

Suction Control Valve Types HDKG40 and HDKO40

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 HDKG 40:

Normally closed. Signal pressure opens the control disc.

Type HDKO 40:

Normally open. Signal pressure closes the control disc.

Examples

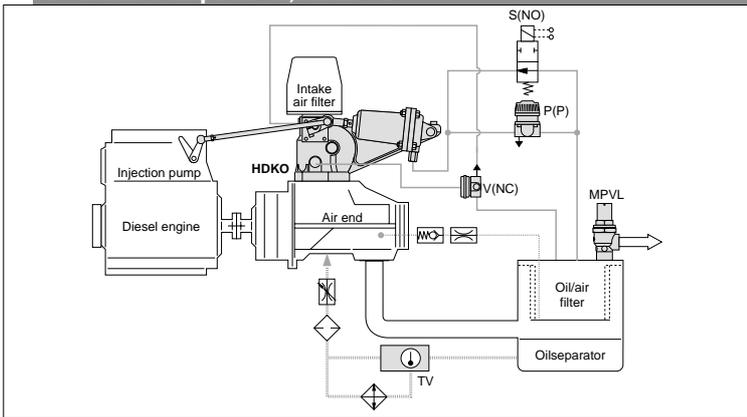
Portable compressor, HDKO 40

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

Start-up: The control disc of the HDKO is open (full load position).

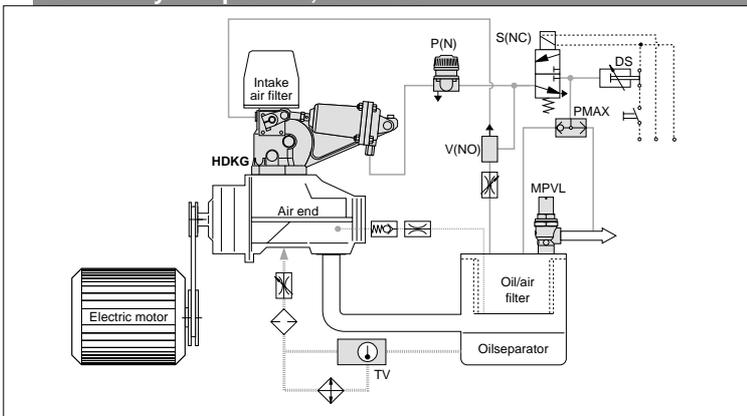
Warming-up: The starting valve S (NO) is open. The servo cylinder of the HDKO

Portable compressor, HDKO 40



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

Stationary compressor, HDKG 40

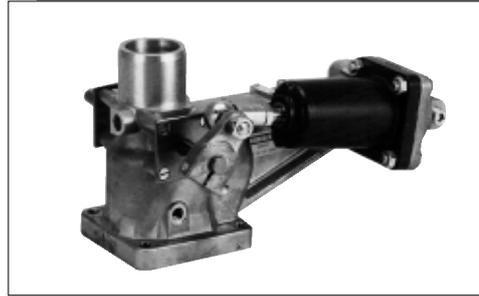


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receives the full separator pressure. It closes the control disc of the HDKO and positions the injection pump to minimum speed.

Full load: The starting valve S (NO) is closed. The control disc of the HDKO is open and the engine is at full speed.

Capacity control: Both the control valve of the HDKO and the injection pump of the engine are steplessly controlled by the proportional controller P (P).

Idling: The control disc of the HDKO is in idling position and the engine is at minimum speed. Compressor at full pressure excess air is blown off via the outlet nozzle of the P (P).

Shut-down: The check valve of the HDKO is closed tightly. The oil separator is vented via the venting valve V(NC).

Stationary compressor, HDKG 40

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 in idling position, 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. The valve is designed especially for small air ends with fastening facilities for bowden wire, solenoid valve and proportional controller. The servo cylinder can be fastened on both wheel ends.

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.

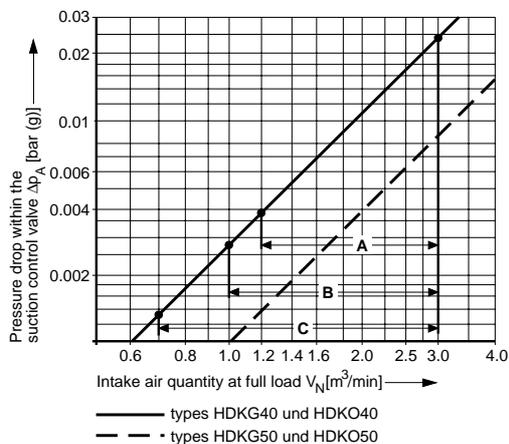
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Details

Nominal diameter	mm	40
Type		HDKG 40 for start-up with suction control valve closed HDKO 40 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		up to 45° opening angle approximately logarithmic
K_{VA} -value	m ³ /h	44 • for air intake from free atmosphere
Air intake capacity	m ³ /min	Pressure drop and proposed range of application see diagram
Idling capacity		idling drilling in control disc $d = 2 \text{ mm}^1$
Dimensions	mm	see installation drawing
Connections	mm	Compressor, suction flange: $D = 102 \times 102 \text{ mm}$ $F = 4$ bolt holes (diameter, pitch circle diameter suitable for air end type specified in order) Signal pressure inlet: $E = G 1/8$ Additional connections: $K = G 1/4$ $U = G 1/8$
Installation attitude		with air intake connection (hose coupling) facing upwards ($\pm 20^\circ$)
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	3.1

¹⁾ 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 dependence 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 Δp_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)

