Solenoid Valves
for application in:
• AUTOMATION
• HIGH TEMPERATURE - STEAM
• HEATING

Cat.: GP/GB
May 2002
### Technical information

#### Index for identification of the type/series of valve required

#### Table for selecting solenoid valves based on fitting size, porting, function

The horizontal rows indicate the porting and the function of the solenoid valve series required. The vertical columns indicate the size of the fittings for the series of solenoid valves included in the table. The codes in the table identify the series (one or more) of valves with the required features in addition to the colour background as indicated on the right-hand page for their use.

<table>
<thead>
<tr>
<th>Column indicating the operation of the various series of solenoid valves</th>
<th>Fitting G [“] or Rp, R where specified</th>
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<tbody>
<tr>
<td>Porting Rest. posit.</td>
<td>Control / Operation / Fittings</td>
</tr>
<tr>
<td>2/2 N.C.</td>
<td>Direct operated</td>
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<tr>
<td>2/2 N.C.</td>
<td>Direct operated, 90° fittings</td>
</tr>
<tr>
<td>2/2 N.O.</td>
<td>Direct operated, reversed seat</td>
</tr>
<tr>
<td>2/2 N.O.</td>
<td>Direct operated.</td>
</tr>
<tr>
<td>2/2 N.C.</td>
<td>Diaphragm pilot operated, lateral pilot</td>
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<tr>
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</tr>
<tr>
<td>2/2 N.C.</td>
<td>Diaphragm pilot operated, central pilot</td>
</tr>
<tr>
<td>2/2 N.C.</td>
<td>Combined operation, hung diaphragm</td>
</tr>
<tr>
<td>2/2 N.O.</td>
<td>Diaphr. pilot operated, lateral pilot</td>
</tr>
<tr>
<td>2/2 N.C.</td>
<td>Combined operation, hung diaphragm</td>
</tr>
<tr>
<td>2/2 N.C.</td>
<td>Direct operated</td>
</tr>
<tr>
<td>2/2 N.C.</td>
<td>Direct operated, flanged body</td>
</tr>
<tr>
<td>3/2 Univers.</td>
<td>Direct operated</td>
</tr>
</tbody>
</table>

Once the series required has been identified:
1: Look up on pg. 3 the catalogue page corresponding to the series of solenoid valves;
2: Go to the contents page of the section corresponding to the type of application (the second in the section): the section is indicated by the background colour of the box where the required series is identified.
In this section you will find all the specific technical information on the double page of the series required.
## Technical information

**Index for identification of the type/series of valve required**

### Table for selecting solenoid valves based on fitting size, porting, function

The background colours of the boxes correspond to the application section of the solenoid valve series indicated in the table:

- normally open **N.O.** have a series code in the table printed in **LIGHT BLUE**
- normally closed **N. C.** have a series code in the table printed in **RED**
- of another type - **UNIVERSAL/BYPASS** have a series code in the table printed in **BLACK**

<table>
<thead>
<tr>
<th>Fitting G [ ” ] or Rp, R where specified</th>
<th>FLANGED BODY</th>
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<tbody>
<tr>
<td>1 1/4</td>
<td>1 1/2</td>
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</table>

**Column indicating the operation of the various series of solenoid valves**

- **2/2 N.C.** Direct operated
- **2/2 N.C.** Direct operated, 90’ fittings
- **2/2 N.O.** Direct operated, reversed seat
- **2/2 N.O.** Direct operated.
- **2/2 N.C.** Diaphragm pilot operated, lateral pilot
- **2/2 N.C.** Diaphragm pilot operated, central pilot
- **2/2 N.C.** Combined operation, hung diaphragm
- **2/2 N.O.** Diaphr. pilot operated, lateral pilot
- **3/2 N.C.** Direct operated
- **3/2 N.C.** Direct operated, flanged body
- **3/2 Univers.** Direct operated

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Parker Hannifin S.p.A.  
via E. Fermi, 5  
20060 Gessate (Milano) - Italy
# General contents

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## SOLENOID VALVES FOR AUTOMATION

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<tr>
<th>Series</th>
<th>Pages</th>
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<td>64-65</td>
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## SOLENOID VALVES FOR STEAM AND HIGH TEMPERATURES

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<td>133...H</td>
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<td>131.4...G</td>
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<td>102-103</td>
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</table>
## Technical information index

<table>
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</table>
General information

Solenoid valves may be defined as devices for interrupting or diverting the flow of fluids or gases in pipework. They operate by opening or closing the orifice directly or by pilot operation by a solenoid operator (or electromagnet / coil).

The solenoid valve is a combination of three basic components:

1. Electromagnet consisting of a solenoid (windings) and a magnetic yoke (or magnetic armature).
2. Moveable plunger (which, in some cases, directly opens or closes the valve).
3. Valve-body with an orifice, opened or closed by plunger or diaphragm to enable or prevent flow of the medium.

Operating principles

The term “solenoid” does not refer to the valve itself, but to the operator and coil mounted on the moveable valve, also known as “pilot” or “magnetic actuator”.

The term "solenoid" derives from the Greek “solen” which means “channel”.

The coil in fact “channels” a strong magnetic force in the windings when the coil is energised, i.e. when electric current flows through it.

The coil consists of capillary copper wire wound on a support reel. When electric current is fed into the coil, magnetic flow lines are generated, which are strongest in the centre of the coil.

This magnetic flow raises the moveable plunger in the coil until it brings it into contact with the pole piece.

The valve body has an orifice through which the liquid or gas flows when the valve is open.

The moveable plunger has an integral seat which, when the solenoid coil is energised, moves off the valve (direct operated) orifice or diaphragm (pilot operated) orifice opening the valve.

When the coil is de-energised, a return spring repositions the plunger in the original closing position on the valve or diaphragm orifice, thus cutting off the flow of the fluid.

A - Flux
B - Pole piece core
C - Magnetic armature
D - Plunger
E - Copper wire (windings)
General features

This section describes the operation of the solenoid valves, versions and types available, selection tables and graphs, basic components, common technical terminology, conversion tables for solenoid valves in various units of measurement.

Principles of operation

In compact solenoid valves, the solenoid coil is mounted directly on the enclosing tube, sealed and integral with the valve body. The moveable plunger is free to move in the enclosing tube and is normally held in position by a thrust (or return) spring.

When the solenoid coil is energised, the plunger is attracted by the effect of the magnetic field and the seat, integral with the plunger, opens (or closes) the valve or the valve pilot.

Solenoid valves/versions available

a) Direct acting
The moveable plunger with integral seat, by the action of the solenoid coil, opens or closes the orifice depending on whether current is supplied to the solenoid (energised or de-energised solenoid) or not.

In this direct operated design the coil itself supplies all the energy required to move the plunger and seat. Operation does not therefore depend on the pressure of the fluid or the flow rate.

The solenoid valve can operate from 0 pressure difference up to the value indicated in the tables.

b) Pilot operated
(servocontrolled or diaphragm pilot operated):

These solenoid valves are fitted with a pilot seat, controlled by the solenoid coil and a diaphragm which closes the main orifice of the valve, using the fluid pressure for operation. When the solenoid is energised, the core opens the pilot seat to allow the pressure on the upper part of the diaphragm to flow to the outlet of the valve body. Thus a pressure imbalance is created on the diaphragm, raising it and fully opening the valve orifice.

When the solenoid is de-energised, the pilot seat closes and the pressure, passing through an “equaliser” hole, is restored above the diaphragm, thus closing the valve.

Operation depends on a pressure difference between upstream and downstream of the solenoid valve which equals the force required for moving the diaphragm or keeping it tight on the main orifice. This value, indicated in the tables, is known as “minimum operating pressure”.

c) Combined operation

In this design the moveable plunger is physically connected to the diaphragm in which the pilot orifice is located.

The attraction of the plunger thus opens the pilot orifice and the pressure lifts the diaphragm which is further moved by the plunger during its opening stroke (assisted lift). Thus by direct operation (plunger) and pilot operation (diaphragm) it is possible to achieve full flow even at low pressures and normal operation (and shut off) even at 0 pressure.

Types of solenoid valves

According to their application, the following types are available:

a) 2-way solenoid valves (2 positions):
they have two ports (one inlet and one outlet) and an orifice passage and are divided into:

- **Normally closed:**
  - they open when the electromagnet or coil is energised (Fig. 1).

- **Normally open:**
  - they close when the electromagnet or coil is energised (Fig. 2).
Types of solenoid valves

b) 3-way solenoid valves (2 positions):
they have three ports and two orifice passages, one always open, the other always closed.
They are divided into:

- **Normally closed:**
  2 = inlet
  1 = outlet
  0 = exhaust
  (Fig. 3)

- **Normally open:**
  0 = inlet
  1 = outlet
  2 = exhaust
  (Fig. 4)

- **Diverting valves:**
  1 = inlet
  0 = outlet
  2 = outlet
  (Fig. 5)

- **Circuit switching valves:**
  0 = inlet
  2 = inlet
  1 = outlet
  (Fig. 6)

- **Universal:**
  they may have the four functions described above.
  (Fig. 7)

Response times:
They depend on the following factors: type of current (a.c. - d.c.), fluid, viscosity, type of operation, size of the solenoid valve.

For the direct acting type (2 or 3 way) and small diameters up to approx. 3 mm, orifice response time may be around tens of milliseconds.
Basic components of solenoid valves

Valve body:
main part of the solenoid valve with the ports, seats and orifice passages.
In almost all Parker-Scem products the bodies are made of brass stampings, while other materials are used in some special versions.

Enclosing tube assembly:
cylinder, normally in stainless steel, hermetically sealed and closed at one end.
It forms the housing and guide for the moveable plunger which is moved magnetically. The solenoid coil is fitted on the exterior of the enclosing tube.

It consists of:

• Pole piece:
Acts as a stop for the moveable plunger (=MP) and it is used to shield the magnetic flow. (Usually made of magnetic stainless steel).

• Phase displacement (or shading) ring:
Normally made of copper, it is inserted on the surface of the pole piece to prevent a/c hum.

• Enclosing tube:
Normally made of stainless steel, it is used as a guide for the moveable plunger (=MP). It is normally assembled with the pole piece and the bonnet.

• Bonnet:
A threaded nut or square flange which secures the magnetic operator assembly to the valve body.

Moveable plunger:
Made of stainless steel, magnetic, it is actuated by the solenoid and slides inside the tube.

Plunger spring (or return spring):
Used to hold the MP in position and to return it into position after the action of the solenoid.

Seat seal (or pad):
Normally mounted on the MP, it is used to close the orifice of the valve or pilot.

Diaphragm:
In servocontrolled solenoid valves it acts as a servocontrol which, actuated by means of an solenoid pilot and by pressure, opens or closes the main orifice in the valve body.

Support Plate:
A perforated disc located in the valve body to support the diaphragm.

Electromagnet (or solenoid coil):
Electrical part consisting of a copper windings (solenoid) which, with a magnetic yoke (armature), when electric current flows through it, generates a magnetic flux attracting the plunger.

For technical details, consult the specific section on Electromagnets.

N.B.
On request for various pilots, the electromagnet, enclosing tube and MP (with seal disc and spring) can be supplied separately as a MAGNETIC OPERATOR.
Technical information

Technical terminology for using the tables

The basic technical features of each solenoid valve model are indicated in the tables with the following headings:

**Fittings (ports):**
- according to the application of the solenoid valves fittings may be:
  - threaded in inches (G);
  - male SAE threaded with card;
  - solder;
  - special where indicated (see solenoid valve drawing).

**Passage (ND):**
- main orifice diameter (orifice)
- (nominal diameter)

**Flow coefficient:**
- the quantity of water, from +5°C to +30°C, which flows through the solenoid valve with a pressure drop of 1 bar (100 KPa-0.1 MPa) expressed in m³/h (cubic metres per hour).

**Minimum operating pressure:**
- the lowest differential pressure required for operation, expressed in bar.
  - In "direct operated" solenoid valves a minimum pressure drop is not required.
  - In "servo controlled" solenoid valves the minimum differential pressure indicated in the table is required.

**Maximum operating pressure differential (M.O.P.D.):**
- the highest working differential pressure with 90% of the rated voltage (-10% Vn) applied to the solenoid coil (for a.c.) and with 95% of the rated voltage (-5% Vn) (for d.c.).

**NP - Maximum test pressure:**
- the maximum static pressure which can be applied to the solenoid valve to check the tightness of the mechanical seals (threads, welds) and the mechanical resistance of the materials.
  - We recommend applying this pressure simultaneously to all fittings to avoid damage to the internal parts, in particular the seals.

**Safe working pressure (S.W.P.):**
- the line or system pressure to which the valve can be subjected safely.

**Valve type:**
- see example of solenoid valve nomenclature.

**Coil type:**
- see coil coding example.

**Power:**
- the rated power under normal conditions of the solenoid expressed in W.

**Materials:**
- **Body** - main material of the valve body:
  - BR = brass
- **Seals** - materials used for seal disc, diaphragms, gaskets.

The following abbreviations are used:

**N = NBR (nitrile butadene rubber)**
- Synthetic elastomer of standard quality for neutral fluids, such as air, water and oils with working temperatures from -10°C to +90°C.

**F = CR (chloroprene)**
- Synthetic elastomer particularly suitable for water, mineral oils, refrigerants, with working temperatures from -30°C to +90°C.

**H = EPDM (ethylene propylene)**
- Synthetic elastomer suitable for hot water and steam with working temperatures from -10°C to +140°C.

**V = FPM (Viton)**
- Fluorinated elastomer suitable for oils, fuel gases, petrols and solvents. Working temperatures from -10°C to +140°C.

**R = Ruby**
- Synthetic corundum (hard stone) with high hardness values and total inertia for all types of fluids.
  - Working temperatures from -40°C to +180°C.

**T = PTFE (Teflon)**
- Plastic material without springback and inert to most fluids, including refrigerants.
  - Working temperatures from -40°C to +180°C.

**L = PTFE with filler (Rulon)**
- Plastic material with coloured mineral fillers, without springback, inert to most fluids, including refrigerants.
  - Working temperature from -40°C to +180°C.
  - More resistant than virgin PTFE to compression and wear.

**Weight:**
- weight of the complete valve without accessories (kg).

For further explanation on how to use the tables see pp 2-3.
**Materials of solenoid valves for industrial applications**

1) **Valve body**: OT58 brass stamping - UNI 5705 (MS 58 = Cu Zn 41 Pb2F38 - DIN 17673).
2) **Seals (gaskets - discs - diaphragms):**
   - **N** = NBR
   - **H** = EPDM
   - **V** = Viton
   - **R** = Ruby
   - **T** = PTFE
3) **Enclosing tube**: AISI 304 - stainless steel (DIN 1.4301).
4) **Plungers (fixed and moveable)**: AISI 430 FR - stainless steel (DIN 1.4104).
5) **Spring**: AISI 302 - stainless steel (DIN 1.4319).
6) **Solder**: silver alloy (56% Ag).
7) **Phase displacement ring**: copper (98% Cu).
8) **Cover screws**: C35B steel with tropical galvanising.
9) **Coil**: continuous service, 100% ED
   - Class F (155°C)
   - moulded polyester resin
   - with 30% glass fiber.
10) **Nameplate**: aluminium.
11) **Spring washer**: steel for springs
    - with white galvanising.
12) **Coil nut**: white galvanised steel.
### Viscosity conversion table

<table>
<thead>
<tr>
<th>Centistokes</th>
<th>°Engler</th>
<th>Saybolt Universal Second</th>
<th>Redwood Second n.1</th>
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<td>cStokes mm²/S</td>
<td>°E</td>
<td>SSU</td>
<td>SRW n.1</td>
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Note: there are no common factors between these units and the S.I. official system.

### Pressure conversion table

<table>
<thead>
<tr>
<th>bar</th>
<th>N/cm²</th>
<th>MPa</th>
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<td>0.01</td>
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\[ m^3/h = \text{l/min} \times 0.06 \]

\[ \text{l/min} = m^3/h \times 16.67 \]

\[ m^3/sec = m^3/h \times 2,778 \times 10^{-5} \]

\[ \text{m}^3/sec = \text{l/min} \times 1,667 \times 10^{-5} \]
VE 146
TWO WAY - DIRECT OPERATED
NORMALLY CLOSED

VE 120.4
TWO WAY - DIRECT OPERATED
NORMALLY OPEN
VE 133
TWO WAY - PILOT OPERATED WITH DIAPHRAGM
NORMALLY CLOSED

VE 143
TWO WAY - PILOT OPERATED WITH DIAPHRAGM
NORMALLY OPEN
VE 123 DIAPHRAGM ASSISTED
NORMALLY CLOSED

DE-ENERGIZED

ENERGIZED

VE 141 V THREE WAY
NORMALLY CLOSED

DE-ENERGIZED

ENERGIZED
VE 139 UNIVERSAL

**NORMALLY OPEN function**
- DE-ENERGIZED
- ENERGIZED

**NORMALLY CLOSED function**
- DE-ENERGIZED
- ENERGIZED

**DIVERTING function**
- DE-ENERGIZED
- ENERGIZED

**MIXING function**
- DE-ENERGIZED
- ENERGIZED
Sizing solenoid valves

The correct choice of a solenoid valve is essential as it determines the regulation and performance required for practical application on a system. In order to decide on the exact type of solenoid valve, various parameters have to be known. However, the calculation method, based on the flow coefficient $K_v$, has proved highly practical as it can be determined on the basis of:

- required flow rate
- flow resistance
- type of fluid and relative viscosity
- specific gravity and temperature.

This flow coefficient $K_v$ is determined as laid down in the VDI/VDE 2173 standards and represents the flow of water in m$^3$/h with a temperature from 5 to 30°C which passes through the solenoid valve with a pressure drop of 1 bar (see Fig. 8).

After the existing conditions have been converted into this factor $K_v$, the type of valve is found by referring to the pages in the specific sections in this catalogue.

The parameters used for sizing the solenoid valve are the following:

- for liquids
- for gases
- for steam

(consult the conversion tables of the various units of measurement as defined by the ISO (International Standards Organisation) - I.S. (International System) set out in this catalogue)

Note: the flow coefficient used in the USA is known as $C_v$ and represents the water flow rate in US gallons per minute with a pressure drop $ΔP$ of 1 psi. To convert $C_v$ to $K_v$ and vice versa use:

- $1 \ K_v = 0.862 \ C_v$
- $1 \ C_v = 1.16 \ K_v$

*Note:*

- $P)$ = Working pressure
- $(\Delta P)$ = Pressure difference between inlet ($P_1$) and outlet ($P_2$) of the solenoid valve when a medium is flowing through the valve ($\Delta P = P_1 - P_2$).
- $(K_v)$ = Flow coefficient
- $(\gamma)$ = Specific gravity of the medium
- $(t)$ = Temperature of the medium
- $(Q)$ = Flow rate: for liquids
- $(Q_n)$ = Flow rate: for gases
- $(Q_v)$ = Flow rate: for steam
- $(Vs)$ = Specific volume

Pressure symbol unit of measurement $P)$ [bar]
Pressure drop symbol unit of measurement $(\Delta P)$ [bar]
Flow coefficient symbol unit of measurement $(K_v)$ [m$^3$/h]
Specific gravity of the medium symbol unit of measurement $(\gamma)$ [Kg/dm$^3$]
Temperature of the medium symbol unit of measurement $(t)$ [$°C$]
Flow rate:
- for liquids symbol unit of measurement $(Q)$ [m$^3$/h]
- for gases symbol unit of measurement $(Q_n)$ [Nm$^3$/h]
- for steam symbol unit of measurement $(Q_v)$ [Kg/h]
Specific volume symbol unit of measurement $(Vs)$ [m$^3$/Kg]

FIG. 8

| Rs | Sp |
| Sp |
---|---|
| Nr |
| Vs |
| Nr |
| Sp |
| Ps |
| Mp |
| Fg |
| Cr |
| Vs |
| Mp |
| Fg |
| Cr |
| Rs |

Parker Hannifin S.p.A.
via E. Fermi, 5
20060 Gessate (Milano) - Italy
Sizing solenoid valves

BY FORMULAE:

a) Solenoid valves for liquids:

Flow rate:
\[ Q = K_v \sqrt{\frac{\Delta P}{\gamma}} \]
where:
- \( Q \) = m³/h
- \( \Delta P \) = bar
- \( \gamma \) = Kg/dm³

Flow coefficient:
\[ K_v = Q \sqrt{\frac{\gamma}{\Delta P}} \]

In the case of liquids with viscosity greater than 3°E (22 cStokes) the Kv is modified according to the formula:
\[ K_{v1} = K_v + C \]
where 
\( C \) is the viscosity correction factor calculated by means of the formula:
\[ C = \frac{\delta \sqrt{K_v}}{200 \cdot Q} \]
where 
\( \delta \) = kinematic viscosity of the fluid expressed in centistokes
\( K_v \) = flow rate factor of the solenoid valve
\( Q \) = flow rate in m³/h.

Pressure drop:
\[ \Delta P = \gamma \left( \frac{Q}{K_v} \right)^2 \]

b) Solenoid valves for gases:

If \( \Delta P \leq 1/2 \ P_1 \) use the following formulae:

Flow rate:
\[ Q_n = 514 \cdot K_v \sqrt{\frac{\Delta P \cdot P_2}{\gamma_n \cdot (273 + t)}} \]
where:
- \( Q_n \) = Nm³/h
- \( P_1 \) = bar
- \( P_2 \) = bar

Flow coefficient:
\[ K_v = \frac{Q_n}{514 \sqrt{\frac{(273 + t) \cdot \gamma_n}{\Delta P \cdot P_2}}} \]

Pressure drop:
\[ \Delta P = \frac{(273 + t) \cdot \gamma_n}{P_2} \cdot \frac{Q_n^2}{(514 \cdot K_v)^2} \]

If \( \Delta P > 1/2 \ P_1 \) use the following formula:

\[ Q_n = 757 \cdot K_v \sqrt{\frac{\Delta P \cdot P_2}{(273 + t) \cdot \gamma_n}} \]

c) Solenoid valves for steam:

If \( \Delta P \leq 1/2 \ P_1 \) use the following formulae:

Flow rate:
\[ Q_v = 31.7 \cdot K_v \sqrt{\frac{\Delta P}{\gamma}} \]
where:
- \( Q_v \) = Kg/h
- \( \Delta P \) = bar
- \( \gamma \) = m³/Kg

Flow coefficient:
\[ K_v = \frac{Q_v}{31.7 \sqrt{\frac{\gamma}{\Delta P}}} \]
Notes:
1) Should the value \( \Delta P \) not be specified, use the following, which is based on experience:
   - For liquids only in the case of free discharge \( \Delta P = 90\% \) of the input pressure (\( P_1 \)).
   - For gases never use a \( \Delta P \) of more than 50% of the absolute inlet pressure, since the excessive pressure drop may cause an irregular flow rate.
   In most cases, \( \Delta P \) can be considered as 10% of the input pressure.
2) Specific volume value (Vs) for dry saturated steam, see the table in diagram 3.

GRAPHIC SIZING:

In addition to the arithmetical method, the flow rate Q or other values can be calculated by using the following diagrams:

Diagram 1: for liquids (up to 3°E) (page 24)
Example: Water (\( \gamma \)). A calculation of the flow rate \( Q \) is required, using a solenoid valve with \( K_v = 0.6 \) at pressure \( P_1 = 15 \) bar and with a pressure drop of \( \Delta P = 9 \) bar.
A line is plotted which joins point 1 on the “specific gravity” line, and point 0.6 on the “Kv” line as far as the auxiliary line. The point on this line should be plotted to point 9 on the \( \Delta P \) line. The straight line plotted crosses the flow rate line “Q” at point 1.8. The value is therefore \( Q = 1.8 \) m³/h.

Diagram 2: for gases (page 25)
Example: Air (\( \gamma_n = 1.3 \)). A calculation of the flow rate \( Q_n \) is required with:
- \( t = 20^\circ\text{C} \), \( K_v = 0.6 \);
- \( P_1 = 12 \) bar;
- \( \Delta P = 3 \) bar.
Point 20 on the temperature line and point 1.3 on the specific gravity line are joined by a straight line as far as the first auxiliary line. The point found on this line should be plotted to point 0.6 on the \( "Kv" \) line as far as the auxiliary line. The point on this line should be plotted to point 9 on the \( \Delta P \) line. The straight line plotted crosses the flow rate line “\( Q_n \)” at point 1.8. The value is therefore \( Q_n = 1.8 \) Nm³/h.

Diagram 3: for dry saturated steam - (page 26)
Example: calculate “\( Q_v \)” with:
- \( P_2 = 5 \) bar;
- \( \Delta P = 2 \) bar;
- \( K_v = 0.5 \).
Using the same method as for diagram 1 the various points can be joined up using the auxiliary line and the value \( Q_v \) is 36 Kg/h.
Naturally, given the possibility of combining various errors graphically (readouts, joining lines, intersections on auxiliary lines etc.), the values obtained from diagrams are approximate and it is therefore advisable to compare them, each time, with the values obtained using formulae.
Specific gravity of the most common fluids ($\gamma$ = Kg/dm$^3$) - (t = 15°C - P = 760 mm Hg)

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<td>Ethyl alcohol</td>
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<td>Methyl alcohol</td>
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Specific gravity of the most common gases (γ = Kg/m³) - (t = 0°C - P = 760mm Hg)

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Diagram 3 for dry saturated steam

Steam (dry saturated) data

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1 = Good  2 = Satisfactory  
N.B. all the fluids are at ambient temperature unless otherwise indicated.

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Technical information

Coils

The Parker coils mounted on the solenoid valves are designed and tested for continuous service (100% ED) and are manufactured according to CEE-EL -10 directives and hence meet all the electrical standards of the major European countries (VDE, CEI, BSI, UTE, SEV, NSD, SEMKO, DEMKO, NEMKO).

The insulation of the copper wire used for the windings are chosen according to the classes of insulation defined in the IEC recommendations:

\[
\begin{align*}
E &= 120^\circ C \\
B &= 130^\circ C \\
F &= 155^\circ C \\
H &= 180^\circ C
\end{align*}
\]

External insulation is achieved by encapsulation in thermoplastic resin with 30% glass fiber, to make the coil airtight, mould-proof and suitable for tropical climates.

All coils are tested for satisfactory performance at the following rated voltage tolerances:

±10% for a.c.; +10% -5% for d.c.

The ambient temperature which the coils can withstand depends on the following factors:

1) Coil wattage.
2) Coil overheating due to continuous service energisation. May be checked by resistance change test (\(\Delta T\)).
3) Service of the coil (continuous service or intermittent service). Coil in continuous or intermittent use.
4) Temperature of the fluid which is shut off by the solenoid valve. Ambient conditions which may affect heat dissipation.
5) Conditions of dissipation of the environment in which the solenoid valve is installed.

All the coils, as mentioned previously, are designed for continuous service, therefore the maximum ambient temperature value (bearing in mind the influence of the fluid temperature) is 50°C (for windings in class F) and +80°C (for windings in class H).

However, if the coil is used for intermittent or short service, the maximum overheating values (\(\Delta T\)) occurring with continuous energisation are not attained, therefore the ambient temperature can be increased. The specific values are determined for each case, in that the applications and possible uses of a solenoid valve are numerous.

Continuous service function:

This depends on the coil classification. With unlimited operation (always energised) at an ambient temperature of 20°C, the coils, after approximately 45 - 120 min., reach the maximum temperature rise (\(\Delta T\)). (Rated voltage increased by 10%).

In this case, the ambient temperature (as already mentioned, including any dissipation externally of high fluid temperatures) must not exceed the values indicated for each model of solenoid valve.

Intermittent service function (or with a relative energisation duration)

This is the most common condition of use, characterised by an energisation time and by a rest time. When these times are known exactly, a coil with greater power can be designed to obtain better performance with the solenoid valve or the solenoid valve can be operated in an area with higher temperatures than those indicated in the catalogue tables, subject to a check on the temperature increase (\(\Delta T\)) made during these working times. By determining the relative energisation duration the work and rest times can be calculated with the following formula:

\[
(S.I.) \text{ ED} = \frac{\text{Energisation time}}{\text{Total cycle time (energisation + rest)}} \times 100 \%
\]

Normally 1h is taken as the total cycle time basis:

<table>
<thead>
<tr>
<th>Relative energisation duration (ED)</th>
<th>Continuous service</th>
</tr>
</thead>
<tbody>
<tr>
<td>100%</td>
<td>100%</td>
</tr>
<tr>
<td>75%</td>
<td>75%</td>
</tr>
<tr>
<td>60%</td>
<td>60%</td>
</tr>
<tr>
<td>50%</td>
<td>50%</td>
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<tr>
<td>40%</td>
<td>40%</td>
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<td>25%</td>
<td>25%</td>
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<tr>
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<td>100%</td>
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<td>75%</td>
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</tr>
<tr>
<td>40%</td>
<td>40%</td>
</tr>
<tr>
<td>25%</td>
<td>25%</td>
</tr>
</tbody>
</table>

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### Degree of protection IP - according to DIN 40050

Refers to coils fitted with connector or plug.

<table>
<thead>
<tr>
<th>IP* * * Degree of enclosure protection for electrical equipment up to 1000V ~ e 1500 V =</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Figure 1:</strong> protection against solids</td>
</tr>
<tr>
<td>IP</td>
</tr>
<tr>
<td>---</td>
</tr>
<tr>
<td>0</td>
</tr>
<tr>
<td>1</td>
</tr>
<tr>
<td>2</td>
</tr>
<tr>
<td>3</td>
</tr>
<tr>
<td>4</td>
</tr>
<tr>
<td>5</td>
</tr>
<tr>
<td>6</td>
</tr>
<tr>
<td>7</td>
</tr>
</tbody>
</table>

In the case of solenoid valve coils, normally only the first two figures are indicated, e.g. IP43-IP65
Technical information

Z coil

Coil manufactured from **class H** copper wire, moulded in thermoplastic:
- (polyester) with 30% glass fiber (**type ZB**);
- (polyphenylene) with 40% glass fiber (**type ZH**).

**Features:**

- **Protection**: DIN 40050 = IP 65 with connector
- **Connector**: DIN 43650 A - PG 9 or PG 11
- **Frequency**: 50/60 Hz

**Types available:**

1) **Class F (155°C)**
   - ZB09 = 16 VA - 9 W a.c. Service (25 VA - Inrush)
   - ZB12 = 12 W d.c.
   - ZB14 = 25 VA - 14 W a.c. Service (33 VA - Inrush)
   - ZB16 = 16 W d.c.

2) **Class H (180°C)**
   - ZH14 = 25 VA - 14 W a.c. - Service (33 VA - Inrush)
   - ZH16 = 16 W d.c.

Note: recommended for applications where humidity is particularly severe and where ice formation or defrosting may occur.

Y coil

Coil manufactured from **class H** copper wire, moulded in thermoplastic:
- (polyester) with 30% glass fiber;

**Features**

- **Protection**: DIN 40050 = IP 67
- **Electrical connection**: two 1000 mm cables
- **Frequency**: 50/60 Hz

**Types available:**

1) **Class F (155°C)**
   - YB09 = 15 VA - 9 W a.c. Service (24 VA - Inrush)
   - YB12 = 12 W d.c.
   - YB14 = 24 VA - 14 W a.c. Service (32 VA - Inrush)
   - YB16 = 16 W d.c.

2) **Class E (120°C)**
   - YEO9 = 15 VA - 9 W a.c.
J coil

Coil manufactured from class H copper wire, moulded in thermoplastic:
- (polyester) with 30% glass fiber;

Features:
- Protection: DIN 40050 = IP 65 with connector
- Connector: DIN 43650 A - PG 9 or PG 11
- Frequency: 50/60 Hz
- Insulation class: F (155°C)

Types available:
- IMQ approved for standard voltages

1) Class F (155°C)
   - J B14 = 30 VA - 14 W a.c. Service (55 VA - Inrush)
   - ZB16 = 16 W d.c.

K coil

Coil manufactured from class F copper wire (type KT09), moulded in thermoplastic:
- (polyammide) with 30% glass fiber;

Features:
- Protection: DIN 40050 = IP 65 with connector
- Connector: DIN 43650 A - PG 9 or PG 11
- Frequency: 50 or 60 Hz
- Insulation class: F (155°C)

Types available:
- IMQ approved for standard voltages

1) Class F (155°C)
   - KT09 = 12 VA - 9 W a.c. Service (20 VA - Inrush)
   - KP07 = 13 VA - 7 W a.c. Service (22 VA - Inrush)
   - KP10 = 10 W d.c.

2) Class H (180°C)
   - KH09 = C.A.12 VA - 9 W - Service (20 VA - Inrush)
### X coil

Coil manufactured from **class F** copper wire, moulded in thermoplastic:
- (polyamamide) with 30% glass fiber;

**Features:**
- **Protection** DIN 40050 = IP 54 with plug
- **Connector** Plug with special three-core cable
- **Frequency** 50 or 60 Hz
- **Insulation class** F (155°C)

**Types available:**
- IMQ approved for standard voltages

1) Class F (155°C)
   - XT09 = 12 VA - 9 W a.c. Service (20 VA - Inrush)
   - XP07 = 13 VA - 7 W a.c. Service (22 VA - Inrush)

### W coil

Coil manufactured from **class H** copper wire, moulded in thermoplastic:
- (polyester) with 30% glass fiber;

**Features:**
- **Protection** DIN 40050 = IP 65 with connector
- **Connector** DIN 43650 B - PG 9
- **Frequency** 50/60 Hz
- **Insulation class** F (155°C)

**Types available:**
- IMQ approved for standard voltages

1) Class F (155°C)
   - WB4.5 = 7.5 VA - 4.5 W a.c. Service (11 VA - Inrush)
   - WB5.0 = 5 W d.c.
   - WB8.0 = 11 VA - 8 W a.c. Service (17 VA - Inrush).
## Coil Table

| VALVE SERIES | JB14 | JB16 | KP07 | KT05 | KT06 | KT09 | KT10 | WB4,5 | WBS,0 | XT09 | XP07 | YB09 | YB12 | YB14 | YB16 | YE09 | ZB09 | ZB12 | ZB14 | ZB16 | ZH14 | ZH16 | KH09 |
|--------------|------|------|------|------|------|------|------|-------|-------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| 120.4        |      |      |      |      |      |      |      |       |       |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| 123          |      |      |      |      |      |      |      |       |       |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| 126          |      |      |      |      |      |      |      |       |       |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| 128          |      |      |      |      |      |      |      |       |       |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| 131          |      |      |      |      |      |      |      |       |       |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| 131.4        |      |      |      |      |      |      |      |       |       |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| 131.4...G    |      |      |      |      |      |      |      |       |       |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| 133          |      |      |      |      |      |      |      |       |       |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| 133...H      |      |      |      |      |      |      |      |       |       |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| 133 OMV      |      |      |      |      |      |      |      |       |       |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| 135          |      |      |      |      |      |      |      |       |       |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| 136          |      |      |      |      |      |      |      |       |       |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| 139          |      |      |      |      |      |      |      |       |       |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| 140          |      |      |      |      |      |      |      |       |       |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| 140.2        |      |      |      |      |      |      |      |       |       |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| 141          |      |      |      |      |      |      |      |       |       |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| 143          |      |      |      |      |      |      |      |       |       |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| 146          |      |      |      |      |      |      |      |       |       |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| 151          |      |      |      |      |      |      |      |       |       |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| 153          |      |      |      |      |      |      |      |       |       |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| 153(1)       |      |      |      |      |      |      |      |       |       |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| 156.2        |      |      |      |      |      |      |      |       |       |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| 158          |      |      |      |      |      |      |      |       |       |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| 161.4        |      |      |      |      |      |      |      |       |       |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| 168.1        |      |      |      |      |      |      |      |       |       |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| 169.1        |      |      |      |      |      |      |      |       |       |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| 173          |      |      |      |      |      |      |      |       |       |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| 174          |      |      |      |      |      |      |      |       |       |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| 179          |      |      |      |      |      |      |      |       |       |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |

Notes:  
- **Standard**  
- **(1)** For spare coil order ZB09-ZB12
Solenoid valve accessories

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Three pin Connector DIN 43650 A
(Z, J, K)

Connector with three core cable
(Z, J, K Coil)

Three pin Connector DIN 43650 B
(WB Coil)

Special plug with three core cable
(X Coil)

**SPECIFICATION: CONNECTOR DIN 43650**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nominal voltage</td>
<td>250 -/ 300V=</td>
</tr>
<tr>
<td>Max switch rating</td>
<td>16 A</td>
</tr>
<tr>
<td>Contact resistance</td>
<td>≤4 m Ohm</td>
</tr>
<tr>
<td>Contact width (max)</td>
<td>1.5 mm²</td>
</tr>
<tr>
<td>Protection class</td>
<td>Gruppo C - VDE 0110</td>
</tr>
<tr>
<td>Insulation class</td>
<td>Gruppo C - VDE 0110</td>
</tr>
<tr>
<td>Gasket material</td>
<td>NBR (-40°C + 90°C)</td>
</tr>
<tr>
<td>Cable diameter</td>
<td>Ø 6 - Ø 10</td>
</tr>
<tr>
<td>Gland nut</td>
<td>Fg 9</td>
</tr>
</tbody>
</table>

Parker Hannifin S.p.A.
Climate & Industrial Controls

35
Solenoid Valves for Automation
## Solenoid Valves for Automation

### Contents

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<thead>
<tr>
<th>Series</th>
<th>Type</th>
<th>Pages</th>
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<td>NC</td>
<td>40-41</td>
</tr>
<tr>
<td>131.4</td>
<td>NC</td>
<td>42-43</td>
</tr>
<tr>
<td>133</td>
<td>NC</td>
<td>44-45</td>
</tr>
<tr>
<td>133 CMV</td>
<td>NC</td>
<td>46-47</td>
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<tr>
<td>136</td>
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<td>50-51</td>
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<td>141</td>
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<tr>
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<td>62-63</td>
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<td>173</td>
<td>NC</td>
<td>64-65</td>
</tr>
<tr>
<td>174</td>
<td>NC</td>
<td>66-67</td>
</tr>
<tr>
<td>179</td>
<td>NC</td>
<td>68-69</td>
</tr>
</tbody>
</table>

**NO** = normally open  
**NC** = normally closed
The numbers in [bar] in the table indicate the M.O.P.D. values (maximum operating pressure differential). The columns refer to the type of fittings and power supply; the rows refer to the valve series. Items with asterisk (*) refer to R type fittings.
**General description:**

PARKER series 123 solenoid valves are diaphragm assisted lift and do not require a minimum differential pressure to operate. They are used for general applications with media such as: water, air, light oils (2°E) and inert gases, provided they are compatible with the construction materials used.

Series 123 valves are normally closed.

**Temperatures:**

The working temperature for media is:
- Maximum: +140°C
- Minimum: -10°C

The maximum ambient temperature is:
- With class “F” coils: +50°C
- With class “H” coils: +80°C

**Application:**

Series 123 solenoid valves are ideal for automatic control of media for a wide range of uses which require zero or very low differential pressures. Some examples of applications are:
- Thermohydraulic systems;
- Industrial dishwashers;
- Hydrocleaners;
- Food industry equipment;
- Instruments;
- Metal smelting plants;
- Polyurethane systems;
- Closed circuits;
- Environmentally-friendly systems;
- Suction pad manipulators.

In vacuum applications series 123 valves can be used in a range from 10⁻¹ to 10⁻¹⁵ torr.

They may be used with gases with pressures over 2,000 mm of water column.

**Coils:**

For series 123 valves class “F” coils (155°C) are available, encapsulated in thermoplastic containing 30% glass fiber (types: ZB, YB, JB). For models I and A, class “H” coils (180°C) are also available, encapsulated in thermoplastic containing 40% glass fiber (type: ZH).

All the coils are for continuous service, 100% E.D. The rated voltage tolerance is:
- ±10% for A.C.
- ±10% -5% for D.C.

The “Z”, “Y”, “J” coils can be used on a.c. with frequency 50/60 Hz (dualfrequency). The “Z” and “J” coils have Faston terminals for DIN 43650A connectors with protection to IP65.

The “Y” coil has terminals with 2 x 1,000 mm cables with protection to IP67.

**Installation:**

The valves can be mounted in any position without jeopardising their operation. It is however advisable to install them with the coil in a vertical position above the body.

**Approvals:**

- **Coil certification:***
  - ZB 09 24V/50-60Hz, 115V/50-60Hz, 220-230V/50-60Hz, 240V/50-60Hz
  - ZB 12 12V DC, 24V DC
  - YB 09 220-230V/50-60Hz
  - JB 14 220-230V/50-60Hz
  - JB 16 24V DC

- **For the coils:***
  - ZB 09 220-230V/50-60Hz, 240V/50-60Hz
  - YB 09 220-230V/50-60Hz

- **Models VE 123 I and 123 A, are UL-approved for***
  - ZB 09 coil voltages: 24V/60Hz, 110-120V/60Hz, 208-240V/60Hz
**Coil type** | **Power [W]** | **Insul. class**
---|---|---
ZB 09 | ZB 12 | 9 | 12 | F
YB 09 | YB 12 | 9 | 12 | F
ZH 14 | ZH 16 | 14 | 16 | H
JB 14 | JB 16 | 14 | 16 | F

**Fittings**

<table>
<thead>
<tr>
<th>Ø G</th>
<th>Valve type</th>
<th>Nominal orifice Ø</th>
<th>Flow coefficient Kv</th>
<th>Minimum pressure</th>
<th>Max differential pressure (M.O.P.D.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>[&quot;&quot; ]</td>
<td>[ ]</td>
<td>[mm]</td>
<td>[m³/h]</td>
<td>[bar]</td>
<td>in AC( ~ )</td>
</tr>
<tr>
<td>3/8</td>
<td>123 I</td>
<td>13</td>
<td>2.40</td>
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</tr>
<tr>
<td>1/2</td>
<td>123 A</td>
<td>13</td>
<td>2.40</td>
<td>0</td>
<td>5</td>
</tr>
<tr>
<td>3/4</td>
<td>123 C</td>
<td>20</td>
<td>6.00</td>
<td>0</td>
<td>3</td>
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<td>1</td>
<td>123 D</td>
<td>25</td>
<td>7.00</td>
<td>0</td>
<td>3</td>
</tr>
</tbody>
</table>

**Notes**
1) NP (Nominal pressure): 16 bar.

**Valve supplied with body (PM) and coil separate. Connector to be ordered separately.**
General description:
PARKER series 131.4 solenoid valves are direct operated. They are used for general applications with media such as inert gases and light oils (2°E). Series 131.4 valves are normally closed.

Temperatures:
The working temperature for media is:
- maximum +140°C
- minimum -10°C
The maximum ambient temperature is:
- +50°C

Application:
Series 131.4 solenoid valves are used for the automatic control of media where low flow rates are required. Some examples of applications are:
- welding machines with controlled atmosphere;
- diesel oil burners;
- gas analysers;
- fumes analysers;
- distribution of light oils;
- measurement and control instruments;
- lubrication systems.

Coils:
For series 131.4 valves class “F” coils (155°C), encapsulated in thermoplastic containing 30% glass fiber (type KT), are available. All the coils are for continuous service, 100% E.D. The rated voltage tolerance is:
- ±10% for A.C. power supply and
- +10% -5% for D.C.
The “K” coil can be used on a.c. with frequency 50 Hz or 60 Hz (single frequency) and has Faston terminals for DIN 43650A connector with protection to IP65.

Installation:
The valves can be mounted in any position without jeopardising their operation. It is however advisable to install them with the coil in a vertical position above the body. The valve body has 2 mounting holes diam. M4 x 7 with centre distance 13 x 13.

Approvals:
- Coil certification:
  - KH 09 24V/50Hz
  - 115V/50Hz
  - 230V/50Hz
  - KT 09 115V/50Hz
  - 220-230V/50Hz
**Fittings Ø R**

<table>
<thead>
<tr>
<th>Fittings Ø R</th>
<th>Valve type</th>
<th>Nominal orifice Ø</th>
<th>Flow coefficient Kv</th>
<th>Minimum pressure</th>
<th>Max differential pressure (M.O.P.D.)</th>
<th>Coil type</th>
<th>Weight</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/8</td>
<td>131.4 BV</td>
<td>2.8</td>
<td>0.174</td>
<td>0</td>
<td>in A.C. (<del>) [bar] in D.C. (</del>) [bar]</td>
<td>KT 09</td>
<td>0.200</td>
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<tr>
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<td>131.4 FV</td>
<td>2.8</td>
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<td>0</td>
<td>8 6</td>
<td>KT 10</td>
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<tr>
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<td>0.318</td>
<td>0</td>
<td>2 1</td>
<td>KH 09</td>
<td>1.220</td>
<td>1</td>
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Note: 1) NP (nominal pressure): 10 bar

**Dimensions**

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<thead>
<tr>
<th>Fittings Ø R</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
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</thead>
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<td>35.5</td>
</tr>
<tr>
<td>1/4</td>
<td>38</td>
<td>60</td>
<td>16</td>
<td>35.5</td>
</tr>
</tbody>
</table>

**Order Code**

**COMPLETE VALVE**

- VE 131.4
- FITTINGS
  - B 1/8
  - F 1/4
  - G 1/4
- SEAL
  - V Viton

Note: Valve supplied with coil in a multipack. Connector to be ordered separately.
Solenoid Valves for Automation

2/2 way - Normally Closed - Diaphragm pilot operated

Fittings: G = 3/8” - 2”

Series 133

General description:
PARKER series 133 solenoid valves are diaphragm pilot operated and require a minimum differential pressure to operate. They are used for applications with high flow rates and media such as water, light oils (2°E) and others, provided they are compatible with the construction materials used.
Series 133 valves are normally closed.

Temperatures:
The working temperature for media is:
- maximum +90°C
- minimum -10°C
with NBR seals (Buna N).

Application:
Series 133 solenoid valves are ideal for the automatic control of media in a wide range of applications such as:
- thermohydraulic systems;
- autoclaves;
- cooling of machine tools;
- industrial washing plants;
- evaporation towers;
- hospital equipment;
- irrigation systems;
- fire-fighting systems;
- wood-working machines;
- marble-working machines;
- molding machines;
- hygiene-health equipment.

For air and inert gases they can be used for low operating frequencies.

Coils:
For series 133 valves class “F” coils (155°C), encapsulated in thermoplastic containing 30% glass fiber (types: ZB, YB), are available.
Class “H” Coils are also available (180°C), encapsulated in thermoplastic containing 40% glass fiber (type: ZH).
All the coils are for continuous service, 100% E.D.
The rated voltage tolerance is:
±10% for A.C., power supply and +10% -5% for D.C.
The “Z” and “Y” coils can be used on a.c. with frequency 50/60 Hz (dualfrequency).
The “Z” coils have Faston terminals for DIN 43650A connectors with protection to IP65.
The “Y” coil has terminals with 2 x 1,000 mm cables with protection to IP67.
Series 133 solenoid valves are also available in a watertight version for applications where the conditions of humidity are particularly critical (type: YE 09).

Installation:
The valves can be mounted in any position without jeopardising their operation. It is however advisable to install them with the coil in a vertical position above the body.

Approvals:
- Coil certification:
  ZB 09 24V/50-60Hz, 115V/50-60Hz, 220-230V/50-60Hz, 240V/50-60Hz
  ZB 12 12VDC, 24VDC
  YB 09 220-230V/50-60Hz

- The coils:
  ZB 09 220-230V/50-60Hz, 240V/50-60Hz
  YB 09 220-230V/50-60Hz

- Models are 133IN, 133AN
  ZB 09 coil:
  24V/60Hz, 110-120V/60Hz, 208-240V/60Hz
**Coil**

- **24 V**
- **115V**
- **220-230 V**
- **240 V**
- **12 V**
- **24 V**

- **Type**
  - 50/60 Hz
  - d.c.

- **ZB**
  - **09**
  - **12**

- **YB**
  - **09**
  - **12**

- **ZH**
  - **14**
  - **16**

- **YE**
  - **09**

**Electrical Features**

<table>
<thead>
<tr>
<th>Coil type</th>
<th>Power [W]</th>
<th>Insul. class</th>
</tr>
</thead>
<tbody>
<tr>
<td>ZB 09</td>
<td>9</td>
<td>F</td>
</tr>
<tr>
<td>ZB 12</td>
<td>12</td>
<td>F</td>
</tr>
<tr>
<td>YB 09</td>
<td>9</td>
<td>H</td>
</tr>
<tr>
<td>YB 12</td>
<td>12</td>
<td>H</td>
</tr>
<tr>
<td>ZH 14</td>
<td>14</td>
<td>H</td>
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<td>ZH 16</td>
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<tr>
<td>YE 09</td>
<td>9</td>
<td>E</td>
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<td>YE 09 UL</td>
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**Fittings**

<table>
<thead>
<tr>
<th>Fittings Ø G - NPT</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
</tr>
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<tbody>
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<td>3/8 G</td>
<td>69,0</td>
<td>92,5</td>
<td>40,0</td>
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</tr>
<tr>
<td>1/2 G</td>
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<td>100,0</td>
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<td>1 G</td>
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<td>1 1/4 G</td>
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<td>37,5</td>
</tr>
<tr>
<td>1 1/2 G</td>
<td>145,0</td>
<td>127,0</td>
<td>102,0</td>
<td>37,5</td>
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<tr>
<td>2 G</td>
<td>173,0</td>
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<td>118,0</td>
<td>37,5</td>
</tr>
</tbody>
</table>

**Order Code**

| PM | 133 |

**Materials**

- **Valve body:** OT58 UNI 5705 brass stamping
- **Seals:** NBR (Buna N) - Viton
- **Enclosing tube:** AISI 304 stainless steel
- **Plunger:** AISI 430 F stainless steel
- **Spring:** AISI 302 stainless steel
- **Shading ring:** Copper

**Specication**

- **Fittings Ø G:**
  - 3/8: 133 I
  - 1/2: 133 A
  - 3/4: 133 C
  - 1: 133 D
  - 1 1/4: 133,2 E
  - 1 1/2: 133,2 F
  - 2: 133 G

- **Valve type:**
  - 9: 12

- **Nominal orifice Ø:**
  - 13: 9

- **Row coefficient Kv:**
  - 3: 1

- **Minimum pressure in AC (~):**
  - 0,1

- **Max differential pressure (M.O.P.D.) in AC (~) in DC (=):**
  - 20

- **Coil type:**
  - ZB
  - YB
  - ZH

- **Coil voltage:**
  - 24 V / 60 Hz

- **Coil type with body separate:**
  - ZB 09 UL
  - YB 09 UL

**Dimensions**

- **Notes:**
  1) NP (nominal pressure): 25 bar (from 1 1/4 to 3” PN 16 bar).
  2) Slow closure version.

**Order Code**

<table>
<thead>
<tr>
<th>Valve body</th>
<th>FITTINGS</th>
<th>SEAL</th>
</tr>
</thead>
</table>
| PM 133     |          | NBR (Buna N) - Viton

**Notes:**

- Valve supplied with body (PM) and coil separate. Connector to be ordered separately. * Optional Viton for fittings up to 1”.

Parker Hannifin S.p.A.
via E. Fermi, 5
20060 Gessate (Milano) - Italy

Climate & Industrial Controls
**General description:**

PARKER series 133CMV solenoid valves are diaphragm pilot operated and require a minimum differential pressure to operate. They are used for applications with high flow rates and media such as water, light oils (2°E) and others, provided they are compatible with the construction materials used. Series 133 valves are normally closed.

**Temperatures:**
The working temperature for media is:
- Maximum: +90°C
- Minimum: -10°C

With NBR seals (Buna N). On request, seals in Viton are available, for fittings ≤ G 1” for maximum working temperature +140°C.

**Manual control:**
The manual control is used to open the valve without supplying voltage to the coil. The control consists of a slotted-head screw for a screwdriver with two possible positions:
- CLOSED valve closed
- OPEN valve open

In the closed position the valve functions normally when coil is energised.

**Fittings:**

2/2 way - Normally Closed - Diaphragm pilot operated

**Closure speed control:**
The closure times of the models 133 CNCMV, 133 DNCMV, 133.2 ENCMV, 133.2 FNCMV, 133 GNCMV can be changed by means of the adjusting screw (dwgs. 1 and 2). The latter, by acting as a throttle on the inlet equalisation (pilot) hole of the valve, slows down the closure speed of the valve, thus reducing water hammer.

The regulation range is from:

- SCREW FULLY OPEN
dwg. 1 max. closure speed

- SCREW FULLY CLOSED
dwg. 2 valve always open, i.e. the pilot hole of the valve closes completely.

**WARNING:** the adjusting screws of the various models differ on the conical seat:

- IDENTIFICATION
  - 2 groove = series C 3/4” series D 1”
  - 1 groove = series 2E 1 1/4” and series 2F 1 1/2”
  - no groove = series G 2” (see down).
**MATERIALS**
- Valve body: OT59 UNI 5705 brass stamping
- Seals: NBR (Buna N) - Viton
- Enclosing tube: AISI 304 stainless steel
- Plunger: AISI 430 F stainless steel
- Spring: AISI 302 stainless steel
- Shading ring: Copper

**ELECTRICAL FEATURES**

<table>
<thead>
<tr>
<th>Coil type</th>
<th>Power</th>
<th>Insul. class</th>
</tr>
</thead>
<tbody>
<tr>
<td>AC( ~)</td>
<td>DC( =)</td>
<td>AC( ~)</td>
</tr>
<tr>
<td>ZB 09</td>
<td>ZB 12</td>
<td>9</td>
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<tr>
<td>YB 09</td>
<td>YB 12</td>
<td>9</td>
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<tr>
<td>ZH 14</td>
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<td>14</td>
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<tr>
<td>YE 09</td>
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**SPECIFICATION**

<table>
<thead>
<tr>
<th>Fittings Ø G</th>
<th>Valve type</th>
<th>Nominal orifice Ø</th>
<th>Flow coefficient Kv</th>
<th>Minimum pressure</th>
<th>Max differential pressure (M.O.P.D.)</th>
<th>Coil type</th>
<th>Weight</th>
<th>Notes</th>
</tr>
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<tr>
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<td></td>
<td></td>
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<tr>
<td>3/4</td>
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<td>20</td>
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**DIMENSIONS**

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<th>B</th>
<th>C</th>
<th>D</th>
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</thead>
<tbody>
<tr>
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<tr>
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**ORDER CODE**

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<th>Fittings</th>
<th>Manual closure speed control</th>
<th>Seal</th>
<th>N</th>
<th>CMV</th>
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**Notes: 1) NP (nominal pressure): 25 bar. 2) Valve supplied with mechanical part (M.P) and coil separate.**

**Coil type**

<table>
<thead>
<tr>
<th>Coil type</th>
<th>24 V</th>
<th>115V</th>
<th>220-230 V</th>
<th>240 V</th>
<th>12 V</th>
<th>24 V</th>
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<td>✔</td>
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<td>✔</td>
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<td>YB 09</td>
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<td>✔</td>
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<td>YB 12</td>
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<tr>
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<tr>
<td>YE 09</td>
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<td>✔</td>
<td>✔</td>
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</table>

**Coil type**

<table>
<thead>
<tr>
<th>Coil type</th>
<th>24 V/ 60 Hz</th>
<th>110-120 V / 60 Hz</th>
<th>208-240 V / 60 Hz</th>
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<tbody>
<tr>
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<td>✔</td>
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<tr>
<td>YB 09 UL</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
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</tbody>
</table>

**Note:** Valve supplied with body (PM) and coil separate. Connector to be ordered separately.
General description:
PARKER series 136 solenoid valves are direct operated and do not require a minimum differential pressure to operate. They are used for general applications with media such as water, air, light oils (2°E) and inert gases, provided they are compatible with the construction materials used. Series 136 solenoid valves are normally open with inlet and outlet in line.

Temperatures:
The working temperature for media is:
- maximum +140°C
- minimum -10°C
The maximum ambient temperature is:
- with class “F” coils +50°C
- with class “H” coils +80°C

Coils:
For series 136 valves class “F” coils (155°C), encapsulated in thermoplastic containing 30% glass fiber (types: ZB, YB), and class “H” coils (180°C), encapsulated in thermoplastic containing 40% glass fiber (type: ZH), are available.
All the coils are for continuous service, 100% E.D.
The rated voltage tolerance is:
- ±10% for A.C. power supply and +10% -5% for D.C.
The “Z” and “Y” coils can be used on a.c. with frequency of 50/60Hz (dualfrequency). The “Z” coils have Faston terminals for DIN 43650A connectors with protection to IP65.
The “Y” coil has terminals with 2 x 1,000 mm cables with protection to IP67.

Application:
Series 136 solenoid valves are ideal for the automatic control of media for the following applications:
- generating sets;
- water purification plants;
- sterilisers;
- air dehumidifiers;
- industrial refrigerators;
- distribution of light oils.
For air applications the maximum differential pressure (MOPD) can be increased by 25%.

Installation:
The valves can be mounted in any position without jeopardising their operation. It is however advisable to install them with the coil in a vertical position above the body.

Approvals:
- Coil certification:
  ZB 14 24V/50-60Hz, 115V/50-60Hz 220-230V/50-60Hz
  ZB 16 12V DC, 24V DC
  YB 14 only voltage 220V/50-60Hz
  YB 16 24V DC
- For the coil:
  ZB 14 220-230V/50-60Hz
Coil 24 V 115V 220-230 V 240 V 12 V 24 V

**Type** 50/60 Hz 50/60 Hz 50/60 Hz 50/60 Hz d.c. d.c.

ZB 14 ZB 16
ZH 14 ZH 16
YB 14 YB 16

**Note:** Valve supplied with body (PM) and coil separate. Connector to be ordered separately.

**Fittings**

- **Y 1/4”**

**Valve**

- **Body:** OT58 UNI 5705 brass stamping
- **Seals:** Viton
- **Enclosing tube:** AISI 304 stainless steel
- **Plunger:** AISI 430 F stainless steel
- **Spring:** AISI 302 stainless steel
- **Shading ring:** Copper

**Electrical Features**

<table>
<thead>
<tr>
<th>Coil type</th>
<th>Power [W]</th>
<th>Insul. class</th>
</tr>
</thead>
<tbody>
<tr>
<td>AC( ~) D.C( =)</td>
<td>AC( ~) D.C( =)</td>
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</tr>
<tr>
<td>ZB 14 ZB 16</td>
<td>14 16</td>
<td>F</td>
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<tr>
<td>ZH 14 ZH 16</td>
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<td>H</td>
</tr>
<tr>
<td>YB 14 YB 16</td>
<td>14 16</td>
<td>F</td>
</tr>
</tbody>
</table>

**Materials**

- **Valve body:** OT58 UNI 5705 brass stamping
- **Seals:** Viton
- **Enclosing tube:** AISI 304 stainless steel
- **Plunger:** AISI 430 F stainless steel
- **Spring:** AISI 302 stainless steel
- **Shading ring:** Copper

**Dimension**

<table>
<thead>
<tr>
<th>Fittings Ø G</th>
<th>Valve type</th>
<th>Nominal orifice Ø</th>
<th>Flow coefficient Kv</th>
<th>Minimum pressure</th>
<th>Max differential pressure (M.O.P.D.)</th>
<th>Coil type</th>
<th>Weight</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>[“ ]</td>
<td>[ ]</td>
<td>[mm]</td>
<td>[m³/h]</td>
<td>[bar]</td>
<td>in AC( ~) [bar] in D.C( =) [bar]</td>
<td>[ ]</td>
<td>[Kg]</td>
<td>[ ]</td>
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<tr>
<td>1/4</td>
<td>136 Y</td>
<td>3</td>
<td>0.240</td>
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<td>5.5</td>
<td>5.5</td>
<td>Z - Y</td>
<td>0.36</td>
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</tbody>
</table>

**Note:** 1) NP (nominal pressure): 64 bar.
**General description:**

PARKER series 139 solenoid valves are universal and may be used as normally closed, normally open and for bypass and mixer applications depending on the flow pattern chosen. They are used for general applications with media such as water, air, light oils (2°E) and inert gases, provided they are compatible with the construction materials used.

Since they are direct-acting valves, they do not require a minimum differential pressure and function within the maximum differential pressure values (MOPD) indicated in the specification table. The series 139 seal bubble tight.

**Temperatures:**

The working temperature for media is:
- Maximum +140°C
- Minimum -10°C

The maximum ambient temperature is:
- With class "F" coils +50°C
- With class "H" coils +80°C

**Application:**

Series 139 solenoid valves are used in applications which require actuation and automatic discharge of moving systems. They enable the flow to be diverted towards a single outlet or to select one flow from two.

Some typical application examples:
- Pneumatic systems;
- Air compressors;
- Pilot valves;
- Batch systems;
- Paper and board manufacturing machines;
- Hydrocleaners;
- Hygiene-health systems;
- Instruments;
  - Dryers;
  - Automatic dispensers.

**Coils:**

For series 139 valves class "F" coils (155°C) are available encapsulated in thermoplastic containing 30% glass fiber (types: ZB, YB).

Class "H" coils (180°C) are also available encapsulated in thermoplastic containing 40% glass fiber (type: ZH).

All the coils are for continuous service, 100% E.D. The rated voltage tolerance is:
- ±10% for A.C. power supply and
- +10% -5% for D.C.

The "Z" and "Y" coils can be used on a.c. with frequency of 50/60Hz (dualfrequency). The "Z" coils have Faston terminals for DIN 43650A connectors with protection to IP65. The "Y" coil has terminals with 2 x 1,000 mm cables with protection to IP67.

**Installation:**

The valves can be mounted in any position without jeopardising their operation. It is however advisable to install them with the coil in a vertical position above the body. The valve body has a M4 x 8 mounting hole.

**Approvals:**

- Coil certification:
  - ZB 09 24V/50-60Hz, 115V/50-60Hz
  - ZB 12 12V DC, 24V DC
  - YB 09 220-230V/50-60Hz

- UL Recognized Comp. Mark for coils:
  - ZB 09 24V/60Hz, 110-120V/60Hz, 208-240V/60Hz
  - YB 09 24V/60Hz, 110-120V/60Hz, 208-240V/60Hz

---

**Series 139**

Parker Hannifin S.p.A.
via E. Fermi, 5
20060 Gessate (Milano) - Italy
for: water - air - light oils (2°E) - inert gases

**MATERIALS**
- Valve body: OT58 UNI 5705 brass stamping
- Seals: Viton
- Enclosing tube: AISI 304 stainless steel
- Plunger: AISI 430 F stainless steel
- Spring: AISI 302 stainless steel
- Shading ring: Copper

**ELECTRICAL FEATURES**

<table>
<thead>
<tr>
<th>Coil type</th>
<th>Power [W]</th>
<th>Insul. class</th>
</tr>
</thead>
<tbody>
<tr>
<td>AC (~)</td>
<td>D.C(=)</td>
<td>AC (~)</td>
</tr>
<tr>
<td>ZB 09</td>
<td>ZB 12</td>
<td>9</td>
</tr>
<tr>
<td>YB 09</td>
<td>YB 12</td>
<td>9</td>
</tr>
<tr>
<td>ZH 14</td>
<td>ZH 16</td>
<td>14</td>
</tr>
</tbody>
</table>

**SPECIFICATION**

<table>
<thead>
<tr>
<th>Fittings ØG</th>
<th>Valve type</th>
<th>Nominal orifice Ø</th>
<th>Flow coefficient Kv</th>
<th>Minimum pressure</th>
<th>Max differential pressure (M.O.P.D.)</th>
<th>Coils type</th>
<th>Weight [Kg]</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>[&quot;”] [ ] [mm]</td>
<td>[m³/h]</td>
<td>[bar]</td>
<td>in AC (~)</td>
<td>in D.C(=)</td>
<td>[ ]</td>
<td>[ ]</td>
</tr>
<tr>
<td>1/8</td>
<td>139 A</td>
<td>1.5 (1,5)*</td>
<td>0.07</td>
<td>0</td>
<td>10</td>
<td>10</td>
<td>Z - Y</td>
<td>0.360</td>
</tr>
<tr>
<td>1/8</td>
<td>139 B</td>
<td>2.0 (2,0)*</td>
<td>0.12</td>
<td>0</td>
<td>7</td>
<td>7</td>
<td>Z - Y</td>
<td>0.360</td>
</tr>
<tr>
<td>1/4</td>
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<td>0</td>
<td>7</td>
<td>7</td>
<td>Z - Y</td>
<td>0.360</td>
</tr>
<tr>
<td>1/4</td>
<td>139 G</td>
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<td>Z - Y</td>
<td>0.360</td>
</tr>
<tr>
<td>1/4</td>
<td>139 L</td>
<td>3.5 (2,5)*</td>
<td>0.30</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>Z - Y</td>
<td>0.360</td>
</tr>
</tbody>
</table>

Note: 1) NP (nominal pressure): 64 bar. 2) * Discharge diameter.

**DIMENSIONS**

<table>
<thead>
<tr>
<th>Fittings ØG</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
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</thead>
<tbody>
<tr>
<td>[&quot;”] [mm]</td>
<td>[mm]</td>
<td>[mm]</td>
<td>[mm]</td>
<td>[mm]</td>
</tr>
<tr>
<td>1/8</td>
<td>40,0</td>
<td>82,5</td>
<td>18</td>
<td>45,5</td>
</tr>
<tr>
<td>1/4</td>
<td>40,0</td>
<td>82,5</td>
<td>18</td>
<td>45,5</td>
</tr>
</tbody>
</table>

**ORDER CODE**

Note: Valve supplied with body (PM) and coil separate. Connector to be ordered separately.
**Solenoid Valves for Automation**

**3/2 way - Normally Closed - Direct operated**

**Series 141**

**General description:**
PARKER series 141 solenoid valves are direct operated and do not require a minimum differential pressure to operate. They are used for general applications with media such as water, air, light oils (2°C) and inert gases, provided they are compatible with the construction materials used.

The series 141 valves seal bubble tight. Series 141 valves are normally closed.

**Temperatures:**
The working temperature for media is:
- maximum +140°C
- minimum -10°C

The maximum ambient temperature is:
- with class “F” coils +50°C
- with class “H” coils +80°C

**Application:**
Series 141 solenoid valves are used in applications which require actuation and automatic discharge of moving systems in the following applications:
- Sterilisers;
- Espresso coffee machines;
- Air compressors;
- Diesel oil burners;
- Pilot valves;
- Polyurethane plants;
- Water treatment plants.

**Coils:**
For series 141 valves class “F” coils (155°C) are available encapsulated in thermoplastic containing 30% glass fiber (types: ZB, YB).
Class “H” coils (180°C) are also available encapsulated in thermoplastic material containing 40% glass fiber (type: ZH).
All the coils are for continuous service, 100% E.D.

The rated voltage tolerance is:
- ±10% for A.C. power supply and +10% -5% for D.C.

The “Z” and “Y” coils can be used on a.c. with frequency of 50/60 Hz (dualfrequency). The “Z” coils have Faston terminals for DIN 43650A connectors with protection to IP65.
The “Y” coil has terminals with 2 x 1,000 mm cables with protection to IP67.

**Installation:**
The valves can be mounted in any position without jeopardising their operation. It is however advisable to install them with the coil in a vertical position above the body. The valve body has a M4 x 8 mounting hole.

**Approvals:**
- Coil certification:
  - ZB 09 24V/50-60Hz, 115V/50-60Hz
  - 220-230V/50-60Hz, 240V/50-60Hz
  - ZB 12 12V DC, 24V DC
  - YB 09 220-230V/50-60Hz

- For the coils:
  - ZB 09 220-230V/50-60Hz, 240V/50-60Hz
  - YB 09 220-230V/50-60Hz

- UL Recognized Comp. Mark for coils:
  - ZB 09 24V/60Hz, 110-120V/60Hz, 208-240V/60Hz
  - YB 09 24V/60Hz, 110-120V/60Hz, 208-240V/60Hz
Coil 24 V 115V 220-230 V 240 V 12 V 24 V
type 50/60 Hz 50/60 Hz 50/60 Hz 50/60 Hz d.c. d.c.
ZB   09  
••••
ZB   12
••
YB   09
•••
YB   12
••
ZH   14
•••
ZH   16
• YB

Note: Valve supplied with body (PM) and coil separate. Connector to be ordered separately.

Electrical Features

<table>
<thead>
<tr>
<th>Coil type</th>
<th>Power [W]</th>
<th>Insul. class</th>
</tr>
</thead>
<tbody>
<tr>
<td>AC( ~)</td>
<td>DC( =)</td>
<td>AC( ~)</td>
</tr>
<tr>
<td>ZB 09</td>
<td>ZB 12</td>
<td>9</td>
</tr>
<tr>
<td>YB 09</td>
<td>YB 12</td>
<td>9</td>
</tr>
<tr>
<td>ZH 14</td>
<td>ZH 16</td>
<td>14</td>
</tr>
</tbody>
</table>

Fittings Valve Nominal Flow Minimum Max differential Coil Weight Notes

<table>
<thead>
<tr>
<th>Fits G</th>
<th>Valve type</th>
<th>Nominal</th>
<th>Flow</th>
<th>Minimum pressure</th>
<th>Max differential pressure (M.O.P.D.)</th>
<th>Coil type</th>
<th>Weight</th>
<th>Notes</th>
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</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>orifice Ø</td>
<td>coefficient</td>
<td></td>
<td>[bar]</td>
<td>[bar]</td>
<td>[ ]</td>
<td>[Kg]</td>
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<tr>
<td>1/8</td>
<td>141 A</td>
<td>1,5 (1,5)*</td>
<td>0,07</td>
<td>0</td>
<td>in AC( ~)</td>
<td>in DC( =)</td>
<td>[ ]</td>
<td>[ ]</td>
</tr>
<tr>
<td>1/8</td>
<td>141 B</td>
<td>2,0 (2,5)*</td>
<td>0,12</td>
<td>0</td>
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<td>15</td>
<td>Z - Y</td>
<td>0,360</td>
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<tr>
<td>1/4</td>
<td>141 F</td>
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<td>0,12</td>
<td>0</td>
<td>10</td>
<td>10</td>
<td>Z - Y</td>
<td>0,360</td>
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<tr>
<td>1/4</td>
<td>141 G</td>
<td>2,5 (2,5)*</td>
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<td>0</td>
<td>7</td>
<td>7</td>
<td>Z - Y</td>
<td>0,360</td>
</tr>
</tbody>
</table>

Note: 1) NP (nominal pressure): 64 bar. 2) * Exhaust diameter.

Materials

• Valve body: OT58 UNI 5705 brass stamping
• Seals: Viton
• Enclosing tube: AISI 304 stainless steel
• Plunger: AISI 430 F stainless steel
• Spring: AISI 302 stainless steel
• Shading ring: Copper

Specifcation

<table>
<thead>
<tr>
<th>Fits G</th>
<th>Valve type</th>
<th>Nominal G</th>
<th>Ø A</th>
<th>Ø B</th>
<th>Ø C</th>
<th>Ø D</th>
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</thead>
<tbody>
<tr>
<td>1/8</td>
<td>141 A</td>
<td>82,5</td>
<td>18</td>
<td>45,5</td>
<td></td>
<td></td>
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<tr>
<td>1/4</td>
<td>141 G</td>
<td>82,5</td>
<td>18</td>
<td>45,5</td>
<td></td>
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</tbody>
</table>

Dimensions

<table>
<thead>
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<th>Fits G</th>
<th>Ø A</th>
<th>Ø B</th>
<th>Ø C</th>
<th>Ø D</th>
</tr>
</thead>
<tbody>
<tr>
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<td>40</td>
<td>82,5</td>
<td>18</td>
<td>45,5</td>
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<tr>
<td>1/4</td>
<td>40</td>
<td>82,5</td>
<td>18</td>
<td>45,5</td>
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Order Code

<table>
<thead>
<tr>
<th>Series</th>
<th>VALVE BODY</th>
<th>FITTINGS</th>
<th>SEAL</th>
<th>[V]</th>
<th>[Hz] / d.c.</th>
</tr>
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<tbody>
<tr>
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<td>141</td>
<td>A 1/8&quot;</td>
<td>V</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>B 1/8&quot;</td>
<td></td>
<td></td>
<td></td>
</tr>
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<td></td>
<td></td>
<td>F 1/4&quot;</td>
<td></td>
<td></td>
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</tr>
<tr>
<td></td>
<td></td>
<td>G 1/4&quot;</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: Valve supplied with body (PM) and coil separate. Connector to be ordered separately.

Coil type

<table>
<thead>
<tr>
<th>Coil type</th>
<th>24 V</th>
<th>115 V</th>
<th>220-230 V</th>
<th>240 V</th>
<th>12 V</th>
<th>24 V</th>
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<td>50/60 Hz</td>
<td>50/60 Hz</td>
<td>dc</td>
<td>dc</td>
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<tr>
<td>ZB 09</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>ZB 12</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>YB 09</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>YB 12</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
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<tr>
<td>ZH 14</td>
<td>●</td>
<td>●</td>
<td>●</td>
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</tr>
<tr>
<td>ZH 16</td>
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<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
</tbody>
</table>
Solenoid Valves for Automation

2/2 way - Normally Open - Diaphragm pilot operated

Fittings: G = 3/8” - 2”

Series 143

General description:
PARKER series 143 solenoid valves are diaphragm pilot operated and require a minimum differential pressure to operate. They are used for general applications with high flow rates and media such as water, light oils (2°E) and others, provided they are compatible with the construction materials used. Series 143 valves are normally open.

Temperatures:
The working temperature for media is:
- maximum: +90°C
- minimum: -10°C
with NBR seals (Buna N).
On request seals in Viton are available for fittings ≤ G 1” and maximum working temperature + 140°C.
The maximum ambient temperature is:
- with class “F” coils: +50°C
- with class “H” coils: +80°C

Application:
Series 143 solenoid valves are ideal for the automatic control of media in a wide range of applications such as:
- Thermohydraulic systems;
- Air compressors;
- Washing plants;
- Hydrocleaners.
For air and inert gases they can be used for low operating frequencies.

Coils:
For series 143 valves class “F” coils (155°C) are available encapsulated in thermoplastic containing 30% glass fiber (types: ZB, YB).
Class “H” coils (180°C) are also available encapsulated in thermoplastic containing 40% glass fiber (type: ZH).
All the coils are for continuous service, 100% E.D.
The rated voltage tolerance is:
- ±10% for A.C. power supply and
- +10% -5% for D.C.
The “Z” and “Y” coils can be used on a.c. with frequency of 50/60Hz (dualfrequency). The “Z” coils have Faston terminals for DIN 43650A connector with protection to IP65. The “Y” coil has terminals with 2 x 1,000 mm cables with protection to IP67.

Installation:
The valves can be mounted in any position without jeopardising their operation. It is however advisable to install them with the coil in a vertical position above the body.

Approvals:
- Coil certification:
  - ZB 14 24V/50-60Hz, 115V/50-60Hz
  - 220-230V/50-60Hz
  - ZB 16 12V DC, 24V DC
  - YB 14 220-230V/50-60Hz
  - YB 16 24V DC
- For the coil:
  - ZB 14 220-230V/50-60Hz
Coil 24 V 115V 220-230 V 240 V 12 V 24 V

• Valve body: OT58 UNI 5705 brass stamping
• Seals: NBR (Buna N) - Viton
• Enclosing tube: AISI 304 stainless steel
• Plunger: AISI 430 F stainless steel
• Spring: AISI 302 stainless steel
• Shading ring: Copper

ELECTRICAL FEATURES

Coil type Power Insul. class
[ ] [ W ] [ ]
AC( ~) DC( =) AC( ~) DC( =)

ZH 14 ZH 16 14 16 H
ZB 14 ZB 16 14 16 F
YB 14 YB 16 14 16 F

For: water - light oils (2°E)

Note: Valve supplied with body (PM) and coil separate. Connector to be ordered separately. * Optional Viton for fitting up to 1”.

Coil type Power Insul. class
[ ] [ W ] [ ]
AC( ~) DC( =) AC( ~) DC( =)

ZH 14 ZH 16 14 16 H
ZB 14 ZB 16 14 16 F
YB 14 YB 16 14 16 F

Note: NP (nominal pressure): 25 bar (from 1 1/4” to 2” PN 16 bar).

DIMENSIONS

Fittings Ø G

A B C D

Note: Valve supplied with body (PM) and coil separate. Connector to be ordered separately. * Optional Viton for fitting up to 1”.

Parker Hannifin S.p.A.
via E. Fermi, 5
20060 Gessate (Milano) - Italy

Climate & Industrial Controls
General Description:

PARKER series 146 solenoid valves are direct operated and do not require a minimum differential pressure to operate. They are used for general applications with media such as water, air, light oils (2°E) and inert gases, provided they are compatible with the construction materials used. Series 146 valves are normally closed.

Temperatures:
The working temperature for media is:
- Maximum: +140°C
- Minimum: -10°C
The maximum ambient temperature is:
- With class "F" coils: +50°C
- With class "H" coils: +80°C

Application:
Series 146 solenoid valves are ideal for the automatic control of media in a wide range of applications such as:
- Burglar alarm systems;
- Sterilisers;
- Espresso coffee machines;
- Diesel oil burners;
- Shoe manufacturing machinery;
- Ceramic plants;
- Air dryers;
- Automatic dispensers;
- Industrial washing machines;
- Water massage systems;
- Floor washing machines;
- Welding systems;
- Machines for plastics;
- Humidifiers.

For use with air the maximum differential pressure (MOPD) may be increased by 25%.

Coils:
For series 146 valves class "F" coils (155°C), encapsulated in thermoplastic containing 30% glass fiber (type ZB, YB), and class "H" coils (180°C), encapsulated in thermoplastic containing 40% glass fiber (type ZH), are available. All the coils are for continuous service, 100% E.D.
The rated voltage tolerance is:
±10% for A.C. power supply and +10% -5% for D.C.
The "Z" and "Y" coils can be used on a.c. with frequency of 50/60Hz (dual frequency). The "Z" coils have Faston terminals for DIN 43650A connectors with protection to IP65. The "Y" coil has terminals with 2 x 1,000 mm cables with protection to IP67.

Installation:
The valves can be mounted in any position without jeopardising their operation. It is however advisable to install them with the coil in a vertical position above the body.

Approvals:

- For the coils:
  - ZB 09 220-230V/50-60Hz
  - ZB 12 12V DC, 24V DC
  - ZB 14 220-230V/50-60Hz
  - ZB 16 24V DC
  - YB 09 220-230V/50-60Hz
  - YB 14 only voltage 220/50-60Hz
  - YB 16 24V DC

- For the model VE 146.3 ABV with coil
  - ZH 14 with voltage 220-230V/50-60Hz

UL Recognized Comp. Mark for coils:

- ZB 09 24V/60Hz, 110-120V/60Hz, 208-240V/60Hz
- YB 09 24V/60Hz, 110-120V/60Hz, 208-240V/60Hz

Special versions:
On request and for large orders, the series 146 valves can be fitted with quick connect fittings such as Prestolock cartridge.
Coil 24 V 115V 220-230 V 240 V 12 V 24 V

Coil type [ ]

Power [ W]

Insul. class

AC( ~ ) D.C( =)
ZB 09 ZB 12 9 12 F
ZB 14 ZB 16 14 16 F
YB 09 YB 12 9 12 F
YB 14 YB 16 14 16 F
ZH 14 ZH 16 14 16 H

ZB 09
••••
ZB 12
••
ZB 14
••••
ZB 16
•
YB 09
•••
YB 12
••
YB 14
••
YB 16
•
ZH 14
•••
ZH 16
•

Note: Valve supplied with body (PM) and coil separate. Connector to be ordered separately.
**General description:**

PARKER series 151 solenoid valves have direct action and do not require a minimum differential pressure to operate. They are used for general applications with media such as water, air, light oils (2° E) and inert gases, provided they are compatible with the construction materials used. Series 151 valves are normally open with connections at 90° on valve body (inlet) and enclosing tube (outlet).

**Temperatures:**

The working temperature for media is:
- maximum +140°C
- minimum -10°C

The maximum ambient temperature is:
- with class "F" coils +50°C
- with class "H" coils +80°C

**Application:**

Series 151 solenoid valves are ideal for the automatic control of media in the following applications:
- Air compressors;
- Pneumatic systems;
- Textile machines;
- Water treatment plants;
- Diesel oil burners.

For air applications the maximum differential pressure (MOPD) may be increased by 25%.

**Coils:**

For series 151 valves class "F" coils (155°C), encapsulated in thermoplastic containing 30% glass fiber (types: ZB, YB), and class "H" coils (180°C), encapsulated in thermoplastic containing 40% glass fiber (type: ZH), are available. All the coils are for continuous service, 100% E.D.

The rated voltage tolerance is:
- ±10% for A.C. power supply and +10% -5% for D.C.

The "Z" and "Y" coils can be used on a.c. with frequency of 50/60Hz (dualfrequency). The "Z" coils have Faston terminals for DIN 43650A connectors with protection to IP65.

The "Y" coil has terminals with 2 x 1,000 mm cables with protection to IP67.

**Installation:**

The valves can be mounted in any position without jeopardising their operation. It is however advisable to install them with the coil in a vertical position above the body.

**Approvals:**

- **Coil certification:**
  - ZB 09 24V/50-60Hz, 115V/50-60Hz
  - 220-230V/50-60Hz
  - ZB 12 12V DC, 24V DC
  - YB 09 220-230V/50-60Hz

- **For the coils:**
  - ZB 09 220-230V/50-60Hz, 240V/50-60Hz
  - YB 09 220-230V/50-60Hz

- **UL Recognized Comp. Mark for coils:**
  - ZB 09 24V/60Hz, 110-120V/60Hz, 208-240V/60Hz
  - YB 09 24V/60Hz, 110-120V/60Hz, 208-240V/60Hz
Coil type | Power [W] | Insulat. class
---|---|---
ZB 09 | 9 | F
YB 09 | 9 | F
ZH 14 | 14 | H

Note: Valve supplied with body (PM) and coil separate. Connector to be ordered separately.

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### MATERIALS
- **Valve body:** OT58 UNI 5705 brass stamping
- **Seals:** Viton
- **Enclosing tube:** AISI 304 stainless steel
- **Plunger:** AISI 430 F stainless steel
- **Spring:** AISI 302 stainless steel
- **Shading ring:** Copper

### FITTINGS
- **For:** water - air - light oils (2°C) - inert gases

### DIMENSIONS

### ORDER CODE

Note: Valve supplied with body (PM) and coil separate. Connector to be ordered separately.

Parker Hannifin S.p.A.
via E. Fermi, 5
20060 Gessate (Milano) - Italy

Climate & Industrial Controls
General description:
PARKER series 168.1 solenoid valves are diaphragm pilot operated and therefore require a minimum differential pressure to operate. They are used for air applications, even with high operating frequencies. The diaphragm is made of plastic with a fabric reinforcement. Series 168.1 valves are normally closed. On request and for large orders, all the models can be supplied with manual control (MC).

Temperatures:
The working temperature for media is:
- maximum +90°C
- minimum -10°C
The maximum ambient temperature is:
- with class “F” coils +50°C
- with class “H” coils +80°C

Application:
Series 168.1 solenoid valves are ideal for air applications where high flow rates with high operating frequencies are required. Some typical application examples are:
- Air compressors;
- Dust removal systems;
- Systems of distribution by compressed air;
- Pneumatic mail;
- Suction systems.

Coils:
For series 168.1 valves class “F” coils (155°C) are available encapsulated in thermoplastic containing 30% glass fiber (types: ZB, YB). Class “H” coils (180°C) are also available encapsulated in thermoplastic containing 40% glass fiber (type: ZH). All the coils are for continuous service, 100% E.D. The rated voltage tolerance is:
- ±10% for A.C., power supply and +10% -5% for D.C.
The “Z” and “Y” coils can be used on a.c. with frequency of 50/60Hz (dualfrequency). The “Z” coils have Faston terminals for DIN 43650A connectors with protection to IP65. The “Y” coil has terminals with 2 x 1,000 mm cables with protection to IP67.

Installation:
The valves can be mounted in any position without jeopardising their operation. It is however advisable to install them with the coil in a vertical position above the body.

Approvals:

Series 168.1

Climate & Industrial Controls
**Coil type** | **Power** | **Insulation class**
---|---|---
ZB 09 | 9 W | F
ZB 12 | 12 W | F
YB 09 | 9 W | F
YB 12 | 12 W | F
ZH 14 | 14 W | H
ZH 16 | 16 W | H

**SPECIFICATION**

<table>
<thead>
<tr>
<th>Fittings Ø G</th>
<th>Valve type</th>
<th>Nominal orifice Ø</th>
<th>Flow coefficient Kv</th>
<th>Minimum pressure</th>
<th>Max differential pressure (M.O.P.D.)</th>
<th>Coil type</th>
<th>Weight</th>
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<tr>
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<td>in DC (=) [bar]</td>
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**DIMENSIONS**

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</table>

**ORDER CODE**

- **VALVE BODY**
  - **FITTINGS**
    - I: 3/8"
    - A: 1/2"
    - C: 3/4"
    - D: 1"
- **SEAL**
  - N: NBR (Buna N)

**Note:** Valve supplied with body (PM) and coil separate. Connector to be ordered separately.
### General description:

PARKER series **169.1** solenoid valves are diaphragm pilot operated and therefore require a minimum differential pressure to operate. They are used for **air** applications, including high operating frequencies. The diaphragm is made of plastic with a fabric reinforcement.

The valves of the series **169.1** are **normally open**.

### Temperatures:

The working temperature for media is:
- maximum: +90°C
- minimum: -10°C

The maximum ambient temperature is:
- with class **F** coils: +50°C
- with class **H** coils: +80°C

### Applications:

Series **169.1** solenoid valves are ideal for **air** applications where high flow rates with high operating frequencies are required. Some typical application examples are:
- Air compressors;
- Dust removal systems;
- Compressed air distribution systems;
- Pneumatic mail;
- Suction systems.

### Coils:

For series **169.1** valves class **“F”** coils (155°C) are available encapsulated in thermoplastic containing 30% glass fiber (types: ZB, YB).

Class **“H”** coils (180°C) are also available encapsulated in thermoplastic containing 40% glass fiber (type: ZH).

All the coils are for continuous service, 100% E.D.

The rated voltage tolerance is:
- ±10% for AC power supply and
- +10% -5% for D.C.

The “Z” and “Y” coils can be used on a.c. with frequency of 50/60Hz (dualfrequency).

The “Z” coils have Faston terminals for DIN 43650A connectors with protection to IP65.

The “Y” coil has terminals with 2 x 1,000 mm cables with protection to IP67.

### Installation:

The valves can be mounted in any position without jeopardising their operation. It is however advisable to install them with the coil in a vertical position above the body.

### Approvals:

- **Coil certification:**
  - ZB 14 24V/50-60Hz, 115V/50-60Hz
  - ZB 16 220-230V/50-60Hz
  - ZB 16 24V DC
  - YB 14 only for 220V/50-60Hz
  - YB 16 24V DC

- **For the coil:**
  - ZB 14 220-230V/50-60Hz
### ELECTRICAL FEATURES

<table>
<thead>
<tr>
<th>Coil type</th>
<th>Power [W]</th>
<th>Insulat. class</th>
</tr>
</thead>
<tbody>
<tr>
<td>A.C. (~)</td>
<td>D.C. (=)</td>
<td>A.C. (~)</td>
</tr>
<tr>
<td>ZB 14</td>
<td>ZB 16</td>
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<td>YB 14</td>
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<tr>
<td>ZH 14</td>
<td>ZH 16</td>
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### MATERIALS

- **Valve body:** OT58 UNI 5705 brass stamping
- **Seals:** NBR (Buna N)
- **Enclosing tube:** AISI 304 stainless steel
- **Plunger:** AISI 430 F stainless steel
- **Spring:** AISI 302 stainless steel
- **Shading ring:** Copper

### SPECIFICATION

<table>
<thead>
<tr>
<th>Fittings Ø G</th>
<th>Valve type</th>
<th>Nominal orifice Ø</th>
<th>Flow coefficient Kv</th>
<th>Minimum pressure</th>
<th>Max differential pressure (M.O.P.D.)</th>
<th>Coil type</th>
<th>Weight [Kg]</th>
<th>Notes</th>
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**Note:** 1) NP (nominal pressure): 25 bar.

### DIMENSIONS

- **Fittings Ø G**
- **A**
- **B**
- **C**
- **D**

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<thead>
<tr>
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<th>[mm]</th>
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### ORDER CODE

- **PM 169.1**
- **N**
- **SEAL**
  - N: NBR (Buna N)

**Note:** Valve supplied with body (PM) and coil separate. Connector to be ordered separately.
General description:
PARKER series 173 solenoid valves are diaphragm pilot operated and therefore require a minimum differential pressure to operate. They are used for general applications with media such as water, air, light oils (2°E) and inert gases, provided they are compatible with the construction materials used. Series 173 valves are normally closed. They are compact, with high flow rates and low power consumption.

Temperatures:
The working temperature for media is:
- maximum +90°C
- minimum -10°C
The maximum ambient temperature is:
- +50°C

Application:
Series 173 solenoid valves are ideal for the automatic control of media in a wide range of applications such as:
- Computerised controls;
- Cooling systems for machine tools;
- Dry-cleaning machines;
- Autoclaves;
- Compressed air systems;
- Car wash systems;
- Hygiene-health systems;
- Tanning industry.

Coils:
Series 173 valves are available with class “F” coils (155°C) with thermoplastic insulation, reinforced with 30% glassofibre. All the coils are for continuous service, 100% E.D.
The rated voltage tolerance is:
- ±10% for A.C. power supply and
- +10% -5% for D.C.
The “W” coil can be used on a.c. with frequency of 50/60Hz (dualfrequency) and has Faston terminals for DIN 43650B connectors with protection to IP65.

Installation:
The valves can be mounted in any position without jeopardising their operation. It is however advisable to install them with the coil in a vertical position above the body.

Approvals:
- Coil certification:
  WB 4,5 115V/50-60Hz, 220-230V/50-60Hz
- For the coil:
  WB 4,5 115V/50-60Hz, 220-230V/50-60Hz
- UL Recognized Comp. Mark for the coil:
  WB 4,5 24V/60Hz, 110-120V/60Hz, 208-240V/60Hz
for: water - air - light oils (2°E) - inert gases

MATERIALS
- Valve body: OT58 UNI 5705 brass stamping
- Seals: NBR (Buna N)
- Enclosing tube: OT58 UNI 5705 brass stamping
- Plunger: AISI 430 F stainless steel
- Spring: AISI 302 stainless steel
- Shading ring: Copper

ELECTRICAL FEATURES
- Coil type: [ ]
- Power [ W ]
- Insulat. class

<table>
<thead>
<tr>
<th>A.C. (~ )</th>
<th>D.C. ( = )</th>
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<th>D.C. ( = )</th>
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SPECIFICATION

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<th>Flow coefficient Kv</th>
<th>Minimum pressure</th>
<th>Max differential pressure (M.O.P.D.)</th>
<th>Coil type</th>
<th>Weight [ Kg ]</th>
<th>Notes</th>
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<td>[m3/h]</td>
<td>[bar]</td>
<td>in A.C. (~ ) [bar] in D.C. ( = ) [bar]</td>
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Note: 1) NP (nominal pressure): 25 bar.

DIMENSIONS

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<td>36</td>
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</tbody>
</table>

ORDER CODE

PM 173 N

VALVE BODY

FITTINGS
- I 3/8"
- A 1/2"

SEAL
- N NBR (Buna N)

Note: Valve supplied with body (PM) and coil separate. Connector to be ordered separately.
Solenoid Valves for Automation

2/2 way - Normally Closed - Direct operated

General description:
PARKER series 174 solenoid valves have direct action and therefore do not require a minimum differential pressure to operate. They are used for general applications, when small overall dimensions and low consumption are required, with media such as water, air, light oils (2°E) and inert gases, provided they are compatible with the construction materials used. Series 174 valves are normally closed. For large orders, valves are available on request with manual operator.

Temperatures:
The working temperature for media is:
- maximum +140°C
- minimum -10°C
The maximum ambient temperature is:
+50°C

Application:
Series 174 solenoid valves are ideal for the automatic control of media with low flow rates.
Some typical application examples:
- Espresso coffee machines;
- Sterilisers;
- Compressed air systems;
- Welding machines;
- Wood-working machines;
- Electrical medical equipment;
- Shoe-manufacturing machines.

Coils:
For series 174 valves the WB class “F” coil (155°C), encapsulated in thermoplastic containing 30% glass fiber, is used. The coil is for continuous service, 100% E.D. The rated voltage tolerance is:
±10% for A.C. power supply and
+10% -5% for D.C.
The “W” coil can be used on a.c. with frequency of 50/60Hz (dualfrequency) and has Faston terminals for DIN 43650B connectors with protection to IP65.

Installation:
The valves can be mounted in any position without jeopardising their operation. It is however advisable to install them with the coil in a vertical position above the body. The series 174 valves with the code .4 are fitted with M4 x 7 mounting holes on the valve body with centre distance 18 x 18 mm.

Approvals:
- Coil certification:
  WB 4,5 115V/50-60Hz, 220-230V/50-60Hz
- For the coil:
  WB 4,5 115V/50-60Hz, 220-230V/50-60Hz
- UL Recognized Comp. Mark for the coil:
  WB 4,5 24V/60Hz, 110-120V/60Hz, 208-240V/60Hz

Special versions:
On request and for large orders, the series 174 can be fitted with quick action coupling fittings such as PrestoLock cartridge.

Series 174
**MATERIALS**

- Valve body: OT58 UNI 5705 brass stamping
- Seals: Viton
- Enclosing tube: OT58 UNI 5705 brass stamping
- Plunger: AISI 430 F stainless steel
- Spring: AISI 302 stainless steel
- Shading ring: Copper

---

**ELECTRICAL FEATURES**

<table>
<thead>
<tr>
<th>Coil type</th>
<th>Power [W]</th>
<th>Insulat. class</th>
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</thead>
<tbody>
<tr>
<td>A.C. (~)</td>
<td>D.C. (=)</td>
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**Fittings**

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<tr>
<th>Fittings Ø G</th>
<th>Valve type</th>
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<th>Minimum pressure</th>
<th>Max differential pressure (M.O.P.D.)</th>
<th>Coil type</th>
<th>Weight [ Kg ]</th>
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<tbody>
<tr>
<td></td>
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<td></td>
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<td></td>
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---

**DIMENSIONS**

Note: 1) NP (nominal pressure): 25 bar.

**ORDER CODE**

- COMPLETE VALVE
- FITTINGS
  - A: 1/8
  - B: 1/8
  - F: 1/8
  - 4 F: 1/8
  - 4 W: 1/4
- SEAL
  - V: Viton

---

**For: water - air - light oils (2°C) - inert gases**

Note: Valve supplied with coil in a multipack. Connector to be ordered separately.
Solenoid Valves for Automation

3/2 way - Normally Closed - Direct operated

General description:
PARKER series 179 solenoid valves have direct action and are used in systems for pressurisation and automatic discharge of media when small overall dimensions and low power consumption are required. They are suitable for general applications with media such as water, air, light oils (2°E) and inert gases, provided they are compatible with the construction materials used. Series 179 valves are normally closed. For large orders, valves are available on request with manual operator.

Temperatures:
The working temperature for media is:
- maximum +140°C
- minimum -10°C
The maximum ambient temperature is:
+50°C

Application:
Series 179 solenoid valves are ideal for automatic control of media where low flow rates are required. Some typical application examples:
- Exhaust gas analysers;
- Sterilisers;
- Scientific equipment;
- Electrical medical equipment;
- Automatic dispensers;
- Pilot valves.

Coils:
For series 179 valves the WB class “F” coil (155°C), encapsulated in thermoplastic containing 30% glass fiber, is used. The coil is for continuous service, 100% E.D. The rated voltage tolerance is:
±10% for A.C. power supply and
+10% -5% for D.C.
The “W” coil can be used on a.c. with frequency of 50/60Hz (dualfrequency) and has Faston terminals for DIN 43650B connector with protection to IP65.

Installation:
The valves can be mounted in any position without jeopardising their operation. It is however advisable to install them with the coil in a vertical position above the body.

Approvals:
- Coil certification: WB 4,5 115V/50-60Hz, 220-230V/50-60Hz
- For the coil: WB 4,5 115V/50-60Hz, 220-230V/50-60Hz
- UL Recognized Comp. Mark per la bobina: WB 4,5 24V/60Hz, 110-120V/60Hz, 208-240V/60Hz

Special versions
On request and for large orders, the series 179 valves can be fitted with quick action coupling fittings such as Prestolock cartridge.
**MATERIALS**

- Valve body: OT58 UNI 5705 brass stamping
- Seals: Viton
- Enclosing tube: OT58 UNI 5705 brass stamping
- Plunger: AISI 430 F stainless steel
- Spring: AISI 302 stainless steel
- Shading ring: Copper

**ELECTRICAL FEATURES**

<table>
<thead>
<tr>
<th>Coil type</th>
<th>Power [W]</th>
<th>Insulat. class</th>
</tr>
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<tbody>
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<td>A.C. (~)</td>
<td>D.C. (=)</td>
<td>A.C. (~)</td>
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**FITTINGS**

- for: water - air - light oils (2°C) - inert gases

**COMPLETE VALVE SERIES**

- Valve supplied with coil in a multipack.
- Connector to be ordered separately.

**SPECIFICATION**

<table>
<thead>
<tr>
<th>Fittings Ø G</th>
<th>Valve type</th>
<th>Nominal orifice Ø</th>
<th>Flow coefficient Kv</th>
<th>Minimum pressure</th>
<th>Max differential pressure (M.O.D.)</th>
<th>Coil type</th>
<th>Weight [Kg]</th>
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<td>1/8</td>
<td>179 I</td>
<td>1,2 (1,6)*</td>
<td>0,04</td>
<td>0</td>
<td>10</td>
<td>10</td>
<td>W</td>
<td>0,14</td>
</tr>
<tr>
<td>1/8</td>
<td>179 A</td>
<td>1,5 (1,6)*</td>
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<td>0</td>
<td>7</td>
<td>7</td>
<td>W</td>
<td>0,14</td>
</tr>
</tbody>
</table>

Note: 1) NP (nominal pressure): 25 bar. 2) * Discharge diameter.

**DIMENSIONS**

<table>
<thead>
<tr>
<th>Fittings Ø G</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
</tr>
</thead>
<tbody>
<tr>
<td>[“”]</td>
<td>[mm]</td>
<td>[mm]</td>
<td>[mm]</td>
<td>[mm]</td>
</tr>
<tr>
<td>1/8</td>
<td>30</td>
<td>56</td>
<td>14</td>
<td>35</td>
</tr>
</tbody>
</table>

**ORDER CODE**

- Valve supplied with coil in a multipack.
- Connector to be ordered separately.
Solenoid Valves for Steam and High Temperatures
Solenoid valves for steam and high temperatures

Contents

<table>
<thead>
<tr>
<th>Series</th>
<th>Type</th>
<th>Pages</th>
</tr>
</thead>
<tbody>
<tr>
<td>126</td>
<td>NC</td>
<td>74-75</td>
</tr>
<tr>
<td>128</td>
<td>NC</td>
<td>76-77</td>
</tr>
<tr>
<td>133...H</td>
<td>NC</td>
<td>78-79</td>
</tr>
<tr>
<td>135</td>
<td>NC</td>
<td>80-81</td>
</tr>
<tr>
<td>140.2</td>
<td>NC</td>
<td>82-83</td>
</tr>
<tr>
<td>156.2</td>
<td>NC</td>
<td>84-85</td>
</tr>
<tr>
<td>158</td>
<td>NC</td>
<td>86-87</td>
</tr>
<tr>
<td>161.4</td>
<td>NC</td>
<td>88-89</td>
</tr>
</tbody>
</table>

NC = normally closed
The numbers in [bar] in the table indicate **the M.O.P.D. values (maximum operating differential pressure)**. The columns refer to the type of fittings and the type of power supply, the rows refer to the valve series.
General description:
PARKER series 126 solenoid valves are direct operated and do not require a minimum differential pressure to operate. They are used with steam and superheated water. Series 126 valves are normally closed.

Temperatures:
The working temperature for media is:
+140°C for models with an ethylene propylene seal (EPDM) and +180°C for the version with a Teflon seal (PTFE).
The minimum temperature of media is -10°C
The maximum ambient temperature is:
with class “F” coils +50°C
with class “H” coils +80°C

Application:
Series 126 solenoid valves are ideal for automatic control of steam and superheated water in applications such as:
• Steam generators;
• Sterilisers;
• Autoclaves;
• Espresso coffee machines;
• Drink dispensers;
• Furnaces;
• Ironing boards and presses.

Coils:
For series 126 valves class “F” coils (155°C) are available encapsulated in thermoplastic containing 30% glass fiber (types ZB, YB) and class “H” coils (180°C) are available encapsulated in thermoplastic containing 40% of glass fiber (type ZH).
All the coils are for continuous service, 100% E.D.
The rated voltage tolerance is:
±10% for A.C. power supply and +10% -5% for D.C.
The “Z” and “Y” coils can be used on a.c. with a frequency of 50/60 Hz (dualfrequency).
The “Z” coils have Faston terminals for DIN 43650A connectors with protection to IP65.
The “Y” coil has terminals with 2 x 1,000 mm cables with protection to IP67.

Installation:
The valves can be mounted in any position without jeopardising their operation. It is however advisable to install them with the coil in a vertical position above the body.
The valve body has a M4 x 8 mounting hole.

Approvals:
• Coil certification:
  ZB 09 24V/50-60Hz, 115V/50-60Hz, 220-230V/50-60Hz, 240V/50-60Hz
  ZB 12 12V DC, 24V DC
  YB 09 220-230V/50-60Hz
• For the coils:
  ZB 09 220-230V/50-60Hz, 240V/50-60Hz
  YB 09 220-230V/50-60Hz
• UL Recognized Comp. Mark for the coils:
  ZB 09 24V/60Hz, 110-120V/60Hz, 208-240V/60Hz
  YB 09 24V/60Hz, 110-120V/60Hz, 208-240V/60Hz
Note: Valve supplied with body (PM) and coil separate. Connectors to be ordered separately.

Note: 1) Maximum pressure for steam 4 bar (140°C). 2) NP (nominal pressure): 25 bar.
Solenoid valves for steam and high temperatures

3/2 way - Normally Closed - Direct Operated

**General description:**
PARKER series 128 solenoid valves are direct operated and do not require a minimum differential pressure to operate. They are used for superheated water. Series 128 valves are normally closed. The inlet and outlet fittings are situated on the mounting flange and enclosing tube.

**Temperatures:**
The working temperature for media is:
- maximum +140°C
- minimum -30°C

The maximum ambient temperature is:
- with class “F” coils -50°C
- with class “H” coils -80°C

**Application:**
Series 128 solenoid valves are ideal for automatic control of superheated water for dispensing espresso coffee. Models are available with various seals and fitting configurations for maximum flexibility of application and installation. Some typical application examples:
- Espresso coffee machines, for bars;
- Espresso coffee machines, for the home;
- Automatic dispensers.

**Coils:**
For series 128 valves class “F” coils (155°C) are available encapsulated in thermoplastic containing 30% glass fiber (ZB, YB types). Class “H” coils (180°C) are available encapsulated in thermoplastic containing 40% of glass fiber (ZH type). All the coils are for continuous service, 100% E.D. The rated voltage tolerance is:
- ±10% for A.C. power supply and +10% -5% for D.C.

The “Z” and “Y” coils can be used on a.c. with a frequency of 50/60 Hz (dual-frequency). The “Z” coils have Faston terminals for DIN 43650A connectors with protection to IP65. The “Y” coils have terminals with 2 x 1,000 mm cables with protection to IP67.

**Installation:**
The valves can be mounted in any position without jeopardising their operation. It is however advisable to install them with the coil in a vertical position above the body.

**Approvals:**
- **Coil certification:**
  - ZB 09 24V/50-60Hz, 115V/50-60Hz, 220-230V/50-60Hz, 240V/50-60Hz
  - ZB 12 12VDC, 24VDC
  - YB 09 220-230V/50-60Hz

- **For the coils:**
  - ZB 09 220-230V/50-60Hz, 240V/50-60Hz
  - YB 09 220-230V/50-60Hz

- **UL Recognized Comp. Mark**
  - For the coils:
  - ZB 09 24V/60Hz, 110-120V/60Hz, 208-240V/60Hz
  - YB 09 24V/60Hz, 110-120V/60Hz, 208-240V/60Hz
Coil type | Power [W] | Insul. class
---|---|---
ZB 09 | 9 | F
YB 09 | 9 | F
ZH 14 | 14 | H

Coil type 24 V / 60 Hz 110-120 V / 60 Hz 208-240 V / 60 Hz

**Fittings Valve Nominal Flow Minimum Max differential Coil Weight NotesØ G type orifice Ø coefficient Kv pressure pressure (M.O.P.D.) type**

<table>
<thead>
<tr>
<th>[&quot;&quot;]</th>
<th>[ ]</th>
<th>[mm]</th>
<th>[m³/h]</th>
<th>[bar]</th>
<th>[bar]</th>
<th>[bar]</th>
<th>[ ]</th>
<th>[ ]</th>
<th>[Kg]</th>
<th>[ ]</th>
</tr>
</thead>
<tbody>
<tr>
<td>-</td>
<td>128 I</td>
<td>1.3 - (2.5)*</td>
<td>0.070</td>
<td>0</td>
<td>10</td>
<td>10</td>
<td>Z - Y</td>
<td>0.310</td>
<td>1 - 2</td>
<td></td>
</tr>
<tr>
<td>-</td>
<td>128 G*</td>
<td>1.3 - (2.5)*</td>
<td>0.070</td>
<td>0</td>
<td>10</td>
<td>10</td>
<td>Z - Y</td>
<td>0.310</td>
<td>1 - 2</td>
<td></td>
</tr>
<tr>
<td>-</td>
<td>128 I-UL</td>
<td>1.3 - (2.5)*</td>
<td>0.070</td>
<td>0</td>
<td>10</td>
<td>10</td>
<td>Z - UL</td>
<td>0.310</td>
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<tr>
<td>-</td>
<td>128 G-UL</td>
<td>1.3 - (2.5)*</td>
<td>0.070</td>
<td>0</td>
<td>10</td>
<td>10</td>
<td>Z - UL</td>
<td>0.310</td>
<td>1 - 2</td>
<td></td>
</tr>
</tbody>
</table>

**SPECIFICATION**

Note: 1) NP (nominal pressure): 25 bar.
2) Maximum static pressure 14.5 bar (for Viton sealing, maximum static pressure: 12 bar). (+) Diameter of the discharge.

**DIMENSIONS**

**ORDER CODE**

Note: Valves supplied with coils in a multipack. Connectors to be ordered separately.

Parker Hannifin S.p.A.
via E. Fermi, 5
20060 Gessate (Milano) - Italy
**General description:**

PARKER series 133H solenoid valves are diaphragm pilot operated and require a minimum differential pressure to operate. They are used for steam and superheated water where high flow rates are required. Series 133H valves are normally closed.

**Temperatures:**

The working temperature for media is:
- **maximum**: +140°C
- **minimum**: -10°C

The maximum ambient temperature is:
- with coils in class “F” - +50°C
- with coils in class “H” - +80°C

**Application:**

Series 133 H solenoid valves are ideal for the automatic control of high temperature water and steam.

Some typical application examples:
- Steam generators;
- Sterilisation systems;
- Industrial washing machines;
- Washing systems;
- Furnaces;
- Boiling systems;
- Autoclaves.

**Coils:**

For series 133H valves class “F” coils (155°C) are available encapsulated in thermoplastic containing 30% glass fiber (types ZB, YB) and class “H” coils (180°C) are available encapsulated in thermoplastic containing 40% of glass fiber (ZH type).

All the coils are for continuous service, 100% E.D.

The rated voltage tolerance is:
- ±10% for A.C. power supply and
- +10% -5% for D.C.

The “Z” and “Y” coils can be used on a.c. with a frequency of 50/60 Hz (dualfrequency).

The “Z” coils have Faston terminals for DIN 43650A connectors with protection to IP65.

The “Y” coil has terminals with 2 x 1,000 mm cables with protection to IP67.

**Installation:**

The valves can be mounted in any position without jeopardising their operation. It is however advisable to install them with the coil in a vertical position above the body.

**Approvals:**

- **Coil certification:**
  - ZB 09: 24V/50-60Hz, 115V/50-60Hz, 220-230V/50-60Hz, 240V/50-60Hz
  - ZB 12: 12V DC, 24V DC
  - YB 09: 220-230V/50-60Hz

- **For the coils:**
  - ZB 09: 220-230V/50-60Hz, 240V/50-60Hz
  - YB 09: 220-230V/50-60Hz

- **UL Recognized Comp. Mark for the coils:**
  - ZB 09: 24V/60Hz, 110-120V/60Hz, 208-240V/60Hz
  - YB 09: 24V/60Hz, 110-120V/60Hz, 208-240V/60Hz
Coil 24 V 115V 220-230 V 240 V 12 V 24 V

**Type:** 50/60 Hz 50/60 Hz 50/60 Hz 50/60 Hz d.c. d.c.

**ZB 09**

**YB 09**

**ZH 14**

**ZH 16**

**Note:** Valve supplied with body (PM) and coil separate. Connectors to be ordered separately.

**Fittings Ø G**

<table>
<thead>
<tr>
<th>Fittings Ø G</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
</tr>
</thead>
<tbody>
<tr>
<td>[&quot;&quot;&quot;&quot;&quot;&quot;&quot;&quot;]</td>
<td>[&quot;&quot;&quot;&quot;&quot;&quot;&quot;&quot;]</td>
<td>[&quot;&quot;&quot;&quot;&quot;&quot;&quot;&quot;]</td>
<td>[&quot;&quot;&quot;&quot;&quot;&quot;&quot;&quot;]</td>
<td>[&quot;&quot;&quot;&quot;&quot;&quot;&quot;&quot;]</td>
</tr>
<tr>
<td>3/8</td>
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<td>3/4</td>
<td>100</td>
<td>100.0</td>
<td>65</td>
<td>37.5</td>
</tr>
<tr>
<td>1</td>
<td>104</td>
<td>105.5</td>
<td>65</td>
<td>37.5</td>
</tr>
<tr>
<td>1 1/4</td>
<td>145</td>
<td>127.0</td>
<td>102</td>
<td>37.5</td>
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<tr>
<td>1 1/2</td>
<td>145</td>
<td>127.0</td>
<td>102</td>
<td>37.5</td>
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<tr>
<td>2</td>
<td>173</td>
<td>141.0</td>
<td>118</td>
<td>37.5</td>
</tr>
</tbody>
</table>

** DIMENSIONS **

**SPECIFICATION**

- **Valve body:** OT58 UNI 5705 brass stamping
- **Seals:** EPDM
- **Enclosing tube:** AISI 304 stainless steel
- **Plunger:** AISI 430F stainless steel
- **Spring:** AISI 302 stainless steel
- **Shading ring:** Copper

**Valve body:**
- **Seals:** EPDM
- **Enclosing tube:** AISI 304 stainless steel
- **Plunger:** AISI 430F stainless steel
- **Spring:** AISI 302 stainless steel
- **Shading ring:** Copper

**Electrical Features**

<table>
<thead>
<tr>
<th>Coil type</th>
<th>Power [W]</th>
<th>Insulat. class</th>
</tr>
</thead>
<tbody>
<tr>
<td>AC( ~ )</td>
<td>DC( =)</td>
<td>AC( ~ ) DC( =)</td>
</tr>
<tr>
<td>ZB 09</td>
<td>ZB 12</td>
<td>9</td>
</tr>
<tr>
<td>YB 09</td>
<td>YB 12</td>
<td>9</td>
</tr>
<tr>
<td>ZH 14</td>
<td>ZH 16</td>
<td>14</td>
</tr>
</tbody>
</table>

**Fittings**

- **Valve body:** OT58 UNI 5705 brass stamping
- **Seals:** EPDM
- **Enclosing tube:** AISI 304 stainless steel
- **Plunger:** AISI 430F stainless steel
- **Spring:** AISI 302 stainless steel
- **Shading ring:** Copper

**Note:**
1) NP (nominal pressure): 25 bar.
2) Maximum pressure for steam: 4 bar (140°C).
Solenoid valves for steam and high temperatures

2/2 way - Normally Closed - Diaphragm pilot operated

Fittings: G = 3/8” - 1”

### General description:

PARKER series 135 solenoid valves are diaphragm pilot operated and therefore require a minimum differential pressure to operate. They are used for **steam and superheated water**.

Electrical components are insulated from the moving parts in contact with the media and therefore series 135 valves are particularly suitable for demanding applications. Series 135 valves are normally closed.

### Temperatures:

- **Coil energised - open**
  - maximum: +180°C
  - minimum: -30°C

- **Coil de-energised - closed**
  - The maximum ambient temperature is: +80°C

### Application:

Series 135 solenoid valves are ideal for automatic control of steam and superheated water in a wide range of applications such as those listed below.

- Dry-cleaning systems;
- Steam generators;
- Laundry systems;
- Sterilisers;
- Autoclaves;
- Plant food industry;
- Steam presses;
- Drying systems;
- Catering systems.

### Installation:

The valves can be mounted in any position without jeopardising their operation. It is however advisable to install them with the coil in a vertical position above the body.

### Coils:

For series 135 valves class “F” coils (155°C) are available encapsulated in thermoplastic containing 40% of glass fiber (types ZH).

All the coils are for continuous service, 100% E.D.

The rated voltage tolerance is:
- ±10% for A.C. power supply and +10% -5% for D.C.

The “Z” coil can be used on a.c. with a frequency of 50/60 Hz (dual frequency) and has Faston terminals for DIN 43650A connectors with protection to IP65.
### Materials
- **Valve body:** OT58 UNI 5705 brass stamping
- **Seals:** PTFE (Teflon)
- **Enclosing tube:** AISI 304 stainless steel
- **Plunger:** AISI 430F stainless steel
- **Spring:** AISI 302 stainless steel
- **Shading ring:** Copper

### Electrical Features
- **Coil type:**
  - ZH
dc
- **Power [W]:**
  - 14
- **Insulation class:**
  - H

### Specification
#### Fittings
<table>
<thead>
<tr>
<th>Ø G</th>
<th>Valve type</th>
<th>Nominal orifice Ø</th>
<th>Flow coefficient Kv</th>
<th>Minimum pressure</th>
<th>Max differential pressure (M.Q.P.D.)</th>
<th>Coil type</th>
<th>Weight</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>3/8</td>
<td>135 I</td>
<td>16</td>
<td>4.7</td>
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<td>in AC(~) 10 in DC(=) 10 Z</td>
<td>1.150</td>
<td>1</td>
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<tr>
<td>1/2</td>
<td>135 A</td>
<td>16</td>
<td>4.7</td>
<td>0.5</td>
<td>in AC(~) 10 in DC(=) 10 Z</td>
<td>1.000</td>
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<tr>
<td>3/4</td>
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<tr>
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<td>135 D</td>
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<td>0.5</td>
<td>in AC(~) 10 in DC(=) 10 Z</td>
<td>3.200</td>
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</tbody>
</table>

#### Notes:
1. NP (nominal pressure): 25 bar.

### Order Code
- **PM**
- **135**
- **T**

### Climate & Industrial Controls
- **Parker Hannifin S.p.A.**
- **via E. Fermi, 5**
- **20060 Gessate (Milano) - Italy**
Solendoid valves for steam and high temperatures
2/2 way - Normally Closed - Direct Operated
Fittings: G = 1/8"

Series 140.2

General description:
PARKER series 140.2 solenoid valves are direct operated and do not require a minimum differential pressure to operate. They are used for general applications with media such as steam and superheated water. Series 140.2 valves are normally closed.

Temperatures:
The working temperature for media is:
- maximum +140°C
- minimum -30°C
The maximum ambient temperature is:
- with class "F" coils +50°C
- with class "H" coils +80°C

Application:
Series 140.2 solenoid valves are particularly suitable for small flow rates of steam or superheated water. Some typical application examples:
- Espresso coffee machines;
- Automatic dispensers;
- Sterilisers;
- Autoclaves.

Coils:
For series 140.2 valves class "F" coils (155°C) are available encapsulated in thermoplastic containing 30% glass fiber (types: ZB, YB) and class "H" coils (180°C) series are available encapsulated in thermoplastic material containing 40% of glass fiber (type ZH).
All the coils are for continuous service, 100% E.D.
The rated voltage tolerance is:
- ±10% for A.C. power supply and +10% -5% for D.C.
The “Z” and “Y” coils can be used on a.c. with a frequency of 50/60 Hz (dualfrequency).
The “Z” coils have Faston terminals for DIN 43650A connectors with protection to IP65. The “Y” coil has terminals with 2 x 1,000 mm cables with protection to IP67.

Installation:
The valves can be mounted in any position without jeopardising their operation. It is however advisable to install them with the coil in a vertical position above the body.

Approvals:
- Coil certification:
  ZB 09 24V/50-60Hz, 115V/50-60Hz, 220-230V/50-60Hz, 240V/50-60Hz
  YB 09 220-230V/50-60Hz
- For the coils:
  ZB 09 220-230V/50-60Hz, 240V/50-60Hz
  YB 09 220-230V/50-60Hz
- UL Recognized Comp. Mark for the coils:
  ZB 09 24V/60Hz, 110-120V/60Hz, 208-240V/60Hz
  YB 09 24V/60Hz, 110-120V/60Hz, 208-240V/60Hz

Parker Hannifin S.p.A.
via E. Fermi, 5
20060 Gessate (Milano) - Italy
**MATERIALS**
- Valve body: OT58 UNI 5705 brass stamping
- Seals: Ruby - EPDM
- Enclosing tube: AISI 304 stainless steel
- Plunger: AISI 430F stainless steel
- Spring: AISI 302 stainless steel
- Shading ring: Copper

**ELECTRICAL FEATURES**

<table>
<thead>
<tr>
<th>Coil type</th>
<th>Power [W]</th>
<th>Insul. class</th>
</tr>
</thead>
<tbody>
<tr>
<td>AC( ~)</td>
<td>D.C( =)</td>
<td>AC( ~)</td>
</tr>
<tr>
<td>ZB 09</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>YB 09</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>ZH 14</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

**Note:** Valve supplied with body (PM) and coil separate. Connectors to be ordered separately.

**SPECIFICATION**

<table>
<thead>
<tr>
<th>Fittings Ø G</th>
<th>Valve type</th>
<th>Nominal orifice Ø</th>
<th>Flow coefficient Kv</th>
<th>Minimum pressure</th>
<th>Max differential pressure (M.O.P.D.)</th>
<th>Coil type</th>
<th>Weight [Kg]</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>[””]</td>
<td>[ ]</td>
<td>[mm]</td>
<td>[m³/h]</td>
<td>[bar]</td>
<td>in AC( ~) [bar] in D.C( =) [bar]</td>
<td>[ ]</td>
<td>[ ]</td>
<td>[ ]</td>
</tr>
<tr>
<td>1/8</td>
<td>140.2 HH</td>
<td>2.5</td>
<td>0.19</td>
<td>0</td>
<td>20 [bar] Z-Y 0.320</td>
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<td></td>
</tr>
<tr>
<td>1/8</td>
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<td>0</td>
<td>10 [bar] Z-Y 0.320</td>
<td>1</td>
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</tr>
</tbody>
</table>

**Note:** 1) NP (nominal pressure): 64 bar.

**DIMENSIONS**

<table>
<thead>
<tr>
<th>Fittings Ø G</th>
<th>A [mm]</th>
<th>B [mm]</th>
<th>C [mm]</th>
<th>D [mm]</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/8</td>
<td>30</td>
<td>68</td>
<td>14</td>
<td>37.5</td>
</tr>
</tbody>
</table>

**ORDER CODE**

- Valve supplied with body (PM) and coil separate. Connectors to be ordered separately.
Solenoid valves for steam and high temperatures

2/2 way - Normally Closed - Diaphragm pilot operated

Fittings: G = 3/8” - 1”

Series 156.2

**General description:**

PARKER series 156.2 solenoid valves are diaphragm pilot operated and require a minimum differential pressure to operate. They are used for general applications with media such as steam and superheated water.

Series 156.2 valves are normally closed.

**Temperatures:**

The working temperature for media is:
- Maximum: +160°C
- Minimum: -30°C

The maximum ambient temperature is:
- With class coils "F" -50°C
- With class coils "H" -80°C

**Application:**

Series 156.2 solenoid valves are ideal for automatic control of steam and superheated water in a wide range of applications such as:
- Sterilisers;
- Ironing machines;
- Hospital equipment;
- Tanning plants;
- Tobacco plants.

**Coils:**

For series 156.2 valves class “F” coils (155°C) are available encapsulated in thermoplastic containing 30% glass fiber (types: ZB, YB) and class “H” coils (180°C) are available encapsulated in thermoplastic containing 40% glass fiber (type ZH).

All the coils are for continuous service, 100% E.D.

The rated voltage tolerance is:
- ±10% for A.C. power supply

The “Z” and “Y” coils can be used on a.c. with a frequency of 50/60 Hz (dualfrequency). The “Z” coils have Faston terminals for DIN 43650A connectors with protection to IP65.

The “Y” coil has terminals with 2 x 1,000 mm cables with protection to IP67.

**Installation:**

The valves can be mounted in any position without jeopardising their operation. It is however advisable to install them with the coil in a vertical position above the body.

**Approvals:**

- **Coil certification:**
  - ZB 09: 24V/50-60Hz, 115V/50-60Hz, 220-230V/50-60Hz, 240V/50-60Hz
  - YB 09: 220-230V/50-60Hz

- **For the coils:**
  - ZB 09: 220-230V/50-60Hz, 240V/50-60Hz
  - YB 09: 220-230V/50-60Hz

- **UL Recognized Comp. Mark for the coils:**
  - ZB 09: 24V/60Hz, 110-120V/60Hz, 208-240V/60Hz
  - YB 09: 24V/60Hz, 110-120V/60Hz, 208-240V/60Hz
Coil: 24 V, 115V, 220-230 V, 240 V, 12 V, 24 V
Type: 50/60 Hz, 50/60 Hz, 50/60 Hz, 50/60 Hz, d.c. d.c.

ZB 09
YB 09
ZH 14

Note: Valve supplied with body part (PM) and coil separate. Connectors to be ordered separately.

Note: 1) NP (nominal pressure): 25 bar. 2) Maximum pressure for steam: 6.5 bar (160 °C).

<table>
<thead>
<tr>
<th>Fittings Ø G</th>
<th>Valve type</th>
<th>Nominal orifice Ø</th>
<th>Flow coefficient Kv</th>
<th>Minimum pressure</th>
<th>Max differential pressure (M.O.P.D.)</th>
<th>Coil type</th>
<th>Weight</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>3/8</td>
<td>156.2 I</td>
<td>10</td>
<td>1.32</td>
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<td>in AC( ~) in DC( =) in AC( ~) in DC( =)</td>
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<td>F</td>
</tr>
<tr>
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<td>156.2 A</td>
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<td>16 - Z-Y</td>
<td>YB 09</td>
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<td>3/4</td>
<td>156.2 C</td>
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<td>2.22</td>
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<td>14 - Z-Y</td>
<td>ZH 14</td>
<td>14</td>
<td>H</td>
</tr>
<tr>
<td>1</td>
<td>156.2 D</td>
<td>18</td>
<td>2.52</td>
<td>0.5</td>
<td>14 - Z-Y</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

For: steam - superheated water

Valve body: OT58 UNI 5705 brass stamping
Seals: Pilot of Ruby - diagram of PTFE (Teflon)
Enclosing tube: AISI 304 stainless steel
Plunger: AISI 430F stainless steel
Spring: AISI 302 stainless steel
Shading ring: Copper

ELECTRICAL FEATURES
<table>
<thead>
<tr>
<th>Coil type</th>
<th>Power [ W ]</th>
<th>Insul. class</th>
</tr>
</thead>
<tbody>
<tr>
<td>AC( ~)</td>
<td>DC( =)</td>
<td>AC( ~)</td>
</tr>
<tr>
<td>ZB 09</td>
<td>9</td>
<td>F</td>
</tr>
<tr>
<td>YB 09</td>
<td>9</td>
<td>F</td>
</tr>
<tr>
<td>ZH 14</td>
<td>14</td>
<td>H</td>
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</tbody>
</table>

Fittings Ø G A B C D

<table>
<thead>
<tr>
<th>Fittings Ø G</th>
<th>A</th>
<th>B</th>
<th>C</th>
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<tr>
<td>1</td>
<td>60</td>
<td>93.5</td>
<td>51</td>
<td>37.5</td>
</tr>
</tbody>
</table>

DIMENSIONS

Note: Valve supplied with body part (PM) and coil separate. Connectors to be ordered separately.
General description:
PARKER series 158 solenoid valves are direct operated and do not require a minimum differential pressure to operate. They are used for steam and superheated water where the flow rate has to be altered by means of a manual regulator. Series 158 valves are normally closed.

Temperatures:
The working temperature for media is: +140°C for the version with a seal of ethylene propylene (EPDM) and +180°C for the version with a seal of Teflon (PTFE). The minimum temperature for media is -10°C for the two versions. The maximum ambient temperature is:
with class “F” coils -50°C
with class “H” coils -80°C

Application:
Series 158 solenoid valves are ideal for the control and regulation of steam in equipment such as:
• Ironing machines;
• Steam-cleaning machines;
• Steam sprayers.

Coils:
For series 158 valves class “F” coils (155°C) are available encapsulated in thermoplastic containing 30% glass fiber (types: ZB, YB) and class “H” coils (180°C) are available encapsulated in thermoplastic containing 40% glass fiber (type ZH). All the coils are for continuous service, 100% E.D. The rated voltage tolerance is:
±10% for A.C. power supply and
+10% - 5% for D.C.
The “Z” and “Y” coils can be used on a.c. with a frequency of 50/60 Hz (dualfrequency) The “Z” coils have Faston terminals for DIN 43650A connector with protection to IP65. The “Y” coil has terminals with 2 x 1,000 mm cables with protection to IP67.

Installation:
The valves can be mounted in any position without jeopardising their operation. It is however advisable to install them with the coil in a vertical position above the body.

Approvals:

• Coil certification:
  ZB 09 24V/50-60Hz, 115V/50-60Hz, 220-230V/50-60Hz, 240V/50-60Hz
  ZB 12 12V DC, 24V DC
  YB 09 220-230V/50-60Hz
• For the coils:
  ZB 09 220-230V/50-60Hz, 240V/50-60Hz
  YB 09 220-230V/50-60Hz
• UL Recognized Comp. Mark for the coils:
  ZB 09 24V/60Hz, 110-120V/60Hz, 208-240V/60Hz
  YB 09 24V/60Hz, 110-120V/60Hz, 208-240V/60Hz
### Materials
- Valve body: OT58 UNI 5705 brass stamping
- Seals: EPDM - PTFE (Teflon)
- Enclosing tube: AISI 304 stainless steel
- Plunger: AISI 430F stainless steel
- Spring: AISI 302 stainless steel
- Shading ring: Copper

### Electrical Features
<table>
<thead>
<tr>
<th>Coil type</th>
<th>Power [W]</th>
<th>Insulation class</th>
</tr>
</thead>
<tbody>
<tr>
<td>AC (~)</td>
<td>D.C. (=)</td>
<td>AC (~) D.C. (=)</td>
</tr>
<tr>
<td>ZB 09</td>
<td>ZB 12</td>
<td>9 12 F</td>
</tr>
<tr>
<td>YB 09</td>
<td>YB 12</td>
<td>9 12 F</td>
</tr>
<tr>
<td>ZH 14</td>
<td>ZH 16</td>
<td>14 16 H</td>
</tr>
</tbody>
</table>

### Specification

<table>
<thead>
<tr>
<th>Fittings ØG</th>
<th>Valve type</th>
<th>Nominal orifice Ø</th>
<th>Flow coefficient Kv</th>
<th>Minimum pressure</th>
<th>Max differential pressure (M.O.P.D.)</th>
<th>Coil type</th>
<th>Weight</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/4</td>
<td>158 IH</td>
<td>3.0</td>
<td>0.2</td>
<td>0</td>
<td>10</td>
<td>in AC (~)</td>
<td>4</td>
<td>ZB – YB 0.320 1 - 2</td>
</tr>
<tr>
<td>1/4</td>
<td>158 IT</td>
<td>3.0</td>
<td>0.2</td>
<td>0</td>
<td>10</td>
<td>in D.C. (=)</td>
<td>10</td>
<td>ZH 0.400 1</td>
</tr>
</tbody>
</table>

Note: 1) NP (nominal pressure): 25 bar. 2) Maximum pressure for steam: 4 bar (140 °C).

### Dimensions

<table>
<thead>
<tr>
<th>Fittings ØG</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/4</td>
<td>57</td>
<td>82</td>
<td>18</td>
<td>37.5</td>
</tr>
</tbody>
</table>

### Order Code

- PM 158 I
- FITTINGS: 1 1/4"
- SEAL: H EPDM T PTFE (Teflon)

Note: Valve supplied with body (PM) and coil separate. Connectors to be ordered separately.
General description:
PARKER series 161.4 solenoid valves are direct operated and do not require a minimum differential pressure to operate. They are used for general applications with media such as steam and superheated water. Series 161.4 valves are normally closed.

Temperatures:
The working temperature for media is:
- maximum +140°C
- minimum -10°C
The maximum ambient temperature is:
+80°C

Application:
Series 161.4 solenoid valves are ideal for automatic control of steam and superheated water with low flow rates. Some examples of typical applications:
- Espresso coffee machines;
- Sterilisers;
- Electrical medical equipment;
- Humidifiers.

Coils:
For series 161.4 valves class “F” coils (155°C) are available encapsulated in thermoplastic containing 30% heat-stabilised glass fiber (type KT). All the coils are for continuous service, 100% E.D. The rated voltage tolerance is:
- ±10% for A.C. power supply and
- +10% -5% in D.C.
The “K” coil can be used on a.c. with a frequency of 50 Hz (single frequency) and has Faston terminals for DIN 43650A connectors with protection to IP65.

Installation:
The valves can be mounted in any position without jeopardising their operation. It is however advisable to install them with the coil in a vertical position above the body.

Approvals:
- Coil certification:
  - KH 09 24V/50Hz
  - 115V/50Hz
  - 230V/50Hz.
  - KT 09 115V/50Hz
  - 220-230V/50Hz.
Coil 24 V 115V 220-230 V 240 V 12 V 24 V
  type 50 Hz* 50 Hz* 50 Hz* 50 Hz* d.c. d.c.

KT   09
••••
KT   10
••
KH   09
•••

Note: Valve supplied with coil in a multipack. Connectors to be ordered separately.

Note: 1) NP (nominal pressure): 25 bar. 2) Maximum pressure for steam: 4 bar (140°C).

Note: Valve supplied with coil in a multipack. Connectors to be ordered separately.
Solenoid valves for steam and high temperatures
Solenoid Valves for Heating
## Solenoid valves for heating

### Contents

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<tr>
<td>131</td>
<td>NC</td>
<td>96-97</td>
</tr>
<tr>
<td>131.4</td>
<td>NC</td>
<td>98-99</td>
</tr>
<tr>
<td>140</td>
<td>NC</td>
<td>100-101</td>
</tr>
<tr>
<td>153</td>
<td>NC</td>
<td>102-103</td>
</tr>
</tbody>
</table>

**NO** = normally open  
**NC** = normally closed
The numbers in [bar] in the table indicate the M.O.P.D. values (maximum operating differential pressure). The columns refer to the type of fittings and the type of power supply, the rows refer to the valve series.
General description:
PARKER series 120.4 solenoid valves are direct operated and do not require a minimum differential pressure to operate. They are used for general applications with media such as fuel oils, diesel oil or naphtha up to 7°E, provided they are compatible with the construction materials used. Series 120.4 valves are normally open with inlet and outlet in line.

Temperatures:
The working temperature for media is:
maximum +160°C
minimum -30°C
The maximum ambient temperature is: +60°C

Application:
Series 120.4 solenoid valves are ideal for automatic control of fuel oils up to 7°E on pressurised burners.

Coils:
For series 120.4 valves class “F” coils (155°C) are available encapsulated in thermoplastic containing 30% glass fiber (types: ZB, YB) and class “H” coils (180°C) are available encapsulated in thermoplastic containing 40% glass fiber (type ZH). All the coils are for continuous service, 100% E.D. The rated voltage tolerance is:
±10% for A.C. power supply
The “Z” and “Y” coils can be used on a.c. with a frequency of 50/60 Hz (dualfrequency). The “Z” coils have Faston terminals for DIN 43650A connectors with protection to IP65. The “Y” coil has terminals with 2 x 1,000 mm cables with protection to IP67.

Installation:
The valves can be mounted in any position without jeopardising their operation. It is however advisable to install them with the coil in a vertical position above the body.

Approvals:
• Coil certification:
  ZB 14 24V/50-60Hz, 115V/50-60Hz
          220-230V/50-60Hz
  YB 14 220V/50-60Hz
        (IMQ only for 220V)
• For coil:
  ZB 14 220-230V/50-60Hz
• With coil:
  ZH 14 220-230V/50-60Hz
Coil features include: 24 V 115V 220-230 V 240 V 12 V 24 V
Type: 50/60 Hz 50/60 Hz 50/60 Hz 50/60 Hz d.c. d.c.

Note: Valve supplied with body (PM) and coil separate. Connectors to be ordered separately.

**Fittings**

<table>
<thead>
<tr>
<th>Fittings Ø G</th>
<th>Valve type</th>
<th>Nominal orifice Ø</th>
<th>Flow coefficient Kv</th>
<th>Minimum pressure</th>
<th>Max differential pressure (M.O.P.D.)</th>
<th>Coil type</th>
<th>Weight</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>[“”]</td>
<td>[ ]</td>
<td>[mm]</td>
<td>[m³/h]</td>
<td>[bar]</td>
<td>[bar]</td>
<td>[bar]</td>
<td>[Kg]</td>
<td>[ ]</td>
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<tr>
<td>1/4</td>
<td>120.4 A</td>
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<td>0</td>
<td>30</td>
<td>Z - Y</td>
<td>0.320</td>
<td>1</td>
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</tbody>
</table>

Note: 1) NP (nominal pressure): 64 bar.

**Materials**

- Valve body: OT58 UNI 5705 brass stamping
- Seals: Ruby
- Enclosing tube: AISI 304 stainless steel
- Plunger: AISI 430F stainless steel
- Spring: AISI 302 stainless steel
- Shading ring: Copper

**Electrical Features**

<table>
<thead>
<tr>
<th>Coil type</th>
<th>Power [W]</th>
<th>Insulat. class</th>
</tr>
</thead>
<tbody>
<tr>
<td>AC( ~ )</td>
<td>D.C( =)</td>
<td>AC( ~)</td>
</tr>
<tr>
<td>ZB 14</td>
<td>-</td>
<td>14</td>
</tr>
<tr>
<td>YB 14</td>
<td>-</td>
<td>14</td>
</tr>
<tr>
<td>ZH 14</td>
<td>-</td>
<td>14</td>
</tr>
</tbody>
</table>

**Order Code**

- Valve Body: PM 120.4 R
- Fittings: I 1/8”, A 1/4”, L
- Seal: R Ruby

Note: Valve supplied with body (PM) and coil separate. Connectors to be ordered separately.
Solenoid valves for heating
2/2 ways - Normally Closed - Direct Operated

Fittings: G = 1/8"

Series 131

**General description:**
PARKER series 131 solenoid valves are direct operated and are used for general applications with media such as fuel oils up to 2°E. Series 131 valves are normally closed.

**Temperatures:**
The working temperature for media is:
- maximum +90°C
- minimum -10°C

The maximum ambient temperature is:
- +60°C

**Application:**
Series 131 solenoid valves are ideal for automatic control of fuel oils up to 2°E on pressurised burners.

**Coils:**
For series 131 valves class “F” coils (155°C) are available encapsulated in thermoplastic containing 30% glass fiber (types: KT, XT).

All the coils are for continuous service, 100% E.D.

The rated voltage tolerance is:
- ±10% for A.C. power supply and +10% -5% in D.C.

The “K” and “X” coils can be used on a.c. with a frequency of 50 Hz (single frequency).

The “K” coil has Faston terminals for DIN 43650A connectors protection to IP65. The “X” coil has Faston terminals for plug with cables (box) with protection to IP54.

**Installation:**
The valves can be mounted in any position without jeopardising their operation. It is however advisable to install them with the coil in a vertical position above the body.

**Approvals:**

- Coil certification:
  - KH 09
    - 24V/50Hz
    - 115V/50Hz
    - 230V/50Hz
  - KT 09
    - 115V/50Hz
    - 220-230V/50Hz
Coil 24 V 115V 220-230 V 240 V 12 V 24 V

**TYPE** 50 Hz 50 Hz 50 Hz 50 Hz d.c. d.c.

**KT** 09
**XT** 09
**KH** 09

---

**Note:** Valve supplied with coil in multipack. Connectors to be ordered separately.

---

**FITTINGS**

- **I**
- **A**

---

**COMPLETE VALVE**

**FITTINGS**

- **I**
- **A**

---

**SEAL**

**N**

**NBR (Buna N)**

---

**SPECIFICATION**

<table>
<thead>
<tr>
<th>Fittings Ø G</th>
<th>Valve type</th>
<th>Nominal orifice Ø</th>
<th>Flow coefficient Kv</th>
<th>Minimum pressure [bar]</th>
<th>Max differential pressure (M.O.P.D.)</th>
<th>Coil type</th>
<th>Weight</th>
<th>Notes</th>
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<tr>
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<td>15</td>
<td>K-X</td>
<td>0,2</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

**Note:** 1) NP (nominal pressure): 40 bar.
Solenoid valves for heating

2/2 way - Normally Closed - Direct Operated

Fittings: \( R = 1/8'' - 1/4'' \)

### General description:

**PARKER series 131.4...G** solenoid valves are direct operated and are used for general applications with **fuel gases**. Series 131.4...G valves are normally closed.

### Temperatures:

The working temperature for media is:
- **maximum** \(+90^\circ\text{C}\)
- **minimum** \(-10^\circ\text{C}\)

The maximum ambient temperature is:
- **+60 \text{^\circ C}**

### Application:

Series 131.4...G solenoid valves are ideal for automatic and safe control of fuel gases where low flow rates are required.

Some typical application examples:
- Portable hot air generators;
- Dryers;
- Gas cookers;
- Boilers for caravans and motorhomes;
- Pilot flame control.

### Coils:

For series 131.4...G valves class “F” coils (155°C) are available encapsulated in thermoplastic containing 30% glass fiber (type KT).

All the coils are for continuous service, 100% E.D.

The rated voltage tolerance is:
- \pm 10\% for A.C. power supply and +10\% - 5\% in D.C.

The “K” coil can be used on a.c. with a frequency of 50 Hz (single frequency) and has Faston terminals for DIN 43650A connector with protection to IP65.

### Installation:

The valves can be mounted in any position without jeopardising their operation. It is however advisable to install them with the coil in a vertical position above the body.

The valve body has 2 mounting holes with diam. M4 x 7 and centre distance 13 x 13.

### Approvals:

- **Coil certification:**
  - KT 09 220-230V/50Hz
  - KT 09 24V/50Hz,
  - 115V/50Hz,
  - 110-120V/60Hz,
  - 220-240V/50Hz
  - KT 05 12V D.C.
  - KT 06 196-216V D.C.

- **EN 161** For the solenoid valves with the following coil:
  - KT 09 24V/50Hz,
  - 115V/50Hz,
  - 110-120V/60Hz,
  - 220-240V/50Hz

---

Parker Hannifin S.p.A.
via E. Fermi, 5
20060 Gessate (Milano) - Italy
Coil 196-216 V - DC 12 V 24 V 240 V
- type c.c. c.c. 50 Hz
- KT 06
- KT 05
- KT 10

• Valve body: OT58 UNI 5705 brass stamping
• Seals: NBR (Buna N)
• Enclosing tube: OT58 UNI 5705 brass stamping
• Plunger: 9 SMnPb 23 UNI 5105 steel with nickel
• Spring: AISI 302 stainless steel
• Shading ring: Copper

ELECTRICAL FEATURES

<table>
<thead>
<tr>
<th>Coil type</th>
<th>Power [W]</th>
<th>Insulat. class</th>
</tr>
</thead>
<tbody>
<tr>
<td>AC( ~)</td>
<td>DC( =)</td>
<td>AC( ~)</td>
</tr>
<tr>
<td>KT 09</td>
<td>KT 10</td>
<td>9</td>
</tr>
<tr>
<td>KT 05</td>
<td>KT 05</td>
<td>5</td>
</tr>
<tr>
<td>-</td>
<td>KT 06</td>
<td>-</td>
</tr>
</tbody>
</table>

Note: Valve supplied with coil in multipack. Connectors to be ordered separately.

FITTINGS

<table>
<thead>
<tr>
<th>Ø Rp</th>
<th>Valve type</th>
<th>Nominal orifice Ø</th>
<th>Flow coefficient Kv</th>
<th>Minimum pressure</th>
<th>Max differential pressure (M.Q.P.D.)</th>
<th>Coil type</th>
<th>Weight</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/8</td>
<td>131.4 C</td>
<td>4</td>
<td>0.318</td>
<td>0</td>
<td>in AC(~) in DC(=)</td>
<td>K</td>
<td>0.20</td>
<td>1-2</td>
</tr>
<tr>
<td>1/4</td>
<td>131.4 G</td>
<td>4</td>
<td>0.318</td>
<td>0</td>
<td>in AC(~) in DC(=)</td>
<td>K</td>
<td>0.22</td>
<td>1-2</td>
</tr>
</tbody>
</table>

Note: 1) NP (nominal pressure): 10 bar. 2) With coil KT05-KT06 (d.c.) the working pressure is reduced to 0,15 bar.

DIMENSIONS

<table>
<thead>
<tr>
<th>Ø Rp</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
</tr>
</thead>
<tbody>
<tr>
<td>[&quot;]</td>
<td>[mm]</td>
<td>[mm]</td>
<td>[mm]</td>
<td>[mm]</td>
</tr>
<tr>
<td>1/8</td>
<td>38</td>
<td>60</td>
<td>60</td>
<td>37,5</td>
</tr>
<tr>
<td>1/4</td>
<td>38</td>
<td>60</td>
<td>60</td>
<td>37,5</td>
</tr>
</tbody>
</table>

ORDER CODE

VE 131.4 G

COMPLETE VALVE

FITTINGS

C | 1/8"
G | 1/4"

SEAL

G | NBR (Buna N)

Note: Valve supplied with coil in multipack. Connectors to be ordered separately.
General description:
PARKER series 140 solenoid valves are direct operated and do not require a minimum differential pressure to operate. They are used for general applications with media such as fuel oils, diesel oil or naphtha up to 7°E, provided they are compatible with the construction materials used. Series 140 valves are normally closed.

Temperatures:
The working temperature for media is:
- maximum +140°C
- minimum -30°C

The maximum ambient temperature is:
- with class “F” coils +50°C
- with class “H” coils +80°C

Application:
Series 140 solenoid valves are ideal for automatic and safe control of fuel oils up to 7°E on pressurised burners.

Coils:
For the series 140 class “F” coils (155°C) are available encapsulated in thermoplastic material containing 30% glass fiber (types: ZB, YB), and class “H” coils (180°C) are available encapsulated in thermoplastic material containing 40% of glass fiber (type ZH). All the coils are for continuous service, 100% E.D.
The rated voltage tolerance is:
- ±10% for A.C. power supply and +10%-5% in D.C.
The “Z” and “Y” coils can be used on a.c. with a frequency of 50/60 Hz (dual-frequency).
The “Z” coils have Faston terminals for DIN 43650A connector with protection to IP65.
The “Y” coil has terminals with 2 x 1,000 mm cable and protection to IP67.
The “X” coils has Faston terminals for plug with cable (box) with protection to IP54.

Installation:
The valves can be mounted in any position without jeopardising their operation. It is however advisable to install them with the coil in a vertical position above the body. The model 140.4 has no mounting hole.

Approvals:
- Coil certification:
  - ZB 09 24V/50-60Hz, 115V/50-60Hz, 220-230V/50-60Hz, 240V/50-60Hz
  - ZB 12 12VDC, 24VDC
  - YB 09 220-230V/50-60Hz
- For the coil:
  - ZB 09 220-230V/50-60Hz, 240V/50-60Hz
  - YB 09 220-230V/50-60Hz
- UL Recognized Comp. Mark for the coil:
  - ZB 09 24V/60Hz, 110-120V/60Hz, 208-240V/60Hz
  - YB 09 24V/60Hz, 110-120V/60Hz, 208-240V/60Hz
- **Valve body:** OT58 UNI 5705 brass stamping
- **Seals:** Ruby
- **Enclosing tube:** AISI 304 stainless steel
- **Plunger:** AISI 430F stainless steel
- **Spring:** AISI 302 stainless steel
- **Shading ring:** Copper

### ELECTRICAL FEATURES

<table>
<thead>
<tr>
<th>Coil type</th>
<th>Power [W]</th>
<th>Insulat. class</th>
</tr>
</thead>
<tbody>
<tr>
<td>AC (~)</td>
<td>D.C. (=)</td>
<td>D.C. (=)</td>
</tr>
<tr>
<td>ZB 09</td>
<td>9</td>
<td>12</td>
</tr>
<tr>
<td>YB 09</td>
<td>9</td>
<td>12</td>
</tr>
<tr>
<td>ZH 14</td>
<td>7</td>
<td>-</td>
</tr>
<tr>
<td>XP 07</td>
<td>-</td>
<td>7</td>
</tr>
</tbody>
</table>

### MATERIALS

- **Fittings:**
  - 1/8" 140 I 2.5 0.192 0 30 17 ZB - YB 0.340 1
  - 1/4" 140 C 2.5 0.192 0 30 17 ZB - YB - XP 0.330 1
  - 1/4" 140.4 A 3.0 0.240 0 30 - ZH 0.330 1
  - 1/4" 140.4 D 3.0 0.240 0 30 - ZH 0.330 1

- **Coil type:**
  - XP 07: 220 V / 50 Hz

### SPECIFICATION

<table>
<thead>
<tr>
<th>Fittings Ø</th>
<th>Valve type</th>
<th>Nominal orifice Ø</th>
<th>Flow coefficient Kv</th>
<th>Minimum pressure</th>
<th>Max differential pressure (M.O.P.D.)</th>
<th>Coil type</th>
<th>Weight</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>[&quot;&quot; ]</td>
<td>[ ]</td>
<td>[mm]</td>
<td>[m/h] [bar]</td>
<td>[in AC (~) [bar]</td>
<td>[in D.C. (=) [bar]</td>
<td>[ ]</td>
<td>[Kg]</td>
<td>[ ]</td>
</tr>
<tr>
<td>1/8&quot;</td>
<td>140 I</td>
<td>2.5</td>
<td>0.192 [0]</td>
<td>0</td>
<td>30 [17]</td>
<td>ZB - YB</td>
<td>0.340</td>
<td>1</td>
</tr>
<tr>
<td>1/4&quot;</td>
<td>140 C</td>
<td>2.5</td>
<td>0.192 [0]</td>
<td>0</td>
<td>30 [17]</td>
<td>ZB - YB - XP</td>
<td>0.330</td>
<td>1</td>
</tr>
<tr>
<td>1/4&quot;</td>
<td>140.4 A</td>
<td>3.0</td>
<td>0.240 [0]</td>
<td>0</td>
<td>30 [ ]</td>
<td>ZH</td>
<td>0.330</td>
<td>1</td>
</tr>
<tr>
<td>1/4&quot;</td>
<td>140.4 D</td>
<td>3.0</td>
<td>0.240 [0]</td>
<td>0</td>
<td>30 [ ]</td>
<td>ZH</td>
<td>0.330</td>
<td>1</td>
</tr>
</tbody>
</table>

Note: 1) NP (nominal pressure): 64 bar.

### DIMENSIONS

**TYPE**
- A
- B
- C
- D

<table>
<thead>
<tr>
<th>[&quot;&quot; ]</th>
<th>[mm]</th>
<th>[mm]</th>
<th>[mm]</th>
<th>[mm]</th>
</tr>
</thead>
<tbody>
<tr>
<td>140-I-C-D*</td>
<td>40</td>
<td>75.5</td>
<td>18</td>
<td>37.5</td>
</tr>
<tr>
<td>140-CFX</td>
<td>40</td>
<td>75.5</td>
<td>18</td>
<td>37.5</td>
</tr>
<tr>
<td>140.4A-D*</td>
<td>40</td>
<td>71</td>
<td>18</td>
<td>37.5</td>
</tr>
</tbody>
</table>

Note: 2) drg. 2

### ORDER CODE

- **PM 140 R**
- **Fittings**
  - I: 1/8"
  - C: 1/4"
  - D: 1/4"
  - A: 4.4 A: 1/8"
  - D: 1/4"
- **Seal**
  - R: Ruby

Note: Valve supplied with body (PM) and coil separate. Connectors to be ordered separately.
**General description:**
PARKER series 153 solenoid valves are direct operated and do not require a minimum differential pressure to operate. They are used for general applications with media such as fuel oils up to 2°C.

Series 153 valves are normally closed.

**Temperatures:**
The working temperature for media is:
- maximum +140°C
- minimum -10°C

The maximum ambient temperature is:
- with class "F" coils -50°C
- with class "H" coils -80°C

**Application:**
Series 153 solenoid valves are ideal for automatic control of fuel oils up to 2°C. Some typical application examples:
- Heating systems;
- Diesel oil distribution systems;
- Tank level control.

**Coils:**
For series 153 valves class "F" (155°C) coils are available encapsulated in thermoplastic containing 30% glass fiber (types: ZB, YB) and class "H" coils (180°C) are available encapsulated in thermoplastic containing 40% of glass fiber (type ZH). All the coils are for continuous service, 100% E.D.

The rated voltage tolerance is:
- ±10% for A.C. power supply
- ±10% -5% in D.C.

The "Z" and "Y" coils can be used on a.c. with a frequency of 50/60 Hz (dualfrequency).

The "Z" coils have Faston terminals for DIN 43650A connector with protection to IP65.

The "Y" coil has terminals with 2 x 1,000 mm cables with protection to IP67.

**Installation:**
The valves can be mounted in any position without jeopardising their operation. It is however advisable to install them with the coil in a vertical position above the body.

**Approvals:**
- Coil certification:
  - ZB 14 24V/50-60Hz, 115V/50-60Hz
  - ZB 16 220-230V/50-60Hz
  - YB 14 12V-DC, 24V-DC
  - YB 16 220V/50-60Hz

- For the coil:
  - ZB 14 220-230V/50-60Hz

- Fire brigade approval, Home Ministry, Fire-Fighting Research Centre.
**MATERIALS**
- Valve body: OT58 UNI 5705 brass stamping
- Seals: Viton
- Enclosing tube: AISI 304 stainless steel
- Plunger: AISI 430F stainless steel
- Spring: AISI 302 stainless steel
- Shading ring: Copper

**ELECTRICAL FEATURES**

<table>
<thead>
<tr>
<th>Coil type</th>
<th>Power [W]</th>
<th>Insul. class</th>
</tr>
</thead>
<tbody>
<tr>
<td>AC( ~)</td>
<td>14</td>
<td>F</td>
</tr>
<tr>
<td>DC( =)</td>
<td>16</td>
<td>F</td>
</tr>
<tr>
<td>AC( ~)</td>
<td>14</td>
<td>H</td>
</tr>
<tr>
<td>DC( =)</td>
<td>16</td>
<td>F</td>
</tr>
</tbody>
</table>

**SPECIFICATION**

<table>
<thead>
<tr>
<th>Fittings Ø G</th>
<th>Valve type</th>
<th>Nominal orifice Ø</th>
<th>Flow coefficient Kv</th>
<th>Minimum pressure</th>
<th>Max differential pressure (M.O.P.D.)</th>
<th>Coil type</th>
<th>Weight [Kg]</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>3/8</td>
<td>153 B</td>
<td>5</td>
<td>0.612</td>
<td>0</td>
<td>in AC( ~) = 2</td>
<td>K</td>
<td>0.390</td>
<td>1</td>
</tr>
<tr>
<td>1/2</td>
<td>153 G</td>
<td>5</td>
<td>0.612</td>
<td>0</td>
<td>in DC( =) = 2</td>
<td>K</td>
<td>0.390</td>
<td>1</td>
</tr>
<tr>
<td>3/8</td>
<td>153 B</td>
<td>5</td>
<td>0.612</td>
<td>0</td>
<td>5</td>
<td>Z - Y</td>
<td>0.390</td>
<td>1</td>
</tr>
<tr>
<td>1/2</td>
<td>153 G</td>
<td>5</td>
<td>0.612</td>
<td>0</td>
<td>5</td>
<td>Z - Y</td>
<td>0.390</td>
<td>1</td>
</tr>
</tbody>
</table>

**DIMENSIONS**

<table>
<thead>
<tr>
<th>Fittings Ø G</th>
<th>A [mm]</th>
<th>B [mm]</th>
<th>C [mm]</th>
<th>D [mm]</th>
</tr>
</thead>
<tbody>
<tr>
<td>3/8</td>
<td>53</td>
<td>77.5</td>
<td>26</td>
<td>37.5</td>
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<tr>
<td>1/2</td>
<td>53</td>
<td>77.5</td>
<td>26</td>
<td>37.5</td>
</tr>
</tbody>
</table>

**ORDER CODE**

- Valve body: PM 153 V
- Fittings: B 3/8", G 1/2"
- Seal: V Viton

**Note:** Valve supplied with body (PM) and coil separate. Connectors to be ordered separately.

**Fittings Valve Nominal Flow Minimum Max differential Coil Weight Notes Ø G A B C D**

- Note: 1) NP (nominal pressure): 10 bar.
Solenoid valves for heating
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