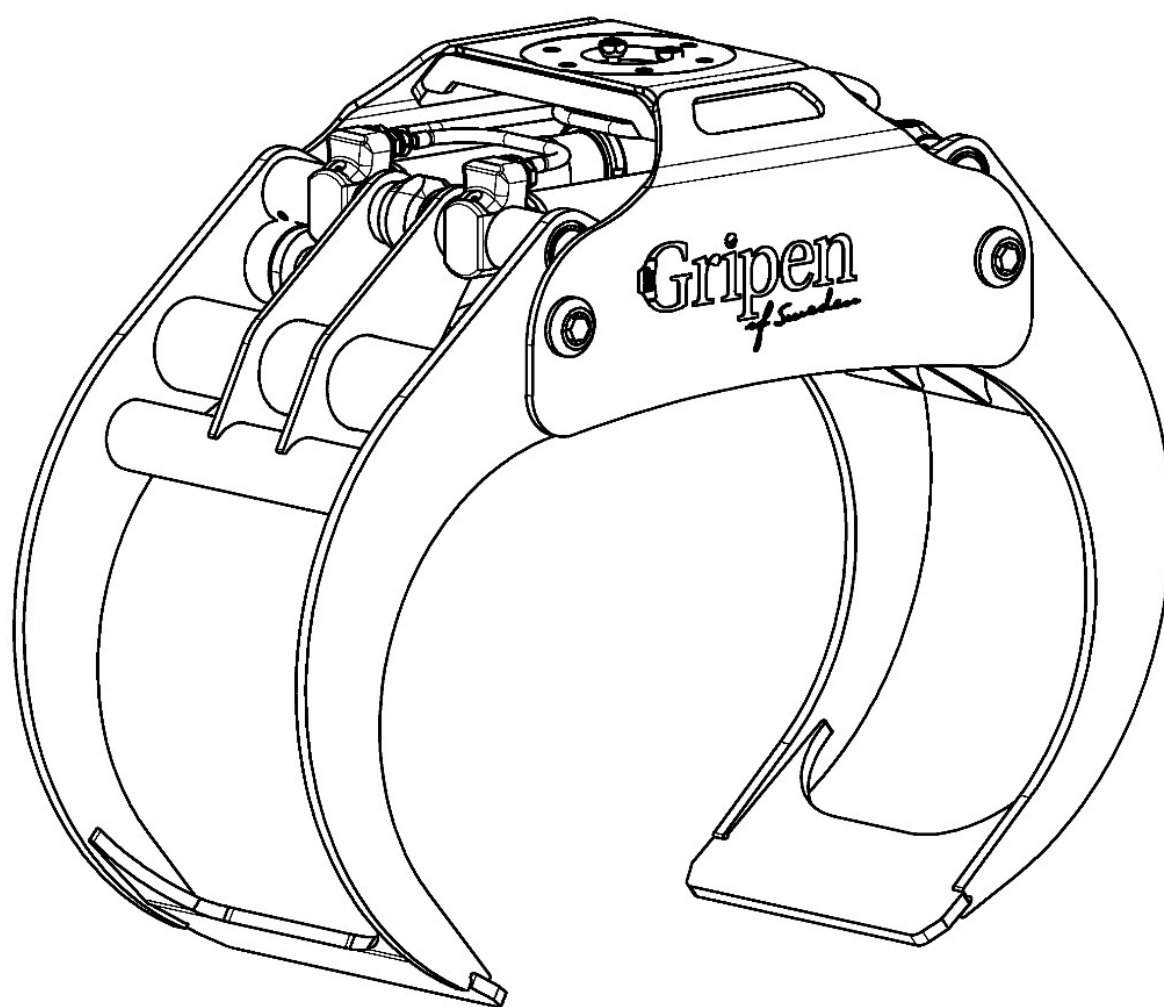


User manual
Service manual
Spare parts list

2022-11

015-055



HSP Gripen
of Sweden



STANDARD



HEAVY DUTY



BIO



V-SHAPE



MINI



TERMINAL

**FOR TOUGH
JOBS AND
HEAVY
LIFTING
ORIGINALET**



TERMINAL LB



CONSTRUCTION



SORTING



INDUSTRY



BUCKET HALVES



BUCKETS



SAW



RECYCLING



RECYCLING HD+



HDX



HSP Gripen
of Sweden

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Introduction

Thank You for choosing a grapple from HSP Gripen!

Since 1994 HSP Gripen has developed and manufactured hydraulic grapples for material handling.

We had an idea of what was required from a grapple to function efficiently and last for a long time. Today HSP Gripen is one of the leading companies in grapple manufacturing. A grapple from HSP Gripen is developed so You can keep a high pace and maintain a high productivity.

All grapples – apart from the smallest – are equipped with twin hydraulic cylinders.*

All of HSP Gripens manufacturing takes place in Hudiksvall, Hälsingland province in the middle of Sweden.

HSP Gripen is:

- *Manufactured in Sweden*
- *Own development and service*
- *Quick delivery times*
- *Wide range makes it simple to make the right choice*
- *Always the best possible quality*
- *Just as good in real life as on paper*

HSP Gripen

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SWEDEN

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About

This User and Service manual contains instructions for correct use and maintenance of the following HSP Gripen grapples (Swedish “gripen” means grapple):

Standard, HD, Bio, I, Duo, V-shape, Recycling, and HDX

Sizes: 015*, 020*, 025, 028, 035, 040, 055

The grapples are only intended for the following applications:

Standard..... Handling of light-weight and medium heavy logs (e.g. thinning)

HD..... Handling of heavy logs (e.g. from final felling)

BIO..... Handling of tops, branches and parts of trees

I..... Handling and sorting of single logs (e.g. sawmills)

Duo..... Two grapples in one, see *Standard and Bio*

V-Shape..... Handling and sorting of light-weight and medium heavy logs

Recycling..... Handling of tree stumps and other waste material

HDX..... Tuff jobs and handling of tree-length logs.

This User Manual belongs to Your grapple and should always be at hand for all servicing and maintenance of your grapple

The operator of the grapple is expected to have the basic knowledge of mechanics and hydraulics necessary for safe use of the grapple.

For latest updates of this manual and its technical data, you are welcome to contact HSP Gripen or visit www.hsp.se

**015 and 020 are equipped with one hydraulic cylinder.*

All other models have two hydraulic cylinders.

CE Certification

The grapple is CE certified, which means that its design, manufacture and specifications are in conformity with the EU machinery directive 2006/42/EC.

If the grapple is modified, supplemented with other products or used in other ways than those described in this manual, our CE certification loses its validity.

Guarantees and Claims

All warranties, repair work and service measures are based on the assumption that only original HSP Gripen spare parts are used and that the instructions in this manual are carefully followed.

Only qualified technicians at authorized repair shops are allowed to perform service and repair work on this product.

For any claims, please contact your HSP Gripen dealer.

Responsibilities and Rights

The manufacturer of this product, Hassela Skogsprodukter AB (HSP Gripen), shall not be held liable for any faults that may arise as a result of not following these instructions or incorrect or careless operation of the product.

As the manufacturer, HSP Gripen has sole rights to this User and Service Manual. Unless specifically approved by HSP Gripen, this document may not be copied, reproduced, translated or distributed in any way.

At the time this User Manual was released, all specifications, technical information and illustrations were correct and fully compliant with our current models.

We reserve the right to change or modify our products without prior notice following this publication. HSP Gripen reserves this right due to continuous product development and constant product improvement. This is a common process that applies to all products sold and distributed by the manufacturer.

In case of doubt with regard to the applicability of these instructions, please contact your closest dealer for detailed and correct information before taking any measures.

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Hudiksvall-Sweden, Jan. 2021



Careless or incorrect use can result in serious injury and property damage. Before operating the grapple, read and make sure you understand the safety instructions.

Safety

General Safety Instructions

This section contains a summary of all safety rules and regulations that must be followed when operating the grapple.

These regulations do not release crane operators from their obligation to observe applicable traffic and occupational safety laws and regulations.

To operate the grapple, the operator must be familiar with the operating principles and the safety regulations that apply to the product.

Use the grapple only for what it is intended for!

Any use together with other accessories not supplied with or recommended for the product must be approved by HSP Gripen.

During operation, the operator should be observant of abnormal noise and oil leakage. Any faults detected must be resolved before continued operation if there is a risk of injury and material damage.

Warning decals

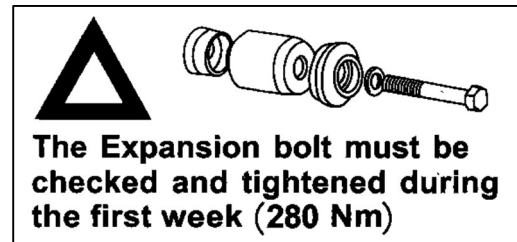
These warning decals are placed on the grapple.

Read and understand the meaning of these!
Replace any damaged decals!

Art.no. 7150359



Art.no. 7150420



And thereafter every month

Warnings

The warnings below point out potential risks and how they can be avoided. If you do not completely understand any of the warnings below, be sure to contact your employer or the manufacturer/distributor of the grapple for a full explanation.

- ! **WARNING** Do not attempt to install, use or perform maintenance on the grapple until you have completely read and understood the documentation for the product as well as the machine on which it is to be installed. Pay special attention to the safety regulations.
- ! **WARNING** Incorrect assembly can jeopardize safety. If you have any doubts regarding the product or how to operate it, be sure to contact your dealer or HSP Gripen.
- ! **WARNING** Shut down the machine/hydraulic system and ensure the hydraulic system has been completely depressurized prior to any work on the system.
- ! **WARNING** Never use your hand to look for leaks in the hydraulic system. Pressurized hydraulic oil can penetrate the skin.
- ! **WARNING** In case of any doubt in regard to safety devices, be sure to contact your dealer or HSP Gripen.
- ! **WARNING** Defective or faulty machinery and/or accessories can cause injury and result in damage to the environment and/or property. Follow the recommendations for performing maintenance on the machine.
- ! **WARNING** If the grapple is overloaded beyond its maximum capacity, this could cause damage to the machine.
- ! **WARNING** Upgrading the capacity of the product through modification is not permitted unless this has been approved by the manufacturer.
- ! **WARNING** Replace damaged and illegible signs and warning labels before operating the machine.
- ! **WARNING** Risk of skin burns in case of contact with hot hydraulic oil.
- ! **WARNING** Risk of crushing injury close to moving parts.
- ! **WARNING** The grapple is not designed for lifting with chains, loops, etc. Risk of injury and material damage! Use proper lifting equipment.
- ! **WARNING** The grapple is not designed to lift persons. This can be fatal.
- ! **WARNING** Never stand or walk under suspended loads. This can be fatal.
- ! **WARNING** Take the necessary precautions when handling long items, with special regard to forces similar to "live weight" and the extended risk area. Risk of injury and material damage.
- ! **WARNING** To avoid unnecessary breaking and torsional loads on the grapple, make sure it has a firm hold on each load. Risk of injury and material damage.
- ! **WARNING** Make sure there are no unauthorized bystanders within 15 meters of the operating range of the grapple. Operators inside the risk area, must be properly protected against falling loads.

Description

General

The grapple is a low-built timber assortment grapple designed for rotator assembly and suspended loads.

The grapple is primarily intended for cranes installed on road and off-road vehicles.

The wide claws and their design offer uniform roll-in and efficient filling.

They also make the grapple easily enter stacks and give it excellent sorting abilities.

The grapple's two hydraulic cylinders* are mechanically connected in parallel and controlled via a double-acting hydraulic circuit.

**Models 015 and 020 have one hydraulic cylinder.*

Names of Parts

(Fig. 1)

1. Frame
2. Outer claw
3. Inner claw
4. Parallel rod
5. Hydraulic cylinder
6. Expansion bolt
7. Machine tag location
8. Serial number location

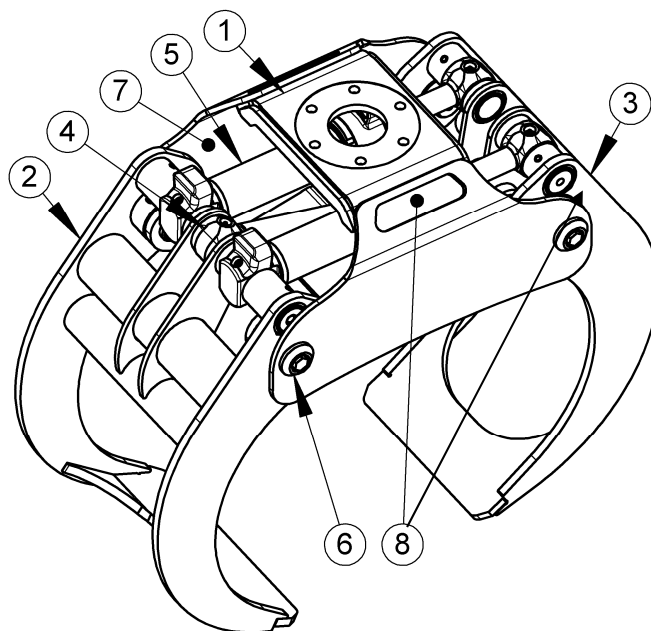


Fig.1

Identification

(Fig. 2)

The grapple has a machine tag with serial no. and CE marking.

The machine tag location is shown in (Fig. 1)



 	
TYP/ART.NR / ART.NO	<input type="text"/>
TILLV. NR / MANUF.NO	<input type="text"/>
TILLV. ÅR / MANUF.YEAR	<input type="text"/>
MAX.TRYCK / MAX.PRESS	<input type="text"/>
MAX.LAST / MAX.LOAD	<input type="text"/>
VIKT / WEIGHT	<input type="text"/>
<small>HASELA SKOGSPRODUKTER AB • KÖPMANBERGSVÄGEN 3 • 824 50 HUDIKSVALL • SWEDEN TELEFON +46 (0)652-366 90 • FAX +46 (0)652-405 50 • www.hsp.se</small>	

Fig.2

Installation Instructions

Hole Pattern

The grapple hole pattern for flange mounted rotators is shown in Fig.3.

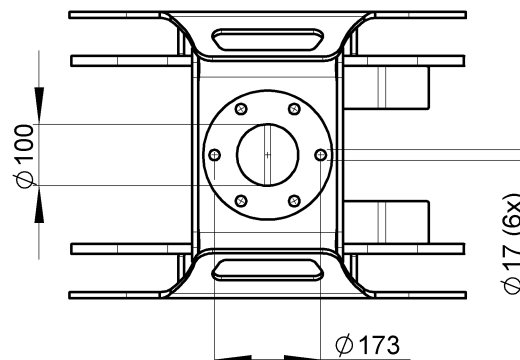


Fig. 3

Rotator Bolt Assembly

See section *Technical Data* (p. 15) for correct torque.

Always use a new set of screws (HSP Gripen part no: 7150190 (M16)) when replacing the rotator or grapple. (Fig.4)

Retighten the bolt assembly between grapple and rotator once a week (or when needed) during the first month of operation.

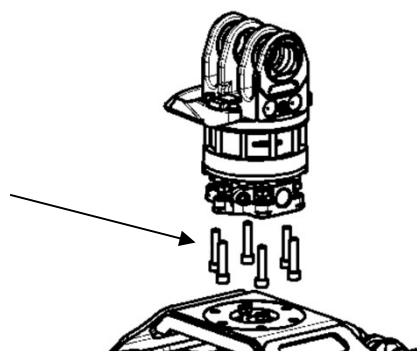


Fig. 4

Hose Connection

Connect the grapple open hose marked "O" to the connector marked "O" on the rotator. Connect the grapple close hose marked "C" to the connector marked "C" on the rotator according to (Fig.5)

"O" = OPEN

"C" = CLOSE

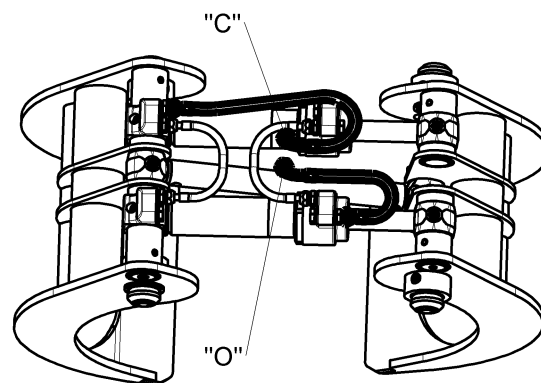


Fig. 5

Start-Up

Check and make sure the grapple functions correspond to the joystick movement order and there are no oil leakage.

Fig. 6

Check and retighten the expander bolts daily during the first week of operation and then every month (280 Nm)

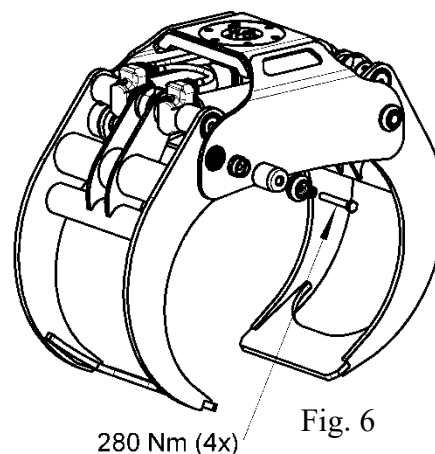


Fig. 6

Maintenance

General

To achieve correct and uninterrupted operation, the grapple requires regular maintenance. Always use original spare parts from HSP Gripen.

Carefully follow the instructions in this manual.
Make it a habit to perform daily inspections of the grapple for correct operation and uncompromised safety.

Any faults detected must be remedied before continued operation if these involve a risk of injury or material damage.



Cleaning

Clean the grapple internally (from twigs, bark, snow, ice etc.) before every shift (or at least every 8 hours) to prevent damages.



Lubrication Instructions

(Fig. 7)

The grapple uses bearing sleeves that should be lubricated every 8 hours.

No. of lubricating points: 10*.

**N.B. 015 and 020 have 8 lubricating points.*

Keep pumping until you see grease coming out round the pin.

All the normal lubricating greases can be used. Lubricating grease with graphite or molybdenum disulphide additives can also be suitable.

We recommend a multi-purpose grease EP2

Bolt Assemblies

Check and retighten the expander bolts during the first week of operation and then every month (280 Nm).



Inspect and retighten the rotator mount assembly at regular intervals during the first month of operation.
For correct tightening torques, see section *Technical data*.

Hydraulic Hoses

Replace damaged hydraulic hoses and couplings.

When replacing hydraulic hoses, lubricate the hose coupling nuts.

Always completely depressurize the hydraulic cylinders before disassembly of hydraulic couplings.

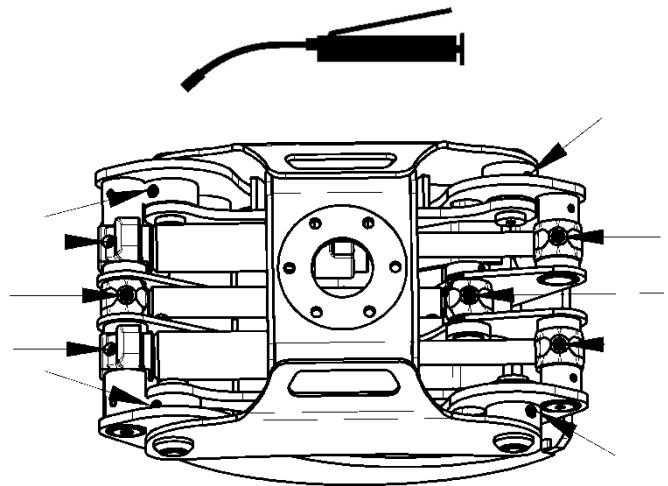


Fig. 7

Maintenance schedule

	Daily (8h)	Weekly (40h)	Monthly (250h)	2000h	4000h	6000h
Clean the grapple from dirt and debris	X					
Lubricate the grapple	X					
Check hydraulic hoses and couplings	X					
Check the grapple for cracks				X		
Retighten the rotator bolts		X*	X			
Check the hydraulic cylinders			X			
Retighten the expander bolts	X**		X			
Renovate the hydraulic cylinders						X

*Retighten the rotator bolts weekly during the first month. Thereafter according to the maintenance schedule.

**Retighten the expander bolts daily during the first week. Thereafter according to the maintenance schedule.

Spare Parts

Spare parts are available at your closest dealer.

Please declare your grapple type and serial no. when ordering spare parts.

Use only original HSP Gripen original spare parts.

HSP Gripen cannot be held liable for the product and safety if other spare parts than original spare parts are being used.

Special tools

Hook wrench (Cylinder 635***-D)..... Part no. 6352782

Piston wrench..... Part no. 6351164

Assembly tool – Duo..... Part no. 6353081

Pin punch for slotted spring pin Ø12..... Part.no. 6353321

Bushing punch for bearing sleeves..... Part no. 6353320

Grapple Cylinder Renovation

Dismount/mount the cylinder.

(Fig. 8)

Completely close the grapple and place it on a firm surface.

1. Protect the piston rod. Wrap some rags around it, place a piece of board under or similar.
2. Disconnect the hydraulic hoses and plug the hose connections.
3. Knock out the slotted spring pins #1 using the pin punch.
4. Pull out the pin #3 and hold the cylinder rod at the same time using, e.g., a sliding hammer. The ends of the pins are prepared with a M16 thread.
5. Lift the cylinder rod while knocking the pin #3 back. Gently place the piston rod head on the axle.
6. Pull out the pin #2 and hold the cylinder foot at the same time.
7. Carefully lift out the cylinder with both hands, without bumping into anything.

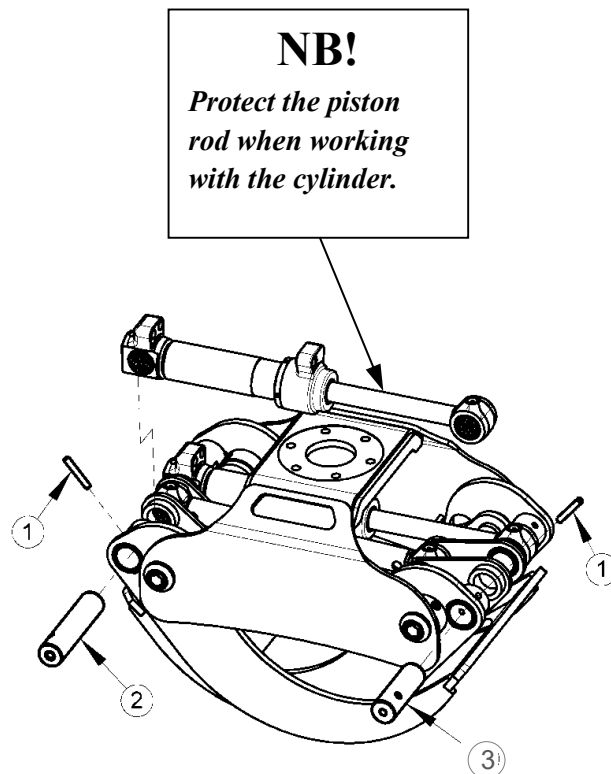
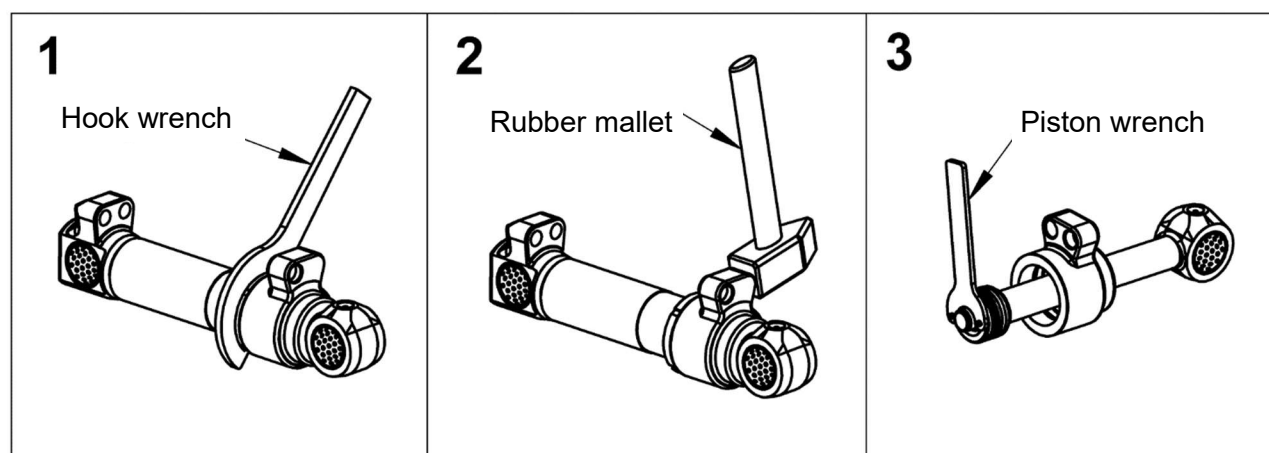


Fig. 8

When mounting the cylinder:

1. Pull out the piston rod as far as you can.
2. Protect the piston rod. Wrap some rags around it, place a piece of board under or similar.
3. Carefully place the cylinder into the grapple and place the cylinder rod head on pin #3.
4. Mount pin #2 at the cylinder foot.
5. Mount pin #3 in the piston rod head.
6. Mount the slotted spring pins #1 and the hydraulic connections.

NB! Before re-installing the spring pins, make sure the locking holes in pin and grapple claw are properly aligned



Item	Part Names
4	Piston gasket
6	Guide ring
7	O-ring
8	Support ring
12	Seal ring
14	Guide ring
15	Piston rod seal
16	Rod wiper

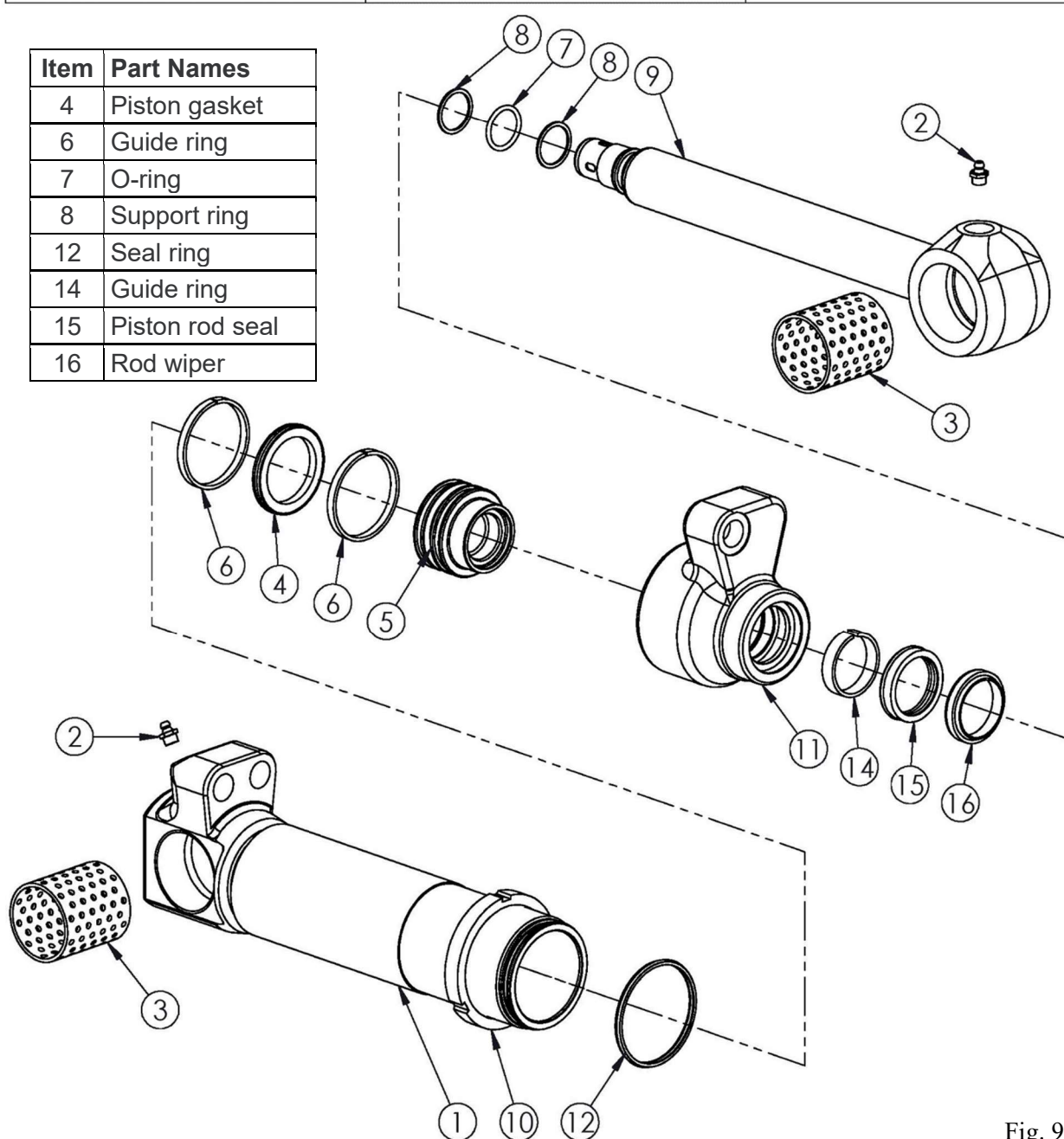


Fig. 9

Seal Kit Replacement

(Fig. 9)

Seal kit part no. 7150280

Replace the seals at least every 6,000 operating hours.

1. Loosen the locking nut using a hook wrench
2. Unscrew the top nut. Knock it out carefully using a rubber mallet if necessary.
Pull out the piston rod & top nut from the cylinder.
3. Unscrew the piston using a piston wrench

Clean the cylinder parts.

Replace any damaged parts.

Install new seals/guides as shown in fig. 9.

Lubricate all parts using hydraulic oil prior to reassembly.

Reassemble the rest of the cylinder in reverse order.

NOTE! Tighten the top nut to the "ten past" position at the bottom and position it to "12 o'clock" using the locking nut to ensure proper sealing around the cylinder tube.

Lock the piston by upending the locking edge (Fig.10).

Tightening torque: 900 Nm.

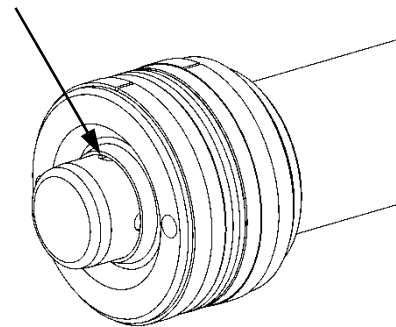


Fig. 10

Replacement of Bearings

All bearing positions in the grapple use cylindrical bronze bearings.

Inner diameters are 50 or 60 mm.

When replacing the bearings, use a punch (Fig. 11) both for disassembly and reassembly.

Once the bearing have been pushed into place, apply plenty of grease to completely fill the grease pockets in the bearings.

The punch is available from HSP Gripen.

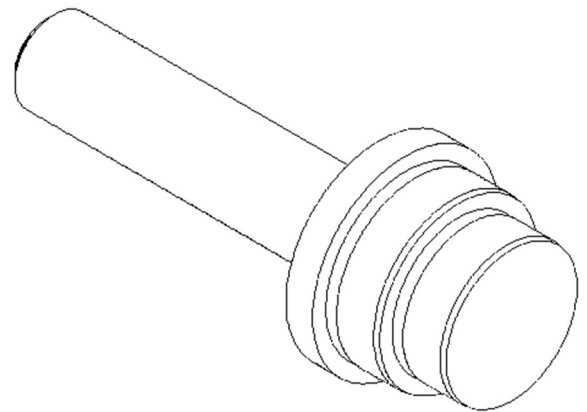


Fig. 11

Repair welding

In case the grapple needs to be repaired and welding is required, this should be performed by your dealer or according to your dealer's instructions.

Before performing welding on the grapple, take the following precautions:

- Make sure firefighting equipment is close at hand.
- Carefully clean the area around the welding point to eliminate the risk of fire.
- Connect the ground wire, making sure the welding current does not travel through any bearings.
- Place the ground wire as close to the welding point as possible.
- Use a suitable welding wire like ESAB OK 48 or equivalent.

Storage

If the grapple is to be stored for a longer period (more than one month), all lubrication points must be lubricated and then the grapple must be stored in the open position.

(Fig 12)

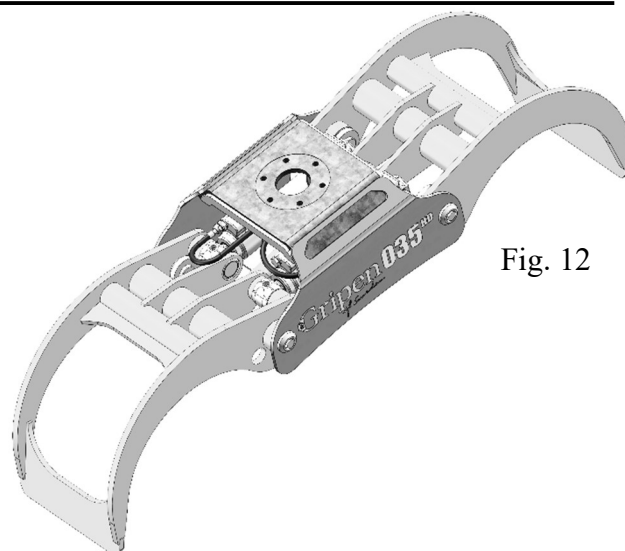


Fig. 12

If this is not possible, when the grapple is closed, pull out the pins for the piston rods (see section Disassembly/Reassembly of Cylinder) and drive the cylinders together. (Fig 13)

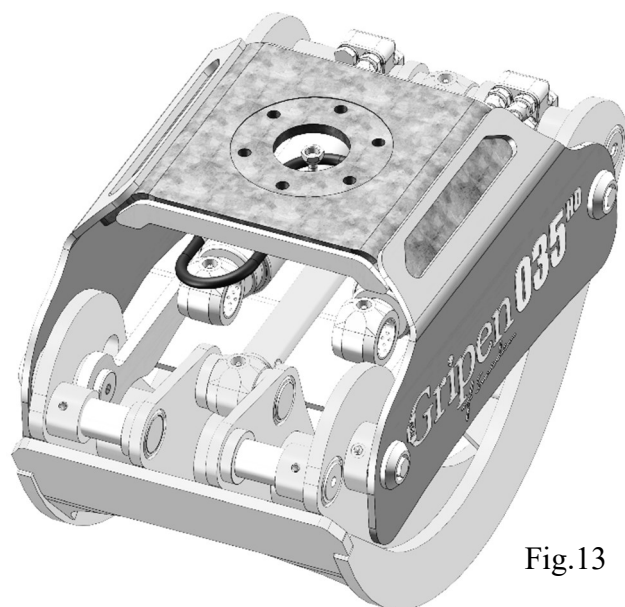


Fig.13

If none of the above is possible, the piston rod should be coated with a suitable corrosion protection oil. (Fig 14)

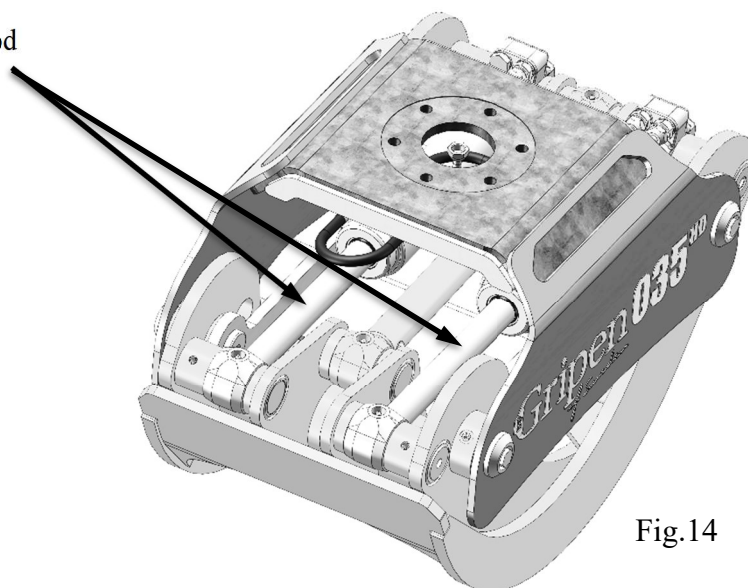


Fig.14

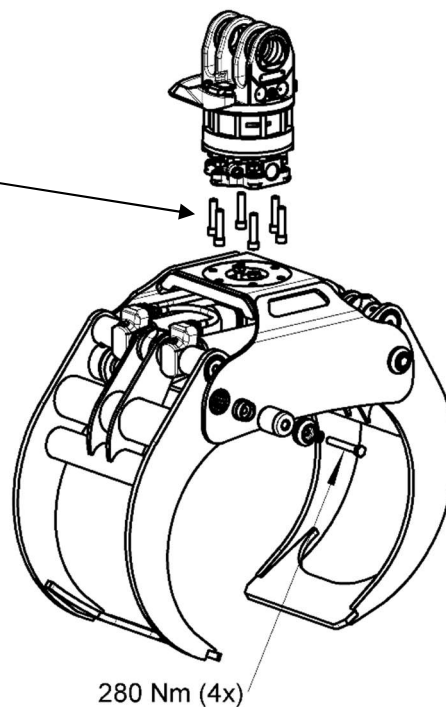
Technical data

Bolt Tightening Torques

(Fig.15)

Rotator mount: M16 (10.9).....280Nm

Expansion bolts: M16 (10.9).....280 Nm



Grapple Dimensions

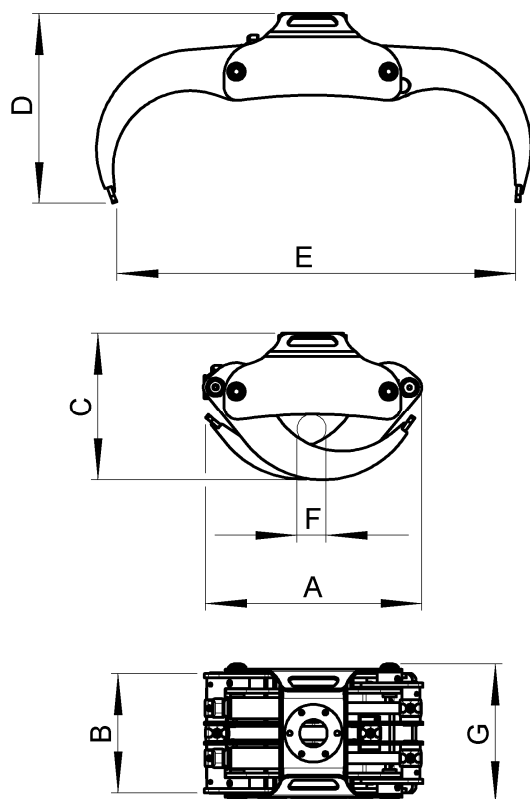


Fig.16

Model description

Standard Grapples

Technical data (for dimensions, also see Fig.16 above)

Grapple size			015	020	025	028	035	040	050	055
Load area, tip-to-tip		m ²	0,15	0,2	0,25	0,28	0,35	0,40	0,50	0,55
Weight		kg	120	130	225	230	255	285	320	325
Dimensions										
Length, grapple closed	A	mm	740	780	800	830	885	970	1080	1110
Width, outer claw	B	mm	355	355	434	434	472	472	472	472
Height, grapple closed	C	mm	510	510	540	530	565	610	615	695
Height, grapple open	D	mm	685	645	690	635	600	630	830	715
Max grapple opening	E	mm	1170	1400	1450	1690	1880	2070	2110	2390
Min load diameter	F	mm	90	95	110	110	120	140	140	160
Max grapple width	G	mm	397	397	488	488	526	526	526	526
Tip force, tip-to-tip		kN	9,3	8,7	17	16,7	16,1	16,2	16	16
Operating pressure (max)		MPa	23	23	23	23	23	23	23	23
Oil flow		l/min	70	70	70	70	70	70	70	70
Opening time at 70l/min		s	0,4	0,4	0,8	0,9	1,0	1,1	1,5	1,7
Closing time at 70l/min		s	0,6	0,7	1,4	1,5	1,6	1,7	2,1	2,5
Max load		kg	2000	2000	3500	3500	5000	5000	5000	5000

Heavy-Duty (HD) Grapples

Technical data (for dimensions, also see Fig.16 above)

Grapple size			015	020	025	028	035	040	050	055
Load area, tip-to-tip		m ²	0,15	0,2	0,25	0,28	0,35	0,40	0,50	0,55
Weight		kg	135	145	235	240	265	295	335	365
Dimensions										
Length, grapple closed	A	mm	740	780	800	830	885	970	1080	1110
Width, outer claw	B	mm	355	355	434	434	472	472	472	472
Height, grapple closed	C	mm	510	510	540	530	565	610	615	695
Height, grapple open	D	mm	685	645	690	635	600	630	830	715
Max grapple opening	E	mm	1170	1400	1450	1690	1880	2070	2110	2390
Min load diameter	F	mm	90	95	110	110	120	140	140	160
Max grapple width	G	mm	397	397	488	488	526	526	526	526
Tip force, tip-to-tip		kN	9,3	8,7	17	16,7	16,1	16,2	16	16
Operating pressure (max)		MPa	23	23	23	23	23	23	23	23
Oil flow		l/min	70	70	70	70	70	70	70	70
Opening time at 70l/min		s	0,4	0,4	0,8	0,9	1,0	1,1	1,5	1,7
Closing time at 70l/min		s	0,6	0,7	1,4	1,5	1,6	1,7	2,1	2,5
Max load		kg	2000	2000	3500	3500	5000	5000	5000	5000

Bio Grapples

Technical data (for dimensions, also see Fig.16 above)

Grapple size			015	020	025	028	035	040	055
Load area, tip-to-tip		m ²	0,15	0,2	0,25	0,28	0,35	0,40	0,55
Weight		kg	135	145	235	240	265	295	335
Dimensions									
Length, grapple closed	A	mm	740	780	800	830	885	970	1110
Width, outer claw	B	mm	355	355	434	434	472	472	472
Height, grapple closed	C	mm	510	510	540	530	565	610	695
Height, grapple open	D	mm	685	645	690	635	600	630	715
Max grapple opening	E	mm	1170	1400	1450	1690	1880	2070	2390
Min load diameter	F	mm	90	95	110	110	120	140	160
Max grapple width	G	mm	397	397	488	488	526	526	526
Tip force, tip-to-tip		kN	9,3	8,7	17	16,7	16,1	16,2	16
Operating pressure		MPa	23	23	23	23	23	23	23
Oil flow		l/min	70	70	70	70	70	70	70
Opening time at 70l/min		s	0,4	0,4	0,8	0,9	1,0	1,1	1,7
Closing time at 70l/min		s	0,6	0,7	1,4	1,5	1,6	1,7	2,5
Max load		kg	2000	2000	3500	3500	5000	5000	5000

Industry Grapples

Technical data (for dimensions, also see Fig.16 above)

Grapple size			015
Load area, tip-to-tip		m ²	0,15
Weight		kg	175
Dimensions			
Length, grapple closed	A	mm	740
Width, outer claw	B	mm	310
Height, grapple closed	C	mm	510
Height, grapple open	D	mm	690
Max grapple opening	E	mm	1210
Min load diameter	F	mm	100
Max grapple width	G	mm	397
Tip force, tip-to-tip		kN	9,3
Operating pressure		MPa	23
Oil flow		l/min	70
Opening time at 70l/min		s	0,4
Closing time at 70l/min		s	0,6
Max load		kg	3500

Duo Grapples

Technical data (for dimensions, also see Fig.16 above)

Grapple size			025	028	035
Load area, tip-to-tip		m ²	0,25	0,28	0,35
Weight		kg	250/265*	255/270*	275/290*
Dimensions					
Length, grapple closed	A	Mm	800	830	885
Width, outer claw	B	mm	470	470	510
Height, grapple closed	C	mm	535	536	565
Height, grapple open	D	mm	698	665	600
Max grapple opening	E	mm	1485	1694	1880
Min load diameter	F	mm	110	110	120
Max grapple width	G	mm	488	488	526
Tip force, tip-to-tip		kN	17	16,7	16,1
Operating pressure		MPa	23	23	23
Oil flow		l/min	70	70	70
Opening time at 70l/min		s	0,8	0,9	1,0
Closing time at 70l/min		s	1,4	1,5	1,6
Max load		kg	3500	3500	5000

* Bio/Standard

V-Shape Grapple

Technical data (for dimensions, also see Fig.16 above)

Grapple size			025	028	035	040	050	055
Load area, tip-to-tip		m ²	0,25	0,28	0,35	0,40	0,50	0,55
Weight		kg	230	235	260	290	315	330
Dimensions								
Length, grapple closed	A	mm	800	830	885	970	1080	1110
Width, outer claw	B	mm	434	434	472	472	472	472
Height, grapple closed	C	mm	540	530	565	610	615	695
Height, grapple open	D	mm	690	635	600	630	830	715
Max grapple opening	E	mm	1450	1690	1880	2070	2110	2390
Min load diameter	F	mm	110	110	120	140	140	160
Max grapple width	G	mm	488	488	526	526	526	526
Tip force, tip-to-tip		kN	17	16,7	16,1	16,2	16	16
Operating pressure		MPa	23	23	23	23	23	23
Oil flow		l/min	70	70	70	70	70	70
Opening time at 70l/min		s	0,8	0,9	1,0	1,1	1,5	1,7
Closing time at 70l/min		s	1,4	1,5	1,6	1,7	2,1	2,5
Max load		kg	3500	3500	5000	5000	5000	5000

Recycling Grapples

Technical data (for dimensions, also see Fig.16 above)

Grapple size			028	040	055		035HD+	055HD+
Load area, tip-to-tip		m ²	0,28	0,40	0,55		0,35	0,55
Weight		kg	290	345	390		345	380
Dimensions								
Length, grapple closed	A	mm	830	970	1110		885	1110
Width, outer claw	B	mm	434	472	472		652	652
Height, grapple closed	C	mm	530	610	695		580	708
Height, grapple open	D	mm	635	630	715		600	715
Max grapple opening	E	mm	1690	2070	2390		1880	2390
Min load diameter	F	mm	110	140	160		120	160
Max grapple width	G	mm	488	526	526		504	504
Tip force, tip-to-tip		kN	16,7	16,2	16,0		16,1	16,0
Operating pressure		MPa	23	23	23		23	23
Oil flow		l/min	70	70	70		70	70
Opening time at 70l/min		s	0,9	1,1	1,7		1,0	1,7
Closing time at 70l/min		s	1,5	1,7	2,5		1,6	2,5
Max load		kg	3500	5000	5000		5000	5000

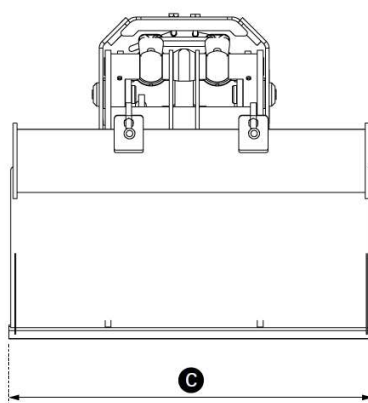
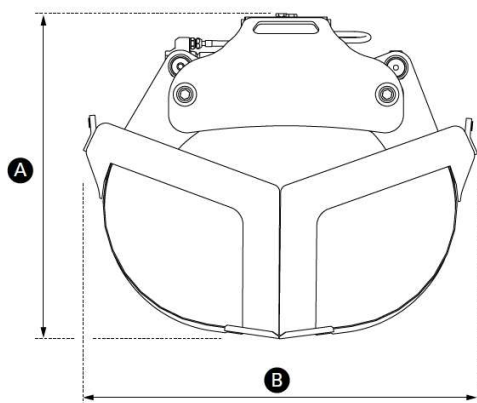
HDX-Grapples

Technical data (for dimensions, also see Fig.16 above)

Grapple size			035	040	055
Load area, tip-to-tip		m ²	0,35	0,40	0,55
Weight		kg	330	360	440
Dimensions					
Length, grapple closed	A	mm	885	970	1110
Width, outer claw	B	mm	472	472	472
Height, grapple closed	C	mm	565	610	695
Height, grapple open	D	mm	600	630	715
Max grapple opening	E	mm	1880	2070	2390
Min load diameter	F	mm	120	140	160
Max grapple width	G	mm	556	556	556
Tip force, tip-to-tip		kN	16,1	16,2	16,0
Operating pressure		MPa	23	23	23
Oil flow		l/min	70	70	70
Opening time at 70l/min		s	1,0	1,1	1,7
Closing time at 70l/min		s	1,6	1,7	2,5
Max load		kg	7000	7000	7000

Bucket halves

Model			150	300	350	500	1000	1500
Volume		Liter	150	300	350	500	1000	1500
Weight		kg	60	75	85	150	220	300
Dimensions								
Height	A	mm	800	890	1000	890	1040	1265
Width	B	mm	850	970	1020	1080	1130	1300
Length	C	mm	430	540	540	1000	1500	1500
Grapple size								
015			X					
020			X					
025				X		X		
028				X		X		
035					X		X	
040					X		X	X
055						X		X



- A** Height
- B** Width
- C** Length

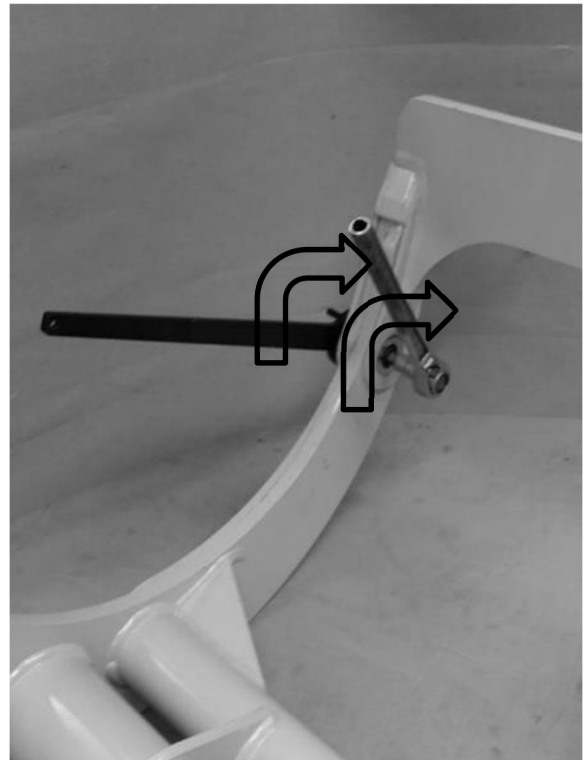
Accessories

Duo – Interchangeable attachments

1. Place the attachment over the tine. Mount the eccentric washers and install the screws together with the locking washer loosely by hand.
2. Use the special tool (Part no. 6353081) to turn the eccentric washers so that the attachment is pressed down into its bottom position. Keep the pressure with the special tool while tapping on the attachment with a hammer or the like to make sure the attachment really is in bottom position.
3. As you continue keeping the pressure with the special tool, use an Allen key to tighten the screw to lock the eccentric washers so the attachment won't move during work with the grapple.

Correct torque for an oil-lubricated M16 screw of 12.9 quality with Nord-Lock washer is 311 Nm.

Make sure you tighten the eccentric washer in the same direction in which you tighten the screw (as shown in the picture).



Mounting of Bucket halves

1. Place the bucket halves (1) on a flat and hard surface.
2. Place the grapples claw in the intended pocket in the bucket half.
3. Mount the pin (3) in the intended holes in the bucket half

Attach the mounting hooks (2) to the grapples boom tube and tighten them by threading the screws (4) through the pin (3) and the hooks (2) to nut (7).

Finish by securing the side guide screws (5) and lock them with the lock nut (6).
4. Then do the same with the other bucket half.

