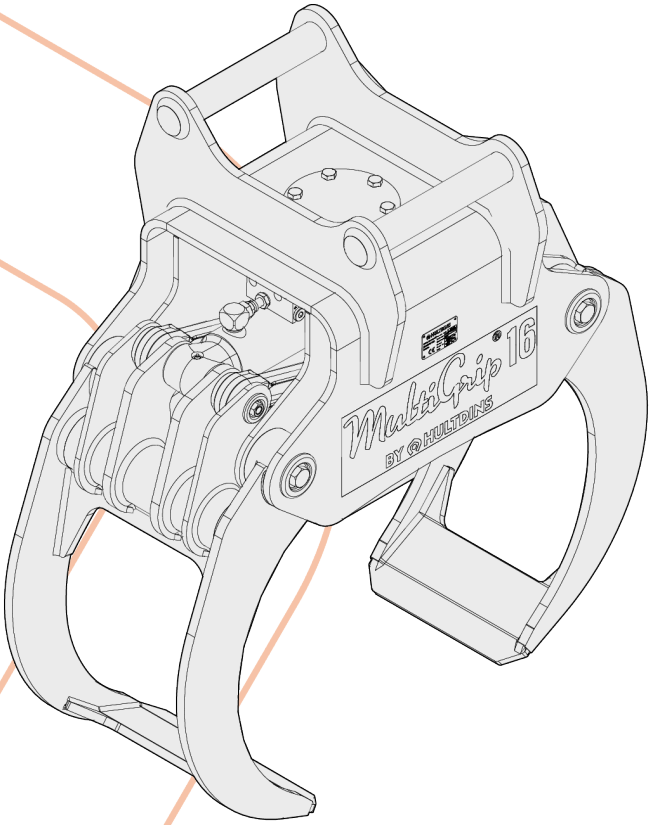
MultiGrip MG

Instructions for use
Original instructions



HULTDINS

This publication contains instructions for the installation and handling of the product. The instructions cover both general information for all models, and procedures or specifications applicable to individual models. If doubt should arise concerning the validity of the instructions please consult the nearest dealer for more detailed information.

Illustrations, technical information and specifications were, as far as we have been able to judge, correct at the time of print. However, we reserve the right to, without prior notice, revise specifications, instructions, equipment, etc. as a result of ongoing product improvement activities.

Even if all conceivable measures have been taken to make the contents as complete as possible, Hultdin System AB takes no responsibility for possible damages that may arise as a result of the instructions not being followed or improper use of the product.

CE declaration is included as a separate supplement.

Important!
The parts and components used in Hultdin System AB's products are specifically chosen. Therefore original spare parts are always the best alternative in a possible need of repairs or upgrading.

All service and repairs should be carried out by qualified service personnel or an authorized repair shop with suitable tools and lifting devices.

This publication is published by: Hultdin System AB
Box 100, Skolgatan 12
SE-939 31 Malå
Sweden

This publication applies to the following models:

MultiGrip 12	S/N 059-0001 & up
MultiGrip 16	S/N 060-0001 & up
MultiGrip 20	S/N 061-0001 & up

Contents

Safety instructions

General safety

- This page describes important safety instructions, which the operator should have a good knowledge of before the equipment is used.
- This product should only be used by operators with proper knowledge and training.
- The owner and the operator are responsible for following all safety regulations and that the machine is safely equipped.
- The owner and the operator are responsible for following National and local laws, regulations and other instructions when using the product.
- The owner and the operator are responsible for replacing damaged parts and/or unreadable warning signs.
- The manual should be available at all times so that the operator is able to follow safety regulations and the procedures of maintenance activities.

Meaning of safety messages

Danger!
Indicates a hazard with a high level of risk which, if not avoided, will result in death, serious injury and/or serious property damage.

Warning!
Indicates a hazard with a medium level of risk which, if not avoided, could result in death, serious injury and/or serious property damage.

Caution!
Indicates a hazard with a low level of risk which, if not avoided, could result in minor or moderate injury and/or property damage.

Important!
Indicates a risk which, if not avoided, could result in material damages

Operational safety

- Before operation, check the unit according to the instructions for Daily maintenance.
- Make sure that the hydraulic pressure in the grapple cylinder is adjusted according to the specifications. If the pressure is too low the grapple will not be able to carry its load. If the pressure is too high, the grapple will be overloaded, which could cause a structural failure, resulting in injury and/or property damage.
- The load of the grapple must not exceed the recommended maximum rating as structural failure could occur, resulting in injury and/or property damage.

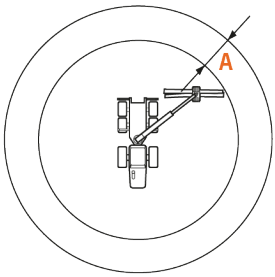


Fig. 1 Safety distance

- Unauthorized persons must remain at a distance (A) of at least 15 meters clear from the equipment during operation.
- The operator must immediately evict unauthorized persons who are in the danger zone or are heading towards the danger zone.
- The operator must be well protected against falling load.
- The operator should be aware that the load, or parts of the load, could fall from the grapple at any time.
- When working with the unit, the load must be completely enclosed and held securely in the center of gravity so that the load does not slip. The minimum gripping diameter must be observed.
- Our material handling grapples are equipped with a load-holding valve to prevent loads dropping in an uncontrolled manner.

  Note! For this purpose, the valve is pre-loaded with a pressure setting that is higher than the grapple maximum pressure rating, so it is of importance not to exceed the maximum rated load of the grapple during use. Structural damage from overloading the grapple is not covered by warranty.
- When handling harder materials such as rails, beams and steel pipes, you must work with increased caution, as the load easier will slide from the unit. Handling abrasive material such as stones, concrete and steel leads to greater wear.

Intended use

The unit is designed to handle the following materials:

- Timber, cut to length, whole trees and waste wood systems.
- Beams, pipes, rails, sleepers and tracks made of wood, steel and concrete.
- Rocks and concrete blocks, such as curbs and threshold.

The unit is also suitable for sorting and material handling, or for demolition of masonry and wooden structures.

Any other use of the product is considered to be unintended and is prohibited.

Maintenance safety

- To ensure personal safety the unit's condition must be checked regularly, daily maintenance shall be performed and any deficiencies must be corrected
- Never commit any service on the equipment without proper knowledge. All service and repairs in electrical and hydaulical systems should be carried out by qualified personnel only.
- Repair any damages immediate when discovered. Do not use the equipment until any damages are rectified.

Fig. 2 Safety symbols

- Before performing any maintenance or service work, lower the unit to the ground and shut off the engine. Turn off any master shut-offs and do not allow personnel in the cab.
- Use safety glasses and protective gloves when servicing the equipment. Hydraulic oil or lubricants in contact with skin or eyes may cause irritations or allergies.
- Use hard hat and safety boots when servicing the equipment. Leakage of hydraulic oil or lubricants will increase the risk of slipping or falling.
- The unit has sharp edges. Use proper wrenches and protective gloves when working on the unit.
- Hydraulic hoses and adapters may be pressurized even with the engine shut off. Loosen any parts with caution.

- Always make sure that the system is depressurized before committing any service on the equipment.
- Always secure movable parts mechanically before any hydraulic hose is loosened.
- Never try to stop a leakage in the hydraulic system with your hand. Pressurized hydraulic oil can be injected under the skin and cause death or severe damage.

Welding

In case of a structural repair of the equipment, when welding may be needed, consult the dealer for recommended instructions.

When welding on the unit the following steps must be taken:

- Make sure that fire-extinguishing equipment is available.
- Clean the area around the welding area to eliminate any fire hazard.
- Connect the ground wire so the welding current does not pass over any bushings.
- Place the ground wire as close to the welding area as possible.
- The bushings are affected by high temperatures. Protect or remove the bushings before welding close to their location.

Modifying the equipment

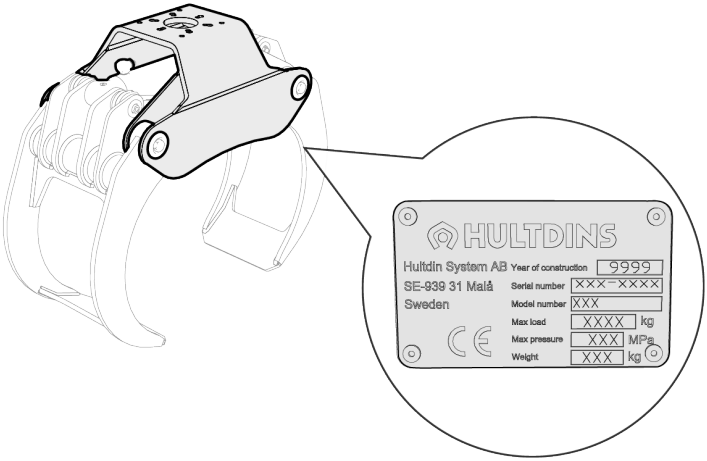
It is not approved to:

- Modify the unit without the consent of Hultdin System AB.
- Alter the function of the unit without the consent of Hultdin System AB.
- Use spare parts other than original Hultdins parts.

Design and Function

Labeling

The MultiGrip MG is labeled on the main frame with serial number, model number, max. load, max.pressure and a CE-label according to the following figure.



Main parts

The MultiGrip MG is made up of the following main parts. All parts are replaceable.

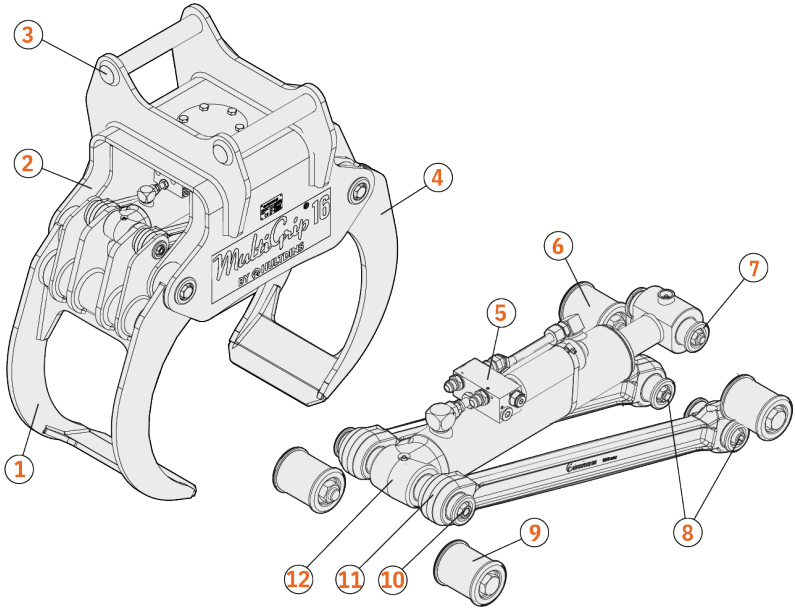


Fig. 3 Main parts

1. Female grapple arm
2. Frame
3. Excvator bracket *
4. Male grapple arm
5. Manifold with valve and accumulator *
6. Pin-joint, frame-male grapple arm
7. Pin-joint, piston rod-male grapple arm
8. Pin-joint, rod-male grapple arm
9. Pin-joint, frame-female grapple arm
10. Pin-joint, female grapple arm-rod-hydraulic cylinder
11. Rod
12. Hydraulic cylinder

* option, design may be different from illustration

Description

The MultiGrip MG consists of one frame and two grapple arms; female grapple arm and male grapple arm. The frame and the grapple arms are fixed together in four pin-joint systems.

The design is equipped with two rods that are mounted in two pin-joint systems. The rods transfer a controlled movement between the male and female grapple arm.

A hydraulic cylinder transfers power to the grapple arms. The hydraulic cylinder is equipped with hydraulic dampening for ”Soft Stop” to eliminate shock loads. The hydraulic cylinder is mounted in pin-joint systems on the barrel side and the piston rod side.

The cylinder works as a mechanical stop for max. opening of the grapple arms. The grapple arms work as a mechanical stop for min. opening of the grapple arms.

The grapple can be equipped with most excavator brackets on the market. The grapple is also suited for XR-type rotators.

Technical data

MultiGrip MG

Special tools

To avoid damage to shafts and bushings during assembly and/or disassembly, customized special tools are recommended. Contact Hultdin System AB for ordering information.

Mandrel, pin-joint system

Diam.	Order. No
50 mm	0660 207
60 mm	0683 010
80 mm	0683 011

Mandrel, bushings

Diam.	Order. No
50 mm	0660 290
60 mm	0683 150
80 mm	0683 150

Grease

Use a mineral oil based grease thickened with, or mixable with a lithium soap. The grease should be classified as L-XCCIB2 according to ISO 6743-9. Molybdendisulfid content max 3 %. Base fluid viscosity 170 to 220 cSt at 40°C. NLGI class 1-2.

Hydraulic hoses

The cylinder hoses should be 1/2" (13,0 mm) according to DIN 20022; SAE 100 R2AT rating. Hose assemblies should be sized for burst pressure with at least a triple safety factor (three times the working pressure).

Rotator fasteners

The rotator should be installed to the grapple with fasteners with the dimension:

- M16 of grade min. 10.9
- M20 of grade min. 8.8

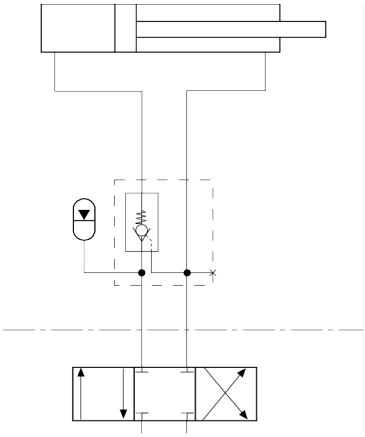


Fig. 4 Hydraulic diagram

Operating pressure

Max. operating pressure 25 MPa.

Torque and socket/wrench sizes

			Torque	Socket/wrench size
MC6S	16	12.9	330 Nm	14 mm
M6S	20	10.9	500 Nm	30 mm
MC6S	20	12.9	500 Nm	17 mm
M6S	24	10.9	900 Nm	36 mm
Piston*			800 Nm	-
Gland*			600 Nm	-

* Use Loctite 243 or similar.

MG

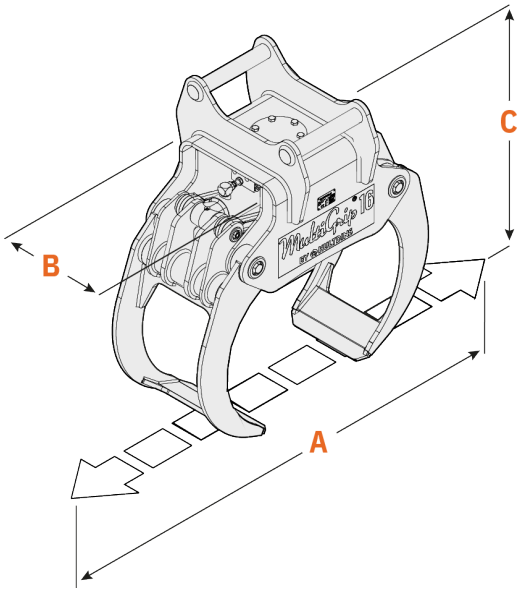


Fig. 5 Dimensions

		MG 12	MG 16	MG 20
Grip area*	**m^2**	0.26	0.36	0.52
Max. grip width (A)	**mm**	1496	1822	2279
Min. grip diameter	**mm**	82	94	179
Max. load	**kg**	6000	8000	10000
Weight	**kg**	315	474	560
Height, arms closed	**mm**	597	674	766
Height* (C)	**mm**	910	1016	1163
Grapple width (B)	**mm**	454	531	531
Cylinder size	**mm**	80/56	90/56	100/63

* Arms tip-tip

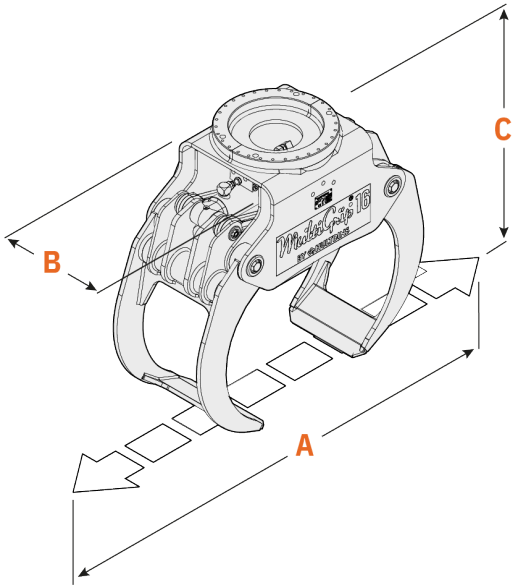


Fig. 6 Dimensions

		MG 12/XR	MG 16/XR	MG 20/XR
Grip area*	**m^2**	0.26	0.36	0.52
Max. grip width (A)	**mm**	1496	1822	2279
Min. grip diameter	**mm**	82	94	179
Max. load	**kg**	6000	8000	10000
Weight	**kg**	310	460	575
Height, arms closed	**mm**	597	674	766
Height* (C)	**mm**	910	1016	1163
Grapple width (B)	**mm**	454	531	531
Cylinder size	**mm**	80/56	90/56	100/63

* Arms tip-tip

MG-R

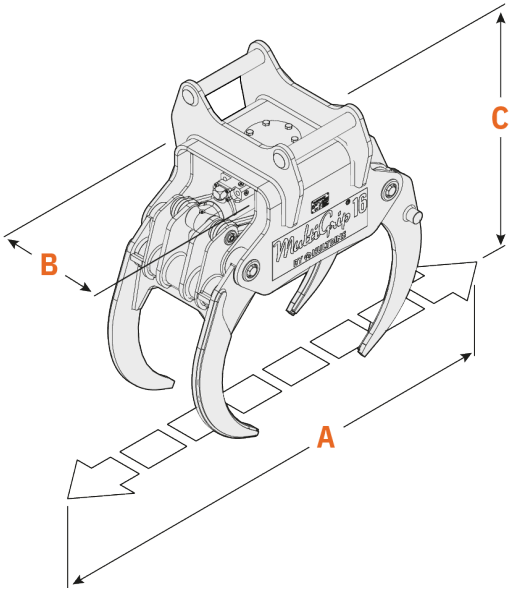


Fig. 7 Dimensions

		MG 12-R	MG 16-R	MG 20-R
Grip area*	**m^2**	0.26	0.36	0.52
Max. grip width (A)	**mm**	1496	1509	2275
Min. grip diameter	**mm**	82	94	188
Max. load	**kg**	4000	5000	6000
Weight	**kg**	318	480	560
Height, arms closed	**mm**	595	676	770
Height* (C)	**mm**	888	996	1133
Grapple width (B)	**mm**	454	531	531
Cylinder size	**mm**	80/56	90/56	100/63

* Arms tip-tip

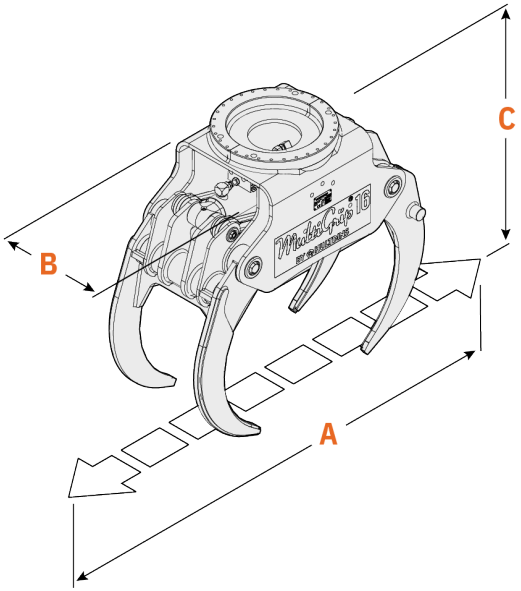


Fig. 8 Dimensions

		MG 12-R/XR	MG 16-R/XR	MG 20-R/XR
Grip area*	**m^2**	0.26	0.36	0.52
Max. grip width (A)	**mm**	1496	1509	2275
Min. grip diameter	**mm**	82	94	188
Max. load	**kg**	4000	5000	6000
Weight	**kg**	310	470	542
Height, arms closed	**mm**	595	676	770
Height* (C)	**mm**	910	1016	1163
Grapple width (B)	**mm**	454	531	531
Cylinder size	**mm**	80/56	90/56	100/63

* Arms tip-tip

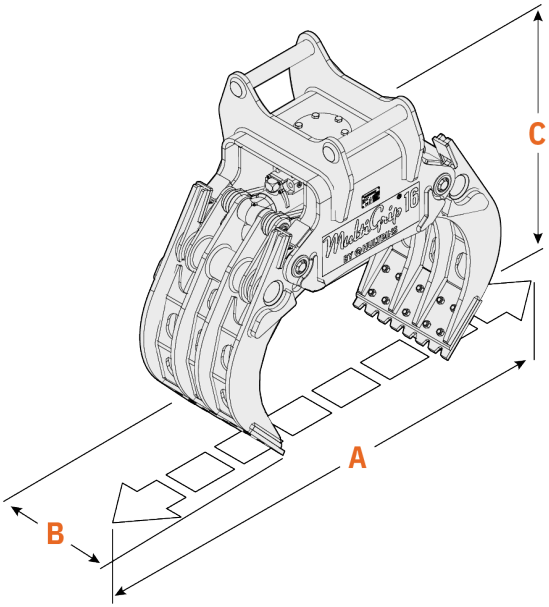


Fig. 9 Dimensions

		MG 16-T
Grip area*	**m^2**	0.28
Max. grip width(A)	**mm**	1773
Min. grip diameter	**mm**	506
Max. load	**kg**	10000
Weight	**kg**	630
Height, arms closed	**mm**	597
Height* (C)	**mm**	1017
Grapple width (B)	**mm**	480
Cylinder size	**mm**	90/56

* Arms tip-tip

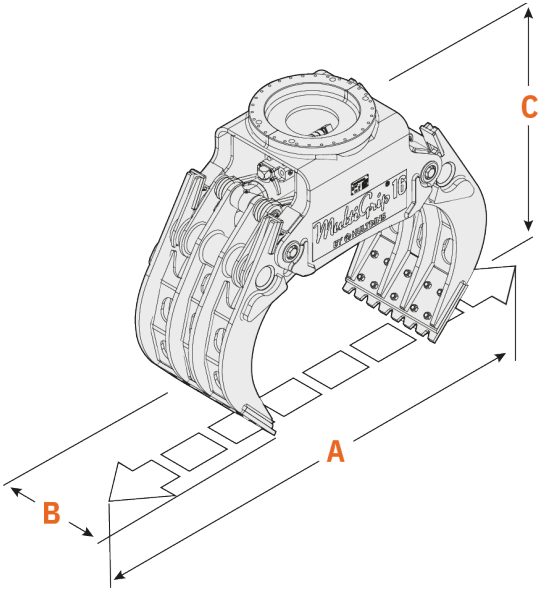


Fig. 10 Dimensions

		MG 16
Grip area*	**m^2**	0.28
Max. grip width (A)	**mm**	1773
Min. grip diameter	**mm**	506
Max. load	**kg**	10000
Weight	**kg**	612
Height, arms closed	**mm**	674
Height* (C)	**mm**	1017
Grapple width (B)	**mm**	480
Cylinder size	**mm**	90/56

* Arms tip-tip

Transportation

During transport, the grapple must be properly secured so that it does not roll off (see example).

Fastening of lifting equipment must be performed according to instructions.

Warning!
Depending on the model, the grapple weighs from 200 to 600 kg. To avoid personal injury always use intended and certified equipment for lifting or moving the product.

For more information about transportation please contact Hultdin System AB.

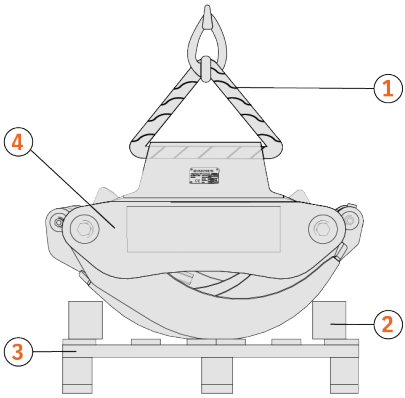


Fig. 11 Arrangement of the grapple at transportation or service

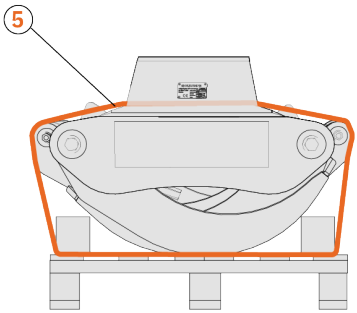


Fig. 12 Grapple strapped with blocks on pallet

1. Strap
2. Block
3. Pallet
4. Grapple
5. Band

Installation

Important!
All service and repairs should be carried out by qualified personnel or an authorized repair shop with suitable tools and lifting devices.

Hydraulic installation

Note! Nail blocks to the pallet base to prevent the grapple from falling during transportation or service. Tie a strap around the stand for safe lifting.

Warning!
The grapple has sharp steel edges. Use protective gloves, and proper wrench sizes when working on the grapple.

1. Place the grapple on a firm base. See Fig. 11
2. Ensure that the entire system is depressurized before installation begins.
3. Make sure that the pressure of the grapple function is in accordance with specifications. See "Technical data"

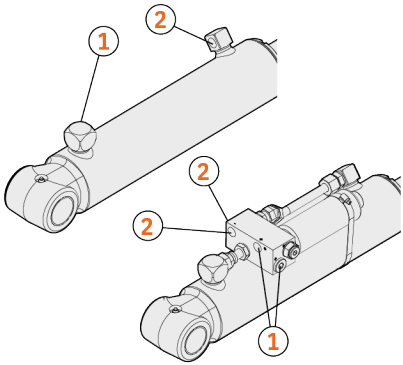


Fig. 13 Connecting the hydraulic hoses

1. Grapple close-function
2. Grapple open-function

4. Connect the hydraulic hoses.
    1. Connect the rotator function ‘grapple close’ to the base end of the cylinder or to port marked "+" on the manifold.
    2. Connect the rotator function ‘grapple open’ to the rod side of the cylinder or to port marked "-" on the manifold.

    The connection of the rotator for ‘grapple open’ is labeled ‘0’ or ‘G0’.

    Note! The cylinder hoses should be 1/2” (13,0 mm) according to DIN 20022; SAE 100 R2AT rating. Hose assemblies should be sized for burst pressure with at least a triple safety factor (three times the working pressure).
5. Make sure that the grapple functions correspond with the order of the joysticks at the operator seat.
6. Cautiously operate all functions to make sure that everything performs normally.

Maintenance instructions

Warning!
Close the grapple and place it solid on the ground and shut down the machine or power source that normally operates the grapple before commencing service.

Warning!
The grapple has sharp steel edges. Use protective gloves, and proper wrench sizes when working on the grapple.

Warning!
Never touch or stand close to the pressurized cylinder and its hydraulic hoses.

Warning!
If hydraulic leaks occur, the grapple can drop its load.

First month of operation

Fasteners

Tightening of the pin-joints should be made after approx. 50 to 75 hours of operating. Failure to do so may cause serious property damage.

See "Technical data" regarding wrench size and torque.

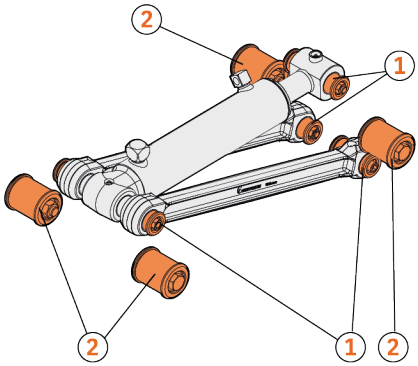


Fig. 14 Fasteners

1. Pin-joint system M16/M20
2. Pin-joint system M20/M24

Regular maintenance

Daily maintenance

Make sure that:

- Fastener joints are properly tightened. For recommended tightening torques, see "Technical data"
- The grapple is cleared so that snow, bark or any other debris does not limit the function of the grapple.
- No damages or cracking have occurred on the grapple.
- There is no leakage on the hydraulic cylinder or hoses.

Ensure that faults and deficiencies are corrected. All service and repairs in electrical and hydraulic systems should be carried out by qualified personnel only.

Every 250 hours of operation

Make sure that:

- No fasteners are loose.
- No damages or cracking have occured on the grapple.
- The hydraulic hoses are not damaged and there is no leakage on the hydraulic cylinder or hoses..

Ensure that faults and deficiencies are corrected. All service and repairs in electrical and hydraulic systems should be carried out by qualified personnel only.

Lubrication

The grapple should be lubricated every 50 hours of operation as the figure here shows.

Lubrication points

1. Grapple arm 4 pcs
2. Rods 4 pcs
3. Cylinder 2 pcs

Note! Use a mineral oil based grease thickened with, or mixable with a lithium soap. See "Technical data"

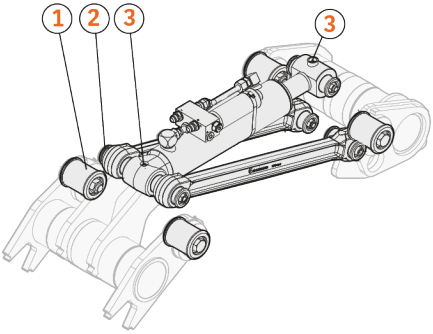


Fig. 15 Lubrication points

Recycling

Contact local authorities or Hultdin System AB for information about recycling the product properly.

The product contains metal and hydraulic oil which needs to be drained and recycled according to local regulations.

MultiGrip®

Hultdin System AB
+46 953-418 00
sales@huldins.se
www.hultdins.se

1221 - 7000254-EN

HULTDINS