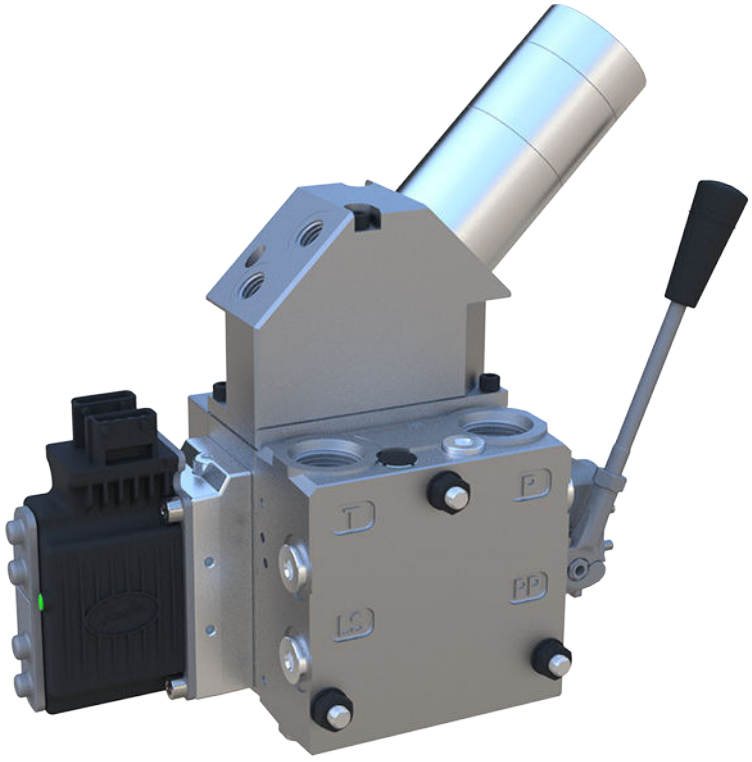
ENGINEERING
TOMORROW

Technical Information

Proportional Valve Group
PVG 32 miniBOOSTER



www.danfoss.com

Revision history

Table of revisions

Date	Changed	Rev
November 2018	Updated schematics	0301
February 2018	Add new modules	0201
August 2015	Drawing updated	00.04
February 2014	Converted to Danfoss layout – DITA CMS	AD
Oct 2010 - June 2013	Various changes	AB-AC
June 2002	New Edition	AA

Contents

General Information

PVG 32 miniBOOSTER 4

HC3-PVG32 miniBOOSTER

Technical data 5
Flow rates and intensification factor 5
Function 6
Ordering 7

M-HC-010

Technical data 8
Intensification factors 8
Function 10
Ordering 10

M-HC-011

Technical data 11
Intensification factors 12
Function 13
Ordering 13

General Information

PVG 32 miniBOOSTER

The PVG miniBOOSTER raises the hydraulic pressure from the pump to the workload. It is ideal when you need an extra high outlet pressure, either constantly or temporarily.

The PVG miniBOOSTER is typically used in mobile attachments, cranes, off highway equipment, injection molding machines and hydraulic presses. It is applicable to machines with insufficient pump capacity to prevent machine stoppage when peak pressures occur.

The PVG miniBOOSTER comes in the following three main variants:

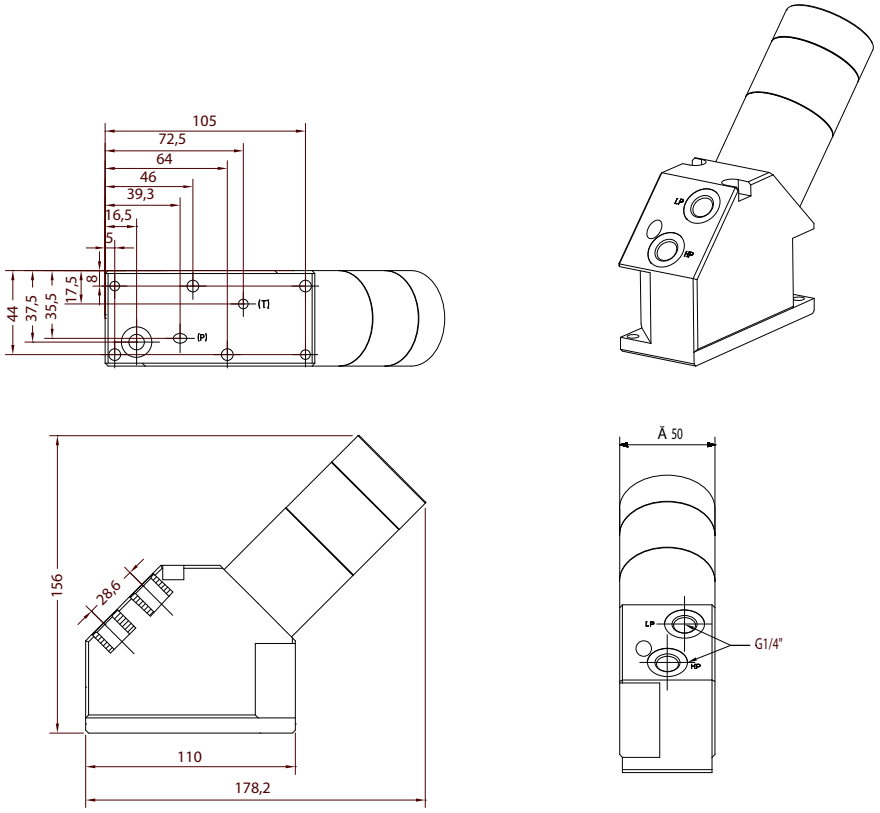
- HC3-PVG
- M-HC-010
- M-HC-011

All ordering, inquiries, technical support etc. of the miniBOOSTER products must be directed to miniBOOSTER Hydraulics A/S. For further information and contact details please visit the miniBOOSTER website. *https://www.minibooster.com*

HC3-PVG32 miniBOOSTER

The HC3-PVG32 is a compact unit weighing only 4.0 kg. It is ideal for use in a variety of applications where building up and maintaining high pressure is required. The HC3-PVG32 raises supplied pressure to a higher outlet pressure and automatically compensates for consumption of oil to maintain the high pressure. Adjustment of the outlet pressure is carried out by varying the supplied pressure.

Dimensions in mm



Technical data

Operating parameters

Inlet pressure range	20 – 200 bar [290 - 2900 psi]
Maximum outlet pressure	800 bar [11 603 psi]

Flow rates and intensification factor

Intensification factor; **i**	Average outlet flow l/min [US gal/min]	Maximum inlet flow l/min [US gal/min]
1.2	1.2 [0.264]	8.0 [1.76]
1.5	1.0 [0.220]	8.0 [1.76]
2.0	0.8 [176]	8.0 [1.76]
2.8	0.6 [132]	8.0 [1.76]
3.2	2.5 [0.550]	15.0 [3.30]
4.0	2.0 [0.440]	14.0 [3.08]
5.0	1.6 [0.352]	14.0 [3.08]

HC3-PVG32 miniBOOSTER

6.6	1.3 [0.286]	13.0 [2.86]
9.0	0.9 [198]	13.0 [2.86]
13.0	0.6 [132]	12.0 [2.64]
20.0	0.3 [066]	12.0 [2.64]

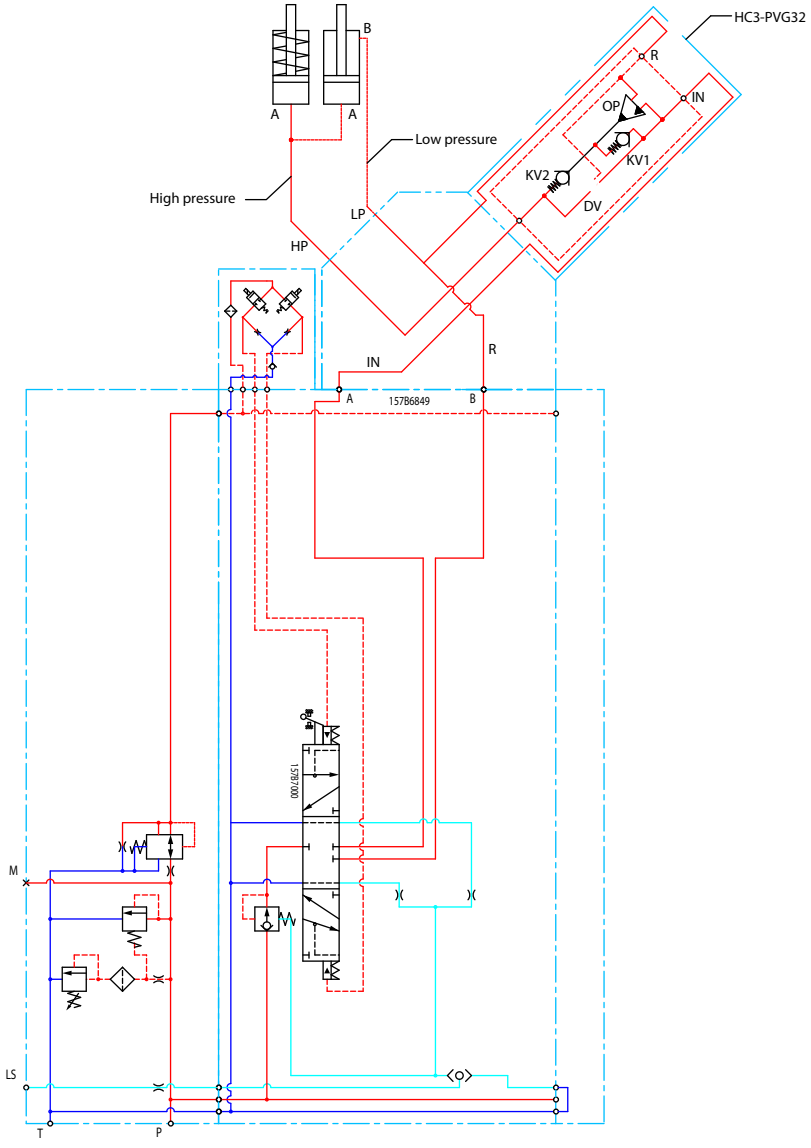
Function

The basic operation is illustrated in the function diagram. Oil is fed through the proportional valve PVG32 to the IN port in the HC3-PVG, flowing freely through the check valves KV1, KV2 and DV to the high pressure side HP. In this condition maximum flow through the booster is achieved giving a fast forward function.

When pump pressure is reached on the high pressure side HP, valves KV1, KV2 and DV will close. The end pressure will be achieved by the oscillating pump unit OP. The unit will automatically stall when end pressure on high pressure side HP is reached. If there is a pressure drop on the high pressure side due to consumption or leakage, the OP valve will automatically operate to maintain the end pressure. Pressure can be relieved from the high pressure side HP through the pilot operated check valve DV. By connecting port R to the supply pressure and port IN to tank, allowing the fluid from the high pressure side HP to flow back to tank.

HC3-PVG32 miniBOOSTER

Schematic



Ordering

The following part numbers are for the parts you have to order through Danfoss Power Solutions. To do so, please contact your Danfoss Power Solutions sales representative.

Part Number	Type
157B6849	PVG 32: PVB basic module
157B7000	Spool flow 10 l/min [2.6 US gal/min]

For further details on the miniBOOSTER HC3-PVG and to order it, click here (link to *https://www.minibooster.com/products/boosters-oil/hc3-pvg32.html*)

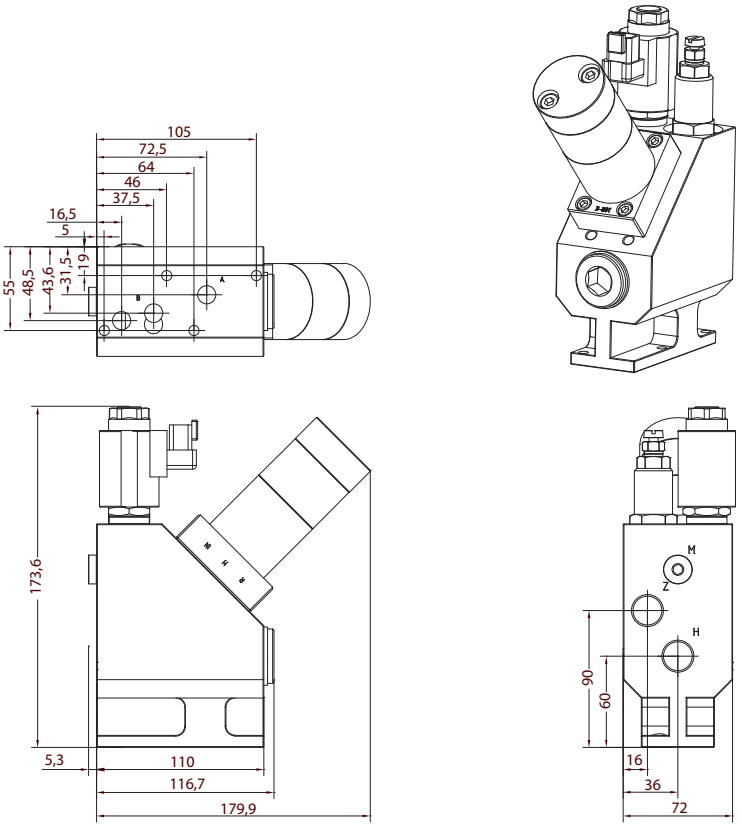
M-HC-010

The M-HC-010 In-line Intensifier System is designed to boost the hydraulic pressure from the pump to the workload. The system operates by solenoid activation. The operator is in full control of the system and can decide if a boosted pressure to the workload should be applied.

The system is dynamical by means of being able to provide flow at high pressure for intermittent use (< 10 min duty cycle).

A relief valve is installed to control the maximum allowable pressure that the system can output, and allowing the booster to go for a higher end pressure producing flow at the decided pressure.

Dimensions in mm



Technical data

Operating parameters

Inlet pressure range	20-207 bar [290-3000 psi]
Maximum outlet pressure	700 bar [11603 psi]
Bypass flow	100 l/min [26 US gal/min]

Intensification factors

HC2D	**HC3**
1.6	1.5
1.9	2.0
2.2	2.8

M-HC-010

2.6	3.2
3.2	4.0
4.0	5.0
5.0	6.6
6.6	9.0
9.0	-

The intensification factor depends on available inlet and desired outlet pressure. To calculate the initial factor, use the following formula:

i = Desired high pressure / pump pressure

Desired pressure: ***500 bar***

Pump pressure: ***200 bar***

i = 500 / 200 = ***2.5***

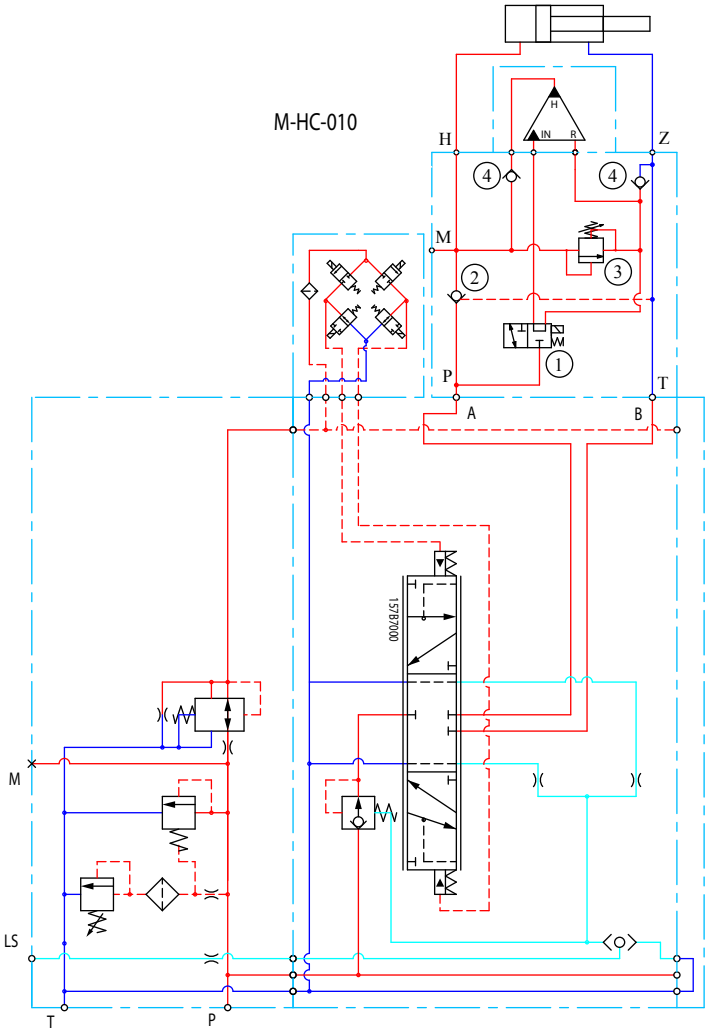
For static use: Select an intensification factor higher or equal to the calculated value. In this case i = 2.8 with HC3 booster. The desired pressure of 500 bar is finally adjusted with the HP relief valve.

For dynamic use: Select an intensification factor 60% higher than the calculated value. In this case i = 500 / 200 = 2.5 + 60% = 4.0 The desired pressure of 500 bar is finally adjusted with the HP relief valve.

M-HC-010

Function

Schematic



Port details:

P: Flow from pump.
A or B port on directional valve.

T: Flow to tank.
A or B port on directional valve.

H: High pressure port to cylinder.

Z: Low pressure port to cylinder.

1: Directional Valve

2: Pilot Operated Check Valve

3: Relief Valve

4: Check Valve

Ordering

The following part numbers are for the parts you have to order through Danfoss Power Solutions. To do so, please contact your Danfoss Power Solutions sales representative.

Part Number	Type	Flow l/min [US gal/min]
157B6849	PVG 32: PVB basic module	
157B7005	Spool	5 [1.3]
157B7000	Spool	10 [2.6]
157B7001	Spool	25 [6.6]
157B7002	Spool	40 [10.6]
157B7003	Spool	65 [1732]
157B7004	Spool	100 [26.4]

For further details on the miniBOOSTER M-HC-010 PVG and to order it, click here (link to *https://www.minibooster.com/products/intensifier-systems-2/m-hc-010.html*)

M-HC-011

The M-HC-011 In-line Intensifier System is designed to boost the hydraulic pressure from the pump to the workload. It operates only when needed, to save energy.

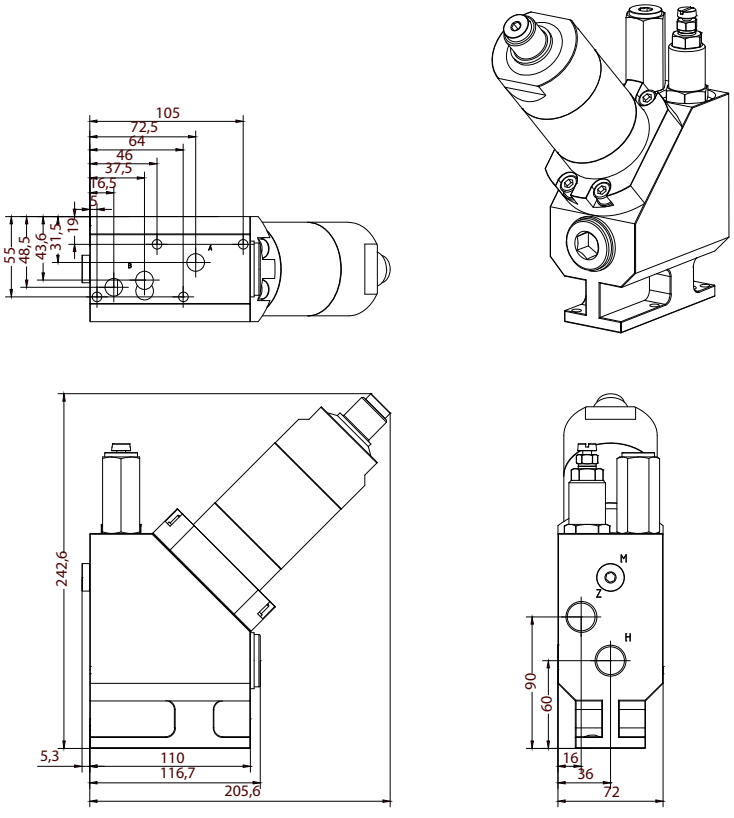
The system is dynamical by means of being able to provide flow at high pressure for intermittent use (< 10 min duty cycle).

The hydraulic oil is by-passed directly from the pump to the workload at maximum flow when back pressure from the workload has reached a set point close to the maximum pressure of pump.

A sequence valve opens and directs the oil to the booster, which makes the pressure rise. The shift between maximum pump pressure and high pressure happens without intervention from the user and ensures that the workload at all times will be driven at a maximum speed in relation to the required high pressure.

A relief valve is installed to control the maximum allowable pressure that the system can output, and allowing the booster to go for a higher end pressure producing flow at the decided pressure.

Dimensions in mm



This is the dimensional drawings for the M-HC2D-011-FL100-PVG32. For the dimensional drawings for the M-HC3-011-FL100-PVG32, click here (*https://www.minibooster.com/fileadmin/user_upload/PDF/m-hc_-011/M-HC3-011-FL100-PVG32-00._Assembly_drawing_01.pdf*)

Technical data

Operating parameters

Inlet pressure range	20-207 bar [290-3000 psi]
Maximum outlet pressure	700 bar [11603 psi]
Bypass flow	100 l/min [26 US gal/min]

M-HC-011

Intensification factors

HC2D	HC3
1.6	1.5
1.9	2.0
2.2	2.8
2.6	3.2
3.2	4.0
4.0	5.0
5.0	6.6
6.6	9.0
9.0	-

The intensification factor depends on available inlet and desired outlet pressure. To calculate the initial factor, use the following formula:

i = Desired high pressure / pump pressure

Desired pressure: ***500 bar***

Pump pressure: ***200 bar***

i = 500 / 200 = ***2.5***

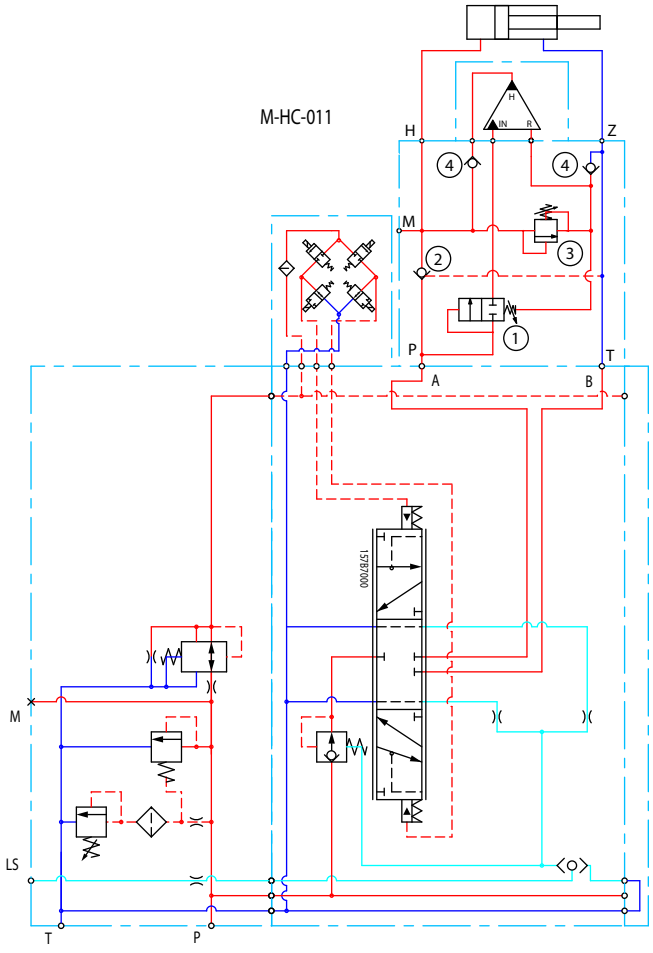
For static use: Select an intensification factor higher or equal to the calculated value. In this case i = 2.8 with HC3 booster. The desired pressure of 500 bar is finally adjusted with the HP relief valve.

For dynamic use: Select an intensification factor 60% higher than the calculated value. In this case i = 500 / 200 = 2.5 + 60% = 4.0 The desired pressure of 500 bar is finally adjusted with the HP relief valve.

M-HC-011

Function

Schematic



Port details:

P: Flow from pump.
A or B port on directional valve.

T: Flow to tank.
A or B port on directional valve.

H: High pressure port to cylinder.

Z: Low pressure port to cylinder.

1: Sequence Valve

2: Pilot Operated Check Valve

3: Relief Valve

4: Check Valve

Ordering

The following part numbers are for the parts you have to order through Danfoss Power Solutions. To do so, please contact your Danfoss Power Solutions sales representative.

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157B7000	Spool	10 [2.6]
157B7001	Spool	25 [6.6]
157B7002	Spool	40 [10.6]
157B7003	Spool	65 [1732]
157B7004	Spool	100 [26.4]

For further details on the miniBOOSTER M-HC-011 PVG and to order it, click here (link to *https://www.minibooster.com/products/intensifier-systems-2/m-hc-011.html*)

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