

INSTRUCTION MANUAL

HYDRAULIC BOOSTER

HC218



MINIMUM SIZE – MAXIMUM POWER

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1.1 - Safety Precautions - IMPORTANT -

Although the miniBOOSTER hydraulic booster 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. 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 boosters 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 DNKFRC10000046A). Each hydraulic booster 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 boosters are individually pressure tested prior to the EOL-approval.

1.3 - Serial Number and Identification plate location

Each individual hydraulic booster can be identified by a unique serial number and its type-code which is stamped on the manifold housing.

The type number and the serial number is required when ordering repairs of the miniBOOSTER hydraulic booster.



The Example Specifies:

HC218	Booster Model
32-18-001	Serial number (week-year-number)
CERXXXXX	Materials certificate

Nomenclature:

5.0	$i = 5.0 : 1$
B	With dump valve

1.4 - Material Certificate

All body parts of the hydraulic booster 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 booster.

Model HC218
Versions A or B
Weight 4,9 kg / 10.8 lbs

Pressure Ranges

Inlet P_{IN} and T 0 - 207 bar / 3,000 psi
 Outlet P_H 0 - 700 bar / 10,150 psi

Flow Ranges

Inlet P_{IN} and T 0 - 40 l/min / 10.5 US gpm
 Outlet P_H 0 - 4.2 l/min / 1.1 US gpm

Connections

IN, R, Z and H 1/4" BSPP

Temperature Ranges

Media oil -40°C to +120°C / -40°F to +248°F

Materials of Construction

Boosters Cast iron
 Check valves Alloy steel
 Static seals standard Nitrile NBR

Fluids

Recognized hydraulic fluids.

Filtration Recommendations

		0-140 BAR (0-2,030 psi)		141-207 BAR (2,031-3,000 psi)		> 207 BAR (> 3,000 psi)	
Media		ISO 4406 Scale number	Micron rating	ISO 4406 Scale number	Micron ratings	ISO 4406 Scale number	Micron ratings
Oil	>5cSt	19/17/14	10	18/16/13	5	17/15/12	3



Medias not filtered in accordance with the recommendations given in this chapter may be the reason to severe damage of the hydraulic booster system.

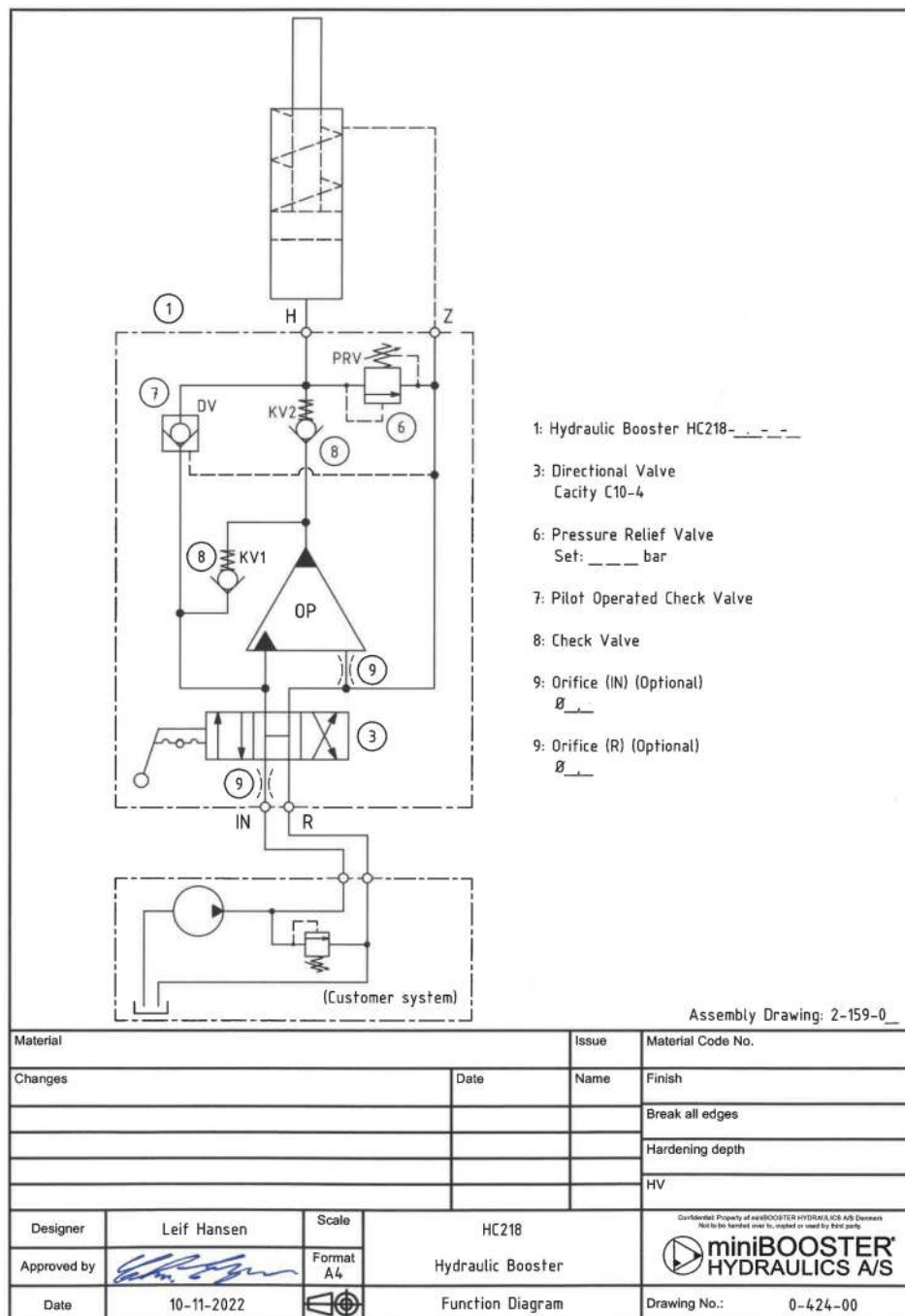
2.1 - Product Description

The HC218 is a In-line mounted hydraulic booster and it is equipped with a manual directional 4/3 valve on the low pressure side and a relief valve on the high pressure side. The high pressure is adjustable up to 700 bar / 10,150 psi (To the A port of e.g. a cylinder).

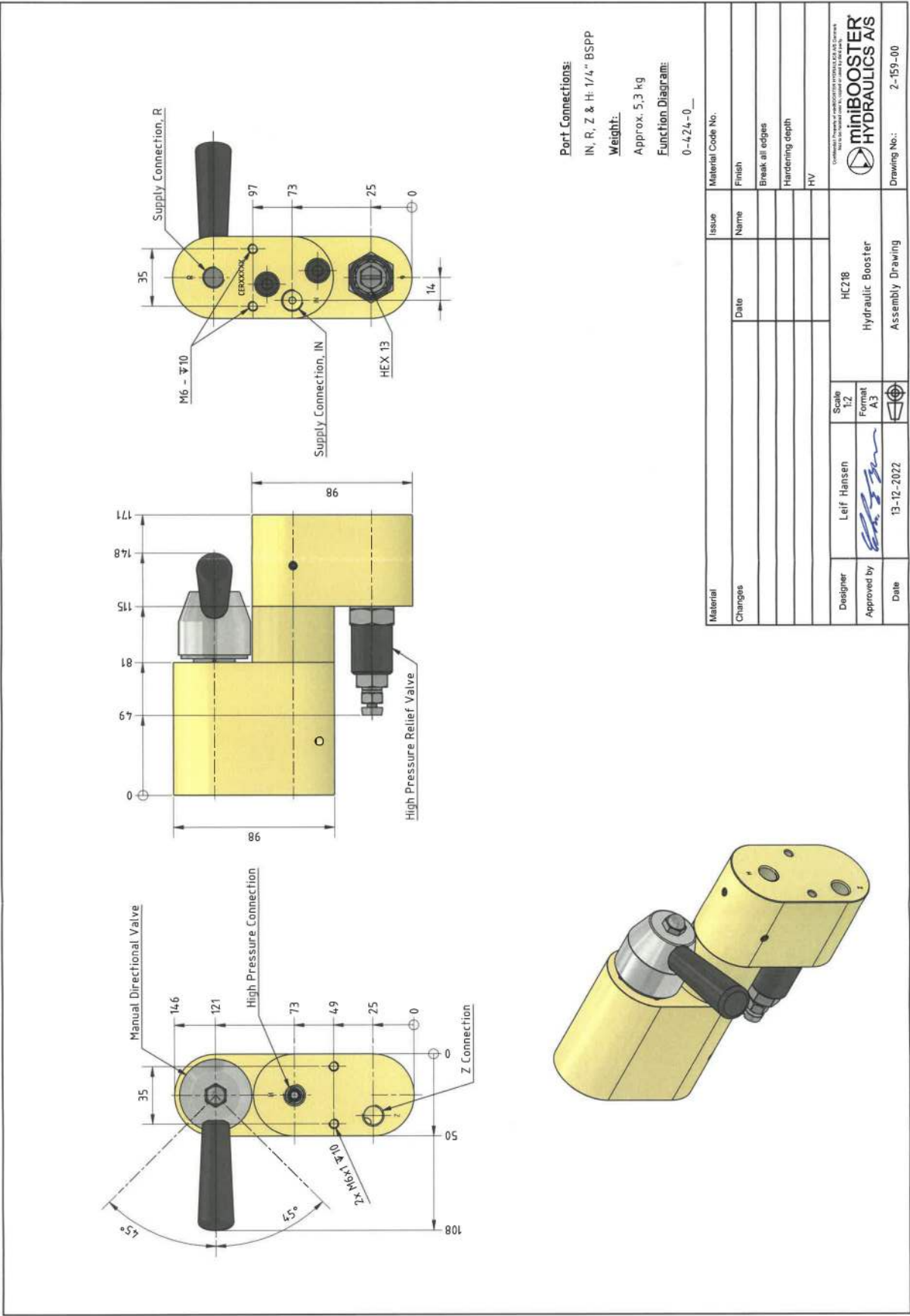
Key features of the hydraulic booster:

- ▶ Adjustable maximum inlet and outlet pressure
- ▶ Wide range of intensification factors available
1.2 / 1.5 / 2.0 / 2.2 / 2.8 / 3.2 / 4.0 / 5.0 / 6.6 / 9.0 / 13.0 / 20.0

2.2 - Function Diagram



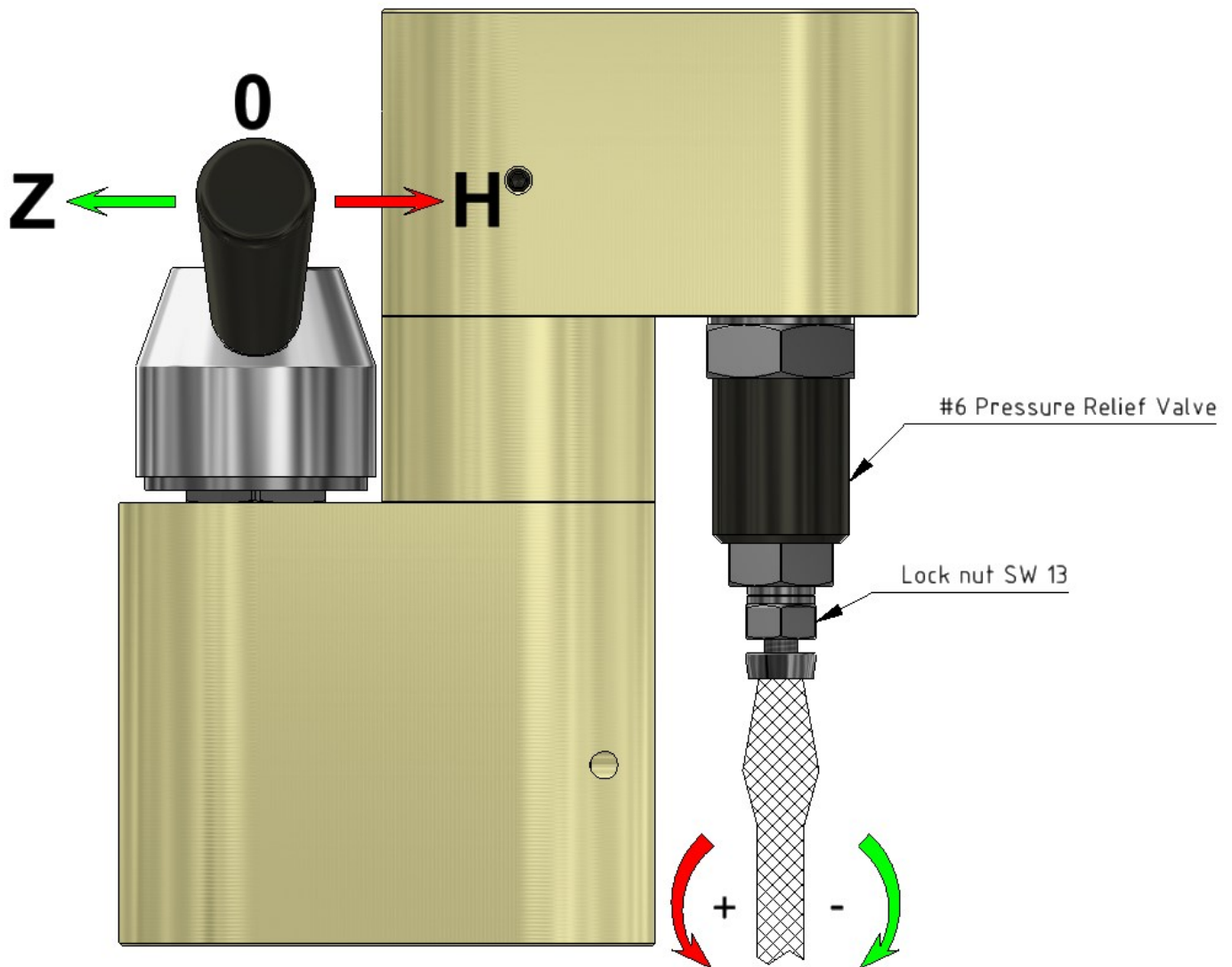
2.3 - Assembly Drawing



3.1 - Introduction

The the relief valve is pre-adjusted to customer specific setting. If needed, the following section provides guidance for any needed re-adjustment. A guide to adjust the hydraulic booster from scratch is also included.

Note: The appearance of the valves in the manual may vary from the received product.



3.2 - Directional Control Valve (DCV Valve #3)

- H. Forward: Outlet flow from the H-port (High pressure).
- 0. Neutral: Open Center.
- Z. Reverse: Outlet flow from the Z-port and relief of the H-port.

3.3 - High Pressure Outlet Control (Relief Valve #6)

Tools:

10 mm spanner or adjustable wrench.

Slotted screwdriver

17 mm torque wrench (*only required for replacing the valve*).

22 mm torque wrench (*only required for replacing the valve*).

CW = Clockwise direction

CCW = Counter Clockwise direction

3.2.1

Loosen the 10 mm lock nut from the stem of the valve (CCW).

3.2.2

Use the screwdriver to rotate the stem and adjust the outlet pressure. (explanation in section 3.1)

CW = Increase outlet pressure of H port.

ΔP per one turn: 94 bar / 1,363 psi

CCW = Decrease outlet pressure of H port.

3.2.3

Retighten the nut. Use the screwdriver to prevent the stem from rotating.

Replacement**3.2.R.1**

Use the 22 mm wrench to release the sealing nut (no more than 1 turn CCW). Afterwards, use the 17 mm wrench to unscrew the valve (CCW).

3.2.R.2

(new valve) Release the sealing nut on the new valve just until a slight resistance is felt (CCW).

3.2.R.3

Before installing the new valve, check that the cavity is free from any particles. Install the new valve by using the 17 mm wrench and apply a torque of 40 Nm / 30 lbf-ft. Finally, use the 22 mm wrench and apply a torque of 35 Nm / 26 lbf-ft to the sealing nut.

3.4 - Adjustment from Scratch

Preliminary steps:

- Stop the pump.
- Decrease the relief valve set pressure as much as possible (CCW).

3.3.1

Turn on the pump and increase the pump pressure to the desired operating pump pressure.

3.3.2

Slowly increase the relief valve set pressure until the booster reach the desired high pressure on the A-port. Use the locknut to lock the high pressure relief valve.

The relief valve setting is now ok.

4.1 - General Use

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

The hydraulic booster systems has been designed and manufactured to provide reliable service over a range of demanding applications. The booster 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 hydraulic booster system should be conducted on a regular basis.

4.2 - Installation

The hydraulic booster system could be installed in any position (vertical, horizontal, angled etc.) Use the four provided screws to firmly secure the system.



Either way the hydraulic booster system is installed, it is important that the system is initially started-up in accordance to the below mentioned instructions. Incorrect initial start-up of the booster may cause severe damages to the internal components of the booster.

4.3 - Bleeding and Initial Start-Up

At the initial start-up the booster should be operated gently at a max LP-IN pressure of approximately 10 bar above setpoint for 30 to 60 seconds, as to ensure it is properly bled from trapped air. Hereafter the hydraulic booster system could be operated at its full capacity.



IMPORTANT! At no time should the booster be operated beyond the specifications listed in Section 1.5

4.4 - Repair

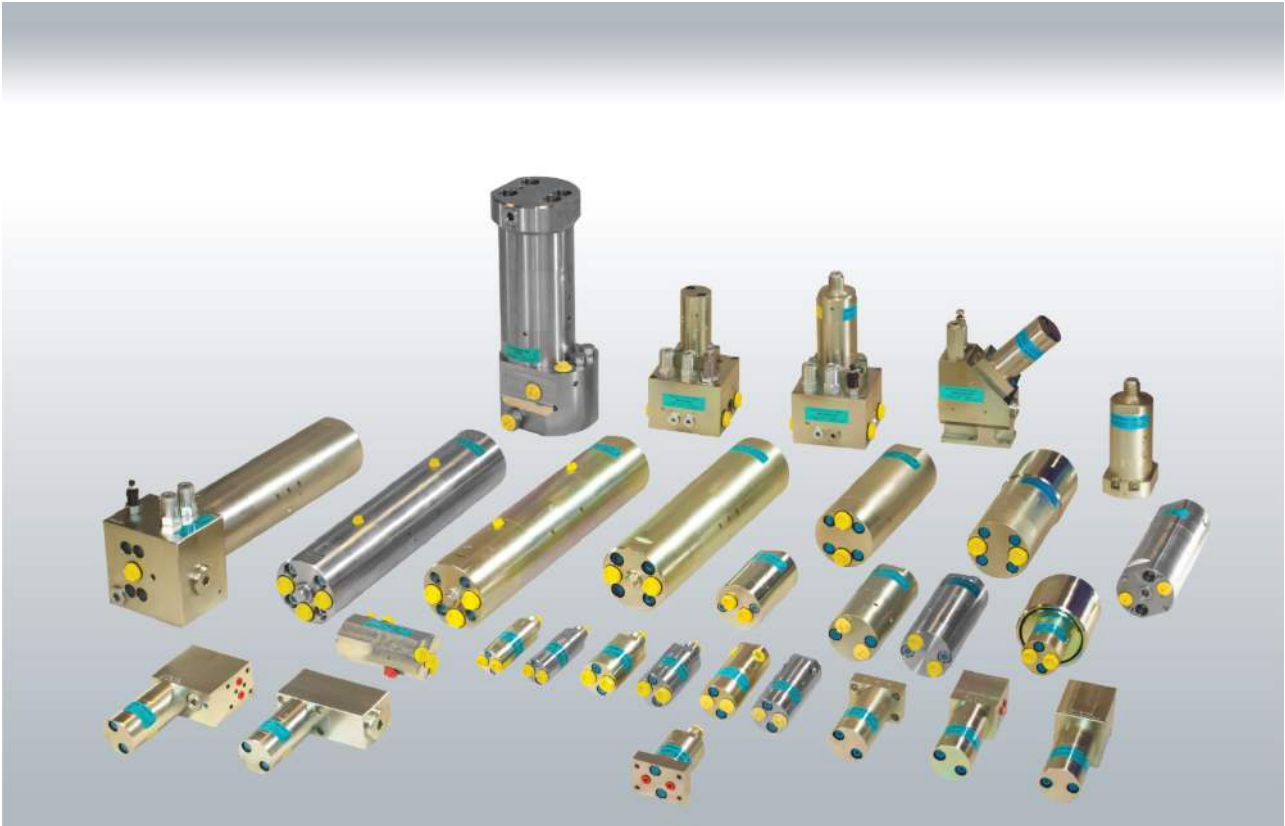
In case the booster should malfunction, all repairs of the product should be conducted by miniBOOSTER only i.e. since any intervention on the booster requires special tools and special testing equipment.

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

5.1 - Troubleshooting

Symptom	Possible Causes	Remedy
Booster does not reach end pressure when the cylinder has been filled.	High pressure relief valve setting is too low.	Adjust the pressure relief valve setting.
Other symptoms		Consult miniBOOSTER

The only full range of hydraulic intensifying solutions



Authorised distributor: