STAUFF®

Multi-Universal Accumulator Charging Kit with Nitrogen Regulator

Instruction Manual

Product Description

The STAUFF Multi-Universal Accumulator Charging Kit is a high-quality, versatile solution engineered for the verification, pressurisation, and gas bleeding of hydraulic accumulators. Designed for broad application, the kit is compatible with most common bladder and diaphragm accumulator types, making it an essential tool for service, maintenance, and commissioning.

This upgraded system features an integrated charging head with an M28 × 1.5 connection, enabling testing, pressurisation, and pre-charging functions through a single, streamlined interface. It also allows direct connection to USA-style gas valves (0.305" × 32 TPI), supplied complete with the appropriate charging valve and charging head adaptor.

By eliminating the need for multiple intermediate adaptors, the kit simplifies setup, improves service efficiency, ensuring safer and more reliable accumulator servicing.

Features

The kit is delivered in a robust storage case containing the following:

1. 1 x Charging head for testing and pressurising (swivel connection M28x1.5)
2. 1 x Adaptor 1/4" BSPP
3. 1 x Adaptor 5/8–18 UNF
4. 1 x Adaptor (long) 7/8–14 UNF
5. 1 x Adaptor (short) Integrated 7/8–14 UNF
6. 1 x 0 - 100 bar/PSI safety pattern pressure gauge + adaptor SMD-20-G1/4-B-OR-W3
7. 1 x 0 - 250 bar/PSI safety pattern pressure gauge + adaptor SMD-20-G1/4-B-OR-W3
8. 1 x Charging head for connecting directly to a USA 0.302" x 32 TPI gas valve
9. 1 x SKK20 Bleed valve
10. 1 x High-pressure gas hose (2000 mm long) for connecting to a nitrogen gas source - SKK-20-1/4" BSPP female
11. 1 x STAUFF Nitrogen Regulator
12. 1 x Type 50 gas bottle adaptor
13. 1 x Safety goggles
14. 1 x Hex key 6 mm
15. 1 x SKK-20 Test coupling 1/4" NPT (for regulator connection)
16. 1 x Operating instructions

Available on request

- 0 - 400 bar kit

Application

- For checking and pre-charging common types of accumulators

⚠ Maximum working pressure of this equipment (excluding individual pressure rating of gauges) is 400 bar.

⚠ Only use "gas approved" test hose

⚠ For use with nitrogen (N_2) gas only

⚠ Safety goggles must be worn at all times

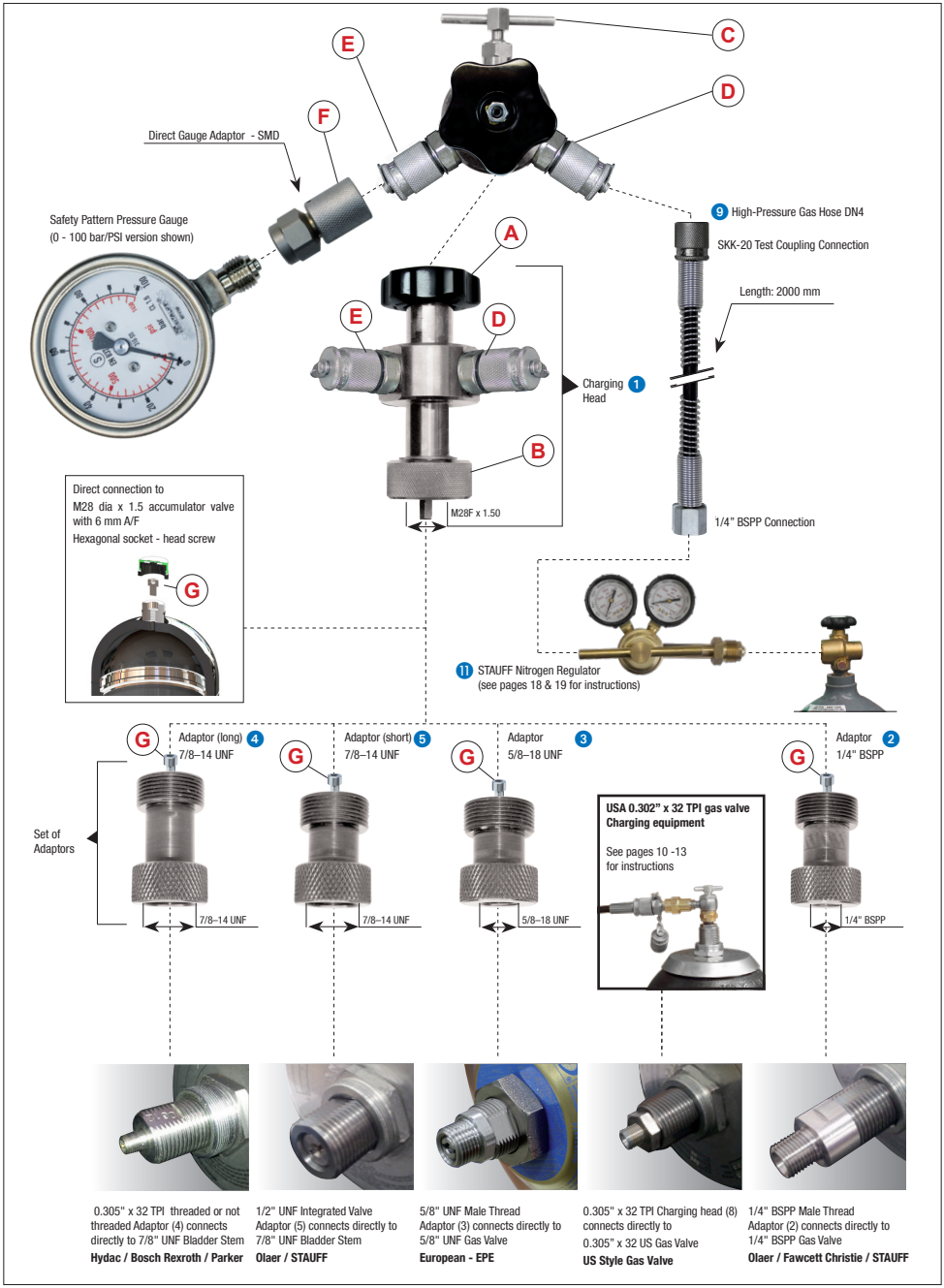
⚠ STAUFF pressure gauges are safety pattern type according to AS1349

Safety Instructions and Recommendations

1. Before using the charging head carefully read the directions and safety instructions in this guide.
2. In all cases observe the pressure limits indicated on the accumulator pressure vessels. If necessary refer to the applicable operating instructions.
3. Before attempting to check the pre-charge pressure, the accumulator in the hydraulic circuit under pressure has to be isolated and discharged on the hydraulic side. If required immobilize it and define a safety zone.
4. Only use nitrogen gas with a purity ≥ 99,8% (N_2) to pressurise the accumulator.
5. STAUFF always recommends the use of a nitrogen gas regulator on the nitrogen gas bottle.
6. The charging head (1) and pressure gauge (6 or 7) are tools for checking gas pressure and pre-charging accumulators. In cases where the gauge and gauge adaptor will be left on the accumulator, make sure that the gauge fitted is rated for the maximum system pressure of the hydraulic circuit.
7. Never use an accumulator in a hydraulic system without it first being pre-charged with the correct nitrogen gas pressure. Failure to do this will result in bladder or diaphragm damage.
8. Ensure safety goggles are worn when either checking or pre-charging accumulators.
9. To ensure optimum efficiency and performance of the hydraulic circuit, the pre-charge pressure must be checked frequently. STAUFF recommends the pressure be checked initially at intervals of 1 month, 3 months and then 6 months after installation. Depending on the amount of loss of pressure (if any) over this time, a planned maintenance schedule for monitoring the pressure can then be put into operation (check annually).

- Only use “gas approved" test hose
- For use with nitrogen (N_2) gas only
- Safety goggles must be worn at all times
- STAUFF pressure gauges are safety pattern type according to AS1349

Connection Flow Chart



0.305" x 32 TPI threaded or not threaded Adaptor (4) connects directly to 7/8" UNF Bladder Stem
Hydac / Bosch Rexroth / Parker

1/2" UNF Integrated Valve Adaptor (5) connects directly to 7/8" UNF Bladder Stem
Olaer / STAUFF

5/8" UNF Male Thread Adaptor (3) connects directly to 5/8" UNF Gas Valve
European - EPE

0.305" x 32 TPI Charging head (8) connects directly to 0.305" x 32 US Gas Valve
US Style Gas Valve

1/4" BSPP Male Thread Adaptor (2) connects directly to 1/4" BSPP Gas Valve
Olaer / Fawcett Christie / STAUFF

Checking the Pre-charge Pressure

General

⚠ 1. Recommendation: Before proceeding to any operation concerning the initial pressurisation of an accumulator, consult the applicable operating instructions.

⚠ 2. Pressurisation limits: Ensure that the Universal Accumulator Charging Kit and any associated pressure gauge fitted are rated for the intended pressure for both pre-charging and pressure checking. Refer to the manufacturers specifications.

The nitrogen gas pressure varies as a function of the gas temperature. After each inflation and deflation of nitrogen gas, wait for the temperature to stabilise before checking the pressure (this may take several minutes depending on the accumulator size). Never exceed the maximum stated design pressure (PS or DP) of the accumulator as stamped on the vessel. If in doubt consult the manufacturer or check manufacturer's operating instructions or specification manual.

⚠ 3. Taking into account the temperature influence on the pre-charge pressure: In order to observe the working pressures of the accumulator it is advised to adjust the inflation pressure (P0) according to the operating or control temperature. Refer to page 10 for inflation pressure corrections table.

Bladder Accumulators

Refer to page 4 for connection flow chart

- Remove the protection or gas valve cap fitted to the gas side of the accumulator
- Select the adaptor according to the gas valve fitted to the accumulator (2, 3, 4 or 5)
- Ensure the pin in the adaptor is backed off by unscrewing the socket head cap screw (G) in an anti-clockwise direction. To do this use the 6 mm hex key supplied in the charging kit
- Attach the appropriate adaptor to the accumulator gas valve
- Take the charging head (1) from the kit and install the pressure gauge by attaching it to the test coupling (E). Make sure the pressure gauge is compatible with the gas pressure (to be verified) and make sure the bleed valve (C) is closed
- Manually tighten the knurled ring (B) on the charging head (1) to the adaptor (2, 3, 4 or 5), positioning the device in such a way that the pressure gauge values can be easily read
- Open the accumulator gas valve by slowly tightening (clockwise) the lobe wheel (A) until the pre-charge pressure is indicated on the pressure gauge. DO NOT overtighten the lobe wheel (A)

Diaphragm Accumulators

Refer to page 4 for connection flow chart

- When checking the pre-charge pressure of a diaphragm accumulator fitted with a 6 mm socket head cap screw – carefully loosen the socket head cap screw (G) by turning anti-clockwise to relieve any tension the 6 mm hex key supplied in the charging kit
- Take the charging head (1) from the kit and install the pressure gauge by attaching it to the test coupling (E). Make sure the pressure gauge is compatible with the gas pressure (to be verified) and make sure the bleed valve (C) is closed
- Mount the charging head (1) directly to the accumulator's M28 threaded connection (no adaptor required), by tightening the knurled ring (B) on the charging head
- Once the charging head (1) is connected to the accumulator, unscrew the lobe wheel (A) anti-clockwise until the inflation pressure is indicated on the pressure gauge

⚠ Only use "gas approved" test hose

⚠ For use with nitrogen (N_2) gas only

⚠ Safety goggles must be worn at all times

⚠ STAUFF pressure gauges are safety pattern type according to AS1349

Service Options

Option 1. The displayed nitrogen gas pressure (P0) is correct

Refer to page 4 for connection flow chart

- For bladder accumulators manually unscrew the lobe wheel (A) anti-clockwise. The lobe wheel (A) allows re-closing of the gas valve. A clicking sound may be heard once the valve is fully closed
- For diaphragm accumulators manually screw the lobe wheel (A) clockwise. The lobe wheel (A) allows re-closing of the socket head cap screw (G)
- Loosen the bleed valve by rotating anti-clockwise (C) to purge the charging head (1) of pressure
- For bladder accumulators remove the charging head (1) from the adaptor (2, 3, 4 or 5)
- For bladder accumulators unscrew the adaptor (2, 3, 4 or 5) fitted to the gas valve
- For diaphragm accumulators remove the charging head (1) from the M28 threaded connection and tighten the socket head cap screw (G) with supplied 6 mm hex key

⚠ **Important:** When using diaphragm accumulators with a socket head cap screw fitted, tighten the socket head cap screw (G) using the supplied 6 mm hex key

⚠ Ensure there is no gas leakage by checking with soapy water or an equivalent specific product

⚠ Ensure the gas valve cap and protection cap are refitted

Option 2. The displayed nitrogen gas pressure (P0) is too high

Refer to page 4 for connection flow chart

- Loosen the bleed valve (C) to reduce the nitrogen gas pressure of the accumulator until the required (P0) pressure after stabilization is reached (the nitrogen gas escapes to the atmosphere)
- Re-tighten the bleed valve (C)
- For bladder accumulators manually unscrew the lobe wheel (A) anti-clockwise. The lobe wheel (A) allows re-closing of the gas valve. A clicking sound may be heard once the valve is fully closed
- For diaphragm accumulators manually screw the lobe wheel (A) clockwise. The lobe wheel (A) allows re-closing of the socket head cap screw (G)
- Loosen the bleed valve by rotating anti-clockwise (C) to purge the charging head (1) of pressure
- For bladder accumulators remove the charging head (1) from the adaptor (2, 3, 4 or 5)
- For bladder accumulators unscrew the adaptor (2, 3, 4 or 5) fitted to the gas valve
- For diaphragm accumulators remove the charging head (1) from the M28 threaded connection and tighten the socket head cap screw (G) with supplied 6 mm hex key

⚠ Only use “gas approved" test hose

⚠ For use with nitrogen (N_2) gas only

⚠ Safety goggles must be worn at all times

⚠ STAUFF pressure gauges are safety pattern type according to AS1349

Service Options

Option 3 . The displayed nitrogen gas pressure (P0) is too low

Refer to page 4 for connection flow chart

- Remove cap from test coupling (D)
- Connect the Test 20 end of the high-pressure hose to test coupling (D)
- Connect the other end of the high-pressure hose to a nitrogen regulator
- If the accumulator gas valve is not already open loosen or tighten the lobe wheel (A) according to the accumulator type to allow the pressure to build up and register on the gauge
- Slightly open the valve on the nitrogen regulator until the required inflation pressure (P0) is reached and stabilized, close the valve of the nitrogen gas source
- For bladder accumulators manually unscrew the lobe wheel (A) anti-clockwise. The lobe wheel (A) allows re-closing of the gas valve. A clicking sound may be heard once the valve is fully closed
- For diaphragm accumulators manually screw the lobe wheel (A) clockwise. The lobe wheel (A) allows re-closing of the socket head cap screw (G)
- Loosen the drain valve (C) to purge the gas from the charging head (1)
- Carefully unscrew and remove the high-pressure hose to purge any remaining gas
- Reinstall cap to test coupling (D)
- For bladder accumulators remove the charging head (1) from the adaptor (2, 3, 4 or 5)
- For bladder accumulators unscrew the adaptor (2, 3, 4 or 5) fitted to the gas valve
- For diaphragm accumulators remove the charging head (1) from the M28 threaded connection and tighten the socket head cap screw (G) with supplied 6 mm hex key

⚠ Ensure there is no gas leakage by checking with soapy water or an equivalent specific product

⚠ Ensure the gas valve cap and protection cap are refitted

⚠ Only use “gas approved" test hose

⚠ For use with nitrogen (N_2) gas only

⚠ Safety goggles must be worn at all times

⚠ STAUFF pressure gauges are safety pattern type according to AS1349

Pre-charging Accumulators Instructions

General

Prior to pre-charging an accumulator it is important that the inside of the accumulator shell be lubricated. New STAUFF accumulators are already lubricated internally during the manufacture / assembly process. For older units or accumulators that have been repaired and a new bladder installed, STAUFF recommend that the accumulator be lubricated with enough system fluid to evenly coat the inside of the shell. To ensure good lubrication lay the accumulator horizontally and rotate on its axis.

The pre-charge setting is recommended to be set to 80% - 90% of the minimum system working pressure if no specific pressure has been calculated.

⚠ **Note:** The following information applies to pre-charging new accumulators or after a bladder change when no gas pressure is present inside the accumulator.

Bladder Accumulators

Remove any plastic plugs that are fitted to the accumulator fluid port. Remove the accumulator gas valve protection cap and gas valve screw cap fitted to the gas side of the accumulator. Prepare a container to catch any fluid which may drain from the fluid port during charging.

Refer to page 4 for connection flow chart

- Select the adaptor according to the gas valve fitted to the accumulator (2, 3, 4 or 5)
- Ensure the pin in the adaptor is backed off by unscrewing the socket head cap screw (G) in an anti-clockwise direction. To do this use a 6 mm hex key from the charging kit
- Attach the appropriate adaptor to the accumulator gas valve
- Take the charging head (1) from the kit and install the pressure gauge compatible with the pressure (to be verified) and make sure the bleed valve (C) is open
- Manually tighten the knurled ring (B) of the charging head (1) to the adaptor, positioning the device in such a way that the pressure gauge values can be easily read
- Open the accumulator gas valve by tightening the lobe wheel (A) slowly clockwise until a small amount of resistance is felt. DO NOT over tighten the lobe wheel as it may cause damage to the gas valve core
- Refer to page 14 for applying the pre-charge pressure

Diaphragm Accumulators

Refer to page 4 for connection flow chart

- Ensure the socket head cap screw (G) is loose by untightening it using the 6 mm hex key supplied before the charging head (1) is fitted
- Take the charging head (1) from the kit and install the pressure gauge by attaching it to test coupling (E). Make sure the pressure gauge is compatible with the pressure (to be verified) and the bleed valve (C) is safely open
- Mount the charging head (1) directly to the accumulator M28 threaded connection (no adaptor required)
- Open the gas valve (socket head cap screw G) on the accumulator by unscrewing the lobe wheel (A) anti-clockwise no more than two complete turns
- Refer to page 14 for applying the pre-charge pressure

⚠ Only use “gas approved" test hose

⚠ For use with nitrogen (N_2) gas only

⚠ Safety goggles must be worn at all times

⚠ STAUFF pressure gauges are safety pattern type according to AS1349

Applying the Pre-Charge Pressure

(Accumulator has no gas)

Refer to page 4 for connection flow chart

- Remove cap from test coupling (D)
- Connect the Test 20 end of the high-pressure hose to test coupling (D)
- Connect the other end of the high-pressure hose to a nitrogen regulator
- Slightly open the valve of the nitrogen regulator until a small amount of gas can be heard coming from the bleed valve (C) which should be open
- After 5 seconds (0.7 Ltr - 4 Ltr) and 10 - 20 seconds (10 Ltr - 55 Ltr) slowly close the bleed valve (C). Allow the pressure to increase
- Slowly increase the pressure by opening the nitrogen regulator valve until the indicated pressure increases to the desired setting. Wait until temperature and pressure are stable, and if necessary increase the pressure again to the required setting. When the pre-charge pressure (P0) is reached and stabilized close the valve of the nitrogen gas source
- For bladder accumulators manually unscrew the lobe wheel (A) anti-clockwise. The lobe wheel (A) allows re-closing of the gas valve
- For diaphragm accumulators manually screw the lobe wheel (A) clockwise. The lobe wheel (A) allows re-closing of the socket head cap screw (G)
- Loosen the bleed valve (C) to purge the gas from the charging head (1)
- Carefully unscrew and remove the high-pressure hose to purge any remaining gas
- Reinstall cap to test coupling (D)
- For bladder accumulators remove the charging head (1) from the adaptor (2, 3, 4 or 5)
- For bladder accumulators unscrew the adaptor (2, 3, 4 or 5) fitted to the gas valve
- For diaphragm accumulators remove the charging head (1) from the M28 threaded connection and tighten the socket head cap screw (G) with supplied 6 mm hex key

⚠ Ensure there is no gas leakage by checking with soapy water or an equivalent specific product.

⚠ Ensure the gas valve cap and protection cap are refitted.

Maintenance of the STA-CK Charging Head (1)

It is recommended to check the various connections and adaptors at regular intervals for cleanliness, detection of possible defects, thread wear and sealing parts.

Contact STAUFF for more information.

⚠ Only use “gas approved" test hose

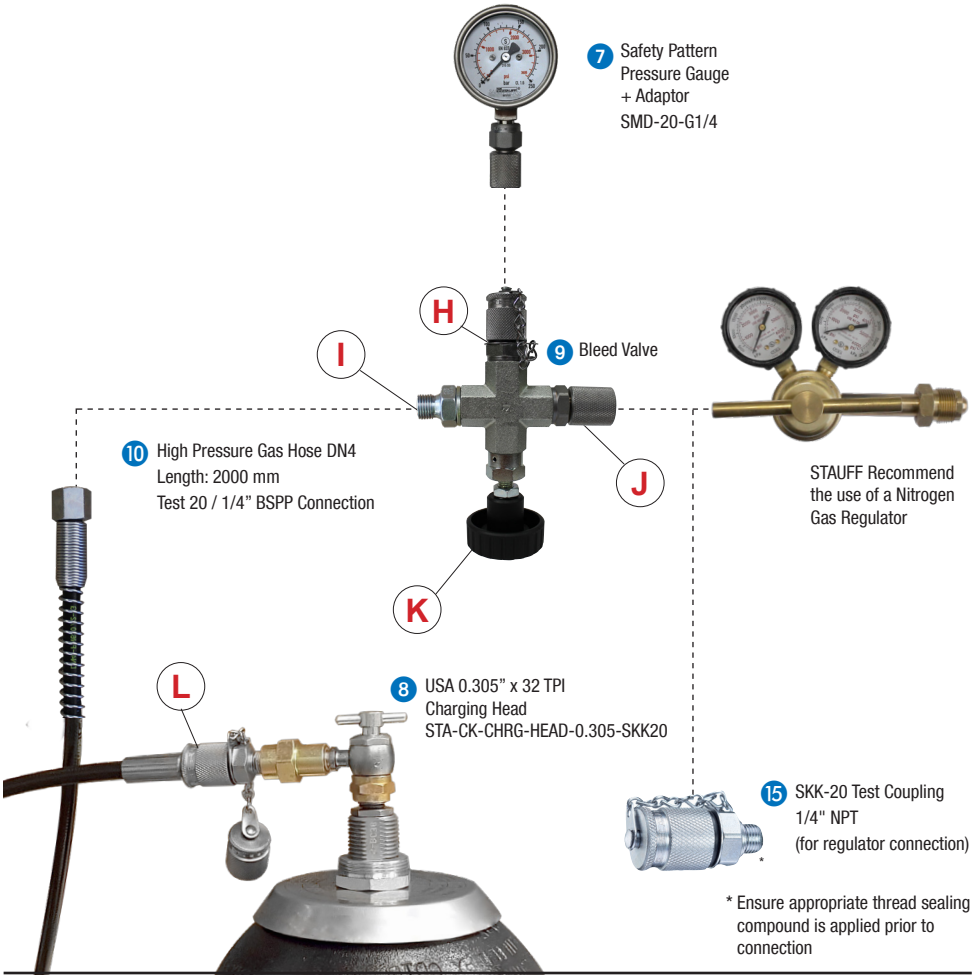
⚠ For use with nitrogen (N_2) gas only

⚠ Safety goggles must be worn at all times

⚠ STAUFF pressure gauges are safety pattern type according to AS1349

Connection Flow Chart - connecting directly to a USA 0.302” x 32 TPI gas valve

Pre-Charging -Typical Installation



- ⚠ Only use “gas approved" test hose
- ⚠ For use with nitrogen (N_2) gas only
- ⚠ Safety goggles must be worn at all times
- ⚠ STAUFF pressure gauges are safety pattern type according to AS1349

Checking the Pre-charge Pressure

General

⚠ 1. Recommendation: Before proceeding to any operation concerning the initial pressurisation of an accumulator, consult the applicable operating instructions.

⚠ 2. Pressurisation limits: Ensure that the STA-CK-305 Charging equipment and any associated pressure gauge fitted are rated for the intended pressure for both pre-charging and pressure checking. Refer to the manufacturers specifications.

The nitrogen gas pressure varies as a function of the gas temperature. After each inflation and deflation of nitrogen gas, wait for the temperature to stabilise before checking the pressure (this may take several minutes depending on the accumulator size). Never exceed the maximum stated design pressure (PS or DP) of the accumulator as stamped on the vessel. If in doubt consult the manufacturer or check manufacturer's operating instructions or specification manual.

⚠ 3. Taking into account the temperature influence on the pre-charge pressure: In order to observe the working pressures of the accumulator it is advised to adjust the inflation pressure (P0) according to the operating or control temperature.

Bladder Accumulators

Refer to page 10 for connection flow chart

- Remove the gas valve cap fitted to the accumulator gas valve.
- Ensure the tee handle on the charging head (8) is screwed back fully anti-clockwise.
- Fit the charging head (8) to the gas valve on the accumulator. Be sure not to overtighten.
- Select a safety patten gauge and adaptor (7) and couple directly to the SKK-20 fitting on the the charging head (8)
- Slowly turn the tee handle on the charging head (8) clockwise until pressure is indicated on the gauge.
- Once the pressure measurement is read from the gauge, turn the tee handle on the charging head (8) fully anti-clockwise.
- Remove the safety patten gauge and adaptor (7) from the charging head (8). Note a small amount of gas will be released.
- Remove the charging head (8) by unscrewing the hex nut that connects the charging head (8) to the gas valve on the accumulator. Note a small amount of gas will be released.

Pre-charging Accumulators Instruction

General

⚠ **Note:** This information applies to pre-charging new accumulators or after a bladder change when no gas pressure is present inside the accumulator.

Prior to pre-charging an accumulator it is important that the inside of the accumulator shell be lubricated. New STAUFF accumulators are already lubricated internally during the manufacture / assembly process. For older units or accumulators that have been repaired and a new bladder installed, STAUFF recommend that the accumulator be lubricated with enough system fluid to evenly coat the inside of the shell. To ensure good lubrication lay the accumulator horizontally and rotate on its axis.

The pre-charge setting is recommended to be set to 80% - 90% of the minimum system working pressure if no specific pressure has been calculated.

⚠ Only use “gas approved" test hose

⚠ For use with nitrogen (N_2) gas only

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⚠ STAUFF pressure gauges are safety pattern type according to AS1349

Applying the Pre-charge Pressure (Topping up the Pre-charge Pressure) Charging Valve Connected Directly to Regulator

Typical Installation

Remove the accumulator gas valve protection cap and gas valve screw cap fitted to the gas side of the accumulator.

Refer to page 10 for connection flow chart

- Ensure regulator used is fitted with STAUFF SKK-20 fitting
- Make sure main valve on nitrogen gas bottle is closed
- Connect SDA-20 adaptor end (J) of bleed valve (9) to SKK-20 test coupling (15) fitted to the regulator
- Connect gauge + adaptor (7) to charging valve (H)
- Ensure that the bleed valve (K) on the charging Valve (1) is fully closed.
- Connect one end of the gas hose to the SKK test coupling (L) and the charging head (8)
- Connect remaining gas hose end to the charging valve connection (I)
- Ensure the tee handle on the charging head (8) is screwed back fully (turn anti-clockwise).
- Fit the charging head (8) to the gas valve on the accumulator. Be sure to not to overtighten.
- To open the gas valve fitted to the accumulator, slowly turn the tee handle on the charging head (8) clockwise until pressure is read on the gauge (7).
- Slowly open the valve on the nitrogen gas source and allow pressure to increase to the desired pre-charge setting. Wait until the temperature and pressure are stable, and if needed increase the pressure again to the required setting.
- When the pre-charge pressure (P0) is reach and has stabilised, close the valve of the nitrogen gas source.
- Close the gas valve fitted to the accumulator by turning the tee handle on the charging head (8) fully anti-clockwise. Open the bleed valve (K) to drain any residual pressure remaining in the charging head (8), bleed valve (9) and the gas hose (10)

⚠ **Important:** Do not over depress the gas valve fitted to the accumulator as this may result in a damaged gas valve.

⚠ **Important:** Do not over tighten the charging head (8) when fitting to the accumulator gas valve

⚠ **Important:** Do not attempt to remove the hose assembly from the fittings (I) or (L) whilst pressure is still monitored on the gauge (7)

⚠ **Important:** Do not attempt to remove the bleed valve (9) by removing the test coupling (J) whilst pressure is still monitored on the gauge (7)

⚠ Only use “gas approved" test hose

⚠ For use with nitrogen (N_2) gas only

⚠ Safety goggles must be worn at all times

⚠ STAUFF pressure gauges are safety pattern type according to AS1349

Applying the Pre-charge Pressure (Accumulator has no gas)
Charging Valve Connected Directly to Regulator

Typical Installation

Remove any plastic plugs that are fitted to the accumulator fluid port. Remove the accumulator gas valve protection cap and gas valve screw cap fitted to the gas side of the accumulator. Prepare a container to catch any fluid which may drain from the fluid port during charging.

Refer to page 10 for connection flow chart

- Ensure regulator used is fitted with STAUFF SKK-20 fitting
- Make sure main valve on nitrogen gas bottle is closed
- Connect SDA-20 adaptor end (J) of bleed valve (9) to SKK-20 test coupling (15) fitted to the regulator
- Connect gauge + adaptor (7) to charging valve (H)
- Connect one end of the gas hose to the SKK test coupling (L) on the charging head (8)
- Connect remaining gas hose end to the charging valve connection (I)
- Ensure the tee handle on the charging head (8) is screwed back fully (turn anti-clockwise).
- Fit the charging head (8) to the gas valve on the accumulator. Be sure to not to overtighten.
- To open the gas valve fitted to the accumulator, slowly turn the tee handle on the charging head (8) clockwise until a slight resistance is felt. Further rotation of the tee handle at this point might cause damage to the gas valve.
- Ensure that the bleed valve (K) is open so that some of the gas from the nitrogen gas source can be vented to air initially.
- Slightly open the valve on the nitrogen gas source until a small amount of gas can be heard coming from the bleed valve (K)
- After approx. 20 seconds slowly close the bleed valve (K), allow pressure to increase
- Slowly increase the pressure from the nitrogen gas source by opening its valve until the indicated pressure increases to the desired setting. Wait until temperature and pressure are stable, and if needed increase the pressure again to the required setting. When the pre-charge pressure (P0) is reached and stabilised, close the valve of the nitrogen gas source
- Close the gas valve fitted to the accumulator by turning the tee handle on the charging head (8) fully anti-clockwise. Open the bleed valve (K) to drain any residual pressure remaining in the charging head (8), bleed valve (9) and the gas hose (10).

⚠ **Important:** Do not over depress the gas valve fitted to the accumulator as this may result in a damaged gas valve.

⚠ **Important:** Do not over tighten the charging head (8) when fitting to the accumulator gas valve

⚠ **Important:** Do not attempt to remove the hose assembly from the fittings (I) or (L) whilst pressure is still monitored on the gauge (7)

⚠ **Important:** Do not attempt to remove the bleed valve (9) by removing the test coupling (J) whilst pressure is still monitored on the gauge (7)

Maintenance of the STA-CK Bleed valve (9)

It is recommended to check the various connections and adaptors at regular intervals for cleanliness, detection of possible defects, thread wear and sealing parts.

Please contact your local STAUFF office for further information.

⚠ Only use “gas approved" test hose

⚠ For use with nitrogen (N_2) gas only

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⚠ STAUFF pressure gauges are safety pattern type according to AS1349

Gas Pressure Change According to Temperature Variation

Basis of Calculation

$$P0\ t2 = P0\ t1 \times \frac{t2 + 273}{t1 + 273}$$

t2 = Operating Temperature
t1 = Temperature = 20°C / 68°F

Value of the nitrogen gas inflation pressure (P0) according to the operating temperature (t2)
Example: Inflation pressure (P0) at operating temperature t2 in bar (absolute value) = 88 bar

173	183	186	193	200	207	214	221	227	234	241	248	255	261	268
164	171	177	184	190	197	203	210	216	222	229	235	242	248	255
155	162	168	174	180	186	192	198	205	211	217	223	229	235	241
147	153	158	164	170	176	182	187	193	199	205	211	216	222	228
138	144	149	155	160	166	171	176	182	187	193	198	204	209	215
130	135	140	145	150	155	160	165	171	176	181	186	191	196	201
121	126	130	135	140	145	150	154	159	164	169	173	178	183	188
112	117	121	126	130	134	139	143	148	152	157	161	166	170	174
104	108	112	116	120	124	128	132	136	141	145	149	153	157	161
95	99	103	106	110	114	118	121	125	129	133	136	140	144	148
91	94	98	101	105	109	112	116	119	123	127	130	134	137	141
86	90	93	97	100	103	107	110	114	117	120	124	127	131	134
82	85	89	92	95	98	102	105	108	111	115	118	121	124	127
78	81	84	87	90	93	96	99	102	105	108	112	115	118	121
73	76	79	82	85	88	91	94	97	100	102	105	108	111	114
69	72	75	77	80	83	86	88	91	94	96	99	102	105	107
65	67	70	72	75	78	80	83	85	88	90	93	96	98	101
60	63	65	68	70	72	75	77	80	82	84	87	89	92	94
56	58	61	63	65	67	69	72	74	76	78	81	83	85	87
52	54	56	58	60	62	64	66	68	70	72	74	76	78	81
48	49	51	53	55	57	59	61	63	64	66	68	70	72	74
43	45	47	48	50	52	53	55	57	59	60	62	64	65	67
39	40	42	43	45	47	48	50	51	53	54	56	57	59	60
35	36	37	39	40	41	43	44	45	47	48	50	51	52	54
30	31	33	34	35	36	37	39	40	41	42	43	45	46	47
26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
22	22	23	24	25	26	27	28	28	29	30	31	32	33	34
17	18	19	19	20	21	21	22	23	23	24	25	26	26	27
13	14	14	15	15	16	16	17	17	18	18	19	19	20	20
8.6	9	9.3	9.7	10	10	11	11	11	12	12	12	13	13	13
4.3	4.5	4.7	4.8	5	5.2	5.3	5.5	5.7	5.9	6	6.2	6.4	6.5	3.7
-20	-10	0	10	20	30	40	50	60	70	80	90	100	110	120

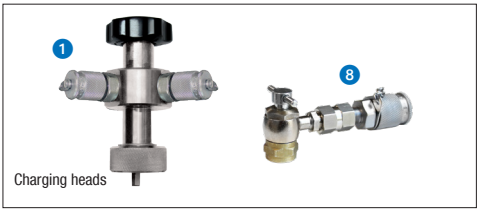
Example:

Nitrogen gas inflation pressure (P0) at 20°C / 68°F (absolute value) = 80 bar

Example:

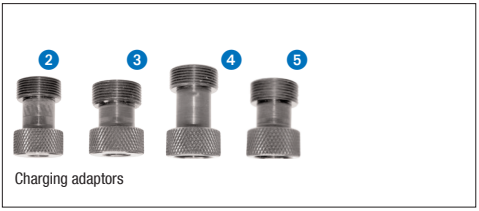
Operating temperature t1 = 50°C / 122°F

Component Contents (refer page 16 & 17 for kit component layout)



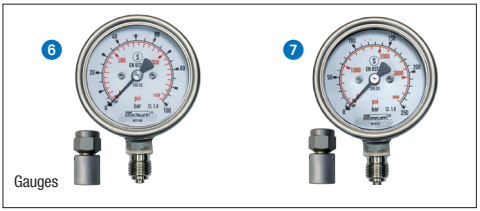
Charging heads

No.	Item No.	Designation
1	3426010190	STA-CK-CHRG-HEAD-M28
8	6100156902	STA-CK-CHRG-HEAD-0.305-SKK20



Charging adaptors

No.	Item No.	Designation
2	3426010223	STA-CK-ADP-M28-1/4
3	3426010220	STA-CK-ADP-M28-5/8
4	3426010852	STA-CK-ADP-M28-7/8L
5	3426010215	STA-CK-ADP-M28-7/8S

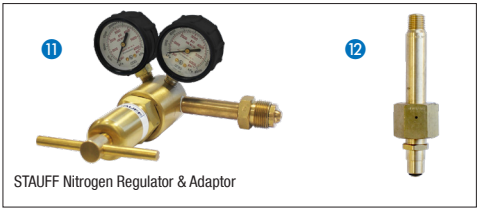


Gauges

No.	Item No.	Designation
6	6100161936 - Gauge 1210026219 - SMD	SPG-063-00100-01-S-B04-490179 SMD-20-G1/4-B-OR-W3
7	6100161938 - Gauge 1210026219 - SMD	SPG-063-00250-01-S-B04-490179 SMD-20-G1/4-B-OR-W3

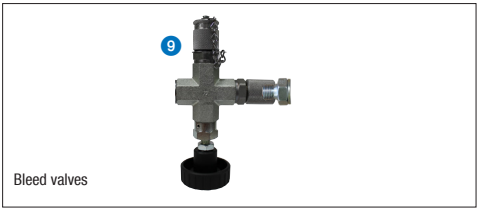
Accessories

No.	Item No.	Designation
10	6100017542	SGS-20/B1/4-2000-C-W3
13	3499000031	CK-GOGGLES-S
14	1930020934	CK-HEX-TOOL-06
15	1210026178	SKK-20-1/4NPT-B-D-W3



STAUFF Nitrogen Regulator & Adaptor

No.	Item No.	Designation
11	6100206346	STA-NR-400-300-T51-400S-400S-G04
12	6100065980	STA-N2-ADP-M07-50-N04



Bleed valves

No.	Item No.	Designation
9	6100011999	STA-CK-CHRG-HEAD-SKK-20

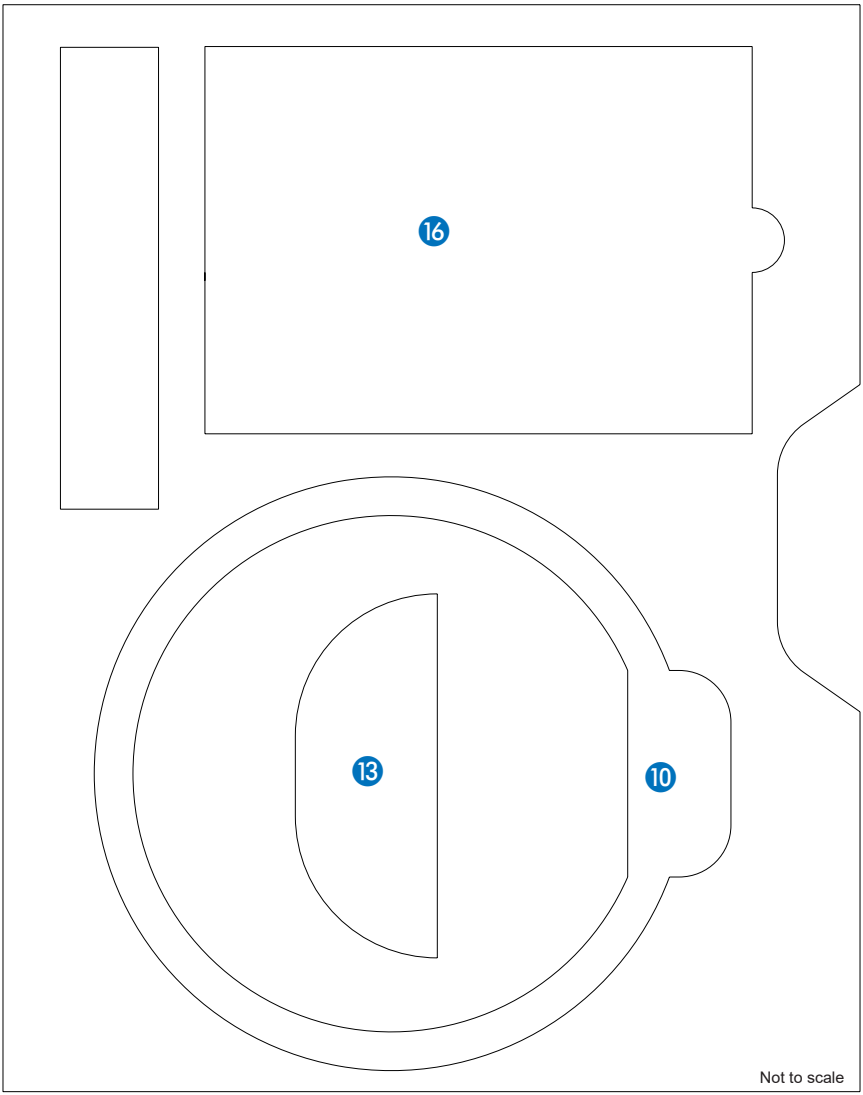
⚠ Only use “gas approved" test hose

⚠ For use with nitrogen (N_2) gas only

⚠ Safety goggles must be worn at all times

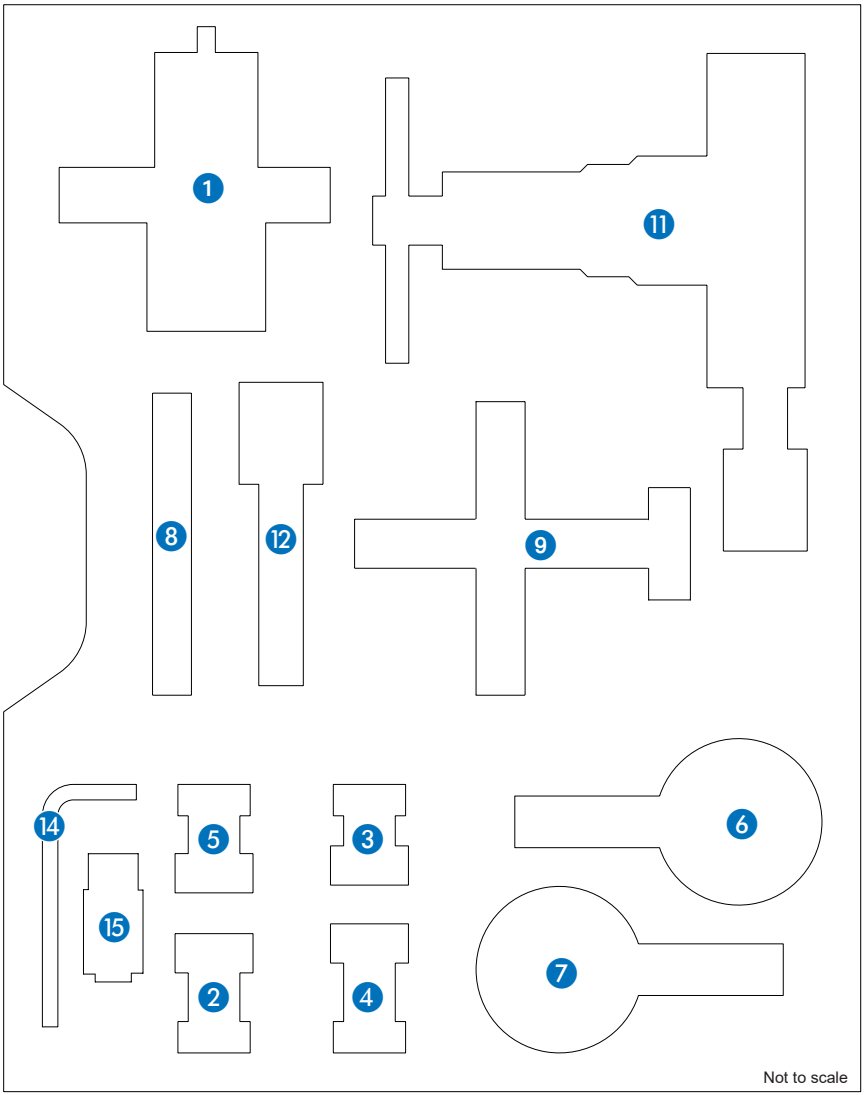
⚠ STAUFF pressure gauges are safety pattern type according to AS1349

Component Layout - Case Lid



No.	Item No.	Designation
10	6100017542	SGS-20/B1/4-2000-C-W3
13	3499000031	CK-GOGGLES-S
16	6100321969	STA-CK-INST-M07-R1

Component Layout - Case Base



No.	Item No.	Designation
1	3426010190	STA-CK-CHRG-HEAD-M28
2	3426010223	STA-CK-ADP-M28-1/4
3	3426010220	STA-CK-ADP-M28-5/8
4	3426010852	STA-CK-ADP-M28-7/8L
5	3426010215	STA-CK-ADP-M28-7/8S
6*	6100161936	SPG-063-00100-01-S-B04-490179
7*	6100161938	SPG-063-00250-01-S-B04-490179

No.	Item No.	Designation
8	6100156902	STA-CK-CHRG-HEAD-0.305-SKK20
9	6100011999	STA-CK-CHRG-HEAD-SKK-20
11	6100206346	STA-NR-400-300-T51-400S-400S-G04
12	6100065980	STA-N2-ADP-M07-50-N04
14	1930020934	CK-HEX-TOOL-06
15	1210026178	SKK-20-1/4NPT-D-W3
* 6 & 7 include: 1210026219 - SMD-20-G1/4-B-OR-W3		

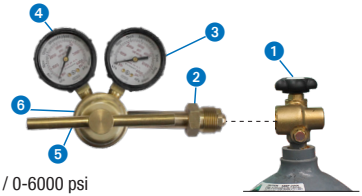
Read the following instructions carefully before using the pressure regulator. The instructions provide all the information necessary for correct use of the instrument, to avoid, misuse, modification, damage and danger.

The information contained herein is provided to assist the operator in the safe use of RGN series Nitrogen Regulator. However, the ultimate responsibility for the safe use of this and any attached equipment lies solely with the operator, including any requirements of associated Australian Standards

Technical Details

Nitrogen 6000

Gas:	N2	**Inlet Pressure (kPa):**	40,000
Colour:	Blue	**Outlet Pressure (kPa):**	30,000
ID:	N	**Max. Delivery Flow Rate (m³/h):**	50
K-Class:	-	**Gauge Scale:**	0-40,000 kPa / 0-6000 psi



1. Function

- The function of the pressure regulator is to reduce and stabilize the pressure of a gas; the regulator changes the pressure at which the gas is kept in the cylinder into the pressure needed to use for the application.
- The pressure regulator has been designed so as to be used only and exclusively with the type of gas and at the pressures which are shown by the pressure gauge marking.
- Use the pressure regulator with Nitrogen Gas (N2) gas only.

⚠ Incorrect use of the pressure regulator can cause serious damage. Users must be trained by competent people.

⚠ The pressure regulator must be treated as a precision instrument. Protect it from accidental knocks, dust, oil and other sources of dirt.

⚠ Do not use the pressure regulator if it is not in perfect working condition (see 5.1).

⚠ When you draw gas, the cylinder must be placed upright and protected from falling.

2. Assembly

2.1 Connection of the Pressure Regulator

- Check that the pressure regulator is correct both for the type of gas and the pressure in the cylinder in use.
- Turn the pressure adjusting screw (5) anticlockwise, to check that the pressure regulator valve is closed.
- Before screwing on the pressure regulator, briefly open the cylinder valve (1) then close to remove any impurity, in case using compressed air. Pay attention to direct the cylinder outlet towards a wall and far from heating sources.
- During this operation it is dangerous to stand, or place your hands in front of the cylinder valve (1).
- Position the pressure regulator with the gauges the right way up.
- Screw the inlet connection (2) tightly to the cylinder valve, by hand then tighten using a spanner.

3. Instructions for Use

3.1 Opening

- Slowly open the cylinder valve (1). The high pressure gauge (3) will show you the cylinder pressure.
- Opening the cylinder valve too quickly may make gauges malfunction.
- Ensure the regulator output connection (6) is connected via a hose to the STAUFF charge head (item 1 page 13).
- Open the pressure adjusting screw (5) very slowly. The low pressure gauge (4) will show the outlet pressure.

Refer to STAUFF Universal Charge kit instructions for further information regarding pre-charging accumulators (page 2).

⚠ Before opening the cylinder valve (1), check carefully that the regulator is completely closed (turn the pressure adjusting screw (5) anticlockwise).

3.2 How to Regulate Pressure

- To increase pressure: slowly turn the regulator pressure adjusting screw (5) clockwise.
- To decrease pressure: slowly turn the regulator pressure adjusting screw (5) anticlockwise.

⚠ Using the pressure adjusting screw (5) it is possible to compensate an eventual pressure drop.

⚠ Outlet pressure must not be regulated higher than the pressure you need to use when flowing.

3. Instructions for Use (continued)

3.3 Closing

- Close the cylinder valve (1).
- Release the gas until the regulator gauges indicate “zero”.
- Turn the pressure adjusting screw (5) anticlockwise until a noticeable decrease in spring tension, then, allow an additional two full turns.

4. Storage

- The pressure regulator must be treated as a precision instrument.
- When the pressure regulator is not to be used for long periods, store it in its wrapping or in its box, to prevent contact with dust, oil and other sources of dirt.

5. Maintenance

⚠ **Note:** Any repairs to regulators must be done with genuine parts by a qualified technician.

- Do not carry out maintenance or repairs, other than the following.
- Spare gauges are available also from your supplier.
- In case of failures which cannot be repaired following these instructions, take your pressure regulator back to the supplier.
- Do not clean gauge glasses with petrol, solvents or any other kind of detergent.

5.1 Malfunctioning

- In case of malfunction (e.g. leaks in the gauges or in the relief valves) stop use and close the cylinder valve (1) immediately.
- Unless there is visible damage to the outside of the instrument, we suggest that the pressure regulator be returned to the supplier to be checked and repaired.

⚠ **Do not use the pressure regulator if there are the following malfunctions:**

⚠ The pressure regulator or any of its parts (gauge, inlet connection, outlet connection) are damaged or dirty, oily etc.

⚠ There are any leaky connections.

⚠ The relief valve adjustment has been modified or the valve leaks.

5.2 Relief Valve

- For safety reasons, the pressure regulator is equipped with an excess pressure valve.
- In case of malfunctioning, this valve allows the excess gas pressure to vent.

⚠ Do not modify the calibration of the relief valve. This is preset by the supplier.

5.3 Checking the Seal

- This check must be carried out only in the open air: use either soapy water or a gas leak detector. Do not use flames.
- Spray detector on the area to be checked.
- The forming of bubbles or foam is a sign of a leak

6. Instructions for Disposal

- Dispose of the regulator in accordance with local requirements.

7. Managing Faults

Problem	Cause	Solution
Cannot connect to the cylinder	Incorrect inlet connection	Only use correct cylinder connection for the gas type 50 or 51 adaptor from AS 2473.2
	Inlet connection damaged	Replace the inlet connection with a genuine part
Insufficient gas flow	Regulator undersized	Contact supplier
	Blocked or damaged equipment downstream	Replace the equipment

Problem	Cause	Solution
Gas Leak	Connection error	Release the control knob, tighten the connections and re-check. Apply pressure again, if leak persists, repair or replace.
Increase in output pressure, when not flowing.	Leak through the regulator seat valve	Replace regulator
Unstable output pressure.	Flow rate too high	Check the flow of the regulator matches the requirement.

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