

# Comparison Pumps

Plate Version

Model **PH 60-P**

Pressure Ranges -1 ... 60 bar (-30 inch Hg ... 870 psi)

## Application

Comparison pumps model PH 60-P are suitable to test and calibrate pressure gauges or other pressure measuring instruments with ranges between -1 to 60 bar (-30" Hg to 800 resp. 870 psi). The test medium has to be gaseous and not aggressive. Pressure up to +4 bar or up to +60 psi and vacuum down to -0.5 bar or -15" Hg can be built up with ambient air by using the piston pump only. For ranges -1/-0.5 bar or -30" Hg/-15" Hg and ranges > +4 bar or > 60 psi external admission pressure or vacuum generation is required.

The specimen gauge must be compared with a pressure gauge of higher accuracy (test gauge, please note our general information leaflet 2000).

Our "plate version" of comparison pumps is small and light. The handling is simple.

These pumps can easily be mounted on workbenches, or they can be used locally, from place to place.

## Structure

(Please compare drawing overleaf.)

The pump consists of:

- Piston and spindle with handwheel to build up the pressure or the vacuum and for fine adjustment
- Cylinder functioning as a pressure chamber
- Stop valve B and C with union nuts for the specimen gauge (valve C) and the test gauges (valve B)
- Double stop valve A with valve A2 for external pressure resp. vacuum (connection E) and valve A1 for venting (connection D; by connecting a flexible tube to connection D, the medium can be let out in a distance from the working place)
- All parts are installed on a basic plate and connected by tubing.

## Standard Configuration

### Connections

2 stop valves (B and C) with connections for pressure gauges, each connection with 2 clamping sleeves M 20x1,5 and ½" BSP ;

2x nipple and union nut acc. to DIN 16284, for connections D and E (external admission pressure and vacuum generator)

### Plate

All components are set up on a grey enameled aluminium casting plate; casting plate with 4 mounting holes Ø 8.5 mm (0.34").

### Piston and Spindle

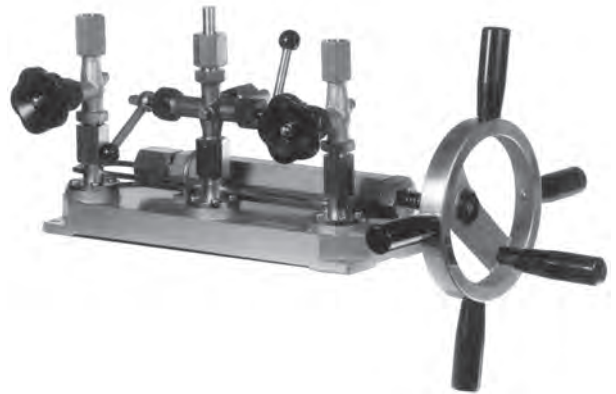
Stainless steel

### Cylinder

Brass, grey enameled

### Measuring Medium

Gaseous, not aggressive;  
for pressure ranges -0.5 up to +4 bar (-15" Hg up to 60 psi) no external admission pressure or external vacuum generating required (medium: ambient air)



Please also take a note of the general informations about our comparison pumps on data sheet 10920.

## Inclosure to Shipment

Beside the comparison pump, the shipment includes:

- 1 instruction manual
- 2 special gaskets, each encasing an O-ring, already assembled to the ½" BSP connections
- 4 O-rings as spare parts
- 2 clamping sleeves M 20x 1,5
- 2 clamping sleeves ½" BSP, already assembled to the comparison pump
- 2 nipples and union nuts acc. to DIN 16284, already assembled to connections D and E

## Optional Special Configurations

- Wetted parts free of grease and oil for testing and calibrating gauges for **oxygen service**, ordering code PH 6-P-O<sub>2</sub>, blue painted cylinder
- Stop valve B according to DIN 16 271 (with additional test connection for simultaneous testing of a pressure gauge and a transmitter)
- Union nut (clamping sleeves) for specimen gauge ½" NPT upon request

## How to Order:

Please specify when ordering:

**Model Code:** PH 60-P

**Special Configurations:** (see above)

## Examples for ordering information:

- PH 60-P
- PH 60-P-O<sub>2</sub>



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**10921**

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# User Instructions (B14)

## Opening Operation

Before starting operation, please close valves B, C, A1, and open valve A2. The test gauge has to be connected to valve B. The specimen gauge has to be connected to valve C. Please screw the gauges tight into the connection. Take care of a proper sealing. Use the wrench flats and don't hold on to the case while screwing the gauge into the connection.

## Test Operation with Pressure

(Valve A1 stays closed.)

Before starting to test pressure gauges, the spindle with the piston has to be screwed out of the cylinder completely by turning the handwheel anticlockwise. This is necessary for building up the required pressure inside of the cylinder by turning the spindle with the piston back in during the test operation.

For low **pressure up to +4 bar / 60 + psi**: Close valve A2, open valves B and C and turn the handwheel slowly clockwise. The pressure which has been built up so far, will be indicated on the pressure gauges.

Before turning the piston back out again, close valves B and C and open valve A2.

Close valve A2 and open valves B and C before rebuilding pressure again!

Repeat to turn the spindle with the piston in and out for producing pressure up to +4 bar or +60 psi.

When **external admission pressure** is required (pressure ranges > 4 bar or > 60 psi): (Valve A1 stays closed.) Connect the external admission pressure to connection E. Close valve A2 before connecting external pressure! Take care of a proper connection! Through opening and closing valve A2 the external pressure can be admitted under control.

For fine adjustment, valve A2 has to be closed and the piston has to be used for building up the pressure as described above.

**For venting** use valve A1, connection D. **ATTENTION**: Never open the pressure gauge connections, when pressure is still inside of the system! Always vent the complete system and wait until the pressure gauge pointer is back to zero!

By connecting a tube or hose to connection D it is possible to let out the medium in a distance to the working place.

## Test Operation with Vacuum

(Valve A1 stays closed.)

For testing vacuum indication, the spindle with the piston has to be completely screwed into the cylinder when starting operation. Therefore the handwheel has to be turned clockwise all the way to the stop point. (Valve B and C have to be closed, valve A2 has to be opened before starting!)

For generating **vacuum down to -0.5 bar resp. -15" Hg** close valve A2, open valves B and C and turn the handwheel slowly anticlockwise. The generated vacuum will be indicated on the pressure gauges.

Before turning the piston back in again, close valves B and C and open valve A2 (otherwise pressure will be produced!). Close valve A2 and open valves B and C before generating vacuum again!

Repeat to turn the spindle with the piston in and out for generating vacuum down to -0.5 bar resp. -15" Hg.

When **external vacuum generation** is required (values below -0.5 bar/-15" Hg): (Valve A1 stays closed.) Connect the external vacuum generator to connection E, valve A2. Close valve A2 before connecting the vacuum generator! Take care of a proper connection!

Through opening and closing valve A2 the vacuum can be generated under control.

For fine adjustment, valve A2 has to be closed and the piston has to be used for vacuum generation as described above.

**For venting** use valve A1, connection D, see left.

## Test Operation with Pressure and Vacuum

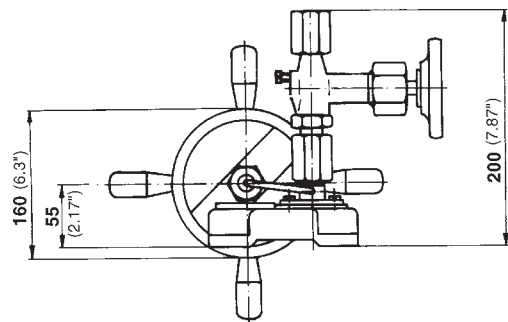
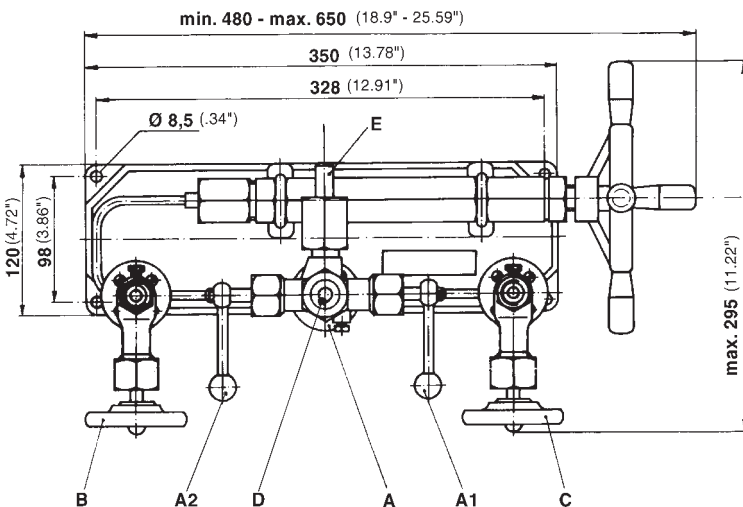
(compound ranges)

For testing gauges with pressure/vacuum compound ranges, external admission pressure and external vacuum generation is required, which have to be connected to valve A, connections E and D. **ATTENTION**: Close valve A2 resp. A1 before! It's user's choice, to which of the two connections he connects the pressure and to which the vacuum.

Take care of a proper connection!

The test operations have to be done as described above.

## Dimensional Data (mm and inches) and Weight (kg and lb):



valve A1 = for connection D  
valve A2 = for connection E

**Weight: approx. 7 kg (15.4 lb)**

The information in this leaflet is given in good faith, but we reserve the right to make changes without notice.