TOLMET

OPERATING MANUAL

WARRANTY CARD

Mounted sprayer

KLARA / XSARA

ZAKŁAD PRODUKCYJNO –USŁUGOWO –HANDLOWY
TOLMET
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CE DECLARATION OF CONFORMITY
for the following machine:
Pursuant to the Regulation of the Minister of Economy of 21 October 2008 (OJ Dz.U. No. 199, item 1228)
and the Directive 2006/42/EC of the European Union of 17 May 2006
Pursuant to the Regulation of the Minister of Economy of 21 October 2009 (OJ Dz.U. No. 124, item 701)
and the Directive 2009/127/EC of the European Union of 17 May 2006

We declare with full responsibility that the following machine:

Machine: MOUNTED SPRAYER

Type/model: KLARA/XSARA_____ Factory No:_____

Year of manufacture:_____

that this declaration corresponds to, meets the following requirements:

Regulation of the Minister of Economy of 21 October 2008, on essential requirements for machinery (OJ Dz.U.
and the Directive 2006/42/EC of the European Union of 17 May 2006
Regulation of the Minister of Economy of 21 October 2009, on essential requirements for machinery for pesticide application (OJ Dz.U.
1228)
and the Directive 2006/42/EC of the European Union of 17 May 2006

Person responsible for technical documentation of the machine: Piotr Wawrzyniak

In order to supplement the relevant safety, health and environmental requirements provided for in the Directive 2006/42/EC, the following harmonized standards are taken into account:

PN–EN ISO 12100 :2012 PN–EN ISO 4254-6:2011
PN–EN ISO 4254-1 :2013 PN-EN ISO 11684:1998

This Declaration of Conformity becomes invalid if the machinery is modified without the manufacturer's consent.

Świnice Warckie_____ _____

Place and date of issue

First and last name and surname of the person authorized to sign

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IDENTIFICATION OF THE MACHINE

Mounted sprayer

The data placed on the rated plate serve for identification of the machine, and they should correspond to the below date, provided upon sales.

Symbol -
Year of manufacture -
Factory No. -

The sprayer is equipped with a rated plate, located on its frame at the front of the machine. The rated plate contains some basic data for machine identification.

Fig. 1: Location of the rated plate on the machine.

Please provide the type and identification number of the machine in case of correspondence, questions, warranty problems. The identification data of the machine can be found on the rated plate located on the left side of the frame.

The Operating Manual is a piece of basic equipment of the sprayer.

Table of contents

1. Introduction

This Manual describes the operation of the mounted sprayer. If you experience any particular problems during operation that are not sufficiently addressed in the enclosed Operating Manual, you may request additional information from the manufacturer or dealer. The manufacturer's essential obligations are specified in the warranty card, which contains the complete and valid warranty regulations. The design of the machine ensures safe operation when used in accordance with the Operating Manual. Therefore, before the first commissioning, please read this Manual in order to become familiar with the conditions of proper operation of the device.

It is essential that each user reads the contents of this manual before proceeding to work.

It is intended to familiarize with the rules of proper use of the sprayer and to ensure safety in use. It is also a condition for the proper exercise of warranty rights.

The Operating Manual is a piece of basic equipment of the machine.

2. Intended use

The Mounted sprayer is designed to perform agrotechnical treatments in agriculture in the field of plant protection and foliar fertilization. Using sprayer for other applications than those mentioned above will be interpreted as misuse of the machine and will result in the loss of warranty. The machine may only be operated by persons who have read and understood the Operating Manual. Familiarizing with the construction of the sprayer, carefully reading and observing the Operating Instructions will guarantee safe operation of the sprayer.

2.1. Use for intended purpose

The sprayer may only be started up, used and repaired by persons who are familiar with the functions of the device and the associated tractor as well as with the safety advice for operating and maintaining the machine. The manufacturer is not responsible for any arbitrary changes in the construction of the sprayer. Only TOLMET parts should be used during the service life.

REMEMBER

The field sprayer is designed for agricultural use only. Using it for purposes other than those specified in point 2 will be interpreted as misuse. Failure to observe the operating, maintenance and servicing conditions specified by the manufacturer is also to be considered as improper use. The manufacturer is not liable for any damage resulting from the use of the sprayer contrary to its intended use .

REMEMBER

Before proceeding to operate and use the field sprayer, read this manual, learn about the construction of the field sprayer assemblies, their functions, ranges and adjustment methods, paying particular attention to the information on work safety. It's too late for that when you already work with the machine.

3. Operation safety

3.1. Intended use of the sprayer.

The Mounted sprayer is intended exclusively for use in agricultural production. The sprayer may be used only for crop protection measures and foliar fertilisation. The machine can only work with agricultural tractors and must use the tractor drive via the power take-off drive shaft by using the telescopic-articulated shaft. When sharing the filed sprayer with third parties, the machine must be accompanied by the Operating Manual in order to ensure safety of the sprayer.

3.2. Expected threats for the operation of the sprayer.

When operating the sprayer as intended, certain hazards to human life and health may be identified. In order to avoid them, the Operating Manual of the machine must be observed. The hazards that may endanger the operator's health and life are:

- Rotating telescopic-articulated shaft
- Sprayer boom lifting and lowering
- Sprayer boom extending and retracting
- Unsecured boom during transport
- Extended boom during travel
- Suspension of the sprayer boom
- Edges of the sprayer boom
- Pressure in the sprayer system
- Sprayer supports
- Hazard from loss of stability
- Hazard from contact with chemical substances used in agrotechnical treatment
- Danger due to negligence in the use of plant health products
- Hydraulic pressure tubing

3.3. Maintenance and safety

Maintenance may be done when the sprayer is lowered to the ground. If the tractor is coupled to the machine, it must be switched off and braked. Use efficient tools and instruments as well as original materials and parts to operate the machine. Use typical safety devices and cotter pins to secure the pins in the machine. Do not use any substitute safety devices, such as bolts, rods, wires, etc., which may cause damage to the tractor or sprayer during operation or transport, thus endangering safety.

3.4. Transport on public roads

According to the road traffic safety regulations / Regulation of the Minister of Infrastructure of 31.12.2002. Dz.U. OJ No. 32 of 2002, item 262/

A combination of an agricultural tractor and an agricultural machine aggregated with it must meet the same requirements as the tractor itself.

WARNING!

The combination (tractor + machine), as part of the vehicle, poses a danger to other road vehicles as it extends beyond the rear lateral contour of the tractor and obstructs the rear lights of the tractor.

REMEMBER!

It is forbidden to travel on public roads with the combination (tractor + machine) without the appropriate markings. When traveling on public roads with the tractor and the field sprayer, you must observe all the regulations of the Road Traffic Code applicable to this type of vehicle.

NOTE!

Before entering any public road, you must retract the sprayer boom to the transport position.

In the case of transport on public roads, the sprayers combined with agricultural tractors must be:

- Marked with warning signs bearing white and red stripes,
- Equipped with lights:
  - marking the side of the machine protruding beyond the tractor's sides (front white position lamps),
  - repeating the rear tractor's lights (grouped and red retro-reflecting lights),
- Marked with triangular plate marking slowly-moving vehicles,
- Do not exceed the driving speed during transport, which is equal to or greater than:

a. On smooth (asphalt) roads up to 20 km/h,

b. On field or paved roads 6-10 km/h

c. On bumpy roads not more than 5 km/h

NOTE!

The driving speed must be adapted to the road condition and situation.

NOTE!

Take special care when bypassing, overtaking and at the turns.

NOTE!

The permissible machine width for driving on public roads is 3.0 m.

3.5. Work with plant health products

Special precautions must be taken when handling plant health products. The greatest hazard related to handling of the plant health products and fertilisers occurs in the following situations:

- Filling up the tank,
- Adding and preparing the substances,
- During the treatment,
- During adjustment,
- While rinsing and drying the tank,
- While replacing the plant health products,
- While operating,
- While disposing packaging.

In order to ensure safety when handling the plant health products, it is necessary to:

- Wear protective clothing (selection of appropriate protective clothing depends on the toxicity class of the preparation). The protective clothing should include:
  - rubber boots
  - gloves
  - coat
  - cap
  - mask or half mask
- You should not work with plants protection products with an empty stomach,
- Do not eat or drink during filling, preparation or treatment,
- Do not fill the tank with water contaminants,
- Do not perform any treatment if you have drunk alcohol, and do not consume any alcohol while working with the sprayer,

- Do not eject any residues of the liquid into open waters or biological sewage treatment plants,
- Dilute the residue and spray it onto the field or discharge it from the tank into a sealed container and return it to a disposal point for such a type of substances,
- The spray liquid may be prepared at a distance of at least 50 meters from wells or water bodies which provide water for food purposes,
- Only adults who are familiar with the Operating Manual may start working with the plant health products,
- In case you get intoxicated with the substance, immediately contact a physician, specifying which agent has been absorbed (administer the active substance),
- The sprayer operator should strictly follow the instructions on the packaging of the plant health product,
- After the treatment, wash your hands, face, whole body, rinse your mouth and change the clothes.

Handling the plant health products before preparing the spray liquid:

- When buying the plant health products pay attention that the packaging is not damaged and that the label is legible
- Protect the product with additional packaging during transport
- Plant health products must not be transported with foodstuffs, crops and animals
- Use the preparation in accordance with the instructions
- Check the expiry date of the preparation
- Check the prevention period (period of prohibition of contact with the plants on which the product has been applied)
- Check the toxicity class
- Check the active substance in case of intoxication

Environmental protection:

- Spraying may be carried out only under appropriate weather conditions where the wind speed does not exceed 3 m/s,
- Do not spray any flowering plants if you use a preparation that is toxic to bees,
- Always observe the protective periods for bees and other living organisms,
- Always work with an efficient sprayer without any failures,
- Dispose of the remaining spray liquid at the collection points or dilute and spray it on the field,
- You must not use the plant health products at a distance smaller than 50 m from water intakes,
- You must not discharge the residues of the spraying liquid into water bodies,
- You must not poison any nearby plantations due to wind drift,
- You must not use the plant protection products within a distance of 20 m from bee apiaries, reserves, herbal plantations, allotment gardens, plant stands covered by the conservation of species.

3.6. Operation

The Mounted sprayer may only be operated by persons authorized to drive an agricultural tractor and by persons who have read and understood the Operating Manual.

It is forbidden for any unauthorized persons, in particular children, to stand by while the machine is being operated.

In order to carry out any repairs or adjustments, turn off the engine, remove the ignition key from the tractor, lower the spray and apply the tractor parking brake.

Before proceeding to operation you must carefully check the technical condition of both the machine and the tractor.

Check tightness of the sprayer.

Perform the spraying operation in accordance with the weather conditions recommended by the plant health product manufacturer. It is recommended that the wind force does not exceed 3m/s.

Observe the regulations that govern the use of plant health products, which stipulate that the treatment must be carried out 5 meters from public roads, excluding any municipal roads. You must not perform the treatment at a distance smaller than 20 meters from dwellings or livestock buildings.

In the event of a leak in the sprayer during operation, stop the procedure immediately and repair the failure.

During the procedure, there must be no bystanders in the work area.

After each treatment, wash and rinse the sprayer. This action must be also performed when changing the plant health product.

It is forbidden to transport any persons on the sprayer.

You must not go inside the sprayer's tank.

You must not operate the sprayer with an inclination of more than 8.5 degrees.

After finishing your work, retract and secure the sprayer boom.

3.7. Work safety with the telescopic-articulated shaft

When working with the telescopic-articulated shaft, remember to:

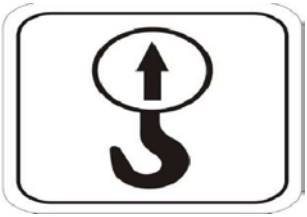
- Use the shaft recommended by the manufacturer,
- Only use the shaft with a complete set of covers,
- Secure the guard against rotation by means of a chain,
- Secure the shaft,
- When switching the drive on, check that there are no bystanders in the vicinity,
- Before fitting the shaft, switch off the tractor's engine, remove the ignition key and apply the parking brake,
- Make sure that the length of the shaft is appropriate (not less than 25cm or 1/3 of the length of the shaft; the parts must overlap),
- Use a shaft with a correct torque,
- Do not use a shaft that is in poor condition,
- Do not turn on the shaft rapidly,
- Before fitting, clean and lubricate the shaft,
- After work, put the shaft in the appropriate place provided for his purpose.

3.8. Safety symbols

No.	Pictograph	Significance	Location
1		Rated plate	On the frame on the right side
2		Before commencing works, get familiar with the Operating Manual	On the sprayer's tank
3		Note. Before commencing the service actions, turn the engine off and remove the ignition key	On the sprayer's tank
4		Maintain a safe distance from the machine	On the sprayer's tank
5		Risk of crushing. Do not reach into the boom retracting area	On the sprayer's tank

6		Risk of crushing hands. Do not reach into the crushing area if parts can still move.	On the water tank near the filling opening
7		Danger of penetration of liquids under high pressure. Read and understand the Operating Manual in its part related to maintenance	On the water tank near the filling opening
8		Read the instructions for use of the products	On the water tank near the filling opening
9		Do not go inside the tank	On the water tank for washing hands

10		Rotating shaft	On the sprayer's tank
11		Do not drink and smoke while working	On the sprayer's tank
12		Do not drink water	On the water tank for washing hands
13		Obligation to wash hands	On the water tank for washing hands
14		CE safety mark	On the sprayer's tank

15		A symbol for permissible transportation speed	At the rear of sprayer tank
16		Do not travel on public roads with a tractor and a machine with transport width exceeding 3m	On the sprayer's tank
17		Pictograph of places for loading the machine on the means of transport.	On the machine's frame
18		Sticker with the name and model of the sprayer	On the sprayer's tank

Tab.1 Pictographs table.

4. Residual risk

4.1. Description of residual risk

The residual risk is usually caused by incorrect behavior on the part of the operator due to inattention or ignorance. The greatest danger occurs in the following situations:
- When the sprayer is operated by minors and persons unfamiliar with the Operating Manual,
- When the machine is operated by persons under influence of alcohol or drugs,
- When the machine is used for purposes other than those described in this Operating Manual,
- When persons stay between the machine and the tractor, near its running engine,
- When bystanders, in particular children, stay nearby a working sprayer,
- When the sprayer is cleaned during operation,
- While tempering with moving elements of the machine during its operation,
- When checking the technical condition of thee sprayer.

When presenting the residual risk of a sprayer, it is treated as a machine which was designed and constructed according to the state of the art in the year of its manufacture in compliance with the basic principles of occupational health and safety.

NOTE!
There is residual risk if you fail to follow the presented recommendations and instructions.

4.2. Residual risk assessment

By following the below recommendations, the residual risk may be minimized:
- Follow the safety principles described in the Operating Manual,
- Read the Operating Manual carefully,
- Do not put your hands in dangerous and restricted areas,
- The sprayer must not be operated in the presence of unauthorized persons, in particular children,
- Only trained personnel may carry out maintenance and repair works on the sprayer,
- The sprayer can be operated only by trained persons, who have read the Operating Manual,
- Protect the sprayer against child access,
- The sprayer can be operated only by capable persons, not under influence of any stimulants.

5. Light signals (optional)

Before entering any public roads, a warning sign with red and white stripes should be placed on the boom frame, equipped with signaling lamps and a holder for a sign distinguishing slow-moving vehicles. The power supply cable must be connected to the tractor's electrical system and the bracket must be fitted with a triangular marking plate. A warning sign with a marking light is an optional extra for the sprayer and is available on request.

6. Construction of Klara mounted sprayer

Fig. 2 Construction of Klara sprayer

1- Filler, 2 - control valve, 3 - frame, 4 - PTO cover, 5 - pump, 6 - water tank for washing hands, 7 - pressure gauge, 8 - tank, 9 - sprayer boom, 10 - hoisting winch, 11 - rotary joint, 12 - spraying liquid level indicator,

Xara sprayer — hydraulically unfolded field boom

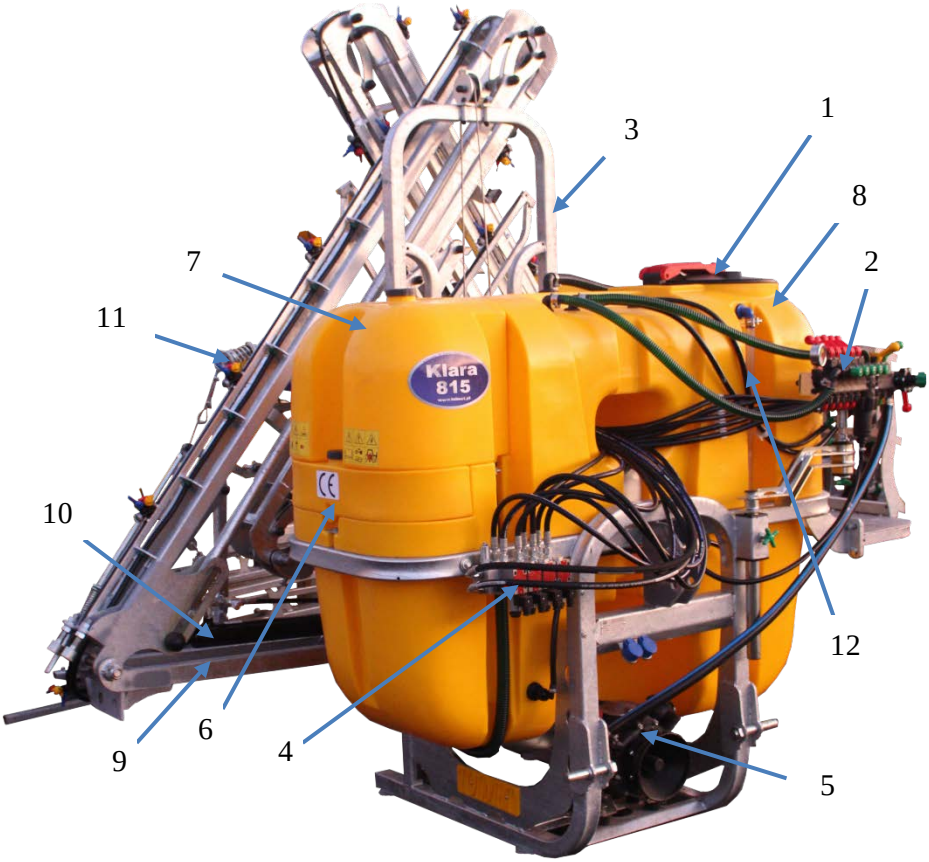


Fig. 2.1. Construction of Xsara type mounted field sprayer.

1- Filler, **2-** control valve, **3-** frame, **4-** electro-hydraulic block, **5-** pump, **6-** hand wash water tank, **7-** system wash tank, **8-** main tank, **9-** field boom, **10-** hydraulic cylinder, **11-** spray lance damper, **12-** working liquid filling indicator.

KLARA sprayer is composed of the following components:

- a three-point linkage,
- frame,
- tank,
- pump,
- valve section,
- sprayer boom,
- hydraulic field boom with hydraulic cylinders and electro-hydraulic block (Xsara).
- Field boom gravitational stabilization,
- Field boom hydraulic stabilization,
- Hand wash tank (optionally 400L, 600L, standard 800L, 1000L, 1200L)

Three-point linkage

The three-point linkage consists of lower links and a stand. This system allows for an easy and quick combination of the machine with any agricultural tractor equipped with a three-point linkage. With this solution, the sprayer can be lifted using a tractor linkage for transport and height adjustment.

Fig. 3 Three-point linkage

Frame

The frame is made in a way that ensures strength and lightness of the sprayer. The main elements of the frame are bent profiles and metal sheets. The whole frame of the sprayer is zinc-coated which provides it with strength and corrosion resistance.

Tank

The tank poses one of the main parts of the sprayer and it can be sized to suit your needs. The tank is made of plastic which makes it light and durable. The tank is also equipped with a measuring scale, which allows to check the amount of spray liquid in the tank.

Fig. 4 Tank.

Fig. 4.1 Hand wash water tank

Fig. 4.2. System wash water tank

Hand wash tank

Each sprayer is equipped in additional tank (with plastic cock) for clean water for washing hands.

System wash tank

Clean water tank for washing system is used in 800L and larger sprayer and optionally in 400L and 600L ones. It allows partial and full sprinkling system wash after finishing work**.**

Side induction bowl (optional)

Each sprayer can be equipped in side induction bowl, by which we can comfortably add from the ground level fertilizers or pest control products. This is sprayer's optional equipment.

Fig. 4.3. Side induction bowl (optional).

Pump

The sprayer uses a PU2/120 or a PU-/140 diaphragm pump. The selection of the pump used in the sprayer depends on the customer's preferences. These pumps have been specially designed and manufactured for use in sprayers. These pumps guarantee obtaining the appropriate working pressure of the liquid, and thus they perform precise agrotechnical treatment, namely the spraying. The operation and design of the pump are described in more detail in the operating manual of the diaphragm pump.

Fig. 5 PU-2/120 and PU-3/140 diaphragm pump.

Valve section

A valve section has been used to control the operation of the sprayer allowing for precise control of the amount of preparation to be sprayed onto the area, as well as for turning an appropriate sprayer boom section on and off. The valve section also allows to control additional functions such as agitator, diluter or tank flushing. Depending on preferences, sprayer can be equipped in basic Gran distributor, Duro distributor with expansion possibility and Fermo constant pressure distributor with possibility of using coils that allow steering via controllers.

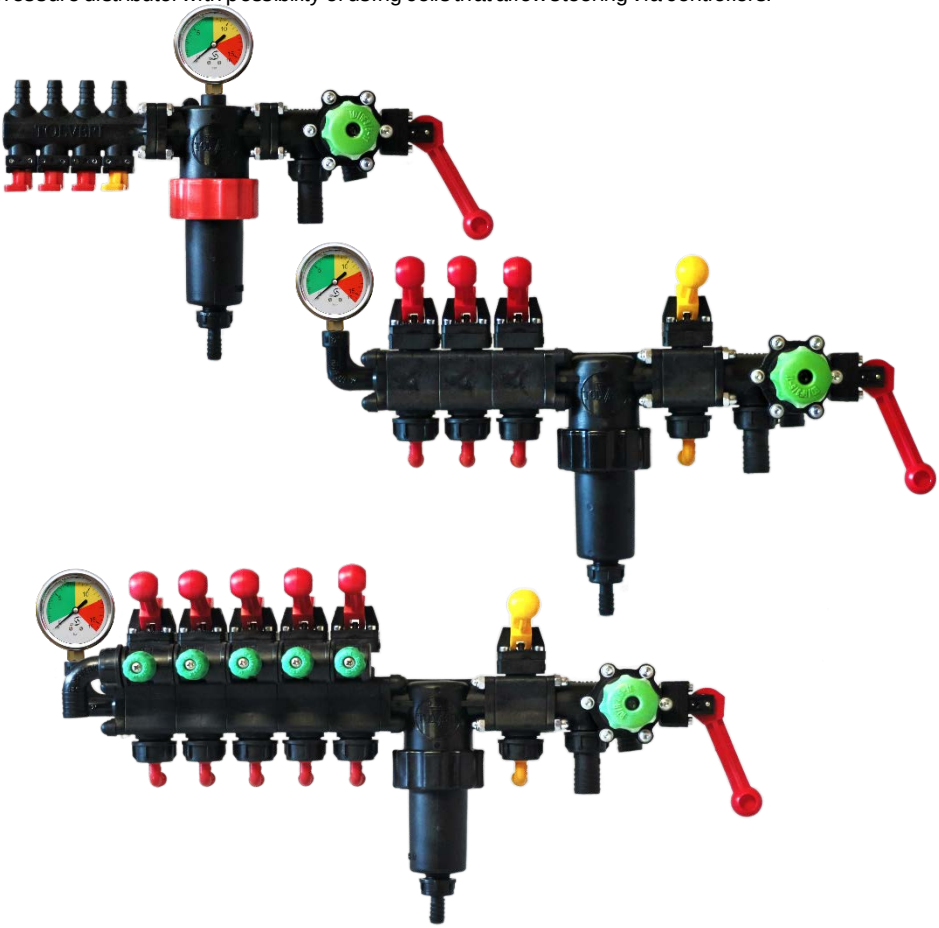


Fig. 6 GRAN 3, DURO 3 and FERMO 5 pressure manifolds.

Controllers

Control Panel 1 — functions: On/Off
Control Panel 2 — On/Off functions; pressure control, built-in manometer and panel backlight lamp
Control Panel 4 — Functions: On/Off; On/Off far sections; pressure control; built-in manometer and panel backlight lamp
Control Panel 7 — Functions: On/Off; On/Off particular sections; pressure control; built-in manometer and panel backlight lamp
Hydro Panel — controller to unfold hydraulic field boom. It is connected to CP2, CP4, CP7 Panels when used with hydraulic field boom.
Hydro Panel 1 — Functions: On/Off; field boom full control.

	Name	Distributor On/Off	Far sections On/Off	Particular sections On/Off	Manometer + pressure regulation	Field boom control	Lamp
	**Control Panel 1**	**YES**	**NO**	**NO**	**NO**	**NO**	**NO**
	**Control Panel 2**	**YES**	**NO**	**NO**	**YES**	**NO**	**YES**
	**Control Panel 4**	**YES**	**YES**	**NO**	**YES**	**NO**	**YES**
	**Control Panel 7**	**YES**	**YES**	**YES**	**YES**	**NO**	**YES**
	**Hydro Panel**	**NO**	**NO**	**NO**	**NO**	**YES**	**NO**
	**Hydro Panel 1**	**YES**	**NO**	**NO**	**NO**	**YES**	**NO**

Manually unfolded field boom

The sprayer boom is used for dosing plant health products and fertilizers. A sprayer boom is a retractable element so that in one pass with a sprayer you can cover a large fragment of the cultivated area at the same time not creating any hazard during transport on public roads.

The sprayer boom is equipped with nozzles that allow for the correct dosing of the spray liquid for the crop. The boom is designed to be strong and corrosion-resistant. Both the sprayer's boom and frame are zinc-coated.

Fig. 7 Retracted sprayer boom

Hydraulically unfolded X field boom

The X field boom is unfolded and lifted by Hydro Panel from the tractor's cabin. Its functionality is ensured by proper hydraulic cylinders and scissor system that allow the sprayer's lance to unfold.

Fig.7.1. The hydraulic X field boom — folded.

7. Technical characteristics of the sprayer

Symbol	Tank capacity	Working width of the boom
206	200	6
208	200	8
210	200	10
306	300	6
308	300	8
310	300	10
312	300	12
408	400	8
410	400	10
412	400	12
415	400	15
612	600	12
614	600	14
615	600	15
616	600	16
618	600	18
812	800	12
814	800	14
815	800	15
816	800	16
818	800	18
1012	1000	12
1014	1000	14
1015	1000	15
1016	1000	16
1018	1000	18
1212	1200	12
1214	1200	14
1215	1200	15
1216	1200	16
1218	1200	18
XSARA		
812	800	12
815	800	15
818	800	18
1012	1000	12
1015	1000	15
1018	1000	18
1212	1200	12
1215	1200	1215
1218	1200	1218

Tab.2 Table with sprayer symbols

Characteristics of the 200l sprayer.

Item	Unit	200l sprayer		
Symbol	-	206	208	210
Type	-	Mounted		
Dimensions of the sprayer				
Length	mm	1100	1100	1100
Working	mm	1650	1650	1650
Height	mm	1,600	1600	1600
Dimensions of the working position				
Length	mm	1100	1100	1100
Working	m	6	8	10
Height	mm	1,600	1600	1600
Sprayer's weight				
Weight of an empty machine	kg	145	158	160
Permissible weight	kg	160	173	175

Tab.3 Characteristics of the 200l sprayer.

Characteristics of the 300l sprayer.

Item	Unit	300l sprayer			
Symbol	-	306	308	310	312
Type	-	Mounted			
Dimensions of the sprayer					
Length	mm	1100	1100	1100	1100
Working	mm	1650	1650	1650	2650
Height	mm	1,600	1600	1600	1600
Dimensions of the working position					
Length	mm	1100	1100	1100	1100
Working	m	6	8	10	12
Height	mm	1600	1600	1600	1600
Sprayer's weight					
Weight of an empty machine	kg	150	160	163	206
Permissible weight	kg	170	180	183	226

Tab.4 Characteristics of the 300l sprayer.

Characteristics of the 400l sprayer.

Item	Unit	400l sprayer			
Symbol	-	408	410	412	415
Type	-	Mounted			
Dimensions of the sprayer					
Length	mm	1100	1100	1100	1400
Working	mm	1650	1650	2650	2850
Height	mm	1750	1750	1750	1950
Dimensions of the working position					
Length	mm	1100	1100	1100	1400
Working	m	6	8	10	15
Height	mm	1750	1750	1750	1750
Sprayer's weight					
Weight of an empty machine	kg	168	171	215	285
Permissible weight	kg	193	196	240	310

Tab.5 Characteristics of the 400l sprayer.

Characteristics of the 600l sprayer.

Item	Unit	600l sprayer				
Symbol	-	612	614	615	616	618
Type	-	Mounted				
Dimensions of the sprayer						
Length	mm	1200	1400	1400	1400	1400
Working	mm	2650	2850	2850	2850	2850
Height	mm	1750	2100	2100	2100	2100
Dimensions of the working position						
Length	mm	1200	1400	1400	1400	1400
Working	m	12	14	15	16	18
Height	mm	1750	2100	2100	2100	2100
Sprayer's weight						
Weight of an empty machine	kg	250	345	355	368	445
Permissible weight	kg	290	385	395	408	485

Tab.6 Characteristics of the 600l sprayer.

Characteristics of the 800l sprayer.

Item	Unit	800l sprayer				
Symbol	-	812	814	815	816	818
Type	-	Mounted				
Dimensions of the sprayer						
Length	mm	1300	1500	1500	1500	1500
Working	mm	2650	2850	2850	2850	2850
Height	mm	2100	2100	2100	2100	2100
Dimensions of the working position						
Length	mm	1300	1500	1500	1500	1500
Working	m	12	14	15	16	18
Height	mm	2100	2100	2100	2100	2100
Sprayer's weight						
Weight of an empty machine	kg	386	465	477	488	567
Permissible weight	kg	426	505	517	528	607

Tab.7 Characteristics of the 800l sprayer.

Characteristics of the 1000l sprayer.

Item	Unit	1000l sprayer				
Symbol	-	1012	1014	1015	1016	1018
Type	-	Mounted				
Dimensions of the sprayer						
Length	mm	1300	1500	1500	1500	1500
Working	mm	2650	2850	2850	2850	2850
Height	mm	2100	2400	2400	2400	2400
Dimensions of the working position						
Length	mm	1300	1500	1500	1500	1500
Working	m	12	14	15	16	18
Height	mm	2100	2400	2400	2400	2400
Sprayer's weight						
Weight of an empty machine	kg	400	479	491	502	581
Permissible weight	kg	450	539	541	552	631

Tab.8 Characteristics of the 1000l sprayer.

Characteristics of the 1200l sprayer.

Item	Unit	1200l sprayer				
Symbol	-	1212	1214	1215	1216	1218
Type	-	Mounted				
Dimensions of the sprayer						
Length	mm	1300	1500	1500	1500	1500
Working	mm	2650	2850	2850	2850	2850
Height	mm	2400	2400	2400	2400	2400
Dimensions of the working position						
Length	mm	1300	1500	1500	1500	1500
Working	m	12	14	15	16	18
Height	mm	2400	2400	2400	2400	2400
Sprayer's weight						
Weight of an empty machine	kg	443	534	546	577	626
Permissible weight	kg	793	584	596	637	676

Tab.9 Characteristics of the 1200l sprayer.

Characteristics of the diaphragm pump

Item	Unit	Pump	
Symbol	-	PU2/120	PU3/140
Type	-	Diaphragm	
Dimensions of the pump			
Length	mm	400	420
Working	mm	300	420
Height	mm	350	310
Mechanical			
Capacity	l/min	118	134
Maximum pressure	MPa	1.5	1.5
Direction of rotation	-	any	any
Rotational speed	rpm	540	540
Oil quantity	l	0.3	1.1
Oil grade	-	CLP 220	LUX 10
Pump weight			
Weight	kg	10.1	15.8

Tab.10 Characteristics of the PU-2/120 and PU-3/140 diaphragm pumps.

Characteristics of the sprayer boom

Item	Unit	Sprayer boom							
Working width	m	6	8	10	12	14	15	16	18
Section width	mm	1100-995-1650-995-1110	1880-1850-1650-1850-1880	2080-1850-1650-1850-2080	2350-2240-2560-2240-2350	1355-1954-1830-2560-1830-1954-1355	1855-1954-1830-2560-1830-1954-1855	2355-1954-1830-2560-1830-1954-2355	821-1630-2335-2352-2560-2352-2335-1630-821
Nozzle spacing	mm	500							
Height adjustment range	mm	500-1100	500-1100	500-1100	500-1250	500-1600	500-1600	500-1600	500-1600
Lifting mechanism for the boom		Manual winch							

Tab.11 Characteristics of the sprayer boom.

8. Delivery and loading on means of transport

The sprayer is delivered to the user in a partially dismantled condition. The degree of disassembly depends on the means of transport used. Use frame elements for loading and unloading as fixing points.

9. Operation and use

9.1. Preparation for work

When preparing the sprayer for operation, check its technical condition, tightness of the system and efficiency of the pump.

In addition, you need to perform the following actions:

- When the sprayer is switched on for the first time, flush it, extend the boom and switch on the pump drive,
- Check the condition of bolted connections,
- Check the condition of nozzles,
- Check the condition of hydraulic hose lines for visible leaks,
- Check the oil condition in the pump,
- Check the tractor's technical condition,
- Check the telescopic-articulated shaft's technical condition,

9.2. Coupling to a tractor

In order to couple the sprayer correctly and safely to the tractor, the sprayer must be on firm, level ground.

While coupling the sprayer to the tractor, the following actions must be carried out:

- Move the tractor back to a distance where it is possible to couple the sprayer's drawbar to the tractor's lower links,
- Turn the tractor's engine off, remove the ignition key and apply the parking brake,
- Fix the tractor's links to the sprayer's catch,
- Tighten the side links to remove vibrations,
- Connect the hydraulic lines,
- Connect the pump shaft to PTO of the tractor via the telescopic-articulated shaft,
- Level the sprayer.

9.3. Filling the tank

Before you start working on the field with the sprayer, fill the tank with water and diluted plant health product or fertiliser. In order to fill the tank, it is necessary to:

- unscrew the tank cover,
- pour water only through a strainer,
- do not allow the hose to come into contact with spray liquid.

9.4. Longitudinal and transverse leveling

Adjust the sprayer in two directions

- longitudinally,
- and transversely.

The longitudinal adjustment consists in adjusting the lower links of the tractor's three-point linkage system in such a way that the links of the system are at the same distance from the ground. The transverse adjustment of the field sprayer is carried out by means of a central screw. To adjust the sprayer longitudinally, raise the sprayer above the ground and adjust the length of the central screw so that the frame is perpendicular to the ground surface. Adjustment of these planes guarantees the correct operation of the nozzles, and thus the precise execution of the treatment.

Boom adjustment

The most important rule when setting the sprayer boom is to keep a distance of 50 cm between the boom and the sprayed surface. To raise the boom, use a winch mounted on the sprayer frame, which in turn is connected to the boom by a steel cable.

Fig. 8 Manual winch.

Extending the sprayer boom (manal)

To extend the sprayer boom, unlock the safety catch that prevents the sprayer boom from extending. Then open the side part of the boom. Do the same with the second part of the boom. The next step is to extend the extreme parts of the boom and its middle part. In order to retract the boom, proceed in the opposite way than when extending, remembering to unlock the safety latches. When extending the stabilized boom, the stabilizer must first be locked. If the sprayer is equipped in hydraulic lift, raise it by switching adequate lever inside the tractor and switching the function in the hydro panel.

Hydraulically unfolded X field boom

The X field boom is unfolded and lifted by Hydro Panel from the tractor's cabin. Its functionality is ensured by proper hydraulic cylinders and scissor system that allow the sprayer's spray lance to unfold.

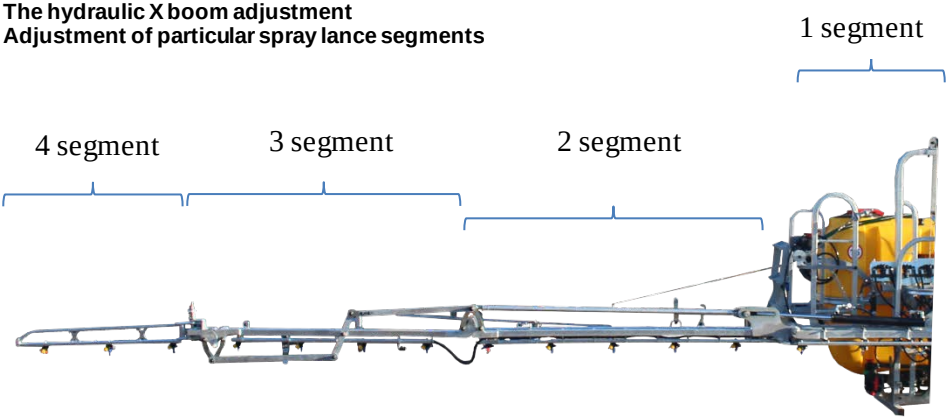
NOTE!

When extending and retracting the sprayer boom, there is a risk of cutting or crushing some parts of the body. Take special care.

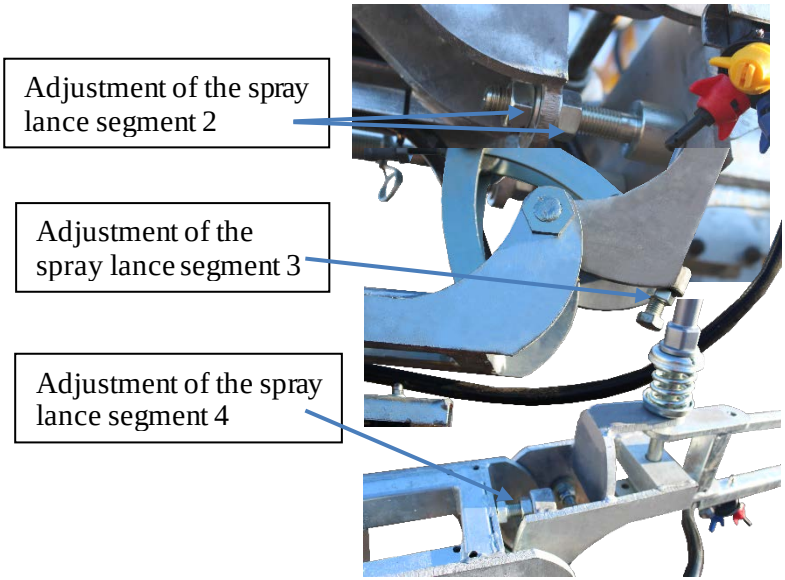
NOTE!

When extending and retracting the sprayer boom, make sure that there are not bystander nearby who could be subject to impact, cut or crushing.

The hydraulic X boom adjustment
Adjustment of particular spray lance segments



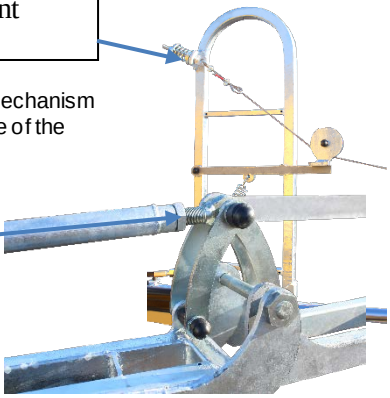
Even though the spray lance was factory-adjusted, it may need adjustment of its segments. The adjustment is being done in three segments on each side of the field boom by tightening or loosing leveling screws.



Adjustment of the smooth lance unfolding mechanism

Lance is equipped in the descent dampening system. To adjust the damper, remove masking frame, then tighten or loosen the screw inside the damper.

Damper adjustment



The lance scissor mechanism adjustment
The field lance is unfolded by cylinders and the scissor mechanism that makes it possible to unfold segments 3 and 4 via one of the cylinder per side. This mechanism requires adequate adjustment via proper screws' tightening.

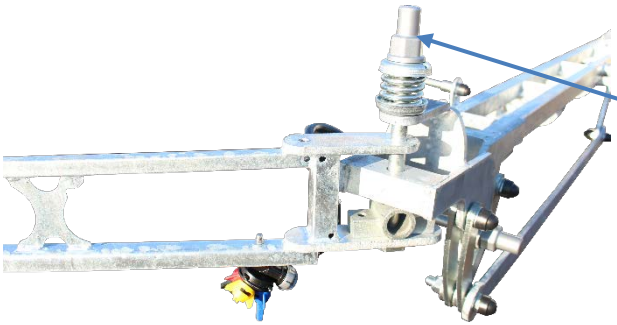
Adjustment 1

Adjustment 1.
Level lance by rotating the screw.

Adjustment 2

Adjustment 2.
Remove screw's masking frame and move the screw to the position that allows complete and free movement of the lance.

Adjustment of strength of the field boom's far segment emergency folding
After encountering an obstacle, the far segments of the field boom can fold. This prevents damaging the field boom when a collision occurs with e.g. pole or tree. Sensitivity of this system is adjusted by screw under the masking frame that was marked on the figure.



Adjustment of the far segment emergency folding

9.5. Manifold operation

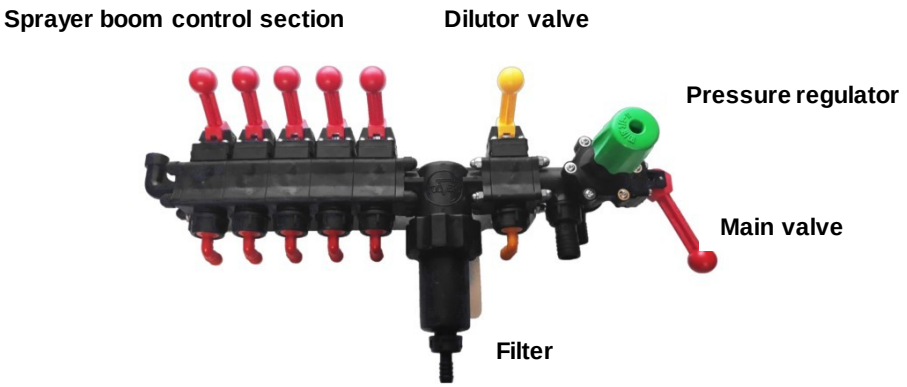


Fig. 9 Construction of the manifold.

The manifold is used to control the sprayer operation. The manifold is composed of the following elements:

- main valve
- pressure regulator
- diluter valve
- the boom control section

The main valve is responsible for shutting off the flow of the spray liquid and directing it into the spray liquid tank.

The pressure regulator is responsible for regulating the working pressure, one of the most important parameters to be set when determining the spray rate.

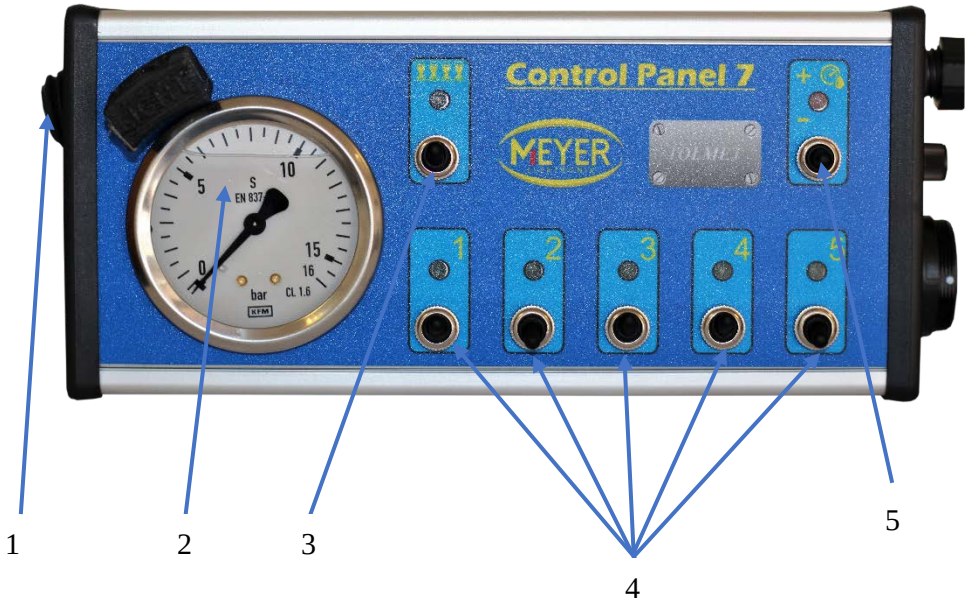
The diluter valve is used to switch the diluter of plant health products on and off.

The spray boom control section is intended to control the sprayer boom operation. This section allows to switch on a selected boom section in order to avoid overlapping of the spray liquid.

9.6. Controllers handling

STEERING THE DISTRIBUTOR FROM THE TRACTOR'S CABIN

The distributor's control functions were described based on the most expanded Control Panel 7 controller.



1. Panel backlight switch;
2. Manometer;
3. Turn all sections on/off;
4. Turn particular sections on/off;
5. Pressure regulation.

STEERING HYDRAULICALLY UNFOLDED FIELD BOOM

Steering field boom from the tractor's cabin is done by Hydro Panel. We choose a function using a knob, next, we use it by a hydraulic system lever in the tractor's cabin. Diode signals the chosen function of the field boom.

1. No functions; 2 Unfolding/folding of the left lance; 3 Unfolding/folding of the right lance;

4 Unfolding/folding of both lances; 5 Field boom height adjustment; 6 Leveling.

9.7. Pump operation

Fig. 10 Diaphragm pump

To ensure correct operation of the pump, remember to check the oil level in the pump and pressure in the air vessel. Too little oil in the pump can damage the pump and too much oil can drain out through the oil filler. Correct pressure in the air vessel guarantees stable pump operation. A sign of too low a pressure is the vibrating pointer of the pressure gauge.

9.8. Filter operation

Fig. 11 Filter.

The filter is responsible for filtering the spray liquid, and allows to drain the spray liquid. The internal filter has a reusable filter cartridge. To clean the filter, there is no need to drain the spray liquid tank, as the filter has a shut-off valve. To cut off the flow, close the shut-off valve as indicated on the knob, then unscrew the green nut and remove the filter cover. In order to remove the cartridge pull it firmly as it is clipped. The next step is to clean the filter cartridge and assemble it in a reverse order.

The filter can also drain the spray liquid, to do so, unscrew the red knob at the bottom of the filter. To close the drain again, turn the knob.

9.9. Nozzles operation

Fig. 12 Order of assembly of individual nozzle and valve components.

Fig. 13 Assembly of particular elements.

You don't need any additional tools to operate the heads or individuals nozzles, as all elements are mounted with caps or nuts that can be unscrewed manually. One of the possible actions during the use of the sprayer is the need to clean the strainers that are embedded in mountings. In order to clean the strainers, unscrew the cap and remove the strainer. Assembly order of particular elements is presented in the picture above.

10.Setting the required dose

To ensure precise and effective spraying, set the desired application rate in the area. The dose is taken as the quantity of used spray liquid specified in liters [l] per unit of area, i.e. hectare[ha].

There are three ways to set the dosage:

- Change of the nozzles,
- Change of the travel speed,
- Change of the liquid pressure.

A single nozzle mounting is included as standard.
The nozzle is replaced by replacing a jet into another one.

Fig. 13 Single jet

In the triple head, the nozzles are changed by turning the head. The head is equipped with two RS nozzles and one RSM nozzle for foliar fertilizers. When the head is in the intermediate position, the spray liquid flow to the nozzle is cut off.

Fig.14 Triple head. 1-Nozzle RS 02; 2-Nozzle RS 03; 3-Nozzle RSM

10.1. Recommended nozzle selection for the type of application

When selecting the right nozzle, the first thing to do is to follow the recommendations on the label of the herbicide. Failure to follow the recommendations may result in a decrease in the effectiveness of the treatment. If there is no information on the packaging, please follow the recommendations given in the table below.

Type of treatment	Type of spraying	Type of nozzle	Type of generated drops	Notes
Soil herbicide spraying and mineral fertilisers	Soil preparations	Nozzles giving a flow rate of 1.5 l at a pressure of 3 bar	Large drops	Even distribution of the preparation on the whole soil surface
Foliar spraying	Foliar preparations	Nozzles giving a flow rate of 1.0 l at a pressure of 3 bar	Little drops that don't flow from the leaves	Even distribution of the preparation on the whole leaves surface
Insecticide spraying	Insecticides	Nozzles giving a flow rate below 1.01 at a pressure of 3 bar	Small drops	Prevent the spray liquid from collecting on the leaves
Fungicide spraying	Fungicides	Nozzles with turbulence	Small drops	Ingress of spray liquid under the leaves

Use the table below to select the correct speed, pressure and spray rate:

Color of the spray according to ISO	Pressure [bar]	Capacity from the jet [l/min]	Spray rate [l/ha] at 50 cm distance between the nozzles for different speeds [km/h]							
			4.0	5.0	6.0	7.0	8.0	9.0	10	12
Yellow	2.0	0.65	195	156	130	111	98	87	78	65
	2.5	0.72	216	173	144	123	108	96	86	72
	3.0	0.79	237	190	158	135	119	105	95	79
	3.5	0.85	255	204	170	146	128	113	102	85
	4.0	0.91	273	218	182	156	137	121	109	91
Blue	2.0	0.96	288	230	192	165	144	128	115	96
	2.5	1.08	324	259	216	185	162	144	130	108
	3.0	1.18	354	283	236	202	177	157	142	118
	3.5	1.27	381	305	254	218	191	169	152	127
	4.0	1.36	408	326	272	233	204	181	163	136
Nozzle RSM Orifice 1	2.0	0.62	186	155	124	108	93	83	74	62
	3.0	0.80	240	200	160	140	120	108	96	80
	4.0	0.95	285	237	190	166	142	128	114	95
	5.0	1.06	318	265	212	185	159	143	127	106

For example, if the recommendations for the preparation that is used for an agrotechnical treatment order to use a yellow nozzle and the amount of liquid used per hectare of area should be about 200l, set the working pressure at 3.0 bar and keep the driving speed at 5km/h. For these settings, you will use 190 litres of liquid per hectare. You can also set a pressure of 3.5 bar, and then you will use 204 liters of liquid per hectare, but remember to keep headlands in mind when overlapping. The example is marked in the table below:

Color of the spray according to ISO	Pressure [bar]	Capacity from the jet [l/min]	Spray rate [l/ha] at 50 cm distance between the nozzles for different speeds [km/h]							
			4.0	5.0	6.0	7.0	8.0	9.0	10	12
Yellow	2.0	0.65	195	156	130	111	98	87	78	65
	2.5	0.72	216	173	144	123	108	96	86	72
	3.0	0.79	237	190	158	135	119	105	95	79
	3.5	0.85	255	204	170	146	128	113	102	85
	4.0	0.91	273	218	182	156	137	121	109	91
Blue	2.0	0.96	288	230	192	165	144	128	115	96
	2.5	1.08	324	259	216	185	162	144	130	108
	3.0	1.18	354	283	236	202	177	157	142	118
	3.5	1.27	381	305	254	218	191	169	152	127
	4.0	1.36	408	326	272	233	204	181	163	136
Nozzle RSM Orifice 1	2.0	0.62	186	155	124	108	93	83	74	62
	3.0	0.80	240	200	160	140	120	108	96	80
	4.0	0.95	285	237	190	166	142	128	114	95
	5.0	1.06	318	265	212	185	159	143	127	106

10.2. Calibration of the sprayer

Determining the working speed

If it is impossible to read the speed of the agricultural tractor, use the provided formula. To use the formula and calculate the working speed, fill the sprayer tank halfway with water, set a distance of 100m and drive it at constant engine revolutions while measuring the time.

$$\textit{Travel speed} \quad \left[\frac{km}{h}\right] = \frac{100[m]}{time[s]} \times 3{,}6$$

Selection of nozzle and pressure

To select the right nozzle and working pressure, use the nozzle selection tables discussed above.

Measurement of flow rate

To determine the flow rate, fill the sprayer tank, mark the liquid level and set the pressure for the required spray rate. The next step is to switch on the pump drive of the sprayer for one minute. After this time lapses, immediately switch off the pump drive and add the missing water (measuring it) to the level before starting the drive. With these data you should use the formula:

$$Q = \frac{600 \times q_c}{b \times v}$$

You can also carry out a simplified test by measuring the amount of liquid flowing out from one nozzle within one minute with for example a measuring cylinder. The formula will look as follows:

$$Q = \frac{600 \times q \times n}{b \times v}$$

where:

Q - dose of liquid per hectare [l/ha],
q_c - amount of water sprayed per minute[l],
q - amount of water sprayed per minute for one nozzle[l], n- number of nozzles,
b - operating width of the sprayer [m], v
speed of travel [km/h].

The calculated dose should be equal to the recommended dose for the agrotechnical treatment, but if the dose is lower than the required one, the working pressure should be increased, if the dose is too high, the pressure should be decreased. After you change the pressure, perform the test again until the recommended dose is equal to calculations.

If it is impossible to adjust the flow rate with pressure, change the speed of travel or type of nozzle.

11.Storage

Clean and repair any failure found before storing the machine for a long period of time. Protect against weather conditions. Store the sprayer on a level, hardened surface. You must remove the spray liquid from the pump for winter to avoid damage.

12.Disassembly and withdrawal from use

The sprayer is made of materials that do not pose any threat to the natural environment. At the end of its service life, when further use is no longer justified, the sprayer must be dismantled. Due to the high weight of the elements, lifting devices such as overhead traveling cranes or forklifts should be used during disassembly. Hand any metal parts to a scrap yard and send rubber and plastic parts for disposal or to a landfill for this type of waste. Used oil from the hydraulic system should be stored in sealed containers and handed over to the petrol stations that purchase such waste.

13.Possible faults

Quality of cultivation under certain conditions depends on the speed, condition of the working elements and correct adjustments. If any irregularities are found, check the condition of the working elements and adjust so as to achieve a satisfactory cultivation result. Any irregularities may have adverse impact on work quality of the sprayer, increase the costs of the procedure and damage both the sprayer and the tractor.

NOTE!

Working with a malfunctioning, poorly adjusted tool can lead to serious hazards for the operator and bystanders. Any observed malfunctions and damage must be repaired immediately.

The most common faults, causes of malfunctions and troubleshooting are described in the table below.

Fault, malfunction	Cause	Troubleshooting
The front of the tractor has a tendency to float	Too little load on the front. IMPORTANT: the front axle load of the tractor must not be less than 0.2 times its unladen weight.	Check that the tractor class complies with the recommendations in the Operating Manual. If not - change the tractor If yes - check the load and add an appropriate number of weights to the front axle if necessary
The pump does not suck in	Clogged suction line	Clean the line
	No liquid in the tank	Fill the tank
	Leakage in the suction line	Repair the leakage
	Filter malfunction	Check the cleanliness and settings of the filter
Pump capacity too low	Pump valves are jammed or damaged	Replace or clean the valves
Strong vibration of the pressure gauge pointer	Too low a pressure level in the air vessel	Increase the pressure level in the air vessel
	The system is air blocked	Check tightness of connections and hoses
	Damaged diaphragm	Replace the diaphragm
Mixture of oil and water flows out of the filling opening of the pump or oil drops are present in the tank	Damaged diaphragm	Replace the diaphragm

No flow of the liquid to the nozzles with an activated pump and an open control valve	Valves in the pump are damaged or installed improperly	Check or replace the valves in the pump
	Contaminated suction or discharge filter	Clean the filters
	Leakage between pump and tank	Repair the leakage
Pressure on the pressure gauge is reduced, and it is impossible to set a working pressure level	The pressure filter is contaminated	Clean the pressure filter
	The pressure hose is damaged	Replace the hose
	Improper or worn jets	Replace the jets
Uneven flow of the spray liquid from the jet	Improper pressure in the air vessel	Check and fill the pressure in the air chamber
	Low oil level in the pump	Check the oil in the pump and top up if necessary
	Rotational speed of the pump is too high	Check the pump speed

14.Stability of the tractor sprayer unit

The towing vehicle should be loaded with a suitable ballast at the front to ensure proper steering and braking. Axle load of the tractor with a Mounted sprayer must be at least 20% of the weight of the tractor alone (Fig. 3).

Please note that the driving nature is affected by the road and the machine body itself. The way of driving must be adjusted to field conditions and type of soil. When driving through a bend with the attached or semi-mounted machine, take into account the wide reach and the uplift pressure of the machine.

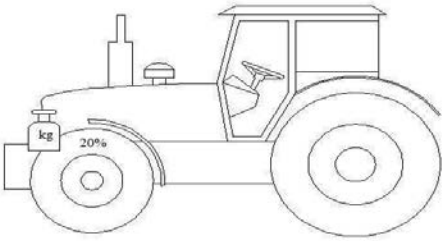


Fig. 15 Minimum axle load on the front of the tractor.

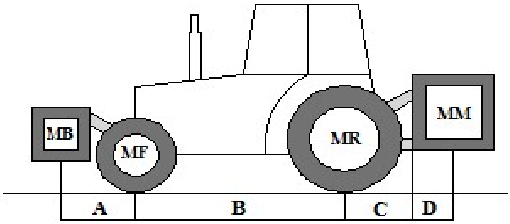


Fig. 16 Static stability determination.

How to determine the minimum front ballast and increase rear axle load is described in detail below:

MB=(MM*(C+D)-MF*B+0,2*MC*B)/(A+B)

A [m] - Distance between the centre of gravity of the front ballast / front-mounted machine and the centre of the front axle;

B [m] - distance between the tractor wheels;

C [m] - distance between the centre of the rear axle and the centre of the ball of the lower link;

D [m] - distance between the centre of the lower link ball and the centre of gravity of the rear-mounted machine.

MC [kg] - Tractor net weight;

MF [kg] - front axle load of the empty tractor; MR [kg] - rear axle load of the empty tractor;

MM [kg] - total weight of the rear-mounted machine;

MB [kg] - total weight of front ballast/ front-mounted machine

The calculation of the required minimum frontal ballast assumes that all the dimensions and weights given above are known. If they are not known and cannot be determined, there is only one safe and accurate way to avoid overloading:

Please weigh the tractor with the coupled and raised sprayer to determine the actual rear axle load, comparing the front and rear axle loads of the tractor without the sprayer with the values when the sprayer is coupled to the tractor.

15. Warranty conditions and warranty services

Detailed information on the warranty terms and conditions for the agricultural equipment is contained in the Civil Code, Section III, Warranty art. 577-581. This information should be available in all agricultural equipment sales outlets and service centers. The warranty service providers are: (dealer) - entered in the warranty card at the time of sale.

WARRANTY CARD

Mounted sprayer

Symbol KLARA -

Factory No. -

Date of manufacture -

....

date of sale, signature of the seller stamp of the seller

Warranty service is provided on behalf of the manufacturer by:

.....

to be filled in by the seller

TOLMET reserves the right to make design changes without prior notice and without assuming any obligations. Unauthorized modifications in the sprayer's design may void the warranty. Only TOLMET parts should be used during the service life.

15.Principles of the warranty procedure

A user is a natural or legal person who purchases the agricultural equipment; A seller is a commercial unit bound by a commercial and service contract, providing the equipment to the user; A manufacturer is a producer of the agricultural equipment. By putting the machine into service, the manufacturer grants a warranty in accordance with the following rules:

1. The manufacturer assures that the product has no defects in material or workmanship.

2. The warranty services are provided by the manufacturer or by the seller authorized to provide repair services.

3. Under the warranty, the manufacturer or the seller authorized to provide repair services, in the event of acceptance of a complaint, undertakes to:

- Repair the equipment complained about free of charge, together with replacement of parts,

- Provide the user with new and correctly manufactured parts free of charge,

- Replace the equipment complained about with new equipment, if based on a decision issued by an authorized experts it is found that the repair cannot be carried out.

4. The warranty is granted for a period of 24 months, counting from the date of sale confirmed by the seller with a stamp and entry in the warranty card .

5. The warranty is extended for the period of repair of the equipment.

6. Manufacturer or a dealer authorized to provide the repair services, performs the warranty repair within 14 days from the date of delivery of the machine for repair.

7. In the case of complex repairs, this period may be extended after prior agreement with the user.

8. The user should lodge the complaint immediately after the failure or damage is found.

9. The basis for lodging the complaint is a properly filled warranty card. The warranty card is not valid without dates, signatures and stamps of the sales point.

10. The user reports the complaint to the seller in writing or via telephone, and provides the following data:

- where the machine was purchased (name of the point of sale),

- the date of sale,
- year of manufacture of the machine,
- factory number of the machine,
- user's address / contact phone
- who performed the commissioning,
- type of failure or damage.

11. The warranty does not cover:

- Damage caused by random events, unless they arose due to reasons inherent in the product,
- Damage caused by accidents or consequences resulting from those accidents,
- Damage resulting from improper storage, improper use, improper maintenance of mechanisms (lubrication) and other causes not attributable to the manufacturer. They can only be removed at the user's expense.

12. Warranty complaints do not apply to mechanically damaged parts and working elements that wear out naturally, such as fluids and lubricants, light bulbs, etc. The damaged parts are replaced at the user's expense.

13. The warranty does not cover damage to hydraulics resulting from contamination of the hydraulic oil. The oil purity class of the tractor hydraulic circuit must comply with the requirements of ISO 4406-1996, condition 20/18/15.

14. In the case of those parts that we did not manufacture ourselves, we pass the warranty to their producer.

15. The warranty is revoked if the user makes any technical changes, if the machine is used improperly, if it is not used in accordance with its intended purpose or if it is used in a manner that differs significantly from the instructions for use and operation .

16. By purchasing equipment covered by this warranty, you agree to the above warranty terms and conditions.

16.Service

No.	Date of submission	Date of rectification of the failure	Description of the activities carried out and the parts replaced	Signature

17.How to use the Parts Catalog

The catalog should be used as follows:
- Determine the machine assembly which the replacement part is located in.
- Find the correct drawing of the assembly and the serial number of the part you are looking for.
- Using this number, find the appropriate drawing number in the table description, or the catalog number and the number of pieces.

18.How to order spare parts

You can order any spare parts for the mounted sprayer by phone or mail by providing:

1. The exact address of the ordering party.
2. Machine name, symbol, serial number and year of manufacture.
3. The exact name of the parts.
4. Number of pieces.
5. Payment terms.

Parts are shipped by courier, or the customer collects them personally from the manufacturer or from the nearest TOLMET representative.

All spare parts are available at www.tolmet.pl

PARTS CATALOG

1. Frame

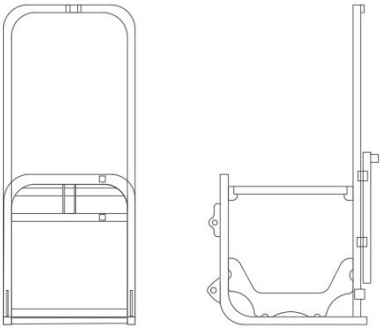
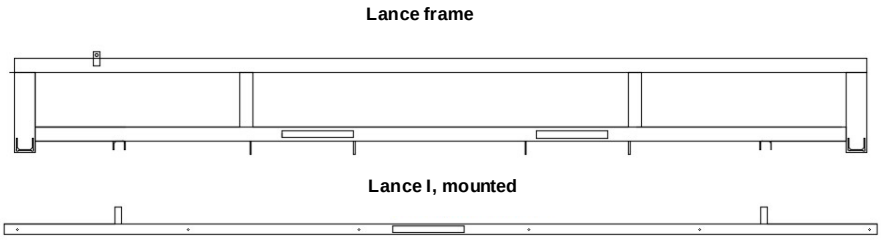
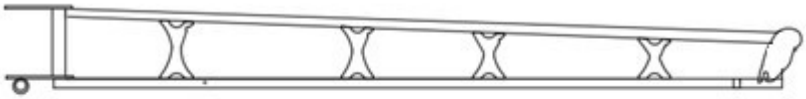


Fig. 1 Frame

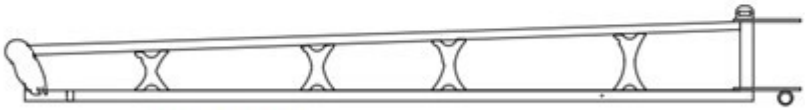
No.	Name	KTM symbol or standard number	Pcs.
1	sprayer frame 200l	K-200R	1
2	sprayer frame 300l	K-300R	1
3	sprayer frame 400l	K-400R	1
4	sprayer frame 600l	K-600R	1
5	sprayer frame 800l	K-800R	1
6	sprayer frame 1000l	K-1000R	1
7	sprayer frame 1200l	K-1200R	1

2. Sprayer boom



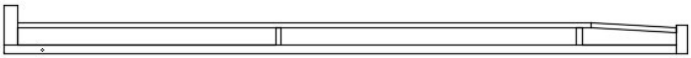


Lance II, right



Lance II, left

Lance III, right



Lance III, left

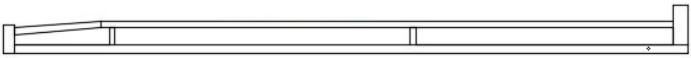


Fig. 2 Example of a drawing of a boom and names of individual components.

3. Barrel

No.	Name	KTM symbol or standard number	Pcs.
1	Barrel 200l	K-200B	1
2	Barrel 300l	K-300B	1
3	Barrel 400l	K-400B	1
4	Barrel 600l	K-600B	1
5	Barrel 800l	K-800B	1
6	Barrel 1000l	K-1000B	1
7	Barrel 1200l	K-1200B	1

4. PU2/120 pump

No.	Name	KTM symbol or standard number	Pcs.
*	PU2/120 pump	1021	1
1	Pump head	PU-2/120-11	1
2	Complete oil tank	1210	1

3	Elbow Ø25 (45°)	1043a	1
4	Elbow Ø32 (90°)	1043b	1
5	Suction manifold	PU-2/120-04	1
6	Air vessel bowl	PU-2/120-02	1
7	Air vessel diaphragm	PU-2/120-03	1
8	Bowl manifold	PU-2/120-01	1
9	Complete air vessel	1214	1
10	Pump shaft	PU-2/120-16	1
11	Pump bearing	1217	2
12	Bearing reduction sleeve	PU-2/120-25	1
13	Guide roller	PU-2/120-05	1
14	Shaft reduction sleeves kit	ZTR-001	1
15	Pump piston	PU-2/120-18	1
16	Pressure diaphragm	PU-2/120-10	2
17	Diaphragm pressure screw	PU-2/120-12	2
18	Complete pump valve	PU-2/120-14	4
19	Complete set of seals	1210	1
20	Leak stopper of the shaft	TC72x35x10	1
21	PTO shaft guard	1301	1

5. PU-3/140 pump

No.	Name	KTM symbol or standard number	Pcs.
*	PU-3/140 pump	1022	1
1	Upper air vessel bowl	PU-3/140-02	1
2	Air vessel diaphragm	PU-3/140-03	1
3	Bottom air vessel bowl	PU-3/140-01	1
4	Complete air vessel	PU-3/140-00	1
5	Head	PU-3/140-11	1
6	Complete pressure manifold	PU-3/140-06	1
7	Complete suction manifold	PU-3/140-04	1
8	Air vessel elbow	PU-3/140-08	1
9	Elbow Ø25 (90°)	1230	1
10	Elbow Ø32 (90°)	PU-3/140-07	1
11	Elbow Ø40 (90°)	PU-3/140-05	1
12	Pressure diaphragm	PU-3/140-10	3
13	Pumping diaphragm cap	PU-3/140-12	3
14	Diaphragm mounting screw	PU-3/140-13	3
15	Complete oil tank	1167	1
16	Rear bearing cover	PU-3/140-23	1
17	Untackled driving shaft	PU-3/140-16	1
18	Bearing reduction sleeve	PU-3/140-25	1
19	Driving shaft bearing	PN-79/M86100	2
20	Crank bearing	PN-83/M86291	1
21	Zeger Z62	Z62	2
22	Pump piston	PU-3/140-08	3
23	Pump sleeve	PU-3/140-17	3
24	Crankshaft pin	PU-3/140-20	2

25	Sealant set	1146	1
26	Leak stopper of the shaft	TCx35x10	1
27	PTO shaft guard	1301	1

6. Manifold

No.	Name	KTM symbol or standard number	Pcs.
1	Manual manifold Duro 3	1006	1
2	Manual manifold Duro 5	1007	1
3	DURO shut-off valve	RD3/5-1098	Depends on the type
4	Pressure filter	RD/RF3/5-1086	1
5	Section elbow	RD/RF3/5-1143	Depends on the type
6	Diluter elbow	RD/RF3/5-1142	1
7	Red short lever	RD/RF3/5-1125	Depends on the type
8	Yellow short lever	RD/RF3/5-1126	1
9	Red long lever	RD/RF3/5-1127	1
10	Pressure gauge holder	RD/RF3/5-27	1
11	Strainer diluter valve	RD/RF3/5-19	1
12	Manual manifold GRAN 3	1124	1
13	Manual manifold GRAN 5	1232	1
14	Section GRAN3	GR3-1234	1
15	Section body GRAN3	GR3-1236	1
16	Section GRAN3	GR5-1235	1
17	Section body GRAN5	GR5-1237	1
18	Shut-off mechanism of section GRAN	GR3/5-1238	Depends on the type
19	GRAN diluter mechanism	GR3/5-1239	1
20	GRAN pressure filter	GR3/5-1240	1
21	GRAN filter body	GR3/5-1241	1
22	Pressure gauge	1233	1
23	Manifold filter housing	RD/RF3/5-17	1
24	Manifold filter cartridge	RD/RF3/5-31	1
25	Manifold filter cap	RD/RF3/5-16	1
26	Main section	RD/RF3/5-1094	1
27	Main section with regulator	RD/RF3/5-1093	1
28	Pressure pipe connection Ø25	RD/RF3/5-21	1
29	Connector pipe for the hydraulic agitator	RD/RF3/5-18	1
30	Connector pipe directing liquid into the tank	RD/RF3/5-28	1
31	Regulator diaphragm	RD/RF3/5-30	1
32	Regulator with a diaphragm	RD/RF3/5-1092	1
33	Manifold regulator cap	RD/RF3/5-11	1
34	Sealing set DURO 3	RD/3-1150	1
35	Sealing set DURO 5	RD/5-1151	1
36	Sealing set GRAN3/GRAN5	GR-1248	1

7. Nozzles

No.	Name	KTM symbol or standard number	Pcs.
1	Single through nozzle holder	P-1015	1
2	Single end nozzle holder	P-1014	1
3	Triple through nozzle holder	G-1002	1
4	Triple end nozzle holder	G-1003	1
5	Carousel body	G-1242	1
6	Rotary body	G-1173	1
7	Main pass-through body	G-01P	1
8	Main end body	G-01K	1
9	"V" type nozzle pass-through body	P-1045P	1
10	"V" type nozzle end body	P-1045K	1
11	RSM jet	G-1023	1
12	RS 02 jet	G-1024	1
13	RS 03 jet	G-1025	1
14	Blue cap	G/P1047a07	1
15	Yellow cap	G/P1047b07	1
16	Red cap	G/P1047c07	1
17	Valve fixing nut	G/P-1048	1
18	Strainer 0.4	G-1049	1
19	Valve	G/P-1051	1
20	Orifice 1.0mm	G-1052	1
21	Diaphragm 18x1.5	G/P-1053	1
22	Nozzle seal 18x3x6	G/P-1050	1
23	O-ring 6x3	G-1172	1

8. Suction filter (main filter) without shut-off valve

No.	Name	KTM symbol or standard number	Pcs.
1	Suction filter without shut-off valve	F16/1274	1
2	Filter cover	F16/1080	1
3	Filter body	F16/1077	1
4	Filter cartridge	F16/1078	1
5	Complete blanking plug	F16/1079	1
6	Cover nut	F16/1085	1
7	Discharge valve	F16/1075	1
8	Elbow Ø32 (45°)	F16/1081	1
9	Set of seals	F16/1154	1

9. Suction filter with shut-off valve

No.	Name	KTM symbol or standard number	Pcs.
1	Suction filter without shut-off valve	F16/1013	1
2	Filter cover	F16/1080	1

3	Filter body	F16/1077	1
4	Filter cartridge	F16/1078	1
5	Complete blanking plug	F16/1079	1
6	Cover nut	F16/1085	1
7	Discharge valve	F16/1075	1
8	Elbow Ø32 (45°)	F16/1081	1
9	Set of seals	F16/1154	1
10	Shut-off valve knob	F16/1083	1
11	Shut-off valve mechanism	F16/1082	1
12		F16/1154	1

10. Tank's equipment

No.	Name	KTM symbol or standard number	Pcs.
1	Pass-throughelbow	1010	1
2	Overflow elbow	1011	1
3	Indicator elbow	1004	1
4	Mixer	1005	1
5	Screen diluter	1001	1
6	T-pipe	1221	1
7	Drain Ø32	1018	1
8	Drain Ø32 45°	F16/1081	1
9	Drain Ø40	1018a	1
10	Hose connection	1243	1
11	Tank fixing screw M10x70	1012b	1
12	Tank fixing screw M10x90	1012c	1
13	Filling strainer Ø400	1040a	1
14	Tank cover Ø400	1059	1
15	Filling strainer Ø355	1040b	1
16	Tank cover Ø355	1059a	

11. Sprayer boom equipment

No.	Name	KTM symbol or standard number	Pcs.
1	Slide for the lance 12	1212	1
2	Sleeve for the lance 12	1245	1
3	Slide for the lance 15	1213	1
4	Sleeve for the lance 15	1246	1
5	Lance fixing screw M12x25x25	1016b	1
6	Lance fixing screw M12x40x35	1016c	1
7	Lance fixing screw M12x50	1016e	1
8	Lance latch 15m	1145	1
9	Lance latch 12m	1144	1

NOTES

NOTES

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