

INSTRUCTION MANUAL

DUAL HYDRAULIC BOOSTER 2 MEDIA HC2D2



MINIMUM SIZE – MAXIMUM POWER

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1.1 - Safety precautions - IMPORTANT -

Although the miniBOOSTER hydraulic intensifier has been designed with operator safety in mind, it still requires the operator to be vigilant upon use.

Therefore it should be observed that the below mentioned safety instructions are obliged to. Contact miniBOOSTER or your local miniBOOSTER distributor in case of any doubt.



Read all instructions, warnings and cautions carefully. Follow all safety precautions to avoid personal injury or property damage during system operation. miniBOOSTER cannot be held responsible for damage or injury resulting from unsafe use, lack of maintenance or incorrect product and/or system operation. Contact your miniBOOSTER distributor if in doubt as to the safety precautions and operations.



Eye protection must be worn while unpacking, installing, repairing and initial start-up of this miniBOOSTER product.



Gloves must be worn while unpacking, installing, repairing and initial start-up of this miniBOOSTER product.



The hydraulic system should always be de-pressurised before any couplings are disconnected. Check the integrity of connections before applying any hydraulic pressure.



Do not apply any hydraulic pressure to non-connected fittings.



Do not unscrew any nipples, couplings or fittings being under any hydraulic pressure.



Avoid sharp bends and kinks when routing hydraulic hoses.



Never exceed the maximum working pressure of the hydraulic system.



If the hydraulic system is under pressure **DO NOT STAND IN LINE** with any fittings, connections or other moving parts i.e. piston-rods and/or any other parts mechanically or hydraulically connected to the hydraulic



All hoses, couplings and fittings connected to the hydraulic system, including the miniBOOSTER, must be kept clean and free from debris and contamination at all times. Follow all instructions provided in this manual whenever installing, running and/or repairing the miniBOOSTER.

This instruction does not override any local safety regulations or relevant hazardous, regulations, which must always take precedence.

Never exceed the specified maximum pressure ranges, temperatures and flows.

Never put the component into operation until the machine, into which it is assembled, complies with all relevant directives and regulations in EU and EFTA.

miniBOOSTER® A/S cannot be held responsible for damage or injury resulting from unsafe use of the product, lack of maintenance, or incorrect product and system application.

If you have any doubts about precautions or applications, contact your local distributor, the manufacturer or visit www.minibooster.com

1.2 - Warranty

Never attempt to disassemble the booster or any other component from the system where it is not specifically described to do so. Any attempt will void the warranty if no consulting has taken place with miniBOOSTER.

DECLARATION OF CONFORMITY

We the manufacturer:

miniBOOSTER Hydraulics A/S
Fynsgade 3
DK 6400 Sønderborg
DENMARK

Declare that:

Hydraulic Intensifiers all types, variants and accessories are designed and manufactured in accordance to the below Directives

2006/42/EC Machinery Safety Directive
97/93/EC Pressure Equipment Directive where required (Max HPXVol >10.000)

The manufacturer miniBOOSTER® is ISO 9001 certified by Bureau Veritas (Certificate number DNKFR10000046A). Each hydraulic intensifier has an identifiable serial number, stamped into its metal-body. Year of manufacture and intensification factor is stamped into the metal body too. All technical documentation is drafted in accordance to the term “sound engineering practice” and in accordance to all of the processes and test-procedures described in miniBOOSTER®’s process-guides. All intensifiers are individually pressure tested prior to the EOL-approval.

1.3 - Serial number and identification plate location

Each individual miniBOOSTER HC2D2 can be identified by a unique serial number and its type-code which is stamped on the two flats at the H1 end of the miniBOOSTER housing.

The type number and the serial number are required when ordering spare parts (new seals) or repairs of the miniBOOSTER HC2D2.



The example specifies:

38-12-188	Serial number (week-year-number)
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Nomenclature:

HC2D2	Booster model
1.2	$i = 1.2 : 1$
A	No dump valve
1	BSPP ports
NN	Seal system

1.4 - Material certificate

All body parts of the miniBOOSTER HC2D2 are marked with a material specification number, which provides materials traceability.

A material certificate verifies the origin batch numbers, the compositions and the test results of the materials used for the individual body parts. It is possible to order the certificates for the miniBOOSTER HC2D2 on request.



1.5 - Product description

The miniBOOSTER HC2D2 is a dual media hydraulic intensifier. It is designed to use one media (media 1) to provide the energy to pressurize a second media (media 2).

The miniBOOSTER HC2D2 intensifier is available in 9 different intensification ratios to provide a wide range of flow and pressure capacities. It is manufactured of cast iron GGG40 and permitting operation with several types of hydraulic fluids.

The miniBOOSTER HC2D2 automatically compensates for the consumption of media 2 to maintain the HP set-point.

Adjusting the media 1 pressure controls, adjusts the media 2 pressure proportionally to the intensification factor.

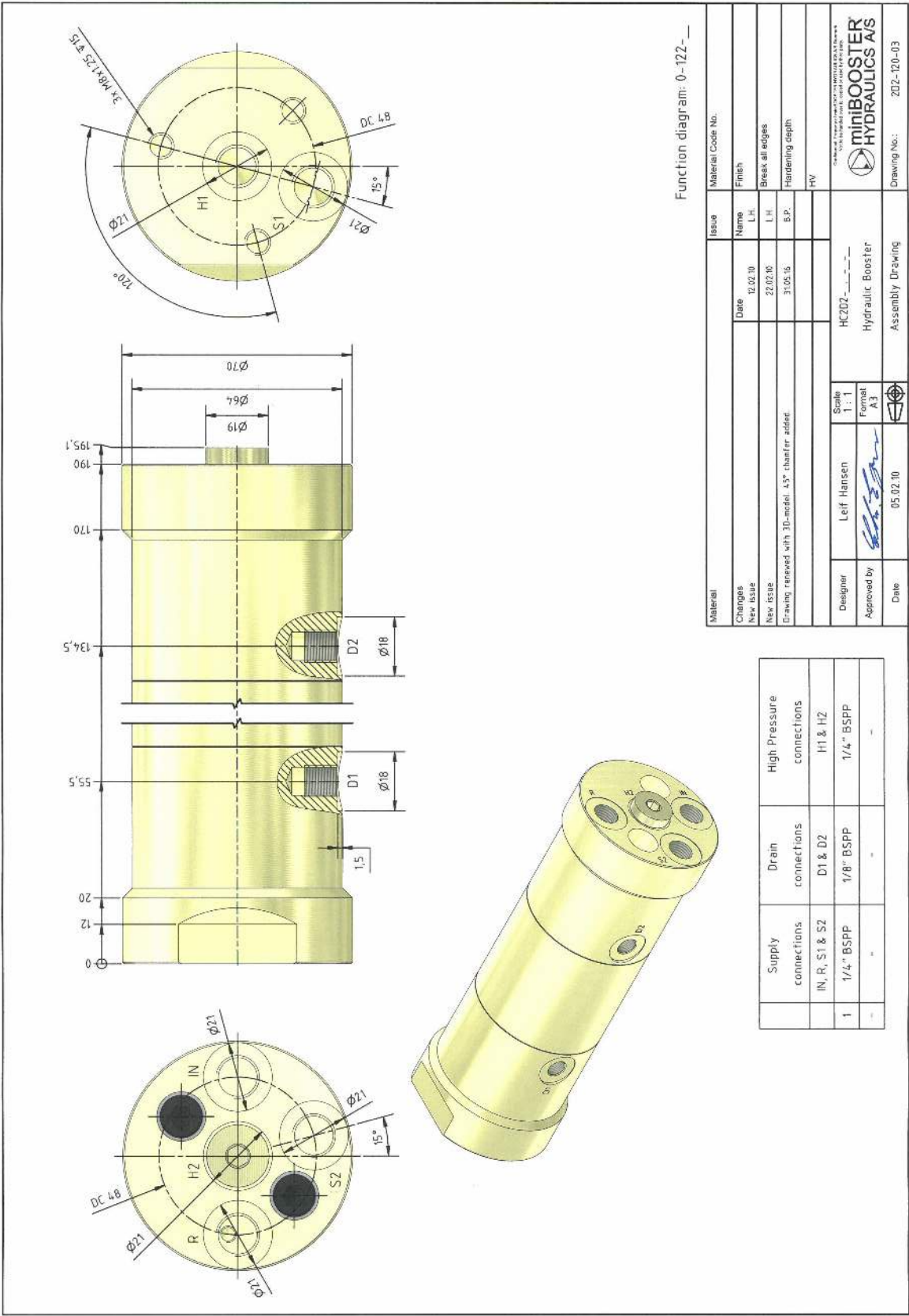
The HC2D2 is internally controlled by a build-in bistable valve assembly, which ensures a continuous flow of pressure-intensified media 2.

The miniBOOSTER HC2D2 is supplied with 1/4" BSPP threaded process connections.

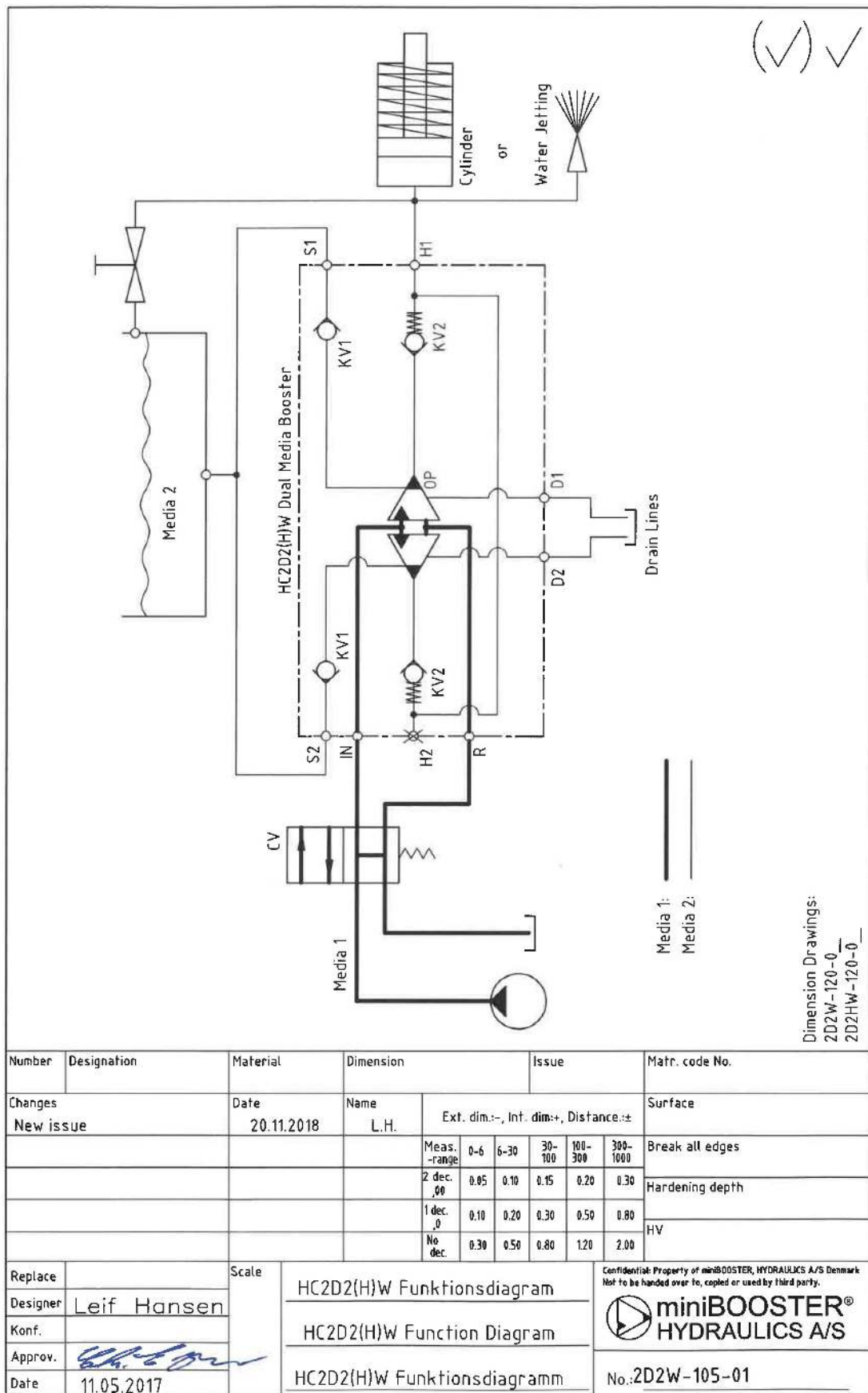
The miniBOOSTER HC2D2 is designed with a double seal system to prevent cross-contamination. The drain connections for the seals are BSPP 1/8".

Adapters are available for operating pressures up to 800 bar (11,600 psi). Please contact distributor for further information.

1.6 - Assembly drawing



1.7 - Function diagram



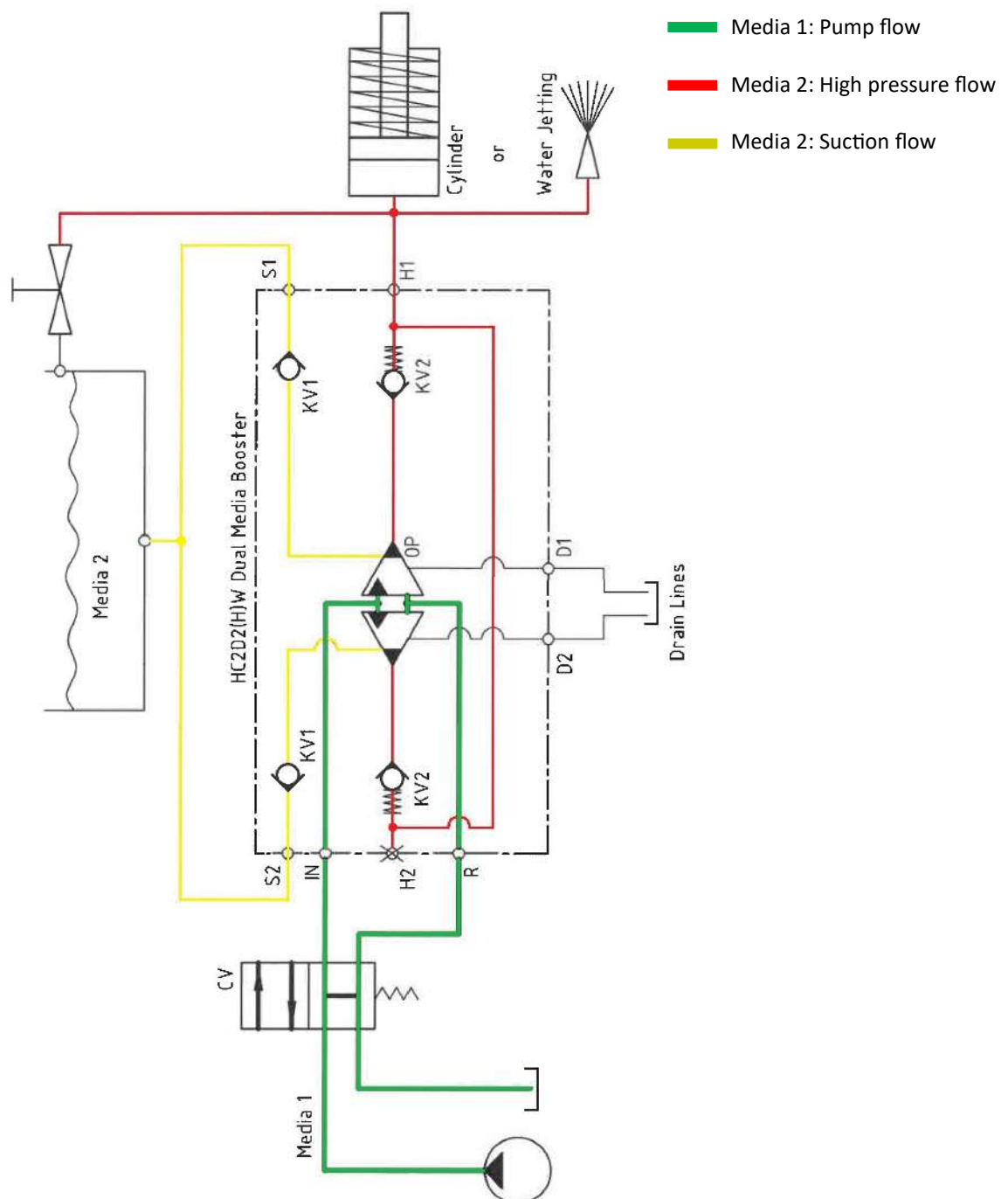
1.8 - Function diagram flow paths

The basic operation of the miniBOOSTER HC2D2 intensifier is illustrated in the below function diagram.

Media 1 is fed through the IN-port flowing freely through the bistable valve (BV1), which in turn drives the LP/HP piston assembly. From both of the suction inlets (S1 and S2), media 2 is drawn through the inlet check valves (KV1) and pumped through the high pressure check valves (KV2) to the high pressure outlet H1 (alternatively H2)

The intensifier will automatically stall when the end pressure on the high-pressure side (H) is reached.

If a pressure drop occurs on the high-pressure side, due to a consumption of media 2 or due to a leakage from the system, the bistable LP/HP piston assembly will automatically start-up oscillating, thus maintaining the intensified pressure (H).



1.9 - Connections

The miniBOOSTER HC2D2 is supplied with 8 threaded connection bores.

All connections are clearly marked/stamped into the body of the miniBOOSTER and could thus be easily identified.

IN	Inlet pressurized media 1
R	Return outlet media 1
H1	High pressure outlet media 2
H2	Optional high pressure outlet media 2 (plugged from manufacturer)
S1	Suction media 2
S2	Suction media 2
D1	Seal drainhole media 1 and 2 (when seals have become worn or defective!)
D2	Seal drainhole media 1 and 2 (when seals have become worn or defective!)



1.10 - Technical specifications

Model	HC2D2	
Weight	4.2 kg / 9.3 lbs	
Pressure ranges		
Inlet pressure (media 1)	IN	20 - 207 bar / 290 - 3,000 psi
Outlet pressure max. (media 2)	H1 and H2	800 bar / 11,600 psi as standard (Higher pressures available, please contact miniBOOSTER)
Return (media 1)	R	As low as possible.
Temperature ranges		
Media oil	-40°C to +120°C / -40°F to +248°F	
Stroke ranges		
Continuous	> 5 minutes	from 1 to maximum 500 strokes/minute
Intermittent	< 5 minutes	from 1 to maximum 600 strokes/minute
Materials of construction		
Body	Zinc chromate electroplated cast iron	
Pistons	Hardened alloy steel	
Check valves	Chrome alloy steel	
Static seals standard	Nitrile NBR (other seal systems available as option)	
Dynamic LP and HP seals standard	H-ECOPUR (other seal systems available as option)	
Connections		
IN, R, S1, S2, H1 and H2	¼" BSPP	
D1 and D2	⅜" BSPP	
Fluids		
Media 1	Hydraulic fluids, water/glycol solutions > 5% glycol	
Media 2	Hydraulic fluids, glycol	



For other mediums such as methanol etc. please contact your miniBOOSTER® distributor.

Filtration recommendations media 1 (media 2 at least 40 µm).

		0-140 BAR (0-2,000 psi)		141-207 BAR (2,000-3,000 psi)	
Media		ISO 4406 Scale number	Micron rating	ISO 4406 Scale number	Micron ratings
Oil	≥ 5 cSt	19/17/14	10	18/16/13	5
Freshwater	≤ 5 cSt	18/16/13	5	17/15/12	3



Mediums not filtered in accordance with the recommendations given in this chapter may be the reason to severe damage of the HC2D2.

2.1 - Seal kit

Complete seal kits are available for the miniBOOSTER HC2D2. Seals should be replaced whenever media 1 or media 2 is leaking from connection D1 or D2 (more than 8 drops/min) or as part of a routine maintenance procedure. A seal kit contains a complete set of seals and an assembly drawing of the seal assembly.



Seal kit

Intensification factor	Item number HH type	Item number HE type	Item number HP type	Item number EE type	Item number EP type
1.2	SEALKIT-2D2-1.2HH	SEALKIT-2D2-1.2HE	SEALKIT-2D2-1.2HP	SEALKIT-2D2-1.2EE	SEALKIT-2D2-1.2EP
1.6	SEALKIT-2D2-1.6HH	SEALKIT-2D2-1.6HE	SEALKIT-2D2-1.6HP	SEALKIT-2D2-1.6EE	SEALKIT-2D2-1.6EP
2.2	SEALKIT-2D2-2.2HH	SEALKIT-2D2-2.2HE	SEALKIT-2D2-2.2HP	SEALKIT-2D2-2.2EE	SEALKIT-2D2-2.2EP
3.0	SEALKIT-2D2-3.0HH	SEALKIT-2D2-3.0HE	SEALKIT-2D2-3.0HP	SEALKIT-2D2-3.0EE	SEALKIT-2D2-3.0EP
4.0	SEALKIT-2D2-4.0HH	SEALKIT-2D2-4.0HE	SEALKIT-2D2-4.0HP	SEALKIT-2D2-4.0EE	SEALKIT-2D2-4.0EP
5.6	SEALKIT-2D2-5.6HH	SEALKIT-2D2-5.6HE	SEALKIT-2D2-5.6HP	SEALKIT-2D2-5.6EE	SEALKIT-2D2-5.6EP
8.0	SEALKIT-2D2-8.0HH	SEALKIT-2D2-8.0HE	SEALKIT-2D2-8.0HP	SEALKIT-2D2-8.0EE	SEALKIT-2D2-8.0EP
12.0	SEALKIT-2D2-12.0HH	SEALKIT-2D2-12.0HE	SEALKIT-2D2-12.0HP	SEALKIT-2D2-12.0EE	SEALKIT-2D2-12.0EP



Important notice!

The HE, EE and the EP type seals are made from materials, which do not withstand the solvent properties from most types of oil. These seals swell and become inefficient when exposed to oil.

Under NO circumstances should intensifiers assembled with HE, EE or EP type seals be internally exposed to oil on the media 2 side.

2.2 - Bolt kit

Complete bolt kit, containing special bolts and washers, are available for the miniBOOSTER HC2D2.



Body bolts part number. [HC2D2-BOLTKIT](#)



Recommendation! Replace old bolts and washers with new ones whenever seals are changed.

2.3 - Tool kit

A complete Tools kit, including all the needed tools, required to change the seals at routine maintenance, is available for the miniBOOSTER HC2D2.



Tool kit part number. [HC2D2-TOOLKIT](#)

Note! The tool kit includes customized tools, which are only available from miniBOOSTER

3.1 - Introduction

The miniBOOSTER HC2D2 intensifier has been designed and is manufactured to provide reliable service over a range of demanding applications. The intensifier does not require special maintenance.

As noted earlier, to provide extended service life, ensure that the unit is operated within specifications and in particular, fluid quality. Please refer to section 1.10 Technical Specifications for additional information.

The miniBOOSTER HC2D2 is designed with field serviceable seals. In the event of a seal failure, the following procedure should be followed closely. For repairs other than seal replacement, it is recommended the intensifier be returned to the factory.

3.2 - Preparation

The miniBOOSTER should only remain unplugged and disassembled in a very clean and tidy workshop environment. No particles larger than 10 µm should possibly be allowed to enter the miniBOOSTER HC2D2 in any way.

Ensure that a clean, flat working space is used and that the following tools and supplies are available before beginning repairs:

Tools:

1. Bench-mounted heavy-duty vise with soft face jaws and a maximum opening of at least 70 mm / 2.75".
2. Roll of lint-free cloth or paper wipes.
3. Can of copper-based anti-seize and lubricating compound (Rocol[®] or NeverSeez[®])
4. Tube of silicone based O-rings grease
5. ½" torque wrench, capable of 38 Nm / 28 lb-ft
6. 8 mm Allen Key ½" Socket
7. Spanner wrench, 0.15" diameter X 0.20" L pins
8. RECOMMENDED! miniBOOSTER Tool kit, HC2D2-TOOLKIT (see section 2.3)

Spare Parts:

1. Seal kit (see section 2.1)
2. Bolt kit (see section 2.2)



miniBOOSTER is continuously developing and improving our products. Material appearances may vary slightly from the illustrations. Please contact your distributor or the factory if you have any questions or concerns about the procedure or parts.

3.3 - Seal replacement instruction



3.3.1

Clean the exterior of the miniBOOSTER HC2D2 thoroughly before it is taken to the workshop.

Make sure that the warranty void sealant is removed from all HEX bolt heads.



Follow the given instructions carefully. Failure to comply with the instructions could result in equipment damage and personal injury. The miniBOOSTER HC2D2 should only be disassembled, have the seals changed and be reassembled in one end at a time.



3.3.2.

Secure the HC2D2 vertically in a vice between soft jaws and clamp it on the flat ends.

If soft jaws are not available use cloth or cardboard instead to protect the surface of the intensifier.

To easen the re-assembly, it is recommended to draw position lines with a marker between the middle- and the end parts.



3.3.3

Loosen and remove the 2 HEX bolts.



3.3.4

Remove the upper part.

**3.3.5**

Remove the middle part. Be careful not to drop the piston located in the middle of the part.

**3.3.6**

Carefully remove the piston.

**3.3.7**

Loosen and remove the seal lock nut.

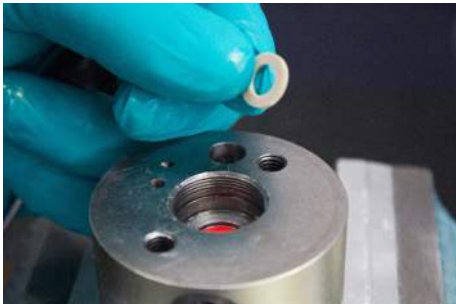
Remove the O-ring from the seal lock nut.



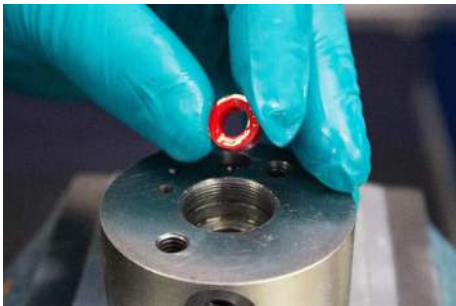
If the surface of the pistons or the piston cylinders have any visible surface imperfections, the intensifier **will not** operate properly. The unit should be returned to the factory for refurbishment. If reassembled with such damaged parts, the intensifier may operate, with a reduced effective intensification ratio, for a while, but will generally fail after a short period of operation and may no longer be serviceable.

**3.3.8**

Remove the seal support ring

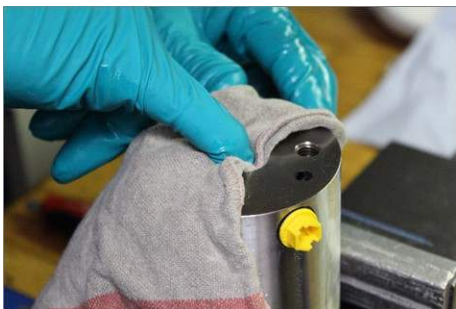
**3.3.9**

Remove the backup ring.

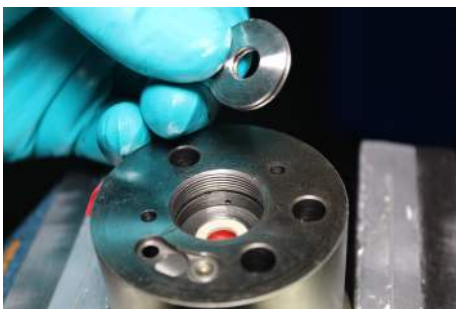
**3.3.10**

Remove the old seal.

Be careful not to scratch the surface where the seal is located.

**3.3.11**

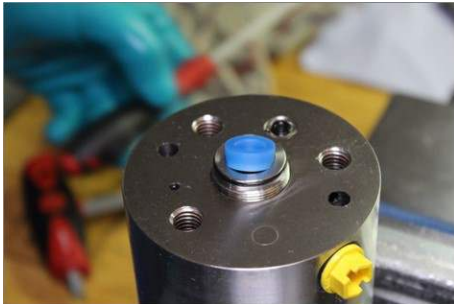
Clean off the seal bore with a lint free cloth and blow with compressed air. Also clean the seal support ring and seal lock nut.

**3.3.12**

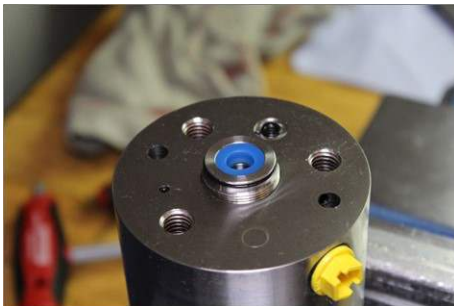
Reassemble with new seals in reverse order, in accordance to the Instructions drawing supplied with the seal kit. Remember the new O-ring.

**3.3.13**

Use the booster end part as a vise for the lock nut and mount it in reverse like shown on the picture.

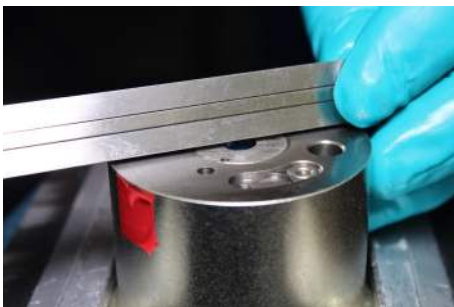
**3.3.14**

Install the new seal (blue on photo) .

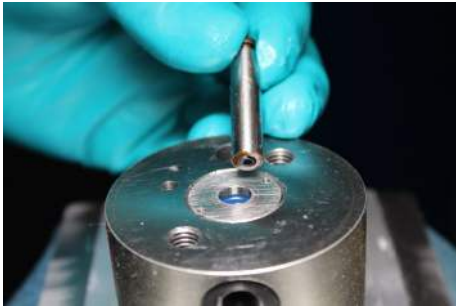
**3.3.15**

Reassemble the lock nut into the end part and DO NOT use excessive force to tighten the nut.

When the nut is under the surface level of the end part, DO NOT tighten any further.

**3.3.16**

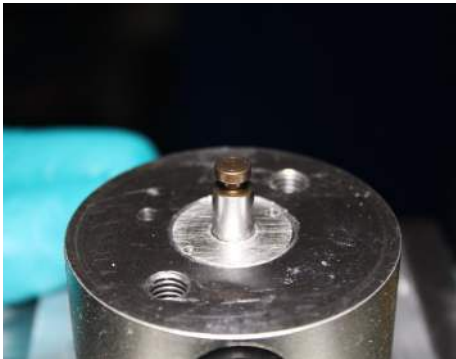
Checking to see that the nut is below level of the end part.

**3.3.17**

Inspect the piston for visual damages (scratches, wear marks).



If the surface of the pistons or the piston cylinders have any visible surface imperfections, the intensifier **will not** operate properly. The intensifier should be returned to the factory for refurbishment. If reassembled with damaged parts, the unit may operate, with a reduced effective intensification ratio, for a while, but will generally fail after a short period of operation and may no longer be serviceable.

**3.3.18**

Insert the HP piston into the end part. Use a soft hammer to gently tap the piston into place. Note that the piston fits tight into the new seals.

The piston should be pushed/tapped approximately half of its length into the end part.

**3.3.19**

Release the end part (marked with D1 at the yellow plug) from the wise and clamp the other end part (marked with D2 at the yellow plug).

Install new seals into this part by using the procedure from section 3.3.7 to 3.3.18.

**3.3.20**

Grease all O-rings with a thin layer of silicone based grease. This will make them stick better into their corresponding grooves.

**3.3.21**

Assemble the remaining new gaskets and O-rings into the middle part in accordance with the instructions drawing incorporated in the supplied seal kit.

Assemble the large piston into the middle part.

**3.3.22**

Connect the large piston in the middle part to the HP piston in the end part.

**3.3.23**

Connect the remaining end part to the assembly.

**3.3.24**

Insert the screws and washers and align the three parts by tapping the bodies lightly with a rubber hammer.

**3.3.25**

Apply a torque of 30 Nm / 22 ft-lbs. to the HEX bolts.

The seal replacement procedure is now finished.

4.1 - Installing the miniBOOSTER HC2D2

The miniBOOSTER HC2D2 can be installed in any position. The preferred and recommended mounting position is with the intensifier horizontal and with the drain ports , D1 and D2, facing downward.

Important notice: The media 2 fluid must be vertically higher positioned than the S1 and S2 suction ports. This ensures that the high pressure chambers in the booster are always flooded with liquid.

The HC2D2 can be used for two different modes of operation:

1. As a hydraulic driven High Pressure Pump increasing the pressure of a media 2, which is primed into the intensifier (S1 and S2 connections), and pumped out (H1 or H2 connections) through a nozzle, at a steady constant pressure set by the size of the nozzle and the pressure/flow of the media 1. The intensifier installed in this mode, will oscillate/ pump constantly during operation. (i.e. for High pressure spraying purposes etc).
2. As a hydraulic driven intensifier intensifying the pressure of media 2 up to a preset value set by the intensification ratio and the supplied media 1 pressure/flow. The intensifier installed, in this mode will oscillate until the preset pressure is reached and then stall, until a consumption of media 2 causes the intensifier start oscillating/intensifying again (this mode is for filling-up hydraulic cylinders, accumulators etc.)

It is recommended to connect a transparent drain hose between the D1 and the D2 connections and the system return line, alternatively a sight glass connected to a sludge tank etc.



Under no circumstances should the D1 and the D2 connections remain plugged during the operation of the HC2D2. I.e. since this could lead to a damage of the internal components of the intensifier, and a pollution of media 1 from media 2.



Either way the miniBOOSTER HC2D2 is installed, it is important that the HC2D2 is installed in accordance to the below mentioned "Preparations" and "Initial start-up" instructions.

4.2 - Preparations

Before the miniBOOSTER HC2D2 is started-up for the first time, as a new unit or as a repaired unit, it should be ensured that the:

1. Filtering recommendations (see index 1.10) do comply.
2. Fittings, piping's and hoses connected to the intensifier High pressure side (H1 or H2) are from materials which will withstand the high pressure supplied from the HC2D2.
3. Media 2 circuit has been completely bled from trapped air, and that there is a sufficient flow of media 2 supplied to the intensifier.



Trapped air should be bled from the internal media 2 circuits thus preventing the HP-pistons and the HP-seals to run under dry conditions. Air should be bled by priming the media 2 suction lines (S1 and S2) with pressurized media 2 (min. 4 bar / 58 psi) until the HP sections are completely bled from air i.e. media 2 flows from the H1 or the H2 connections without any air bubbles in it.

4. Media 1 flow (IN connection) is adjustable and is adjusted to 0.
5. Check that the drain connections (D1 and D2) are unplugged and connected to a drainage system.

4.3 - Initial start-up procedure (after preparations are carried out)

Mode 1 installation (HC2D2 installed as a High Pressure Pump)

1. Slowly increase the pressure/flow of the media 1 supplied to the HC2D2. Observe that the intensifier starts oscillating when the supplied pressure reaches 20 - 30 bar / 290 - 435 psi.
2. Observe that the intensifier oscillates with a steady pulsing sound, and with a stroke-rate within the specifications (see section 1.10).
3. Increase the pressure/flow of the media 1 observing that the pressure of the media 2 increases proportionally. Ensure that the specified stroke rate is not exceeded at any time.
4. Check that no media 1 or 2 is leaking from the connections D1 and D2 (up to 8 drops /minute should be accepted)

Mode 2 installation (HC2D2 installed as an pressure intensifier)

1. Slowly increase the pressure/flow of the media 1 supplied to the HC2D2. Observe that the intensifier starts oscillating when the supplied pressure reaches approximately 20 -30 bar / 290 - 435 psi.
2. Observe that the intensifier oscillates with a steady pulsing sound, and with a stroke-rate within the specifications (see section 1.10).
3. Increase the pressure/flow of the media 1 observing that the pressure of the media 2 increases proportionally. Ensure that the specified stroke-rate is not exceeded at any time.
4. Operate the cylinder / accumulator to its end position.
5. Move the cylinder/accumulator between its end positions a couple of times, as to completely bleed the system from trapped air.
6. Check whether the pressure of media 2 is reached. If not then adjust the pressure of media 1 once more.



IMPORTANT! At no time should the intensifier be operated beyond the specifications listed in Section 1.10

5.1 - Introduction

The miniBOOSTER HC2D2 intensifier has been designed and is manufactured to provide reliable service over a range of demanding applications. The intensifier does not require special maintenance, but should be kept free from dust and dirt and debris.

In case the HC2D2 should malfunction, all repairs of the product should be conducted by using miniBOOSTER original spare parts only, whilst following the instructions given in this manual strictly.

Before the miniBOOSTER is disconnected and sent for a repair, it should be thoroughly cleaned at the exterior. Once the HC2D2 has been disconnected all connection bores should immediately be plugged efficiently with plugs or tape, before the intensifier is sent to miniBOOSTER or to the miniBOOSTER distributor. I.e. since an internal contamination of the HC2D2 may obstruct the fault-finding process at the miniBOOSTER service dept.

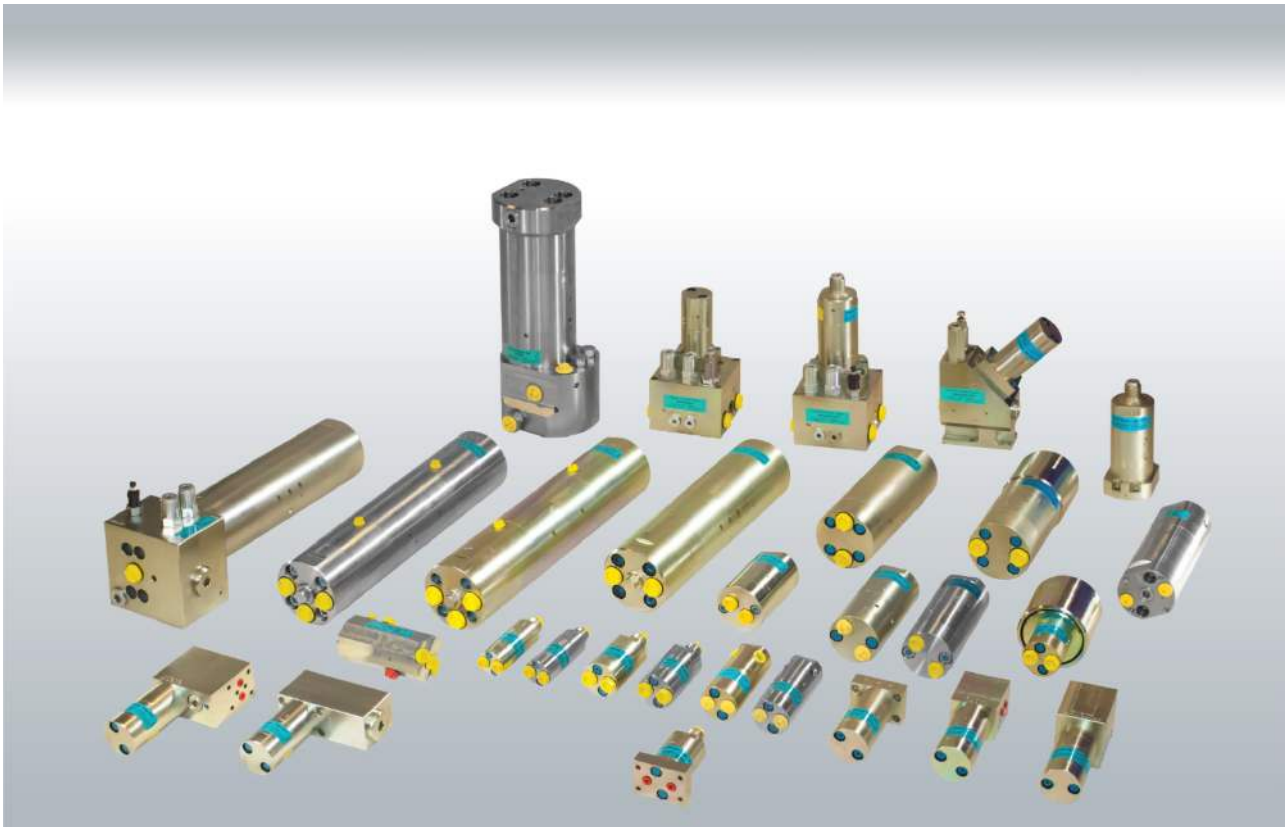
5.2 - Inspection

A visual inspection for media escaping from drain holes D1 or D2 should be conducted on a regularly basis. The purpose of the drain holes (see their routing on the function diagram) is to enable the user to visually inspect whether the internal dynamic seals of the HC2D2 have become worn or scratched for some reason, or if these are fully functional.. The maximum permissible amount of media escaping from D1 or D2 is 8 (eight) drops per minute. If this amount is exceeded the HC2D2 should be repaired with new seals or returned to miniBOOSTER for a repair. Any changes in the normal behavior/run of the HC2D2 i.e. slow or difficult starting etc. should be a sensible reason to have the intensifier repaired immediately.

6.1 - Troubleshooting

Symptom	Possible causes	Remedy
Media 2 pressure (H1 and H2) not existent	No supply of media 2 to port S1 and S2 Intensifier doesn't oscillate Air trapped in the media 2 circuit Suction filter Clogged	Establish supply and bleed circuit See below Bleed the media 2 circuit Change filter element
Intensifier doesn't oscillate	Port R plugged Port R pressure too high Pressure on IN < 20 bar (290 psi) Intensifier piston seized Intensifier cylinder seized Intensifier seals seized Bistable valve system seized Preset max HP (H1 and H2) reached	Establish a flow from R to tank Reduce pressure to max 5 bar (72 psi) Increase media1 pressure Return intensifier to miniBOOSTER Return intensifier to miniBOOSTER Change out the seals Return intensifier to miniBOOSTER Normal situation (intensifier stalls)
Excessive flow of media from D1 and D2	LP seals defective HP seals defective HP pistons scratched or worn	Change out the seals Change out the seals Return intensifier to miniBOOSTER
Media1 has been polluted with media 2	D1 and D2 plugged/clogged	Unplug and establish a free flow
Reduced capacity of the intensifier	Air trapped in media 2 circuit Defective HP seals Defective HP pistons Defective HP cylinders	Bleed the circuit Change out the seals Return intensifier to miniBOOSTER Return intensifier to miniBOOSTER
Media 2 pressure builds up very slowly	Air trapped in media2 circuit Defective HP seals Defective HP pistons Defective HP cylinders Poor filling with media 1	Bleed the media 2 circuit Change out the seals Return intensifier to miniBOOSTER Return intensifier to miniBOOSTER Ensure sufficient filling of intensifier
Media 2 pressure won't build up	Air trapped in media 2 circuit LP seals defective HP seals defective HP pistons scratched or worn HP pistons seize under pressure Too low pressure of media 1	Bleed the media 2 circuit Change out the seals Change out the seals Return intensifier to miniBOOSTER Return intensifier to miniBOOSTER Check pressure of media 1
Effective intensification ratio reduced	HP seals defective HP pistons scratched or worn HP pistons seize under pressure	Change out the seals Return intensifier to miniBOOSTER Return intensifier to miniBOOSTER
Unsteady pulsing sound from intensifier	Trapped air in 1 media 2 circuit	Bleed the media 2 circuit
Hard metallic sound from intensifier	Trapped air in 1 or 2 media 2 circuits Intensifier over speeding	Bleed the media2 circuit (S1 and S2) Reduce media 1 pressure/flow (IN)
Intensifier over speeding consequently	Trapped air in 1 or 2 media 2 circuits	Bleed the media 2 circuit
LP and HP seals wears rapidly	Filtering recommendations do not comply Intensifier working under too warm conditions Intensifier over speeding	Ensure proper filtering of mediums Ensure proper cooling of intensifier Reduce speed
LP and HP cylinders worn rapidly	Intensifier working under too warm conditions	Ensure proper cooling of intensifier
Intensifier overheats	Filtering recommendations do not comply Too high working pressures Too warm mediums entered into intensifier HP pistons seizing under high pressure Warm operating environment	Ensure proper filtering of mediums Check/reg pressures (see specs) Check/reg temperatures (see specs) Return intensifier to miniBOOSTER Cool the intensifier with water or oil

The only full range of hydraulic intensifying solutions



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