



Sede Legale: Strada Provinciale Ovest n .36

Sede Operativa: Strada Provinciale Ovest n .38

46020 PEGOGNAGA (MN)

Tel. 0376-558089-Fax. 0376-559890

E-MAIL: info@bonatticaricatori.it- www.bonatticaricatori.it

C.F./P.I. 02133730206 - CCIAA-MN-n. 02133730206

N. MECCANOGRAFICO MN02142 R.E.A. MN-n 226961

Capitale Sociale i.v. € 30.000,00

*OPERATIONS
AND
MAINTENANCE MANUAL
SNOW BLADE*

MOD. L₁SN

-A-

COD. B / 037 - 10/96 REV. 00

FOREWORD

This operation and maintenance manual has been written by the company bonatti and complies with the machine directive **89/392/cee-91/368/cee-93/44/cee -93-68/cee** and relevant harmonized *provisions en 292-1 and en 292-2*.

The technical inspection of compliance of the technical documentation and prototype with the directive and with the harmonized provisions here stated, has been performed by the **company Bonatti**.

The manual:

- Must be always with the **snowplow system - LSN 1250-LSN 1500-LSN 1750-LSN 2000 - LSN 2250 - LSN 2500 - LSN 2500 I - LSN 2750 I - LSN 3000 I - LSN 3250 I** and contains the instructions to perform without any risk all handling operations, use and maintenance procedures and spare parts replacement.
- The operator must well understand this manual before to perform handling operations, use and maintenance procedures and spare parts replacement.
- Unskilled operators or physically unable to understand the instructions here described, may cause material damages, injuries to third party and can be prejudicial to the safety of the system.



CAUTION

- Any label, notice-sticker, mentioned in this **OPERATION MANUAL** must be compulsory replaced by the user or by the owner of the system before they become illegible. They may be obtained from the **Company Bonatti** (the above mentioned labels and notice-stickers can be requested by mentioning the CODE number printed on them).
- The manufacturer is not responsible for damages arising from a late replacement of these labels and notice-stickers.
- Should a label, notice-sticker be partly illegible or quite missing, the user or the installer cannot use the **Snow Blade** until a new lable or notice-sticker has been applied.
- The punching mentioned in this manual must not be altered or made illegible.

USED SYMBOLS

In This manual three types of safety warnings are used to underline so many risk levels to which is subjected the maintenance and installation personnel of the handling system.

- Symbol of " DANGER "



DANGER

This symbol is used to underline risky situations for the personnel and therefore, to Prevent serious accidents, that sometime may be fatal.

- Symbol of " CAUTION "



CAUTION

It is used to underline risky situations for the integrity and the efficiency of the handling system and therefore many concern also the safety of the people.

- Symbol " IMPORTANT "



IMPORTANT

This symbol is used to underline important information that the personnel must learn and keep in mind.

In addition to the warning symbols also a symbol to underline the notes has been used.

- Symbol " NOTE "



NOTE

This symbol is used to draw your attention on informations or suggestions that may facilitate the work of the personnel entrusted with the handling use and maintenance operations.

The different symbols and notes are completed with messages indicating which are the risks and the warnings and their nature, also they clearly describe the suggested procedures and useful informations.



NOTA

ATTENZIONE

TRAINING OF THE OPERATOR AND INSTRUCTIONS FOR USE:

The **Snow Blade** can be used only by well trained personnel, able to use the **Snow Blade** according with the operation manual. The manual is to be held good only if written and modified by the **Company Bonatti** and corresponding to the machine in use.

In case of an irregular use of the **Snow Blade** it is suggested to perform these operations even if it is not required to better check the functioning.

A correct use of the **Snow Blade** and a regular maintenance, as required by the manual, allow a good working of the equipment ensuring the margins of safety required by the referred normative.

The **Snow Blade** is to be used according with the operation manual only. It cannot be used to carry persons or things. This type of use is forbidden and this prohibition is underlined with special signs.

The non-observance of the above prescriptions may be cause of damages, serious injuries or death to the persons.

IMPORTANT: a **skilled** operator must not make use of drugs or alcohol that may his ability and co-ordination while working. An operator making use of prescribed drugs hold a doctor certificate evidencing his ability to work safety.

The **Company Bonatti** is exonerated from all responsibility in case of non-observance of the prescriptions of this operations manual.

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PRESCRIPTIONS

IMPORTANT: Before operating the machine the operator must acquire a good general knowledge of the machine and its limits, as well as of the safety informations.



CAUTION

The instructions contained in this manual are provided by the Manufacturer. Any derogation of these directions must be authorized in writing by the Manufacturer. It is recommended to use quality safety clothing, such as helmets, non-skid shoes, safety gloves and protective glasses when required. Refer to the safety rules in force and to the safety devices.

FOREWORD

Use caution during the use and the maintenance of the **Snow Blade** to avoid accidents and to improve the safety of the work.

For safety reasons we recommend to select your technical staff between following two occupational categories:

- Operator: his technical training will consist in:
 - a) reading und understanding this manual
 - b) making a work demonstration
 - c) being verbally trained by a skilled technician of **Bonatti** or by other skilled personnel on the use of **Snow Blade**.

DANGER:

The operator is absolutely forbidden to perform such operations that are specified in this manual as duty of the maintenance engineer of the **Company Bonatti**.

CAUTION : The operator is absolutely forbidden to leave his work station during the use



and the maintenance of the **Snow Blade**.

- Maintenance engineer: he must be technically trained and have a good knowledge of the **Snow Blade** components.

In addition the maintenance engineer is required:

- a) to have a basic technical knowledge and to have gained experience in the farm equipment field;
- b)** to be particularly trained in all those works he must perform on the **Snow Blade**.
He must be trained by skilled service engineers or by personnel authorized by **Bonatti**.
- c) to have a perfect knowledge of the safety and accident prevention rules;
- d) to read and fully understand this manual.

Any suggestion or alternative solution, not included in this manual, must be submitted to the Manufacturer's technical department for approval.

RISKY SITUATIONS

Situations that can be a danger to the environment and to the safe-guard of the **Snow Blade** may happen during following work phases:

- A** - Transport or handling
- B** - Installation, setting at work, disassembly
- C** - Storage or out of order
- D** - Maintenance, adjustment, repair.

TYPE OF RISK	PHASE			
	A	B	C	D
Turnover, skidding or fall of the Snow Blade	▪	▪		
Mechanical failure of the components	▪	▪		▪
Accidental fall of components and accessories	▪	▪		▪
Squashing of persons	▪	▪		▪
Impact, contusions and skidding	▪	▪		▪
Shearing and imprisonment		▪		▪
Risks arising from lifting and lowering of mechanical parts		▪		▪

INSTALLATION SAFETY RULES

- **CAUTION:** The user must take care that the installation of the Snow Blade complies with the provisions contained in this manual and therefore he is responsible for their observance.
- Carefully read the operative procedures contained in this manual under the section " Coupling position of the **Snow Blade** to the farm tractor ".
- Before coupling to the farm tractor, carefully inspect the **Snow Blade** and check if it is provided with all part listed in the section " **Description of the Snow Blade** ".
- Bring the **Snow Blade** in a working area suitable for the coupling and work operations.
- Make sure that the spaces surrounding the working area are easy to be inspected and big enough to allow handling operations to be performed in a safe way.
- Before performing any operation, get all required safety devices, including safety clothing.



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CONFORMITY DECLARATION N° 5201

Encl. II D.P.R. 459/96 and Machines Directive 98/37/CE Encl. II A

The undersigned BONATTI SILVANO born in S.BENEDETTO PO
06.09.1949
address PEGOGNAGA (MN) PROVINCIALE OVEST, N° 42 representative
of the Company BONATTI CARICATORI SRL with seat in PEGOGNAGA (MN)
PROVINCIALE OVEST, N° 36 Producer of the following machine:

TYPE: SNOW BLADE

Commercial denomination:

Series number: **

With the following accessories: //

FOR TRACTOR:

NUMBER OF SERIES:

DECLARES

**UNDER PERSONAL RESPONSIBILITY IT CORRESPONDS TO WHAT IS PRESCRIBED BY THE
MACHINES DIRECTIVE 98/37/CE. FOR THE CONFORMITY CHECK WE'VE AVAILED OURSELVES
OF THE HARMONIZED RULES EN 292-1 AND EN 292-2**

PEGOGNAGA, LI

The representant of the company

Bonatti Silvano



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MINUTES OF DELIVERY

SNOW BLADE:

NUMBER OF SERIES: **

FOR TRACTOR: //

NUMBER OF SERIES: **

EFFEECTED TESTS

DESCRIPTION	NOTES	EFFECTED BY
INSTALLATION	YES	BONATTI SILVANO
TEST	YES	BONATTI SILVANO
HYDRAULIC PIPES CONTROL FOR RUBBING AND PROTECTION	YES	BONATTI SILVANO
HYDRAULIC OIL SUPPLY	NO	
PRODUCER'S PLATE	YES	BONATTI MARCO
SAFETY ADHESIVES	YES	BONATTI MARCO
MAINTENANCE AND OPERATOR'S MANUAL	YES	BONATTI GIORGIA
CONFORMITY DECLARATION	YES	BONATTI GIORGIA
ISTRUCTIONS TO THE USER	NO	

Data

stamp of the person who install

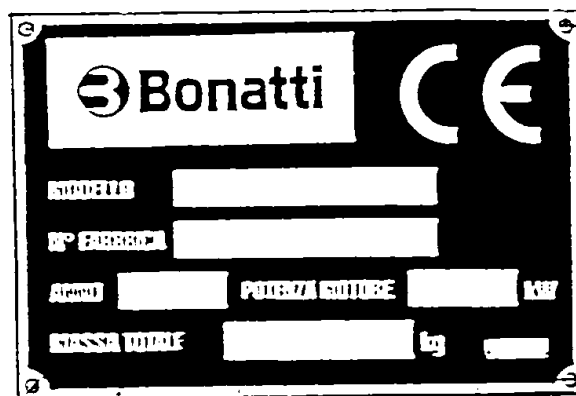
stamp of the producer

1. IDENTIFICATION OF THE MACHINE

Each Snow Blade is identified by a serial number and by the Model that are written in the nameplate located on the outside part of the door.

IMPORTANT: in your requests to the Manufacturer always refer to the name plate and specify the name plate data.

On some components of the Snow Blade that have not been directly made by the Manufacturer, name plates identifying the details of the component and the details of the manufacturer of such component according with CE specifications, are applied.



2. ROAD CIRCULATION

The road circulation is subject to the law and regulations in force.

The manufacturer of the equipment is not responsible for the consequences of the non-observance of the rules of the road.

Prescriptions for road circulation:

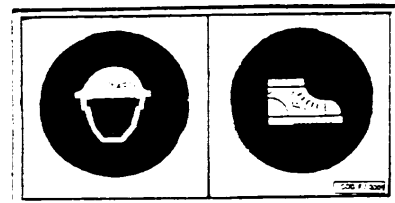
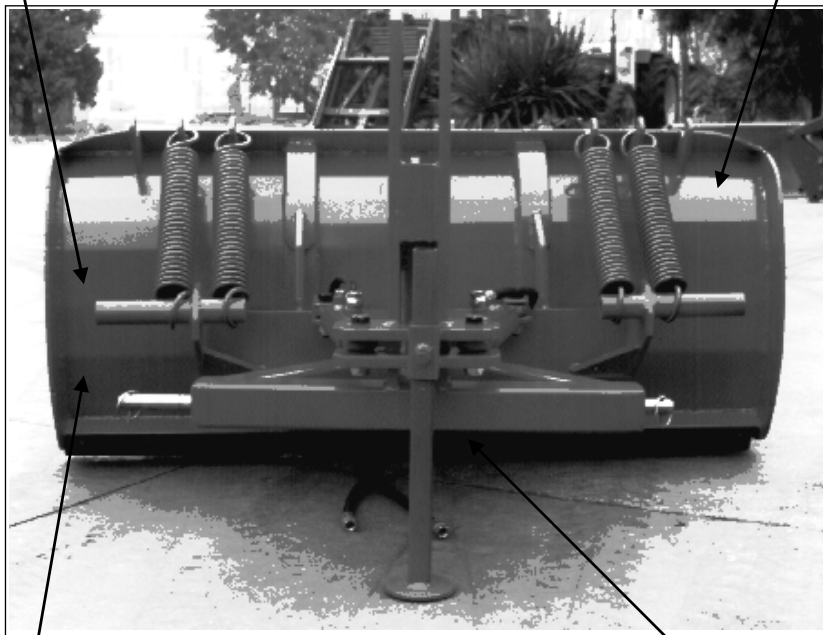
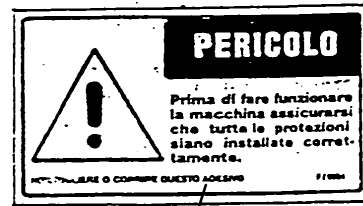
- Yellow pivotable headlight on
- Make sure that the mechanical locks of the Snow Blade are fastened.
- Fix the tie rods of the farm tractor power-lift by means of the special adjuster in order to avoid dangerous oscillations during the transport.

The non-use of the mechanical lock devices may cause serious damages to things and persons.

N.B. For safety reasons we suggest the biggest caution on the road to avoid unexpected oscillations and side skids.

N.B. The **Company Bonatti** declines any civil and penal liability for damages to persons and things that may arise from the non-observance of the road circulation rules.

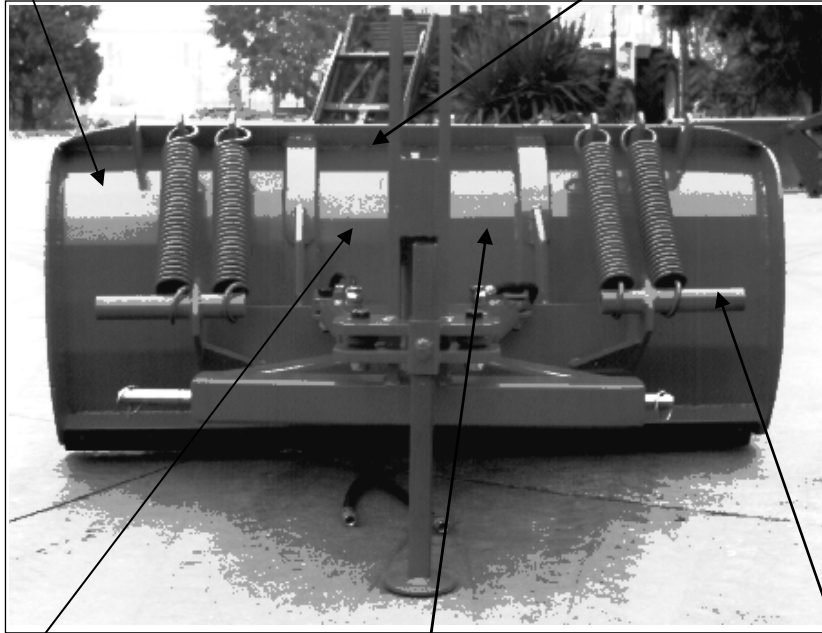
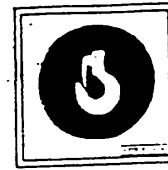
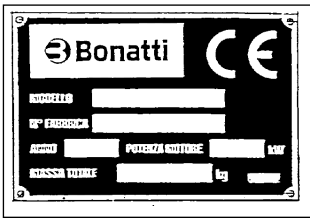
3. LOCATION OF WARNINGS, NAME PLATES, SAFETY STICKERS



IMPORTANT:

Make sure that all nameplates and warning stickers are legible and located in the correct positions as shown in the above figure.

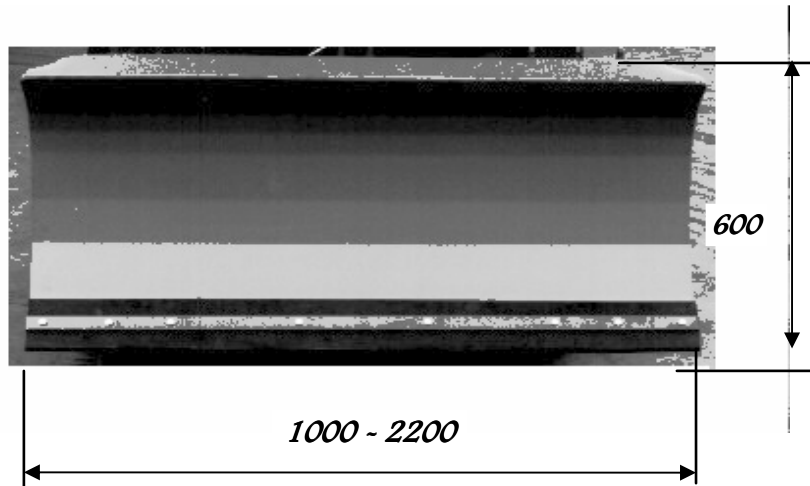
LOCATION OF WARNINGS, NAME PLATES, SAFETY STICKERS
(continuation)



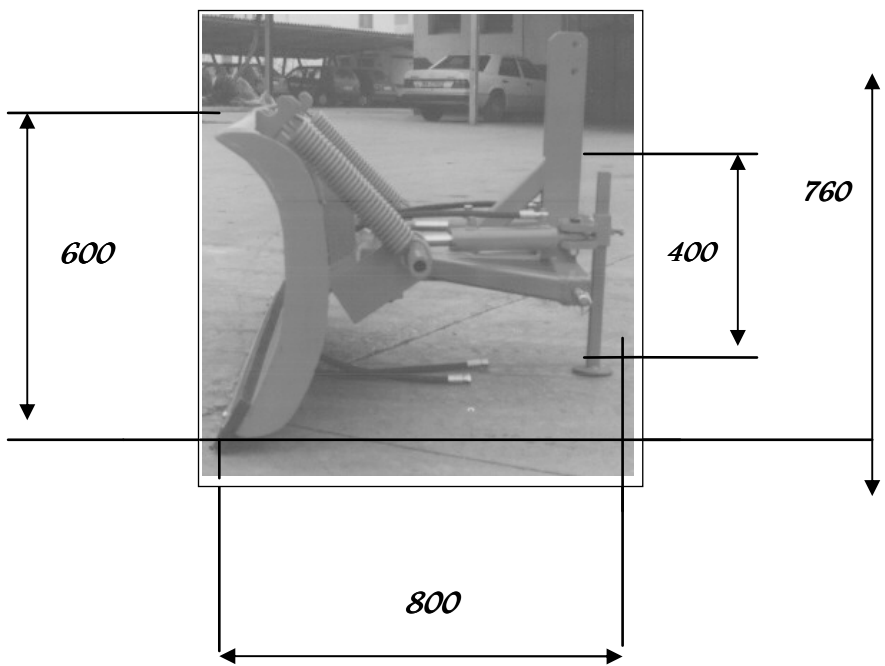
IMPORTANT:

Take care that all identification plates and warning stickers are legible and locted in the correct positions as shown in the above figure.

4. DIMENSION OF THE SNOW BLADE



FRONT VIEW



SIDE VIEW

5. DESCRIPTION OF THE SNOW BLADE

The Snow Blade is an equipment to fit to the farm tractor and to be used to push the snow heaps in the desired direction or to the road sides. The blade can be turned both on the left and on the right of 33° approx. by operating the special hydraulic jacks of the machine.

5.1 PARTS OF THE SNOW BLADE

The Snow Blade consists of following parts:

- **FIXED SUPPORT** provided with:
 - a) upper hole for third point coupling with through pin provided with mechanical safety release block;
 - b) through pin, in the lower part, with chains and safety split pins, for the coupling of the farm tractor lifting arms;
 - c) fulcrum pin to connect the fixed support to the turning support;
 - d) central support connecting pins (2) to Snow Blade, with safety lock split pins (see table below)
 - e) pins (4) for connection to hydraulic cylinders between fixed and turning support.
- **CENTRAL TURNING SUPPORT** provided with eyebolt acting as hooking point for lifting.
- **SNOW BLADE** with one or two separated sections.
- **SHOCKPROOF SPRINGS** in variable quantity according to the model (see table below)
- 2 double acting **HYDRAULIC CYLINDERS** for horizontal orientation of the blade.
Mechanical **STABILIZING FOOT**, adjustable in height and provided with lock screw.
- **END BLADES** in rubber or steel.

Flexible **HYDRAULIC PIPES** with rapid joint (see table below).

Model LSN	Springs		Pins
	Min.	Max.	
1000	2	2	2
1250	2	4	2
1500	4	6	2
1700	4	6	2
2000	4	8	3
2200	6	8	3

TABLE 1

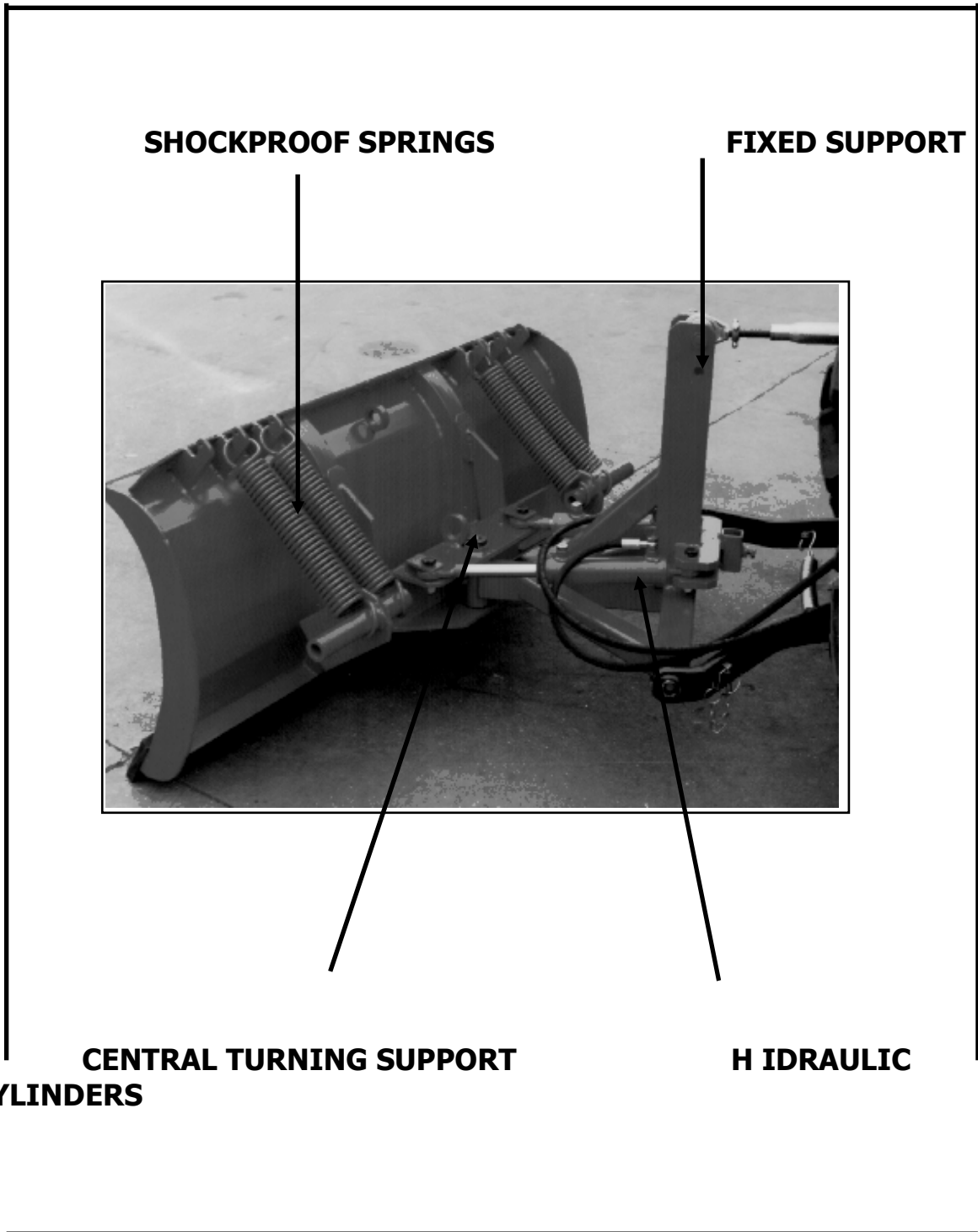


TABLE 2

SNOW BLADE

HIDRAULIC PIPES



END CUTTERS

STABILIZING FOOT

6. OPERATING PROCEDURES OF THE SNOW BLADE FUNCTIONS

The snow blade can be positioned in different ways:

1. Coupling position to farm tractor
2. Transport position after coupling to farm tractor
3. Working position
4. Transport position after work
5. Parking position

One or more phases describe which are the operating procedures to do in order to get the **Snow Blade** in the required position.

6.1 COUPLING POSITION OF THE SNOW BLADE TO THE FARM TRACTOR

With coupling position we mean the **Snow Blade** in non-working conditions, that is detached from the farm tractor and supported by the stabilizing foot. To transport the **Snow Blade** with the farm tractor, first of all it must be coupled to the farm tractor, following the procedure phases here below.

6.6.1. Coupling phase to the farm tractor

a) Start the farm tractor and back up or go ahead slowly, according to the position of the Snow Blade coupler, so that the lower holes of the fixed support to the farm tractor hoisting device arms are matching.

b) Stop the engine



c) Approach the hoisting device arms to the side pins.

d) By hand, insert the left and right hoisting device arm (1st and 2nd point) with the safety split pin in the lower pins, so as to couple the **Snow Blade** to the farm tractor. In case of farm tractor provided with rapid coupling, make sure that mechanical locks are provided.

N.B. In case the mechanical safety lock and the safety split pins are not inserted, the Company Bonatti declines any civil and penal responsibility.

e) Connect the upper third point of the Snow Blade to the farm tractor with mechanical screw arm provided with safety lock, by fastening it with the lock through pin and split pin.

N.B. In case of accident due to a wrong performing of the above operations, the Company Bonatti declines any civil or penal responsibility.

f) Connect the two hydraulic flexible pipes with rapid coupling to the farm tractor.

g) Lift the mechanical stabilizing foot and lock it in rest position by means of the special setscrew.

6.2. TRANSPORT POSITION AFTER COUPLING TO THE FARM TRACTOR

During the transport the **Snow Blade** is in lifted position. To lift the Snow Blade proceed as follows.

6.2.1 Transport phase after coupling to the farm tractor

- a) Start the engine
- b) Lift the **Snow Blade** by operating the special hydraulic control lever of the hoisting devices.

N.B. Make sure that no one is walking within the reach of the **Snow Blade**

6.3. WORK POSITION

The **Snow Blade** is in working position when it is connected to the farm tractor, ready for use. To put the equipment in working position it is necessary to position the blade in the direction to which the snow must be pushed.

6.3.1. Working phase

- a) By operating the hydraulic control levers of the farm tractor jacks, position the blade in the direction to which the snow must be pushed.
- b) Drop the blade to the ground by operating the hydraulic control levers of the farm tractor.

After having carefully performed these operations, the **Snow Blade** is ready for use.

N.B. Once the lever has been lowered to the ground, do not try to position the blade during work. In case a different position of the blade is required, carry out the operations as per points a) and b).

N.B. In case the above procedures are not correctly performed, the Company Bonatti declines any civil and penal responsibility that may arise from a wrong use of the Snow Blade.

6.4. TRANSPORT POSITION AFTER WORK

As transport position after work we mean all those operations required to get the **Snow Blade** in the correct position for circulation on any type of road.

6.4.1 Transport phase after work

a) Lift the blade by operating the hydraulic levers of the farm tractor.

If these operations are correctly performed, the Snow Blade can be transported safely.

6.5. PARKING POSITION

With parking position we mean the Snow Blade in non-working conditions, that is detached from the farm tractor and supported by the stabilizing foot. To get the Snow Blade in parking position following procedures have to be followed.

Parking phase

a) Drop the blade to the ground



b) Stop the engine and release the flexible pipe pressure by operating the hydraulic control of the farm tractor.

c) Disconnect the hydraulic flexible pipes from the rapid couplings.

d) By hand, lower the stabilizing foot and secure it with the special setscrew.

e) By hand, extract the pin of the third point coupling.

f) Manually remove the lock-split pin from the lower arms of the farm tractor hoisting device.

g) Manually extend the hoisting device arms of the farm tractor until they are extracted from the fixed support pin of the Snow Blade.

N.B. Take care that the blade is completely uncoupled from the hoisting device.

N.B. Make sure that the Snow Blade is positioned on a flat and suitable surface, in order to prevent the Blade from turning over.

Start the engine of the farm tractor and go ahead or back up slowly, according with the position of the Snow Blade compared with the farm tractor.

N.B. The Company Bonatti declines any civil and penal responsibility that may arise from a wrong use of the Snow Blade in case of non-observance of the above mentioned procedures.

N.B. In case of a wrong positioning of the stabilizing foot, the **Snow Blade** may overturn and cause damages to things and persons. The Company Bonatti declines any civil and penal responsibility for accidents arising from the non-observance of the correct procedures.

7. DAILY OPERATIONS

Before start working:

- check the integrity of the hydraulic pipes;
- check the general conditions of the carpentry, it must be free from rust and breaking;
- check the integrity of the instruction labels;
- check the correct zero setting of the hydraulic control levers of the farm tractor;
- check the lock split pins on the mechanical pins of the Snow Blade.

8. INSTALLATION MANUAL OF THE SNOW BLADE

The **Snow Blade** can be installed on commercial farm tractors having following operating features:

MINIMUM POWER REQUIRED TRACTOR HP (minimum)	MINIMUM POWER REQUIRED TRACTOR HP (Maximum)
20 HP MINIMUM	20 HP MAXIMUM

NOTE

Before using the equipment always check the resistance to turnover of the farm tractor.

9. SPECIAL USE CONDITIONS

The machine cannot be operated in:

- fire risk areas
- corrosive atmosphere
- atmosphere with power detrimental to operator's health
- closed environment

10. MAINTENANCE MANUAL OF THE SNOW BLADE

The maintenance is an essential condition to get the best safety performances of the **Snow Blade**, therefore it must be made regularly. Each component of the **Snow Blade** that may be damaged or malfunctioning must be replaced or rebuilt. For spare part replacement get in touch with Company Bonatti, as the use of non original spare parts may endanger the functionality of the **Snow Blade** and cause irreparable damages to things and persons.

10.1. MAINTENANCE FOR DEAD PERIOD AND/OR STORAGE

In case of dead period and/or storage of the machine:

- wash the Snow Blade accurately;
- lubricate all unpainted parts, slits, sliding flanges and guides;
- lubricate all grease nipples;
- store in a dry place.

10.2 LUBRICATION OF THE SNOW BLADE COMPONENTS

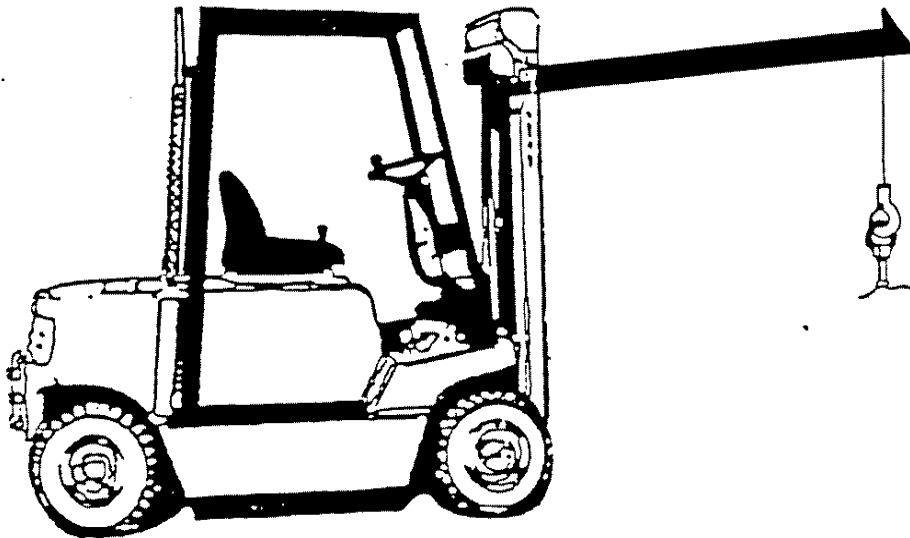
COMPONENT	OPERATION	WORK HOURS
Fulcrum pin	Greasing	10 h
Positioning hydraulic jack		

11 MAIN FAILURES

MAIN FAILURES	CAUSE	CURE
Hydraulic jack controls do not work	Hydraulic pump damaged	Replace pump
The snow blade moves without operating the controls	Cylinder gasket worn	Replaced gasket
Fitting is leaking	Fitting is slack	Tighten the fitting

12. HANDLING OF THE SNOW BLADE

To move the **Snow Blade** use a lift truck suitable to the capacity of the support (200 Kg) and equipped with lifting arm, as shown in the figure.



Positioning with lift truck

IMPORTANT

- Use hooks or spring catches in proportion to the capacity of the Snow Blade (200 Kg).
- Use hooks or spring catches not levering on the eyebolt (lifting point).
- Use ropes for a draught higher than the capacity of the Snow Blade (200 Kg.)
- During lifting operations avoid any oscillations of the Snow Blade that may cause damages to things and persons.

N.B. In case handling operations of the Snow Blade are not performed by the Company Bonatti, the Company declines any civil and penal liability for damages to things or persons.

13. TABLE OF SPARE GROUPS

13.1 ORDER OF SPARE PARTS

In your orders of spare parts always quote model, serial number and year of manufacture of your "**SNOW BLADE**", that can be found in the name plate of the **Snow Blade**.

NOTE

- Use original spare parts only, to be ordered by sending a written request to Company Bonatti and specifying the code numbers and the description of the required spare parts. The Company Bonatti declines any liability in case no original spare parts are used.

13.2 LIST OF SPARE GROUPS FOR THE SNOW BLADE

RIF.	DECRPTION	CODE	Q.TY
1	Coupling pin of the snow Blade to fixed support	B/1313	2-3
2	Positioning hydraulic cylinder	B/1314	2
3	Fulcrum pin for blade positioning with lock split pin	B/1315	1
4	Hydraulic cylinder fulcrum pin with lock split pin	B/1316	4
5	Shockproof spring	B/1317	2-8
6	Flexible hydraulic pipes provided with explosion-proof sheath	B/1318	2
7	Stabilizing foot	B/1319	1

13.3 TABLE OF SPARE GROUPS

