

98 Series Backpressure Regulators and Relief Valves

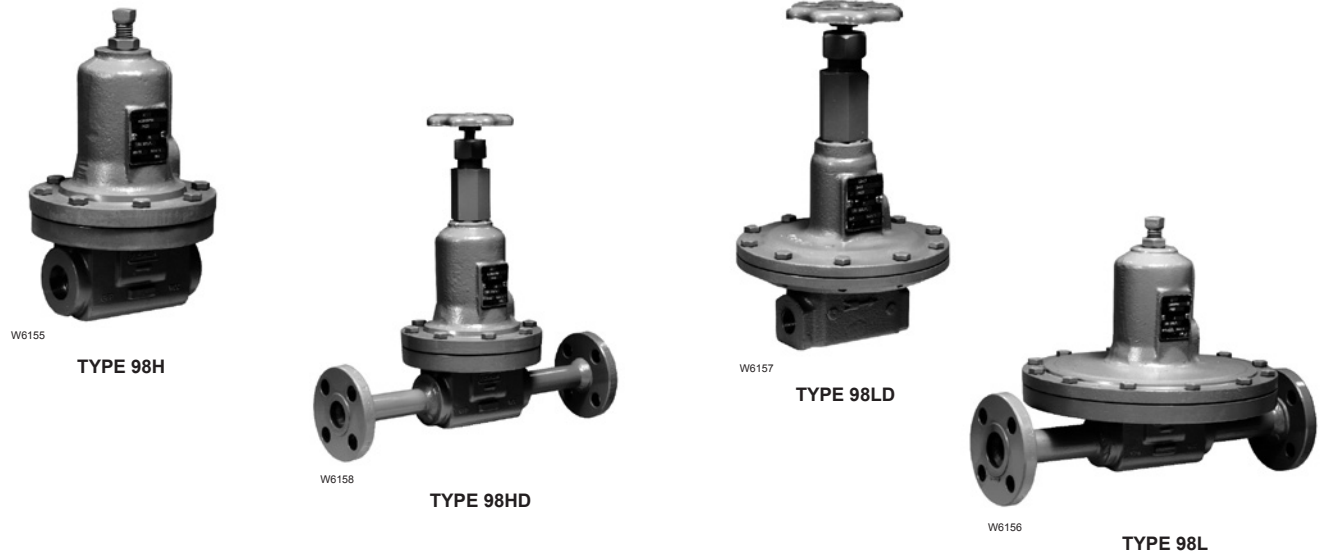


Figure 1. Typical 98 Relief Valves

Introduction

The 98 Series (Figure 1) is used for backpressure or relief applications in liquid, gas, air, and steam service. The Types 98L, 98H, and 98HH are direct-operated and spring-loaded. The Types 98LD and 98HD use additional pressure loading to maintain relief differential pressures, backpressures or for remote setpoint adjustment.

The Type 98HM is a direct-operated, spring to close regulator for backpressure or relief applications in liquid, gas, or steam service. The regulator requires no external power to operate and features a sensing line connection for sensing pressure externally from the regulator. A seal washer for the set screw can be included when applications require pressure loading of the spring case (not available on NPS 1-1/2 and 2 bodies (DN 40 and 50)).

Using a Type 98HM as a relief valve does not exclude the installation of an ASME certified full flow valve as specified by local codes and regulations or system design.

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Features

- **Versatility**—Typical applications include backpressure on pumps, maintaining differential pressure across lubricated seals, steam header pressure, fuel and oil lines, air supply systems, pump bypass applications for API general and special purpose lube and seal oil systems, relief applications for flash tanks and accumulators, and other process and industrial uses.
- **Excellent Fluid Compatibility**—Diaphragms come in stainless steel, MoneI®, Hastelloy® C, or elastomers, and body is available in cast iron and steel as well as stainless steel, Hastelloy® C, and MoneI®. Corrosion-resistant trims are available.
- **Close, Stable Regulation**—Diaphragm is isolated from the main flow stream. Slotted valve plug and pusher post assembly provides positive guiding for improved shutoff.
- **Compact Design**—Small size allows easy installation in limited spaces.



Specifications

Available Constructions

Type 98L: Direct-operated low-pressure backpressure/relief valve with internal pressure registration and standard adjusting screw for 2 to 38 psig (0,14 to 2,6 bar) set pressure range

Type 98LD: Pressure-loaded low-pressure backpressure/relief valve with internal pressure registration and handwheel adjustment for 2 to 38 psi (0,14 to 2,6 bar) differential set pressure range

Type 98H: Direct-operated high-pressure backpressure/relief valve with internal pressure registration and standard adjusting screw for 5 to 200 psig (0,35 to 13,8 bar) set pressure range

Type 98HD: Pressure-loaded low-pressure backpressure/relief valve with internal pressure registration and handwheel adjustment for 5 to 200 psi (0,35 to 13,8 bar) differential set pressure range

Type 98HH: Direct-operated high-pressure backpressure/relief valve with internal pressure registration and standard adjusting screw for 150 to 375 psig (10,3 to 25,9 bar) set pressure range

Type 98HHD: Pressure-loaded high-pressure backpressure/relief valve with internal pressure registration and handwheel adjustment for 150 to 375 psi (10,3 to 25,9 bar) differential set pressure range

Type 98HM: Direct-operated high-pressure backpressure/relief valve with external pressure registration and standard adjusting screw for 5 to 275 psig (0,35 to 19,0 bar) set pressure range

Body Sizes and End Connection Styles

TYPES	BODY MATERIAL	
	Cast Iron	WCC Steel, CF8M Stainless steel, Hastelloy® C, Monel®
98L and 98LD	1/4, 1/2, 3/4, 1 NPT	1/4 through 1 NPT, NPS 1/2 through 1 SWE, CL150RF, CL300RF, PN 16/25/40 RF
98H and 98HD	1/4, 1/2, 3/4, 1, 1-1/2, 2 NPT	1/4 through 2 NPT, NPS 1/2 through 2 SWE, CL150 RF, CL300 RF, PN 16/25/40 RF
98HM	----	1/2, 3/4, 1, 1-1/2, 2 NPT
98HH, 98HHD	1/4, 1/2, 3/4, 1 NPT	

Construction Materials

BODY	SPRING CASE
Cast iron, WCC Steel, CF8M Stainless steel, Monel®, or Hastelloy® C	Cast iron, WCC Steel, or CF8M Stainless steel

Trim Materials

See Table 1

Maximum Cold Working Pressures of Body Size and Material⁽¹⁾⁽³⁾

REGULATOR	BODY SIZE	BODY AND SPRING CASE MATERIALS	MAXIMUM INLET PRESSURE ⁽²⁾⁽⁴⁾ PSIG (bar)
Type 98L	All Sizes	Cast Iron	60 (4,1)
		Steel	125 (8,6)
		Stainless Steel	125 (8,6)
Type 98LD	All Sizes	Cast Iron	60 (4,1)
		Steel	150 (10,3)
		Stainless Steel	150 (10,3)
Type 98H	All Sizes	Cast Iron	300 (20,7)
		Steel	300 (20,7)
		Stainless Steel	300 (20,7)
Type 98HD	All Sizes	Cast Iron	300 (20,7)
		Steel	400 (27,6)
		Stainless Steel	400 (27,6)
Type 98HH, 98HHD	All Sizes	Cast Iron	400 (27,6)
		Steel	400 (27,6)
		Stainless Steel	400 (27,6)
Type 98HM	All Sizes	Steel	300 (20,7)
		Stainless Steel	300 (20,7)

Relief Pressure Ranges

See Table 2

Temperature Capabilities for Elastomer Parts⁽¹⁾⁽⁵⁾

MATERIAL	TEMPERATURE RANGE
Nitrile (NBR)	-40° to 180°F (-40° to 82°C)
Neoprene (CR)	-40° to 180°F (-40° to 82°C)
Fluorocarbon (FKM) ⁽⁶⁾	0° to 300°F (-18° to 149°C) Limited to 200°F (93°C) for hot water
Ethylene propylene (EPDM) ⁽⁶⁾	-40° to 275°F (-40° to 135°C)
Perfluoroelastomer (FFKM) ⁽⁶⁾	0° to 425°F (-18° to 218°C)
Polytetrafluoroethylene (PTFE) Diaphragm protector ⁽⁶⁾	-40° to 400°F (-40° to 204°C)

1. The pressure/temperature limits in this Bulletin and any applicable standard limitation should not be exceeded.
2. Loading pressure plus spring setting should not exceed maximum inlet pressure.
3. Temperature and/or the body end connection may decrease these maximum pressures.
4. Maximum inlet pressure equals set pressure plus build-up.
5. Pressure and/or the body end connection may decrease these maximum temperatures.
6. Not for use on steam service.
7. Not available for Type 98HM.

Specifications (continued)

Temperature Capabilities for Metal Parts⁽¹⁾⁽⁵⁾

MATERIAL	TEMPERATURE RANGE
Cast Iron ⁽⁷⁾	-40° to 406°F (-40° to 208°C)
WCC Steel	-20° to 450°F (-29° to 232°C)
CF8M Stainless steel, Monel [®] , or Hastelloy [®] C	-40° to 450°F (-40° to 232°C)

Maximum Spring Case Loading Pressure for Types 98LD and 98HD (Spring Setting Plus Loading Pressure)⁽¹⁾⁽²⁾

Type 98LD Spring Case

Cast Iron: 50 psig (3,4 bar)

Steel or Stainless steel: 125 psig (8,6 bar)

Type 98HD Spring Case

Cast Iron: 235 psig (16,2 bar)

Steel or Stainless steel: 300 psig (20,7 bar)

Type 98HHD Spring Case

Cast Iron: 250 psig (17,2 bar)

Steel or Stainless steel: 250 psig (17,2 bar)

Capacities

Types 98L and 98LD: See Tables 3 through 7

Types 98H and 98HD: See Tables 8 through 12

Type 98HH and 98HHD: See Tables 13 through 17

Type 98HM: See Tables 18 through 21

Shutoff Classification Per ANSI/FCI 70-3-2004

Metal Seats: Class IV

PTFE: Class IV

Elastomer Seats: Class VI

Flow Coefficient

C₁: 35

Type 98HM Sensing Line Connection

1/2, 1-1/2, or 2 NPT body: 1/8 NPT

3/4 or 1 NPT body: 1/4 NPT

IEC Sizing Coefficients

BODY SIZES, NPS (DN)	X _T	F _D	F _L	K _m
1/4	0.78	0.50	0.91	0.83
1/2 (15)			0.83	0.69
3/4 and 1 (20 and 25)			0.88	0.77
1-1/2 and 2 (40 and 50)			0.92	0.85

Options

- Handwheel or tee handle for Types 98L, 98H, and 98HH
- Tapped spring case vent for Types 98L, 98H, 98HH, and 98HM
- Seal washer to permit spring case pressure loading for Types 98L, 98H, 95HH, and 98HM

1. The pressure/temperature limits in this Bulletin and any applicable standard limitation should not be exceeded.
 2. Loading pressure plus spring setting should not exceed maximum inlet pressure.
 5. Pressure and/or the body end connection may decrease these maximum temperatures.
 7. Not available for Type 98HM.

- **Differential Pressure Capability**—Spring-loaded PTFE packing and tapped connections permit pressure loading of Types 98LD and 98HD spring cases.
- **Handwheels**—Handwheels (standard on the Types 98LD and 98HD and optional on some sizes of the Types 98L and 98H) allow easy pressure setting changes.
- **Sour Gas Service Capability**—Optional materials are available for applications handling sour gases. These constructions comply with the recommendations of NACE International Standards MR0175 and MR0103.

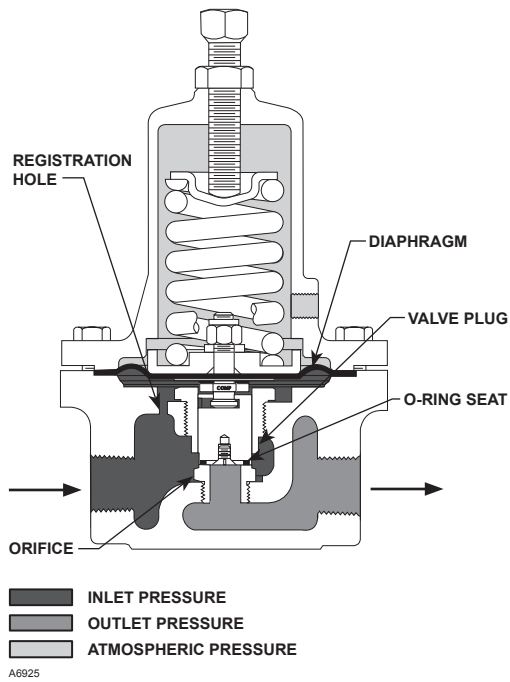
Principle of Operation

Relief or backpressure valves respond to changes in upstream pressure. Pressure changes register under the diaphragm (see Figure 2) through a registration

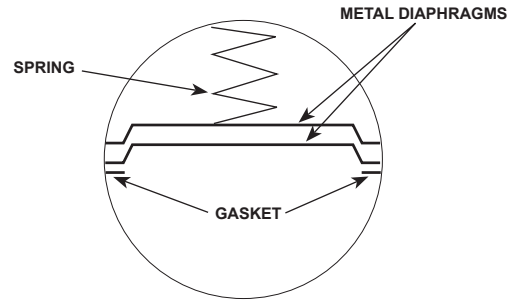
hole in the valve body (through upstream sensing line connection for Type 98HM). When the pressure increases beyond the spring setting, the diaphragm pressure overcomes the spring compression. This causes the valve plug to move away from the orifice. The flow line through the valve is open and excess pressure is vented. When upstream pressure drops back to normal, the valve resumes its closed position.

The chart in Figure 3 illustrates the operation of an NPS 1/2 (DN 15) body used in air service. As the inlet pressure increases, initial flow occurs at the bubble point of 10.5 psig (0,72 bar). Flow increases with further rises in the inlet pressure, reaching 500 SCFH (13,4 Nm³/h) at the relief pressure setting of 12 psig (0,83 bar). Greater capacities are obtained with higher build-ups over the relief pressure setting, as shown in the capacity tables.

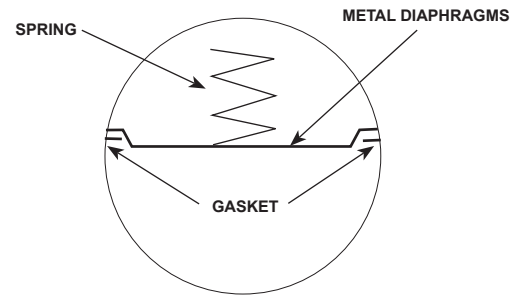
When the inlet pressure decreases, flow decreases until the valve reseals to reseal point of 9 psig (0,62 bar).



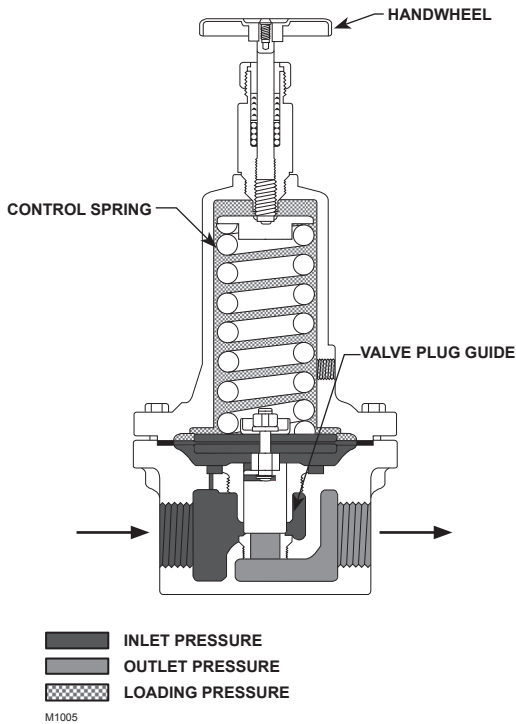
TYPE 98H (ALSO TYPICAL OF 98L AND 98HH)



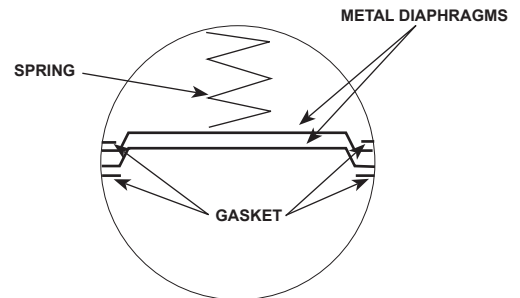
FOR TYPE 98H WITH TWO METAL DIAPHRAGMS
(ALSO TYPICAL OF 98HH AND 98L EXCEPT FOR
TYPE 98L, 1/4 NPT, 2 TO 7 PSI (0,14 TO 0,48 bar) RANGE)



TYPE 98L (1/4 NPT, 2 TO 7 PSI (0,14 TO 0,48 bar) RANGE)
WITH ONE METAL DIAPHRAGM

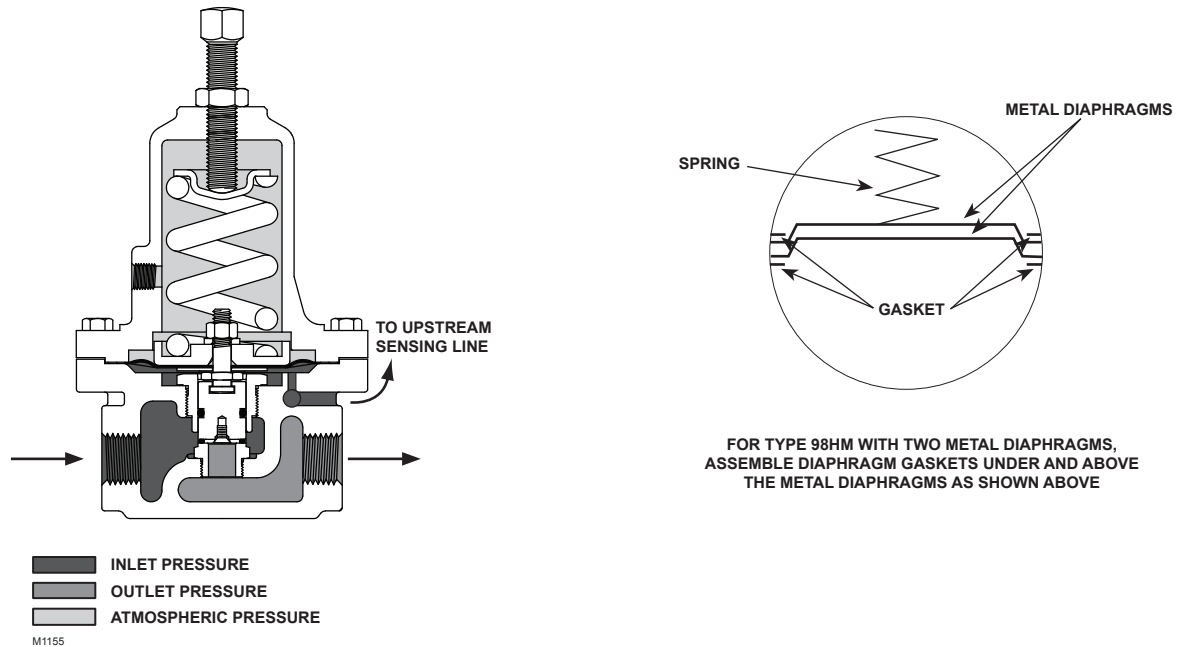


TYPE 98HD (ALSO TYPICAL OF 98LD AND 98HHD)



FOR TYPE 98HD/LD/HHD WITH TWO METAL DIAPHRAGMS,
ASSEMBLE DIAPHRAGM GASKETS UNDER AND ABOVE
THE METAL DIAPHRAGMS AS SHOWN ABOVE

Figure 2. 98 Series Operational Schematic



TYPE 98HM

Figure 2. 98 Series Operational Schematic (continued)

Once the valve has reseated, leakage will not occur again until the bubble point pressure of 10.5 psig (0,72 bar) is reached.

Table 22 shows typical pressure differences between the relief pressure setting and the bubble point, and between the relief pressure setting and the reseal point. These differences are to be used in conjunction with the capacity tables to determine the total inlet pressure increase required to develop the tabulated flows and to determine the actual inlet pressure reductions required for reseal point.

Capacity Information

Relieving capacities at selected pressures and outlet pressure flows are given in SCFH (60°F and 14.7 psia) of air in Tables 6, 7, 11, 12, 16, 17, 18, and 19. To determine the equivalent capacities for other gases, multiply the table capacities by the following appropriate conversion factors: 1.29 for 0.6 specific gravity natural gas, 0.808 for propane, 0.707 for butane, or 1.018 for nitrogen. For gases of other specific gravities, divide by the square root of the appropriate specific gravity.

Then, if capacity is desired in normal cubic meters per hour at 0°C and 1,01325 bar, multiply SFCH by 0.0168.

Typical relieving capacities in pounds per hour and kilogram per hour of saturated steam are shown in Tables 5, 10, and 15.

Tables 3, 4, 8, 9, 13, 14, 20, and 21 gives relieving capacities in U.S. gallons per minute and in liters per minute of water.

Sizing

Determine Flow Rates for units used as differential relief valves as follows:

Air and Steam Service

When the Capacity Information section do not cover the actual service conditions, it will be necessary to calculate the flow rate available from the relief valve.

Step 1.

From the Capacity Information section determine a flow rate using the closest available data for setpoint

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and build-up. With this information, calculate a flow coefficient using the following:

Equation 1:

$$C_g = \frac{Q}{\sqrt{\frac{520}{GT}} P_{1a} \text{SIN} \left(\frac{3417}{C_1} \sqrt{\frac{\Delta P}{P_{1a}}} \right) \text{DEG}}$$

- C_g = Calculated Flow coefficient
- Q = Flow rate from tables (SCFH)
- P_{1a} = Inlet pressure from table (set pressure and build-up) converted to absolute pressure
- G = Specific gravity
- T = Absolute temperature of gas at inlet degrees Rankine = °F + 460
- P_1 = Absolute inlet pressure, psia = psig + 14.7
- C_1 = 35
- ΔP = $P_1 - P_2$, psid

Calculate the C_g coefficient for the setting and build-up **nearest** to the desired service conditions **within the selected spring range**. Then use this C_g to calculate the approximate flow available for the actual setpoint and build-up desired. Available C_g will vary based upon setpoint, differential pressure, build-up, and spring range.

Step 2.

Calculate the actual flow rate available using the coefficient from Step 1 and the actual inlet pressure (setpoint plus build-up) and actual outlet pressure (if not atmospheric).

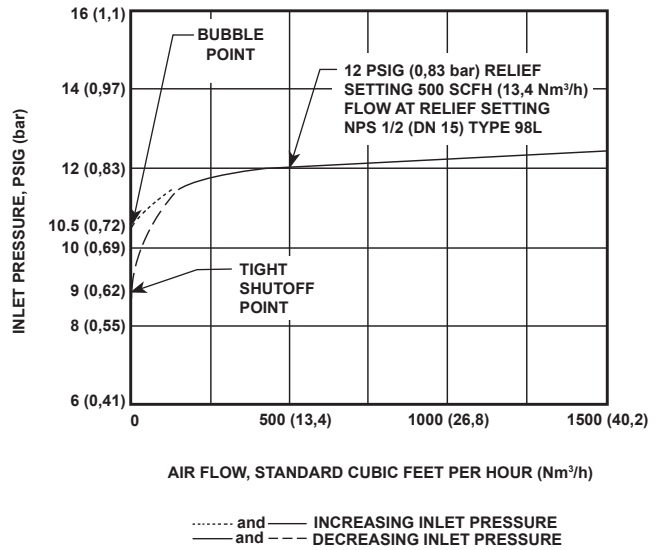
Equation 2:

$$Q_{\text{SCFH}} = \sqrt{\frac{520}{GT}} C_g P_{1a} \text{SIN} \left(\frac{3417}{C_1} \sqrt{\frac{\Delta P}{P_{1a}}} \right) \text{DEG}$$

Example 1.

Service Conditions:

- Setpoint, 115 psi (7,9 bar)
- Build-up allowed, 10 psi (0,69 bar)
- Outlet discharges to atmosphere
- Require 13 200 SCFH (354 Nm³/h) air flow rate



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Figure 3. Typical Bubble Point and Reseat Point Performance

From Table 11, select NPS 3/4 or 1 (DN 20 or 25) body, red spring for 100 psi (6,9 bar) setpoint, and 10 psi (0,69 bar) build-up. The Type 98H will flow 13 000 SCFH (348 Nm³/h) air.

Calculate C_g for these table conditions using Equation 1:

- P_1 = 100 psig (6,9 bar) + 10 psig (0,69 bar) build-up = 110 psig or 124.7 psia (7,6 bar g or 8,6 bar a)
- ΔP = $P_1 - P_2$ = 110 psid (7,6 bar d)
- Q = 13 000 SCFH (348 Nm³/h)
- C_1 = 35

Answer from Equation 1, $C_g = 104^*$

*Since build-up relates to travel, this coefficient is valid for all pressure settings on the spring used in the calculation whenever the build-up is 10 psi (0,69 bar).

Now, solve for actual flow, Q , from the original service conditions using Equation 2:

- P_1 = 115 psig (7,9 bar) + 10 psig (0,69 bar) build-up = 125 psig or 139.7 psia (8,6 bar or 9,6 bar a)
- P_2 = 0, therefore $\Delta P = P_1 - P_2 = 125$ psig (8,6 bar) - 0 = 125 psid (8,6 bar d)
- C_g = 104 (from above)
- C_1 = 35

Answer from Equation 2, $Q = 14\,500$ SCFH (389 Nm³/h) rated capacity. Since this capacity is greater than the 13 200 SCFH (354 Nm³/h) required, the relief valve may be used or the calculation could be repeated to try for a smaller body size.

Example 2.

Service Conditions:

- Setpoint, 165 psi (11,4 bar)
- Build-up allowed, 10 psi (0,69 bar)
- Outlet discharges into pressured system of 50 psi (3,4 bar)
- Require 3000 SCFH (80,4 Nm³/h) air flow rate

From Table 11, select NPS 3/4 or 1 (DN 20 or 25) body, blue spring. For 150 psi (10,3 bar) setpoint and 10 psi (0,69 bar) build-up, the Type 98H will flow 9000 SCFH (241 Nm³/h) air.

Calculate C_g for these table conditions using Equation 1:

$$\begin{aligned}
 P_1 \text{ (inlet)} &= 150 \text{ psig (10,3 bar)} + 10 \text{ psig (0,69 bar) build-up} = 160 \text{ psig or } 174.7 \text{ psia (11,0 bar g or 12,0 bar a)} \\
 \Delta P &= P_1 - P_2 = 160 \text{ psig (11,0 bar)} - 0 = 160 \text{ psid (11,0 bar d)} \\
 Q &= 9000 \text{ SCFH (241 Nm}^3\text{/h)} \\
 C_1 &= 35
 \end{aligned}$$

Answer from Equation 1, $C_g = 51.5^*$

*Since build-up relates to travel, this coefficient is valid for all pressure settings on the spring used in the calculation whenever the build-up is 10 psi (0,69 bar).

Now, solve for actual flow, Q , from the original service conditions using Equation 2:

$$\begin{aligned}
 P_1 &= 165 \text{ psig (11,4 bar)} + 10 \text{ psig (0,69 bar) build-up} = 175 \text{ psig or } 189.7 \text{ psia (12,1 bar g or 13,1 bar a)} \\
 \Delta P &= P_1 - P_2 = 170 \text{ psig (11,7 bar)} - 50 \text{ psig (3,4 bar)} = 120 \text{ psid (8,3 bar d)} \\
 C_g &= 51.5 \text{ (from above)} \\
 C_1 &= 35
 \end{aligned}$$

Answer from Equation 2, $Q = 9500$ SCFH (255 Nm³/h) rated capacity. Since this capacity is greater than the 3000 SCFH (80,4 Nm³/h) required, the relief valve may be used or the calculation could be repeated to try for a smaller body size.

Liquid Sizing for Liquids Other than Water

Step 1.

Determine C_v at build-up conditions of application.

$$C_v = \frac{Q}{\sqrt{\Delta P}}$$

- Q = Flow in GPM from capacity tables
- ΔP = Pressure drop in psi (setpoint and build-up)
- C_v = Valve sizing coefficient

Step 2.

To determine flow rate for liquids other than water or flow rate for differential relief service:

$$Q = C_v \sqrt{\Delta P / G}$$

G = Specific gravity of fluid

Maximum Allowable Pressure Drop for Liquid Service

Pressure drops in excess of allowable will result in choked flow and possible cavitation damage.

To determine maximum allowable pressure drop for water:

$$\begin{aligned}
 \Delta P(\text{allow}) &= K_m (P_1) \\
 \Delta P &= \text{Valve differential - PSI} \\
 K_m &= \text{Valve recovery coefficient from table} \\
 P_1 &= \text{Valve inlet pressure psig}
 \end{aligned}$$

To determine maximum allowable pressure drop for fluids other than water, see Fisher® Catalog 10.

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Table 1. Trim Materials

ELASTOMER SEAT	STANDARD	OPTIONAL
Orifice	416 Stainless steel	316 Stainless steel
O-ring retainer	416 Stainless steel	316 Stainless steel
Valve plug	416 Stainless steel	316 Stainless steel
Valve plug guide	416 Stainless steel	316 Stainless steel
Pusher post	416 Stainless steel	316 Stainless steel
Diaphragm retaining washer	316 Stainless steel	302 Stainless steel
Diaphragm	Neoprene (CR)	Fluorocarbon (FKM) ⁽³⁾ or Ethylenepropylene (EPDM); PTFE protector available; 302 Stainless steel ⁽²⁾
O-ring seat	Nitrile (NBR)	Fluorocarbon (FKM), Ethylenepropylene EPDM, Perfluoroelastomer (FFKM) ⁽¹⁾
METAL SEAT	STANDARD	OPTIONAL
Orifice	416 Stainless steel, hardened	316 Stainless steel, Hastelloy® C, Monel®
Valve plug	416 Stainless steel, hardened	316 Stainless steel, Hastelloy® C, Monel®
Valve plug guide	416 Stainless steel	316 Stainless steel, Hastelloy® C, Monel®
Pusher post	416 Stainless steel	316 Stainless steel, Hastelloy® C, Monel®
Diaphragm	302 Stainless steel ⁽²⁾	Neoprene (CR), Fluorocarbon (FKM) ⁽³⁾ , PTFE protector available, Hastelloy® C, Monel®
Diaphragm retaining washer	Not used	302 Stainless steel

1. Available for Type 98HM only.
 2. Two metal diaphragms will be used except only for Type 98L, 1/4 NPT, 2 to 7 psi (0,14 to 0,48 bar) range which uses only one metal diaphragm (see Figure 2 for assembly reference).
 3. Two diaphragms will be used if elastomer diaphragm is Fluorocarbon (FKM)

Table 2. Spring Ranges for Relief or Differential Relief Pressures

BODY SIZES, NPS (DN)	RELIEF SET PRESSURE RANGE ⁽¹⁾ , PSIG OR PSI (bar)			SPRING PART NUMBER	SPRING COLOR
	Type 98L or 98LD	Type 98H, 98HD, or 98HM	Type 98HH or 98HHD		
1/4 ⁽²⁾	2 to 7 (0,14 to 0,48 bar)	15 to 35 (1,0 to 2,4 bar)	----	1E392527022	Yellow
	6 to 14 (0,41 to 0,97 bar)	25 to 75 (1,7 to 5,2 bar)	----	1E392627012	Green
	12 to 25 (0,83 to 1,7 bar)	70 to 140 (4,8 to 9,7 bar)	----	1E392727142	Red
	20 to 38 (1,4 to 2,6 bar)	130 to 200 (9,0 to 13,8 bar)	----	1L346127142	Blue
	----	----	150 to 375 (10,3 to 25,9)	1N942227142	Light Gray
1/2 (15)	2 to 7 (0,14 to 0,48 bar)	15 to 35 (1,0 to 2,4 bar)	----	1E395627022	Yellow
	6 to 14 (0,41 to 0,97 bar)	25 to 75 (1,7 to 5,2 bar)	----	1D7455T0012	Green
	12 to 25 (0,83 to 1,7 bar)	70 to 140 (4,8 to 9,7 bar)	----	1E395727192	Red
	20 to 38 (1,4 to 2,6 bar)	130 to 200 (9,0 to 13,8 bar)	----	1L380027142	Blue
	----	15 to 100 ⁽³⁾ (1,0 to 6,9 bar)	----	14B9943X012	Unpainted
	----	100 to 275 ⁽³⁾ (6,9 to 19,0 bar)	----	14B9942X022	Unpainted
	----	----	150 to 375 (10,3 to 25,9)	1N943427142	Light Gray
3/4, 1 (20, 25)	2 to 7 (0,14 to 0,48 bar)	15 to 35 (1,0 to 2,4 bar)	----	1E398927022	Yellow
	6 to 14 (0,41 to 0,97 bar)	25 to 75 (1,7 to 5,2 bar)	----	1E399027142	Green
	12 to 25 (0,83 to 1,7 bar)	70 to 140 (4,8 to 9,7 bar)	----	1E399127162	Red
	20 to 38 (1,4 to 2,6 bar)	130 to 200 (9,0 to 13,8 bar)	----	1L380127082	Blue
	----	15 to 100 ⁽³⁾ (1,0 to 6,9 bar)	----	14B9944X022	Unpainted
	----	100 to 275 ⁽³⁾ (6,9 to 19,0 bar)	----	14B9945X022	Unpainted
	----	----	150 to 375 (10,3 to 25,9)	1N944127182	Black Stripe
1-1/2, 2 (40, 50)	----	5 to 35 (0,34 to 2,4 bar)	----	1E792327092	Dark Gray
	----	20 to 65 (1,4 to 4,5 bar)	----	1E795327082	Light Blue
	----	50 to 100 (3,4 to 6,9 bar)	----	1E795427082	Light Gray
	----	80 to 170 (5,5 to 11,7 bar)	----	1P788827082	Black

1. All springs may be backed off to 0 psig (0 bar). However, highest capacities and best performances are obtained by using these springs in their recommended ranges. Psi rather than psig are used for differential relief constructions.
 2. Not available for Type 98HM.
 3. Only available for Type 98HM. Stainless steel construction.

Table 3. Water Relief Capacities in Gallons per Minute (l/min), Types 98L and 98LD with Elastomer Diaphragm

NOMINAL BODY SIZES, NPS (DN)	SPRING		RELIEF PRESSURE SETTING, PSIG (bar)	FLOW AT RELIEF SETTING, GPM (l/min)	PRESSURE BUILD-UP OVER RELIEF SETTING, PSIG (bar)								
	Part Number	Color Code			2 (0,14)	4 (0,28)	6 (0,41)	8 (0,55)	10 (0,69)	15 (1,0)	20 (1,4)	25 (1,7)	30 (2,1)
1/4	1E392527022	Yellow	2 (0,14)	0.7 (2,7)	2.1 (8,0)	2.6 (9,8)	3 (11,4)	3.4 (12,9)	3.8 (14,4)	4.5 (17,0)	5.2 (19,7)	5.7 (21,6)	6.2 (23,5)
			5 (0,34)	0.7 (2,7)	2.9 (11,0)	3.3 (12,5)	3.7 (14,0)	4.1 (15,5)	4.5 (17,0)	5.2 (19,7)	5.8 (22,0)	6.4 (24,2)	6.9 (26,1)
	1E392627012	Green	10 (0,69)	2.2 (8,3)	3.5 (13,2)	4.5 (17,0)	5 (18,9)	5.3 (20,1)	5.5 (20,8)	5.9 (22,3)	6.5 (24,6)	7.0 (26,5)	7.5 (28,4)
			1E392727142	Red	15 (1,0)	1.8 (6,8)	3.1 (11,7)	4.3 (16,3)	5 (18,9)	5.5 (20,8)	6 (22,7)	6.4 (24,2)	6.9 (26,1)
	20 (1,4)	1.8 (6,8)			3.3 (12,5)	4.8 (18,2)	5.7 (21,6)	6.1 (23,1)	6.3 (23,8)	6.7 (25,4)	7 (26,5)	7.4 (28,0)	7.8 (29,5)
	25 (1,7)	1.8 (6,8)			3.5 (13,2)	5.3 (20,1)	6.1 (23,1)	6.5 (24,6)	6.7 (25,4)	7.1 (26,9)	7.5 (28,4)	7.9 (29,9)	8.3 (31,4)
	1L346127142	Blue	25 (1,7)	1.8 (6,8)	3.4 (12,9)	4.7 (17,8)	5.5 (20,8)	6.1 (23,1)	6.6 (25,0)	7.2 (27,3)	7.6 (28,8)	8 (30,3)	8.4 (31,8)
			30 (2,1)	1.8 (6,8)	3.8 (14,4)	5.2 (19,7)	6 (22,7)	6.7 (25,4)	7.2 (27,3)	7.6 (28,8)	8 (30,3)	8.4 (31,8)	8.5 (32,2)
35 (2,4)			1.8 (6,8)	4.2 (15,9)	5.6 (21,2)	6.5 (24,6)	7 (26,5)	7.4 (28,0)	8 (30,3)	8.4 (31,8)	8.7 (32,9)	9.2 (34,8)	
1/2 (15)	1E395627022	Yellow	2 (0,14)	2.2 (8,3)	5.2 (19,7)	7.5 (28,4)	8.5 (32,2)	9.5 (36,0)	10.2 (38,6)	12.1 (45,8)	13.8 (52,2)	15.3 (57,9)	16.6 (62,8)
			5 (0,34)	2.2 (8,3)	6 (22,7)	8.2 (31,0)	9.2 (34,8)	10.2 (38,6)	11.2 (42,4)	12.9 (48,8)	14.5 (54,9)	15.8 (59,8)	17.1 (64,7)
	1D7455T0012	Green	10 (0,69)	2.2 (8,3)	6.7 (25,4)	8.5 (32,2)	10 (37,9)	11.5 (43,5)	12.5 (47,3)	14.2 (53,7)	15.6 (59,0)	16.8 (63,6)	18.0 (68,1)
			1E395727192	Red	15 (1,0)	1.8 (6,8)	4.5 (17,0)	6.7 (25,4)	9.2 (34,8)	11.2 (42,4)	12.6 (47,7)	15 (56,8)	16.2 (61,3)
	20 (1,4)	1.8 (6,8)			5 (18,9)	7.7 (29,1)	10.5 (39,7)	12.5 (47,3)	13.7 (51,9)	16.2 (61,3)	17.7 (67,0)	18.8 (71,2)	19.9 (75,3)
	25 (1,7)	1.8 (6,8)			5.5 (20,8)	8.2 (31,0)	11.5 (43,5)	13.2 (50,0)	14.5 (54,9)	16.5 (62,5)	18.2 (68,9)	19.5 (73,8)	20.4 (77,2)
	1L380027142	Blue	25 (1,7)	1.8 (6,8)	4.2 (15,9)	7 (26,5)	9.7 (36,7)	12 (45,4)	13.5 (51,1)	16.2 (61,3)	18.2 (68,9)	19.5 (73,8)	20.5 (77,6)
			30 (2,1)	1.8 (6,8)	4.5 (17,0)	7.5 (28,4)	10.2 (38,6)	12.5 (47,3)	14 (53,0)	16.7 (63,2)	18.7 (70,8)	20 (75,7)	21 (79,5)
35 (2,4)			1.8 (6,8)	4.7 (17,8)	8 (30,3)	10.7 (40,5)	13 (49,2)	14.7 (55,6)	17.5 (66,2)	19.5 (73,8)	21.5 (81,4)	21.2 (80,2)	
3/4, 1 (20, 25)	1E398927022	Yellow	2 (0,14)	2.2 (8,3)	15 (56,8)	18.5 (70,0)	20 (75,7)	22.5 (85,2)	24 (90,8)	28.6 (108)	32.5 (123)	36.0 (136)	39.2 (148)
			5 (0,34)	2.2 (8,3)	15.5 (58,7)	19 (71,9)	21 (79,5)	23 (87,1)	24.5 (92,7)	28.9 (109)	33.5 (127)	36.7 (139)	39.6 (150)
	1E399027142	Green	10 (0,69)	2.2 (8,3)	16.5 (62,5)	21.5 (81,4)	24.5 (92,7)	26.5 (100)	27.5 (104)	29.5 (112)	32.3 (122)	34.9 (132)	37.3 (141)
			1E399127162	Red	15 (1,0)	1.8 (6,8)	14 (53,0)	21 (79,5)	25.5 (96,5)	28 (106)	30 (114)	32 (121)	34.6 (131)
	20 (1,4)	1.8 (6,8)			16.5 (62,5)	24 (90,8)	28.5 (108)	30.5 (115)	32 (121)	34 (129)	36 (136)	38.2 (145)	40.2 (152)
	25 (1,7)	1.8 (6,8)			17.5 (66,2)	25.5 (96,5)	30.5 (115)	33 (125)	34 (129)	36 (136)	38 (144)	40 (151)	42.0 (159)
	1L380127082	Blue	25 (1,7)	1.8 (6,8)	10 (37,9)	20 (75,7)	25 (94,6)	29 (110)	32 (121)	36 (136)	38 (144)	40 (151)	42.0 (159)
			30 (2,1)	1.8 (6,8)	11 (41,6)	24 (90,8)	30 (114)	33.5 (127)	35.5 (134)	38 (144)	40 (151)	42 (159)	44 (167)
35 (2,4)			1.8 (6,8)	19.5 (73,8)	30 (114)	34.5 (131)	36.5 (138)	38 (144)	40 (151)	42 (159)	44 (167)	51 (193)	

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Table 4. Water Relief Capacities in Gallons per Minute (l/min), Types 98L and 98LD with Metal Diaphragm

NOMINAL BODY SIZES, NPS (DN)	SPRING		RELIEF PRESSURE SETTING, PSIG (bar)	FLOW AT RELIEF SETTING, GPM (l/min)	PRESSURE BUILD-UP OVER RELIEF SETTING, PSIG (bar)									
	Part Number	Color Code			2 (0,14)	4 (0,28)	6 (0,41)	8 (0,55)	10 (0,69)	15 (1,0)	20 (1,4)	25 (1,7)	30 (2,1)	
1/4	1E392527022	Yellow	2 (0,14)	0.7 (2,7)	1.2 (4,5)	1.8 (6,8)	2.5 (9,5)	3.0 (11,4)	3.3 (12,5)	3.9 (14,8)	4.5 (17,0)	4.9 (18,5)	5.4 (20,4)	
			5 (0,34)	0.7 (2,7)	1.3 (4,9)	2.1 (8,0)	3.0 (11,4)	3.5 (13,2)	3.8 (14,4)	4.4 (16,7)	4.9 (18,5)	5.4 (20,4)	5.8 (22,0)	
	1E392627012	Green	10 (0,69)	2.2 (8,3)	3.4 (12,9)	4 (15,1)	4.5 (17,0)	4.8 (18,2)	5.1 (19,3)	5.5 (20,8)	6.0 (22,7)	6.5 (24,6)	7.0 (26,5)	
			1E392727142	Red	15 (1,0)	1.8 (6,8)	3 (11,4)	3.9 (14,8)	4.5 (17,0)	5 (18,9)	5.4 (20,4)	5.8 (22,0)	6.3 (23,8)	6.7 (25,4)
20 (1,4)	1.8 (6,8)	3.1 (11,7)			4 (15,1)	4.6 (17,4)	5.2 (19,7)	5.5 (20,8)	6.3 (23,8)	6.7 (25,4)	7.1 (26,9)	7.5 (28,4)		
25 (1,7)	1.8 (6,8)	3.3 (12,5)			4.3 (16,3)	5.1 (19,3)	5.7 (21,6)	6.1 (23,1)	6.7 (25,4)	7.1 (26,9)	7.5 (28,4)	7.9 (29,9)		
1L346127142	Blue	25 (1,7)	1.8 (6,8)	2.6 (9,8)	3.7 (14,0)	4.5 (17,0)	5 (18,9)	5.5 (20,8)	6.5 (24,6)	7.1 (26,9)	7.5 (28,4)	7.9 (29,9)		
		30 (2,1)	1.8 (6,8)	3.1 (11,7)	4.1 (15,5)	4.9 (18,5)	5.5 (20,8)	6 (22,7)	7 (26,5)	7.5 (28,4)	7.9 (29,9)	8.3 (31,4)		
		35 (2,4)	1.8 (6,8)	3.2 (12,1)	4.4 (16,7)	5.3 (20,1)	6 (22,7)	6.5 (24,6)	7.5 (28,4)	7.9 (29,9)	8.3 (31,4)	8.7 (32,9)		
		1E395627022	Yellow	2 (0,14)	2.2 (8,3)	3.7 (14,0)	6 (22,7)	7.2 (27,3)	8.2 (31,0)	9.2 (34,8)	11.0 (41,6)	12.5 (47,3)	13.8 (52,2)	15.0 (56,8)
5 (0,34)	2.2 (8,3)			4.7 (17,8)	6.2 (23,5)	8 (30,3)	9.2 (34,8)	10.2 (38,6)	11.8 (44,7)	13.2 (50,0)	14.4 (54,5)	15.6 (59,0)		
1D7455T0012	Green			10 (0,69)	2.2 (8,3)	3.8 (14,4)	5.5 (20,8)	7.5 (28,4)	9 (34,1)	10.5 (39,7)	13 (49,2)	14.2 (53,7)	15.4 (58,3)	16.4 (62,1)
				1E395727192	Red	15 (1,0)	1.8 (6,8)	4.2 (15,9)	6.2 (23,5)	7.5 (28,4)	8.7 (32,9)	9.7 (36,7)	11.5 (43,5)	12.4 (46,9)
20 (1,4)	1.8 (6,8)	4.7 (17,8)	7 (26,5)			8.5 (32,2)	9.7 (36,7)	10.7 (40,5)	12.7 (48,1)	14 (53,0)	14.8 (56,0)	15.6 (59,0)		
25 (1,7)	1.8 (6,8)	5 (18,9)	7.5 (28,4)			9.2 (34,8)	10.7 (40,5)	12 (45,4)	14 (53,0)	15 (56,8)	16.2 (61,3)	17.0 (64,3)		
1L380027142	Blue	25 (1,7)	1.8 (6,8)	3.5 (13,2)	5.7 (21,6)	7.5 (28,4)	9.2 (34,8)	10.2 (38,6)	12.7 (48,1)	14.7 (55,6)	16.2 (61,3)	17.0 (64,3)		
		30 (2,1)	1.8 (6,8)	4 (15,1)	6.5 (24,6)	8.5 (32,2)	10.1 (38,2)	11.2 (42,4)	14 (53,0)	16 (60,6)	17.2 (65,1)	18.2 (68,9)		
		35 (2,4)	1.8 (6,8)	4.5 (17,0)	7.2 (27,3)	9.5 (36,0)	11 (41,6)	12.2 (46,2)	15.5 (58,7)	17.2 (65,1)	18.2 (68,9)	19.2 (72,7)		
		1E398927022	Yellow	2 (0,14)	2.2 (8,3)	13 (49,2)	16.5 (62,5)	18.5 (70,0)	19.5 (73,8)	20.5 (77,6)	24.4 (93,4)	27.8 (105)	30.8 (117)	33.5 (127)
5 (0,34)	2.2 (8,3)			14.7 (55,6)	18.2 (68,9)	20 (75,7)	21 (79,5)	22 (83,3)	25.4 (96,1)	28.4 (107)	31.1 (118)	33.6 (127)		
1E399027142	Green			10 (0,69)	2.2 (8,3)	11.5 (43,5)	17.5 (66,2)	20.2 (76,5)	20.5 (77,6)	24 (90,8)	26.5 (100)	29.0 (110)	31.4 (119)	33.5 (127)
				1E399127162	Red	15 (1,0)	1.8 (6,8)	5 (18,9)	14 (53,0)	18.5 (70,0)	21 (79,5)	23.5 (88,9)	27.5 (104)	29.7 (112)
20 (1,4)	1.8 (6,8)	5.2 (19,7)	15 (56,8)			20 (75,7)	23.5 (88,9)	26 (98,4)	30 (114)	31.5 (119)	33.4 (126)	35.2 (133)		
25 (1,7)	1.8 (6,8)	5.5 (20,8)	18 (68,1)			23.5 (88,9)	26.5 (100)	29 (110)	32 (121)	33.5 (127)	35.5 (134)	37.2 (141)		
1L380127082	Blue	25 (1,7)	1.8 (6,8)	2.5 (9,5)	7.5 (28,4)	12.5 (47,3)	17 (64,3)	20 (75,7)	26 (98,4)	30.5 (115)	34.5 (131)	37.2 (141)		
		30 (2,1)	1.8 (6,8)	3 (11,4)	9 (34,1)	14 (53,0)	18 (68,1)	22 (83,3)	27.5 (104)	32 (121)	37.5 (142)	39.5 (150)		
		35 (2,4)	1.8 (6,8)	5.2 (19,7)	11.5 (43,5)	16.5 (62,5)	21.5 (81,4)	25 (94,6)	31.5 (119)	36 (136)	39.5 (150)	42 (159)		
		1E399927022	Yellow	2 (0,14)	2.2 (8,3)	13 (49,2)	16.5 (62,5)	18.5 (70,0)	19.5 (73,8)	20.5 (77,6)	24.4 (93,4)	27.8 (105)	30.8 (117)	33.5 (127)
5 (0,34)	2.2 (8,3)			14.7 (55,6)	18.2 (68,9)	20 (75,7)	21 (79,5)	22 (83,3)	25.4 (96,1)	28.4 (107)	31.1 (118)	33.6 (127)		
1E399027142	Green			10 (0,69)	2.2 (8,3)	11.5 (43,5)	17.5 (66,2)	20.2 (76,5)	20.5 (77,6)	24 (90,8)	26.5 (100)	29.0 (110)	31.4 (119)	33.5 (127)
				1E399127162	Red	15 (1,0)	1.8 (6,8)	5 (18,9)	14 (53,0)	18.5 (70,0)	21 (79,5)	23.5 (88,9)	27.5 (104)	29.7 (112)
20 (1,4)	1.8 (6,8)	5.2 (19,7)	15 (56,8)			20 (75,7)	23.5 (88,9)	26 (98,4)	30 (114)	31.5 (119)	33.4 (126)	35.2 (133)		
25 (1,7)	1.8 (6,8)	5.5 (20,8)	18 (68,1)			23.5 (88,9)	26.5 (100)	29 (110)	32 (121)	33.5 (127)	35.5 (134)	37.2 (141)		
1L380127082	Blue	25 (1,7)	1.8 (6,8)	2.5 (9,5)	7.5 (28,4)	12.5 (47,3)	17 (64,3)	20 (75,7)	26 (98,4)	30.5 (115)	34.5 (131)	37.2 (141)		
		30 (2,1)	1.8 (6,8)	3 (11,4)	9 (34,1)	14 (53,0)	18 (68,1)	22 (83,3)	27.5 (104)	32 (121)	37.5 (142)	39.5 (150)		
		35 (2,4)	1.8 (6,8)	5.2 (19,7)	11.5 (43,5)	16.5 (62,5)	21.5 (81,4)	25 (94,6)	31.5 (119)	36 (136)	39.5 (150)	42 (159)		
		1E399927022	Yellow	2 (0,14)	2.2 (8,3)	13 (49,2)	16.5 (62,5)	18.5 (70,0)	19.5 (73,8)	20.5 (77,6)	24.4 (93,4)	27.8 (105)	30.8 (117)	33.5 (127)
5 (0,34)	2.2 (8,3)			14.7 (55,6)	18.2 (68,9)	20 (75,7)	21 (79,5)	22 (83,3)	25.4 (96,1)	28.4 (107)	31.1 (118)	33.6 (127)		
1E399027142	Green			10 (0,69)	2.2 (8,3)	11.5 (43,5)	17.5 (66,2)	20.2 (76,5)	20.5 (77,6)	24 (90,8)	26.5 (100)	29.0 (110)	31.4 (119)	33.5 (127)
				1E399127162	Red	15 (1,0)	1.8 (6,8)	5 (18,9)	14 (53,0)	18.5 (70,0)	21 (79,5)	23.5 (88,9)	27.5 (104)	29.7 (112)
20 (1,4)	1.8 (6,8)	5.2 (19,7)	15 (56,8)			20 (75,7)	23.5 (88,9)	26 (98,4)	30 (114)	31.5 (119)	33.4 (126)	35.2 (133)		
25 (1,7)	1.8 (6,8)	5.5 (20,8)	18 (68,1)			23.5 (88,9)	26.5 (100)	29 (110)	32 (121)	33.5 (127)	35.5 (134)	37.2 (141)		
1L380127082	Blue	25 (1,7)	1.8 (6,8)	2.5 (9,5)	7.5 (28,4)	12.5 (47,3)	17 (64,3)	20 (75,7)	26 (98,4)	30.5 (115)	34.5 (131)	37.2 (141)		
		30 (2,1)	1.8 (6,8)	3 (11,4)	9 (34,1)	14 (53,0)	18 (68,1)	22 (83,3)	27.5 (104)	32 (121)	37.5 (142)	39.5 (150)		
		35 (2,4)	1.8 (6,8)	5.2 (19,7)	11.5 (43,5)	16.5 (62,5)	21.5 (81,4)	25 (94,6)	31.5 (119)	36 (136)	39.5 (150)	42 (159)		
		1E399927022	Yellow	2 (0,14)	2.2 (8,3)	13 (49,2)	16.5 (62,5)	18.5 (70,0)	19.5 (73,8)	20.5 (77,6)	24.4 (93,4)	27.8 (105)	30.8 (117)	33.5 (127)
5 (0,34)	2.2 (8,3)			14.7 (55,6)	18.2 (68,9)	20 (75,7)	21 (79,5)	22 (83,3)	25.4 (96,1)	28.4 (107)	31.1 (118)	33.6 (127)		
1E399027142	Green			10 (0,69)	2.2 (8,3)	11.5 (43,5)	17.5 (66,2)	20.2 (76,5)	20.5 (77,6)	24 (90,8)	26.5 (100)	29.0 (110)	31.4 (119)	33.5 (127)
				1E399127162	Red	15 (1,0)	1.8 (6,8)	5 (18,9)	14 (53,0)	18.5 (70,0)	21 (79,5)	23.5 (88,9)	27.5 (104)	29.7 (112)
20 (1,4)	1.8 (6,8)	5.2 (19,7)	15 (56,8)			20 (75,7)	23.5 (88,9)	26 (98,4)	30 (114)	31.5 (119)	33.4 (126)	35.2 (133)		
25 (1,7)	1.8 (6,8)	5.5 (20,8)	18 (68,1)			23.5 (88,9)	26.5 (100)	29 (110)	32 (121)	33.5 (127)	35.5 (134)	37.2 (141)		
1L380127082	Blue	25 (1,7)	1.8 (6,8)	2.5 (9,5)	7.5 (28,4)	12.5 (47,3)	17 (64,3)	20 (75,7)	26 (98,4)	30.5 (115)	34.5 (131)	37.2 (141)		
		30 (2,1)	1.8 (6,8)	3 (11,4)	9 (34,1)	14 (53,0)	18 (68,1)	22 (83,3)	27.5 (104)	32 (121)	37.5 (142)	39.5 (150)		
		35 (2,4)	1.8 (6,8)	5.2 (19,7)	11.5 (43,5)	16.5 (62,5)	21.5 (81,4)	25 (94,6)	31.5 (119)	36 (136)	39.5 (150)	42 (159)		
		1E399927022	Yellow	2 (0,14)	2.2 (8,3)	13 (49,2)	16.5 (62,5)	18.5 (70,0)	19.5 (73,8)	20.5 (77,6)	24.4 (93,4)	27.8 (105)	30.8 (117)	33.5 (127)
5 (0,34)	2.2 (8,3)			14.7 (55,6)	18.2 (68,9)	20 (75,7)	21 (79,5)	22 (83,3)	25.4 (96,1)	28.4 (107)	31.1 (118)	33.6 (127)		
1E399027142	Green			10 (0,69)	2.2 (8,3)	11.5 (43,5)	17.5 (66,2)	20.2 (76,5)	20.5 (77,6)	24 (90,8)	26.5 (100)	29.0 (110)	31.4 (119)	33.5 (127)
				1E399127162	Red	15 (1,0)	1.8 (6,8)	5 (18,9)	14 (53,0)	18.5 (70,0)	21 (79,5)	23.5 (88,9)	27.5 (104)	29.7 (112)
20 (1,4)	1.8 (6,8)	5.2 (19,7)	15 (56,8)			20 (75,7)	23.5 (88,9)	26 (98,4)	30 (114)	31.5 (119)	33.4 (126)	35.2 (133)		
25 (1,7)	1.8 (6,8)	5.5 (20,8)	18 (68,1)			23.5 (88,9)	26.5 (100)	29 (110)	32 (121)	33.5 (127)	35.5 (134)	37.2 (141)		
1L380127082	Blue	25 (1,7)	1.8 (6,8)	2.5 (9,5)	7.5 (28,4)	12.5 (47,3)	17 (64,3)	20 (75,7)	26 (98,4)	30.5 (115)	34.5 (131)	37.2 (141)		
		30 (2,1)	1.8 (6,8)	3 (11,4)	9 (34,1)	14 (53,0)	18 (68,1)	22 (83,3)	27.5 (104)	32 (121)	37.5 (142)	39.5 (150)		
		35 (2,4)	1.8 (6,8)	5.2 (19,7)										

Table 5. Steam Relief Capacities in Pounds per Hour (kg/h), Types 98L and 98LD with Metal Diaphragm Only

NOMINAL BODY SIZES, NPS (DN)	SPRING		RELIEF PRESSURE SETTING, PSIG (bar)	FLOW AT RELIEF SETTING, POUNDS/HOUR (kg/h)	PRESSURE BUILD-UP OVER RELIEF SETTING, PSIG (bar)								
	Part Number	Color Code			2 (0,14)	4 (0,28)	6 (0,41)	8 (0,55)	10 (0,69)	15 (1,0)	20 (1,4)	25 (1,7)	30 (2,1)
1/4	1E392527022	Yellow	2 (0,14)	7.5 (3,4)	18 (8,2)	30 (13,6)	41 (18,6)	48 (21,8)	54 (24,5)	64 (29,0)	74.1 (33,6)	84.2 (38,2)	94.3 (42,8)
			5 (0,34)	7.5 (3,4)	18 (8,2)	33 (15,0)	46 (20,9)	54 (24,5)	60 (27,2)	70.1 (31,8)	80.2 (36,4)	90.3 (41,0)	100 (45,4)
	1E392627012	Green	10 (0,69)	25 (11,3)	39 (17,7)	50 (22,7)	54 (24,5)	59 (26,8)	68 (30,8)	86 (39,0)	96.8 (43,9)	108 (49,0)	119 (54,0)
			1E392727142	Red	15 (1,0)	25 (11,3)	36 (16,3)	50 (22,7)	54 (24,5)	64 (29,0)	73 (33,1)	91 (41,3)	101 (45,8)
20 (1,4)	25 (11,3)	39 (17,7)			52 (23,6)	59 (26,8)	68 (30,8)	77 (34,9)	95 (43,1)	105 (47,6)	115 (52,2)	124 (56,2)	
25 (1,7)	25 (11,3)	41 (18,6)			54 (24,5)	64 (29,0)	73 (33,1)	82 (37,2)	105 (47,6)	123 (55,8)	132 (59,9)	142 (64,4)	
1L346127142	Blue	25 (1,7)	25 (11,3)	36 (16,3)	54 (24,5)	64 (29,0)	73 (33,1)	86 (39,0)	109 (49,4)	123 (55,8)	136 (61,7)	147 (66,7)	
		30 (2,1)	25 (11,3)	39 (17,7)	59 (26,8)	66 (29,9)	77 (34,9)	91 (41,3)	113 (51,3)	127 (57,6)	140 (63,5)	155 (70,3)	
		35 (2,4)	25 (11,3)	41 (18,6)	61 (27,7)	68 (30,8)	82 (37,2)	95 (43,1)	123 (55,8)	140 (63,5)	150 (68,0)	159 (72,1)	
1/2 (15)	1E395627022	Yellow	2 (0,14)	25 (11,3)	59 (26,8)	86 (39,0)	100 (45,4)	114 (51,7)	127 (57,6)	151 (68,5)	175 (79,4)	198 (89,8)	222 (101)
			5 (0,34)	25 (11,3)	73 (33,1)	95 (43,1)	114 (51,7)	127 (57,6)	136 (61,7)	159 (72,1)	182 (82,6)	205 (93,0)	228 (103)
	1D7455T0012	Green	10 (0,69)	25 (11,3)	77 (34,9)	105 (47,6)	122 (55,3)	136 (61,7)	145 (65,8)	173 (78,5)	195 (88,5)	216 (98,0)	238 (108)
			1E395727192	Red	15 (1,0)	25 (11,3)	59 (26,8)	95 (43,1)	122 (55,3)	141 (64,0)	155 (70,3)	187 (84,8)	208 (94,3)
20 (1,4)	25 (11,3)	64 (29,0)			100 (45,4)	127 (57,6)	145 (65,8)	168 (76,2)	204 (92,5)	227 (103)	248 (112)	269 (122)	
25 (1,7)	25 (11,3)	68 (30,8)			109 (49,4)	136 (61,7)	164 (74,4)	182 (82,6)	228 (103)	260 (118)	286 (130)	308 (140)	
1L380027142	Blue	25 (1,7)	25 (11,3)	50 (22,7)	77 (34,9)	100 (45,4)	123 (55,8)	141 (64,0)	190 (86,2)	232 (105)	264 (120)	284 (129)	
		30 (2,1)	25 (11,3)	52 (23,6)	82 (37,2)	109 (49,4)	136 (61,7)	159 (72,1)	210 (95,3)	250 (113)	282 (128)	310 (141)	
		35 (2,4)	25 (11,3)	55 (24,9)	86 (39,0)	114 (51,7)	145 (65,8)	168 (76,2)	220 (99,8)	264 (120)	295 (134)	317 (144)	
3/4, 1 (20, 25)	1E398927022	Yellow	2 (0,14)	25 (11,3)	122 (55,3)	177 (80,3)	210 (95,3)	236 (107)	264 (120)	313 (142)	363 (165)	412 (187)	462 (210)
			5 (0,34)	25 (11,3)	127 (57,6)	182 (82,6)	218 (98,9)	246 (112)	272 (123)	318 (144)	364 (165)	415 (188)	465 (211)
	1E399027142	Green	10 (0,69)	25 (11,3)	136 (61,7)	200 (90,7)	240 (109)	280 (127)	310 (141)	370 (168)	417 (189)	463 (210)	509 (231)
			1E399127162	Red	15 (1,0)	25 (11,3)	100 (45,4)	173 (78,5)	228 (103)	272 (123)	300 (136)	380 (172)	423 (192)
20 (1,4)	25 (11,3)	127 (57,6)			210 (95,3)	264 (120)	310 (141)	340 (155)	420 (191)	455 (206)	497 (225)	538 (244)	
25 (1,7)	25 (11,3)	136 (61,7)			236 (107)	280 (127)	328 (149)	364 (165)	455 (206)	500 (227)	545 (247)	587 (266)	
1L380127082	Blue	25 (1,7)	25 (11,3)	91 (41,3)	164 (74,4)	228 (103)	272 (123)	320 (145)	420 (191)	500 (227)	545 (247)	587 (266)	
		30 (2,1)	25 (11,3)	118 (53,5)	190 (86,2)	254 (115)	318 (144)	354 (161)	455 (206)	545 (247)	590 (268)	680 (308)	
		35 (2,4)	25 (11,3)	127 (57,6)	220 (99,8)	280 (127)	346 (157)	390 (177)	500 (227)	590 (268)	640 (290)	730 (331)	

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Table 6. Air Relief Capacities in SCFH (Nm³/h), Types 98L and 98LD with Elastomer Diaphragm

NOMINAL BODY SIZES, NPS (DN)	SPRING		RELIEF PRESSURE SETTING, PSIG (bar)	FLOW AT RELIEF SETTING, SCFH (Nm ³ /h)	PRESSURE BUILD-UP OVER RELIEF SETTING, PSIG (bar)								
	Part Number	Color Code			2 (0,14)	4 (0,28)	6 (0,41)	8 (0,55)	10 (0,69)	15 (1,0)	20 (1,4)	25 (1,7)	30 (2,1)
1/4	1E392527022	Yellow	2 (0,14) 5 (0,34)	150 (4,0) 150 (4,0)	670 (18,0) 900 (24,1)	830 (22,2) 1030 (27,6)	960 (25,7) 1150 (30,8)	1080 (28,9) 1260 (33,8)	1200 (32,2) 1380 (37,0)	1430 (38,3) 1610 (43,1)	1650 (44,2) 1850 (49,6)	1870 (50,2) 2080 (55,7)	2100 (56,3) 2310 (61,9)
	1E392627012	Green	10 (0,69)	500 (13,4)	1200 (32,2)	1300 (34,8)	1400 (37,5)	1500 (40,2)	1700 (45,6)	1900 (50,9)	2140 (57,4)	2380 (63,8)	2620 (70,2)
	1E392727142	Red	15 (1,0) 20 (1,4) 25 (1,7)	500 (13,4) 500 (13,4) 500 (13,4)	1100 (29,5) 1300 (34,8) 1400 (37,5)	1400 (37,5) 1600 (42,9) 1800 (48,2)	1600 (42,9) 1800 (48,2) 2000 (53,6)	1700 (45,6) 1900 (50,9) 2000 (53,6)	1800 (48,2) 2100 (56,3) 2300 (61,6)	2100 (56,3) 2300 (61,6) 2600 (69,7)	2330 (62,4) 2600 (69,7) 2900 (77,7)	2560 (68,6) 2840 (76,1) 3100 (83,1)	2800 (75,0) 3070 (82,3) 3340 (89,5)
	1L346127142	Blue	25 (1,7) 30 (2,1) 35 (2,4)	500 (13,4) 500 (13,4) 500 (13,4)	1200 (32,2) 1300 (34,8) 1400 (37,5)	1600 (42,9) 1700 (45,6) 1900 (50,9)	1900 (50,9) 2000 (53,6) 2300 (61,6)	2100 (56,3) 2300 (61,6) 2500 (67,0)	2300 (61,6) 2400 (64,3) 2600 (69,7)	2600 (69,7) 2700 (72,4) 2900 (77,7)	2900 (77,7) 3000 (80,4) 3200 (85,8)	3100 (83,1) 3300 (88,4) 3500 (93,8)	3340 (89,5) 3500 (93,8) 3800 (102)
1/2 (15)	1E395627022	Yellow	2 (0,14) 5 (0,34)	500 (13,4) 500 (13,4)	1900 (50,9) 1900 (50,9)	2100 (56,3) 2200 (59,0)	2400 (64,3) 2500 (67,0)	2600 (69,7) 2700 (72,4)	2800 (75,0) 3000 (80,4)	3320 (89,0) 3640 (97,6)	3850 (103) 4170 (112)	4380 (117) 4690 (126)	4900 (131) 5220 (140)
	1D7455T0012	Green	10 (0,69)	500 (13,4)	2300 (61,6)	2700 (72,4)	2900 (77,7)	3200 (85,8)	3400 (91,1)	4000 (107)	4500 (121)	5020 (135)	5520 (148)
	1E395727192	Red	15 (1,0) 20 (1,4) 25 (1,7)	500 (13,4) 500 (13,4) 500 (13,4)	2100 (56,3) 2700 (72,4) 2800 (75,0)	2700 (72,4) 3300 (88,4) 3600 (96,5)	3200 (85,8) 3700 (99,2) 4100 (110)	3500 (93,8) 4100 (110) 4500 (121)	3800 (102) 4300 (115) 4800 (129)	4400 (118) 4900 (131) 5400 (145)	4890 (131) 5500 (147) 6000 (161)	5380 (144) 6000 (161) 6500 (174)	5870 (157) 6530 (175) 7000 (188)
	1L380027142	Blue	25 (1,7) 30 (2,1) 35 (2,4)	500 (13,4) 500 (13,4) 500 (13,4)	1500 (40,2) 1800 (48,2) 1800 (48,2)	2300 (61,6) 2700 (72,4) 2800 (75,0)	3100 (83,1) 3500 (93,8) 3600 (96,5)	3700 (99,2) 4200 (113) 4300 (115)	4200 (113) 4700 (126) 4800 (129)	5300 (142) 5700 (153) 5800 (155)	6000 (161) 6500 (174) 6600 (177)	6500 (174) 7100 (190) 7300 (196)	7000 (188) 7500 (201) 8000 (214)
3/4, 1 (20, 25)	1E398927022	Yellow	2 (0,14) 5 (0,34)	500 (13,4) 500 (13,4)	3000 (80,4) 4100 (110)	4200 (113) 5100 (137)	4900 (131) 5600 (150)	5400 (145) 6000 (161)	5800 (155) 6600 (177)	7000 (188) 7710 (207)	8100 (217) 8810 (236)	9340 (250) 9920 (266)	10 400 (279) 11 000 (295)
	1E399027142	Green	10 (0,69)	500 (13,4)	4600 (123)	6200 (166)	6900 (185)	7400 (198)	8000 (214)	8900 (239)	10 000 (268)	11 100 (297)	12 300 (330)
	1E399127162	Red	15 (1,0) 20 (1,4) 25 (1,7)	500 (13,4) 500 (13,4) 500 (13,4)	4400 (118) 4800 (129) 5800 (155)	6200 (166) 6800 (182) 8000 (214)	7200 (193) 7900 (212) 9000 (241)	7900 (212) 8800 (236) 9800 (263)	8500 (228) 9400 (252) 10 000 (268)	10 000 (268) 11 000 (295) 12 000 (322)	11 100 (297) 12 000 (322) 13 000 (348)	12 300 (330) 13 100 (351) 14 000 (375)	13 400 (359) 14 200 (381) 15 100 (405)
	1L380127082	Blue	25 (1,7) 30 (2,1) 35 (2,4)	500 (13,4) 500 (13,4) 500 (13,4)	3600 (96,5) 4800 (129) 5300 (142)	6000 (161) 7000 (188) 7700 (206)	7400 (198) 8600 (230) 9400 (252)	9000 (241) 10 000 (268) 11 000 (295)	10 000 (268) 11 000 (295) 12 000 (322)	12 000 (322) 13 000 (348) 13 000 (348)	13 000 (348) 14 000 (375) 15 000 (402)	14 000 (375) 15 000 (402) 16 000 (429)	15 100 (405) 16 000 (429) 17 000 (456)

Table 7. Air Relief Capacities in SCFH (Nm³/h), Types 98L and 98LD with Metal Diaphragm

NOMINAL BODY SIZES, NPS (DN)	SPRING		RELIEF PRESSURE SETTING, PSIG (bar)	FLOW AT RELIEF SETTING, SCFH (Nm ³ /h)	PRESSURE BUILD-UP OVER RELIEF SETTING, PSIG (bar)								
	Part Number	Color Code			2 (0,14)	4 (0,28)	6 (0,41)	8 (0,55)	10 (0,69)	15 (1,0)	20 (1,4)	25 (1,7)	30 (2,1)
1/4	1E392527022	Yellow	2 (0,14) 5 (0,34)	150 (4,0) 150 (4,0)	360 (9,7) 360 (9,7)	610 (16,3) 670 (18,0)	830 (22,2) 920 (24,7)	960 (25,7) 1080 (28,9)	1080 (28,9) 1200 (32,2)	1350 (36,2) 1470 (39,4)	1560 (41,8) 1690 (45,3)	1770 (47,4) 1900 (50,9)	1980 (53,1) 2110 (56,5)
	1E392627012	Green	10 (0,69)	500 (13,4)	850 (22,8)	1100 (29,5)	1200 (32,2)	1300 (34,8)	1500 (40,2)	1900 (50,9)	2140 (57,4)	2380 (63,8)	2620 (70,2)
	1E392727142	Red	15 (1,0) 20 (1,4) 25 (1,7)	500 (13,4) 500 (13,4) 500 (13,4)	800 (21,4) 850 (22,8) 900 (24,1)	1100 (29,5) 1150 (30,8) 1200 (32,2)	1200 (32,2) 1300 (34,8) 1400 (37,5)	1400 (37,5) 1500 (40,2) 1600 (42,9)	1600 (42,9) 1700 (45,6) 1800 (48,2)	2000 (53,6) 2100 (56,3) 2300 (61,6)	2220 (59,5) 2300 (61,6) 2900 (77,7)	2450 (65,7) 2510 (67,3) 2900 (77,7)	2670 (71,6) 2720 (72,9) 3120 (83,6)
	1L346127142	Blue	25 (1,7) 30 (2,1) 35 (2,4)	500 (13,4) 500 (13,4) 500 (13,4)	800 (21,4) 850 (22,8) 900 (24,1)	1200 (32,2) 1300 (34,8) 1350 (36,2)	1400 (37,5) 1450 (38,9) 1500 (40,2)	1600 (42,9) 1700 (45,6) 1800 (48,2)	1900 (50,9) 2000 (53,6) 2100 (56,3)	2400 (64,3) 2500 (67,0) 2700 (72,4)	2700 (72,4) 2800 (75,0) 3100 (83,1)	3000 (80,4) 3100 (83,1) 3300 (88,4)	3230 (86,6) 3400 (91,1) 3500 (93,8)
1/2 (15)	1E395627022	Yellow	2 (0,14) 5 (0,34)	500 (13,4) 500 (13,4)	1300 (34,8) 1600 (42,9)	1900 (50,9) 2100 (56,3)	2200 (59,0) 2500 (67,0)	2500 (67,0) 2800 (75,0)	2800 (75,0) 3000 (80,4)	3320 (89,0) 3510 (94,1)	3850 (103) 4010 (107)	4380 (117) 4510 (121)	4900 (131) 5020 (135)
	1D7455T0012	Green	10 (0,69)	500 (13,4)	1700 (45,6)	2300 (61,6)	2700 (72,4)	3000 (80,4)	3200 (85,8)	3800 (102)	4280 (115)	4760 (128)	5230 (140)
	1E395727192	Red	15 (1,0) 20 (1,4) 25 (1,7)	500 (13,4) 500 (13,4) 500 (13,4)	1300 (34,8) 1400 (37,5) 1500 (40,2)	2100 (56,3) 2200 (59,0) 2400 (64,3)	2700 (72,4) 2800 (75,0) 3000 (80,4)	3100 (83,1) 3200 (85,8) 3600 (96,5)	3400 (91,1) 3700 (99,2) 4000 (107)	4100 (110) 4500 (121) 5000 (134)	4560 (122) 5000 (134) 5700 (153)	5020 (135) 5460 (146) 6300 (169)	5480 (147) 5910 (158) 6790 (182)
	1L380027142	Blue	25 (1,7) 30 (2,1) 35 (2,4)	500 (13,4) 500 (13,4) 500 (13,4)	1100 (29,4) 1150 (30,8) 1200 (32,2)	1700 (45,6) 1800 (48,2) 1900 (50,9)	2200 (59,0) 2400 (64,3) 2500 (67,0)	2700 (72,4) 3000 (80,4) 3200 (85,8)	3100 (83,1) 3500 (93,8) 3700 (99,2)	4200 (113) 4600 (123) 4900 (131)	5100 (137) 5500 (147) 5800 (155)	5800 (155) 6200 (166) 6500 (174)	6250 (168) 6900 (185) 7200 (193)
3/4, 1 (20, 25)	1E398927022	Yellow	2 (0,14) 5 (0,34)	500 (13,4) 500 (13,4)	2700 (72,4) 2800 (75,0)	3900 (105) 4000 (107)	4600 (123) 4800 (129)	5200 (139) 5400 (145)	5800 (155) 6000 (161)	6400 (172) 7010 (188)	7410 (199) 8020 (215)	8420 (226) 9030 (242)	9430 (253) 10 000 (268)
	1E399027142	Green	10 (0,69)	500 (13,4)	3000 (80,4)	4400 (118)	5300 (142)	6200 (166)	6800 (182)	8200 (220)	8400 (225)	9340 (250)	10 300 (276)
	1E399127162	Red	15 (1,0) 20 (1,4) 25 (1,7)	500 (13,4) 500 (13,4) 500 (13,4)	2200 (59,0) 2800 (75,0) 3000 (80,4)	3800 (102) 4600 (123) 5200 (139)	5000 (134) 5800 (155) 6200 (166)	6000 (161) 6800 (182) 7200 (193)	6600 (177) 7600 (204) 8000 (214)	8400 (225) 9200 (247) 10 000 (268)	9340 (250) 10 000 (268) 11 000 (295)	10 300 (276) 10 900 (292) 12 000 (322)	11 200 (300) 11 800 (316) 12 900 (346)
	1L380127082	Blue	25 (1,7) 30 (2,1) 35 (2,4)	500 (13,4) 500 (13,4) 500 (13,4)	2000 (53,6) 2600 (69,7) 2800 (75,0)	3600 (96,5) 4200 (113) 4800 (129)	5000 (134) 5600 (150) 6200 (166)	6000 (161) 7000 (188) 7600 (204)	7000 (188) 7800 (209) 8600 (230)	9200 (247) 10 000 (268) 11 000 (295)	11 000 (295) 12 000 (322) 13 000 (348)	12 000 (322) 13 000 (348) 14 000 (375)	12 900 (346) 15 000 (402) 16 000 (429)

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Table 8. Water Relief Capacities in Gallons per Minute (l/min), Types 98H and 98HD with Elastomer Diaphragm

NOMINAL BODY SIZES, NPS (DN)	SPRING		RELIEF PRESSURE SETTING, PSIG (bar)	FLOW AT RELIEF SETTING, GPM (l/min)	PRESSURE BUILD-UP OVER RELIEF SETTING, PSIG (bar)								
	Part Number	Color Code			5 (0,34)	7 (0,48)	10 (0,69)	15 (1,0)	20 (1,4)	30 (2,1)	50 (3,4)	75 (5,2)	100 (6,9)
1/4	1E392527022	Yellow	15	1.8	3.2	4	4.2	7.2	7.4	8.0	8.9	10.4	11.8
			(1,0)	(6,8)	(12,1)	(15,1)	(15,9)	(27,3)	(28,0)	(30,3)	(33,7)	(39,4)	(44,7)
			25	1.8	5	5.6	6.3	7.3	7.5	8.1	9.5	11.0	12.2
			(1,7)	(6,8)	(18,9)	(21,2)	(23,8)	(27,6)	(28,4)	(30,7)	(36,0)	(41,6)	(46,2)
	1E392627012	Green	35	1.8	6.2	6.6	7.6	8	8.2	8.9	10.1	11.5	12.7
			(2,4)	(6,8)	(23,5)	(25,0)	(28,8)	(30,3)	(31,0)	(33,7)	(38,2)	(43,5)	(48,1)
			50	1.5	3.2	4.3	5.3	6.3	7.2	8.6	10.6	11.8	12.9
			(3,4)	(5,7)	(12,1)	(16,3)	(20,1)	(23,8)	(27,3)	(32,6)	(40,1)	(44,7)	(48,8)
	1E392727142	Red	75	1.3	2.8	3.6	4.4	5.4	6.2	7.7	10	12.4	13.1
			(5,2)	(4,9)	(10,6)	(13,6)	(16,7)	(20,4)	(23,5)	(29,1)	(37,9)	(46,9)	(49,6)
			100	1.3	3.7	4.4	5.4	6.6	7.6	9.2	11.8	14.2	15.6
			(6,9)	(4,9)	(14,0)	(16,7)	(20,4)	(25,0)	(28,8)	(34,8)	(44,7)	(53,7)	(59,0)
1L346127142	Blue	125	1.3	4	5	6	7.6	8.6	10.6	13.3	15.5	16.6	
		(8,6)	(4,9)	(15,1)	(18,9)	(22,7)	(28,8)	(32,6)	(40,1)	(50,3)	(58,7)	(62,8)	
		150	1	2.2	2.6	3.2	4.2	5	6.8	9.9	12.6	16	
		(10,3)	(3,8)	(8,3)	(9,8)	(12,1)	(15,9)	(18,9)	(25,7)	(37,5)	(47,7)	(60,6)	
1/2 (15)	1E395627022	Yellow	175	1	2.6	3	3.8	4.8	5.8	7.8	11	14	16.5
			(12,1)	(3,8)	(9,8)	(11,4)	(14,4)	(18,2)	(22,0)	(29,5)	(41,6)	(53,0)	(62,5)
			200	1	2.7	3.2	4	5.2	6.4	8.6	12	15.1	17.2
			(13,8)	(3,8)	(10,2)	(12,1)	(15,1)	(19,7)	(24,2)	(32,6)	(45,4)	(57,2)	(65,1)
	1D7455T0012	Green	15	1.8	5.5	9.7	10	13.5	14.7	16.7	20	23.7	26.1
			(1,0)	(6,8)	(20,8)	(36,7)	(37,9)	(51,1)	(55,6)	(63,2)	(75,7)	(89,7)	(98,8)
			25	1.8	10	12	13.5	15.5	17.5	18.5	21	25	27.1
			(1,7)	(6,8)	(37,9)	(45,4)	(51,1)	(58,7)	(66,2)	(70,0)	(79,5)	(94,6)	(103)
	1E395727192	Red	35	1.8	14.5	16	17.2	18	19.2	20.7	23	26	28
			(2,4)	(6,8)	(54,9)	(60,6)	(65,1)	(68,1)	(72,7)	(78,4)	(87,1)	(98,4)	(106)
			50	1.5	7.5	9	11	13.5	15.5	18.5	22	24	26
			(3,4)	(5,7)	(28,4)	(34,1)	(41,6)	(51,1)	(58,7)	(70,0)	(83,3)	(90,8)	(98,4)
1L380027142	Blue	75	1.5	10.5	13	15	17.5	19.5	22	25	28.2	30	
		(5,2)	(5,7)	(39,7)	(49,2)	(56,8)	(66,2)	(73,8)	(83,3)	(94,6)	(107)	(114)	
		100	1.3	6	8	11	16	19.5	23.5	28	31.5	34.5	
		(6,9)	(4,9)	(22,7)	(30,3)	(41,6)	(60,6)	(73,8)	(88,9)	(106)	(119)	(131)	
3/4, 1 (20, 25)	1E398927022	Yellow	125	1.3	7.5	10	14	20.5	23.5	27.2	31.5	34.5	37
			(8,6)	(4,9)	(28,4)	(37,9)	(53,0)	(77,6)	(88,9)	(103)	(119)	(131)	(140)
			150	1	3.5	4.7	6.5	9	12	16.5	23	29	34.7
			(10,3)	(3,8)	(13,2)	(17,8)	(24,6)	(34,1)	(45,4)	(62,5)	(87,1)	(110)	(131)
	1E399027142	Green	175	1	4	5.5	7.5	10.5	14	19	26	32.5	38.2
			(12,1)	(3,8)	(15,1)	(20,8)	(28,4)	(39,7)	(53,0)	(71,9)	(98,4)	(123)	(145)
			200	1	4.7	6	8	11.5	15	20.5	29.5	37.5	42.5
			(13,8)	(3,8)	(17,8)	(22,7)	(30,3)	(43,5)	(56,8)	(77,6)	(112)	(142)	(161)
	1E39927142	Green	200	1	4.7	6	8	11.5	15	20.5	29.5	37.5	42.5
			(13,8)	(3,8)	(17,8)	(22,7)	(30,3)	(43,5)	(56,8)	(77,6)	(112)	(142)	(161)
			25	1.8	26	29	33	38	41	45	53	61	67
			(1,7)	(6,8)	(98,4)	(110)	(125)	(144)	(155)	(170)	(201)	(231)	(254)
1E39927142	Green	35	1.8	32	34.5	37.5	42	45	49.5	56	64	70	
		(2,4)	(6,8)	(121)	(131)	(142)	(159)	(170)	(187)	(212)	(242)	(265)	
		50	1.5	25	31	37	42.5	47	52	58	65	71.0	
		(3,4)	(5,7)	(94,6)	(117)	(140)	(161)	(178)	(197)	(220)	(246)	(269)	
1E39927142	Green	75	1.5	35	41	45	50	53	58	63.5	68.5	74	
		(5,2)	(5,7)	(132)	(155)	(170)	(189)	(201)	(220)	(240)	(259)	(280)	
		100	1.3	7.5	10	14	20.5	23.5	27.2	31.5	34.5	37	
		(6,9)	(4,9)	(22,7)	(30,3)	(41,6)	(60,6)	(73,8)	(88,9)	(106)	(119)	(131)	

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Table 8. Water Relief Capacities in Gallons per Minute (l/min), Types 98H and 98HD with Elastomer Diaphragm (continued)

NOMINAL BODY SIZES, NPS (DN)	SPRING		RELIEF PRESSURE SETTING, PSIG (bar)	FLOW AT RELIEF SETTING, GPM (l/min)	PRESSURE BUILD-UP OVER RELIEF SETTING, PSIG (bar)								
	Part Number	Color Code			5 (0,34)	7 (0,48)	10 (0,69)	15 (1,0)	20 (1,4)	30 (2,1)	50 (3,4)	75 (5,2)	100 (6,9)
3/4, 1 (20, 25)	1E399127162	Red	75 (5,2)	1.3 (4,9)	19 (71,9)	25 (94,6)	32 (121)	37 (140)	41 (155)	47 (178)	57 (216)	66.5 (252)	72 (273)
			100 (6,9)	1.3 (4,9)	22 (83,3)	29 (110)	35 (132)	43 (163)	48.5 (184)	57 (216)	66.5 (252)	73 (276)	78 (295)
	1L380127082	Blue	125 (8,6)	1.3 (4,9)	27 (102)	34.5 (131)	42 (159)	50.5 (191)	57 (216)	67 (254)	73.5 (278)	78 (295)	83 (314)
			150 (10,3)	1 (3,8)	15 (56,8)	20 (75,7)	27 (102)	39 (148)	48 (182)	62 (235)	78 (295)	83 (314)	88 (333)
			175 (12,1)	1 (3,8)	19 (71,9)	24 (90,8)	32 (121)	50 (189)	60 (227)	72 (273)	82 (310)	88.5 (335)	94 (356)
			200 (13,8)	1 (3,8)	22 (83,3)	27 (102)	36 (136)	53 (201)	65 (246)	78 (295)	88 (333)	93 (352)	98 (371)
1-1/2, 2 (40, 50)	1E792327092	Dark Gray	5 (0,34)	3.6 (13,6)	15 (56,8)	22 (83,3)	33 (125)	38 (144)	43 (163)	50 (189)	62 (235)	74 (280)	85 (322)
			10 (0,69)	3.6 (13,6)	18 (68,1)	26 (98,4)	37 (140)	41 (155)	45 (170)	52 (197)	64 (242)	76 (288)	87 (329)
			15 (1,0)	3.6 (13,6)	21 (79,5)	30 (114)	40 (151)	55 (208)	59 (223)	67 (254)	81 (307)	95 (360)	107 (405)
			25 (1,7)	3.6 (13,6)	26 (98,4)	36 (136)	50 (189)	68 (257)	87 (329)	96 (363)	112 (424)	129 (488)	144 (545)
			35 (2,4)	3.6 (13,6)	32 (121)	40 (151)	56 (212)	75 (284)	90 (341)	98 (371)	112 (424)	127 (481)	141 (534)
			25 (1,7)	3 (11,4)	16 (60,6)	22 (83,3)	32 (121)	50 (189)	65 (246)	72 (273)	84 (318)	96.9 (367)	108 (409)
			35 (2,4)	3 (11,4)	20 (75,7)	26 (98,4)	36 (136)	55 (208)	70 (265)	100 (379)	114 (431)	130 (492)	144 (545)
			50 (3,4)	3 (11,4)	25 (94,6)	31 (117)	40 (151)	60 (227)	78 (295)	115 (435)	160 (606)	179 (678)	196 (742)
	65 (4,5)	3 (11,4)	35 (132)	41 (155)	50 (189)	70 (265)	95 (360)	130 (492)	170 (643)	187 (708)	203 (768)		
	1E795427082	Light Gray	50 (3,4)	2.5 (9,5)	15 (56,8)	24 (90,8)	28 (106)	40 (151)	62 (235)	100 (379)	150 (568)	168 (636)	184 (696)
			75 (5,2)	2.5 (9,5)	19 (71,9)	28 (106)	32 (121)	45 (170)	68 (257)	110 (416)	165 (625)	180 (681)	194 (734)
			100 (6,9)	2.5 (9,5)	22 (83,3)	32 (121)	35 (132)	50 (189)	75 (284)	120 (454)	175 (662)	190 (719)	205 (776)
			75 (5,2)	2.3 (8,7)	7 (26,5)	12 (45,4)	18 (68,1)	34 (129)	40 (151)	85 (322)	135 (511)	175 (662)	207 (783)
	1P788827082	Black	100 (6,9)	2.3 (8,7)	9 (34,1)	14 (53,0)	20 (75,7)	37 (140)	46 (174)	90 (341)	145 (549)	190 (719)	215 (814)
			125 (8,6)	2.3 (8,7)	12 (45,4)	17 (64,3)	25 (94,6)	40 (151)	51 (193)	95 (360)	150 (568)	200 (757)	225 (852)
			170 (11,7)	2.3 (8,7)	15 (56,8)	20 (75,7)	28 (106)	45 (170)	55 (208)	100 (379)	158 (598)	210 (795)	240 (908)
75 (5,2)			2.3 (8,7)	7 (26,5)	12 (45,4)	18 (68,1)	34 (129)	40 (151)	85 (322)	135 (511)	175 (662)	207 (783)	

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Table 9. Water Relief Capacities in Gallons per Minute (l/min), Types 98H and 98HD with Metal Diaphragm

NOMINAL BODY SIZES, NPS (DN)	SPRING		RELIEF PRESSURE SETTING, PSIG (bar)	FLOW AT RELIEF SETTING, GPM (l/min)	PRESSURE BUILD-UP OVER RELIEF SETTING, PSIG (bar)									
	Part Number	Color Code			5 (0,34)	7 (0,48)	10 (0,69)	15 (1,0)	20 (1,4)	30 (2,1)	40 (2,8)	50 (3,4)	75 (5,2)	100 (6,9)
1/4	1E392527022	Yellow	15 (1,0)	1.8 (6,8)	2.9 (11,0)	3.4 (12,9)	4 (15,1)	4.9 (18,5)	5.4 (20,4)	6.1 (23,1)	6.8 (25,7)	7.4 (28,0)	8.7 (32,9)	9.8 (37,1)
			25 (1,7)	1.8 (6,8)	3.4 (12,9)	3.8 (14,4)	4.6 (17,4)	5.5 (20,8)	6.2 (23,5)	6.9 (26,1)	7.4 (28,0)	7.9 (29,9)	9.1 (34,4)	10.2 (38,6)
			35 (2,4)	1.8 (6,8)	4.6 (17,4)	4.4 (16,7)	5.2 (19,7)	6.2 (23,5)	7 (26,5)	8.4 (31,8)	9.0 (34,1)	9.2 (34,8)	10.4 (39,4)	11.5 (43,5)
			50 (3,4)	1.5 (5,7)	2.2 (8,3)	2.8 (10,6)	3.5 (13,6)	3.7 (14,4)	4.8 (19,7)	5.8 (25,7)	7.2 (30,3)	7.7 (34,8)	8.2 (40,5)	9.3 (45,0)
1E392627012	Green	50 (3,4)	1.5 (5,7)	2.8 (10,6)	3.6 (13,6)	4.6 (17,4)	5.2 (19,7)	6.8 (25,7)	8 (30,3)	9.2 (34,8)	10.7 (40,5)	11.9 (45,0)	12.9 (48,8)	
		75 (5,2)	1.5 (5,7)	3.4 (12,9)	4.5 (17,0)	5.8 (22,0)	6 (22,7)	8.4 (31,8)	9.8 (37,1)	10.9 (41,3)	11.8 (44,7)	12.9 (48,8)	13.7 (51,9)	
		100 (6,9)	1.3 (4,9)	1.7 (7,57)	2.3 (8,71)	2.9 (11,0)	3.8 (14,4)	4.3 (16,3)	6.6 (25,0)	8.2 (31,0)	9.4 (35,6)	11.8 (44,7)	13.6 (51,5)	
		125 (8,6)	1.3 (4,9)	2.2 (8,3)	2.6 (9,8)	3.2 (12,1)	4.4 (16,7)	4.8 (18,2)	7.4 (28,0)	9.5 (36,0)	11 (41,6)	13.2 (50,0)	15 (56,8)	
1L346127142	Blue	150 (10,3)	1 (3,8)	1.8 (6,8)	2.2 (8,3)	2.8 (10,6)	3.7 (14,0)	4.7 (17,8)	6.6 (25,0)	8.2 (31,0)	9.6 (36,3)	12.3 (46,6)	14.2 (53,7)	
		175 (12,1)	1 (3,8)	2 (7,57)	2.4 (9,08)	3 (11,4)	4.2 (15,9)	5.2 (27,3)	7.2 (34,8)	9.2 (40,9)	10.8 (51,5)	13.6 (59,0)	15.6 (59,0)	
		200 (13,8)	1 (3,8)	2.2 (8,3)	2.7 (10,2)	3.4 (12,9)	4.8 (18,2)	5.9 (22,3)	8 (30,3)	10.2 (38,6)	11.8 (44,7)	15 (56,8)	16.9 (64,0)	
		75 (5,2)	1.3 (4,9)	2.7 (10,2)	3.5 (13,2)	4.5 (17,0)	6.5 (24,6)	8 (30,3)	11.5 (43,5)	14.5 (54,9)	17 (64,3)	21.7 (82,1)	23 (87,1)	
1/2 (15)	1E395627022	Yellow	25 (1,7)	1.8 (6,8)	5 (18,9)	6.5 (24,6)	8 (30,3)	10 (37,9)	11.7 (44,3)	12.9 (48,8)	13.7 (51,9)	14.7 (55,6)	17 (64,3)	18 (68,1)
			35 (2,4)	1.8 (6,8)	6 (22,7)	9.2 (34,8)	9.5 (36,0)	12 (45,4)	14 (53,0)	16.5 (62,5)	17.7 (67,0)	18.4 (69,6)	20 (75,7)	22.7 (85,9)
			50 (3,4)	1.5 (5,7)	3.7 (14,0)	4.5 (17,0)	5.7 (21,6)	7.5 (28,4)	9 (34,1)	12 (45,4)	14.5 (54,9)	16.5 (62,5)	18 (68,1)	19 (71,9)
			75 (5,2)	1.5 (5,7)	4.2 (15,9)	5.5 (20,8)	7.2 (27,3)	10.5 (39,7)	13 (49,2)	17 (64,3)	19 (71,9)	21 (79,5)	24.5 (92,7)	26 (98,4)
1E395727192	Red	100 (6,9)	1.3 (4,9)	3 (11,4)	4 (15,1)	5.2 (19,7)	7.5 (28,4)	9.7 (36,7)	13.7 (51,9)	17 (64,3)	19.5 (73,8)	24.5 (92,7)	28 (106)	
		125 (8,6)	1.3 (4,9)	4.2 (15,9)	5.5 (20,8)	7 (26,5)	9.5 (36,0)	12 (45,4)	16.5 (62,5)	20 (75,7)	22.5 (85,2)	28 (106)	31 (117)	
		150 (10,3)	1 (3,8)	3 (11,4)	3.7 (14,0)	4.7 (17,8)	6.5 (24,6)	8.5 (32,2)	11.5 (43,5)	14.7 (55,6)	17.5 (66,2)	24 (90,8)	29 (110)	
		175 (12,1)	1 (3,8)	3.2 (12,1)	4.2 (15,9)	5.5 (20,8)	7.5 (28,4)	9.5 (36,0)	13.5 (51,1)	17.2 (65,1)	20.5 (77,6)	28 (106)	33.2 (126)	
1L380027142	Blue	200 (13,8)	1 (3,8)	3.3 (12,5)	4.3 (16,3)	5.6 (21,2)	8 (30,3)	10.2 (38,6)	15 (56,8)	19 (71,9)	22.2 (84,0)	29.5 (112)	35 (132)	
		75 (5,2)	1.8 (6,8)	6 (22,7)	13 (49,2)	16 (60,6)	20 (75,7)	26 (98,4)	31 (117)	34 (129)	37 (140)	44 (167)	49 (185)	
		25 (1,7)	1.8 (6,8)	13 (49,2)	16 (60,6)	19.5 (73,8)	24 (90,8)	32 (121)	35 (132)	37 (140)	40 (151)	46 (174)	50 (189)	
		35 (2,4)	1.8 (6,8)	16 (60,6)	19 (71,9)	23 (87,1)	28 (106)	33 (125)	37 (140)	39 (148)	41 (155)	47 (178)	51 (193)	
3/4, 1 (20, 25)	1E398927022	Yellow	35 (2,4)	1.5 (5,7)	8 (30,3)	14 (53,0)	16.5 (62,5)	21 (79,5)	23 (87,1)	29.5 (112)	31 (117)	33 (125)	37 (140)	41 (155)
			50 (3,4)	1.5 (5,7)	11 (41,6)	15 (56,8)	18.5 (70,0)	24 (90,8)	28.5 (108)	35.5 (134)	40 (151)	44 (167)	49 (185)	53 (201)
			75 (5,2)	1.5 (5,7)	14 (53,0)	20 (75,7)	26 (98,4)	33 (125)	37 (140)	42.5 (161)	47 (178)	50 (189)	58 (220)	62 (235)
			100 (6,9)	1.3 (4,9)	3 (11,4)	4 (15,1)	5.2 (19,7)	7.5 (28,4)	9.7 (36,7)	13.7 (51,9)	17 (64,3)	19.5 (73,8)	24.5 (92,7)	28 (106)

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Table 9. Water Relief Capacities in Gallons per Minute (l/min), Types 98H and 98HD with Metal Diaphragm (continued)

NOMINAL BODY SIZES, NPS (DN)	SPRING		RELIEF PRESSURE SETTING, PSIG (bar)	FLOW AT RELIEF SETTING, GPM (l/min)	PRESSURE BUILD-UP OVER RELIEF SETTING, PSIG (bar)											
	Part Number	Color Code			5 (0,34)	7 (0,48)	10 (0,69)	15 (1,0)	20 (1,4)	30 (2,1)	40 (2,8)	50 (3,4)	75 (5,2)	100 (6,9)		
3/4, 1 (20, 25)	1E399127162	Red	75 (5,2)	1.3 (4,9)	7 (26,5)	10 (37,9)	14 (53,0)	20 (75,7)	26 (98,4)	35 (132)	41.5 (157)	46 (174)	55 (208)	58 (220)		
			100 (6,9)	1.3 (4,9)	9 (34,1)	12 (45,4)	18 (68,1)	25.5 (96,5)	32 (121)	41 (155)	49 (185)	54 (204)	62 (235)	68 (257)		
	1L380127082	Blue	125 (8,6)	1.3 (4,9)	11 (41,6)	14.5 (54,9)	20 (75,7)	30 (114)	38 (144)	50 (189)	56 (212)	60.5 (229)	67.5 (255)	72 (273)		
			150 (10,3)	1 (3,8)	7 (26,5)	9 (34,1)	12 (45,4)	17.5 (66,2)	23 (87,1)	34 (129)	43 (163)	51 (193)	66 (250)	76 (288)		
			175 (12,1)	1 (3,8)	8 (30,3)	10 (37,9)	14 (53,0)	20.5 (77,6)	27 (102)	39 (148)	50 (189)	59 (223)	74 (280)	81 (307)		
			200 (13,8)	1 (3,8)	9 (34,1)	12 (45,4)	17 (64,3)	24.5 (92,7)	32.5 (123)	47 (178)	58 (220)	66 (250)	79 (299)	85 (322)		
1-1/2, 2 (40, 50)	1E792327092	Dark Gray	5 (0,34)	3.6 (13,6)	18 (68,1)	23 (87,1)	35 (132)	40 (151)	45 (170)	53 (201)	60 (227)	66 (250)	79 (299)	88 (333)		
			10 (0,69)	3.6 (13,6)	20 (75,7)	27 (102)	39 (148)	47 (182)	55 (208)	61 (231)	67 (254)	80 (303)	89 (337)			
			15 (1,0)	3.6 (13,6)	23 (87,1)	30 (114)	43 (163)	60 (227)	64 (242)	73 (303)	80 (329)	87 (386)	102 (435)			
			25 (1,7)	3.6 (13,6)	26 (98,4)	34 (129)	46 (174)	65 (246)	75 (284)	82 (310)	89 (337)	96 (363)	111 (420)	122 (462)		
			35 (2,4)	3.6 (13,6)	29 (110)	37 (140)	50 (189)	70 (265)	82 (310)	95 (360)	102 (386)	107 (405)	122 (462)	134 (507)		
	1E795327082	Light Blue	25 (1,7)	3 (11,4)	17 (64,3)	24 (90,8)	36 (136)	48 (182)	65 (246)	71 (269)	77 (291)	83 (314)	96 (363)	105 (397)		
			35 (2,4)	3 (11,4)	20 (75,7)	27 (102)	40 (151)	52 (197)	70 (265)	80 (303)	85 (322)	91 (344)	103 (390)	113 (428)		
			50 (3,4)	3 (11,4)	24 (90,8)	30 (114)	43 (163)	57 (216)	76 (288)	90 (341)	98 (371)	105 (397)	117 (443)	128 (484)		
			65 (4,5)	3 (11,4)	30 (114)	35 (132)	46 (174)	63 (238)	80 (303)	100 (379)	112 (424)	125 (473)	137 (519)	148 (560)		
			1E795427082	Light Gray	50 (3,4)	2.5 (9,5)	14 (53,0)	23 (87,1)	34 (129)	47 (178)	65 (246)	85 (322)	96 (363)	110 (416)	122 (462)	133 (503)
	75 (5,2)	2.5 (9,5)			17 (64,3)	26 (98,4)	37 (140)	53 (201)	70 (265)	92 (348)	108 (409)	125 (473)	150 (568)	160 (606)		
	100 (6,9)	2.5 (9,5)			20 (75,7)	30 (114)	40 (151)	58 (220)	76 (288)	102 (386)	122 (462)	140 (530)	165 (625)	178 (674)		
	1P788827082	Black			75 (5,2)	2.3 (8,7)	8 (30,3)	13 (49,2)	23 (87,1)	33 (125)	50 (189)	65 (246)	81 (307)	95 (360)	130 (492)	140 (530)
					100 (6,9)	2.3 (8,7)	10 (37,9)	16 (60,6)	26 (98,4)	37 (140)	56 (212)	72 (273)	89 (337)	105 (397)	140 (530)	165 (625)
			125 (8,6)	2.3 (8,7)	13 (49,2)	18 (68,1)	29 (110)	42 (159)	60 (227)	80 (303)	98 (371)	114 (431)	150 (568)	180 (681)		
			170 (11,7)	2.3 (8,7)	16 (60,6)	20 (75,7)	32 (121)	46 (174)	63 (238)	85 (322)	105 (397)	120 (454)	165 (625)	195 (738)		

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Table 10. Steam Relief Capacities in Pounds per Hour (kg/h), Types 98H and 98HD with Metal Diaphragm Only

NOMINAL BODY SIZES, NPS (DN)	SPRING		RELIEF PRESSURE SETTING, PSIG (bar)	FLOW AT RELIEF SETTING, POUNDS/HOUR (kg/h)	PRESSURE BUILD-UP OVER RELIEF SETTING, PSIG (bar)								
	Part Number	Color Code			5 (0,34)	7 (0,48)	10 (0,69)	15 (1,0)	20 (1,4)	30 (2,1)	50 (3,4)	75 (5,2)	100 (6,9)
1/4	1E392527022	Yellow	15 (1,0)	25 (11,3)	43 (19,5)	52 (23,6)	59 (26,8)	73 (33,1)	82 (37,2)	101 (45,8)	135 (61,2)	177 (80,3)	220 (99,8)
			25 (1,7)	25 (11,3)	45 (20,4)	59 (26,8)	68 (30,8)	82 (37,2)	95 (43,1)	118 (53,5)	150 (68,0)	195 (88,5)	235 (107)
			35 (2,4)	25 (11,3)	50 (22,7)	64 (29,0)	73 (33,1)	86 (39,0)	105 (47,6)	132 (59,9)	170 (77,1)	210 (95,3)	250 (113)
1E392627012	Green	35 (2,4)	25 (11,3)	41 (18,6)	50 (22,7)	59 (26,8)	77 (34,9)	100 (45,4)	132 (59,9)	170 (77,1)	210 (95,3)	250 (113)	
		50 (3,4)	25 (11,3)	55 (24,9)	68 (30,8)	77 (34,9)	91 (41,3)	109 (49,4)	136 (61,7)	190 (86,2)	240 (109)	280 (127)	
		75 (5,2)	25 (11,3)	59 (26,8)	82 (37,2)	100 (45,4)	122 (55,3)	150 (68,0)	177 (80,3)	230 (104)	300 (136)	340 (154)	
1E392727142	Red	75 (5,2)	25 (11,3)	50 (22,7)	54 (24,5)	64 (29,0)	68 (30,8)	82 (37,2)	127 (57,6)	195 (88,5)	280 (127)	320 (145)	
		100 (6,9)	25 (11,3)	55 (24,9)	64 (29,0)	77 (34,9)	95 (43,1)	118 (53,5)	155 (70,3)	236 (107)	330 (150)	410 (186)	
		125 (8,6)	25 (11,3)	64 (29,0)	82 (37,2)	91 (41,3)	113 (51,3)	136 (61,7)	182 (82,6)	270 (122)	385 (175)	455 (206)	
1L346127142	Blue	150 (10,3)	25 (11,3)	45 (20,4)	54 (24,5)	68 (30,8)	91 (41,3)	114 (51,7)	160 (72,6)	250 (113)	360 (163)	455 (206)	
		175 (12,1)	25 (11,3)	48 (21,8)	64 (29,0)	82 (37,2)	100 (45,4)	132 (59,9)	180 (81,6)	280 (127)	400 (181)	545 (247)	
		200 (13,8)	25 (11,3)	50 (22,7)	68 (30,8)	86 (39,0)	104 (47,2)	136 (61,7)	195 (88,5)	310 (141)	455 (206)	590 (268)	
1/2 (15)	1E395627022	Yellow	15 (1,0)	25 (11,3)	68 (30,8)	91 (41,3)	104 (47,2)	160 (72,6)	200 (90,7)	240 (109)	320 (145)	420 (191)	530 (240)
			25 (1,7)	25 (11,3)	72 (32,7)	95 (43,1)	120 (54,4)	170 (77,1)	220 (99,8)	280 (127)	360 (163)	470 (213)	570 (259)
			35 (2,4)	25 (11,3)	77 (34,9)	100 (45,4)	135 (61,2)	185 (83,9)	250 (113)	330 (150)	410 (186)	511 (232)	610 (277)
1D7455T0012	Green	35 (2,4)	25 (11,3)	64 (29,0)	68 (30,8)	105 (47,6)	130 (59,0)	165 (74,8)	260 (118)	400 (181)	511 (232)	610 (277)	
		50 (3,4)	25 (11,3)	73 (33,1)	91 (41,3)	118 (53,5)	160 (72,6)	210 (95,3)	310 (141)	455 (206)	570 (259)	675 (306)	
		75 (5,2)	25 (11,3)	82 (37,2)	110 (49,9)	145 (65,8)	200 (90,7)	260 (118)	380 (172)	540 (245)	680 (308)	780 (354)	
1E395727192	Red	75 (5,2)	25 (11,3)	59 (26,8)	77 (34,9)	100 (45,4)	145 (65,8)	185 (83,9)	280 (127)	455 (206)	630 (286)	725 (329)	
		100 (6,9)	25 (11,3)	82 (37,2)	105 (47,6)	136 (61,7)	185 (83,9)	245 (111)	360 (163)	590 (268)	770 (349)	860 (390)	
		125 (8,6)	25 (11,3)	86 (39,0)	114 (51,7)	150 (68,0)	210 (95,3)	270 (122)	400 (181)	630 (286)	860 (390)	950 (431)	
1L380027142	Blue	150 (10,3)	25 (11,3)	77 (34,9)	110 (49,9)	125 (56,7)	173 (78,5)	225 (102)	340 (154)	545 (247)	820 (372)	1000 (454)	
		175 (12,1)	25 (11,3)	82 (37,2)	105 (47,6)	135 (61,2)	195 (88,5)	260 (118)	380 (172)	590 (268)	910 (413)	1100 (499)	
		200 (13,8)	25 (11,3)	91 (41,3)	120 (54,4)	160 (72,6)	225 (102)	290 (132)	425 (193)	690 (313)	1000 (454)	1180 (535)	

- continued -

Table 10. Steam Relief Capacities in Pounds per Hour (kg/h), Types 98H and 98HD with Metal Diaphragm Only (continued)

NOMINAL BODY SIZES, NPS (DN)	SPRING		RELIEF PRESSURE SETTING, PSIG (bar)	FLOW AT RELIEF SETTING, POUNDS/HOUR (kg/h)	PRESSURE BUILD-UP OVER RELIEF SETTING, PSIG (bar)								
	Part Number	Color Code			5 (0,34)	7 (0,48)	10 (0,69)	15 (1,0)	20 (1,4)	30 (2,1)	50 (3,4)	75 (5,2)	100 (6,9)
3/4, 1 (20, 25)	1E398927022	Yellow	15 (1,0)	25 (11,3)	91 (41,3)	135 (61,2)	180 (81,6)	260 (118)	360 (163)	440 (200)	580 (263)	770 (349)	950 (431)
			25 (1,7)	25 (11,3)	120 (54,4)	180 (81,6)	230 (104)	330 (150)	395 (179)	510 (231)	660 (299)	850 (386)	1030 (467)
	1L380127082	Green	35 (2,4)	25 (11,3)	68 (30,8)	110 (49,9)	160 (72,6)	230 (104)	330 (150)	500 (227)	625 (284)	785 (356)	940 (426)
			50 (3,4)	25 (11,3)	110 (49,9)	160 (72,6)	210 (95,3)	340 (154)	430 (195)	640 (290)	910 (413)	1100 (499)	1300 (590)
1E399127162	Red	75 (5,2)	25 (11,3)	130 (59,0)	155 (70,3)	210 (95,3)	320 (145)	410 (186)	590 (268)	1050 (476)	1350 (612)	1550 (703)	
		100 (6,9)	25 (11,3)	135 (61,2)	160 (72,6)	230 (104)	350 (159)	455 (206)	680 (308)	1180 (535)	1600 (726)	1800 (816)	
		125 (8,6)	25 (11,3)	145 (65,8)	205 (93,0)	280 (127)	450 (204)	540 (245)	860 (390)	1400 (635)	1770 (803)	2000 (907)	
		1L380127082	Blue	150 (10,3)	25 (11,3)	86 (39,0)	135 (61,2)	200 (90,7)	340 (154)	455 (206)	720 (327)	1270 (576)	1900 (862)
175 (12,1)	25 (11,3)			91 (41,3)	145 (65,8)	230 (104)	350 (159)	500 (227)	770 (349)	1350 (612)	2000 (907)	2400 (1089)	
1-1/2, 2 (40, 50)	1E792327092	Dark Gray	5 (0,34)	45 (20,4)	300 (136)	440 (200)	525 (238)	820 (372)	940 (426)	1100 (499)	1650 (748)	2250 (1021)	2840 (1288)
			10 (0,69)	45 (20,4)	360 (163)	500 (227)	675 (306)	945 (429)	1060 (481)	1300 (590)	1780 (807)	2370 (1075)	2960 (1343)
			15 (1,0)	45 (20,4)	375 (170)	525 (238)	725 (329)	975 (442)	1180 (535)	1420 (644)	1900 (862)	2490 (1129)	3090 (1402)
			25 (1,7)	45 (20,4)	425 (193)	550 (249)	800 (363)	1100 (499)	1350 (612)	1650 (748)	2130 (966)	2730 (1238)	3300 (1497)
1E795327082	Light Blue	35 (2,4)	45 (20,4)	435 (197)	585 (265)	850 (386)	1200 (544)	1500 (680)	1900 (862)	2370 (1075)	2970 (1347)	3560 (1615)	
		50 (3,4)	45 (20,4)	300 (136)	400 (181)	550 (249)	875 (397)	1000 (454)	1620 (735)	2080 (943)	2660 (1207)	3240 (1470)	
		75 (5,2)	45 (20,4)	335 (152)	440 (200)	750 (340)	1025 (465)	1350 (612)	1850 (839)	2310 (1048)	2890 (1311)	3470 (1574)	
		100 (6,9)	45 (20,4)	350 (159)	465 (211)	800 (363)	1150 (522)	1450 (658)	2100 (953)	2850 (1293)	3470 (1574)	4090 (1855)	
1E795427082	Light Gray	65 (4,5)	45 (20,4)	400 (181)	550 (249)	850 (386)	1250 (567)	1600 (726)	2400 (1089)	3400 (1542)	4100 (1860)	4760 (2159)	
		50 (3,4)	45 (20,4)	120 (54,4)	350 (159)	525 (238)	800 (363)	1000 (454)	1500 (680)	2350 (1066)	2860 (1297)	3680 (1669)	
		75 (5,2)	45 (20,4)	190 (86,2)	520 (236)	775 (352)	1150 (522)	1500 (680)	2200 (998)	3000 (1361)	3500 (1588)	4030 (1828)	
		100 (6,9)	45 (20,4)	300 (136)	600 (272)	900 (408)	1300 (590)	1700 (771)	2500 (1134)	3300 (1497)	3850 (1746)	5000 (2268)	
1P788827082	Black	75 (5,2)	45 (20,4)	145 (65,8)	300 (136)	450 (204)	700 (318)	900 (408)	1500 (680)	2500 (1134)	3600 (1633)	4100 (1860)	
		100 (6,9)	45 (20,4)	150 (68,0)	400 (181)	750 (340)	1025 (465)	1350 (612)	2050 (930)	3500 (1588)	4750 (2155)	5550 (2517)	
		125 (8,6)	45 (20,4)	350 (159)	450 (204)	825 (374)	1150 (522)	1500 (680)	2300 (1043)	3900 (1769)	5400 (2449)	6200 (2812)	
		170 (11,7)	45 (20,4)	365 (166)	500 (227)	850 (386)	1200 (544)	1600 (726)	2400 (1089)	4100 (1860)	5800 (2631)	6750 (3062)	

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Table 11. Air Relief Capacities in SCFH (Nm³/h), Types 98H and 98HD with Elastomer Diaphragm

NOMINAL BODY SIZES, NPS (DN)	SPRING		RELIEF PRESSURE SETTING, PSIG (bar)	FLOW AT RELIEF SETTING, SCFH (Nm ³ /h)	PRESSURE BUILD-UP OVER RELIEF SETTING, PSIG (bar)								
	Part Number	Color Code			5 (0,34)	7 (0,48)	10 (0,69)	15 (1,0)	20 (1,4)	30 (2,1)	50 (3,4)	75 (5,2)	100 (6,9)
1/4	1E392527022	Yellow	15	500	1600	1700	1800	2100	2290	2700	3600	4800	6000
			(1,0)	(13,4)	(42,9)	(45,6)	(48,2)	(56,3)	(61,4)	(72,4)	(96,5)	(129)	(161)
			25	500	1800	1900	2200	2500	2800	3200	4100	5300	6400
			(1,7)	(13,4)	(48,2)	(50,9)	(59,0)	(67,0)	(75,0)	(85,8)	(110)	(142)	(172)
	1E392627012	Green	35	500	2000	2300	2700	2900	3200	3700	4600	5700	6850
			(2,4)	(13,4)	(53,6)	(61,6)	(72,4)	(77,7)	(85,8)	(99,2)	(123)	(153)	(184)
			50	500	1600	2100	2800	3400	3700	4300	5300	6400	7600
			(3,4)	(13,4)	(42,9)	(56,3)	(75,0)	(91,1)	(99,2)	(115)	(142)	(172)	(204)
	1E392727142	Red	75	500	1300	1600	2500	3500	4300	5200	6400	7600	8700
			(5,2)	(13,4)	(34,8)	(42,9)	(67,0)	(93,8)	(115)	(139)	(172)	(204)	(233)
			100	500	2000	2300	3500	5000	5600	6300	7500	8700	9900
			(6,9)	(13,4)	(53,6)	(61,6)	(93,8)	(134)	(150)	(169)	(201)	(233)	(265)
	1L346127142	Blue	125	500	2100	2500	3800	5400	6500	7400	8700	9800	11 000
			(8,6)	(13,4)	(56,3)	(67,0)	(102)	(145)	(174)	(198)	(233)	(263)	(295)
			150	500	2800	3300	5000	6100	6700	7600	9000	10 500	12 000
			(10,3)	(13,4)	(75,0)	(88,4)	(134)	(163)	(180)	(204)	(241)	(281)	(322)
1L346127142	Blue	175	500	3000	3600	5200	6600	7300	8200	10 000	11 500	13 000	
		(12,1)	(13,4)	(80,4)	(96,5)	(139)	(177)	(196)	(220)	(268)	(308)	(348)	
		200	500	3200	4000	5600	7500	8200	9300	11 500	13 000	14 000	
		(13,8)	(13,4)	(85,8)	(107)	(150)	(201)	(220)	(249)	(308)	(348)	(375)	
1/2 (15)	1E395627022	Yellow	15	500	2200	2600	3400	4400	5200	6300	8400	11 000	13 600
			(1,0)	(13,4)	(59,0)	(69,7)	(91,1)	(118)	(139)	(169)	(225)	(295)	(364)
			25	500	2600	3600	4400	5400	6000	7300	9400	12 000	14 600
			(1,7)	(13,4)	(69,7)	(96,5)	(118)	(145)	(161)	(196)	(252)	(322)	(391)
	1D7455T0012	Green	35	500	2800	3900	4600	6000	6900	8400	10 500	10 500	15 700
			(2,4)	(13,4)	(53,6)	(105)	(123)	(161)	(185)	(225)	(281)	(281)	(421)
			50	500	3800	4600	6600	8000	8800	10 000	12 000	14 600	17 000
			(3,4)	(13,4)	(102)	(123)	(177)	(214)	(236)	(268)	(322)	(391)	(456)
	1E395727192	Red	75	500	4400	5400	8000	10 000	11 000	12 000	14 500	16 000	18 000
			(5,2)	(13,4)	(118)	(145)	(214)	(268)	(295)	(322)	(389)	(429)	(482)
			100	500	3500	4400	7400	11 000	13 000	14 000	17 000	19 000	21 000
			(6,9)	(13,4)	(93,8)	(118)	(198)	(295)	(348)	(375)	(456)	(509)	(563)
	1L380027142	Blue	125	500	3800	5100	7600	11 000	14 000	16 000	19 000	21 000	23 000
			(8,6)	(13,4)	(102)	(137)	(204)	(295)	(375)	(429)	(509)	(563)	(616)
			150	500	2400	3200	4600	7000	9000	13 000	20 000	23 000	26 000
			(10,3)	(13,4)	(64,3)	(85,8)	(123)	(188)	(241)	(348)	(536)	(616)	(697)
1L380027142	Blue	175	500	3200	4000	5400	8000	11 000	16 000	23 000	26 000	28 000	
		(12,1)	(13,4)	(85,8)	(107)	(145)	(214)	(295)	(429)	(616)	(697)	(750)	
		200	500	3400	4100	6000	9000	12 000	17 000	25 000	28 000	30 000	
		(13,8)	(13,4)	(91,1)	(110)	(161)	(241)	(322)	(456)	(670)	(750)	(804)	

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Table 11. Air Relief Capacities in SCFH (Nm³/h), Types 98H and 98HD with Elastomer Diaphragm (continued)

NOMINAL BODY SIZES, NPS (DN)	SPRING		RELIEF PRESSURE SETTING, PSIG (bar)	FLOW AT RELIEF SETTING, SCFH (Nm ³ /h)	PRESSURE BUILD-UP OVER RELIEF SETTING, PSIG (bar)								
	Part Number	Color Code			5 (0,34)	7 (0,48)	10 (0,69)	15 (1,0)	20 (1,4)	30 (2,1)	50 (3,4)	75 (5,2)	100 (6,9)
3/4, 1 (20, 25)	1E398927022	Yellow	15 (1,0)	500 (13,4)	5000 (134)	6500 (174)	7700 (206)	9200 (247)	9900 (265)	11 900 (319)	15 900 (426)	20 900 (560)	25 900 (694)
			25 (1,7)	500 (13,4)	7000 (188)	8500 (228)	9700 (260)	12 000 (322)	13 000 (348)	13 900 (373)	17 900 (480)	22 900 (614)	27 900 (748)
			35 (2,4)	500 (13,4)	9000 (241)	10 500 (281)	12 000 (322)	13 000 (348)	14 000 (375)	17 000 (456)	20 800 (557)	26 000 (697)	31 000 (831)
	1E399027142	Green	35 (2,4)	500 (13,4)	4500 (121)	5500 (147)	8500 (228)	13 000 (348)	14 000 (375)	17 000 (456)	20 800 (557)	26 000 (697)	31 000 (831)
			50 (3,4)	500 (13,4)	6000 (161)	7000 (188)	11 500 (308)	15 500 (415)	17 000 (456)	20 000 (536)	24 000 (643)	29 000 (777)	34 000 (911)
			75 (5,2)	500 (13,4)	7500 (201)	10 000 (268)	15 000 (402)	20 000 (536)	22 000 (590)	25 000 (670)	29 000 (777)	34 000 (911)	39 000 (1045)
	1E399127162	Red	75 (5,2)	500 (13,4)	5000 (134)	6500 (174)	10 000 (268)	15 000 (402)	20 000 (536)	24 000 (643)	29 000 (777)	34 000 (911)	39 000 (1045)
			100 (6,9)	500 (13,4)	6500 (174)	8500 (228)	13 000 (348)	20 000 (536)	24 000 (643)	29 000 (777)	34 000 (911)	39 000 (1045)	45 000 (1206)
			125 (8,6)	500 (13,4)	7000 (188)	9000 (241)	14 500 (389)	23 000 (616)	28 000 (750)	33 000 (884)	39 000 (1045)	45 000 (1206)	50 000 (1340)
	1L380127082	Blue	150 (10,3)	500 (13,4)	4700 (126)	6000 (161)	9000 (241)	14 000 (375)	19 000 (509)	28 000 (750)	42 000 (1126)	50 000 (1340)	56 000 (1501)
			175 (12,1)	500 (13,4)	5700 (153)	7000 (188)	10 500 (281)	17 000 (456)	23 000 (616)	34 000 (911)	49 000 (1313)	56 000 (1501)	61 000 (1635)
			200 (13,8)	500 (13,4)	5700 (153)	7500 (201)	12 000 (322)	18 000 (482)	24 000 (643)	36 000 (965)	54 000 (1447)	61 000 (1635)	66 000 (1769)
1-1/2, 2 (40, 50)	1E792327092	Dark Gray	5 (0,34)	900 (24,1)	6300 (169)	7000 (188)	10 000 (268)	20 000 (536)	23 000 (616)	29 000 (777)	41 000 (1099)	55 000 (1474)	70 000 (1876)
			10 (0,69)	900 (24,1)	6500 (174)	8000 (214)	12 000 (322)	18 000 (482)	26 000 (697)	32 000 (858)	44 000 (1179)	58 000 (1554)	73 000 (1956)
			15 (1,0)	900 (24,1)	7000 (188)	9000 (241)	13 000 (348)	20 000 (536)	29 000 (777)	35 000 (938)	47 000 (1260)	61 000 (1635)	76 000 (2037)
			25 (1,7)	900 (24,1)	7200 (193)	10 000 (268)	15 000 (402)	22 000 (590)	33 000 (884)	41 000 (1099)	52 000 (1394)	67 600 (1812)	82 000 (2198)
			35 (2,4)	900 (24,1)	9000 (241)	11 000 (295)	16 000 (429)	24 000 (643)	37 000 (992)	37 000 (992)	59 000 (1581)	74 000 (1983)	88 000 (2358)
			25 (1,7)	900 (24,1)	8500 (228)	11 000 (295)	15 000 (402)	21 000 (563)	27 000 (724)	37 600 (1008)	48 000 (1286)	62 000 (1662)	75 000 (2010)
	1E795327082	Light Blue	35 (2,4)	900 (24,1)	8600 (230)	12 000 (322)	17 000 (456)	23 000 (616)	29 000 (777)	43 000 (1152)	54 000 (1447)	67 300 (1804)	80 800 (2165)
			50 (3,4)	900 (24,1)	9300 (249)	13 000 (348)	19 000 (509)	25 000 (670)	33 000 (884)	48 000 (1286)	57 000 (1528)	75 000 (2010)	89 000 (2385)
			65 (4,5)	900 (24,1)	9600 (257)	13 000 (348)	19 000 (509)	26 000 (697)	37 000 (992)	57 000 (1528)	80 000 (2144)	99 000 (2653)	115 000 (3082)
			50 (3,4)	900 (24,1)	6100 (163)	8900 (239)	12 000 (322)	20 000 (536)	27 000 (724)	41 000 (1099)	70 000 (1876)	85 000 (2278)	100 000 (2680)
	1E795427082	Light Gray	75 (5,2)	900 (24,1)	6200 (166)	9000 (241)	13 000 (348)	21 000 (563)	29 000 (777)	47 000 (1260)	78 000 (2090)	97 000 (2600)	112 000 (3002)
			100 (6,9)	900 (24,1)	6600 (177)	9700 (260)	15 000 (402)	23 000 (616)	32 000 (858)	54 000 (1447)	90 000 (2412)	110 000 (2948)	130 000 (3484)
			75 (5,2)	900 (24,1)	4600 (123)	6500 (174)	10 000 (268)	17 000 (456)	22 000 (590)	36 000 (965)	67 000 (1796)	94 000 (2519)	108 000 (2894)
	1P788827082	Black	100 (6,9)	900 (24,1)	5600 (150)	8500 (228)	12 000 (322)	19 000 (509)	26 000 (697)	42 000 (1126)	78 000 (2090)	108 000 (2894)	129 000 (3457)
			125 (8,6)	900 (24,1)	6200 (166)	9200 (247)	14 000 (375)	22 000 (590)	30 000 (804)	47 000 (1260)	86 000 (2305)	120 000 (3216)	132 000 (3538)
			170 (11,7)	900 (24,1)	6500 (174)	9400 (252)	15 000 (402)	23 000 (616)	32 000 (858)	52 000 (1394)	100 000 (2680)	135 000 (3618)	157 000 (4208)
100 (6,9)			900 (24,1)	5600 (150)	8500 (228)	12 000 (322)	19 000 (509)	26 000 (697)	42 000 (1126)	78 000 (2090)	108 000 (2894)	129 000 (3457)	

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Table 12. Air Relief Capacities in SCFH (Nm³/h), Types 98H and 98HD with Metal Diaphragm

NOMINAL BODY SIZES, NPS (DN)	SPRING		RELIEF PRESSURE SETTING, PSIG (bar)	FLOW AT RELIEF SETTING, SCFH (Nm ³ /h)	PRESSURE BUILD-UP OVER RELIEF SETTING, PSIG (bar)									
	Part Number	Color Code			5 (0,34)	7 (0,48)	10 (0,69)	15 (1,0)	20 (1,4)	30 (2,1)	40 (2,8)	50 (3,4)	75 (5,2)	100 (6,9)
1/4	1E392527022	Yellow	15	500	950	1150	1300	1600	1900	2300	2700	3100	4100	5100
			(1,0)	(13,4)	(25,5)	(30,8)	(34,8)	(42,9)	(50,9)	(61,6)	(72,4)	(83,1)	(110)	(137)
			25	500	1000	1300	1500	1800	2100	2700	3100	3500	4500	5400
			(1,7)	(13,4)	(26,8)	(34,8)	(40,2)	(48,2)	(56,3)	(72,4)	(83,1)	(93,8)	(121)	(145)
	1E392627012	Green	35	500	1100	1400	1600	1900	2300	2900	3500	3900	4900	5800
			(2,4)	(13,4)	(29,5)	(37,5)	(42,9)	(50,9)	(61,6)	(77,7)	(93,8)	(105)	(131)	(155)
			50	500	1200	1500	1700	2000	2400	3000	3600	4200	5400	6400
			(3,4)	(13,4)	(32,2)	(40,2)	(45,6)	(53,6)	(64,3)	(80,4)	(96,5)	(113)	(145)	(172)
	1E392727142	Red	75	500	1100	1200	1400	1500	1800	2800	3600	4300	6100	7000
			(5,2)	(13,4)	(29,5)	(32,2)	(37,5)	(40,2)	(48,2)	(75,0)	(96,5)	(115)	(163)	(188)
			100	500	1200	1400	1700	2100	2600	3400	4300	5200	7300	9000
			(6,9)	(13,4)	(32,2)	(37,5)	(45,6)	(56,3)	(69,7)	(91,1)	(115)	(139)	(196)	(241)
	1L346127142	Blue	125	500	1400	1800	2000	2500	3000	4000	5000	6000	8500	10 000
			(8,6)	(13,4)	(37,5)	(48,2)	(53,6)	(67,0)	(80,4)	(107)	(134)	(161)	(228)	(268)
			150	500	1000	1200	1500	2000	2500	3500	4500	5500	8000	10 000
			(10,3)	(13,4)	(26,8)	(32,2)	(40,2)	(53,6)	(67,0)	(93,8)	(121)	(147)	(214)	(268)
1/2 (15)	1E395627022	Yellow	175	500	1050	1400	1800	2200	2900	4000	5100	6200	8900	12 000
			(12,1)	(13,4)	(28,1)	(37,5)	(48,2)	(59,0)	(77,7)	(107)	(137)	(166)	(239)	(322)
			200	500	1100	1500	1900	2300	3000	4300	5700	6900	10 000	13 000
			(13,8)	(13,4)	(29,5)	(40,2)	(50,9)	(61,6)	(80,4)	(115)	(153)	(185)	(268)	(348)
	1E395627022	Yellow	15	500	1500	2000	2500	3600	4500	5400	6300	7200	9400	11 700
			(1,0)	(13,4)	(40,2)	(53,6)	(67,0)	(96,4)	(121)	(145)	(169)	(193)	(252)	(314)
			25	500	1600	2100	2700	3800	4900	6200	7200	8000	10 300	12 600
			(1,7)	(13,4)	(42,9)	(56,3)	(72,4)	(102)	(131)	(166)	(193)	(214)	(276)	(338)
	1D7455T0012	Green	35	500	1700	2200	3000	4100	5600	7400	8100	8470	11 200	13 600
			(2,4)	(13,4)	(45,6)	(59,0)	(80,4)	(110)	(150)	(198)	(217)	(227)	(300)	(364)
			50	500	1600	2000	2600	3600	4700	6900	8800	10 000	12 500	14 800
			(3,4)	(13,4)	(42,9)	(53,6)	(69,7)	(96,5)	(126)	(185)	(236)	(268)	(335)	(397)
	1E395727192	Red	75	500	1800	2400	3200	4400	5700	8300	10 000	12 000	15 000	17 000
			(5,2)	(13,4)	(48,2)	(64,3)	(85,8)	(118)	(153)	(222)	(268)	(322)	(402)	(456)
			100	500	1800	2300	3000	4100	5400	8000	10 000	13 000	17 000	19 000
			(6,9)	(13,4)	(48,2)	(61,6)	(80,4)	(110)	(145)	(214)	(268)	(348)	(456)	(509)
1L380027142	Blue	125	500	1900	2500	3300	4600	6000	8700	11 000	14 000	19 000	21 000	
		(8,6)	(13,4)	(50,9)	(67,0)	(88,4)	(123)	(161)	(233)	(295)	(375)	(509)	(563)	
		150	500	1700	2200	2800	3800	5000	7500	9000	12 000	18 000	22 000	
		(10,3)	(13,4)	(45,6)	(59,0)	(75,0)	(102)	(134)	(201)	(241)	(322)	(482)	(590)	
1L380027142	Blue	175	500	1800	2300	3000	4300	5700	8300	11 000	13 000	20 000	24 000	
		(12,1)	(13,4)	(48,2)	(61,6)	(80,4)	(115)	(153)	(222)	(295)	(348)	(536)	(643)	
		200	500	2000	2700	3600	5000	6400	9400	12 000	15 000	22 000	26 000	
		(13,8)	(13,4)	(53,6)	(72,4)	(96,5)	(134)	(172)	(252)	(322)	(402)	(590)	(697)	

- continued -

Table 12. Air Relief Capacities in SCFH (Nm³/h), Types 98H and 98HD with Metal Diaphragm (continued)

NOMINAL BODY SIZES, NPS (DN)	SPRING		RELIEF PRESSURE SETTING, PSIG (bar)	FLOW AT RELIEF SETTING, SCFH (Nm ³ /h)	PRESSURE BUILD-UP OVER RELIEF SETTING, PSIG (bar)									
	Part Number	Color Code			5 (0,34)	7 (0,48)	10 (0,69)	15 (1,0)	20 (1,4)	30 (2,1)	40 (2,8)	50 (3,4)	75 (5,2)	100 (6,9)
3/4, 1 (20, 25)	1E398927022	Yellow	15	500	2000	3000	4000	5700	8500	10 400	12 000	13 900	18 000	22 500
			(1,0)	(13,4)	(53,6)	(80,4)	(107)	(153)	(228)	(279)	(322)	(373)	(482)	(603)
			25	500	2700	4000	5200	7200	8700	12 100	13 900	15 600	20 000	24 000
			(1,7)	(13,4)	(72,4)	(107)	(139)	(193)	(233)	(324)	(373)	(418)	(536)	(643)
	1E399027142	Green	35	500	3000	4200	5500	8000	10 000	13 000	15 600	17 300	21 700	26 000
			(2,4)	(13,4)	(80,4)	(113)	(147)	(214)	(268)	(349)	(418)	(464)	(582)	(697)
			50	500	2500	3500	4700	7500	9500	14 000	18 000	20 000	24 000	28 600
			(3,4)	(13,4)	(67,0)	(93,8)	(126)	(201)	(255)	(375)	(482)	(536)	(643)	(766)
	1E399127162	Red	75	500	2900	3400	4700	7000	9200	13 000	18 000	23 000	30 000	35 000
			(5,2)	(13,4)	(77,7)	(91,1)	(126)	(188)	(247)	(348)	(482)	(616)	(804)	(938)
			100	500	3000	3500	5000	7700	10 000	15 000	20 000	26 000	35 000	40 000
			(6,9)	(13,4)	(80,4)	(93,8)	(134)	(206)	(268)	(402)	(536)	(697)	(938)	(1072)
	1L380127082	Blue	125	500	3200	4500	6200	9500	12 000	19 000	25 000	31 000	39 000	45 000
			(8,6)	(13,4)	(85,8)	(121)	(166)	(255)	(322)	(509)	(670)	(831)	(1045)	(1206)
			150	500	1900	3000	4500	7500	10 000	16 000	22 000	28 000	42 000	50 000
			(10,3)	(13,4)	(50,9)	(80,4)	(121)	(201)	(268)	(429)	(590)	(750)	(1126)	(1340)
1-1/2, 2 (40, 50)	1E792327092	Dark Gray	175	500	2000	3200	5000	7700	11 000	17 000	23 000	30 000	45 000	54 000
			(12,1)	(13,4)	(53,6)	(85,8)	(134)	(206)	(295)	(456)	(616)	(804)	(1206)	(1447)
			200	500	3500	5000	7000	10 000	14 000	21 000	28 000	35 000	52 000	60 000
			(13,8)	(13,4)	(93,8)	(134)	(188)	(268)	(375)	(563)	(750)	(938)	(1394)	(1608)
			5	900	6000	8800	10 500	16 000	18 000	23 000	28 000	32 700	44 000	55 700
			(0,34)	(24,1)	(161)	(236)	(281)	(429)	(482)	(616)	(750)	(876)	(1179)	(1493)
			10	900	7200	10 000	13 500	18 000	21 000	25 700	30 000	35 000	46 800	58 600
			(0,69)	(24,1)	(193)	(268)	(362)	(482)	(563)	(689)	(804)	(938)	(1254)	(1570)
	1E795327082	Light Blue	15	900	7500	10 500	14 500	19 500	23 000	28 000	32 700	37 000	49 000	61 000
			(1,0)	(24,1)	(201)	(281)	(389)	(523)	(616)	(750)	(876)	(992)	(1313)	(1635)
			25	900	8500	11 000	16 000	22 000	27 000	32 700	37 000	42 000	54 000	65 600
			(1,7)	(24,1)	(228)	(295)	(429)	(590)	(724)	(876)	(992)	(1126)	(1447)	(1758)
			35	900	8700	11 700	17 000	24 000	30 000	38 000	42 000	47 000	58 600	70 000
			(2,4)	(24,1)	(233)	(314)	(456)	(643)	(804)	(1018)	(1126)	(1260)	(1570)	(1876)
			25	900	6000	8000	11 000	17 500	20 000	32 000	36 000	41 000	52 000	64 000
			(1,7)	(24,1)	(161)	(214)	(295)	(469)	(536)	(858)	(965)	(1099)	(1394)	(1715)
1E795427082	Light Gray	35	900	6700	8800	15 000	21 000	27 000	37 000	41 600	46 000	57 000	68 900	
		(2,4)	(24,1)	(180)	(236)	(402)	(563)	(724)	(992)	(1115)	(1233)	(1528)	(1847)	
		50	900	7000	9300	16 000	23 000	29 000	42 000	50 000	57 000	69 000	81 600	
		(3,4)	(24,1)	(188)	(249)	(429)	(616)	(777)	(1126)	(1340)	(1528)	(1849)	(2187)	
		65	900	8000	11 000	17 000	25 000	32 000	48 000	59 000	68 000	82 000	73 700	
		(4,5)	(24,1)	(214)	(295)	(456)	(670)	(858)	(1286)	(1581)	(1822)	(2198)	(1975)	
		50	900	2400	7000	10 500	16 000	20 000	30 000	39 000	47 000	57 000	67 500	
		(3,4)	(24,1)	(64,3)	(188)	(281)	(429)	(536)	(804)	(1045)	(1260)	(1528)	(1809)	
1P788827082	Black	75	900	3800	10 500	15 500	23 000	30 000	44 000	53 000	60 000	70 000	80 600	
		(5,2)	(24,1)	(102)	(281)	(415)	(616)	(804)	(1179)	(1420)	(1608)	(1876)	(2160)	
		100	900	6000	12 000	18 000	26 000	34 000	50 000	59 000	66 000	77 000	100 000	
		(6,9)	(24,1)	(161)	(322)	(482)	(697)	(911)	(1340)	(1581)	(1769)	(2064)	(2680)	
		75	900	2700	6000	9000	14 000	18 000	30 000	41 000	50 000	72 000	82 900	
		(5,2)	(24,1)	(72,4)	(161)	(241)	(375)	(482)	(804)	(1099)	(1340)	(1930)	(2222)	
		100	900	3000	8000	15 000	21 000	27 000	41 000	56 000	70 000	95 000	111 000	
		(6,9)	(24,1)	(80,4)	(214)	(402)	(563)	(724)	(1099)	(1501)	(1876)	(2546)	(2975)	
1P788827082	Black	125	900	7000	9000	16 500	23 000	30 000	46 000	63 000	78 000	108 000	124 000	
		(8,6)	(24,1)	(188)	(241)	(442)	(616)	(804)	(1233)	(1688)	(2090)	(2894)	(3323)	
		170	900	7300	10 000	17 000	24 000	32 000	48 000	66 000	82 000	116 000	135 000	
		(11,7)	(24,1)	(196)	(268)	(456)	(643)	(858)	(1286)	(1769)	(2198)	(3109)	(3618)	

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Table 13. Water Relief Capacities in Gallons per Minute (l/min), Types 98HH and 98HHD with Elastomer Diaphragm

NOMINAL BODY SIZES, NPT	PART NUMBER OF ZINC PLATED SPRING	RELIEF PRESSURE SETTING, PSIG (bar)	FLOW AT RELIEF SETTING, GPM (l/min)	PRESSURE BUILD-UP OVER RELIEF SETTING, PSIG (bar)											
				5 (0,34)	10 (0,69)	15 (1,0)	20 (1,4)	25 (1,7)	30 (2,1)	35 (2,4)	40 (2,8)	50 (3,4)	75 (5,2)	100 (6,9)	
1/4	1N942227142	150 (10,3)	1 (3,8)	2.2 (8,3)	2.8 (10,6)	4.2 (15,9)	5 (18,9)	6 (22,7)	6.8 (25,7)	7.7 (29,1)	8.6 (32,6)	9.9 (37,5)	12.6 (47,7)	16 (60,6)	
		175 (12,1)	1 (3,8)	2.6 (9,8)	3.2 (12,1)	4.8 (18,2)	5.8 (22,0)	6.8 (25,7)	7.8 (29,5)	8.7 (32,9)	9.6 (36,3)	11 (41,6)	14 (53,0)	16.5 (62,5)	
		200 (13,8)	1 (3,8)	2.7 (10,2)	4 (15,1)	5.2 (19,7)	6.4 (24,2)	7.4 (28,0)	8.6 (32,6)	9.5 (36,0)	10.4 (39,4)	12 (45,4)	15.1 (57,2)	17.2 (65,1)	
		250 (17,2)	1 (3,8)	3 (11,4)	6 (22,7)	7 (26,5)	8 (30,3)	10 (37,9)	11 (41,6)	13 (49,2)	14 (53,0)	16 (60,6)	18 (68,1)	20 (75,7)	
		300 (20,7)	1 (3,8)	3.5 (13,2)	7 (26,5)	9 (34,1)	10 (37,9)	12 (45,4)	14 (53,0)	15 (56,8)	16 (60,6)	18 (68,1)	20 (75,7)	22 (83,3)	
		375 (25,9)	1 (3,8)	4 (15,1)	7.5 (28,4)	10 (37,9)	13 (49,2)	15 (56,8)							
1/2	1N943427142	150 (10,3)	1 (3,8)	3.5 (13,2)	6.5 (24,6)	10 (37,9)	13 (49,2)	16 (60,6)	18 (68,1)	20 (75,7)	23 (87,1)	26 (98,4)	34 (129)	37 (140)	
		175 (12,1)	1 (3,8)	4 (15,1)	7.5 (28,4)	10.5 (39,7)	14.5 (54,9)	18 (68,1)	21 (79,5)	23 (87,1)	25 (94,6)	29 (110)	36 (136)	41 (155)	
		200 (13,8)	1 (3,8)	4.7 (17,8)	8 (30,3)	11.5 (43,5)	15 (56,8)	20 (75,7)	23 (87,1)	25 (94,6)	28 (106)	32 (121)	40 (151)	45 (170)	
		250 (17,2)	1 (3,8)	4.8 (18,2)	8.3 (31,4)	11.7 (44,3)	15.5 (58,7)	22 (83,3)	25 (94,6)	27 (102)	30 (114)	35 (132)	44 (167)	48 (182)	
		300 (20,7)	1 (3,8)	5 (18,9)	8.5 (32,2)	12 (45,4)	16 (60,6)	24 (90,8)	28 (106)	30 (114)	33 (125)	39 (148)	47 (178)	52 (197)	
		375 (25,9)	1 (3,8)	5.1 (19,3)	8.7 (32,9)	12.2 (46,2)	17 (64,3)	25 (94,6)							
3/4, 1	1N944127182	150 (10,3)	1 (3,8)	7 (26,5)	15 (56,8)	19 (71,9)	34 (129)	43 (163)	50 (189)	56 (212)	61 (231)	70 (265)	83 (314)	88 (333)	
		175 (12,1)	1 (3,8)	8 (30,3)	15.5 (58,7)	20 (75,7)	35 (132)	44 (167)	52 (197)	57 (216)	62 (235)	72 (273)	85 (322)	92 (348)	
		200 (13,8)	1 (3,8)	9 (34,1)	16 (60,6)	22 (83,3)	36 (136)	45 (170)	55 (208)	58 (220)	64 (242)	74 (280)	86 (326)	95 (360)	
		250 (17,2)	1 (3,8)	9.5 (36,0)	16.5 (62,5)	24 (90,8)	37 (140)	46 (174)	61 (231)	62 (235)	68 (257)	76 (288)	90 (341)	99 (375)	
		300 (20,7)	1 (3,8)	10 (37,9)	17 (64,3)	26 (98,4)	40 (151)	48 (182)	66 (250)	74 (280)	79 (299)	87 (329)	100 (379)	109 (413)	
		375 (25,9)	1 (3,8)	11 (41,6)	17.5 (66,2)	30 (114)	43 (163)	56 (212)							

- Shaded areas show where maximum inlet pressures are exceeded.

Table 14. Water Relief Capacities in Gallons per Minute (l/min), Types 98HH and 98HHD with Metal Diaphragm

NOMINAL BODY SIZES, NPT	PART NUMBER OF ZINC PLATED SPRING	RELIEF PRESSURE SETTING, PSIG (bar)	FLOW AT RELIEF SETTING, GPM (l/min)	PRESSURE BUILD-UP OVER RELIEF SETTING, PSIG (bar)										
				5 (0,34)	10 (0,69)	15 (1,0)	20 (1,4)	25 (1,7)	30 (2,1)	35 (2,4)	40 (2,8)	50 (3,4)	75 (5,2)	100 (6,9)
1/4	1N942227142	150 (10,3)	1 (3,8)	1.8 (6,8)	2.8 (10,6)	3.7 (14,0)	4.7 (17,8)	5.6 (21,2)	6.6 (25,0)	7.4 (28,0)	8.2 (31,0)	9.6 (39,3)	12.3 (46,6)	14.2 (53,7)
		175 (12,1)	1 (3,8)	2 (7,57)	3 (11,4)	4.2 (15,9)	5.2 (19,7)	6.2 (23,5)	7.2 (27,3)	8.2 (31,0)	9.2 (34,8)	10.8 (40,9)	13.3 (50,3)	15 (56,8)
		200 (13,8)	1 (3,8)	2.2 (8,3)	3.4 (12,9)	4.8 (18,2)	5.9 (22,3)	7 (26,5)	8 (30,3)	8.6 (32,6)	9.7 (36,7)	11.4 (43,1)	13.6 (51,5)	15.6 (59,0)
		250 (17,2)	1 (3,8)	2.4 (9,08)	3.6 (13,6)	5 (18,9)	6.1 (23,1)	7.1 (26,9)	8.3 (31,4)	9.2 (34,8)	10 (37,9)	11.8 (44,7)	14.0 (53,0)	16 (60,6)
		300 (20,7)	1 (3,8)	2.7 (10,2)	3.8 (14,4)	5.2 (19,7)	6.3 (23,8)	7.3 (27,6)	8.5 (32,2)	9.5 (36,0)	10.5 (39,7)	12 (45,4)	14.5 (54,9)	16.5 (62,5)
		375 (25,9)	1 (3,8)	3 (11,4)	4.2 (15,9)	5.5 (20,8)	6.5 (24,6)	7.5 (28,4)						
1/2	1N943427142	150 (10,3)	1 (3,8)	3 (11,4)	4.7 (17,8)	6.5 (24,6)	8.5 (32,2)	10 (37,9)	12 (45,4)	14 (53,0)	17 (64,3)	21 (79,5)	27.5 (104)	32 (121)
		175 (12,1)	1 (3,8)	3.2 (12,1)	5.5 (20,8)	7.5 (28,4)	9.5 (36,0)	10.7 (40,5)	13.5 (51,1)	15.5 (58,7)	17.4 (65,9)	21.5 (81,4)	28 (106)	33 (125)
		200 (13,8)	1 (3,8)	3.3 (12,5)	5.6 (21,2)	8 (30,3)	10.2 (38,6)	11.5 (43,5)	15 (56,8)	17 (64,3)	19 (71,9)	22.2 (84,0)	29.5 (112)	33.5 (127)
		250 (17,2)	1 (3,8)	3.4 (12,9)	5.8 (22,0)	8.2 (31,0)	10.5 (39,7)	11.7 (44,3)	15.5 (58,7)	17.5 (66,2)	19.5 (73,8)	22.3 (84,4)	30 (114)	34.5 (131)
		300 (20,7)	1 (3,8)	3.5 (13,2)	6 (22,7)	8.5 (32,2)	11 (41,6)	12 (45,4)	16 (60,6)	18 (68,1)	20 (75,7)	23 (87,1)	30.5 (115)	36 (136)
		375 (25,9)	1 (3,8)	3.6 (13,6)	6.2 (23,5)	8.7 (32,9)	11.5 (43,5)	12.5 (47,3)						
3/4, 1	1N944127182	150 (10,3)	1 (3,8)	4 (15,1)	7 (26,5)	11 (41,6)	15 (56,8)	19 (71,9)	22 (83,3)	26 (98,4)	30 (114)	37 (140)	53 (201)	66 (250)
		175 (12,1)	1 (3,8)	4.2 (15,9)	7.5 (28,4)	11.5 (43,5)	15.5 (58,7)	20 (75,7)	24 (90,8)	28 (106)	32 (121)	38 (144)	54 (204)	68 (257)
		200 (13,8)	1 (3,8)	4.4 (16,7)	8 (30,3)	12 (45,4)	16 (60,6)	21 (79,5)	26 (98,4)	30 (114)	34 (129)	40 (151)	55 (208)	70 (265)
		250 (17,2)	1 (3,8)	4.6 (17,4)	8.5 (32,2)	12.5 (47,3)	17 (64,3)	22 (83,3)	28 (106)	32 (121)	36 (136)	44 (167)	57 (216)	74 (280)
		300 (20,7)	1 (3,8)	4.8 (18,2)	9 (34,1)	13 (49,2)	18 (68,1)	24 (90,8)	30 (114)	34 (129)	38 (144)	46 (174)	65 (246)	82 (310)
		375 (25,9)	1 (3,8)	5 (18,9)	10 (37,9)	15 (56,8)	21 (79,5)	26 (98,4)						

- Shaded areas show where maximum inlet pressures are exceeded.

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Table 15. Steam Relief Capacities in Pounds per Hour (kg/h), Types 98HH and 98HHD with Metal Diaphragm Only

NOMINAL BODY SIZES, NPT	PART NUMBER OF ZINC PLATED SPRING	RELIEF PRESSURE SETTING, PSIG (bar)	FLOW AT RELIEF SETTING, POUNDS/HOUR (kg/h)	PRESSURE BUILD-UP OVER RELIEF SETTING, PSIG (bar)											
				5 (0,34)	10 (0,69)	15 (1,0)	20 (1,4)	25 (1,7)	30 (2,1)	35 (2,4)	40 (2,8)	50 (3,4)	75 (5,2)	100 (6,9)	
1/4	1N942227142	150 (10,3)	25 (11,3)	34 (15,4)	61 (27,7)	88 (39,9)	114 (51,7)	136 (61,7)	160 (72,6)	182 (82,6)	204 (92,5)	240 (109)	364 (165)	430 (195)	
		175 (12,1)	25 (11,3)	36 (16,3)	63 (28,6)	91 (41,3)	118 (53,5)	145 (65,8)	173 (78,5)	200 (90,7)	209 (94,8)	259 (117)	368 (167)	455 (206)	
		200 (13,8)	25 (11,3)	38 (17,2)	66 (29,9)	93 (42,2)	123 (55,8)	150 (68,0)	177 (80,3)	205 (93,0)	214 (97,1)	264 (120)	373 (169)	477 (216)	
		250 (17,2)	25 (11,3)	41 (18,6)	68 (30,8)	95 (43,1)	127 (57,6)	154 (69,9)	182 (85,6)	214 (97,1)	218 (98,9)	272 (123)	410 (186)	523 (237)	
		300 (20,7)	25 (11,3)	43 (19,5)	70 (31,8)	97 (44,0)	132 (59,9)	159 (72,1)	186 (84,4)	218 (98,9)	236 (107)	286 (130)	455 (206)	568 (258)	
		375 (25,9)	25 (11,3)	45 (20,4)	72 (32,7)	100 (45,4)	136 (61,7)	163 (73,9)							
1/2	1N943427142	150 (10,3)	25 (11,3)	77 (34,9)	100 (45,4)	145 (65,8)	191 (86,6)	250 (113)	295 (134)	340 (154)	372 (169)	545 (247)	818 (371)	1000 (454)	
		175 (12,1)	25 (11,3)	81 (36,7)	104 (47,2)	148 (67,1)	195 (88,5)	259 (117)	314 (142)	377 (171)	436 (198)	590 (268)	910 (413)	1090 (494)	
		200 (13,8)	25 (11,3)	91 (41,3)	123 (55,8)	163 (73,9)	227 (103)	290 (132)	354 (161)	427 (194)	500 (227)	680 (308)	1000 (454)	1180 (535)	
		250 (17,2)	25 (11,3)	93 (42,2)	125 (56,7)	168 (76,2)	232 (105)	295 (134)	359 (163)	432 (196)	522 (237)	705 (320)	1020 (463)	1200 (544)	
		300 (20,7)	25 (11,3)	95 (43,1)	127 (57,6)	172 (78,0)	236 (107)	300 (136)	364 (165)	436 (198)	545 (247)	727 (330)	1045 (474)	1225 (556)	
		375 (25,9)	25 (11,3)	97 (44,0)	129 (58,5)	177 (80,3)	240 (109)	304 (138)							
3/4, 1	1N944127182	150 (10,3)	25 (11,3)	68 (30,8)	136 (61,7)	204 (92,5)	340 (154)	455 (206)	614 (279)	705 (320)	818 (371)	1020 (463)	1590 (721)	2090 (948)	
		175 (12,1)	25 (11,3)	75 (34,0)	154 (69,9)	227 (103)	363 (165)	477 (216)	636 (288)	727 (330)	864 (392)	1070 (485)	1660 (753)	2220 (1007)	
		200 (13,8)	25 (11,3)	82 (37,2)	172 (78,0)	250 (113)	386 (175)	500 (227)	680 (308)	773 (351)	910 (413)	1090 (494)	1680 (762)	2270 (1030)	
		250 (17,2)	25 (11,3)	91 (41,3)	181 (82,1)	272 (123)	408 (185)	545 (247)	772 (350)	864 (392)	1000 (454)	1180 (535)	1770 (803)	2360 (1070)	
		300 (20,7)	25 (11,3)	95 (43,1)	191 (86,6)	295 (134)	432 (196)	590 (268)	818 (371)	910 (413)	1045 (474)	1225 (556)	1950 (885)	2590 (1175)	
		375 (25,9)	25 (11,3)	100 (45,4)	204 (92,5)	340 (154)	477 (216)	614 (279)							

- Shaded areas show where maximum inlet pressures are exceeded.

Table 16. Air Relief Capacities in SCFH (Nm³/h), Types 98HH and 98HHD with Elastomer Diaphragm

NOMINAL BODY SIZES, NPT	PART NUMBER OF ZINC PLATED SPRING	RELIEF PRESSURE SETTING, PSIG (bar)	FLOW AT RELIEF SETTING, SCFH (Nm ³ /h)	PRESSURE BUILD-UP OVER RELIEF SETTING, PSIG (bar)												
				5 (0,34)	10 (0,69)	15 (1,0)	20 (1,4)	25 (1,7)	30 (2,1)	35 (2,4)	40 (2,8)	50 (3,4)	75 (5,2)	100 (6,9)		
1/4	1N942227142	150 (10,3)	500 (13,4)	1300 (34,8)	3600 (96,5)	5100 (137)	6500 (174)	7200 (193)	7600 (204)	8000 (214)	8400 (225)	9000 (241)	10 500 (281)	12 000 (322)		
		175 (12,1)	500 (13,4)	1400 (37,5)	3800 (102)	5300 (142)	7000 (188)	7700 (206)	8200 (220)	8500 (228)	9000 (241)	9000 (268)	10 000 (308)	11 500 (348)	13 000 (375)	
		200 (13,8)	500 (13,4)	1500 (40,2)	4000 (107)	5500 (147)	7500 (201)	8800 (236)	9300 (249)	9800 (263)	9800 (268)	10 000 (268)	11 500 (308)	13 000 (348)	14 000 (375)	
		250 (17,2)	500 (13,4)	1800 (48,2)	4200 (113)	6000 (161)	8500 (228)	10 000 (268)	10 500 (281)	10 500 (281)	11 000 (295)	12 000 (322)	12 000 (322)	13 000 (348)	14 500 (389)	16 000 (429)
		300 (20,7)	500 (13,4)	2100 (56,3)	4500 (121)	7000 (188)	9000 (241)	10 500 (281)	10 500 (281)	12 000 (322)	13 000 (348)	13 500 (362)	15 000 (402)	17 000 (456)	19 000 (509)	
		375 (25,9)	500 (13,4)	2400 (64,3)	4800 (129)	7200 (193)	10 000 (268)	13 000 (348)								
1/2	1N943427142	150 (10,3)	500 (13,4)	2400 (64,3)	4600 (123)	7500 (201)	10 000 (268)	13 000 (348)	16 000 (429)	17 000 (456)	18 000 (483)	20 000 (536)	23 000 (616)	26 000 (697)		
		175 (12,1)	500 (13,4)	3200 (85,8)	5400 (145)	8000 (214)	11 000 (295)	15 000 (402)	17 000 (456)	18 500 (496)	20 000 (536)	23 000 (616)	26 000 (697)	28 000 (750)		
		200 (13,8)	500 (13,4)	3400 (91,1)	6000 (161)	9000 (241)	12 000 (322)	16 000 (429)	18 000 (482)	23 000 (616)	24 000 (643)	26 000 (697)	30 000 (804)	32 000 (858)		
		250 (17,2)	500 (13,4)	3500 (93,8)	6200 (166)	9200 (247)	12 500 (335)	16 500 (442)	20 500 (549)	24 000 (643)	25 000 (670)	27 000 (724)	31 000 (831)	34 000 (911)		
		300 (20,7)	500 (13,4)	3600 (96,5)	6300 (169)	9300 (249)	13 500 (362)	17 000 (456)	22 500 (603)	27 000 (724)	29 000 (777)	31 000 (831)	36 000 (965)	40 000 (1072)		
		375 (25,9)	500 (13,4)	3700 (99,2)	6400 (172)	9400 (252)	14 500 (389)	20 000 (536)								
3/4, 1	1N944127182	150 (10,3)	500 (13,4)	2700 (72,4)	5400 (145)	9000 (241)	15 000 (402)	20 000 (536)	25 000 (670)	29 000 (777)	33 000 (884)	38 000 (1018)	50 000 (1340)	56 000 (1501)		
		175 (12,1)	500 (13,4)	3000 (80,4)	6000 (161)	10 500 (281)	16 000 (429)	22 000 (590)	27 000 (724)	31 000 (831)	35 000 (938)	39 000 (1045)	52 000 (1394)	61 000 (1635)		
		200 (13,8)	500 (13,4)	3500 (93,8)	7200 (193)	12 000 (322)	17 000 (456)	23 000 (616)	28 000 (750)	32 000 (858)	38 000 (1018)	44 000 (1179)	57 000 (1528)	66 000 (1769)		
		250 (17,2)	500 (13,4)	3700 (99,2)	8500 (228)	13 000 (348)	22 000 (590)	26 000 (697)	32 000 (858)	36 000 (965)	40 000 (1072)	49 000 (1313)	65 000 (1742)	75 000 (2010)		
		300 (20,7)	500 (13,4)	3900 (105)	9500 (255)	17 000 (456)	25 000 (670)	33 000 (884)	37 000 (992)	45 000 (1206)	52 000 (1394)	61 000 (1635)	77 000 (2064)	86 000 (2305)		
		375 (25,9)	500 (13,4)	4000 (107)	11 000 (295)	25 000 (670)	42 000 (1126)	55 000 (1474)								

- Shaded areas show where maximum inlet pressures are exceeded.

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Table 17. Air Relief Capacities in SCFH (Nm³/h), Types 98HH and 98HHD with Metal Diaphragm

NOMINAL BODY SIZES, NPT	PART NUMBER OF ZINC PLATED SPRING	RELIEF PRESSURE SETTING, PSIG (bar)	FLOW AT RELIEF SETTING, SCFH (Nm ³ /h)	PRESSURE BUILD-UP OVER RELIEF SETTING, PSIG (bar)										
				5 (0,34)	10 (0,69)	15 (1,0)	20 (1,4)	25 (1,7)	30 (2,1)	35 (2,4)	40 (2,8)	50 (3,4)	75 (5,2)	100 (6,9)
1/4	1N942227142	150 (10,3)	500 (13,4)	750 (20,1)	1350 (36,2)	1950 (52,3)	2500 (67,0)	3000 (80,4)	3500 (93,8)	4000 (107)	4500 (121)	5300 (142)	8000 (214)	9500 (255)
		175 (12,1)	500 (13,4)	800 (21,4)	1400 (37,5)	2000 (53,6)	2600 (69,7)	3200 (85,8)	3800 (102)	4400 (118)	4600 (123)	5700 (153)	8100 (217)	10 000 (268)
		200 (13,8)	500 (13,4)	850 (22,8)	1450 (38,9)	2050 (54,9)	2700 (72,4)	3300 (88,4)	3900 (105)	4500 (121)	4700 (126)	5800 (155)	8200 (220)	10 500 (281)
		250 (17,2)	500 (13,4)	900 (24,1)	1500 (40,2)	2100 (56,3)	2800 (75,0)	3400 (91,1)	4000 (107)	4700 (126)	4800 (129)	6000 (161)	9000 (241)	11 500 (308)
		300 (20,7)	500 (13,4)	950 (25,5)	1550 (41,5)	2150 (57,6)	2900 (77,7)	3500 (93,8)	4100 (110)	4800 (129)	5200 (139)	6300 (169)	10 000 (268)	12 500 (335)
		375 (25,9)	500 (13,4)	1000 (26,8)	1600 (42,9)	2200 (59,0)	3000 (80,4)	3600 (96,5)						
1/2	1N943427142	150 (10,3)	500 (13,4)	1700 (45,6)	2200 (59,0)	3200 (85,8)	4200 (113)	5500 (147)	6500 (174)	7500 (201)	8200 (220)	12 000 (322)	18 000 (482)	22 000 (590)
		175 (12,1)	500 (13,4)	1800 (48,2)	2300 (61,6)	3250 (87,1)	4300 (115)	5700 (153)	6900 (185)	8300 (222)	9600 (257)	13 000 (348)	20 000 (536)	24 000 (643)
		200 (13,8)	500 (13,4)	2000 (53,6)	2700 (72,4)	3600 (96,5)	5000 (134)	6400 (172)	7800 (209)	9400 (252)	11 000 (295)	15 000 (402)	22 000 (590)	26 000 (697)
		250 (17,2)	500 (13,4)	2050 (54,9)	2750 (73,7)	3700 (99,2)	5100 (137)	6500 (174)	7900 (212)	9500 (255)	11 500 (308)	15 500 (415)	22 500 (603)	26 500 (710)
		300 (20,7)	500 (13,4)	2100 (56,3)	2800 (75,0)	3800 (102)	5200 (139)	6600 (177)	8000 (214)	9600 (257)	12 000 (322)	16 000 (429)	23 000 (616)	27 000 (724)
		375 (25,9)	500 (13,4)	2150 (57,6)	2850 (76,4)	3900 (105)	5300 (142)	6700 (180)						
3/4, 1	1N944127182	150 (10,3)	500 (13,4)	1500 (40,2)	3000 (80,4)	4500 (121)	7500 (201)	10 000 (268)	13 500 (362)	15 500 (415)	18 000 (482)	22 500 (603)	35 000 (938)	46 000 (1233)
		175 (12,1)	500 (13,4)	1650 (44,2)	3400 (91,1)	5000 (134)	8000 (214)	10 500 (281)	14 000 (375)	16 000 (429)	19 000 (509)	23 500 (630)	36 500 (978)	49 000 (1313)
		200 (13,8)	500 (13,4)	1800 (48,2)	3800 (102)	5500 (147)	8500 (228)	11 000 (295)	15 000 (402)	17 000 (456)	20 000 (536)	24 000 (643)	37 000 (992)	50 000 (1340)
		250 (17,2)	500 (13,4)	2000 (53,6)	4000 (107)	6000 (161)	9000 (241)	12 000 (322)	17 000 (456)	19 000 (509)	22 000 (590)	26 000 (697)	39 000 (1045)	52 000 (1394)
		300 (20,7)	500 (13,4)	2100 (56,3)	4200 (113)	6500 (174)	9500 (255)	13 000 (348)	18 000 (482)	20 000 (536)	23 000 (616)	27 000 (724)	43 000 (1152)	57 000 (1528)
		375 (25,9)	500 (13,4)	2200 (59,0)	4500 (121)	7500 (201)	10 500 (281)	13 500 (362)						

Shaded areas show where maximum inlet pressures are exceeded.

Table 18. Air Relief Capacities in SCFH (Nm³/h), Type 98HM with Elastomer Diaphragm

BODY SIZES, NPT	RELIEF SET PRESSURE RANGE, SPRING PART NUMBER, AND COLOR, PSIG (bar)	RELIEF PRESSURE SETTING, PSIG (bar)	FLOW AT RELIEF SETTING, SCFH (Nm ³ /h)	PRESSURE BUILD-UP OVER RELIEF SETTING, PSIG (bar)				
				5 (0,34)	10 (0,69)	20 (1,4)	50 (3,4)	100 (6,9)
1/2	15 to 35 (1,0 to 2,4) 1E398927022 Yellow	15 (1,0) 25 (1,7) 35 (2,4)	500 (13,4) 500 (13,4) 500 (13,4)	2200 (59,0) 2600 (69,7) 2800 (75,0)	3400 (91,1) 4400 (118) 4600 (123)	5200 (139) 6000 (161) 6900 (185)	8400 (225) 9400 (252) 10 500 (281)	13 600 (364) 14 600 (391) 15 700 (421)
	25 to 75 (1,7 to 5,2) 1E399027142 Green	35 (2,4) 50 (3,4) 75 (5,2)	500 (13,4) 500 (13,4) 500 (13,4)	2000 (53,6) 3800 (102) 4400 (118)	3600 (96,5) 6600 (177) 8000 (214)	6400 (172) 8800 (236) 11 000 (295)	10 500 (281) 12 000 (322) 14 500 (389)	15 700 (421) 17 000 (456) 18 000 (482)
	70 to 140 (4,8 to 9,7) 1E399127162 Red	75 (5,2) 100 (6,9) 125 (8,6)	500 (13,4) 500 (13,4) 500 (13,4)	2600 (69,7) 3500 (93,8) 3800 (102)	5000 (134) 7400 (198) 7600 (204)	10 000 (268) 13 000 (348) 14 000 (375)	14 500 (389) 17 000 (456) 19 000 (509)	18 000 (482) 21 000 (563) 23 000 (616)
	130 to 200 (9,0 to 13,8) 1L380127082 Blue	150 (10,3) 175 (12,1) 200 (13,8)	500 (13,4) 500 (13,4) 500 (13,4)	2400 (64,3) 3200 (85,8) 3400 (91,1)	4600 (123) 5400 (145) 6000 (161)	9000 (241) 11 000 (295) 12 000 (322)	20 000 (536) 23 000 (616) 25 000 (670)	26 000 (697) 28 000 (750) 30 000 (804)
3/4, 1	15 to 35 (1,0 to 2,4) 1E398927022 Yellow	15 (1,0) 25 (1,7) 35 (2,4)	500 (13,4) 500 (13,4) 500 (13,4)	5000 (134) 7000 (188) 9000 (241)	7700 (206) 9700 (260) 12 000 (322)	9900 (265) 13 000 (348) 14 000 (375)	15 900 (426) 17 900 (480) 20 800 (557)	25 900 (694) 27 900 (748) 31 000 (831)
	25 to 75 (1,7 to 5,2) 1E399027142 Green	35 (2,4) 50 (3,4) 75 (5,2)	500 (13,4) 500 (13,4) 500 (13,4)	4500 (121) 6000 (161) 7500 (201)	8500 (228) 11 500 (308) 15 000 (402)	14 000 (375) 17 000 (456) 22 000 (590)	20,800 (557) 24,000 (643) 29,000 (777)	31 000 (831) 34 000 (911) 39 000 (1045)
	70 to 140 (4,8 to 9,7) 1E399127162 Red	75 (5,2) 100 (6,9) 125 (8,6)	500 (13,4) 500 (13,4) 500 (13,4)	5000 (134) 6500 (174) 7000 (188)	10 000 (268) 13 000 (348) 14 500 (389)	20 000 (536) 24 000 (643) 28 000 (750)	29 000 (777) 34 000 (911) 39 000 (1045)	39 000 (1045) 45 000 (1206) 50 000 (1340)
	130 to 200 (9,0 to 13,8) 1L380127082 Blue	150 (10,3) 175 (12,1) 200 (13,8)	500 (13,4) 500 (13,4) 500 (13,4)	4700 (126) 5700 (153) 5700 (153)	9000 (241) 10 500 (281) 12 000 (322)	19 000 (509) 23 000 (616) 24 000 (643)	42 000 (1126) 49 000 (1313) 54 000 (1447)	56 000 (1501) 61 000 (1635) 66 000 (1769)
1-1/2, 2	5 to 35 (0,3 to 2,4) 1E792327092 Dark gray	5 (0,3) 10 (0,7) 15 (1,0) 25 (1,7) 35 (2,4)	900 (24,1) 900 (24,1) 900 (24,1) 900 (24,1) 900 (24,1)	6300 (169) 6500 (174) 7000 (188) 7200 (193) 9000 (241)	10 000 (268) 12 000 (322) 13 000 (348) 15 000 (402) 16 000 (429)	23 000 (616) 26 000 (697) 29 000 (777) 33 000 (884) 37 000 (992)	41 000 (1099) 44 000 (1179) 47 000 (1260) 52 000 (1394) 59 000 (1581)	70 000 (1876) 73 000 (1956) 76 000 (2037) 82 000 (2198) 88 000 (2358)
	20 to 65 (1,4 to 4,5) 1E795327082 Light blue	25 (1,7) 35 (2,4) 50 (3,4) 65 (4,5)	900 (24,1) 900 (24,1) 900 (24,1) 900 (24,1)	8500 (228) 8600 (230) 9300 (249) 9600 (257)	15 000 (402) 17 000 (456) 19 000 (509) 19 000 (509)	27 000 (724) 29 000 (777) 33 000 (884) 37 000 (992)	48 000 (1286) 54 000 (1447) 57 000 (1528) 80 000 (2144)	75 000 (2010) 80 800 (2165) 89 000 (2385) 115 000 (3082)
	50 to 100 (3,5 to 6,9) 1E795427082 Light gray	50 (3,4) 75 (5,2) 100 (6,9)	900 (24,1) 900 (24,1) 900 (24,1)	6100 (163) 6200 (166) 6600 (177)	12 000 (322) 13 000 (348) 15 000 (402)	27 000 (724) 29 000 (777) 32 000 (858)	70 000 (1876) 78 000 (2090) 90 000 (2412)	100 000 (2680) 112 000 (3002) 130 000 (3484)
	80 to 170 (5,5 to 11,7) 1P788827082 Black	75 (5,2) 100 (6,9) 125 (8,6) 170 (11,7)	900 (24,1) 900 (24,1) 900 (24,1) 900 (24,1)	4600 (123) 5600 (150) 6200 (166) 6500 (174)	10 000 (268) 12 000 (322) 14 000 (375) 15 000 (402)	22 000 (590) 26 000 (697) 30 000 (804) 32 000 (858)	67 000 (1796) 78 000 (2090) 86 000 (2305) 100 000 (2680)	108 000 (2894) 129 000 (3457) 132 000 (3538) 157 000 (4208)

Bulletin 71.4:98

Table 19. Air Relief Capacities in SCFH (Nm³/h), Type 98HM with Metal Diaphragm

BODY SIZES, NPT	RELIEF SET PRESSURE RANGE, SPRING PART NUMBER, AND COLOR, PSIG (bar)	RELIEF PRESSURE SETTING, PSIG (bar)	FLOW AT RELIEF SETTING, SCFH (Nm ³ /h)	PRESSURE BUILD-UP OVER RELIEF SETTING, PSIG (bar)				
				5 (0,34)	10 (0,69)	20 (1,4)	50 (3,4)	100 (6,9)
1/2	15 to 35 (1,0 to 2,4) 1E395627022 Yellow	15 (1,0) 25 (1,7) 35 (2,4)	500 (13,4) 500 (13,4) 500 (13,4)	1500 (40,2) 1600 (42,9) 1700 (45,6)	2500 (67,0) 2700 (72,4) 3000 (80,4)	4500 (121) 4900 (131) 5600 (150)	7200 (193) 8000 (214) 8470 (227)	11 700 (314) 12 600 (338) 13 600 (364)
	25 to 75 (1,7 to 5,2) 1D7455T0012 Green	35 (2,4) 50 (3,4) 75 (5,2)	500 (13,4) 500 (13,4) 500 (13,4)	1400 (37,5) 1600 (42,9) 1800 (48,2)	2300 (61,6) 2600 (69,7) 3200 (85,8)	3700 (99,2) 4700 (126) 5700 (153)	8900 (239) 10 000 (268) 12 000 (322)	13 500 (362) 14 800 (397) 17 000 (456)
	70 to 140 (4,8 to 9,7) 1E395727192 Red	75 (5,2) 100 (6,9) 125 (8,6)	500 (13,4) 500 (13,4) 500 (13,4)	1300 (34,8) 1800 (48,2) 1900 (50,9)	2200 (59,0) 3000 (80,4) 3300 (88,4)	4100 (110) 5400 (145) 6000 (161)	10 000 (268) 13 000 (348) 14 000 (375)	16 000 (429) 19 000 (509) 21 000 (563)
	130 to 200 (9,0 to 13,8) 1L380027142 Blue	150 (10,3) 175 (12,1) 200 (13,8)	500 (13,4) 500 (13,4) 500 (13,4)	1700 (45,6) 1800 (48,2) 2000 (53,6)	2800 (75,0) 3000 (80,4) 3600 (96,5)	5000 (134) 5700 (153) 6400 (172)	12 000 (322) 13 000 (348) 15 000 (402)	22 000 (590) 24 000 (643) 26 000 (697)
3/4, 1	15 to 35 (1,0 to 2,4) 1E398927022 Yellow	15 (1,0) 25 (1,7) 35 (2,4)	500 (13,4) 500 (13,4) 500 (13,4)	2000 (53,6) 2700 (72,4) 3000 (80,4)	4000 (107) 5200 (139) 5500 (147)	8500 (228) 8700 (233) 10,000 (268)	13 900 (373) 15 600 (418) 17 300 (464)	22 500 (603) 24 000 (643) 26 000 (697)
	25 to 75 (1,7 to 5,2) 1E399027142 Green	35 (2,4) 50 (3,4) 75 (5,2)	500 (13,4) 500 (13,4) 500 (13,4)	1500 (40,2) 2500 (67,0) 4000 (107)	3500 (93,8) 4700 (126) 7000 (188)	7200 (193) 9500 (255) 14 000 (375)	17 000 (456) 20 000 (536) 25 000 (670)	26 000 (697) 28 600 (766) 35 000 (938)
	70 to 140 (4,8 to 9,7) 1E399127162 Red	75 (5,2) 100 (6,9) 125 (8,6)	500 (13,4) 500 (13,4) 500 (13,4)	2900 (77,7) 3000 (80,4) 3200 (85,8)	4700 (126) 5000 (134) 6200 (166)	9200 (247) 10 000 (268) 12 000 (322)	23 000 (616) 26 000 (697) 31 000 (831)	35 000 (938) 40 000 (1072) 45 000 (1206)
	130 to 200 (9,0 to 13,8) 1L380127082 Blue	150 (10,3) 175 (12,1) 200 (13,8)	500 (13,4) 500 (13,4) 500 (13,4)	1900 (50,9) 2000 (53,6) 3500 (93,8)	4500 (121) 5000 (134) 7000 (188)	10 000 (268) 11 000 (295) 14 000 (375)	28 000 (750) 30 000 (804) 35 000 (938)	50 000 (1340) 64 000 (1447) 60 000 (1608)
1-1/2, 2	5 to 35 (0,3 to 2,4) 1E792327092 Dark gray	5 (0,3) 10 (0,7) 15 (1,0) 25 (1,7) 35 (2,4)	900 (24,1) 900 (24,1) 900 (24,1) 900 (24,1) 900 (24,1)	6000 (161) 7200 (193) 7500 (201) 8500 (228) 8700 (233)	10 500 (281) 13 500 (362) 14 500 (389) 16 000 (429) 17 000 (456)	18 000 (482) 21 000 (563) 23 000 (616) 27 000 (724) 30 000 (804)	32 700 (876) 35 000 (938) 37 000 (992) 42 000 (1126) 47 000 (1260)	55 700 (1493) 58 600 (1570) 61 000 (1635) 65 600 (1758) 70 000 (1876)
	20 to 65 (1,4 to 4,5) 1E795327082 Light blue	25 (1,7) 35 (2,4) 50 (3,4) 65 (4,5)	900 (24,1) 900 (24,1) 900 (24,1) 900 (24,1)	6000 (161) 6700 (180) 7000 (188) 8000 (214)	11 000 (295) 15 000 (402) 16 000 (429) 17 000 (456)	20 000 (536) 27 000 (724) 29 000 (777) 32 000 (858)	41 000 (1099) 46 000 (1233) 57 000 (1528) 68 000 (1822)	64 000 (1715) 68 900 (1847) 81 600 (2187) 73 700 (1975)
	50 to 100 (3,4 to 6,9) 1E795427082 Light gray	50 (3,4) 75 (5,2) 100 (6,9)	900 (24,1) 900 (24,1) 900 (24,1)	2400 (64,3) 3800 (102) 6000 (161)	10 500 (281) 15 500 (415) 18 000 (482)	20 000 (536) 30 000 (804) 34 000 (911)	47 000 (1260) 60 000 (1608) 66 000 (1769)	67 500 (1809) 80 600 (2160) 100 000 (2680)
	80 to 170 (5,5 to 11,7) 1P788827082 Black	75 (5,2) 100 (6,9) 125 (8,6) 170 (11,7)	900 (24,1) 900 (24,1) 900 (24,1) 900 (24,1)	2700 (72,4) 3000 (80,4) 7000 (188) 7300 (196)	9000 (241) 15 000 (402) 16 500 (442) 17 000 (456)	18 000 (482) 27 000 (724) 30 000 (804) 32 000 (858)	50 000 (1340) 70 000 (1876) 78 000 (2090) 82 000 (2198)	82 900 (2222) 11 000 (2975) 124 000 (3323) 135 000 (3618)

Table 20. Water Relief Capacities in Gallons per Minute (l/min), Type 98HM with Elastomer Diaphragm

BODY SIZES, NPT	RELIEF SET PRESSURE RANGE, SPRING PART NUMBER, AND COLOR, PSIG (bar)	RELIEF PRESSURE SETTING, PSIG (bar)	FLOW AT RELIEF SETTING, GPM (l/min)	PRESSURE BUILD-UP OVER RELIEF SETTING, PSIG (bar)				
				5 (0,34)	10 (0,69)	20 (1,4)	50 (3,4)	100 (6,9)
1/2	15 to 35 (1,0 to 2,4) 1E395627022 Yellow	15 (1,0) 25 (1,7) 35 (2,4)	1.8 (6,8) 1.8 (6,8) 1.8 (6,8)	5.5 (20,8) 10 (37,9) 14.5 (54,9)	10 (37,9) 13.5 (51,1) 17.2 (65,1)	14.7 (55,7) 17.5 (66,2) 19.2 (72,7)	20 (75,7) 21 (79,5) 23 (87,1)	26.1 (98,8) 27.1 (103) 28 (106)
	25 to 75 (1,7 to 5,2) 1D7455T0012 Green	35 (2,4) 50 (3,4) 75 (5,2)	1.8 (6,8) 1.8 (6,8) 1.8 (6,8)	7 (26,5) 7.5 (28,4) 10.5 (39,8)	9.7 (36,7) 11 (41,6) 15 (56,8)	13 (49,2) 15.5 (58,7) 19.5 (73,8)	20 (75,7) 22 (83,3) 25 (94,6)	25 (94,6) 26 (98,4) 30 (114)
	70 to 140 (4,8 to 9,7) 1E395727192 Red	75 (5,2) 100 (6,9) 125 (8,6)	1.3 (4,9) 1.3 (4,9) 1.3 (4,9)	5 (18,9) 4 (22,7) 7.5 (28,4)	9 (34,1) 11 (41,6) 14 (53,0)	15.5 (58,6) 19.5 (73,8) 23.5 (89,0)	23.7 (89,7) 28 (106) 31.5 (119)	29 (110) 34.5 (131) 37 (140)
	130 to 200 (9,0 to 13,8) 1L380027142 Blue	150 (10,3) 175 (12,1) 200 (13,8)	1 (3,8) 1 (3,8) 1 (3,8)	3.5 (13,3) 4 (15,1) 4.7 (17,8)	6.5 (24,6) 7.5 (28,4) 8 (30,3)	12 (45,4) 14 (53,0) 15 (56,8)	23 (87,1) 26 (98,4) 29.5 (112)	34.7 (131) 38.2 (145) 42.5 (161)
3/4, 1	15 to 35 (1,0 to 2,4) 1E398927022 Yellow	15 (1,0) 25 (1,7) 35 (2,4)	1.8 (6,8) 1.8 (6,8) 1.8 (6,8)	18 (68,1) 26 (98,4) 32 (121)	27 (102) 33 (125) 37.5 (142)	33 (125) 41 (155) 45 (170)	45 (170) 53 (201) 56 (212)	59 (223) 67 (254) 70 (265)
	25 to 75 (1,7 to 5,2) 1E399027142 Green	35 (2,4) 50 (3,4) 75 (5,2)	1.5 (5,7) 1.5 (5,7) 1.5 (5,7)	20 (75,7) 25 (94,6) 35 (132)	28 (106) 37 (140) 45 (170)	37 (140) 47 (178) 53 (201)	50 (189) 58 (220) 63.5 (240)	63 (238) 71 (269) 74 (280)
	70 to 140 (4,8 to 9,7) 1E399127162 Red	75 (5,2) 100 (6,9) 125 (8,6)	1.3 (4,9) 1.3 (4,9) 1.3 (4,9)	19 (71,9) 22 (83,3) 27 (102)	32 (121) 35 (132) 42 (159)	41 (155) 48.5 (184) 57 (216)	57 (216) 66.5 (252) 73.5 (278)	72 (273) 78 (295) 83 (314)
	130 to 200 (9,0 to 13,8) 1L380127082 Blue	150 (10,3) 175 (12,1) 200 (13,8)	1 (3,8) 1 (3,8) 1 (3,8)	15 (56,8) 19 (71,9) 22 (83,3)	27 (102) 32 (121) 36 (136)	48 (182) 60 (227) 65 (246)	78 (295) 82 (310) 88 (333)	88 (333) 94 (356) 98 (371)
1-1/2, 2	5 to 35 (0,3 to 2,4) 1E792327092 Dark gray	5 (0,3) 10 (0,7) 15 (1,0) 25 (1,7) 35 (2,4)	3.6 (13,6) 3.6 (13,6) 3.6 (13,6) 3.6 (13,6) 3.6 (13,6)	15 (56,8) 18 (68,1) 21 (79,5) 26 (98,4) 32 (121)	33 (125) 37 (140) 40 (151) 50 (189) 56 (212)	43 (163) 45 (170) 59 (223) 87 (329) 90 (341)	62 (235) 64 (242) 81 (307) 112 (424) 112 (424)	85 (322) 87 (329) 107 (405) 144 (545) 141 (534)
	20 to 65 (1,4 to 4,5) 1E795327082 Light blue	25 (1,7) 35 (2,4) 50 (3,4) 65 (4,5)	3 (11,4) 3 (11,4) 3 (11,4) 3 (11,4)	16 (60,6) 20 (75,7) 25 (94,6) 35 (132)	32 (121) 36 (136) 40 (151) 50 (189)	65 (246) 70 (265) 78 (295) 95 (360)	84 (318) 114 (432) 160 (606) 170 (644)	108 (409) 144 (545) 196 (742) 203 (768)
	50 to 100 (3,4 to 6,9) 1E795427082 Light gray	50 (3,4) 75 (5,2) 100 (6,9)	2.5 (9,5) 2.5 (9,5) 2.5 (9,5)	15 (56,8) 19 (71,9) 22 (83,3)	28 (106) 32 (121) 35 (132)	62 (235) 68 (257) 75 (284)	150 (568) 165 (625) 175 (662)	184 (697) 194 (734) 205 (776)
	80 to 170 (5,5 to 11,7) 1P788827082 Black	75 (5,2) 100 (6,9) 125 (8,6) 170 (11,7)	2.3 (8,7) 2.3 (8,7) 2.3 (8,7) 2.3 (8,7)	7 (26,5) 9 (34,1) 12 (45,4) 15 (56,8)	18 (68,1) 20 (75,7) 25 (94,6) 28 (106)	40 (151) 46 (174) 51 (193) 55 (208)	135 (511) 145 (549) 150 (568) 158 (598)	207 (784) 215 (814) 225 (852) 240 (909)

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Table 21. Water Relief Capacities in Gallons per Minute (l/min), Type 98HM with Metal Diaphragm

BODY SIZES, NPT	RELIEF SET PRESSURE RANGE, SPRING PART NUMBER, AND COLOR, PSIG (bar)	RELIEF PRESSURE SETTING, PSIG (bar)	FLOW AT RELIEF SETTING, GPM (l/min)	PRESSURE BUILD-UP OVER RELIEF SETTING, PSIG (bar)				
				5 (0,34)	10 (0,69)	20 (1,4)	50 (3,4)	100 (6,9)
1/2	15 to 35 (1,0 to 2,4) 1E395627022 Yellow	15 (1,0) 25 (1,7) 35 (2,4)	1.8 (6,8) 1.8 (6,8) 1.8 (6,8)	3 (11,4) 5 (18,9) 6 (22,7)	6.7 (25,4) 8 (30,3) 9.5 (36,0)	10 (37,9) 11.7 (44,3) 14 (53,0)	13.7 (51,9) 14.7 (55,7) 18.4 (69,7)	17.4 (65,9) 18 (68,1) 22.7 (85,9)
	25 to 75 (1,7 to 5,2) 1D7455T0012 Green	35 (2,4) 50 (3,4) 75 (5,2)	1.8 (6,8) 1.8 (6,8) 1.8 (6,8)	3 (11,4) 3.7 (14,0) 4.2 (15,9)	4.7 (17,8) 5.7 (21,6) 7.2 (27,3)	7.5 (28,4) 9 (34,1) 13 (49,2)	11.1 (42,0) 16.5 (62,5) 21 (79,5)	13 (49,2) 19 (71,9) 26 (98,4)
	70 to 140 (4,8 to 9,7) 1E395727192 Red	75 (5,2) 100 (6,9) 125 (8,6)	1.3 (4,9) 1.3 (4,9) 1.3 (4,9)	2.7 (10,2) 3 (11,4) 4.2 (15,9)	4.5 (17,0) 5.2 (19,7) 7 (26,5)	8 (30,3) 9.7 (36,7) 12 (45,4)	17 (64,4) 19.5 (73,8) 22.5 (85,2)	23 (87,1) 28 (106) 31 (117)
	130 to 200 (9,0 to 13,8) 1L380027142 Blue	150 (10,3) 175 (12,1) 200 (13,8)	1 (3,8) 1 (3,8) 1 (3,8)	3 (11,4) 3.2 (12,1) 3.3 (12,5)	4.7 (17,8) 5.5 (20,8) 5.6 (21,2)	8.5 (32,2) 9.5 (36,0) 10.2 (38,6)	17.5 (66,2) 20.5 (77,6) 22.2 (84,0)	29 (110) 33.2 (126) 35 (132)
3/4, 1	15 to 35 (1,0 to 2,4) 1E398927022 Yellow	15 (1,0) 25 (1,7) 35 (2,4)	1.8 (6,8) 1.8 (6,8) 1.8 (6,8)	6 (22,7) 13 (49,2) 16 (60,6)	16 (60,6) 19.5 (73,8) 23 (87,1)	26 (98,4) 32 (121) 33 (125)	37 (140) 40 (151) 41 (155)	49 (185) 50 (189) 51 (193)
	25 to 75 (1,7 to 5,2) 1E399027142 Green	35 (2,4) 50 (3,4) 75 (5,2)	1.5 (5,7) 1.5 (5,7) 1.5 (5,7)	8 (30,3) 11 (41,6) 14 (53,0)	16.5 (62,5) 18.5 (70,0) 26 (98,4)	23 (87,1) 28.5 (108) 37 (140)	33 (125) 44 (167) 50 (189)	41 (155) 53 (201) 62 (235)
	70 to 140 (4,8 to 9,7) 1E399127162 Red	75 (5,2) 100 (6,9) 125 (8,6)	1.3 (4,9) 1.3 (4,9) 1.3 (4,9)	7 (26,5) 9 (34,1) 11 (41,6)	14 (53,0) 18 (68,1) 20 (75,7)	26 (98,5) 32 (121) 38 (144)	46 (174) 54 (204) 60.5 (229)	58 (220) 68 (257) 72 (273)
	130 to 200 (9,0 to 13,8) 1L380127082 Blue	150 (10,3) 175 (12,1) 200 (13,8)	1 (3,8) 1 (3,8) 1 (3,8)	7 (26,5) 8 (30,3) 9 (34,1)	12 (45,4) 14 (53,0) 17 (64,4)	23 (87,1) 27 (102) 32.5 (123)	51 (193) 59 (223) 66 (250)	76 (288) 81 (307) 85 (322)
1-1/2, 2	5 to 35 (0,3 to 2,4) 1E792327092 Dark gray	5 (0,3) 10 (0,7) 15 (1,0) 25 (1,7) 35 (2,4)	3.6 (13,6) 3.6 (13,6) 3.6 (13,6) 3.6 (13,6) 3.6 (13,6)	18 (68,1) 20 (75,7) 23 (87,1) 26 (98,4) 29 (110)	35 (132) 39 (148) 43 (163) 46 (174) 50 (189)	45 (170) 47 (178) 64 (242) 75 (284) 82 (310)	66 (250) 67 (254) 87 (329) 96 (363) 107 (405)	88 (333) 89 (337) 115 (435) 122 (462) 134 (507)
	20 to 65 (1,4 to 4,5) 1E795327082 Light blue	25 (1,7) 35 (2,4) 50 (3,4) 65 (4,5)	3 (11,4) 3 (11,4) 3 (11,4) 3 (11,4)	17 (64,4) 20 (75,7) 24 (90,9) 30 (114)	36 (136) 40 (151) 43 (163) 46 (174)	65 (246) 70 (265) 76 (288) 80 (303)	83 (314) 91 (344) 105 (397) 125 (473)	105 (397) 113 (428) 128 (485) 148 (560)
	50 to 100 (3,4 to 6,9) 1E795427082 Light gray	50 (3,4) 75 (5,2) 100 (6,9)	2.5 (9,5) 2.5 (9,5) 2.5 (9,5)	14 (53,0) 17 (64,4) 20 (75,7)	34 (129) 37 (140) 40 (151)	65 (246) 70 (265) 76 (288)	110 (416) 125 (473) 140 (530)	133 (503) 160 (606) 178 (674)
	80 to 170 (5,5 to 11,7) 1P788827082 Black	75 (5,2) 100 (6,9) 125 (8,6) 170 (11,7)	2.3 (8,7) 2.3 (8,7) 2.3 (8,7) 2.3 (8,7)	8 (30,3) 10 (37,9) 13 (49,2) 16 (60,6)	23 (87,1) 26 (98,4) 29 (110) 32 (121)	50 (189) 56 (212) 60 (227) 63 (238)	95 (360) 105 (397) 114 (432) 120 (454)	140 (530) 165 (625) 180 (681) 195 (738)

Table 22. Bubble and Reseat Points Below Relief Pressure Setting, Psig (bar)

TYPES	SPRING COLOR CODE	ELASTOMER SEAT		METAL SEAT			
		Bubble Point	Reseat Point	Bubble Point	Reseat Point		
					1/4 NPT Body	NPS 1/2, 3/4, and 1 (DN 15, 20, and 25) Bodies	NPS 1-1/2 and 2 (DN 40 and 50) Bodies (Type 98H Only)
98L, 98LD	Yellow	1 (0,07)	2 (0,14)	2 (0,14)	4 (0,28)	2 (0,14)	NA ⁽¹⁾
	Green	1 (0,07)	2 (0,14)	2 (0,14)	5 (0,34)	3 (0,21)	NA ⁽¹⁾
	Red	2 (0,14)	3 (0,21)	4 (0,28)	8 (0,55)	5 (0,34)	NA ⁽¹⁾
	Blue	2 (0,14)	4 (0,28)	5 (0,34)	9 (0,62)	7 (0,48)	NA ⁽¹⁾
98H, 98HD, 98HM	Yellow	3 (0,21)	5 (0,34)	5 (0,34)	10 (0,69)	8 (0,55)	NA ⁽¹⁾
	Green	5 (0,34)	8 (0,55)	7 (0,48)	12 (0,83)	10 (0,69)	NA ⁽¹⁾
	Red	6 (0,41)	10 (0,69)	9 (0,62)	16 (1,1)	14 (0,96)	NA ⁽¹⁾
	Blue	7 (0,48)	12 (0,83)	11 (0,76)	20 (1,4)	17 (1,2)	NA ⁽¹⁾
	Dark Gray	3 (0,21)	5 (0,34)	10 (0,69)	NA ⁽¹⁾	NA ⁽¹⁾	13 (0,90)
	Light Blue	5 (0,34)	8 (0,55)	10 (0,69)	NA ⁽¹⁾	NA ⁽¹⁾	13 (0,90)
	Light Gray	6 (0,41)	10 (0,69)	10 (0,69)	NA ⁽¹⁾	NA ⁽¹⁾	15 (1,0)
98HH, 98HHD	Unpainted	8 (0,55)	14 (0,96)	13 (0,90)	24 (1,7)	20 (1,4)	NA ⁽¹⁾

1. Size-spring combination not available in this type.

Installation

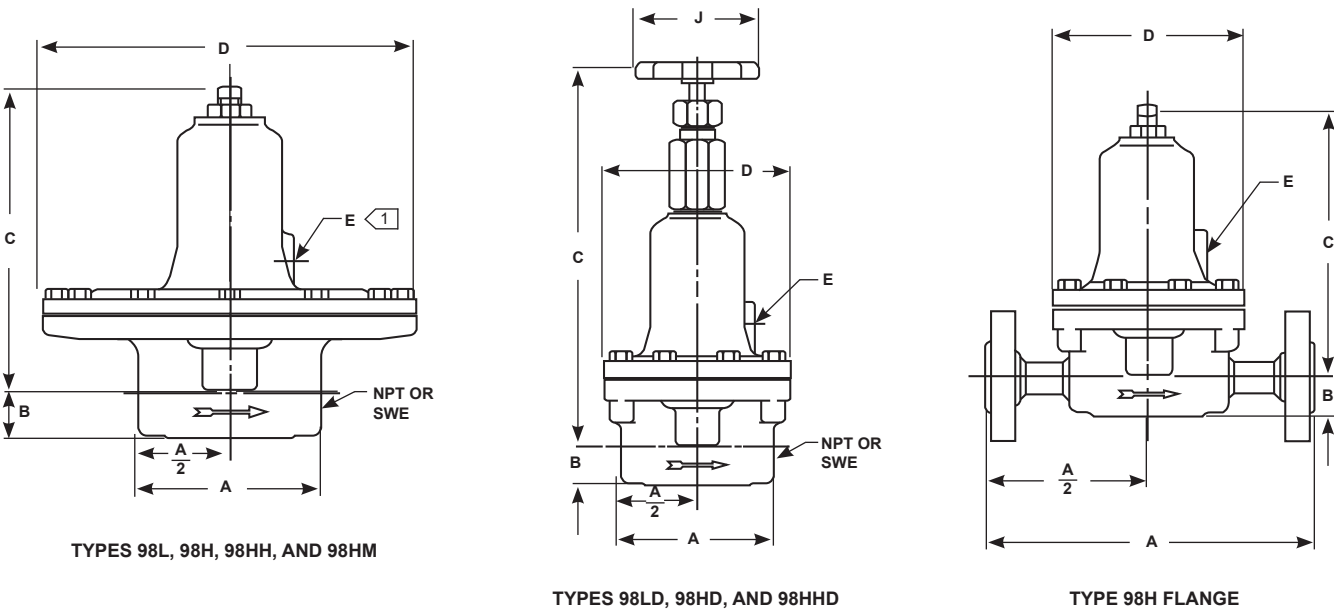
These valves may be installed in any position, as long as flow will be in the same direction as that of the arrow cast on the body. For dimensional information see Figure 4.

Emerson Process Management Regulator Technologies Inc., provides an instruction manual with every valves shipped. Refer to this for complete installation, operation, and maintenance instructions. Included is a complete listing of individual parts and recommended spare parts.

Universal NACE Compliance

Optional materials are available for applications handling sour gases. These constructions comply with the recommendations of NACE International sour service standards.

The manufacturing processes and materials used by Emerson assure that all products specified for sour gas service comply with the chemical, physical, and metallurgical requirements of NACE MR0175 and/or NACE MR0103. Customers have the responsibility to specify correct materials. Environmental limitations may apply and shall be determined by the user.



1 TAPPED VENT IS OPTIONAL FOR TYPES 98L, 98H, 98HH, AND 98HM

AL5117-H
AL5300-E
AP3074-B
B2417

TYPES	NOMINAL BODY SIZE, NPS (DN)	DIMENSION, INCHES (mm)							
		A		B	C (Maximum)		D	E (NPT)	J (Handwheel Constructions Only)
		NPT or SWE	Flanged		Type 98L, 98H, or 98HH	Type 98LD or 98HD			
98L, 98LD	1/4	3.19 (81)	----	1.00 (25)	5.50 (140)	8.38 (213)	5.06 (128)	1/8	2.75 (70)
	1/2 (15)	4.25 (108)	14 (356)	0.88 (22)	7.25 (184)	10.62 (270)	7.00 (178)	1/4	4.00 (102)
	3/4, 1 (20, 25)	5.00 (127)	14 (356)	1.25 (32)	9.81 (249)	12.50 (317)	10.19 (259)	1/4	4.00 (102)
98H, 98HD, 98HM	1/4	3.19 (81)	----	1.00 (25)	5.50 (140)	8.31 (211)	3.19 (81)	1/8	2.75 (70)
	1/2 (15)	4.25 (108)	14 (356)	0.88 (22)	7.19 (183)	10.50 (267)	4.25 (108)	1/4	4.00 (102)
	3/4, 1 (20, 25)	5.00 (127)	14 (356)	1.25 (32)	9.69 (246)	12.31 (313)	6.06 (154)	1/4	4.00 (102)
98HH, 98HHD	1-1/2, 2 (40, 50)	6.62 (168)	14 (356)	1.88 (48)	14.12 (359)	18.06 (459)	8.19 (208)	1/4	6.75 (171)
	1/4	3.19 (81)	----	1.00 (25)	7.75 (197)	----	3.19 (81)	1/8	2.75 (70)
	1/2	4.25 (108)	14 (356)	0.88 (22)	10.00 (254)	----	4.25 (108)	1/4	4.00 (102)
	3/4, 1	5.00 (127)	14 (356)	1.25 (32)	12.38 (314)	----	6.06 (154)	1/4	4.00 (102)

Figure 4. Dimensions

Ordering Information

When ordering, specify:

1. Type number
2. Body size
3. Maximum inlet pressure (relief pressure setting plus maximum allowable build-up over setting)
4. Maximum spring case loading pressure
5. Relief pressure range
6. Maximum temperature of process fluid
7. Body, spring case, and trim materials
8. Desired options

Ordering Guide

Type (Select One)

- 98L (low pressure)
- 98H (high pressure up to 200 psig (13,8 bar) setting)
- 98HH (high pressure up to 375 psig (25,9 bar) setting)
- 98LD (low pressure differential)
- 98HD (high pressure differential up to 200 psig (13,8 bar) setting)
- 98HHD (high pressure differential up to 375 psi (25,9 bar) setting)
- 98HM (high pressure monitor)

Body Size (Select One)

- 1/4 NPT (not available for Type 98HM)
- NPS 1/2 (DN 15)
- NPS 3/4 (DN 20)
- NPS 1 (DN 25)
- NPS 1-1/2 (DN 40) (not available for Types 98L, 98HH)
- NPS 2 (DN 50) (not available for Types 98L, 98HH)

Body Material and End Connection Style (Select One)

Cast Iron (Not available for Type 98HM)

- NPT***

WCC Steel

- NPT***
- SWE**
- CL150 RF**
- CL300 RF**
- PN 16/25/40**

CF8M Stainless steel

- NPT***
- SWE**
- CL150 RF**
- CL300 RF**
- PN 16/25/40**

Hastelloy® C

- NPT*
- SWE*
- CL150 RF*
- CL300 RF*
- PN 16/25/40*

Monel®

- NPT*
- SWE*
- CL150 RF*
- CL300 RF*
- PN 16/25/40*

Spring Case Material (Select One)

- Cast Iron (**standard** for cast iron bodies)***
- WCC Steel (**standard** for steel or stainless steel bodies)***
- CF8M Stainless steel (optional for stainless steel bodies)**

Diaphragm (See Table 1)

- Neoprene (CR) (**standard** for elastomer seat)***
- 302 Stainless steel (**standard** for metal seat)***
- Fluorocarbon (FKM)***
- Ethylenepropylene (EPDM)*
- Hastelloy® C*
- Monel®*

Trim Material (See Table 1) (Select Metal or Elastomer)

Metal Seat (Select One)

- 416 Stainless steel (**standard**)***
- 316 Stainless steel**
- Hastelloy® C*
- Monel®*

Elastomer Seat

Valve Plug (Select One)

- 416 SST***
- 316 SST**
- Hastelloy® C (Available in Type 98HM, 1/2 NPT only)
- Monel® (Available in Type 98HM, 1/2 NPT only)

O-ring Seat (Select One)

- Nitrile (NBR)
- Fluorocarbon (FKM)
- Ethylenepropylene (EPDM)
- Perfluoroelastomer (FFKM)

Relief/Differential Relief Pressure Range (Select One)

Type 98L or 98LD (NPS 1/4 through 1)

- 2 to 7 psig/psi (0,14 to 0,48 bar)
- 6 to 14 psig/psi (0,41 to 0,97 bar)
- 12 to 25 psig/psi (0,83 to 1,7 bar)
- 20 to 38 psig/psi (1,4 to 2,6 bar)

Type 98H or 98HD

NPS 1/4 through 1

- 15 to 35 psig/psi (1,0 to 2,4 bar)
- 25 to 75 psig/psi (1,7 to 5,2 bar)
- 70 to 140 psig/psi (4,8 to 9,7 bar)
- 130 to 200 psig/psi (9,0 to 13,8 bar)

Type 98H or 98HD (continued)

NPS 1-1/2 through 2

- 5 to 35 psig/psi (0,35 to 2,4 bar)
- 20 to 65 psig/psi (1,4 to 4,5 bar)
- 50 to 100 psig/psi (3,4 to 6,9 bar)
- 80 to 170 psig/psi (5,5 to 11,7 bar)

Type 98HM

1/2 through 1 NPT

- 15 to 35 psig (1,0 to 2,4 bar)
- 25 to 75 psig (1,7 to 5,2 bar)
- 70 to 140 psig (4,8 to 9,7 bar)
- 130 to 200 psig (9,0 to 13,8 bar)
- 15 to 100 psig (SST construction) (1,0 to 6,9 bar)
- 100 to 275 psig (SST construction) (6,9 to 19,0 bar)

1/2 through 1 NPT

- 5 to 35 psig (0,35 to 2,4 bar)
- 20 to 65 psig (1,4 to 4,5 bar)
- 50 to 100 psig (3,4 to 6,9 bar)
- 80 to 170 psig (5,5 to 11,7 bar)

Type 98HH or 98HHD (1/4 through 1 NPT)

- 150 to 375 psig (10,3 to 25,9 bar)

Replacement Parts Kit (Optional)

- Yes, send one replacement parts kit to match this order.

Regulators Quick Order Guide	
***	Readily Available for Shipment
**	Allow Additional Time for Shipment
*	Special Order, Constructed from Non-Stocked Parts. Consult your local Sales Office for Availability.
Availability of the product being ordered is determined by the component with the longest shipping time for the requested construction.	

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