USE AND MAINTAINCE MANUAL

Compakta series irrigation hose reel

(Universal Sales T3.0"/984' and T3.0"/1378' travelers)

(Version 0 – 2015-05-11)

Via Togliatti 4, z.i. San Giacomo, 42016 Guastalla, RE, Italia

UNIVERSAL SALES

USA PNW Representative

www.universalsales.biz

INDEX

INTRODUCTION	PAGE	3
ATTENTION	PAGE	3
SYMBOLS ON THE MACHINES AND RELATIVE MEANING	PAGE	4
IMPORTANT ADVICE	PAGE	4
USE CONDITIONS	PAGE	6
IDENTIFICATION DATA AND MACHINE CONTROLS	PAGE	6
COMPAKTA SERIES: CONTROLS AND DETAILS OF THE MACHINE	PAGE	7
1. INFORMATION AND TECHNICAL DATA	PAGE	14
1.1 DIMENSIONS AND WEIGHT	PAGE	14
2 FREIGHT, DELIVERY AND ASSEMBLING OF THE MACHINE	PAGE	15
3. MACHINE PREPARATION TO WORK ON THE FIELD	PAGE	20
3.1 MACHINE SET UP ON THE FIELD	PAGE	20
3.2 AUTOMATIC STOP OF THE MACHINE	PAGE	23
3.3 CONTROLS TO BE DONE FOR THE SET UP	PAGE	23
3.4 ADJUSTMENT OF THE AUTOMATIC SPEED COMPENSATOR	PAGE	24
3.5 EMERGENCY PE HOSE REWINDING BY PTO	PAGE	25
3.6 MACHINE USE AT NIGHT	PAGE	25
4.0 MAINTAINANCE	PAGE	26
5.0 MACHINE STORAGE AT THE END OF THE IRRIGATION SEASON	PAGE	26
6.0 PROBLEMS AND SOLUTIONS	PAGE	26
7.0 IMPORTANTS SUGGESTIONS	PAGE	27
8.0 ADDITIONAL RISKS	PAGE	28
9.0 SHIFTING OF MACHINES CONNECTED TO PRESSURISED SYSTEMS	PAGE	29

INTRODUCTION

Thanks to chose an IRRILAND machine. This manual is a fundamental part of the machine and has to follow it in case you give/sell it to other users.
Before to do any operation the assembling person and the user have to read and follow up strictly the indications given here following.

A T T E N T I O N

Don’t start using the machine if you haven’t carefully read this manual first. Don’t work with the machine close to kids or close to not authorized personnel. Avoid that the kids go close to the machine.

Attention when you disconnect the flex supply hose.

If the machine is equipped with a closing (or shut off) valve the flex supply hose remains pressurized at the end of the cycle so DO NOT DISCONNECT the flex supply hose before you release the pressure

Attention to the sprinkler

The pressurized water of the sprinkler can cause severe injuries and damages to persons and things.

Precaution along the freight

The machine can’t circulate (move around) on public roads. Don’t exceed the towing speed of 10 km/h on plain roads and 3 km/h on not leveled fields.

Never service the machine when it’s working

To do any maintenance pls stop the machine and disconnect it from the supply line. It’s necessary to mount all the protections before the machine start to work again.

Precaution with the electric power lines

The throw of the water hasn’t to touch the electric power lines and/or any other item of electric power supply at anytime.

SYMBOLS ON THE MACHINE AND RELATIVE MEANING

ATTENTION 1) This symbol means different risky situations:
1a) the operations and the part that can be risky for the user safety. When you see this symbol, please read carefully the relative information as there's an incident risk.

1b) Don't open the couplings in case there's pressure in the pipeline. Before you open the couplings you have to be sure there's no pressure in the pipeline.

1c) Electricity risk: you can never place the sprinkler near to any energy source. You must be sure that the sprinkler water will not be in contact with any energy source, house, or working place.

1d) Read carefully this manual before you use the machine.

1e) Before you start the machine and you do any service on it, pls stop it and disconnect it from the feeding pipeline.

2) This symbol indicates the risk relative to moving parts. Don't use the machine before you mounted again the safety parts and guards. When you use a winch pls be sure it's allowed by the present norm.

3) This symbol means moving parts. Pls stay away from the machine when is working.

4) This symbol indicates the point to connect the lifting hooks. Don't connect the hooks in other points of the machine because it can be very dangerous.

5) This symbol indicates the points that need to be lubricated: look at the manual carefully and follow up the instructions. A correct lubrication improve the machine efficiency, reduce the risk to brake some parts and extend a lot the machine working life.

IMPORTANT ADVICE

Read and follow up precisely the instructions labeled on the machines.
They don't substitute the manual but focus the attention on some parts and info that are important for the use, the maintenance and the safety.

BRIEF USE INSTRUCTIONS

READ THE COMPLETE INSTRUCTION MANUAL OF THE MACHINE BEFORE ANY OPERATION

1 - Position the machine, aligning the drum with the strip to irrigate
2 - Lower the front jack (and eventually stabilizers), unfasten the hitch and drive the tractor forward
3 - Adjust the track width of the sprinkler cart as wide as possible
4 - Lower the rear anchoring legs and plant them properly in the ground
5 - Take the safety pin off the cart loading system (for automatic loading system only)
6 - Be sure the gear box is disengaged: the p.t.o. should turn easily with the hand wheel
7 - Insert the hand wheel on the p.t.o., turn it a bit counterclockwise and put the safety dog of the crown gear in pulling out position
8 - Discharge the sprinkler cart onto the ground by using the p.t.o. hand wheel or the hydraulic system, if equipped. Pay attention to the cart and lifting system height: it's mandatory the cart can be loaded (with automatic cart lifting system) and the lifting system (or the cart itself) can disengage the gear box or the drive system at the run end
9 - Adjust the irrigation sector on the sprinkler
10 - Turn the computer on, if equipped. Turn on the simple computer Controller after the pulling out.
11 - Release the sprinkler cart safety chain, if equipped, then hook the sprinkler cart with the tractor and unroll the polyethylene hose (3 km/h - 2 mph) slowly
12 - Put the crown gear safety dog, if equipped, in working position.
13 - Connect the flexible feeding hose and start the irrigation
14 - 3 speeds gear box: put the left lever in 2nd gear and engage the gearbox with the right lever.
1 speed gear box: engage the gearbox with the lever on top
15 - On the 3 speed gear box, find the best gear ratio by trying the different gears and adjusting the bypass valve. Most systems will operate best using the 2nd gear. Always disengage the gear box with the right lever before you change the speed with the left lever.
16 - The speed indicator, if equipped, shows the real polyethylene pull in speed on the first winding diameter of the drum. For the larger diameters look at the labeled speed chart.
17 - Machines with computer: follow the computer instructions.
18 - Automatic cart lifting: after the run the sprinkler cart will automatically load. Insert the safety pin and/or fix the safety chain to lock the cart in place.
Hydraulic cart lifting: fix the safety chain, if equipped, and load the sprinkler cart.
19 - Lift the anchoring legs, turn the upper frame and prepare the machine to be shifted to next position. MAX SPEED ON GOOD FLAT ROADS 10 KM/H (6 MPH)

INSTRUCTIONS FOR REWINDING BY P.T.O.

A - Be sure the gear box is disengaged: the p.t.o. should turn easily with the hand wheel
B - Connect the pto shaft only if the tractor is stopped or you are sure the pto can't turn
C - To prevent damage, stop the motorized roll up with 2-3 meters (6-9 feet) of pipe unrolled. Complete the roll up process by hand with the p.t.o. hand wheel.

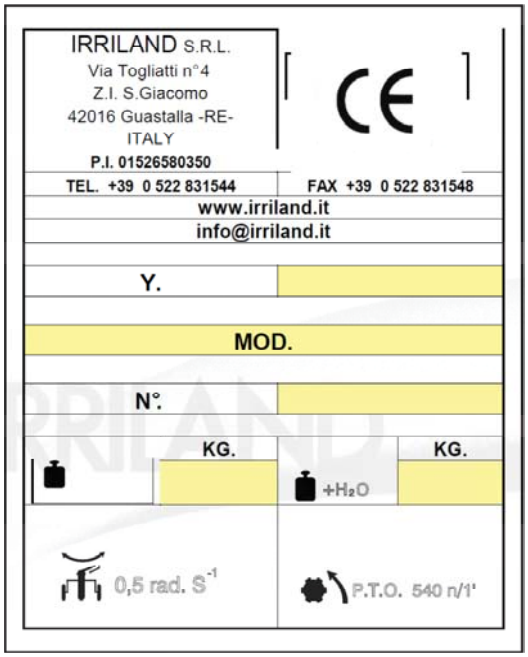
WARNING

Don't forget to check the oil level and the chain tension and to grease the points stated in the manual (crown gear, bearings, hubs, jacks, brake, no end screw) EVERY 20 WORKING HOURS

USE CONDITIONS

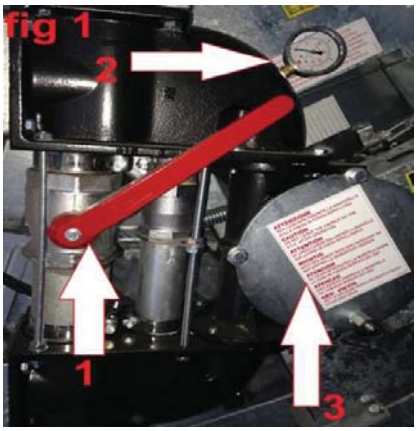
This machine has been designed to be used with water for irrigation. In case of sand or other solids in the water, the machine can function up to 12% solids with reduced efficiency and working life. With more than 12% solids the functioning of the machine is not warranted. The machine can be used with one to three sprinklers, multiple foliage nozzles, or with an irrigation boom. For all these uses please look at the specific instructions.

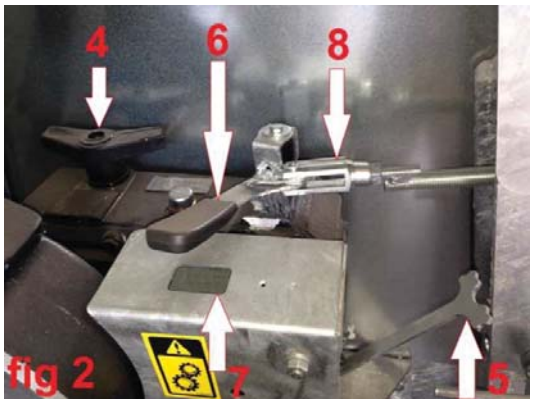
IDENTIFICATION DATA AND MACHINE CONTROLS



Y. > production year
Mod. > machine model (OD in mm and length in m)
N°. > serial number composed by the corder confirmation number and the machine structure (last three numbers / letters)
Kg. > dry machine weight / weight of the machine full of water
0,5 rad S-1 > max rotation speed of the sprinkler
PTO 540 n/1' > max rpm of the power take off

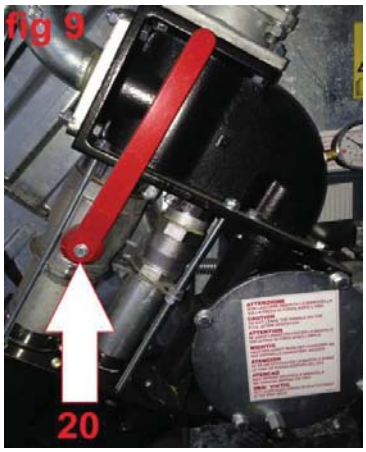
COMPAKTA SERIES: CONTROLS AND DETAILS OF THE MACHINE



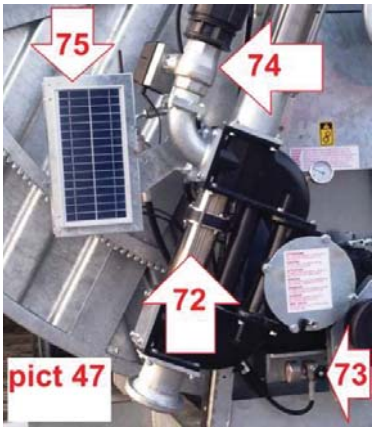


1.Lever of the turbine by pass (half closed in working position)
2.Manometer
3. Safety instructions
4. Gear lever: positions 1, 2, 3

5. Brake adjustment
6. Engagement / disengagement lever. Gear box disengaged position
7. Speed indicator
8. Joint between disengagement lever and disengagement rod



20. By-pass lever in “open” position. In this position the turbine doesn’t work and the machine can’t roll up the polyethylene hose.

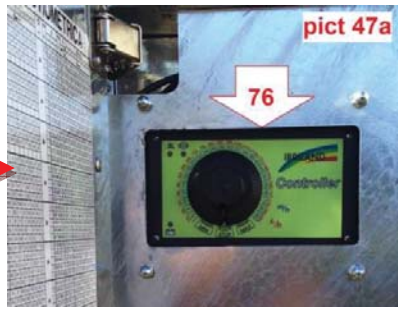


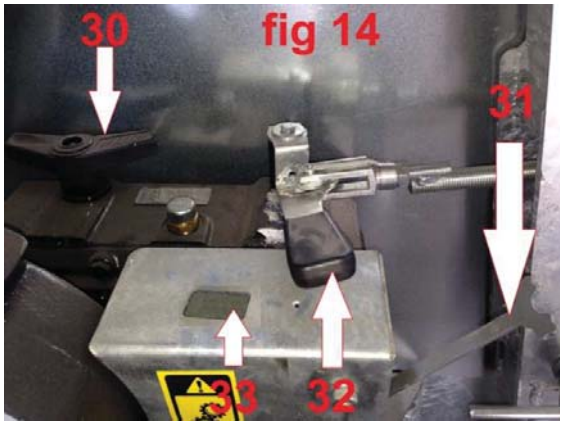
72. Bypass electric valve (if the machine has a computer)
73. Hydraulic brake (optional)
74. Electric discharge valve (optional with the computer)
75. GSM computer w/galvanized box, battery and solar panel

Available computers (options):

76. Controller

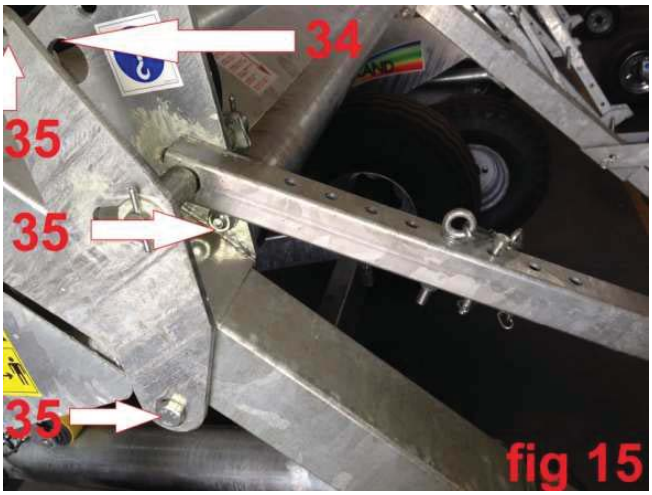
77. Controller 2,3, plus, gsm

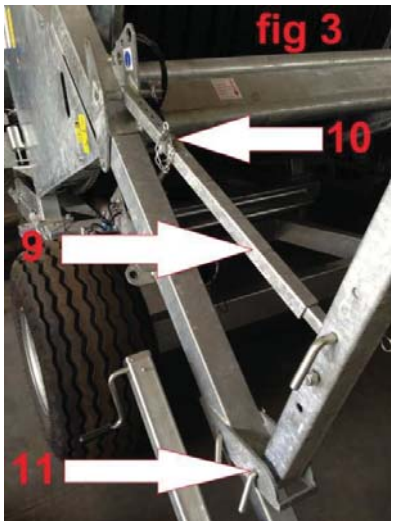




30. lever of the 3 speeds gear box in position 2
31. Brake adjustment
32. Engagement / disengagement lever. Gear box in engaged position
33. speed indicator

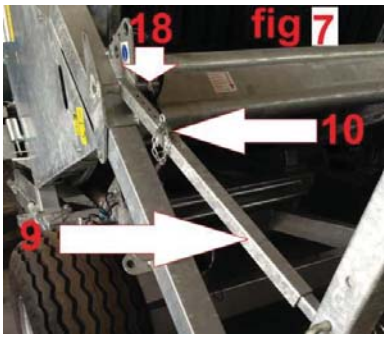
34. Hook hole to lift the machine
35. Bolts to fix the anchoring leg

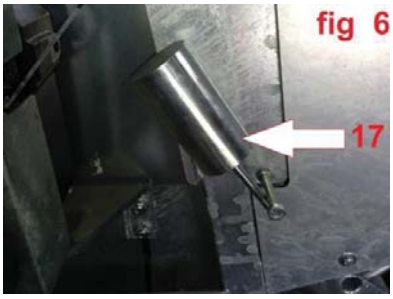




9. Automatic disengagement rod connected with the automatic lifting system (it works at the end of the pull)
10. Pin in freight position
11. pivoting point of the sprinkler cart automatic lifting system
18. Gear box disengagement rod

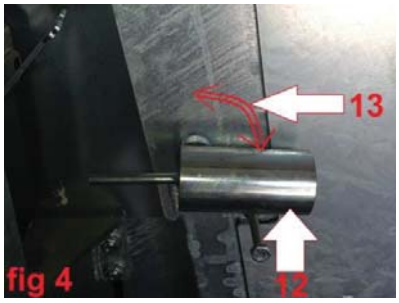
19. Pin position for any operation except freight



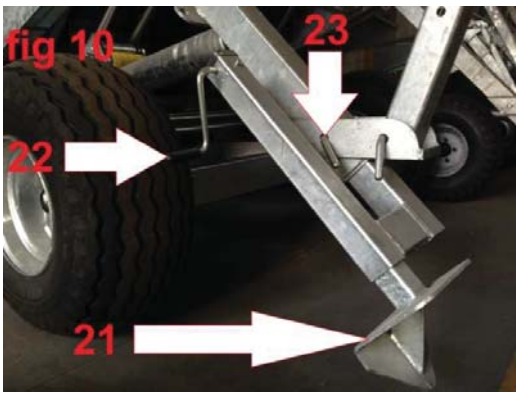


12. Safety dog (non return tooth) in working + freight position
13. Rotation run of the safety dog

17. Safety dog (non return tooth) in position to drop off the sprinkler cart and pull out the polyethylene hose.

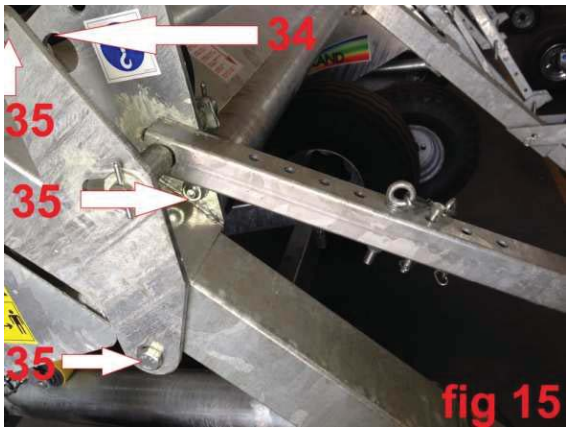


14. Hand wheel for pto (power take off) shaft in transport and irrigation position.
15. Manometer to know the working pressure
16. Central elbow and drum water inlet (central seal inside)



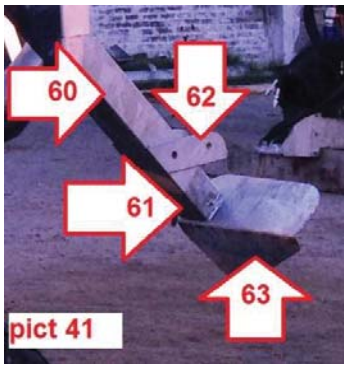
21. Anchoring jack
22. Crank of the anchoring jack
23. Pin to fix the anchoring leg with its jack

34. Hook hole to lift the machine
35. Bolts to fix the anchoring leg

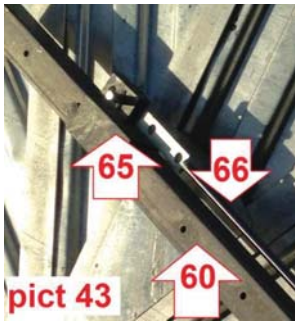


HYDRAULIC ANCHORING LEGS (OPTION): PICT. 41, 42, 43

60. external pipe of the anchoring leg
61 internal long pipe of the anchoring leg
62. joint point for the automatic loading system
63. anchoring jack



64. mandatory distance to be set up when you mount the hydraulic cylinder bracket on the upper side of the long anchoring leg.
Attention: the hydraulic cylinder has to totally extended when you connect the bracket to the anchoring leg. If the anchoring jack pos 63 matches the external anchoring pipe pos 62, it will be damaged!



65. hydraulic cylinder bracket
66. hydraulic cylinder

HYDRAULIC ROTATION (OPTION): PICT. 53, 53a

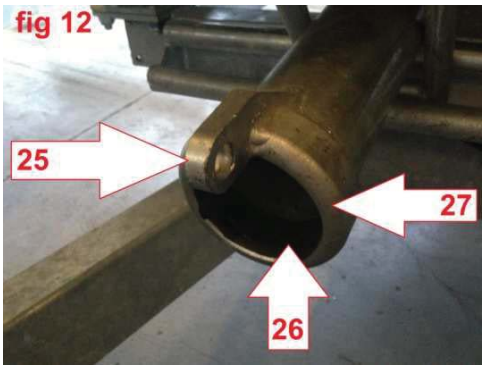
89. Protection for the hydraulic motor rotation

90. Hydraulic rotation motor and below the pinion and the crown gear of the rotation.

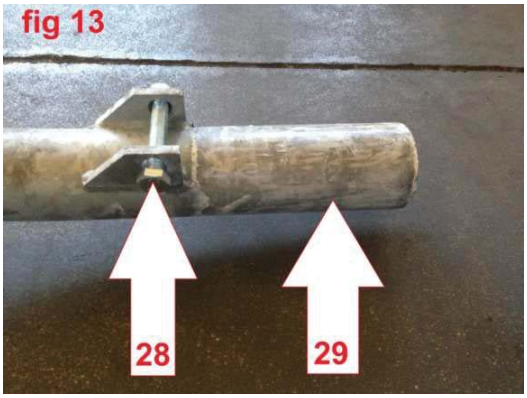
HYDRAULIC FRONT JACK (OPTION): PICT. 67

92. Hydraulic front jack
92a. Hydraulic distributor valve with 2 levers (for front jack and rotation) and 5 m (16’) hydraulic hoses to connect the tractor hydraulic plug.

24. Hand wheel mounted on the pto (power take off) shaft

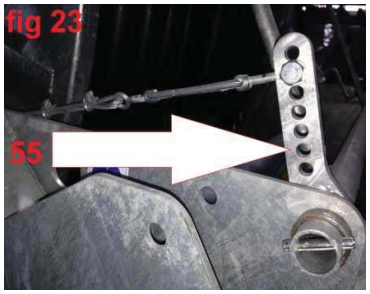


25. Hole to fix the sprinkler cart coupling
26. Double lip seal
27. Quick coupling on the PE hose to connect the sprinkler cart



28. Bolt to fix the sprinkler cart coupling
29. Quick coupling of the sprinkler cart. Lubricate before inserting

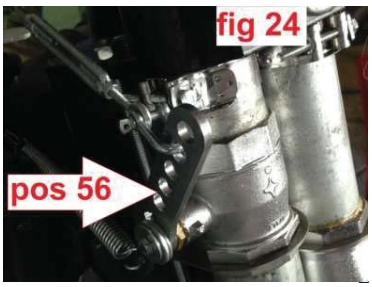
SPEED COMPENSATOR (not included in machines equipped with computer)

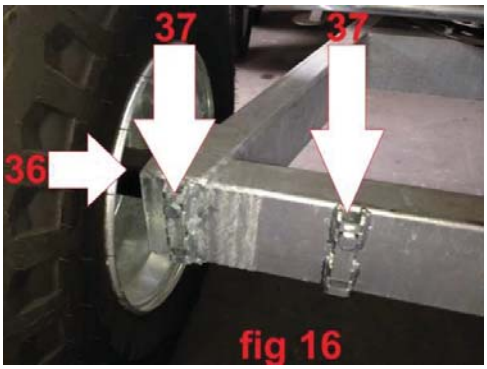


54. Speed compensator

55. Compensator lever on sprinkler cart side

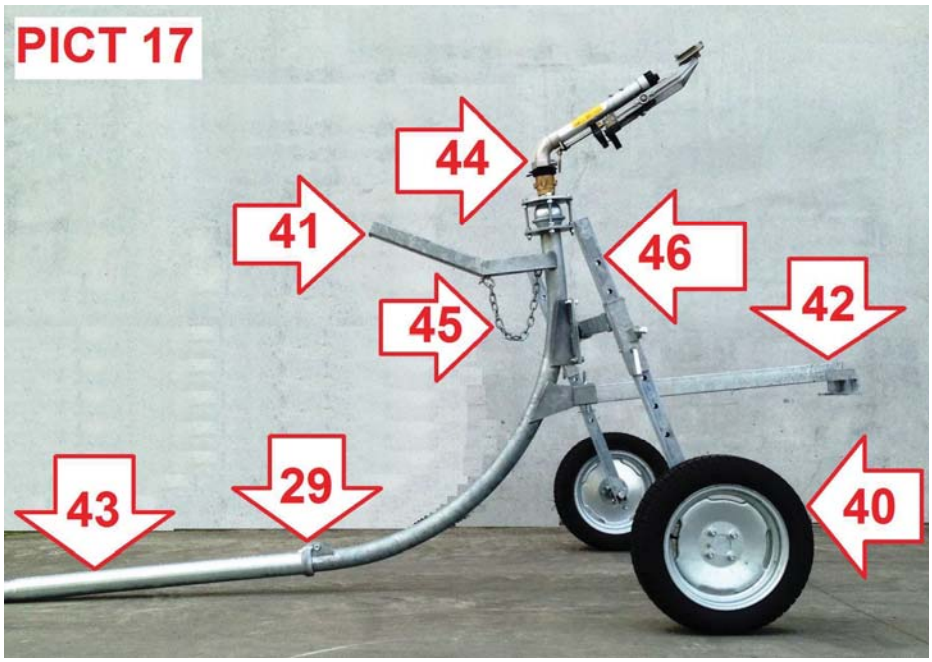
56. Compensator lever on by-pass side



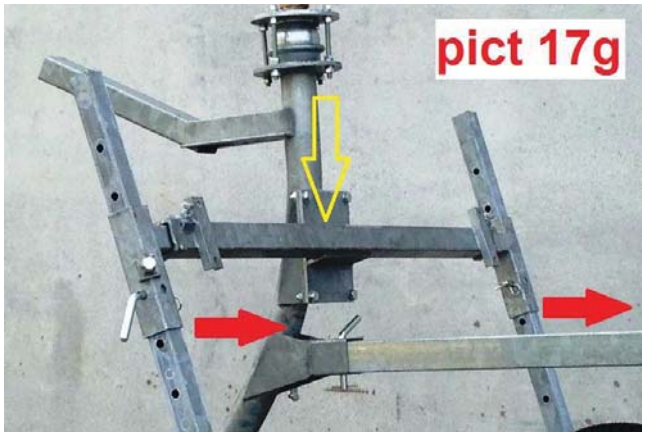


36. Axle of the machine tire
37. Bolts to fix the axle (two positions to allow the chassis height adjustment)

40. tires 41. Sprinkler cart hook 42. Towing bar (on sprinkler cart)
43. Quick coupling on the PE hose 44. Sprinkler and sprinkler coupling
45. Cart safety chain 46. Cart legs with holes for height adjustment



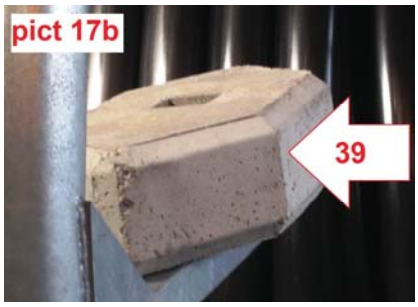
Picture 17g: when assembling the cart pay attention to the position of the flange indicated by the yellow arrow.
The square pipe directly welded on the flange has to be on top side.
This way the legs will be angled as shown by the red arrows.



Optional ballast mounting:

39. Concrete ballast on cart leg, pict. 17a

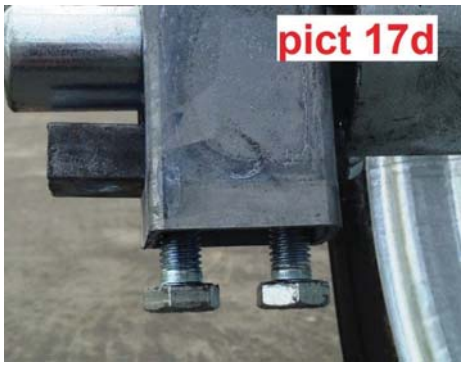
39. Concrete ballast on cart hook, pict 17b

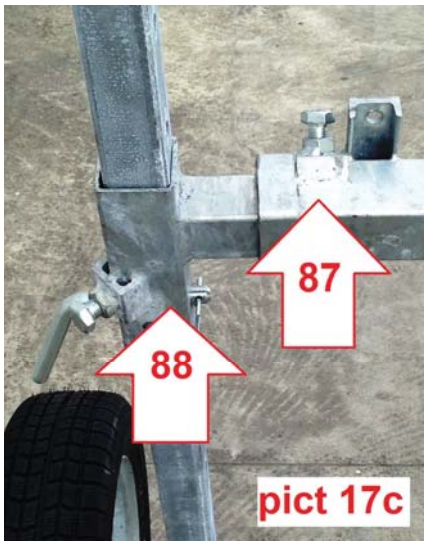


Picture 17d: tire's axles/legs assembling

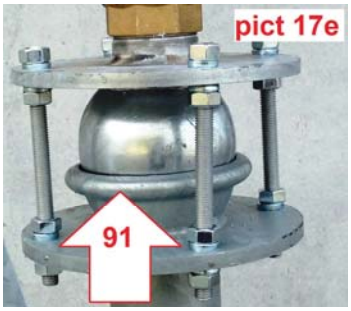
.

87. cart width adjustment
88. cart leg height adjustment

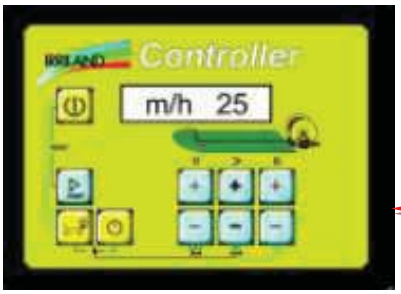




Pict.17f: cart safety chain
91. sprinkler ball coupling to adjust the angle of the sprinkler



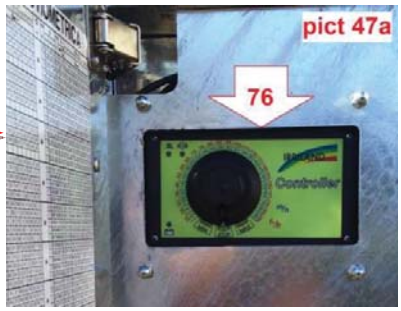
Machines equipped with computer (option):



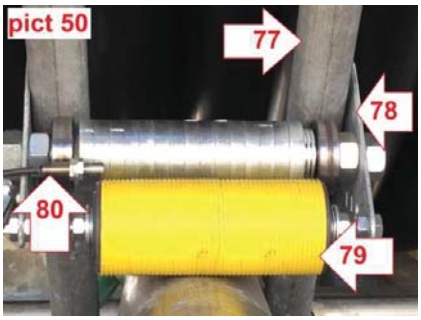
Available computers :

76. Controller

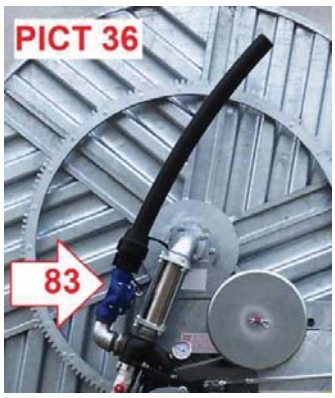
Controller 2,3, plus, gsm



75. Galvanized box and solar panel for computer (battery inside) 77. hose guide fork 78. roller bracket 79. speed reading roller (with two magnets) 80. speed sensor that send two impulses every revolution to the computer 81. bypass valve for machines with Controller 82. Electric motor for bypass valve

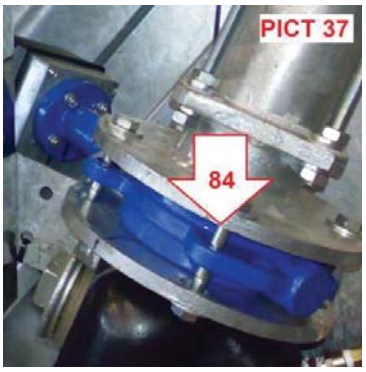


Machines equipped with vacuum or shut off valve (option):



83. Low pressure diaphragm valve (also called vacuum valve or discharge valve)

84. Electric shut off valve (only available with Controller 2, 3, Plus and Gsm).
If the machine doesn't have one of the above listed Controllers, the shut off valve will not be electric



1. INFORMATION AND TECHNICAL DATA

1.1 DIMENTIONS AND WEIGHTS

ATTENTION: you have to carefully look at the weight and dimensions before any unloading and assembling of the machine (See chart). The unloading operations have to be done by qualified persons.

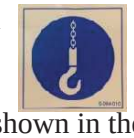
LOOK AT THE MACHINE STRUCTURE ON THE IDENFICATION DATA

STRUCTURE	H1	H2	H3	L1	L2	L3	L5
21	2880 113.38”	2600 102.36”	2400 94.49”	4150 163.38”	2300 90.55”	2850 112.20”	500 19.68”
23S	3000 118.11”	2730 107.48”	2510 98.82”	4150 163.38”	2300 95.55”	2850 112.20”	500 19.68”
23L	3040 119.68”	2780 109.45”	2550 100.39”	4400 173.23”	2550 100.39”	2850 112.20”	500 19.68”
26	3420 134.65”	3150 124.02”	2900 114.17”	4500 177.16”	2550 100.39”	2850 112.20”	500 19.68”
28	3670 144.49”	3400 133.86”	3150 124.02”	4500 177.16”	2550 100.39”	2850 112.20”	500 19.68”
H1	Heigth with tires						
H2	Height with no tires						
H3	Height with no tires, chassis and turntable						
L1	Length with no sprinkler cart						
L2	Max width						
L3	Necessary space for machines loaded in series on flats with 2,45 m width						
L5	Towing bar length to be added to L3						

WEIGHT: always look at the weight indicated in the identification plate on the machine !!

2 FREIGHT, DELIVERY AND COMMISSIONING OF THE MACHINE

Attention: always work with working gloves!!

To facilitate the freight and the loading/unloading some parts can be dismantled: tires, drum and upper chassis, legs….can be delivered dismantled.
The producer or the person in charge will fix the machine on the loading flat paying attention to the instructions. To load and un-load the machine it’s necessary to hang it on the **4 points** indicated with the symbol 

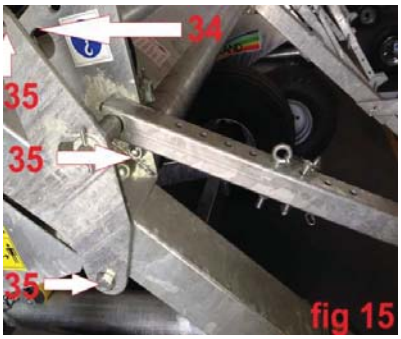


fig 15

For example as shown in the picture n. 15 pos 34

If the machine has been delivered with the mounted chassis pls hang the hooks the same way as above described: 4 points with the symbol indicated above (example pict. 15).

The following instructions are relative to the machine with several dismantled parts. Follow up carefully the relative instructions.

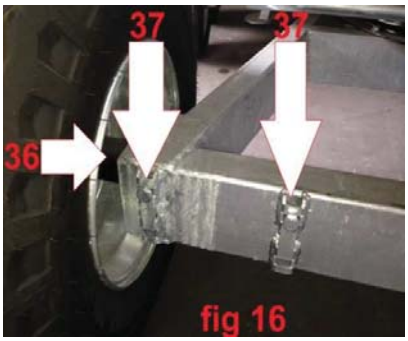
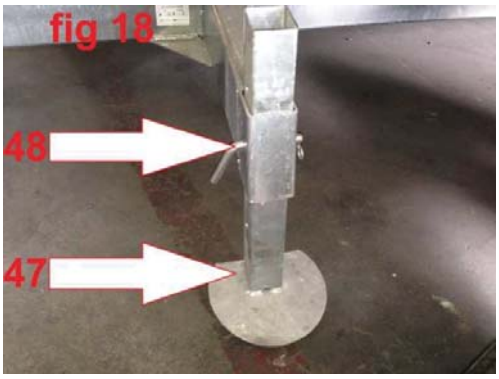


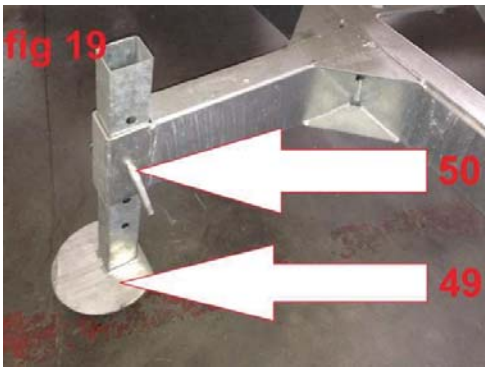
fig 16

Controls to be made when you assemble the dismantled parts:

1) Mount the axles for the tires till the indicated point (pos 36 pict 16) and tight well the bolts to fix them (pos 37 pict. 16). You can adjust the tire’s width but be sure the axle remains At least 3 (1.2”) cm inside the bolt pos 37 pict. 16

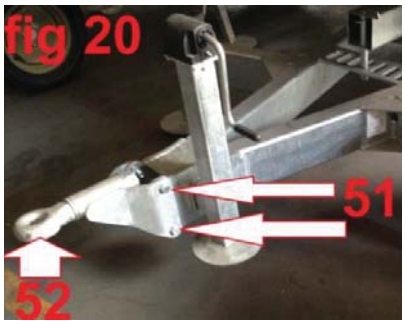
2) Mount the front lateral legs and adjust the height with the pin pict 18 pos 47, 48 and pict 19 pos. 49, 50) to get the chassis horizontal. They might not be included on some machines.

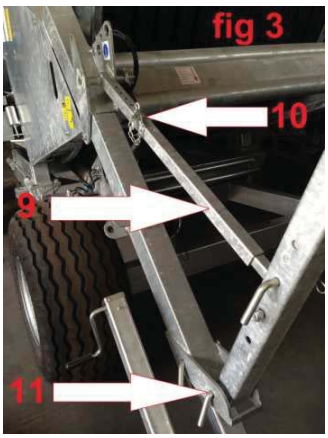




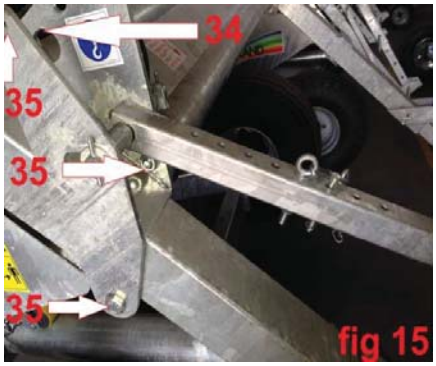
3) Mount the towing bar (pict 20 pos. 52) in its position and tight the bolt (pict 20 pos. 51)

4) Mount the front jack (picture 21 pos 53)

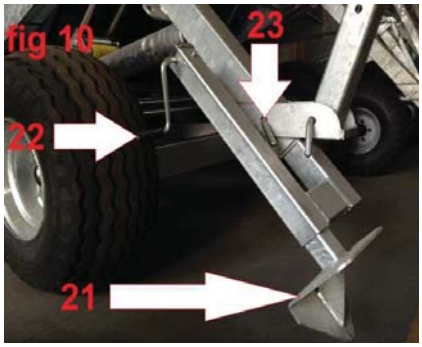




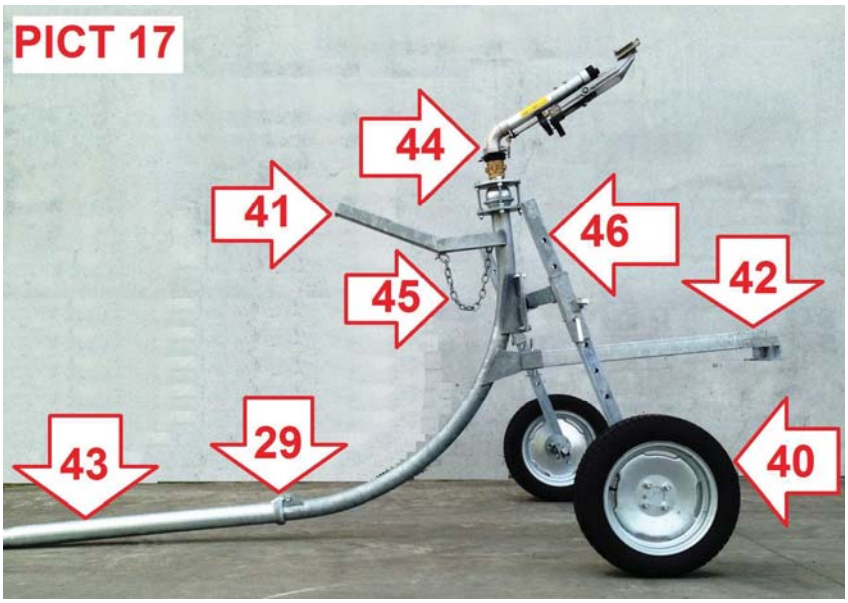
5) Mount the automatic loading system with the pin pos. 11 and the disengagement pipes as you see on pict. 3.
Leave the pin outside its hole as you see in pict. 8



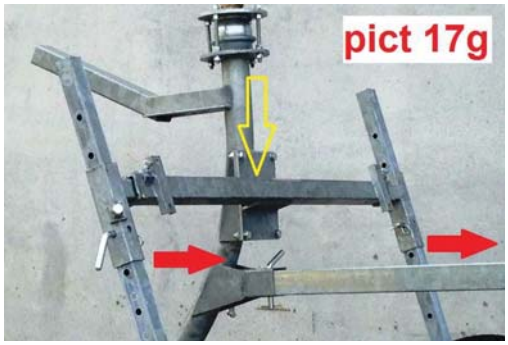
6) Mount pipes to support the legs and them with the pin pos 35 pict 15. Then mount the rear anchoring legs as you see in pict.10
Place the leg as in the picture and fix the jack with the pin 23 pict 10



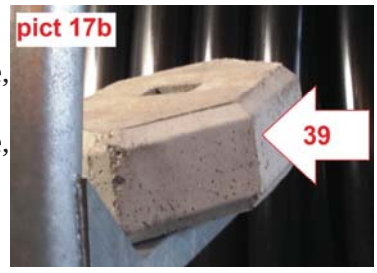
7) Assemble the sprinkler cart as in all the pictures 17. When the cart is fully assembled control the position of the bottom of the central pipe point 29 and the pe hose connection pipe: they have to be close to the ground but don't touch it. In case those parts touch the ground adjust the legs higher.



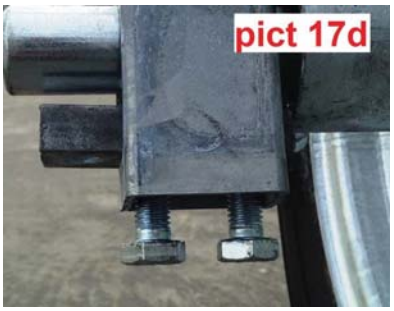
Picture 17g: when assembling the cart pay attention to the position of the flange indicated by the yellow arrow.
The square pipe directly welded on the flange has to be on top side.
This way the legs will be angled as shown by the red arrows.



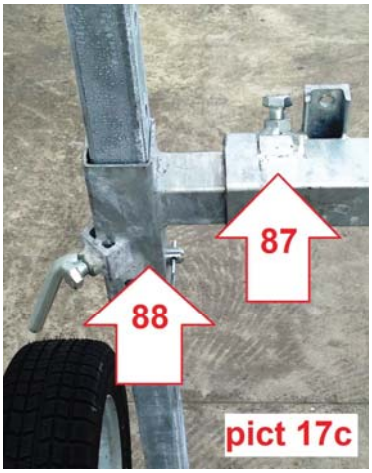
39. Concrete ballast, if available, on cart leg, pict. 17a
39. Concrete ballast, if available, on cart central hook, pict. 17b



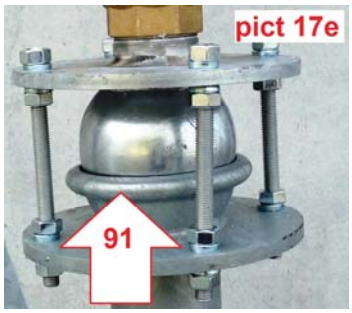
Picture 17d: mount the tire's axles as shown in picture 17d. When position the axle leave some clearance from the leg (right side) and be sure both bolts can tighten it.



Picture 17c:
87. cart track adjustment on horizontal pipe
88. cart height adjustment on vertical legs

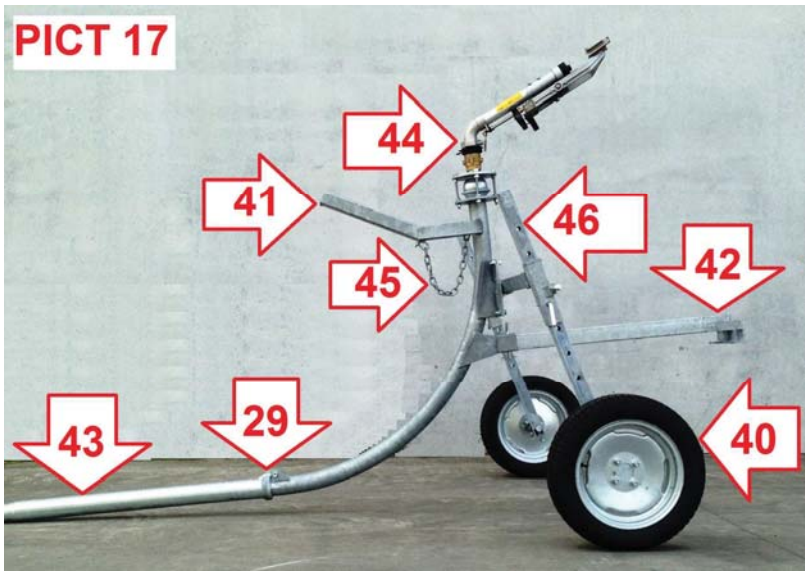


Pict.17f: cart safety chain: it should be open along the pull in and locked (with the chain around the loading system pipe) during the machine shifting.
91. sprinkler ball coupling



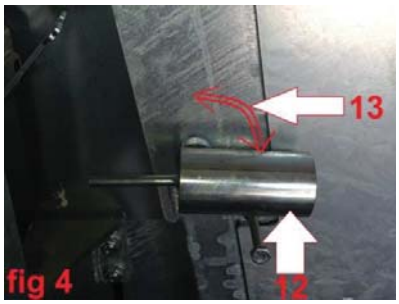
Towing bar

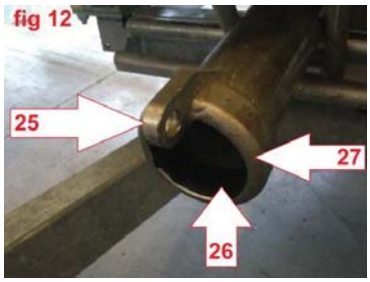
8) Mount the sprinkler: pos 44 pict 17



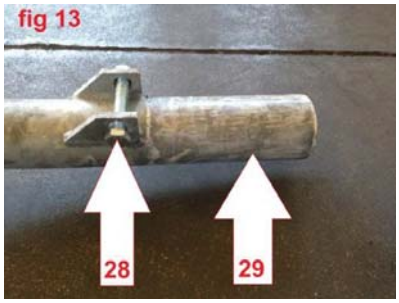
9) Place the hand wheel on the pto shaft pict 11 pos 24

10) Turn the hand wheel clock wise and move the safety dog (non return tooth) from pos 12 pict 4 to the pos 17 pict 6

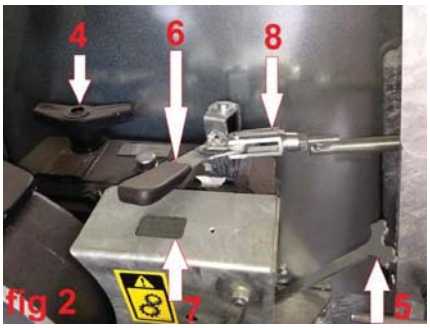




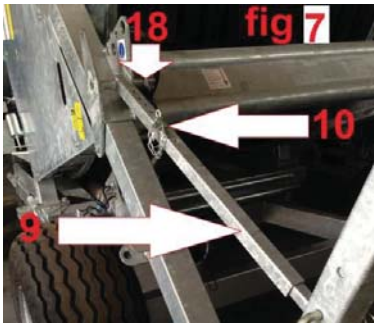
11) Now hook a rope or a chain to the hole pos 25 pict 12 and pull out 4 m (12') polyethylene hose.



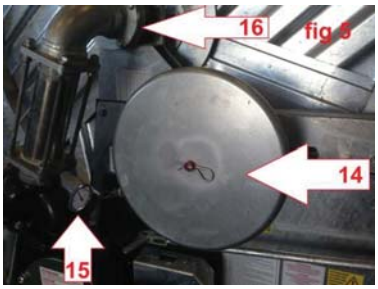
12) Insert the cart male coupling pict 13 pos 29 in the female coupling of pict 12. Put and tighten the bolt pos 28 pict 13.



13) Put the safety dog (non return tooth) in pos 12 pict 4 (above this page) and roll up the pe hose turning the hand wheel clock wise.
When the sprinkler cart is hooked to the lifting system you need a forklift or two persons to help pushing it up while you continue turning the hand wheel till when the disengagement lever pcit 2 pos 6 is on the left side (turbine side) of its run.



14) put the pin pos 10 pict 7 in its transport position

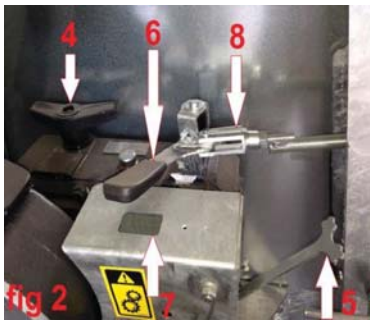


15) take the hand wheel off the pto shaft and place it in its non working position pict 5 pos 14

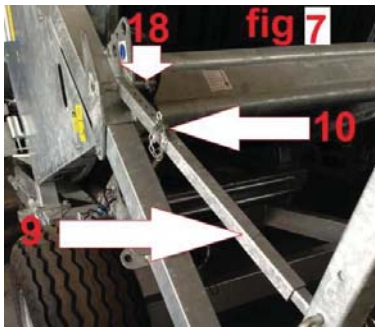
3. PREPARATION OF THE MACHINE TO WORK ON THE FIELD

CONTROLS TO BE DONE:

1) Control the gear box oil level and, if needed, add the Sae 90 oil till the window level



2) Lubricate the machine using any greasing point on the machine (look at the symbol page 3) and also the hole of the lever pos 6 pict 2 and the hole of the disengagement pos 18 pict 7. It's necessary to lubricate every 50 working hours.

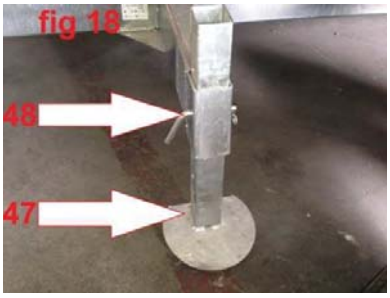


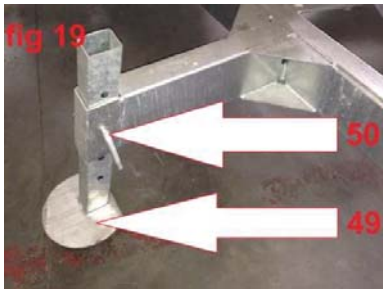
3) Check the machine tire pressure: 5 bar

3.1 MACHINE SET UP ON THE FIELD

Attention: always work with the working gloves!!

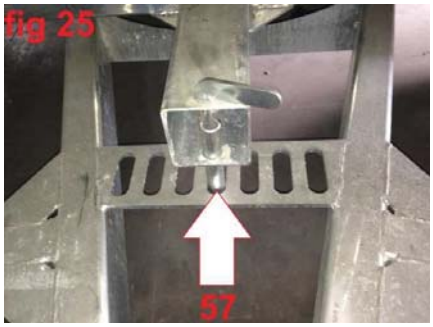
1) To hook the machine to the tractor, lift it a bit by turning the front jack handle. Then, lift up the front lateral galvanized stabilizers as much as possible and lower the chassis till when the complete weight is held by the tractor. Take the front jack off and shift the machine till the working line (max transport speed is 10 km/h or 6 mph on flat roads).



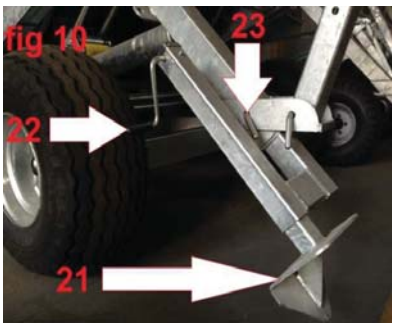


2) Lift up the chassis a bit by turning the front jack handle and move a bit forward the tractor; adjust the galvanized legs height to get the chassis horizontal and then lower the front jack by turning the handle.

Take the pin of the rotation stop (pict 25 pos 57) off and put the drum in the proper direction toward the irrigation strip in order to get it aligned with the pull out direction of the pe hose: go on the back side of the drum and look along the side of the drum its alignment with the pulling out direction (pict 26). Turn the machine on the turntable till when the drum is well aligned.

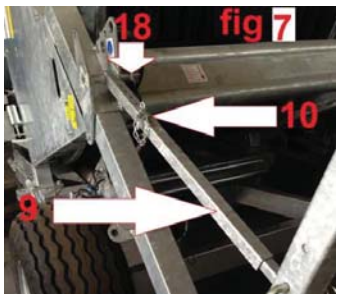


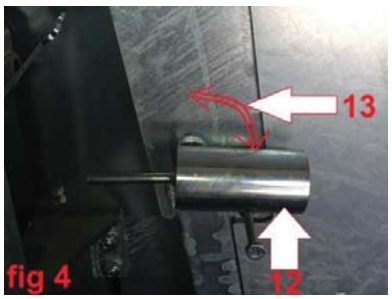
2) Put the pin of the rotation stop in its position to stop the rotation.

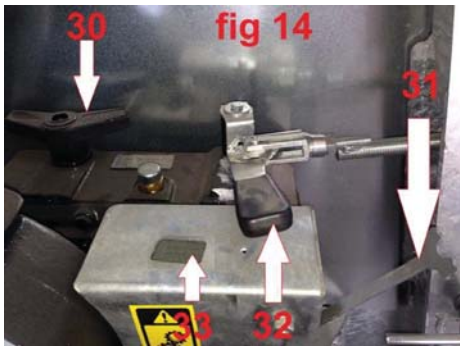


3) Lower the anchoring legs pict 10 pos 21 with the handle pos 22 and fix them properly in the ground.

4) Take the pin pos 10 pict 7 off and leave it drop down. Put the hand wheel on the pto shaft: turn the hand wheel clock wise and lower the safety dog (non return tooth) from pos 12 pict 4 to pos 17 pict 6.

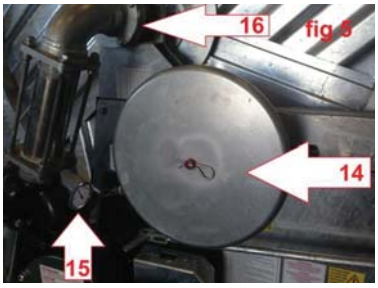






7) Now turn the hand wheel in anti clock wise direction to drop down the sprinkler cart. If the sprinkler cat tries to drop to fast you can tighten more the brake band on the gear box. (pict 14 pos 31)

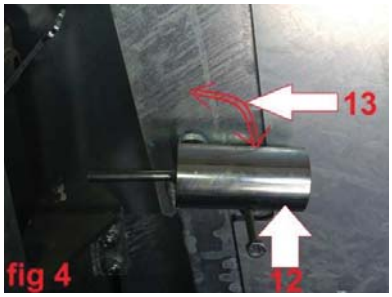
8) Take the hand wheel off the pto shaft and put it in its non working position (pos 14 pict 5)



9) Hook the towing bar of the sprinkler cart to the tractor and pull out the polyethylene hose on the field with the max speed of 3 km/h (2 mph). Before you stop the pulling pls reduce the speed smoothly. Check if the irrigation sector is ok and eventually adjust it. Disconnect the tractor and drive back to the machine.

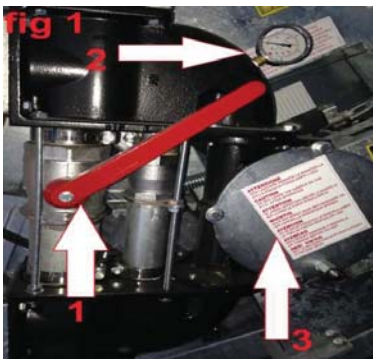
Important: *always leave at least one polyethylene hose ring rolled on the drum and remember that along the first use of the machine is necessary to pull out the complete polyethylene hose not leaving more than one or two rings on the drum so you'll roll it up with the pressure inside.*

10) Place the safety dog (non return tooth) in its working position as shown in picture 4 pos 12.

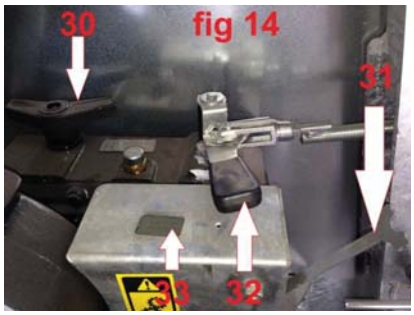


11) Connect the main line (hydrant head or pipeline outlet) to the machine by using the flexible hose and open a bit the hydrant then wait the water comes out from the sprinkler. Then you can open the hydrant completely.

12) When the sprinkler is irrigating and the pressure is stable you can adjust the speed.



a) turn the by pass lever 45° so the gears inside the gear box will move: pos 1 pict 1
b) machines with Computer: set up the speed following the computer instructions.

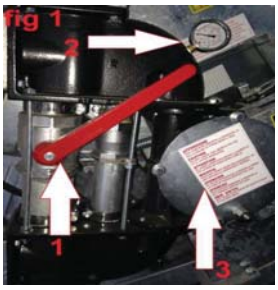


c) set the left side lever of the gear box , pict 14 pos 30, as follows:

1 with pressure till 3 bar and speed till 15 m/h
2 with pressure between 3 and 5 bar and speed till 50 m/h
3 with more pressure and to reach higher speed

These are approx indications as the flow and other factors are important as well.

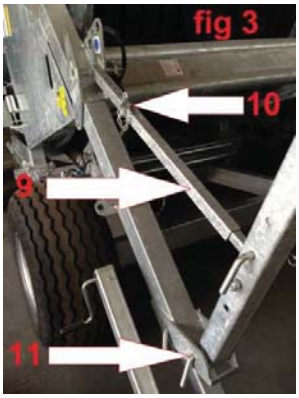
c) engage the gear box by moving the right side lever to position 1 (direction of the sprinkler cart) pict 14 pos 32 and adjust the speed moving the by pass lever (or follow the computer instructions, if it's installed): when it's perpendicular to the by pass pipe the turbine reaches the max speed so you get the max available speed for each gear.

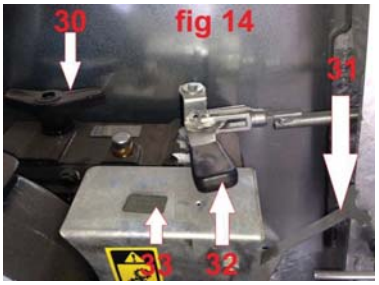


ATTENTION: *never change the gear with the left side lever (pict 2 pos 4) before you disengage the gear box by moving the right side lever (pict 2 pos 6) in "neutral position" 0 (turbine direction).*

3.2 MACHINE AUTOMATIC STOP

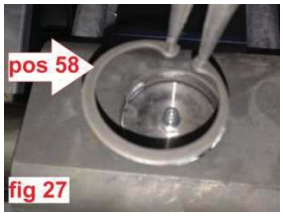
When the polyethylene hose has been completely rewound and the sprinkler cart has been already loaded, the disengagement pipes placed between the automatic loading system and the machine lateral structure (pict 3 pos 9), push the disengagement rod and the right side lever toward the turbine from pos 32 pict 14 to pos 6 pict 2: the gear box will be automatically disengaged (neutral position) and the pe hose rewinding will be stopped. If there aren't low and/or high pressure valves on the machine the irrigation will continue also when the drum doesn't turn anymore. If a stop irrigation valve (discharge or shut off valve) is installed, the irrigation might end either after the disengagement or after the final pause is finished.
Attention: the flow stop depends on the system as well! Check the pressure switches on the pumping station have been properly set up.





3.3 CONTROLS TO BE DONE FOR THE SET UP

1) Check that the hose guide fork is positioned properly: it has to be well aligned with the polyethylene hose. This control has to be done with the pe hose completely unrolled. In case of need, adjust the guide fork position as follows:



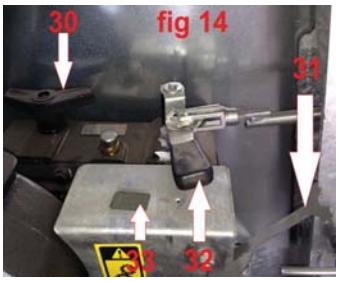
FIRST OF ALL STOP THE MACHINE AND BE SURE IT CAN'T START.

- take the elastic ring that fix the insert of the no end screw off the block Pict 27 pos 58
- take the insert off the block pulling it out from the greasing unit and look carefully the direction (position) of the half moon below pict 28 pos 59

- Align the guide fork to the polyethylene hose and put the insert inside the block paying attention the half moon below is in the same direction as before.
- put the elastic ring back in its place and assure it's well positioned all around the grove

2) Check the engagement/disengagement lever is at the end of its run
In neutral position "0", pict 2 pos 6

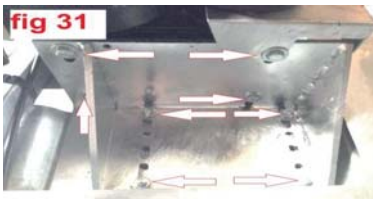
It's possible to check if the disengagement functions properly: push the lever pict 14, pos 32 in position 1 (sprinkler cart direction) and now push up the automatic lifting system till the end of its run to achieve the disengagement system. The lever should be moved to position "0" (neutral)



If it doesn't work properly, adjust the length of the disengagement pipes between the automatic loading system and the disengagement rod by placing the bolt in a different hole.
The lifting system should disengage the gear box when it arrives 15/20 degrees before the vertical position, pict 29.

ATTENTION: *When you drop down the sprinkler cart releasing the safety dog (non return tooth) and turning the pto shaft by means of the hand wheel you should use* ***working protection gloves****! Be sure nobody is close to the sprinkler cart before you release the safety dog and drop down the sprinkler cart.*

1) Check that the gear box pinion is aligned with the crown gear and the teeth work well inside each other (allowed tolerance 0,5-2 mm (0.02" to 0.08"). In case of need release a bit the 4 bolts to fix the gear box or, depending on the position to correct, the bolts to fix the bearing flange for the gear box (pict 31) and adjust the gear box position to get it well aligned and the teeth of the pinion and the crown gear properly engaged (pict 30)



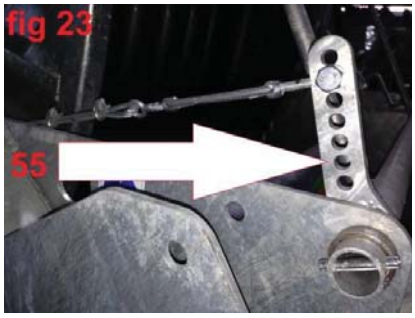
Due to safety reasons this operation can be done only when the machine has been stopped.

4) Check that all the bolts and screws are well tightened and that all the points indicated in this manual are well lubricate.

3.4 SPEED COMPENSATION ADJUSTMENT (in case the machine has no computer)

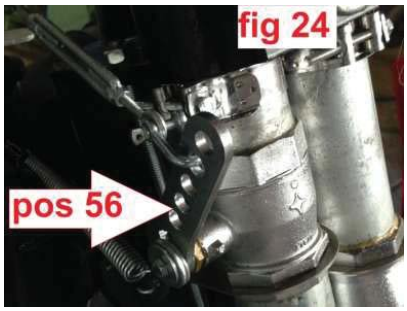
If the pull in speed drops down a lot it's possible to adjust the cable position on the by-pass lever so that any time the speed compensator works the by-pass will be opened less than now. In practice you need to place the cable in a hole more far from the lever pivoting point.
A second solution for the same problem is to adjust the cable position on the other side of the cable, where it's connected to the compensation system: this side you have to connect the cable closer to the lever pivoting point. Look at pict. 23 and 24.

In the pull in speed increases too much it's possible to adjust the cable position on the by-pass lever so that any time the speed compensator works the by-pass will be opened more than now. In practice you need to place the cable in a hole closer to the lever pivoting point.
A second solution for the same problem is to adjust the cable position on the other side of the cable, where it's connected to the compensation system: this side you have to connect the cable more far to the lever pivoting point. Look at pict 23 and 24.



Pos. 55: speed compensation lever on cart side

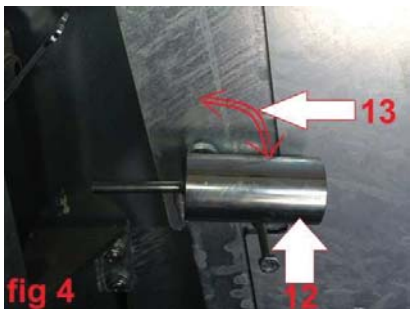
Pos. 56: speed compensation lever on by pass side



3.5 EMERGENCY PE HOSE REWINDING BY PTO

The pto (power take off) of the gear box can be used for the emergency rewinding of the polyethylene hose: it will be connected to the tractor by means of a cardan shaft and can be used i.e. in case of rain.

1) Check that the right side lever on the gear box pict 14 pos 32 is on neutral (toward the cart) because otherwise you can cause serious damages to the gear box.
2) Connect the cardan shaft to the pto shaft of the gear box.
3) Achieve the pto shaft to rewind the polyethylene hose.
Attention: *when you use the pto drive the disengagement (automatic stop) doesn't work at the rewinding end. The rewinding has to be stopped before the cart arrives against the machine. The last 2 / 3 meters (6 / 10 feet) have to be rolled up manually with the hand wheel. If you want to rewind them with the tractor you can but you should roll it up very slowly and stop the rewinding before the loading system pushes the disengagement rod. Don't forget that the safety dog has to remain in working position before you start up rewinding the pe hose, pict 4 pos 12.*



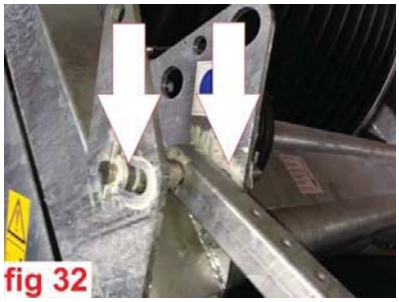
Attention: *if the polyethylene hose has been totally pulled out, to avoid an excessive ovalisation is better to put some pressure inside before you start the rewinding.*

3.6 USE OF THE MACHINE AT NIGHT

The machine isn't provided with an own electric energy and or lamp: in case the machine has to be used with insufficient light it's important to provide an adequate lamp to follow up all the previously given instructions and avoid risks to persons and things.

4.0 MANTAINANCE

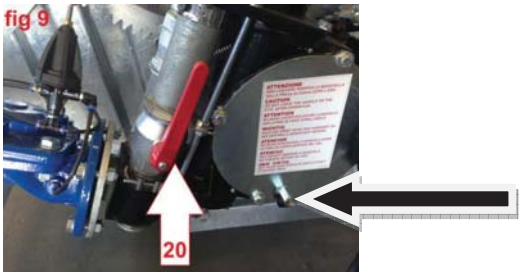
1) Lubricate all the gears (crown gear on the drum included) at least every 100 working hours and follow the notices attached on the machine.
2) Lubricate every 100 working hours the tires axles of the sprinkler cart, if a greasing inlet is installed.
3) Change the gear box oil every irrigation season or at least every 3000 working hours.
4) Control periodically the tires pressure.
5) Lubricate the sprinkler every 400 hours.
6) Lubricate the joints and the holes of the disengagement system every 50 working hours pict 32 and 33.



5.0 MACHINE STORAGE AT THE END OF THE IRRIGATION SEASON

1) If the winter temperature will drop below zero where the machine will be stored, it's better to partially empty the polyethylene hose. To do it you should pull out half of the polyethylene hose as you do for a normal irrigation, then you take the sprinkler cart off and then you rewind the polyethylene hose by means of the pto shaft (look at point 3.5). In case there's a plug on the cart main pipe you can take it off instead of taking off the complete cart.

2) Open the small valve on the turbine/collector bottom



3) For a longer lifetime of the machine is suggested to clean the machine with a water gun and after it's dry again, look at the point that eventually need some antioxidant.
4) Lubricate all the indicated points as you do for the normal maintenance
5) In case valves, flow regulators, flow meters and finally sprinkler self leveling system (all options) are mounted on the machine it's important to drain them and eventually the brass control valve (if mounted).

6.0 PROBLEMS AND SOLUTIONS

1 The machines can't rewind the polyethylene hose.
- For machines with computer pls also follow the instructions on the computer manual.
- Open and close completely the bypass by moving its lever. If the turbine impeller doesn't turn is possible that the turbine nozzle is blocked by a solid: dismount the collector under the turbine and clean it. Also take off and check the impeller: need to dismantle the turbine cover (and the pto protection) with a spanner and a tube key and then the impeller by using an extractor.

- The gear box doesn't work: if moving the bypass lever (or adjusting min to max speed on the computer) the turbine impeller turns (you hear the noise) but the drum doesn't move, is possible that the levers on top of the gear box aren't well positioned. Place the left side lever in position 1, 2 or 3 as indicated at point 3.1 12) at page 17 of this manual. Then place the right side lever in pos 1 (toward the sprinkler cart) , pict 14 pos 32.
- The sprinkler nozzle is partially stopped and only some water comes out. Dismantle the nozzle and check.
- The filter at the machine inlet is stopped or at least dirty. Disconnect the flexible supply hose and clean the filter.
- The sprinkler is always supplied with some nozzles of different sizes. If possible change the sprinkler nozzle with a larger one.
- The turbine nozzle is generally 2 mm (0,8") larger than the sprinkler nozzle. In case the flow is low and you can use only a small nozzle on the sprinkler you can also change the turbine nozzle. In this case you can mount a turbine nozzle with the same diam of the sprinkler one or just 2 mm (0,08") larger.
- The pressure isn't enough at the turbine/machine inlet: first of all disengage the gear box placing the right side lever in neutral position "0" and change the gear to a lower one (from 3 to 2 or from 2 to 1) with the left side lever. If the drum doesn't turn try to increase the pressure.
- The polyethylene hose has been pulled out, the gear box is properly engaged and all the above mentioned parts have been checked. The gear box may be damaged: call the local authorized service.

2 The machine isn't stable and try to move.

- The rear anchoring legs haven't been adjusted properly place the machine better and especially fix properly both rear anchoring legs in the ground.
- The polyethylene hose has been pulled out, is on the field and is difficult to pull in: wait that the soil becomes dry, then shift the polyethylene hose beside its position by a chain or a strong rope. Put the chain (or the rope) under the polyethylene hose and connect it to the tractor lifting system and drive the tractor all along the polyethylene hose shifting it beside. If you haven't a tractor you can do this operation manually or you can put a wooden block under the polyethylene hose every 6 m (20') or less.

3 If the polyethylene hose hasn't been rolled up properly pls check the drum is well aligned with the pulling out direction, pull the hose out and follow up the instruction to align the guide fork and then roll up the polyethylene hose with pressure (inside the hose). It's possible to roll up the hose by cardan shaft/pto or by turbine but always with inside pressure to avoid the polyethylene hose excessive ovalisation

7.0 IMPORTANT SUGGESTIONS

- During the machine transport the max allowed speed is 10 km/h (6 mph) on good flat roads.
- Before you roll up the polyethylene hose by cardan shaft pls be sure the right side lever on the gear box is on neutral position of the gear box, otherwise the gear box and other parts can be strongly damaged
- The first time you pull the pe hose out to start the irrigation, you have to pull it out completely leaving only 1 or 2 rings on the drum.
- Any modification (that hasn't been authorized in written form by the supplier) invalid the warranty
- If the polyethylene lays on the soil, then it rains, it's possible that the polyethylene hose will stick to the soil so prior to start the irrigation and rewind it, it's mandatory to clean and shift it beside with a rope or chain as indicated at above 6.2 point.
- If the polyethylene hose has been partially pulled out, probably some rings became loose on the drum and it's necessary to pull it out completely to roll it up properly. If this was the solution and the problem has been fixed also check the brake and eventually lubricate and tight it. Also remember to slow down the speed smoothly when you stop the pulling out.

- Only the large lateral tires and the polyethylene hose (close to the sprinkler cart) have to support the cart weight, otherwise the cart can't come back straight and the central pipe will worn out rapidly.
- Before to change speed with the left side lever on the gear box, always put the right side lever in neutral position "0" (direction to the turbine).
- Before you disengage the gear box it's necessary to slow down the rewinding speed by computer or by moving the bypass lever. Then disengage the gear box and then you can change the speed gear. In case of gear change with the left side lever without previous disengagement with the right side lever the gear box can be damaged.
- Don't pull out the polyethylene hose or achieve any other function on the machine when the hand wheel is mounted on the pto shaft of the gear box. Always take it off the shaft after use.
- Don't use the machine when the protections aren't mounted.
- always use the gloves when you operate or shift the machine.

IMPORTANT NOTE: if these instructions will not be correctly followed, if non original parts will be installed or in case of not written authorized modifications the warranty is totally invalid. In this case the producer is not more responsible for any risk.

8.0 ADDITIONAL RISKS

Even if IRRILAND pays attention to avoid dangers for the user during the design and the construction with functions and guards generally safe, it's always possible that some additional risk appear during the use of the machine.

1) Risk to hook and displacement between the drum and the structure during the structure and the drum rotation. This risk is higher during the machine placement and during the polyethylene hose pulling out and rewinding. Be sure nobody is next to the machine during the rotation before the anchoring legs have been fixed and during the polyehtylene hose pulling out and rewinding. Only the authorized persons can remain close to the machine, nobody more.
2) Flattering and trapped risk between the polyethylene hose and the drum along the rewinding. Avoid any contact with the polyethylene hose during the rewinding and be sure only authorized persons can access to the area.
3) Overturn risk: along the machine shifting and freight there's a serious risk to overturn the machine. The risk increases a lot if the slope is more than 6°. Drive with particular attention, don't increase the speed and drive through the best parts of the road. In case of excessive risk drive back and look for other way.
4) Risk of upper frame sudden rotation: when you place the machine especially in a slope area the upper frame could turn suddenly: to work with no risks in this situation the client need to buy the option "hydraulic rotation" or at least do the machine set up in two persons and hold the upper frame from the towing bar on the cart to turn it smoothly.
5) Overturn risk during the upper frame rotation: Always load the cart with the boom, than position the rear anchoring legs with their points just some cm (2 or 3 inches) from the soil, check the front stabilizers are well established and turn the upper frame. In case the machine isn't stable you need to fill it up with water to increase the stability, before the upper frame rotation.
6) Electricity risk: during the irrigation the sprinkler throw can match the power cables. The risk of a very dangerous electric shock through the metal structure is very high. Be sure there aren't electric lines in the sprinkler radius all along the pull.
7) Risk to impact directly the sprinkler throw. When the machine will be started and the water will be supplied to the machine, the throw can start suddenly and strong. It's always better to release the flow partially till the water pass through the sprinkler and then increase it smoothly till the normal working flow. Anyway be sure nobody is next to the sprinkler when you start the machine.
8) Shock risk against plugs and couplings of the machine and the flex hose. Don't open nor disconnect the plugs and the couplings with the pressure inside. Be sure there's no pressure before you release any plug or coupling.
9) Risk to impact against the oil of the hydraulic circuit (only in case of hydraulic options on the machine). Don't make anything to the hydraulic circuit if the pressure hasn't been discharged through the quick couplings or the distributor.
10) Risk of incidents on roads. Set up the sprinkler cart and the sprinkler in a way that the water throw will not wet a transit area to avoid damages to persons and things.

9.0 SHIFTING OF MACHINES CONNECTED TO PRESSURISED MAIN LINES

When the machine has finished the cycle, pls reduce the pressure at the machine as follows:

1) Shut off the hydrant valve (where is connected the flex supply hose of the machine)
2) Manually open the small ball valve on the bottom collector and/or turbine
3) When the manometer indicates pressure “0” and there’s no more pressure in the flex supply hose you can disconnect the couplings of flex supply hose and prepare and shift the machine to the next position.