

Safety Cut-Off Valve HON 305



PRODUCT INFORMATION

**Serving the Gas Industry
Worldwide**

Honeywell

SAFETY CUT-OFF VALVE HON 305

Introduction, Application, Features, Technical Data

Introduction

- The HON 305 is a safety cut-off valve of single in line orifice design, overpressure operated, with external control line connection, manual reset and pressure balancing bypass. Completely self-acting and requires no separate power source to close the valve.

Application

- Designed to safeguard gas distribution systems, normally installed upstream of the pressure regulator with the external control line piped to the downstream of the regulator, closing automatically in the event of an overpressure condition. After closure, the valve must be manually reset to the open position after normal pressure conditions have been restored by use of the manual bypass valve.

Installation

Sizes up to and including DN 100 can be installed in both the horizontal and vertical positions.

The DN 150 and DN 200 sized units can only be installed in the horizontal position with the spring housing pointing vertically upwards.

Options

Can be supplied with proximity sensor system to initiate 'valve-open' or 'valve-closed' indicator on remote panel.

Features

- Helical torsion spring secures valve door in closed position.
- Fully enclosed valve position indicator - colour coded to show valve status.
- Specially designed spindle and seal between trigger mechanism and diaphragm actuator practically eliminates effect of inlet pressure variation on trip set point.
- Integral push button pressure equalising valve.
- Low Pressure Loss.
- Manual Reset.
- V9 Approval

Size Range

DN 50*
DN 80
DN 100
DN150
DN 200

*DN 50 - Flanged short face to face (SFF) model available on request

Temperature Range

-20°C to +60°C

Connections

Flanged connections to PN16: BS EN 1092-2:1997

ANSI B16.5 Class 150 (19 barg)

External Control Line connection: Rc 1/4

Diaphragm breather connection: Rc 1/8

SELECTION GUIDE

| | |
|-------------------|---|
| HON 305-LP | Range: 0.025 to 0.75 bar g (0.4 to 11 psig) |
| HON 305-MP | Range: 0.3 to 2.75 bar g (4 to 40 psig) |
| HON 305-IP | Range: 2.5 to 7.0 bar g (36 to 101 psig) |

Pressure Rating

16 barg (232 psig) - Ductile Iron Body

19 barg (275 psig) - Ductile Iron Construction

| SPRING SELECTION | | | | | | |
|----------------------------------|--|------------|---------------------|---------------|---------------|---------------|
| Model | Spring | | Trip Pressure Range | | | |
| | Number | Colour | Minimum bar g | Maximum bar g | Minimum psi g | Maximum psi g |
| 305-LP Low Pressure | 1200* | Silver | 0.025 | 0.05 | 0.4 | 0.7 |
| | 495 | Orange | 0.045 | 0.125 | 0.6 | 1.8 |
| | 835 | Blue | 0.112 | 0.25 | 1.6 | 3.6 |
| | 839 | Grey | 0.235 | 0.35 | 3.4 | 5.0 |
| | 1054 | Red/White | 0.28 | 0.55 | 4.0 | 8.0 |
| | 1059 | Red/Yellow | 0.5 | 0.75 | 7.0 | 11.0 |
| 305-MP Medium Pressure | 495 | Orange | 0.3 | 0.4 | 4.0 | 6.0 |
| | 835 | Blue | 0.36 | 0.9 | 5.0 | 13.0 |
| | 839 | Grey | 0.8 | 1.35 | 11.5 | 20.0 |
| | 1054 | Red/White | 1.12 | 2.25 | 16.0 | 32.5 |
| | 1059 | Red/Yellow | 1.95 | 2.75 | 28.0 | 40.0 |
| | 305-IP Intermediate Pressure | 1077 | Yellow | 2.5 | 3.3 | 36.0 |
| 1078 | | Green | 3.1 | 4.0 | 45.0 | 58.0 |
| 1079 | | White | 3.8 | 5.0 | 55.0 | 72.0 |
| 1080 | | Red | 4.8 | 6.0 | 70.0 | 87.0 |
| 1300 | | Self | 5.5 | 7.0 | 80.0 | 101.0 |

*Non GIS/V9-1 Spring Range

Pressure Loss

The HON 305 is designed for minimal pressure loss (Δ p)

$$P_i - P_o = P_i - \frac{P_i - \sqrt{P_i^2 - 4(Q/K)^2}}{2} \text{ bar}$$

Where:

Q = Valve flow M³/Hr (SG 0.6)

P_i = Inlet pressure bar (abs)

P_o = Outlet pressure bar (abs)

K = Flow Constant

(abs) = Absolute pressure 1.01325

When sizing valves in accordance with GIS/V9-1 the maximum recommended gas velocity through the safety cut-off valve should not exceed 80 m/sec, (262 ft./sec).

Consideration given to higher gas velocities on request – please contact Honeywell for details.

| FLOW CONSTANT | |
|---------------|---------------|
| Valve Size | Flow Constant |
| DN 50 | 3860 |
| DN 80 | 7861 |
| DN 100 | 16302 |
| DN 150 | 49780 |
| DN 200 | 78818 |

Conversion Factors

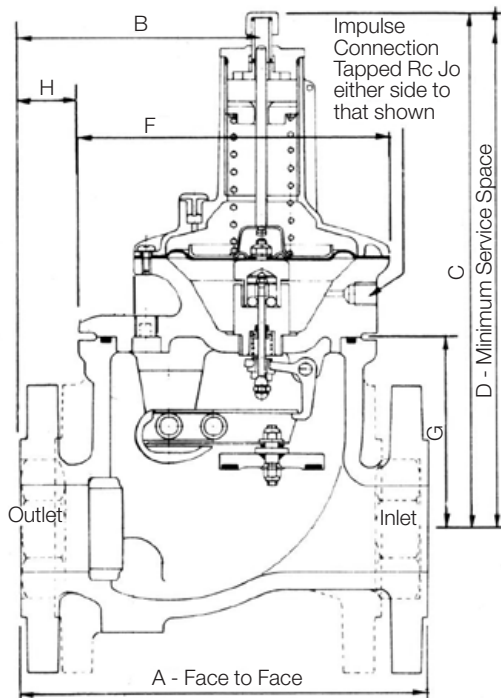
The pressure loss calculation is given in terms of natural gas SG 0.6. For all other gases multiply by the following correction factor:

$$\sqrt{\frac{0.6}{\text{SG of gas handled}}}$$

Conversion to ft³/hr - multiply by 35.3

SAFETY CUT-OFF VALVE HON 305

Dimensions & Weights, Material of Construction



Dimension E centre line of valve to maximum extent of by-pass mechanism positioned a side of body.

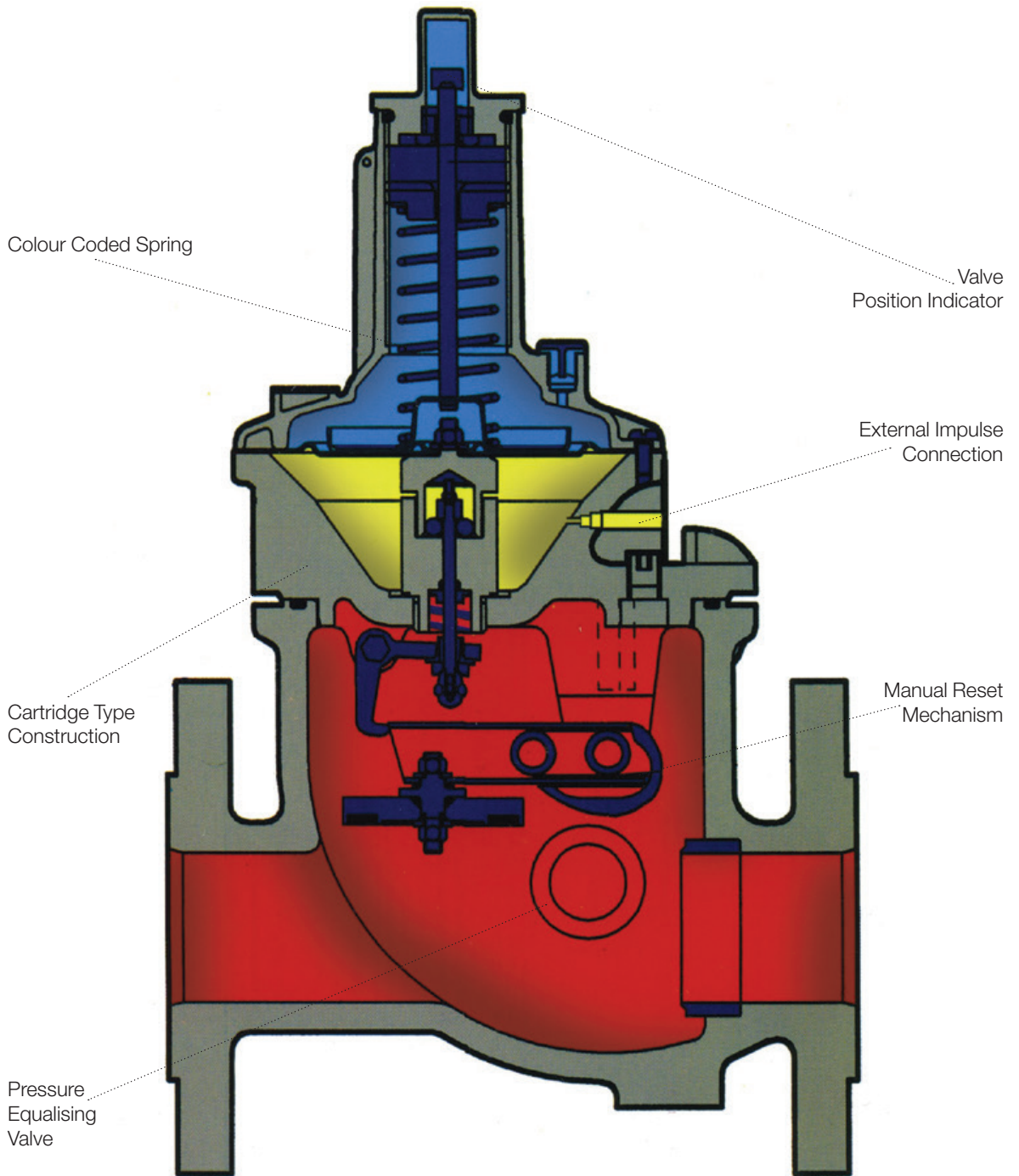
| SERVICE CONDITIONS | |
|---|---|
| Component | Material |
| Body and top cover | Ductile Iron to BS EN 1563 Grade: EN-GJS-400-18 |
| Spring housing and cap (Dependent on model) | Aluminium - BS.1490 Grade LM24 or Ductile Iron to BS EN 1563 Grade: EN-GJS-400-18 |
| Ball, Trigger assembly and operating spindles | Stainless Steel: BS.970 Grade 416S21 |
| Valve Orifice | Stainless Steel: BS.970 Grade 316S21 |
| Seal retainer, reset and bypass housing | Brass: BS.2874 Grade CZ 121 |
| Diaphragm | Nylon reinforced nitrile |
| Diaphragm plate | Mild Steel: BS.1449 Grade D1 zinc plated |
| 'O' Rings | Nitrile |
| Main spring | Spring Steel: BS.1726 oiled finished |
| Bypass spring, door spring and trigger spring | Stainless Steel: BS.970 Grade 302S25 |
| Reset spring | Music Wire: BS5216 Grade M5 |
| Valve door | Aluminium: BS 1474 Grade HE 30TF with polyurethane seat 70/75 shore hardness |

| DIMENSIONS | | | | | | | | | | | |
|------------|------------------|-----------------|-----|-----|-----|-----|-----|-----|----|---------|-----------|
| Size | Connections | Dimensions (mm) | | | | | | | | Degrees | Weight Kg |
| | | A | B | C | D | E | F | G | H | | |
| DN 50 | Flanged | 230 | 136 | 295 | 400 | 125 | 168 | 110 | 33 | - | 21 |
| DN 50 | Flanged (S.F.F.) | 184 | 116 | 295 | 400 | 125 | 168 | 110 | 13 | - | 18 |
| DN 80 | Flanged | 276 | 169 | 310 | 430 | 135 | 208 | 126 | 38 | - | 29 |
| DN 100 | Flanged | 292 | 169 | 320 | 455 | 135 | 208 | 137 | 38 | - | 33 |
| DN 150 | Flanged | 381 | 203 | 370 | 505 | 206 | 273 | 178 | 67 | 30 | 75 |
| DN 200 | Flanged | 457 | 248 | 405 | 540 | 234 | 330 | 216 | 83 | 40 | 108 |

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Sectional Arrangement

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 Inlet Pressure

 Outlet Pressure

 Atmospheric Pressure

For More Information

To learn more about Honeywell's
Advanced Gas Solutions, visit
www.honeywellprocess.com or contact
your Honeywell account manager.

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