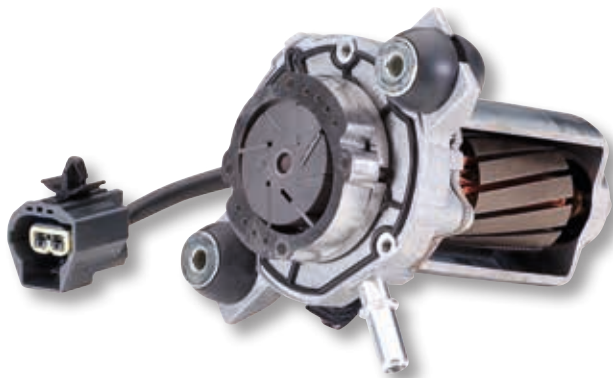


PRODUCT INFORMATION

Vacuum Pumps

- Electrical vacuum pumps to support or independently generate the vacuum for the pneumatic brake booster system
- Can be applied to all motor designs, including electric motors and hybrid drives
- More than 10 years of experience developing and manufacturing electric vacuum pumps at HELLA

PRODUCT FEATURES



- The UP 28 supports the existing brake booster vacuum supply as an add-on system.
- The variants UP 30, UP 32 und UP 50 can provide a pneumatic vacuum supply as a standalone system.
- The vacuum pump is connected electrically to the control unit via a cable on the pump with engine compartment connector or via a relay box with integrated plug-in connection.
- The vacuum pumps are maintenance-free.
- The service life is over 600 hours (UP 28), over 900 hours (UP 30 and UP 32) and 1500 hours (UP 50). This is equivalent to more than 450,000 on/off switching cycles or more than 1,100,000 on/off switching cycles respectively.

THE VARIANTS

UP 28, UP 30, UP 32 AND UP 50



UP 28 – with relay box

008570027



UP 28 – with engine connector

009428087



UP 30 – with engine connector

009286001



UP 32 – with engine compartment connector

009570321

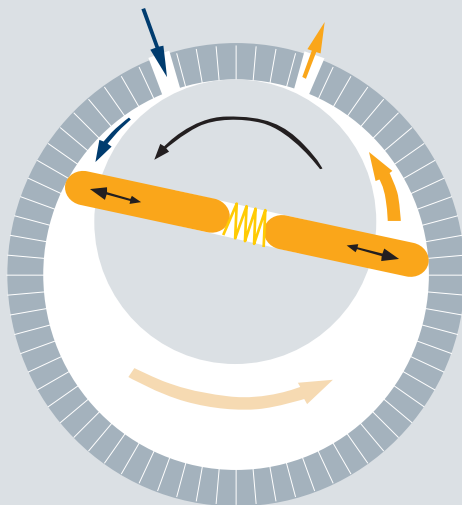


UP 50 – with engine compartment connector

012377701

OPERATING PRINCIPLE

ROTARY VANE COMPRESSOR PRINCIPLE



The vacuum pumps function according to the rotary slide compressor principle.

The pump contains a rotor off-centre to the pump chamber. The blades set in the rotor slide along the interior wall of the pump chamber.

The space enclosed by the slides is continuously compressed through rotation. This change in the chamber volume generates a vacuum causing air to be sucked in by the brake booster through the vacuum pump via the pneumatic line system.

SPECIAL FEATURES




- Engine-independent vacuum support
- Flexible installation location
- Dry-running system (no connection to the lubricating oil circuit is necessary)
- Conventional braking system for alternative drive systems such as hybrid and electric drives can continue to be used
- Energy consumption is reduced through demand-based use
- Support for compliance with statutory regulations on reduction of pollutant emissions

UP 28, UP 30, UP 32 AND UP 50 COMPARISON

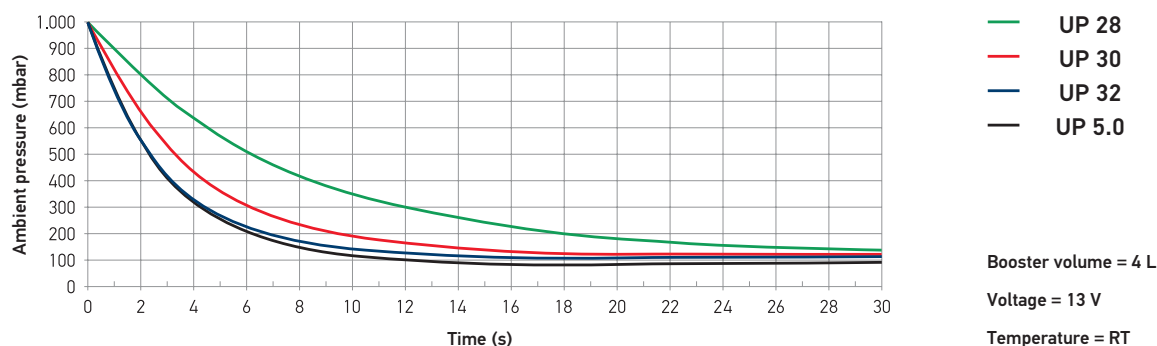
TECHNICAL DETAILS

UP 28	UP 30 - UP 32	UP 5.0
<ul style="list-style-type: none"> → Rotor and pump chamber eccentrically fixed → 5-vane technology 	<ul style="list-style-type: none"> → Pump chamber and rotor centrally fixed → Eccentric pump chamber → 8-vane technology 	<ul style="list-style-type: none"> → Rotor with 8 vanes → Optimised shape of pump chamber → Plastic silencer with specific shape for noise improvement
Difference between UP 30 and UP 32:		
	<ul style="list-style-type: none"> → Pump chamber with different profile (height) UP 30 low profile UP 32 high profile 	
<ul style="list-style-type: none"> → Smaller pump with 600 h service life → Typically for support application 	<ul style="list-style-type: none"> → Higher performance level pumps with 900 h service life → Typically for stand alone application 	<ul style="list-style-type: none"> → Highest performance level pump in portfolio with 1500 h service life → Typically for stand alone application

Comparison overview

	UP 28	UP 30	UP 32	UP 5.0
Specification values				
Rated voltage	13,5 V	14 V	13 V	13 V
Average current consumption between thresholds	< 10 A	< 15 A	< 18 A	16 A
Service life data	600 h	900 h	900 h	1.500 h
Max. vacuum	86% (≥ 88% typical)	86% (≥ 88% typical)		≥ 90 %
50% of ambient pressure	≤ 5.5 s	≤ 3.5 s	≤ 3.1 s	≤ 3.0 s
70% of ambient pressure	≤ 11 s	≤ 7 s	≤ 6.2 s	≤ 6.0 s
Booster size	3.2 L	4 l	5 l	5 l
Acoustics	< 70 db (A)	< 77 db (A)	< 78 db (A)	< 73 db (A)

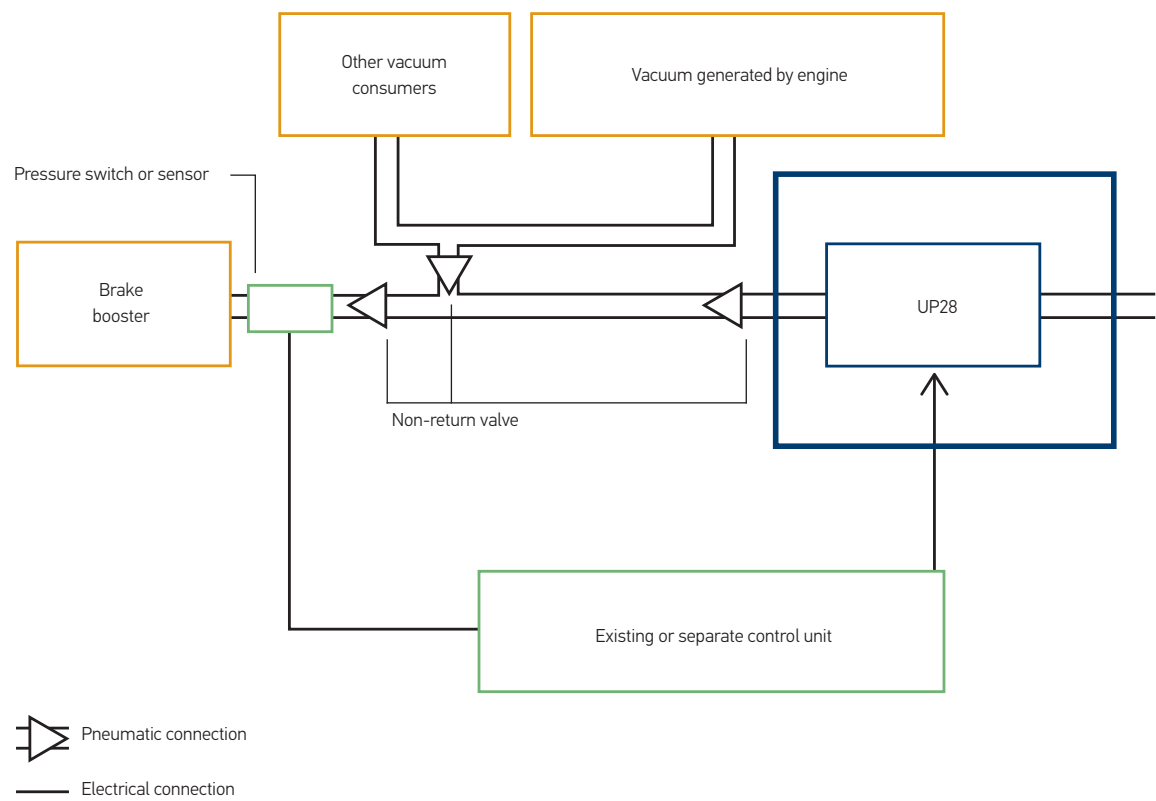
UP 28 ~ UP 30 vacuum curve comparison



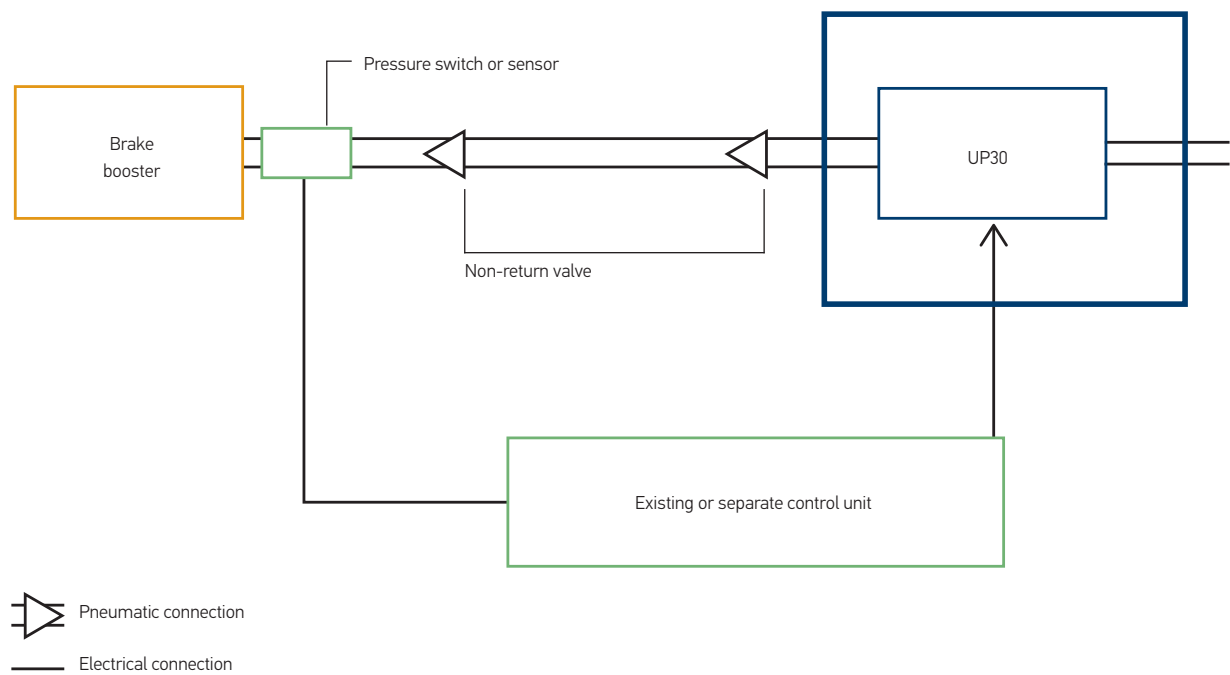
COMPARISON BETWEEN "ADD ON" VERSION AND "STAND ALONE" VERSION

TECHNICAL DETAILS

UP 28 add-on version



UP 30, UP 32, UP 50 stand alone version



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Subject to technical and price modifications.

TYPICAL APPLICATION

Under certain driving conditions or depending on the engine layout, no vacuum or an insufficient vacuum is supplied to the brake booster through the intake manifold of the internal combustion engine (hybrid engines / electric engines). The electric vacuum pump feeds a continuous vacuum supply to the pneumatic brake booster. Depending on the layout of the brake system, the pump can also be used as a stand alone device in diesel, hybrid and electric vehicles. Due to these drive concepts, the pump must function as the sole vacuum source and ensure a sufficient supply to the brake booster and any auxiliary equipment.