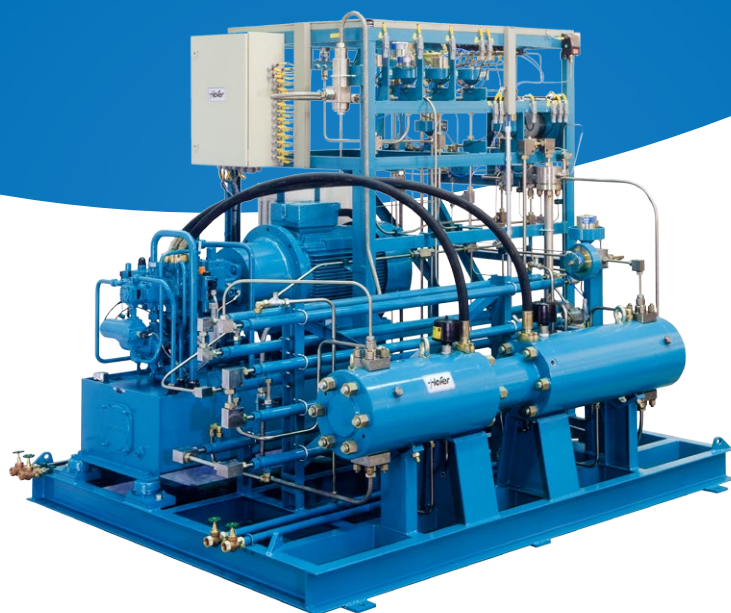




# Dry-running piston compressors

Maximum pressure up to 65,000 psi with zero emission.



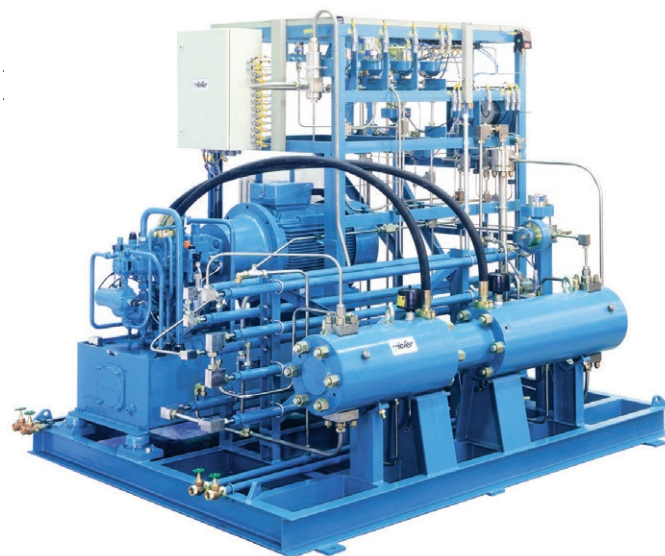
**Hofer**  
NEUMAN & ESSER GROUP

# ***Hofer*** piston compressors with hydraulic drive unit, type TKH

Hydraulically driven, dry-running HOFER piston compressors are designed for easy maintenance and allow a lubricant-free compression of non-corrosive gases, which are free from solid particles, such as hydrogen, helium, argon, nitrogen, carbon dioxide and ethylene.

The maximum discharge pressure of the standard design is approx. 14,500 psi (1,000 bar). For higher working pressures up to 65,000 psi (4,500 bar), special designs are available.

This compressor type is built in an easy to maintain construction. A piston packing can be replaced in approx. 10 to 30 minutes, depending on the compressor size.



## Working principle

The special construction and design of the piston packing allows to operate completely without lubrication of these sealing elements at higher discharge pressures, although under normal circumstances such a lubrication is absolutely required.

The gas piston gets the required sealing and sliding properties by the design of the packing structure with the materials specially developed for this purpose. The gas space and the gas to be compressed are kept free from undesirable lubricants.

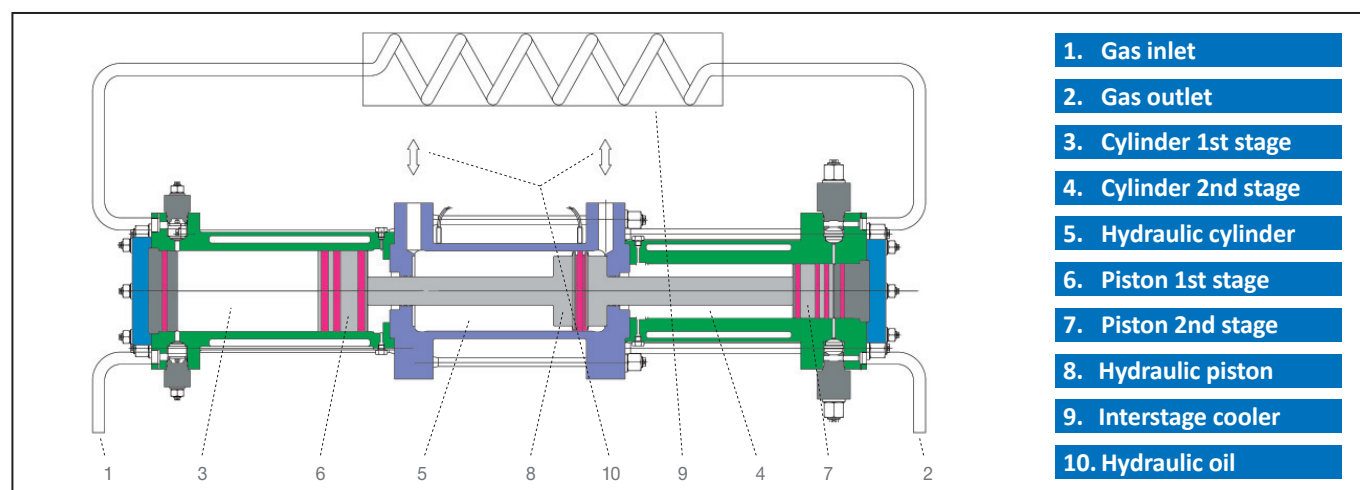
HOFER piston compressors of the TKH type series are preferably respectively designed in a two-stage and one-stage double-acting design. The unit is driven by oil-hydraulics. The hydraulic cylinder is positioned between the first and second stage. A hydraulic pump with controllers alternating pressurises the hydraulic cylinder with the hydraulic oil. Proximity limit switches activate the stroke reversion.

Mixing of both media is excluded by separating of the hydraulic and the gas chamber and by using double seals.

The force required for gas compression is generated by the oil pressure and the corresponding ratio of piston diameters.

The capacity is regulated by the piston speed (number of strokes) by varying of the flow rate of the pump. The frequency of strokes and, thus, the suction capacity of the compressor can be continuously regulated between 0% and 100% via a standard analogue signal.

Upon request, instruments for the detection of gas and oil leaks can be integrated at this point. This allows to permanently monitor the condition of gas and oil-side seals. The gas which is compressed in the different stages is cooled by the respective downstream inter-stage and after cooler. Here, the temperature difference is approx. 10 K in relation to the cooling water inlet temperature. Usually, the hydraulic unit is also connected to this cooling circuit.





## Model designation

The main dimensions are encoded in the type designation for the HOFER TKH piston compressors:

Two-stage dry-running piston compressor with hydraulic drive unit TKH 52/36 -200 -50

Piston diameter first stage: 52 mm  
Piston diameter second stage: 36 mm  
Stroke: 200 mm  
Max. allowable discharge pressure: 7,250 psi (500 bar)

One-stage double-acting compressor (e.g. booster) TKH 28/28 -80 -100

Piston diameter 1A. stage: 28 mm  
Piston diameter 1B. stage: 28 mm  
Stroke: 80 mm  
Max. allowable discharge pressure: 14,500 psi (1,000 bar)

## Installation of HOFER piston compressors in hazardous areas

For the use of the compressors in hazardous areas, two alternatives can be supplied:

1. Installation of the cylinder set in the hazardous area (zone 2 or 1) and installation of the hydraulic system in the non-hazardous area. The hydraulic oil unit is connected through a gas-tight wall.
2. Installation of the cylinder set and the hydraulic unit in the non-hazardous area (zone 2).

## Capacity, compression ratios, pressure stages

The suction capacity of the compressor is determined by the suction pressure, the discharge pressure and the frequency of strokes. For different models please refer to the attached tables (other performance data upon request). The stated driving powers apply to the maximum operating data.

## Equipment

The HOFER compressors of the TKH model series can be supplied as compressor without accessories or turn-key as complete operational unit with all necessary devices, fittings and instruments.

## Acceptances and certifications

The standards and directives applicable in the European Community

- Directive for Machinery 98/37/EG
- Pressure Equipment Directive 97/23/EG
- ATEX Directive 94/9/EG
- Low Voltage Directive 93/68/EWG

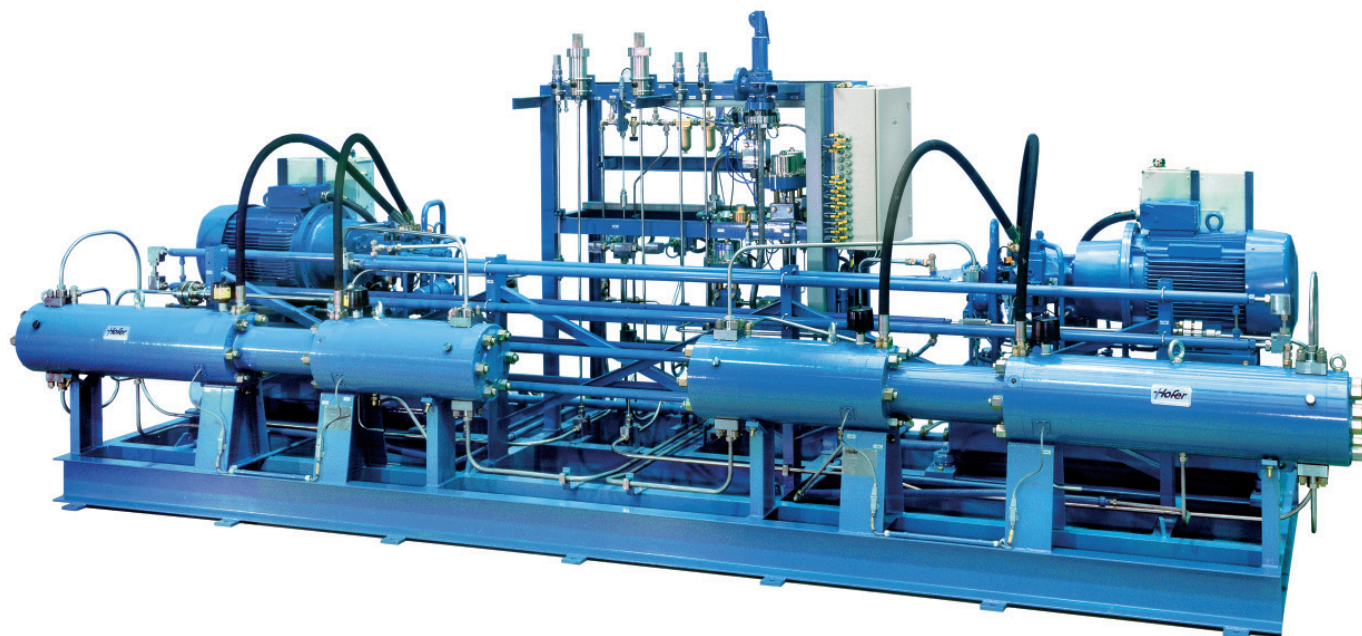
as well as in above mentioned applicable standards are the basis of HOFER's construction and design.

Compliance with the applicable directives is confirmed by the conformity declaration and the manufacturer's declaration respectively as well by the CE marking of the compressor.

### US standards:

**For the American market, the applicable US regulations and standards are complied with.**

Prior to delivery, each HOFER piston compressor is subjected to a test run under operating conditions for several hours. Upon request, the customer participates in the test run.





## Industries

HOFER compressors are used in nearly every industry in which high-purity, rare or hazardous gases are utilized.

Some specific applications are:

- PTA plants (prod. of terephthalic acid)
- Gas cylinder filling, gas blending and mixing systems
- Chemical, pharmaceutical and petrochemical plants
- Gas transfer, filling and off-loading of tube trailers
- Electronics, semiconductor and fiber optics manufacturing
- Hydrogen filling stations
- Research and development
- Pressure boosting and high-pressure gas storage systems
- Space centers

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