Bulletin No. B24106

DADCO®

Soluzioni per condizioni estreme

Molle a gas azoto per intervalli di temperatura estesi

Extended Temperature Options

DADCO offers a selection of Nitrogen Gas Springs with high temperature components for applications where temperatures will exceed standard operating temperature. The H1 model is well suited for applications up to 230°F *(110°C)* while the H2 model allows for applications up to 392°F *(200°C)*. Other gas springs may be ordered as H1 or H2; contact DADCO for assistance assessing your specific application requirements.

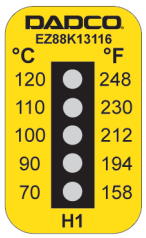
	High Temp. Type	H1		H2	
	Max Charge Pressure:	135 bar *1950 psi*		110 bar *1600 psi*	
	Operating Temp:	20°C *68°F*	110°C *230°F*	20°C *68°F*	200°C *392°F*
Model	Piston Rod Area cm^2 *in^2*	Force Cold daN *lbf*	Force at MAX Temp. daN *lbf*	Force Cold daN *lbf*	Force at MAX Temp. daN *lbf*
C.045	0.28 *0.044*	38.2 *85*	49.9 *112*	31.1 *70*	50.2 *113*
C.070	0.38 *0.060*	52.0 *116*	67.9 *152*	42.3 *95*	68.3 *154*
C.090	0.50 *0.078*	67.9 *152*	88.7 *199*	55.3 *125*	89.3 *201*
C.180	1.13 *0.175*	153 *342*	200 *447*	124 *280*	201 *452*
C.250	1.77 *0.274*	239 *534*	312 *698*	194 *438*	314 *706*
U.0175	0.95 *0.147*	128 *287*	168 *375*	105 *236*	169 *380*
U.0325	1.77 *0.274*	239 *534*	312 *698*	194 *438*	314 *706*
U.0400	1.99 *0.308*	268 *600*	350 *784*	218 *492*	353 *794*
U.0600	3.14 *0.487*	424 *950*	554 *1241*	346 *779*	558 *1254*
U.0800	4.91 *0.761*	663 *1484*	866 *1939*	540 *1217*	872 *1960*
U.1200	7.07 *1.096*	954 *2136*	1247 *2793*	778 *1753*	1255 *2821*
L.300	1.99 *0.308*	268 *600*	350 *784*	218 *492*	*353* *794*
L.500	3.14 *0.487*	424 *950*	554 *1241*	346 *779*	*558* *1254*
L.750	4.91 *0.761*	663 *1484*	*866* *1939*	540 *1217*	*872* *1960*
90.10.00500	3.14 *0.487*	424 *950*	554 *1241*	346 *779*	558 *1254*
90.10.00750	4.91 *0.761*	663 *1484*	866 *1939*	540 *1217*	872 *1960*
90.10.01500	10.18 *1.578*	1374 *3077*	1796 *4022*	1120 *2524*	1808 *4065*
90.10.03000	19.63 *3.043*	2651 *5935*	3465 *7758*	2160 *4869*	3487 *7839*
U/UX.1600	10.18 *1.578*	1374 *3077*	1796 *4022*	1120 *2524*	1808 *4065*
U/UX.2600	15.90 *2.465*	2147 *4807*	2807 *6284*	1749 *3944*	2824 *6348*
U/UX.4600	28.27 *4.383*	3817 *8546*	4990 *11171*	3110 *7012*	5021 *11287*

Note: UK, UH models available

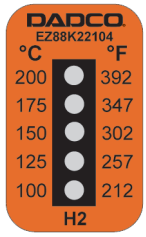
Temperature Indicator Labels

DADCO heat sensitive labels provide indication that a maximum temperature has been reached when the circle is grayed out. Labels are not re-usable and circles will not undarken as temperature decreases.

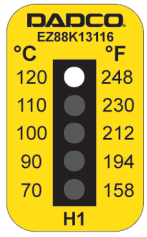
H1
Part No. EZ88K13116



H2
Part No. EZ88K22104



Example:
Used H1 Label



Ordering Example:

U.0325. H1. 025. TO.

Model

High Temperature Option: H1 or H2

Stroke: Consult individual series for options

Charging Pressure: H1: 15-135max *(220-1950psi)*. H2: 15-110max *(220-1600psi)*. See page 3 for custom pressure calculation.

Mount Option: TO = Basic Model. *When not specified default is TO.*

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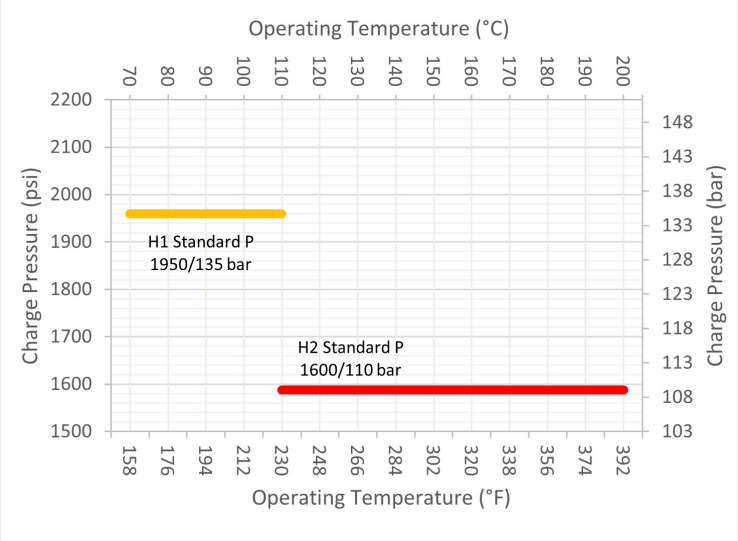
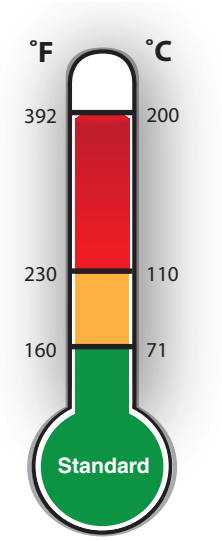
Extended Temperature Options

Charging pressure for DADCO's H1/H2 High Temperature Nitrogen Gas Springs must be reduced from the normal charging pressure range due to increased operating temperature. The initial pressure in the gas spring will increase to a higher pressure at the increased operating temperature; therefore the same on-contact force will be achieved with a lower charging pressure. Linked H1/H2 gas springs require high temperature hoses and fittings.



The graph shows the highest charging pressure of each type of spring. Lower charging pressures are preferred.

Temperature		20° C Force TX
°F	°C	
392	200	1.61
374	190	1.58
356	180	1.55
338	170	1.51
320	160	1.48
302	150	1.44
284	140	1.41
266	130	1.38
248	120	1.34
230	110	1.31
212	100	1.27
194	90	1.24
176	80	1.20
158	70	1.17
140	60	1.14
122	50	1.10
104	40	1.07
86	30	1.03
68	20	1.00



Charging Pressure Calculation

For those instances where the recommended or maximum charging pressures are not suitable for your application you can use the information below to determine the required charging pressure and resultant force for your application.

P1 = Charging Pressure, **F1** = Charging Force (min),
F2 = Operating Force at T_{OP}, **A** = Area of gas spring piston rod, *(see table on page 2)*,
T_{RM} = Room Temperature, T_{OP} = Operating Temperature

TX = Force and pressure multiplier when cylinder temperature increases from T_{RM} = 20° C (68° F).

Example **F2** = **F1** * **TX** or **TX** = **P2**/**P1**, where **P2** = pressure at T_{OP}

Charging Pressure based On Contact Force:

psi	**P1** = (**F2** / **A**) x [(T_{RM} + 460) / (T_{OP} + 460)] where **P1** = psi, **A** = in², **T** = °F
bar	**P1** = (**F2** / **A**) x [(T_{RM} + 273) / (T_{OP} + 273)] where **P1** = bar, **A** = cm², **T** = °C

On Contact Force at Operating Temperature:

lbf	**F2** = **P1** x **A** x [(T_{OP} + 460) / (T_{RM} + 460)] where **P1** = psi, **A** = in², **T** = °F
daN	**F2** = **P1** x **A** x [(T_{OP} + 273) / (T_{RM} + 273)] where **P1** = bar, **A** = cm², **T** = °C

On Contact Force at Room Temperature:

lbf	**F1** = **P1** x **A** where **P1** = psi, **A** = in²
daN	**F1** = **P1** x **A** where **P1** = bar, **A** = cm²

Application Examples

H1 Option:

C.090.H1.050 requires 190 lbf on-contact force and will be installed in an operation with an operating temperature of 230° F.

Using the equation given, the C.090.H1.050 will need to be ordered with a charging pressure of 1871 psi.

P1 = (**F2** / **A**) x [530 / (T_{OP} + 460)]

P1 = (190 / .078) x [530 / (230 + 460)]

P1 = 1871 psi

Order Code: C.090.H1.050.TO.BK.1871

H2 Option:

U.1200.H2.050 requires 1700 lbf on-contact force and will be installed in an operation that has an operating temperature of 300° F.

Using the equation given, the U.1200.H2.050 will need to be ordered with a charging pressure of 1081 psi.

P1 = (**F2** / **A**) x [530 / (T_{OP} + 460)]

P1 = (1700 / 1.096) x [530 / (300 + 460)]

P1 = 1081 psi

Order Code: U.1200.H2.050.TO.1081

Other DADCO Products

Micro – C Series
- Five Models: **Micro 45**®, **Micro 70**®, **Micro 90**®, **Micro 180**® and **Micro 250**®
- Color-coded forces from 50 daN to 313 daN
- Full range of stroke lengths up to 200 mm
- Ideal for coil spring replacement

Mini – L / LJ Series
- 38 mm, 45 mm and 50 mm diameters
- Force models: 3 kN, 5 kN, 7.5 kN
- Full range of standard strokes up to 125 mm
- Common M6 port for linked operation

Ultra Force® **– U Series**
- 19 mm to 195 mm in diameter
- Forces up to 199 kN
- Full range of standard stroke lengths up to 125 mm
- **UltraPak**® cartridge for long life

UH Series
- 32 mm to 120 mm in diameter
- Forces up to 66 kN
- Full range of standard stroke lengths up to 125 mm
- Common G1/8 port for linked operation

ISO / 90.10 Series
- From 32 mm to 195 mm in diameter
- Forces up to 100 kN
- Full range of standard stroke lengths up to 300 mm
- Bolt-on or welded mounts available
- ISO Standards

Ultra Force Extended® **– UX Series**
- 25-55% more force on-contact than ISO Standard Nitrogen Gas Springs
- From 50 mm to 195 mm in diameter
- Forces up to 199 kN
- Full range of standard stroke lengths up to 200 mm
- Bolt-on or welded mounts available

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