

## Suction Control Valve Types HDKG120 and HDKO120

### Application

For both stepless or two point capacity control of screw compressors, which can be pressurized with their full discharge pressure at shut - down.

### Operation

Straight throughflow valve with butterfly type control disc and swing type non-return valve.

### Operation of the swing type non-return valve

The suction line is closed quickly, automatically, and independently of any other components of the compressor if the air flow is interrupted or reversed.

### Operation of the butterfly type control disc

Both stepless and two point control via the attached servo cylinder type ZAED40.

### Type HDKG120:

Normally closed. Signal pressure opens the control disc.

### Type HDKO120:

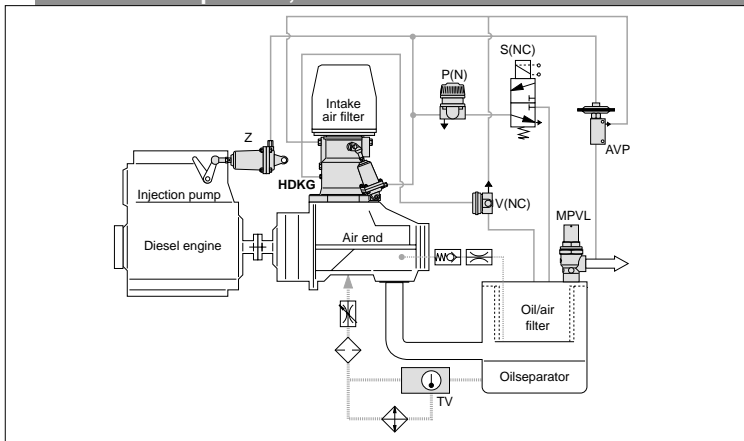
Normally open. Signal pressure closes the control disc.

### Examples

#### Portable compressor, HDKG120

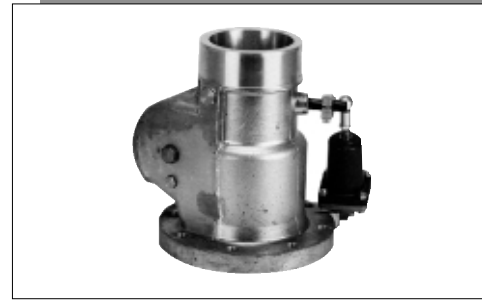
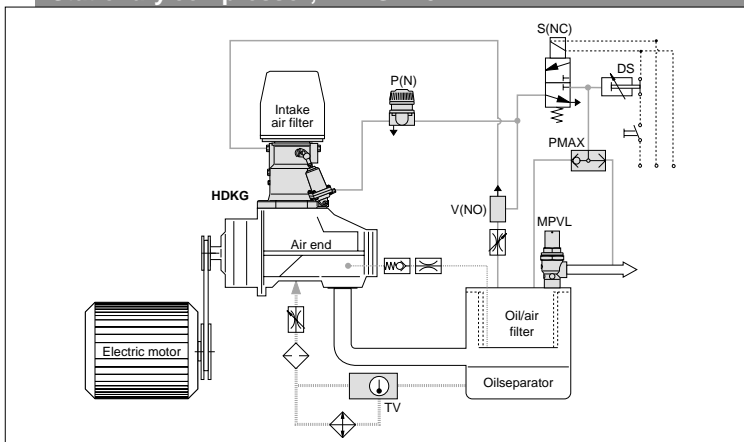
The compressor is controlled steplessly from full load to zero load by the proportional controller P(N):

Portable compressor, HDKG 120



**⚠ Attention! Never attempt to disassemble a cylinder whilst under pressure!**

Stationary compressor, HDKG 120



**Start-up:** The control disc of the HDKG is closed (idling position).

**Warming-up:** The starting valve S (NC) is closed. The control disc of the HDKG is closed and the engine is warming up at minimum speed.

**Full load:** The starting valve S (NC) is open. The control disc of the HDKG is open and the engine is at full speed.

**Capacity control:** Both the control disc of the HDKG and the injection pump of the engine are steplessly controlled by the proportional controller P (N).

**Idling:** The control disc of the HDKG is in idling position and the engine is at minimum speed. Compressor at full pressure excess air is blown off via the bleed valve AVP.

**Shut down:** The check valve of the HDKG is closed tightly. The oil separator is vented via the venting valve V(VC).

#### Stationary compressor, HDKG120

The proportional controller controls the capacity of the compressor steplessly, if there is a large air requirement. The electric pressure switch (DS) turn the compressor into idling if less air is required.

**Start-up:** S(NC) is closed, the control disc of the HDKG is closed, the oil separator is vented via venting valve V(NO).

**Full load:** The solenoid valve S(NC) is opened. The venting valve V(NO) is closed and the control disc of the HDKG is opened by the servo cylinder.

**Capacity control:** Between full load and approx. 70% load. The control disc of the HDKG is partially closed by an infinitely variable signal from the proportional controller P(N). At less air requirement DS switches the compressor into idling.

**Idling:** The solenoid valve S(NC) is closed. The control disc of the HDKG is closed by the servo cylinder. The oil separator pressure is lowered via the venting valve V(NO).

**Shut-down, stand-by:** Both control disc and check flap of the HDKG are closed. The oil separator is vented via the venting valve V(NO).

#### Installation

At the suction flange of the air end, either directly or via flange adaptor, depending on the type of air end. For fastening of air intake filter and connection of signal pressure or monitoring lines see details.

#### Order details

**Compressor data:** Suction load and final pressure at full load, suction vacuum and final pressure at no-load, manufacturer and type of air end element or connection measurements of the suction flanges. **Wanted controller action:** A, B or C.



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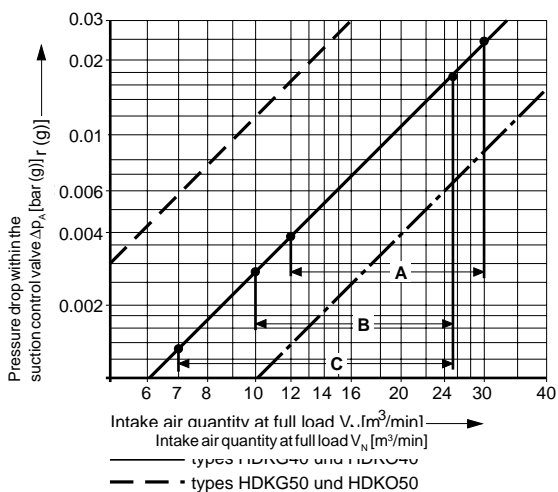
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## Details

Nominal diameter	mm	120
Type		HDKG120 for start-up with suction control valve closed HDKO120 for start-up with suction control valve open
Working pressure	bar (g)	up to 16
Temperature range	°C	- 20 to +90 • in case of an emergency stop: up to 140
Control characteristic		from closed position to 45° opening angle approximately logarithmic
$K_{VA}$ -value	m <sup>3</sup> /h	440 • for air intake from free atmosphere
Air intake capacity	m <sup>3</sup> /min	Pressure drop at fully opened control valve and proposed range of application see diagram
Idling capacity		d=12 mm standard nozzle diameter for start-up and zero load bypass system <sup>1)</sup>
Dimensions	mm	see installation drawing
Connections	mm	Compressor, suction flange: F = bolt holes (number, diameter, pitch circle dia. suitable for air end type specified in order) Signal pressure inlet: E = G 1/8 Additional connections: G, K = G 1/2 U, W = G 1/4
Installation attitude		with air intake connection (hose coupling) facing upwards (± 30°)
Servo cylinder		ZAED40 for stepless control or two point control of the butterfly type control valve Springs for different characteristics available
Control signal	bar (g)	Equivalent spring, maximum pressure: 7 for two point control 10 for stepless control (100 to 0%) recommended compressed air quality according to DIN ISO 8573-1, class 5
Materials		Housing parts: Aluminium alloy Internal parts: Aluminium alloy, corrosion resistant steel, plated steel PTFE-compound bearings, Viton sealings, Perbunane diaphragm
Weight	kg	12,8

<sup>1)</sup> Manufacturers of air ends sometimes propose an optimum suction vacuum for zero load conditions. Please specify both required suction vacuum and full load capacity or required bypass nozzle diameter.

### Pressure drop in dependance of air intake (F.A.D.)



#### Recommended application:

- Range A: Portable compressors with stepless capacity control from full load to idling
- Range B: Stationary compressors with stepless control from full load to minimum (approx. 70%), two point control at low air demand.
- Range C: Two point control, either full load or idling

The diagram shows the pressure drop  $\Delta p_A$  within the suction control valve at full load, including the pressure loss caused by accelerating ambient air to intake velocity. Pressure drops caused by intake air filters and adjacent air lines are not included, since they are dependent on designs selected by the compressor manufacturer.

### Dimensions (mm)

