

# INSTRUCTION MANUAL

## PORTABLE INTENSIFIER SYSTEM

### M-HC2-812A-1M01



Max. 800 bar

**MINIMUM SIZE – MAXIMUM POWER**



# Index

## 1.0 General information

1.1	Safety precautions - IMPORTANT .....	4
1.2	Warranty .....	5
1.3	Serial number and identification plate location .....	5
1.4	Material certificate .....	6
1.5	Technical specification .....	6

## 2.0 Product overview

2.1	Product description .....	7
2.2	Assembly drawing .....	8
2.3	Function diagram .....	9

## 3.0 Operating instructions

3.1	Valves overview .....	10
3.2	System connection and operation .....	11

## 4.0 Installation and maintenance

4.1	General use .....	12
4.2	Installation .....	12
4.3	Bleeding and initial start-up .....	12
4.4	Repair .....	12

## 5.0 Troubleshooting

5.1	Troubleshooting .....	13
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## 1.1 - Safety Precautions - IMPORTANT -

Although the miniBOOSTER hydraulic intensifier system 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 followed 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 system.



**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](http://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 with 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 DNKFRC1000046A). Each hydraulic intensifier has an identifiable serial number, stamped into its metal body. Year of manufacture and intensification factor are stamped into the metal body too. All technical documentation is drafted in accordance with the term “sound engineering practice”, and in accordance with 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 pressure intensifier system can be identified by a unique serial number and its type code, which is engraved on the manifold housing.

The type number and the serial number are required when ordering repairs of the miniBOOSTER pressure intensifier systems.



#### The example specifies :

M-HC2-812A-1M01	Model
42-14-035	Serial number (week-year-number)
PP-812	Manifold number
CERXXXXX	Materials certificate

#### Nomenclature:

M	Manifold system
HC2	Booster model
812	Function diagram

## 1.4 - Material Certificate

All body parts of the pressure intensifier system are marked with a 3.1 material certificate 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 on request.

## 1.5 - Technical Specification



Never exceed the below pressure, flow and temperature ranges, as this will damage the internal seals of the intensifier.

<b>Model</b>	M-HC2-812A-1M01	
<b>Weight</b>	9,8 kg / 21,6 lbs	
<b>Pressure ranges</b>		
Inlet	P	0 - 350 bar / 5,076 psi
Outlet	P1, M and Z	0 - 207 bar / 3,000 psi
Outlet	H	0 - 800 bar / 14,500 psi
Tank pressure	T	As low as possible
<b>Flow ranges</b>		
Inlet	P	0 - 40 l/min / 10.6 US gpm
<b>Threaded connections</b>		
H, P, T, Z, P1, M <sub>1</sub> and M <sub>2</sub>	1/4" BSPP	
T	3/8" BSPP	
<b>Temperature ranges</b>		
Media oil	-40°C to +120°C / -40°F to +248°F	
<b>Materials of construction</b>		
Manifold housing	Aluminum 6082 T6	
Boosters	Cast iron	
Check valves	Alloy steel	
Static seals standard	Nitrile NBR	
<b>Max. tightening torque</b>		
1/4" BSPP	38 Nm	
3/8" BSPP	47 Nm	
<b>Fluids</b>		
Recognised hydraulic fluids.		
<b>Filter element</b>		
Fineness	12 µm	

## 2.1 - Product Description

The miniBOOSTER M-HC2 Portable Intensifier Systems are rugged units designed to be durable and safe. They require only a minimum of maintenance; but maintenance must still be carried out to ensure trouble-free operation, as working experience shows that up to 80% of all errors are caused by pollutants in the system and a lack of technical service.

It is important that these safety instructions are obtained in connection with any type of technical service and repair of the hydraulic system.

The M-HC2 can be used with any low-pressure (20 to 350 bar) power source providing a minimum flow of 2 L/min. Output pressure as high as 800 bar.

### **Reliability is a primary design consideration**

The M-HC2 is equipped with a 12-micron filter and a visual filter clogging indicator.

### **Time is money**

The M-HC2 can deliver up to 15 L/min and is designed to ensure that system capacity is directed to your process until intensification is required. Cycle times are minimised.

### **Portability**

With a weight of only 9,8kg and a convenient lifting handle, the M-HC2 can easily be carried by one person.

### **Ease of operation**

The M-HC2 operates using an existing low-pressure hydraulic supply. No additional utilities are required. All controls are incorporated into the unit providing simple and reliable performance.

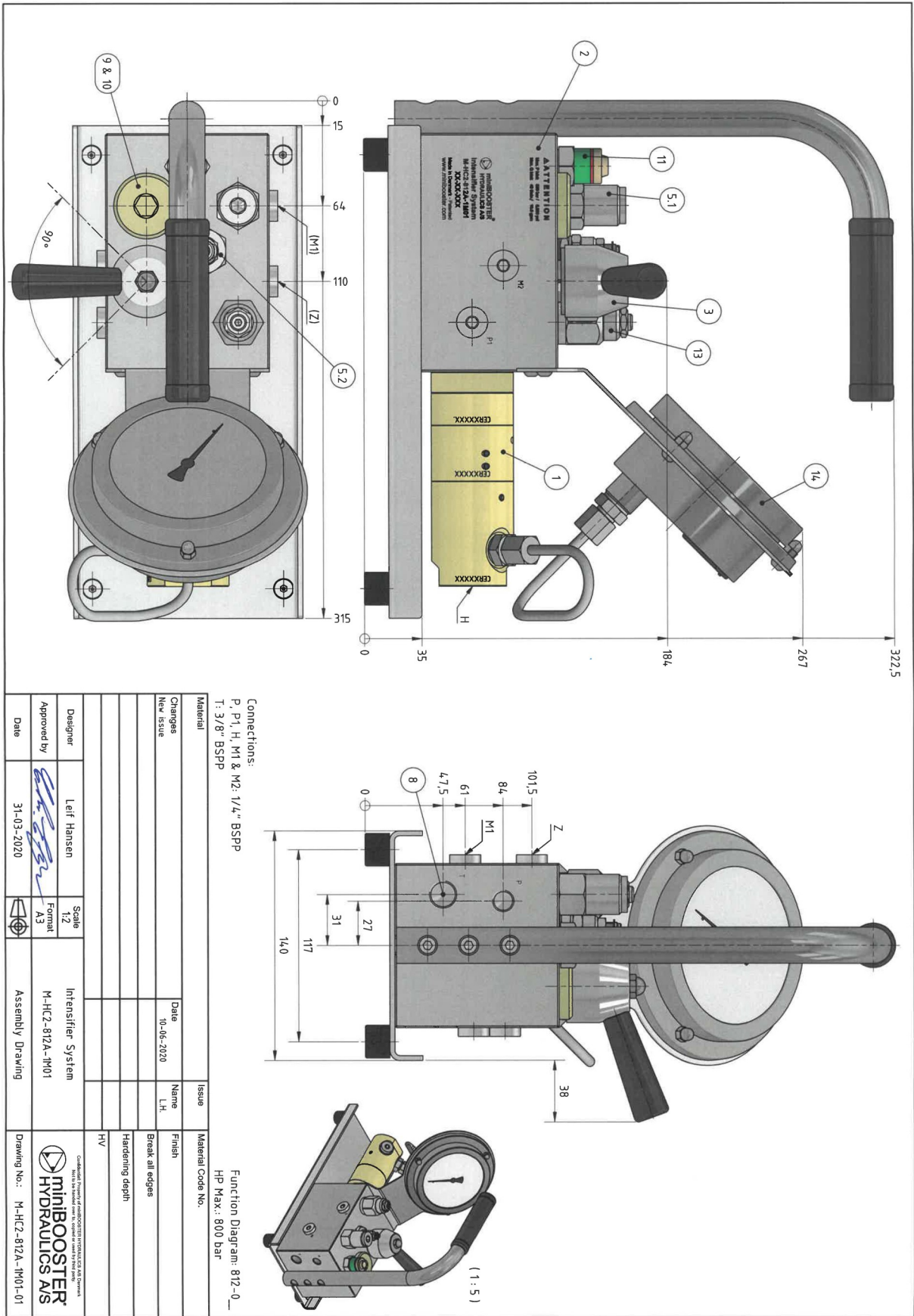
### **Accuracy**

Many applications require that the unit provides exceptional accuracy. The M-HC2 is provided with an easy-to-read 4" diameter pressure gauge to permit accuracy to be controlled within 1%.

### **Typical applications:**

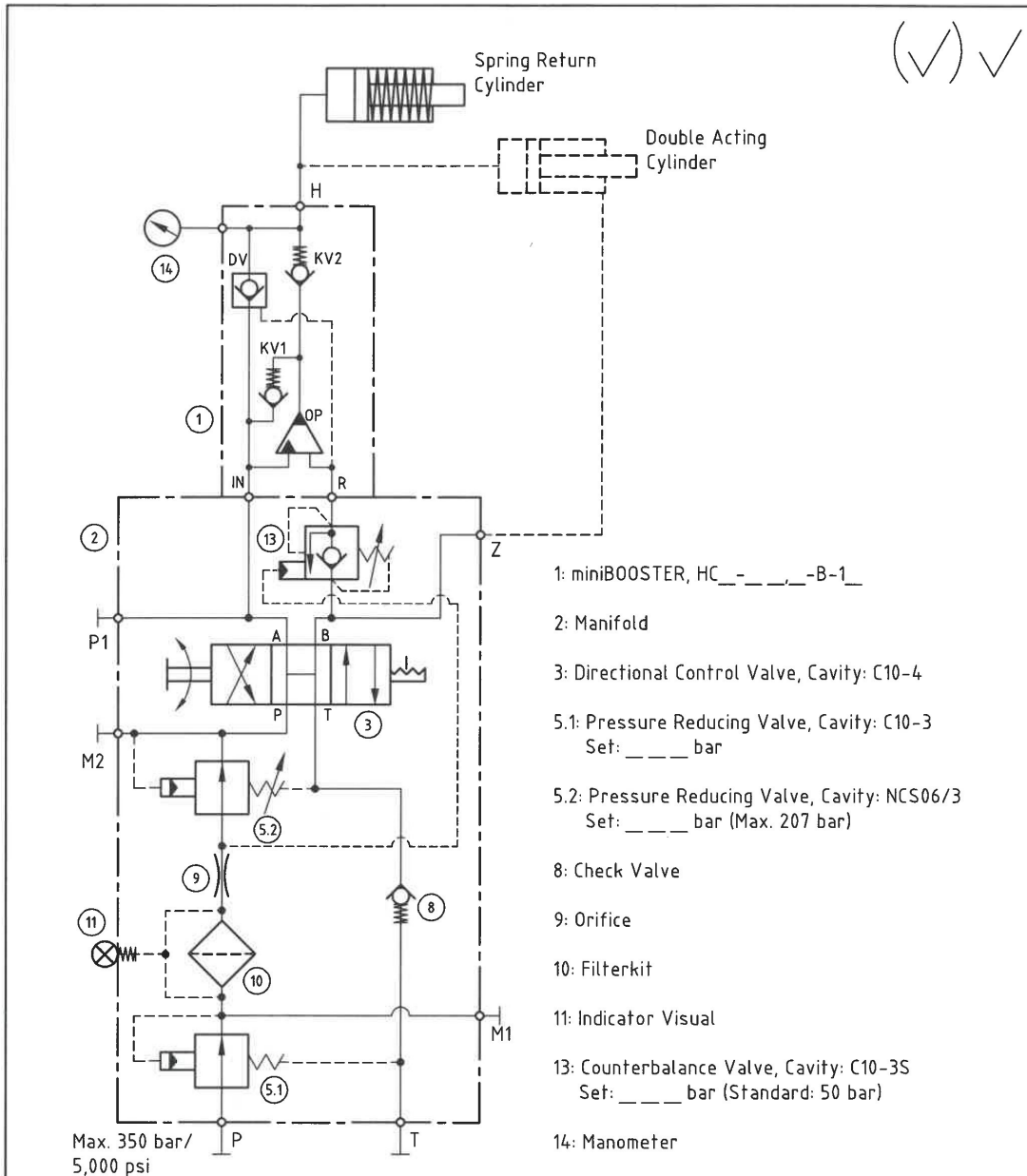
- ▶ Bolt tensioning
- ▶ Jacking systems
- ▶ Railroad systems
- ▶ Crimping/cutting systems
- ▶ Rescue tools
- ▶ Torque wrenches

## 2.2 - Assembly Drawing



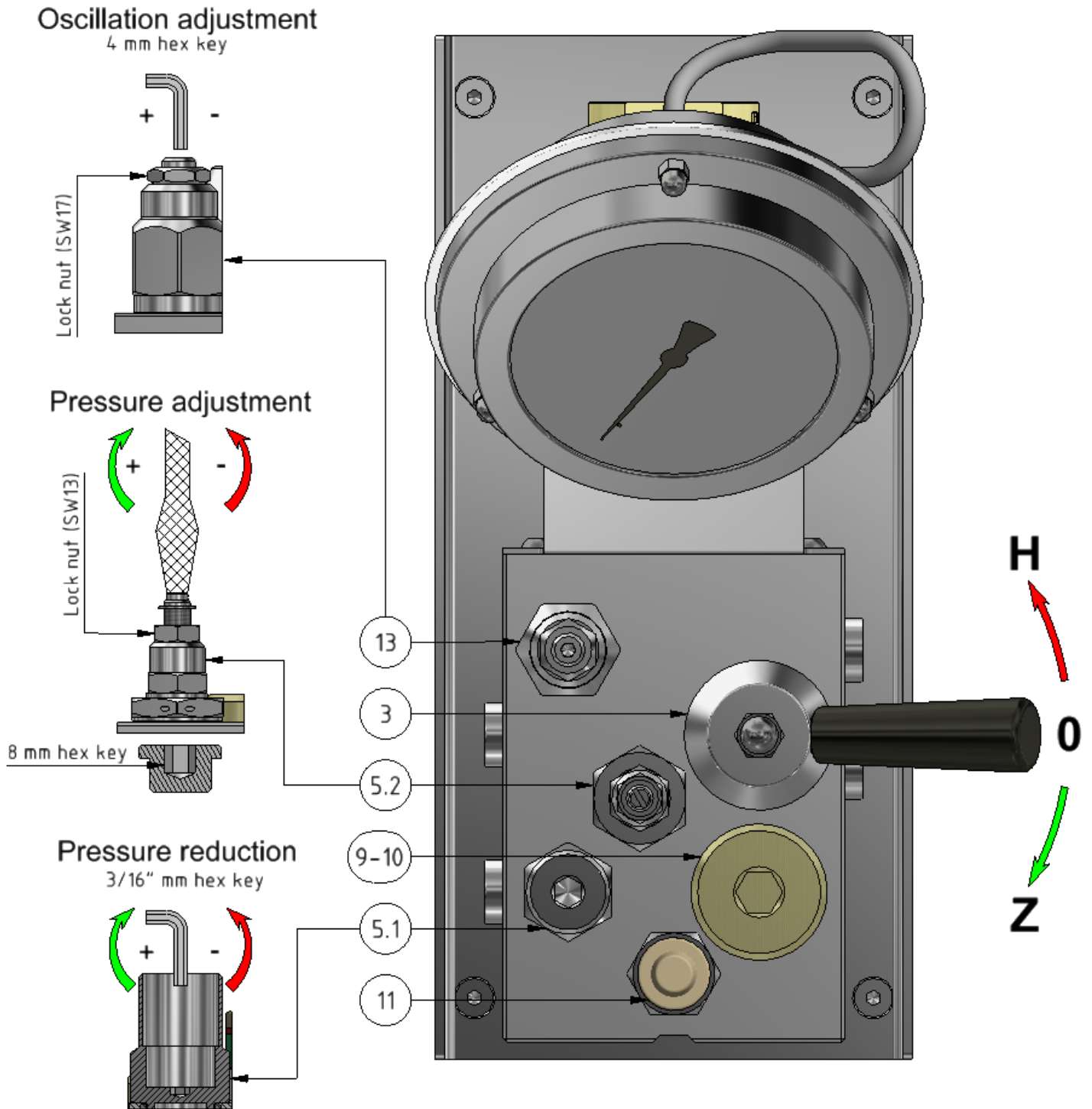


### 2.3 - Function Diagram



Number	Designation	Material	Dimension	Issue	Matr. code No.
Changes		Date	Name	Ext. dim.: -, Int. dim.: +, Distance.: s	Surface
				Meas. -range	0-6   6-30   30-100   100-300   300-1000
				2 dec. .00	0.05   0.10   0.15   0.20   0.30
				1 dec. .0	0.10   0.20   0.30   0.50   0.80
				No dec.	0.30   0.50   0.80   1.20   2.00
Replace		Scale	Function Diagram		Confidential: Property of miniBOOSTER, HYDRAULICS A/S Denmark Not to be handed over to, copied or used by third party. 
Designer	Leif Hansen		Intensifier System		
Konf.			M-HC _ -812		
Date	06-04-2020		No.: 812-00		

### 3.1 - Valves Overview



## 3.2 - System Connection And Operation

### Connections

The Intensifier System is equipped with six hydraulic ports:

- Two on the low-pressure side marked P and T, (P = Pump and T = Tank)
- Two on the right side marked Z for return of a double-acting cylinder and M1 for measuring pressure after PRV No. 5.1.
- Two on the left side marked P1 and M2. P1 is used for reduced pressure outlet to e.g. a secondary cylinder. The M2-port is used as a gauge port for measuring the reduced pressure after PRV No. 5.2.
- One H-port (High pressure). Important: a special high-pressure hose must be used on the high-pressure side (H).

On the left-hand side of the unit, pressure reducing valve (pos. 5.1) will limit the pump pressure on the low-pressure side to 207 bar, or lower if required.

Be sure to loosen the lock nut before the adjustment is made and tighten it again when done.

In the middle is a pressure reducing valve (pos. 5.2). This valve is used to adjust the inlet pressure to the intensifier, to be able to control the outlet pressure (H).

On the right side is a directional control valve (pos. 3)

### Directional control valve (DCV) (valve #3)

- |    |          |   |
|----|----------|---|
| H. | Forward: | Outlet flow from the H-port (High pressure).          |
| 0. | Neutral: | A, B and T are open. P is closed.                     |
| Z. | Reverse: | Outlet flow from the Z-port and relief of the H-port. |

### IMPORTANT NOTICE regarding oscillation adjustment (valve #13)

If the inlet pressure is lower than the standard setting (50 bar), the valve will not open and allow the booster to oscillate. The valve setting has to be reduced by turning the adjustment screw clockwise, until the oscillation starts and high pressure is able to build up.

Be sure to loosen the lock nut before the adjustment is made and tighten it again when done.

### Operating

0. Turn the pressure reducing valves (pos. 5.1 + 5.2) counterclockwise to reduce the pressure.
1. Connect the H-port to the tools.
2. Connect P to pump and T to the tank.
3. Start the pump.
4. Control the clogging indicators\* (pos. 11). Inspect and replace filter if necessary (pos. 10.1).  
**Green colour:** Filters OK **Red colour:** Change filters.
5. To activate the high-pressure intensifier, turn the DCV forward to pos. A.
6. When the pressure is stable and the booster has stopped oscillating, adjust the pressure reducing valve (pos. 5) clockwise until desired pressure has been achieved.
7. To release the pressure, turn the DCV to position B and hold it there until the pressure reads 0.
8. Return the DCV to the neutral position.
9. Make sure pressure is released before disconnecting any of the hoses.

*\*Clogging indicator only works when the unit is under pressure.*

*Clogging indicator for pressure filter. If it shows Red, replace the filter. If it shows Green, the filter is OK.*

## 4.1 - General Use

All new or repaired intensifiers from miniBOOSTER have been hydraulically tested under full load conditions after assembly and are guaranteed full functionality and efficiency.

The pressure intensifier systems have been designed and 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, dirt and debris.

A visual inspection for oil escaping on any exterior part of the pressure intensifier system should be conducted on a regular basis.



**IMPORTANT! At no time should the intensifier be operated beyond the specifications listed in Section 1.5.**

## 4.2 - Installation

The pressure intensifier system can be installed in any position (vertical, horizontal, angled etc.) Use the four provided screws to firmly secure the system.



**Regardless of how the pressure intensifier system is installed, it is important that the system is initially started-up in accordance with the below mentioned instructions. Incorrect initial start-up of the intensifier may cause severe damage to the internal components of the intensifier.**

## 4.3 - Bleeding And Initial Start-up

At the initial start-up the intensifier should be operated gently at a max LP-IN pressure of approximately 100 bar (1,450 psi) for 1 to 2 minutes, to ensure it is properly bled from trapped air. Hereafter the pressure intensifier system can be operated at its full capacity.



**IMPORTANT! At no time should the intensifier be operated beyond the specifications listed in Section 1.5.**

## 4.4 - Repair

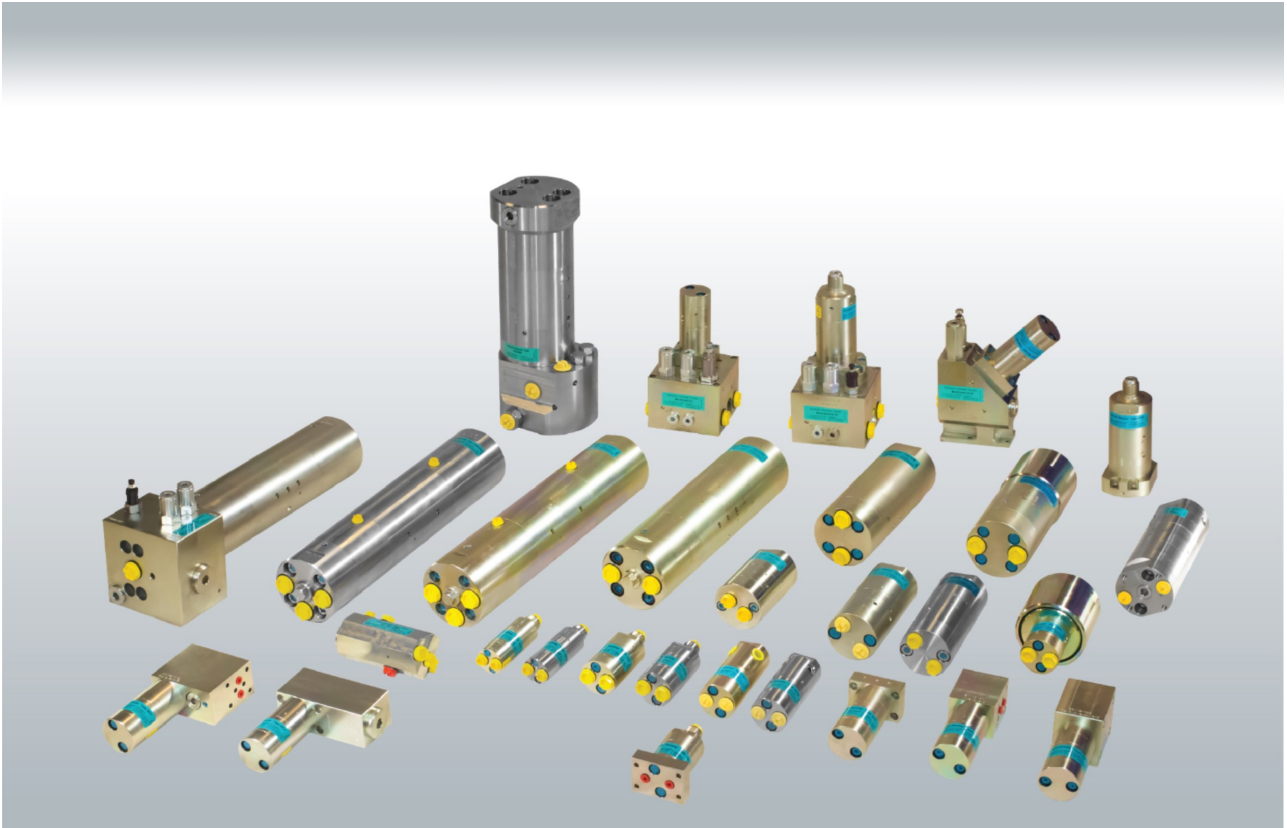
In case the intensifier should malfunction, all repairs of the product should be conducted by miniBOOSTER only, since any intervention on the intensifier requires special tools and special testing equipment.

Before the pressure intensifier system is disconnected and sent for repair, the exterior should be thoroughly cleaned. Once the pressure intensifier system 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, since an internal contamination of the intensifier may obstruct the fault-finding process at the miniBOOSTER service department.

## 5.1 - Troubleshooting

Symptom	Possible causes	Remedy
High pressure does not reach maximum pressure.	Pump pressure.	Make sure that the pump pressure is at least the intensification ratio times the pump pressure.
	Pressure reducing valves (5.1 and 5.2) are not adjusted correct.	Adjust valve 5.1 first, and then 5.2.
Booster does not oscillate when the cylinder has been filled.	Counterbalance Valve #13.	Adjust the Counterbalance Valve setting (See section 3.2)
Clogging indicator #11 showing red.	Filter Kit blocked.	Change Filter Kit #10. (See section 3.2)
None of the above symptoms.		Consult miniBOOSTER.

# The only full range of hydraulic intensifying solutions



Authorised distributor:

