

316 QUALITY STAINLESS STEEL GAS SPRINGS PROGRAM

ALL OUR GASSPRINGS ARE EXECUTED WITH VALVE AND NITRITE SEAL AND ARE PRODUCED UNDER LLOYDS CONTROLLED AND CERTIFIED CONDITIONS



COMPRESSION GAS SPRINGS

316 STAINLESS STEEL WITH VALVE AND NITRITE SEAL.

See page 6-5 to 6-9



ALSO AVAILABLE IN CARBON STEEL



COMPRESSION GAS SPRINGS WITH PROTECTION TUBE



made from 316 STAINLESS STEEL WITH VALVE



COMPRESSION GAS SPRINGS WITH LOCKING DEVICE



LOCKS IN EXTENDED POSITION

See page 6-8-1



COMPRESSION GAS SPRINGS, BLOCKING TYPE

CAN BE MANUALLY LOCKED IN ANY POSITION . Page 6-10



BLEEDING VALVES AND CHARGING KITS

ALLOWS CONTROLLED BLEEDING AND FILLING UP OF IZERWAREN GAS SPRINGS.

See page 6-13 page



ENDFITTINGS See pages 6-11- A and 6-11-B



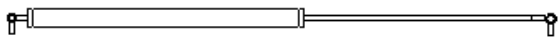
STAINLESS STEEL BRACKETS AND END-FITTINGS

See page 6-14 and page 6-15

For technical information please call our office or visit our showroom:

Office and Show room: 2207 South Andrews Avenue, Fort Lauderdale, Florida 33316

Web site: www.gas-spring.net and www.izerwaren.com E-mail: sales@izerwaren.com



PRODUCT INFORMATION IZERWAREN STAINLESS STEEL GAS SPRINGS



Boutique Gas Spring Niche Set Up.

Izerwaren is focused on the special, hard to find gas spring applications, for which big companies have no time. Everything is geared to satisfy customers special needs, in small quantities. All standard gas springs offered in our program are low frequently gas springs. They should not be operated more than a few times per minute. Continuous operated gas springs, for instance damping devises, can be special ordered upon request.

316 Stainless Steel Quality

IZERWAREN stainless steel gas springs are made from the *316 stainless steel*. The rod is made of hard chrome plated 316 stainless steel. Tests and experience over time have proven that the gas spring withstands a corrosive environment very well. Our standard gas spring is build and continuously tested according to Lloyds Standard Cert. LRQ 0953426. We stock most sizes 316 stainless steel gas springs.



Hatch shown with 10-23-200 series Izerwaren Gas Springs. Picture: Freeman Marine Inc.

Construction of standard compression gas springs

IZERWAREN stocks stainless steel gas springs have a cylinder filled with nitrogen. Non Combustible Nitrogen gas is pressurized in the cylinder (*up to aprox. 2000 psi, depending on the series of gas springs (check our [conversion tables](#) for relations of Bar-Psi-Lb.-Kg-Newton)*). The gas spring is filled through an orifice in the threaded rod on the cylinder side. By means of a Schrader type valve the pressure is maintained. Releasing pressure is possible by pressing lightly on the pin in the Schrader valve. The pressurized gas exert a force to the backside of the piston. The force is a function of the square surface of the rod and the pressure of the gas. The force is read in Newton's. The piston has a calibrated orifice. The size of the orifice determines the extension speed of the gas spring. Because of the orifice in the piston, gas flows on both side of the piston. It has no effect on the force on the rod. The compression speed is not calibrated. The rubber seal on the piston will simply drop away inside a internal groove when the gas spring is compressed. The rod-seal is made of special nitrite material that hardly needs any lubrication. Nevertheless a little vegetable based industrial oil is added to lubricate the seals.

It is therefore important to mount the gas spring with the cylinder up, and the rod down. This position also allows the outgoing stroke to be smoothly dampened towards the end of the stroke.

Quality Carbon Steel Gas Springs

The same high quality gas springs can be ordered made of carbon steel. The cylinder can be either black painted with an highly durable epoxy paint, or rubber coated. The rods are carbon steel hard chrome plated. We limited stock carbon steel gas springs, all sixes can be provided by special order.

Custom Calibrated Extension Speed

The extension speed can be changed by changing the size of the orifice in the piston. Please indicate when ordering if a special (mostly slow) extension speed is required.

Continuous Operated Gas Springs (Gas Shocks).

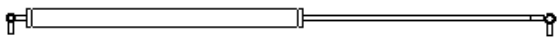
Continues operating gas springs, also called Gas Shocks, are acting like shock absorbers, are available upon special order. With this set up, the ingoing, the outgoing stroke, the speed and force can be completely custom determined. Available in Stainless steel and carbon steel version.

Maintenance

Like every stainless steel product, it needs to be maintained properly with the products that are available and especially made for this goal, i.e. stainless steel cleaning agents. The rod should be kept clear by wiping with a soft cloth and baby oil. Avoid foreign objects, paint, abrasive cleaners, etc. The gas spring cylinder can be cleaned with stainless steel wax type products. Do not apply wax to the rod.

Adjustable Force due to valve

Gas springs are charged by Izerwaren Inc. Our gas springs are provided with a valve, so charging and/or bleeding of the gas spring is possible. We provide in our program a **Bleeding Gage Set #63.001** on page 6-17 for controlled down bleeding and pressure hecking. Filling gas springs can be done in a industrial safe environment with the **Charging Kit #63.000** shown on page 6-17. Not recommended for accidental users.



Gas spring force

The compressing force and the force of extension are indicated in N. (Newton; 1 kilogram or 2.2 pounds = 9.81 N) The Newton force of the gas springs of our program have a range from 50N up till 10,000N. (2.200 lb.) That means that a weight 2200 lb. can be balanced by a Force of 10,000 Newton. The thickness of the rod determines the force that a gas spring can exert. The force range per gas spring between compressed and extended is approximately 15%. IZERWAREN gas springs sizes are specifically designed to fit in tight spaces. The shortest possible set up is per series chosen. By lengthening the cylinder, but not the rod of any given gas spring, a flatter run up in force can be achieved. We take orders for custom size gas springs.

Safety

The nitrogen filling of the gas spring is incombustible. Because of the way the gas spring is constructed, explosion of the gas spring is not possible. The seal will fail first, if the pressure becomes too high, due to overheating. Gas springs operating outside the temperature limits are void of warranty. Izerwaren is not responsible for failures of gas springs due to operating under these circumstances.

Minimum and Maximum Operating Temperature and Gas Pressure Change

Gas springs can be used in a temperature range of minus 15 to plus 50 degree Celsius. Special order gas springs are available for a range from 30 degree Celsius up to 80 degrees Celsius. The force of extension increases/decreases by 3.4 % per 10 degrees Celsius. Nominal operating temperature: 20 degrees Celsius.

Warranty

IZERWAREN gas springs have a one year factory warrantee on parts for manufacturing defects only.

Life term

The life span of a gas spring is almost unlimited, provided that the gas spring is correctly positioned (cylinder up, rod down) under axial load only, not being bent or receives lateral pressure by incorrect mounting. Also, the piston rod should be kept clean, undamaged and free from scratches. To extend the life of the gas spring it is recommended to compress the gas spring a few times a month to lubricate the seals and piston rod.

How To Choose The Right Gas Spring With The Right Charge.

Please collect the following data: or: let us do the calculating! Email your SCALED DRAWING!

- A. The weight of the part (hatch) to be lifted.
- B. The length of the hatch: This is the distance from the hinges to the lock (or locking) side.
- C. The thickness of the hatch. (small hatches which are very thick -freezer hatches- need longer size gas spring)
- D. The degree to which the hatch will be opened. (90 degrees or more, up to 160 degrees)

To find the actual weight of an existing hatch, place a fish scale on the side of the hatch in a position as close as possible to the horizontal position and multiply the measured weight by 2. Keep in account the friction of the hinges, if any, and the weight of locking devices that can upset the center of gravity of the hatch. Adjust for these variables in the formula.

Determining The Stroke

As a rule of thumb the stroke of the gas spring is at least 1/4 of the total distance from the pivoting point to the locking side of the hatch. (See Diagram Application A on page 6-5; 6-6 and 6-7)

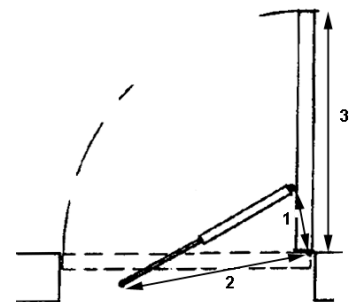


Illustration Application A,

Showing slightly over 90 degree opening

Sample of Application A

- #1: Distance from center hatch bracket to hinge pin.
 - #2: Distance from center coaming bracket to hinge pin
 - #3: Total length of hatch, measuring always from hinge pin.
- If hatch is 500 mm long, distance #1 is 125 mm.
The stroke will be 150 mm, The gas spring series (6-15, 8-18, 10-23 - in this case an 8-18-150) is determined by the force it can exert. With weak structures or Plexiglas, place the gas spring further away from the hinge. Choose the next size with a longer stroke. This rule is based on the hatch opening of 90 degrees; gas spring mounted in the rim (application A). If a different opening of the hatch is desired, the stroke has to be recalculated accordingly.



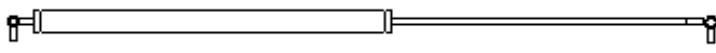
Application A

- 1 = distance top bracket to hinge pin
- 2 = distance bottom bracket /hinge
- 3 = length of hatch

Formula for determining the Newton Force for application A:

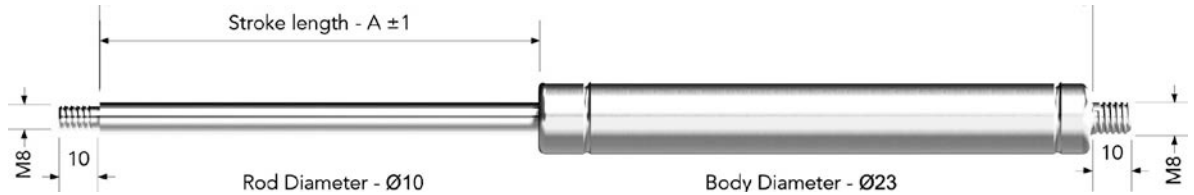
Multiply the total unhinged weight of the hatch using Newton Force times 2. Add to this a recommended 10-15% extra force to allow for a positive force to hold the hatch open in place. (1 kg = 2.2 pounds = 9,81 Newton Force)

The hatches have a weight of 25 lbs. (11 kg or 113 N) each. As they are 500 mm wide, and the gas spring has a stroke of 150 mm, the gas springs are mounted at less than a quarter of the width, meaning that to balance the weight of the hatch, the force needs to be equal to two times the weight. Which is 50 Lbs. or 226N. To keep the hatch from falling easily, 10% extra force is added. This equals 248N total. If the situation requires installing 2 gas springs per hatch, the force for both gas springs is halved.



The table below shows the standard program of stainless steel gas springs available, non - standard sizes are available on special order.

The diagram also shows hatch size indication when mounting the gas spring in the rim of the hatch, with 90 degree opening. For other applications use the formula below or contact our office.



Stainless steel Gas spring	Hatch weight lb.	Hatch in inches	Force IN Newton	Stroke length		Rod	Cylinder	Overall length, extended and compressed, not counting the threads, without attachments		Thread
I.D.#	for 1 spring	Max. size		mm	inches	diameter	diameter	mm	inch	on both sides
6-15-50	4 / 30lb	8"	25 / 400 N	50	2"	6 mm	15 mm	130 / 80	5 1/8" / 3 1/8"	M 5 x 0.8
6-15-65	4 / 30lb	10"	25 / 400 N	65	2 3/8"	6 mm	15 mm	160 / 95	6 1/4" / 3 3/4"	
6-15-80	4 / 30lb	12 1/2"	25 / 400 N	80	3"	6 mm	15 mm	190 / 110	8 1/4" / 5 1/8"	M 5 x 0.8
6-15-100	4 / 30lb	15 3/4"	25 / 400 N	100	4"	6 mm	15 mm	230 / 130	9 1/16" / 5 1/8"	M 5 x 0.8
6-15-120	4 / 30lb	19 1/2"	25 / 400 N	120	4 3/4"	6 mm	15 mm	270 / 150	10 5/8" / 5 7/8"	M 5 x 0.8
6-15-150	4 / 30lb	23 1/2"	25 / 300 N	150	5 7/8"	6 mm	15 mm	330 / 180	13" / 7 1/16"	M 5 x 0.8
6-15-200	4 / 30lb	31 1/4"	25 / 300 N	200	7 7/8"	6 mm	15 mm	430 / 230	16 15/16" / 9 1/16"	M 5 x 0.8
8-18-100	10/70lb	15 3/4"	100 / 750 N	100	4"	8 mm	19 mm	245 / 145	9 5/8" / 5 3/4"	M 8 x 1.25
8-18-150	10/70lb	23 1/2"	100 / 750 N	150	5 7/8"	8 mm	19 mm	345 / 195	13 3/4" / 7 3/4"	M 8 x 1.25
8-18-200	10/70lb	31 1/4"	100 / 700 N	200	7 7/8"	8 mm	19 mm	445 / 245	17 1/2" / 9 5/8"	M 8 x 1.25
8-18-250	10/70lb	39 3/8"	100 / 700 N	250	9 7/8"	8 mm	19 mm	545 / 295	21 1/2" / 11 5/8"	M 8 x 1.25
10-23-100	15/120lb	15 3/4"	150 / 1200 N	100	4"	10 mm	23 mm	245 / 145	9 5/8" / 5 3/4"	M 8 x 1.25
10-23-150	15/120lb	23 1/2"	150 / 1200 N	150	5 7/8"	10 mm	23 mm	345 / 195	13 3/4" / 7 3/4"	M 8 x 1.25
10-23-200	15/120lb	31 1/4"	150 / 1200 N	200	7 7/8"	10 mm	23 mm	445 / 245	17 1/2" / 9 5/8"	M 8 x 1.25
10-23-250*	15/110lb	39 3/8"	150 / 1100 N	250	9 7/8"	10 mm	23 mm	545 / 295	21 1/2" / 11 5/8"	M 8 x 1.25
10-23-300*	15/100lb	47 1/4"	150 / 900 N	300	11 13/16	10 mm	23 mm	645 / 345	25 5/8" / 13 3/4"	M 8 x 1.25
10-23-350*	15/77lb	55 1/8"	150 / 700 N	350	13 3/4"	10 mm	23 mm	745 / 395	29 5/16" / 15 9/16"	M 8 x 1.25
10-23-400*	15/65lb	63"	150 / 500 N	400	15 3/4"	10 mm	23 mm	845 / 445	33 1/4" / 17 1/2"	M 8 x 1.25
*10-23-series	120 lb:	with	protection	tube	1200N					
14-28-100 / 14-28-500	25/250lb	15 3/4" 63"	250 / 2500 N	100 / 500	4 / 19 11/16	14 mm	28 mm	on request	on request	M 10 x 1.5
22-38-200 22-38-1000	50/500lb	15 3/4" 63"	500 / 5000 N		7 7/8 to 39 3/8"	22 mm	38 mm	on request	on request	M 14 x 1.5
30-65-1000	--/1650lb --/2200lb	15 3/4" to 63"	5000N / 10000N	1000 1000	39 3/8"			on request	on request	M 24 x 3

Compression Gas Springs Details per size: Please see page 6-5 to 6-10. For attachments: Please see page 6-11, 6-14 and 6-15.

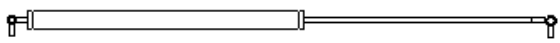
For Blocking Gas Springs: Please see Page 6-10

HOW TO CHOOSE THE RIGHT GAS SPRING WITH THE RIGHT CHARGE:

Please find the following data:

1. The weight of the part (hatch) to be lifted.
2. The length of the hatch. This is the distance from the hinges to the locking side.
3. The thickness of the hatch. (small hatches which are very thick – like freezer hatches- need longer size gas springs)
4. The degree to which the hatch will be opened. (90 degrees or more, up to 160 degrees)

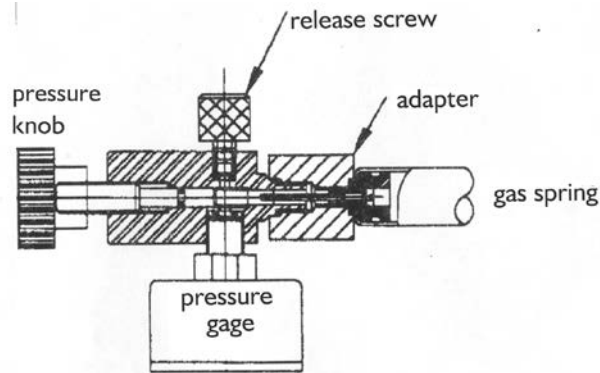
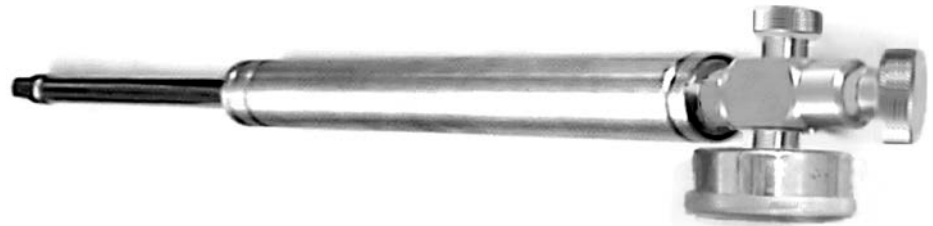
To find the actual weight of an existing hatch, without removing it from the deck, place a hanging scale on the side of the hatch in a position as close as possible to the horizontal position and multiply the measured weight by 2. Keep in account the friction of the hinges, if any, and the weight of locks and hatch dogging devises that can upset the center of gravity of the hatch. Adjust for these variables in the formula. See also pages 6-0-2-0 and 6-0-2-1.



Picture: Gas spring with bleeding gage attached



Part Number: #63.001
Bleeding Gage Kit with Case



Bleeding Gage Cut Through Diagram



Valve

USE OUR BLEEDING GAGE TO CHECK AND REDUCE THE PRESSURE IN YOUR IZERWAREN BRAND GAS SPRINGS.

Operating Instructions

Warning! Do not point the gas spring to yourself or to others. Wear eye protection at all times. Do not attempt to work with damaged gages, adapters or as springs. Always use caution with high pressure.

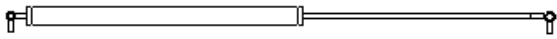
- Identify the size adapter that best fits the threads on the cylinder end of your gas spring and install firmly on the end of the Gage Body.
- Select the correct size Pressure Knob assembly to fit your gas spring by lightly inserting the thin metal end into the cylinder end. Place, but do not screw, the correct pressure knob into the gage body.
- Hold the gas spring vertically with the cylinder up and the shaft down. Lower the shaft end to rest on a work surface. Screw the Adapter End of the Gage onto the cylinder end threads and tighten with hand pressure only.
- Gently turn the black Pressure Knob clockwise until it engages the valve inside the cylinder end. You may not need to fully tighten the Pressure Knob. When the gage needle moves, record the indicated pressure.
- To release pressure from the cylinder, turn the silver Release Screw slowly until you hear gas escaping. Watch the gage and tighten the Release Screw when you reach the desired pressure. Remove Gage Assembly by twisting the entire assembly counter clockwise.

HIGH PRESSURE! ALWAYS USE CAUTION! NEVER FORCE ANYTHING! .

The Newton force / psi / lbs. conversion table (Page 6-18 & 6-19) are included with the Bleeding Gage Set.

Disclaimer:

Izerwaren Inc. cannot be held responsible for damage or injury occurred as a result of the use or misuse of our Izerwaren Inc. gas spring products or charging kit to first, second and third parties or the damage or loss of property or injury or death to first, second or third parties. User acknowledges and agrees with this disclaimer when purchasing our gas spring products.

**How to use the Force Conversion Table (pages 6-18 and 6-19) with our Bleeding Kit:**

1. Determine the size of the rod of your gas spring. (6, 8 10, 14 or 20 mm diameter.)
2. Determine the Newton force required. (Calculate the required Newton force based on your application. See also our sheet: How to Determine The right Pressure for Your Gas Spring.)
3. Look for the corresponding Psi. value in the table.
4. Bleed the gas spring accordingly, using the dials on your bleeding gage See the reverse side for operating your Bleeding Gage correctly.

Sample: Gas spring 10-23 200 mm stroke; required Newton force based on prior calculation: 1000N.

1000N equals approx. 98.1 kg or 215 lb. This means that the gas spring, charged with 1000N, will balance a weight of 215 lb. Looking at the table, a force of 1846 psi need to be dialed in on your valve/gage to achieve this Newton value.

A hatch with a weight of 93.5 lb. to which a gas spring is attached at about a 1/4 of the distance away from the hinge pin requires a force of twice the weight of the hatch to balance the hatch. This is $2 \times 93.5 \text{ lb.}$ is 187 lb. It is normal to add a 10 to 15 % extra force to the gas spring pressure to allow the hatch to stay open.

$15\% + 187 \text{ lb} = 215 \text{ lbs.} = 1000\text{N.}$

Question: What is the Psi. pressure required to bring a gas spring series 10-23 to 1000 Newton's?

Answer:

1. Lookup in the table for the column of the 10 mm rod diameter for 1000N. Go two columns to the right: and find 1846 Psi.

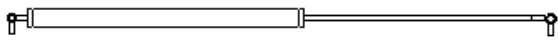
(The following only applies for the use of the Bleeding Kit, and requires the gas spring to have a higher value then the value desired. Please make sure to hold the gas spring with the cylinder up and the rod down when bleeding the gas spring. This ensures that only gas is released, and not oil.)

Warning! Do not point the gas spring to yourself or to others. Wear eye protection at all times. Do not attempt to work with damaged gages, adapters or as springs. Always use caution with high pressure.

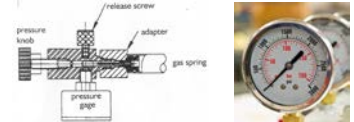
- Identify the size adapter that best fits the threads on the cylinder end of your gas spring and install firmly on the end of the Gage Body.
- Select the correct size Pressure Knob assembly to fit your gas spring by lightly inserting the thin metal end into the cylinder end. Place, but do not screw, the correct pressure knob into the gage body.
- Hold the gas spring vertically with the cylinder up and the shaft down. Lower the shaft end to rest on a work surface. Screw the Adapter End of the Gage onto the cylinder end threads and tighten with hand pressure only.
- Gently turn the black Pressure Knob clockwise until it engages the valve inside the cylinder end. You may not need to fully tighten the Pressure Knob. When the gage needle moves, record the indicated pressure.
- To release pressure from the cylinder, turn the silver Release Screw slowly until you hear gas escaping. Watch the gage and tighten the Release Screw when you reach the desired pressure. Remove Gage Assembly by twisting the entire assembly counter clockwise.

Disclaimer:

We cannot be hold responsible for damage or injury occurred as a result of the use or misuse of our Izerwaren Inc. gas spring products or charging kit to first, second and third parties or the damage or loss of property or injury or death to first, second or third parties. User acknowledges and agrees with this disclaimer by purchasing our gas spring products. Izerwaren Inc.



Part Number: #63.000 Charging Kit includes plywood box



Part Number: #63.001
Bleeding Gage Kit with Case
Descriptions on page 6-13-0

Important instructions how to charge Izerwaren Gas Springs using the Izerwaren Charging Kit.

Do not try to charge gas springs without reading instructions first.

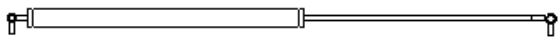
Gas spring factory warranty void when gas springs have been charged beyond their capacity.

1. Connect hose and charging nipple assembly to charging kit. Connect to Nitrogen Bottle of sufficient pressure. (Bottle needs no less than 2500 Psi for charging gas springs to the maximum charge. Check chart for maximum charge of all type of gas springs. DO NOT OVER CHARGE.) Compensate for inaccurate gage readings of your gas bottle gages. Calibrate the gage on the gas bottle for the right pressure reading before first use.
2. Place the charging nipple by hand on the cylinder side of the gas spring on the threaded rod. Do not use force, do not tighten. Charging Nipples are provided for the sizes: M5, M8, M10, M14.
3. Allow a little flow of gas through the line. The nipple may leak first but will seal itself by means of an inner valve.
4. If no sealing occurs, turn the nipple slightly back and forth, but never tight on the gas spring, as this will rupture the rubber seal. Then apply charging force required. A few extra rubber seals are enclosed.
5. Do not bend the thin high pressure line. The line is for use for pressure up till 300 bar or 4000 Psi. If the line is bend or nicked, dispose of this line, do not use
6. Before removing the nipple after charging the gas spring, release the pressure by means of a relief valve.

Never allow more than the maximum charge for the gas spring charged. For maximum Psi/Bar pressure for each gas springs series see charge table on pages 6-18 and 6-19.

A converting thread piece from M14 to 1/4" pipe thread is needed to connect the thin high pressure line to your existing nitrogen bottle and gage assembly.

Recommended is the use "Tef-Gel" or other anti-seize products on the threaded ends on the gas spring before final installation of end fittings. This is to avoid seizing of end fittings to the gas spring. End fittings includes Eyes, Ball joints, Swivel eyes and Clevis Hooks. See pages 6-11-A and 6-11-B.



Operating a charging kit

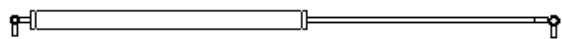
takes place under full responsibility of the end user. No claim can be placed towards Izerwaren Inc. for injury or damage occurring from operating a charging kit from Izerwaren Inc. If only parts of the kit are sold, Izerwaren takes no responsibility for any injury, or damage occurred as a result from use or misuse of the parts sold or equipment charged.

INSTRUCTIONS HOW TO USE THE CHARGING NIPPLES with CHARGING KIT and BLEEDING KIT.

1. NEVER USE FORCE.
2. PLACE THE CHARGING NIPPLE LOOSELY ON THE CYLINDER SIDE OF THE GAS SPRING.
3. ALLOW A LOW PRESSURE FLOW OF GAS THROUGH THE LINE. THE NIPPLE WILL SEAL ITSELF BY MEANS OF AN INNER VALVE SEAT.
4. IF NO SEALING OCCURS, TURN THE NIPPLE SLIGHTLY BACK AND FORTH, BUT NEVER TIGHT ON THE GAS SPRING, AS THIS WILL RUPTURE THE RUBBER SEAL. THEN APPLY CHARGING FORCE REQUIRED. A FEW EXTRA RUBBER SEALS ARE ENCLOSED.
5. DO NOT BEND THE LINE. THE LINE IS RATED FOR 300 BAR OR 4000 PSI.
6. BEFORE REMOVING THE NIPPLE, RELEASE THE PRESSURE BY MEANS OF A RELIEF VALVE. OPEN THE RELIEVE VALVE COMPLETELY AND QUICKLY.
7. **NEVER ALLOW MORE THEN 2200 PSI PRESSURE** IN THE BLOCKING GAS SPRING SERIES 10-23: LOOK UP AT THE CHARGE TABLE UNDER 10 MM Ø ROD; WHICH IS THE 7TH COLUMN FROM THE LEFT: 1200 NEWTON EQUALS 2216 PSI. FOR OTHER SIZES ALWAYS FIND THE ROD DIAMETER FIRST. NEVER OVERCHARGE THE VARIOUS GAS SPRINGS. SEE CHART FOR MAX. PRESSURE OF GAS SPRING OF EACH TYPE. THE SEAL WILL RUPTURE IN CASE OF OVERCHARGING. NO WARRANTEE ON GAS SPRINGS THAT ARE NOT CHARGED BY US.
8. GAGES ON THE GAS BOTTLE NEED TO BE CALIBRATED FOR THE RIGHT PRESSURE READING.
9. YOUR HIGH PRESSURE LINE IS EQUIPPED WITH A 1/4" PIPE THREAD CONVERTER FROM M14
10. NIPPLES PROVIDED: M5, M8, M10, M14.
11. ALWAYS USE TEF GEL ON THE THREADED ENDS ON THE GAS SPRING BEFORE FINAL INSTALLATION OF EYES OR BALLJOINTS.



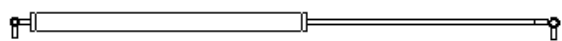
Charts for converting Psi / Lbs. / Kg / Newton force for each gas spring series are included. Please see for maximum Psi/Bar pressure for each gas springs series pages 6-18 and 6-19..



FORCE CONVERSION TABLE FOR IZERWAREN STAINLESS STEEL COMPRESSION GAS SPRINGS
WHEN USING THE IZERWAREN CHARGING KIT; PLEASE SEE PAGE 6-17-0
PAGE 6-19- SHOWS THE SIZE VALUES FOR THE SIZES M20, M22, M25 AND M30

Rod M6			Rod M8			Rod M10			Rod M14		
Newton	Bar	PSI	Newton	Bar	PSI	Newton	Bar	PSI	Newton	Bar	PSI
-	-	-									
50	17.7	257	-	-	-				-	-	-
100	35.4	513	100	19.8	287	-	-	-	250	16.3	236
150	53	769	150	29.7	431	150	19.1	277	300	19.5	283
200	70.7	1025	200	39.6	574	200	25.5	370	350	22.7	329
250	88.4	1282	250	49.5	718	250	31.8	461	400	26	377
300	106	1537	300	59.5	863	300	38.2	554	450	29	421
			350	69.3	1005	350	44.6	647	500	32.5	471
			400	79.2	1149	400	51	740	550	35.8	519
			450	89.1	1292	450	57.3	831	600	39	566
			500	99	1436	500	63.7	924	650	42.2	612
			550	108.9	1579	550	70.1	1017	700	45.5	660
			600	118	1711	600	76.4	1108	750	48.7	706
			650	128.7	1867	650	82.8	1201	800	52	754
			700	138.6	2010	700	89.1	1292	850	55.2	801
						750	95.5	1385	900	58.5	848
						800	102	1479	950	61.8	896
						850	108.2	1569	1000	65	943
						900	114.6	1662	1050	68.2	989
						950	121	1755	1100	71.4	1036
						1000	127.3	1846	1150	74.6	1082
						1050	133.7	1939	1200	78	1131
						1100	140	2031	1250	81.2	1178
						1150	146.4	2123	1300	84.5	1226
						1200	152.8	2216	1350	87.8	1273
						1250	159.2	2309	1400	91	1320
									1450	94.2	1366
									1500	97.4	1413
									1625	105.5	1530
									1750	113.6	1648
									1875	121.7	1765
									1937	125	1813
									2000	129.8	1883
									2125	138.1	2003
									2250	146.1	2118
									2500	162.3	2354

CAUTION! DO NOT EXCEED THE VALUES LISTED WHEN CHARGING GAS SPRINGS!!!!
Izerwaren Inc. is not responsible for the use or misuse of this table. For indication only.
No application in any proper or improper way of this chart is implied.



FORCE CONVERSION TABLE FOR IZERWAREN STAINLESS STEEL GAS SPRINGS
USING THE IZERWAREN CHARGING KIT. See page 6-13-0
Page 6-18 shows the values for the sizes M6, M8, M10 and M14

Rod M20			Rod M22			Rod M25			Rod M30		
Newton	Bar	PSI	Newton	Bar	PSI	Newton	Bar	PSI	Newton	Bar	PSI
									-	-	-
									1200	16.99	246.3
						-	-	-	1400	19.82	287.4
						800	16.4	238	1600	22.65	328.5
			500	16	232	900	18.4	267	1800	25.48	369.5
			550	14	210	1000	20.4	296	2000	28.31	410.6
			600	16	229	1250	25.5	370	2100	29.72	431.1
			650	17	248	1500	30.6	444	2200	31.14	451.6
500	16	232	700	18	267	1750	35.7	518	2300	32.55	472.2
550	17.6	255	750	20	286	2000	40.8	592	2400	33.97	492.7
600	19.2	278	800	21	305	2250	46.0	666	2500	35.39	513.2
650	20.8	302	850	22	324	2500	51.1	741	2600	36.80	533.8
700	22.3	323	900	24	344	2750	56.2	815	2800	39.63	574.8
750	23.9	347	950	25	363	3000	61.3	889	3000	42.46	615.9
800	25.5	370	1000	26	382	3250	66.4	963	3200	45.29	656.9
850	27.1	393	1100	29	420	3500	71.5	1037	3400	48.12	698.0
900	28.7	416	1200	32	458	3750	76.6	1111	3600	50.96	739.0
950	30.3	439	1300	34	496	4000	81.7	1185	3800	53.79	780.1
1000	31.9	463	1400	37	534	4250	86.8	1259	4000	56.62	821.2
1100	35.4	513	1500	39	573	4500	91.9	1333	4200	59.45	862.2
1200	38.9	564	1700	45	649	4750	97.0	1407	4400	62.28	903.3
1300	41.7	605	1800	47	687	5000	102.1	1481	4600	65.11	944.3
1400	44.6	647	2000	53	763	5250	107.2	1555	4800	67.94	985.4
1500	47.8	693	2500	66	954	5500	112.3	1629	5000	70.77	1026.5
1700	54.2	786	3000	79	1145	5740	117.4	1703	5200	73.60	1067.5
1800	57.4	833	3500	92	1336	6000	122.5	1777	5400	76.43	1108.6
2000	63.7	924	4000	105	1527	6250	127.6	1851	5600	79.26	1149.6
2500	79.6	1155	4500	118	1718	6500	132.7	1925	5800	82.09	1190.7
3000	95.6	1387	5000	132	1909	6750	137.8	1999	6000	84.93	1231.7
3500	111.5	1617	5100	134	1947	7000	142.9	2073	6200	87.76	1272.8
4000	127.4	1848	5200	137	1985	7250	148.0	2147	6400	90.59	1313.9
4500	143.3	2078	5500	145	2100	7500	153.1	2221	6600	93.42	1354.9
5000	159.3	2310	6000	158	2290	7750	158.2	2294	6800	96.25	1396.0
5100	162.5	2357	6150	162	2348	8000	163.3	2368	7000	99.08	1437.0
									8000	113.23	1642.3
									9000	127.39	1847.6
									10000	141.54	2052.9

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