cycles manually (the cycle must be automatic).
 - If you want to clean it manually, please press for a moment the press button (do not keep it pressed).
- 5) Emergency brake (pedal with red lever).
 - This pedal must not be used as normal brake, but only in case of emergency; during the machine operation, always use the feed and reverse gear pedals as brake.
- 6) In order to avoid the cutting deck joint points stress, during the machine operation the hydraulic distributor lever must be in the float position.
- 7) Blades check and cutting deck cleaning, after putting the deck in a vertical position (explanation).
- 8) Grass catcher grill cleaning (explanation).
- 9) Towing in case of engine failure (please see the handbook).
- 10) Machine must be serviced after the first 50 working hours.

ITALIANO

ATTENZIONE! PRIMA DELLA CONSEGNA DI UNA NUOVA FD2200, ESEGUIRE I SEGUENTI CONTROLLI:

- 1) Livello olio motore (15W40):
- 2) Livello olio idraulico (ISO VG 46);
- 3) Inversione ventola radiatore, spingendo il pulsante sul cruscotto e controllando che la ventola riparta con ruote sterzate al massimo e motore al minimo;
- 4) Funzionamento turbina;
- 5) Funzionamento piatto;
- 6) Liquido radiatore.

SPIEGAZIONE PER IL CLIENTE DURANTE LA CONSEGNA DELLA MACCHINA:

- 1) Le lame e la turbina si inseriscono solo con il cesto chiuso e l'operatore seduto.
- 2) La macchina è dotata di una doppia sicurezza che entra in funzione in caso di surriscaldamento motore: la doppia sicurezza innesca lo spegnimento istantaneo del motore e l'accensione di un avvisatore acustico. Quando scatta questa sicurezza occorre controllare il livello del liquido del radiatore (Attenzione, non togliere il tappo dal serbatoio di espansione per evitare ustioni).
- 3) Consigliamo l'intervento dell'officina assistenza per eseguire lo spurgo del circuito di raffreddamento e il controllo del funzionamento della centralina, del motore idraulico della ventola radiatore.
- 4) Se la temperatura del liquido di raffreddamento nello strumento sale, non eseguire il ciclo di pulizia manualmente (il ciclo deve avvenire automaticamente).
 - Se si vuole eseguire manualmente la pulizia, premere per un istante il pulsante (non mantenerlo premuto).
- 5) Freno di emergenza (pedale con leva rossa).
 - Questo pedale non deve essere usato come freno di servizio, ma solo in caso di emergenza; durante l'uso della macchina, usare sempre come freno i pedali di avanzamento e retromarcia.
- 6) Per non sollecitare i punti di attacco del piatto, la leva del distributore idraulico durante l'uso della macchina deve essere nella posizione flottante.
- 7) Controllo lame e pulizia del piatto, mettendolo in posizione verticale (spiegazione).
- 8) Pulizia griglia cesto (spiegazione).
- 9) Traino in caso di avaria del motore (vedi libretto).

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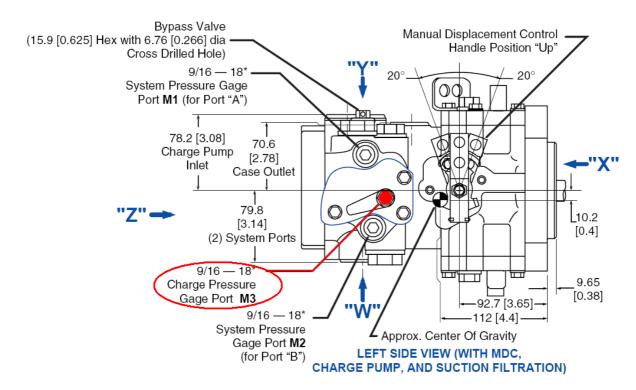




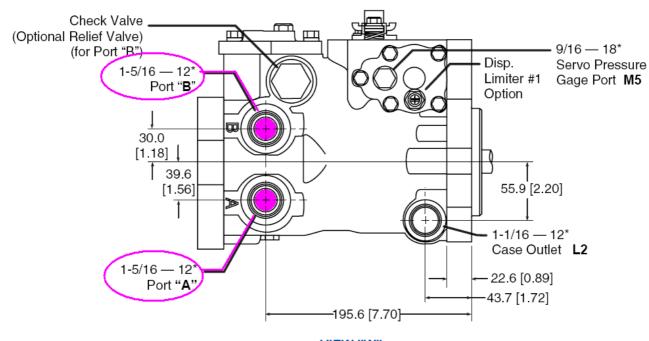
HOW TO CHECK THE PUMP PRESSION ON THE LAWNMOWER FD2200

If the machine has difficulties in moving forward, please carry out the following controls:

- 1. Check if the levers which allow the movement to go from the forward pedal to the pump work properly.
- 2. Start the engine and put a pressure gauge on the "Gage Port M3" (in red in the below picture), then press the forward pedal: the pressure measured should be equal or higher than 20 BAR (between 20 and 25 bar).



To ensure a correct check of the pressure, detach the two pressure pipes (gate A and B in pink in the picture below), plug them and repeat the controls listed in point 2; alternatively make a hole in the taps A and B, put a pressure gauge on both of them and check the pressure: it should be 280 BAR.

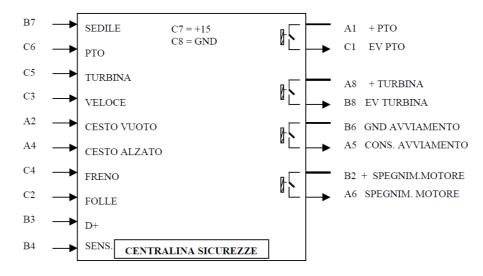


VIEW "W"
BOTTOM VIEW (WITH MDC AND SUCTION FILTRATION)





FD2200 MICRO-SWITCHES ELECTRONIC CONTROL UNIT

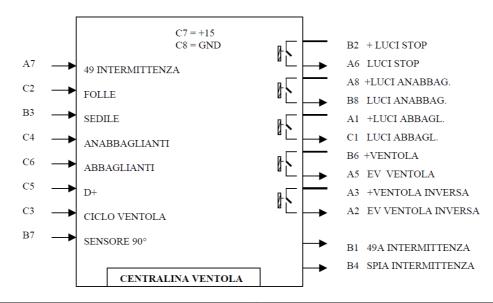


PIN	INPUT	ТҮРЕ
В7	Seat	Activated via microswitch
C6	РТО	Activated via button
C5	Turbine	Activated via button
A2	Empty grass-catcher	Activated via microswitch
A4	Raised grass-catcher	Activated via microswitch
C4	Brake	Activated via microswitch
C2	Neutral position	Activated via microswitch
В3	D+	D+ alternator
B4	Sensor	Hydr. oil high temp. sensor
PIN	OUTPUT	ТҮРЕ
A1	+PTO	+12 volt PTO relay
C1	PTO electrovalve	60W 12 v solenoid
A8	+ Turbine	+12 volt turbine relay
В8	TURBINE electrovalve	60W 12 v solenoid
В6	GND starting	Earth/ starting relay
A5	Consent to engine starting	500mA max coil
B2	+ engine switch off	+12 volt engine switch off relay
A6	Engine switch off	2amp max coil





FD2200 LIGHTS&FAN ELECTRONIC CONTROL UNIT



PIN	INPUT	TYPE
A7	49 direction arrows	Activated via toggle switch
C2	Neutral position	Activated via microswitch
В3	Seat	Activated via microswitch
C4	Dipped headlights	Activated via selector switch
C6	Beam headlights	Activated via selector switch
C5	D+	Signal D+ alternator
С3	Fan cycle	Activated via temp. toggle switch
В7	Bulb 90°	Activated via thermocouple
PIN	OUTPUT	ТҮРЕ
B2	+stop lights	+12 volt stop lights relay
A6	Stop lights	Lamp max n.2x21w
A8	+ dipped headlights	+12 volt dipped headlights relay
В8	Dipped headlights	Lamp max n.2x55w
A1	+ beam headlights	+12 beam headllights relay
C1	Beam headlights	Lamp max n.2x60w
В6	+ Fan	+12 volt fan relay
A5	Fan electrovalve	Solenoid 60W 12v
А3	+ fan inversion	+12 volt inverted fan relay
A2	Fan inversion electrovalve	Solenoid 60W 12v
B1	49a hazard lights	Lamp max n.4x21w
B4	Hazard lights warning light	Warning light lamp max 3W





AGRIGARDEN MACHINES

FD2200 - HOW TO REPLACE THE CLUTCH DISCS

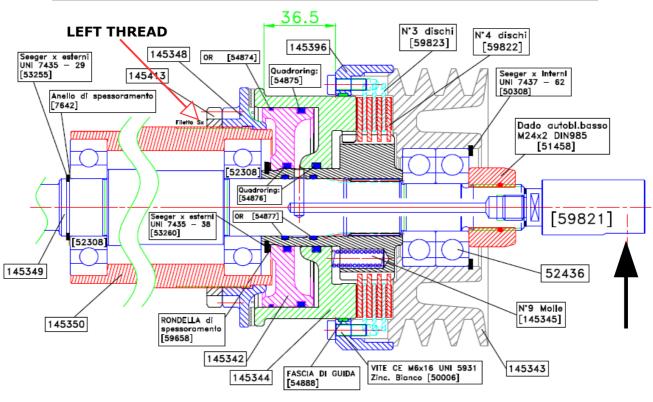
When the engine is not running:

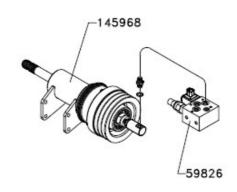
- 1. Block the cardan shaft.
- 2. Remove the rotating connector [59821] (REMEMBER to stop the oil flux to avoid oil leakages!)
- 3. Loosen the 4 screws [50006] and move the bell to the left [145396]
- 4. Loosen the self-locking nut M24 [51458]
- 5. Remove the pulley body 145343 (the washers included [50308])
- 6. Now replace the discs (ATTENTION: they must be placed in the appropriate position). See the scheme below-

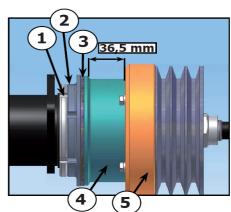
ATTENTION: KEEP THE DISCS AWAY FROM OILS OR LUBRICANTS

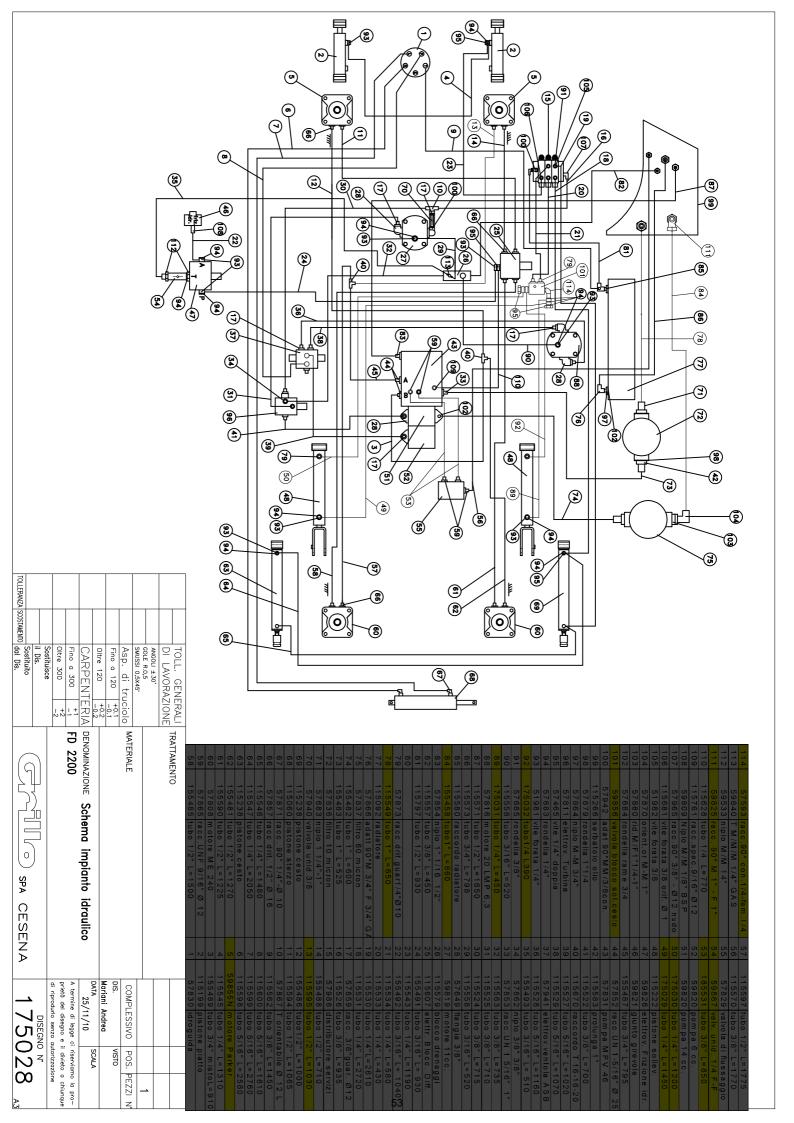
Now replace all the pieces following the above-mentioned indications and fix teh self-locking nut M24 [51458] with a tightening torque of 27Kgm.

HYDRAULIC CLUTCH ASSEMBLING SCHEME













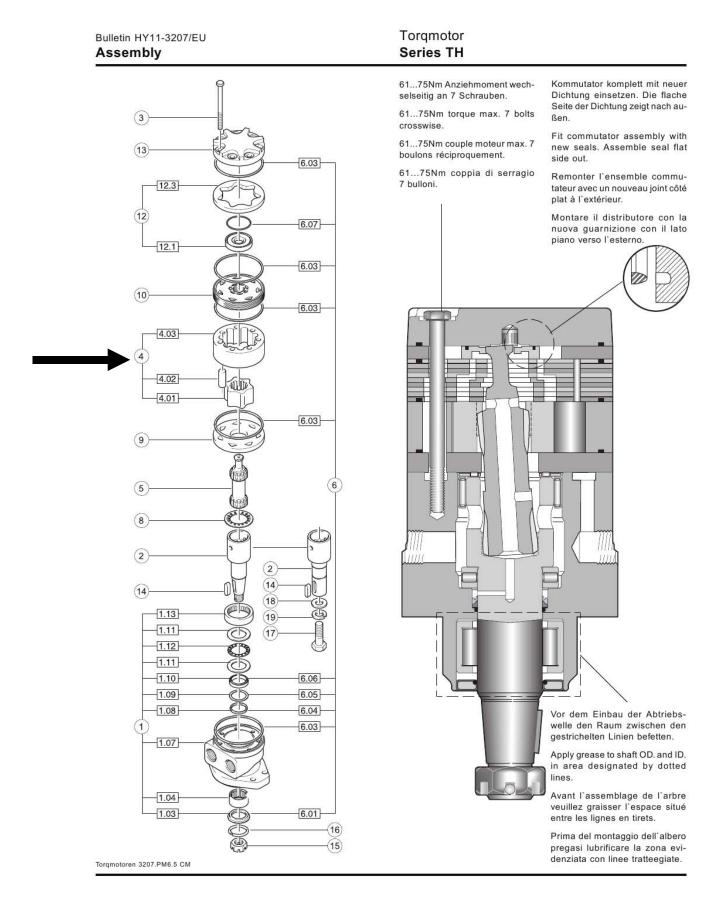
FD2200 HYDRAULIC DIAGRAM LEGEND

114	Fitting 90°
113	Fitting T 1/4
112	Nipple
111	Fitting
110	Pipe 1/4
109	Fitting
108	Nipple
107	Fitting 90°
106	Drilled screw
105	Drilled screw
104	Fitting
103	Adapter fitting
102	Washer ¾
101	Grass catcher lifting block valve
100	Fitting 90°
99	Oil tank
98	Washer 1"1/4
97	Nipple
96	Turbine Electrovalve
95	Screw 1/4" double
94	Washer 1/4"
93	Drilled screw 1/4"
92	Pipe ¼ L=450
91	Washer 3/8"
90	Pipe L=520
89	Pipe L=450
88	Engine 20 LMP 6,3
87	Pipe 1/2" L=1650
86	Pipe 3/4" L=798
85	Radiator fitting
84	Pipe 1" L=860
83	Nipple
82	Pipe 3/8" L=450
81	Pipe L=930
80	

79	Fitting
78	Pipe L=650
77	Radiator
76	Fitting 90°
75	Filter 60 micron
74	Pipe L=600
73	Pipe L=525
72	Filter 10 Micron
71	Nipple
70	Non return valve
69	Grass catcher piston
68	Steering piston
67	Fitting 90°
66	Fitting ½"
65	Pipe 1/4" L=1480
64	Pipe 1/4" L=2050
63	Grass catcher piston
62	Pipe 1/2" L=1270
61	Pipe 1/2" L=1225
60	Engine ME 240
59	Fitting
58	Pipe 1/2" L=1500
57	Pipe 1/2" L=1775
56	Pipe 3/8" L=1770
55	Flow regulating valve
54	Non return valve 1/4
53	Pipe 3/8" L=850
52	Pump 6cc
51	Pump 14cc
50	Pipe 1/4" L=1200
49	Pipe 1/4" L=1450
48	Lifting piston
47	Hydr. clutch electrovalve
46	Hydr. Turning connection
45	Pipe 3/4" L=795
44	Fitting
43	Pump MPV46
42	Extension 1"
41	Pipe 3/8" L=700
40	Fitting T
39	Pipe 5/16" L=1020
38	Pipe 5/16" L=1070

37	Fan electrovalve
36	Pipe 5/16" L=1160
35	Pipe 3/16" L=510
34	Nipple
33	Fitting
32	Pipe 3/8" L=735
31	Pipe 3/8" L=710
30	Pipe 3/8" L=715
29	Pipe 3/16" L=520
28	Coupling 3/8"
27	Engine 11cc
26	Draining valve unit
25	Diff-lock electrovalve
24	Pipe 3/16" L=930
23	Pipe 1/4" L=1190
22	Pipe 3/16" L=1040
21	Pipe 1/4" L=580
20	Pipe 1/4" L=430
19	Pipe 1/4" L=2610
18	Pipe 1/4" L=2720
17	Fitting 3/8"
16	Pipe 3/8" L=935
15	Distributor for services
14	Pipe 1/2" L=710
13	Pipe 1/2" L=1030
12	Pipe 1/2" L=1000
11	Pipe 1/2" L=1065
10	Fitting T
9	Pipe 3/8" L=1450
8	Pipe 5/16 L=1610
7	Pipe 5/16 L=2760
6	Pipe 5/16 L=2580
5	Parker engine
4	Pipe 1/4" L=1310
3	Pipe 3/4"
2	Cutting deck piston
1	Hydraulic steering

FD2200 FRONT WHEELS HYDRAULIC MOTORS



SEALING KIT FOR THE FRONT WHEELS HYDR. MOTOR > RPKPSK000115 SEALING KIT FOR THE REAR WHEELS HYDR. MOTOR > RPKPSK000092



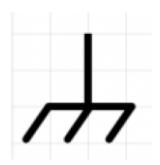


INSTRUCTIONS FOR THE USE OF THE WIRING DIAGRAMS

- 1) Read the legend attentively to identify the various components
- 2) Check the colour table to identify the cable's colour (e.g. N = black RN = red-black)
- 3) Once you have identified the component in the diagram, check the cable, the fuses, the micro switches and their warning lights.

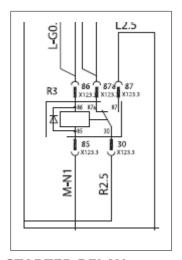
Tools: testers and current clamps

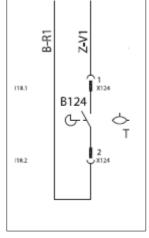
On the micro -switches you will find the abbreviation NC – NO. This indicates if the circuit of the micro – switch is "normally closed or "normally open"

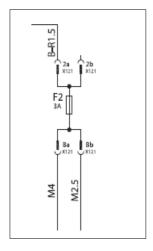


This symbol indicates the earth ground

E.g.
N1 = black cable (negative) 1 mm diametre
R 1,5 = red cable (positive) 1,5 mm diametre







STARTER RELAY

SEAT'S MICRO-SWITCH

FUSE

To have a quick diagnostic, study carefully the problem. For example, if the motor does not start, after checking the battery, the fuses and the wires connections, check the proper functioning of the seat micro-switch and of the forward pedal micro-switch.

If both the PTO and the turbine do not engage, check the "full grass-catcher" micro-switch (inside the grass catcher) ant the "closed grass catcher" micro-switch (under the grass catcher, on the rear). If only one function is not engaging (PTO or turbine), try to understand first if it is a mechanical or an electrical problem. To exclude an electrical problem, check if you have power, via a tester. Also, do not forget to consult the electric diagram and follow the colours of the wires.





TESTING THE PROPER FUNCTIONING OF THE FULL GRASS-CATCHER MICRO-SWITCH



FD900 - FD1100 - FD13.09 - FD2200

If both the blades and the turbine do not engage, check the functioning of the full grass-catcher micro-switch following the instructions: on the outer connection, on the right side of the grass-catcher, connect the white/red wire with the blue/red wire

FD2200 TS

If both the blades and the turbine do not engage, check the functioning of the full grass-catcher micro-switch following the instructions: on the outer connection, on the right side of the grass-catcher, connect the white wire with the orange wire.





BELTS CHECK

During work, belts normally warm up. However, an excessive overheating can cause the damaging of the belt.

Belts overheating occurs when they slip because a shaft is blocked or because it hardly turns. Belts overheating can also be caused by an excessive tension or by a wrong position of the belt itself (for example when they work out of alignment).

In this specific case, the belt will be marked in its inner side, or externally, on its back.

If the belt breaks crosswise, with a clean cut, either it is a faulty piece or it comes out from its pulley and it gets therefore stuck.

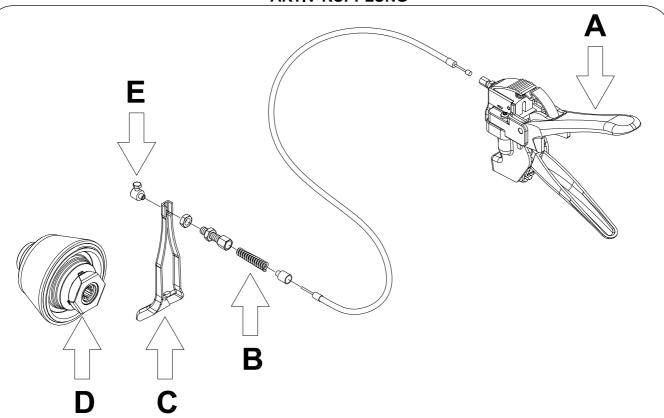
Ensure the pulleys have no deformations or burrs.

Check the base of the pulley: if it is polished, the belt is slipping. The pulley could therefore be worn or the belt is not suitable for this pulley.

Do not forget to explain to the operator that the clutch must not be engaged at engine maximum rpm and that it must be engaged some meters before getting into the area to cut.



ACTIVE CLUTCH FRIZIONE ATTIVA EMBRAYAGE ACTIF AKTIV-KUPPLUNG



CAUTION

Keep the A lever firmly depressed during work.

Do not use the machine whilst
only partially pressing the lever.

The B spring must be compressed to 80% while pressing the A lever to prevent the clutch from sliding in case the lever A is partially released during work. The lever C when in neutral position must not come in touch with the bearing D.

If necessary adjust the distance using the clamp E.

ATTENZIONE

Durante il lavoro la leva A va mantenuta ben premuta.

Non lavorare mai con la leva parzialmente premuta.

La molla B dev'essere compressa all'80% quando la leva A è premuta, in modo da compensare un eventuale rilascio parziale della leva A durante il lavoro evitando così lo slittamento della frizione.

La leva C nella posizione di folle non deve toccare il cuscinetto D.

Eventualmente regolare la distanza tramite morsetto E.

ATENCIÓN

Durante el trabajo mantener la palanca A bien presionada.

Nunca trabajar con la palanca parcialmente presionada.

El muelle B debe estar comprimido al 80%

para evitar que el embrague deslice

si la palanca A no es presionada a fondo

durante el trabajo.

La palanca C en posición de punto muerto no debe

tocar el rodamiento D.

Al ser necesario, ajustar la distancia por medio

del suietacables E.

ATTENTION

Le levier A doit être bien maintenu pendant le travail.

Ne travaillez pas avec le levier à moitié course.

Le ressort B doit être comprimé à 80% pour éviter le glissement de l'embrayage si le levier A est partiellement relâché pendant le travail.

Le levier C en position de point mort ne doit pas toucher le roulement D.

Si nécessaire, régler la distance au moyen du serre-câble E.

VORSICHT

Der Hebel A während der Arbeit immer gut gedrückt halten.
Nie mit nur teilweise gedrücktem Hebel arbeiten.
Die Feder B muss bis zu 80% komprimiert sein, wenn
den Hebel A gedrückt wird, so dass die Kupplung
nicht gleitet, sollte der Hebel A während der Arbeit
zufällig teilweise losgelassen werden.
Der Hebel C in Leerlauf muss nicht mit dem
Lager D in Berührung kommen.
Wenn nötig, den Abstand durch die Klemmschraube E.