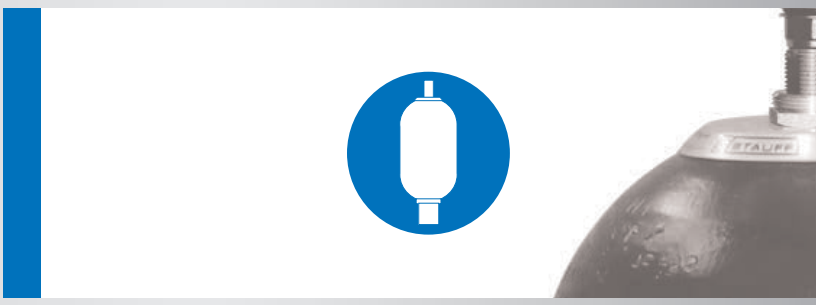
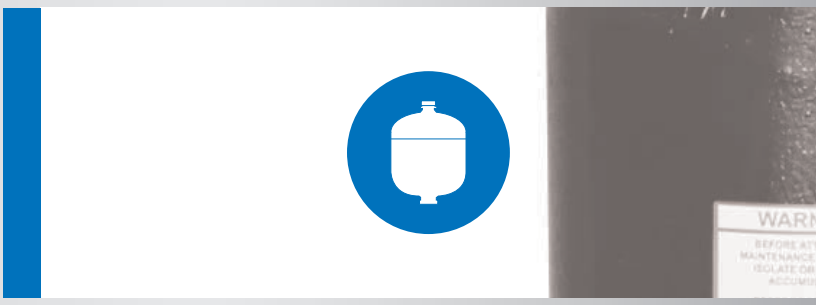
STAUFF®

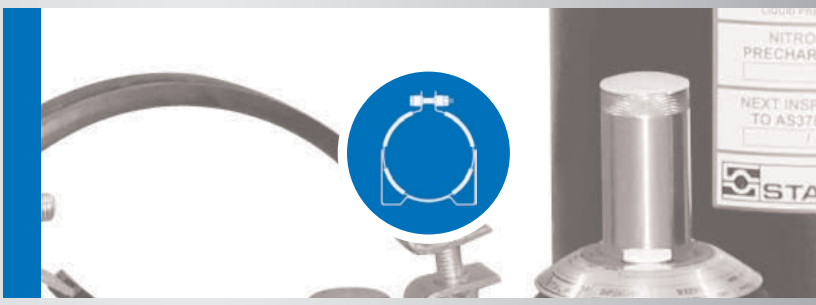
Bladder Accumulators



Diaphragm Accumulators

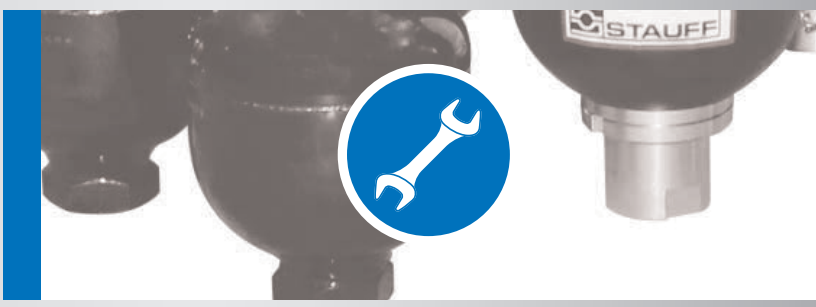


Accumulator Accessories



Pre-charging and Testing Equipment

Servicing and Maintenance



Catalogue 10.1

STAUFF Accumulators

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STAUFF products and services are globally available through wholly-owned subsidiaries and a tight network of authorised distributors and representatives in all major industrial regions of the world.

You can find detailed contact information on the back cover of this product catalogue or at www.stauff.com

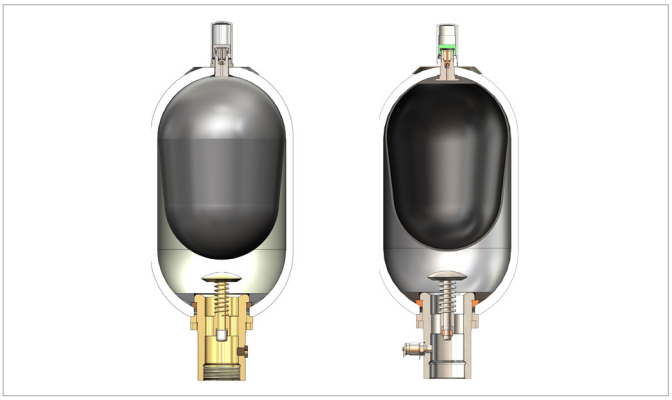
Accumulators

Product Description

STAUFF's range of hydraulic accumulators are designed to store energy, regulate the performance and enhance the operational efficiency of hydraulic systems. Available in a comprehensive range of sizes, materials, port configurations and pressure ratings, STAUFF accumulators are suitable for pressure storage, backup energy for emergency and safety functions, absorbing hydraulic shock, noise reduction, and dampening pump pulsations and fluctuations. STAUFF accumulators also provide excellent gas and fluid separation, ensuring dependable performance, maximum efficiency and an increased service life of machinery.

STAUFF Accumulator Advantages

STAUFF's range of accumulators have been designed to include additional benefits and features for modern mobile and stationary hydraulic systems.
These include:



Bladder Accumulators

▪ Gas valves	STAUFF offer a range of gas valves to suit different applications and customer requirements
▪ Dual design approval	STAUFF accumulators have both Australian (AS1210) and International (ASME) approvals
▪ Bleed valve	STAUFF offer a fluid port with a STAUFF test coupling at the bleed valve > 4 Litres
▪ Flat face seal connection	STAUFF offer a fluid port with a standard BSPP flat face seal connection

STAUFF Test Coupling Gas Valve

STAUFF test coupling gas valves are exclusive only to STAUFF accumulators for checking gas pressure pre-charge.

▪ Easy connection	Allows easy connection of other equipment using a STAUFF test coupling without having to use special manifolds; therefore reducing the risk of potential leakage points
▪ Easy removal	Accessory equipment connected to the gas valve can be easily removed without needing to drain the pre-charge from the accumulator
▪ Checking pre-charge (without the need for a charging kit)	Exclusive accumulator gas valve test coupling allows for pre-charge checking using a STAUFF safety pattern pressure gauge and direct gauge adaptor; therefore a charging kit is not required
▪ Permanent gauge mounting	Mounted on to the accumulator gas valve a gauge and gauge adaptor can be easily attached

AS1349 Safety pattern pressure gauge

STAUFF PT-RF Wireless Pressure Tester

STAUFF PT-RF wireless pressure tester has been developed to measure and record temperature and pressure data without the use of a gauge or charge kit.

▪ Test multiple accumulators	Each PT-RF sensor has a unique identifiable serial number therefore each accumulator can be logged separately using the one PT-RF reader
▪ Data storage	The PT-RF Reader can store over 15,000 measurement recordings (recording pressure and temperature data)
▪ No power required	The measurement recordings are delivered from the PT-RF transmitter to the PT-RF reader using RFID technology therefore the pressure transmitter requires no internal or external power supply
▪ Quick and easy to use	The PT-RF transmitter is activated by the press of a button and the measured value is determined within only 0.5 seconds. A maximum distance of only 1.5 cm is required from the antenna to the tip of the PT-RF transmitter for the duration of the measurement
▪ Checking pre-charge (manually with a gauge)	The PT-RF transmitter is easily removed without draining the accumulator pre-charge when installed with a STAUFF Permanent Charging Head (as required to check the pre-charge pressure with a gauge)

Permanent Charging Head

STAUFF Permanent Charging Heads allow auxiliary equipment such as a gauge or PT-RF sensor to be fitted to the gas side for both STAUFF Bladder (STBA) and Diaphragm (STDA) accumulators, so the pre-charge pressure can be monitored without the use of a charging kit.

Refer to page 35 - 37 for more information.

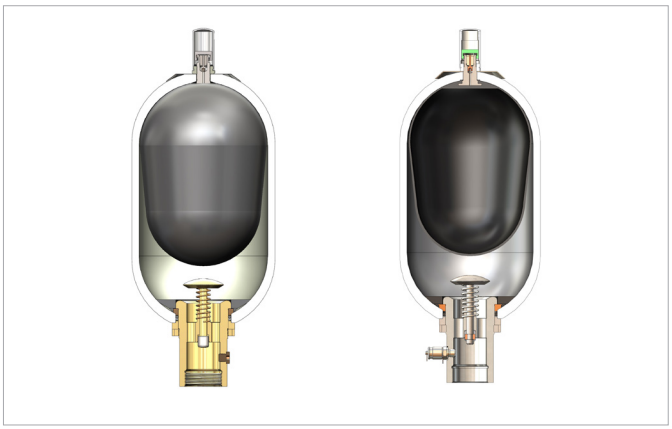
Integrated Gas Valve and Gauge - Option T

STAUFF US Style Gas Valve and Pressure Transmitter - Option Y

Hydraulic Accumulators

Bladder Accumulators

Bladder accumulators operate as a hydraulic spring by using the system hydraulic fluid to compress nitrogen gas stored in the accumulator. The gas and system fluid are separated by a rubber bladder containing nitrogen gas. When the system's hydraulic pressure becomes greater than the nitrogen gas pre-charge pressure, the system fluid enters the accumulator. The fluid is then stored as potential energy inside the accumulator, due to the compressibility of the gas. When the system fluid pressure drops, the nitrogen gas pressure expands and delivers the fluid stored in the accumulator back to the system. Operating pressures of up to 400 bar enables a liquid under pressure to be accumulated, stored and recovered at any time.



Bladder accumulators consist of:

- Forged steel shell (pressure vessel)
- Bladder (pressurised with nitrogen gas)
- Gas valve (used to charge the accumulator with nitrogen gas)
- Fluid port (incorporating a poppet valve to enable connection of the accumulator to the hydraulic system)
- Poppet valve (to prevent the bladder from being extruded)

Diaphragm Accumulators

Diaphragm accumulators operate in a similar way to bladder accumulators, however they are supplied assembled as a welded vessel with a pre-installed rubber diaphragm. In comparison to bladder accumulators, diaphragm accumulators are normally manufactured to a lower design pressure.

The benefits of STAUFF's diaphragm accumulators are based on the considerable difference in compressibility between a gas and a liquid, enabling a large quantity of energy to be stored in an extremely compact form. Operating pressures of up to 350 bar enables a liquid under pressure to be accumulated, stored and recovered at any time.

Diaphragm accumulators consist of:

- Full seam welded construction
- Diaphragm
- Fluid port
- Gas valve connection incorporating a standard hexagon key valve to suit a range of optional adaptors

Operating Principles

Stage A

The unit contains no nitrogen gas pre-charge pressure and no hydraulic pressure.

Stage B

The unit is pre-charged with nitrogen gas to the correct pressure (P0). At this stage the gas volume is the same as the effective volume of the accumulator (V0).

Stage C

Upon the hydraulic system pressure exceeding the pre-charge (P0), the bladder / diaphragm is then compressed and hydraulic oil starts to flow into the accumulator. When the hydraulic system pressure peaks or reaches the maximum desired pressure (P2), the accumulator is then filled with oil according to the design capacity. The nitrogen gas has been compressed and the gas volume is now (V2).

Stage D

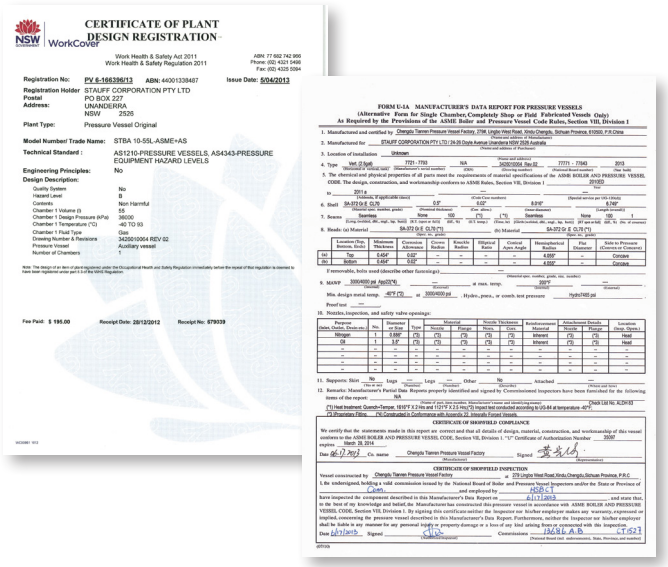
Hydraulic system pressure falls and the nitrogen gas expands forcing the stored hydraulic oil back into the hydraulic circuit. The minimum operating pressure of the hydraulic circuit is reached (P1). The accumulator has discharged its stored volume down from the maximum pressure (P2) to the minimum pressure (P1).

Certifications

Accumulators are pressure vessels that can be subject to extreme operating conditions, large pressure and temperature variations, rapid cycles and aggressive environments.

Pressure vessels are regulated through their design worldwide in order to ensure that they are safe. Major accumulator designs are ASME, PED CE, AS1210 and GB/T.

Most design codes are specific to the region or country where the accumulator is manufactured. However, in some cases where machinery is exported, the design code may not be recognised in the region or country of import. In this case, it is the responsibility of the importer and end user to ensure that the accumulator meets the requirements of local law and vessel design requirements.



CERTIFICATE OF PLANT DESIGN REGISTRATION

Work Health & Safety Act 2011
Work Health & Safety Regulation 2011

Registration No: PV 6-166396/13 ABN: 44001338467 Issue Date: 5/04/2013

Registration Holder: STAUFF CORPORATION PTY LTD
Postal: PO BOX 227
Address: UNANDERRA NSW 2526

Plant Type: Pressure Vessel Original

Model Number/ Trade Name: STBA 10-55L-ASME+AS

Technical Standard: AS1210-PRESSURE VESSELS, AS4343-PRESSURE EQUIPMENT HAZARD LEVELS

Engineering Principles: No

Design Description:

Quality System	No
Hazard Level	B
Contents	Non Harmful
Chamber 1 Volume (l)	55
Chamber 1 Design Pressure (kPa)	36000
Chamber 1 Temperature (°C)	-40 TO 93
Chamber 1 Fluid Type	Gas
Drawing Number & Revisions	342001/0004 REV 02
Pressure Vessel	Auxiliary vessel
Number of Chambers	1

Fee Paid: $ 195.00 Receipt Date: 28/12/2012 Receipt No: 879339

FORM U-1A MANUFACTURER'S DATA REPORT FOR PRESSURE VESSELS
(Alternative Form for Single Chamber, Completely Shop or Field Fabricated Vessels Only)
As Required by the Provisions of the ASME Boiler and Pressure Vessel Code Rules, Section VIII, Division 1

1. Manufactured and certified by Chengdu Tiamen Pressure Vessel Factory, 3788, Lingbo West Road, Xindu Chengdu, Sichuan Province, 610500, P.R.China
2. Manufactured for STAUFF CORPORATION PTY LTD / 24-26 Doyle Avenue Unanderra NSW 2526 Australia
3. Location of Installation Unknown
4. Type Vert. (2 Sph) 7721 - 7753 N/A 2626/2014 Rev.02 7771 - 7840 3010
5. The chemical and physical properties of all parts meet the requirements of material specifications of the ASME BOILER AND PRESSURE VESSEL CODE. The design, construction, and workmanship conforms to ASME Rules, Section VIII, Division 1 2010ED
to 2011a
6. Shell SA-372 Gr.E CL70 0.5" 0.02" 8.016" 6.749"
7. Seams Seamless None 100 (%) (%) Seamless None 100 1
8. Heads: (a) Material SA-372 Gr.E CL70 (*1) (b) Material SA-372 Gr.E CL70 (*1)

	Location (Top, Bottom, etc.)	Minimum Thickness	Corrosion Allowance	Crown Radius	Knuckle Radius	Elliptical Ratio	Conical Apex Angle	Hemispherical Radius	Flat Diameter	Side to Pressure (Convex or Concave)
(a)	Top	0.454"	0.02"	–	–	–	–	4.055"	–	Convex
(b)	Bottom	0.454"	0.02"	–	–	–	–	4.055"	–	Convex

9. MAWP 3000/4000 psi Ap(CCTV) — @ max. temp. 200°F
Min. design metal temp. -40°F (*2) @ 3000/4000 psi Hydro, pneu., or comb. test pressure Hydro7485 psi
Proof test —

10. Nozzles, Inspection, and safety valve openings:

Purpose (Inlet, Outlet, Drain, etc.)	No.	Diameter or Size	Material Type	Material Nozzle	Material Flange	Nozzle Thickness Nozz.	Nozzle Thickness Corr.	Reinforcement Material	Attachment Details Nozzle	Attachment Details Flange	Location (Shell, Dome)
Nitrogen	1	0.886"	(*3)	(*3)	(*3)	(*3)	(*3)	Inherent	(*3)	(*3)	Head
Oil	1	3.0"	(*3)	(*3)	(*3)	(*3)	(*3)	Inherent	(*3)	(*3)	Head
–	–	–	–	–	–	–	–	–	–	–	–
–	–	–	–	–	–	–	–	–	–	–	–
–	–	–	–	–	–	–	–	–	–	–	–

11. Supports: Skirt No Legs — Lugs — Other No Attached —
12. Remarks: Manufacturer's Partial Data Reports properly identified and signed by Commissioned Inspectors have been furnished for the following items of the report: N/A
(*1) Heat treatment: Quench+Temper, 1810°F X 2 hrs and 1121°F X 2.5 Hrs(*2) Impact test conducted according to UG-84 at temperature -40°F.
(*3) Proprietary Filling. (*4) Constructed in Conformance with Appendix 22, Integrally Forged Vessels.

CERTIFICATE OF SHOP/FIELD COMPLIANCE

We certify that the statements made in this report are correct and that all details of design, material, construction, and workmanship of this vessel conform to the ASME BOILER AND PRESSURE VESSEL CODE, Section VIII, Division 1. "U" Certificate of Authorization Number 28260 expires March 26, 2014
Date 6-17-2013 Co. name Chengdu Tiamen Pressure Vessel Factory Signed (Representative)

CERTIFICATE OF SHOP/FIELD INSPECTION

Vessel constructed by Chengdu Tiamen Pressure Vessel Factory at 3788 Lingbo West Road, Xindu Chengdu, Sichuan Province, P.R.C
I, the undersigned, holding a valid commission issued by the National Board of Boiler and Pressure Vessel Inspectors and/or the State or Province of Cabin and employed by ASME C.I. have inspected the component described in this Manufacturer's Data Report on 6/17/2013 and state that, to the best of my knowledge and belief, the Manufacturer has constructed this pressure vessel in accordance with ASME BOILER AND PRESSURE VESSEL CODE, Section VIII, Division 1. By signing this certificate neither the Inspector nor his/her employer makes any warranty, expressed or implied, concerning the pressure vessel described in this Manufacturer's Data Report. Furthermore, neither the Inspector nor his/her employer shall be liable in any manner for any personal injury or property damage or a loss of any kind arising from or connected with this inspection.
Date 6/17/2013 Signed (Authorized Inspector) Commissions IA&E.B.A.B. 6152 (National Board (incl. endorsements), State, Province, and number)

Australian Design Code Standard - AS1210

For Australia and New Zealand the pressure vessel design code is AS1210. Accumulators for service in Australia, pressure vessels with a hazard level of A,B,C and D (according to AS4343) must be design registered with a State work safe authority.

AS4343 specifies the hazard level of a pressure vessel into categories A through to D based on design pressure MPa x Volume (Litres) and design temperature.

Some work safe authorities currently recognise overseas standards such as ASME, PED and CE, however the design still needs to be verified and then registered by the local authority.

In Australia, once accumulators are design registered they then need to have regular inspections in order to ensure that the equipment remains safe. AS3788 outlines guidelines with regard to pressure vessel in service inspections.

According to Australian law each pressure vessel that is design registered should be marked or stamped with the design registration number. In the case of AS1210, design registration AS1210 must also be stamped on the vessel. It is important to understand that local laws are designed to ensure safety when operating and servicing hydraulic accumulators. If laws are followed the potential risk of failure or harm is minimised.

ASME Design

ASME (American Society of Mechanical Engineers) is an organisation that regulates the design and manufacture of pressure vessels. Accumulators are classified under the category 'unfired pressure vessels' and fall under the jurisdiction of the ASME boiler and pressure vessel code.

Accumulators specifically fall under the section of the code which refers to Section VIII Division 1. This section requires certification on vessels with an internal diameter greater than 152 mm (6 in) and with the 'U' stamp as evidence that the vessel has been manufactured in accordance with the ASME design code.

The basic requirement of the ASME code is one of design strength and traceability. Accumulators must be manufactured with materials that meet the requirement of the code and safety factor. Appendix 22 in the code allows for a reduction in the safety factor especially for hydraulic accumulators that have been manufactured with a forged shell.

Under the ASME code, each manufactured batch of accumulator shells are to be registered with the USA national board of inspectors using form U1a.

Applications

General

Accumulators are used in many different applications, providing energy savings through a reduction of equipment operating costs, and offering increased reliability and performance of system components.

Accumulator Application Examples

Reduction in Installed Power

In the case of a system that has a variable demand for oil, a hydraulic accumulator can be used to reduce installed power by supplementing pump flow and therefore allowing a smaller pump and drive motor to be used.

Emergency Operation

Used in systems when something needs to be operated without the use of power or electricity:

- Braking systems
- Power steering systems
- Lubrication systems
- Systems for closing or opening a gate
- Rapid closure of oil and gas valves

Leakage Compensator

Compensates for losses in a hydraulic system due to internal or external leakage that might occur over an extended period, and reduces the operational frequency of the pump.

Hydraulic Spring

Used in suspension systems and transport vehicles to enhance operator comfort level. Fitted to crusher and roller press systems in order to maintain a required force whilst allowing for a variation in material density and thickness.

Hydraulic Shock Absorber

Eliminate shock (fluid hammer) in hydraulic systems caused through fast closing valves.

Hydraulic Separator

When two separate fluids must interact in the same hydraulic system an accumulator can function as a separator.

Thermal Expansion

Thermal expansion in pipelines can be caused by temperature changes and can lead to induced pressures that result in pipe failures and leakages. Accumulators can be used as thermal compensator's to prevent damage to pipe-work.

High-Speed Actuation

Accumulators have the capacity to produce high flow rates for short periods of time, particularly in the case of accumulator stations. They are often used in applications such as die casting and injection moulding.

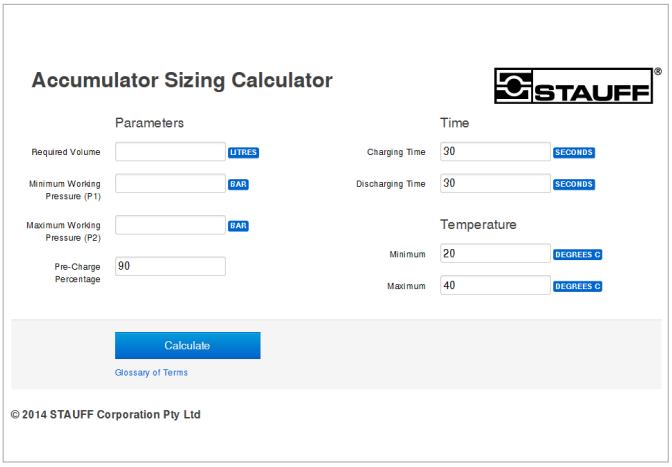
Accumulator Selection and Sizing

The following factors should be considered when selecting an accumulator to optimise operating efficiency and equipment service life:

▪ Required volume:	The volume required to be stored in the accumulator
▪ Minimum working pressure (P1):	The minimum system pressure (or minimum load pressure) to operate the actuator
▪ Maximum working pressure (P2):	Maximum system pressure is normally controlled by a pressure switch (or in some cases a relief valve) to shut off the hydraulic pump
▪ Pre-charge pressure:	Normally 80% - 90% of minimum operating pressure (P1) or load pressure
▪Charge time:	Time in seconds to charge the accumulator with hydraulic fluid from the system (normally controlled by pump flow). In shock applications this can be the valve closure or load actuation time
▪ Discharge time:	Time to operate the actuator or valve based on the output flow rate required from the accumulator. In shock applications this can be the valve closure or load actuation time
▪ Minimum temperature:	Minimum ambient temperature
▪ Maximum temperature:	Maximum ambient temperature
▪ Effective gas volume:	Actual gas volume of the accumulator required in Litres (example: 20 Litre accumulator has an effective gas volume of 18.4 Litres). Accumulator volume selected must have an effective gas volume above that as requested by the calculation program
▪ Pre-charge pressure:	The specified pre-charge pressure at 20°C which allows for a rise in operating temperature

The following factors should also be considered when selecting an accumulator:

- Cycle time
- Fluid type
- Flow rate
- Maximum design pressure
- Operating frequency
- Shock suppression
- Certification requirements



Accumulator Sizing Calculator:

Visit http://accumulatorsizing.stauff.com.au for STAUFF's accumulator sizing calculator or contact STAUFF for more information.

Accumulator Pre-charge

Accumulators must first be pre-charged with nitrogen gas to the correct pressure before the accumulator can be operated in a hydraulic system. This is imperative in order to achieve a long service life and optimum operational performance of the system.

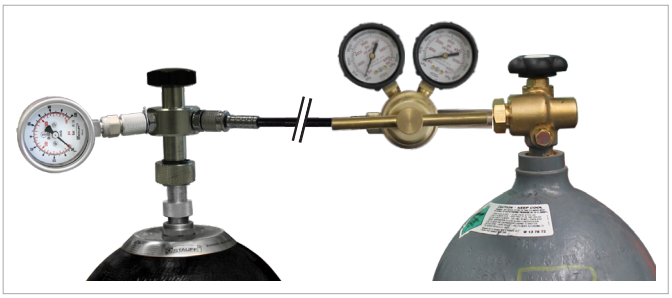
Pre-charge pressure determines the amount of fluid still retained in the accumulator at minimum operating pressure. This is important so that the bladder / diaphragm does not cycle on the bottom of the accumulator at minimum operating pressure. In a typical storage application where the minimum and maximum pressures are always defined, the pre-charge gas pressure should be set to 80 - 90% of the minimum operating pressure at operating temperature. If the pre-charge pressure is set too low then this will result in a reduction of usable gas volume and reduced stored capacity. This could also lead to a reduction in bladder life.

Accumulators lose some pre-charge after a period of time. The loss of the nitrogen gas through the bladder or diaphragm is called gas permeation. The effects of gas permeation can be varied depending on the particular application. In some applications, the loss of pre-charge can be quite dramatic over several months, whilst in others, there is little or no effect over the same period of time.

The gas permeation rate is affected by several factors, primarily:

- Cycle time
- Temperature
- Stored volume
- System oil capacity / tank volume

When an accumulator is first installed in a hydraulic system it is important that the pre-charge pressure be monitored initially. STAUFF recommend that the pre-charge gas pressure be inspected after 1 month, 3 months and 6 months. Depending on the results of the pressures recorded, a scheduled program of checking the pre-charge gas pressure can then be introduced.



Mounting

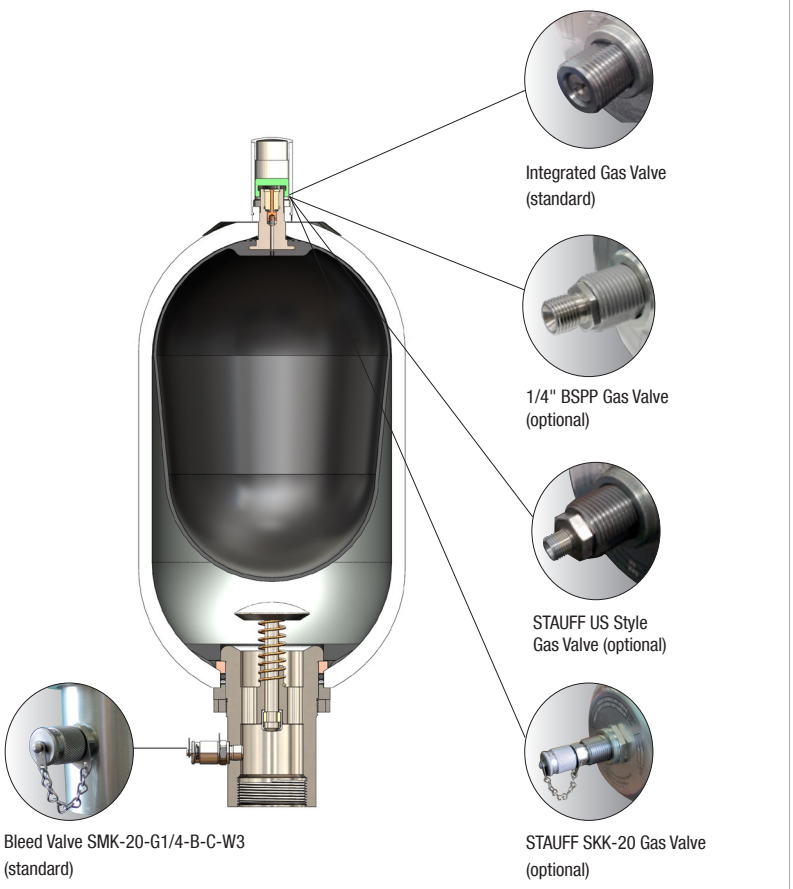
The optimum mounting position for an accumulator is the vertical position with the oil port mounted at the bottom. Bladder accumulators can be mounted in the horizontal position, however it is not recommended as it may result in a slight reduction in stored capacity, and in cases of high cycle or rapid discharge applications a reduction in bladder life may be experienced. In cases where it is not possible to mount the accumulator vertically, contact STAUFF to verify suitability.

Note: Diaphragm accumulators are less affected by horizontal mounting due to the nature of their design and smaller size.

Refer to pages 38 - 39 for mounting accessories.


WARNING
STAUFF
WARNING
BEFORE ATTEMPTING MAINTENANCE ON SYSTEM, ISOLATE OR EXHAUST ACCUMULATOR.
BEFORE REMOVAL OF ACCUMULATOR, EXHAUST LIQUID PRESSURE.
NITROGEN PRECHARGED TO
BAR
NEXT INSPECTION TO AS3788 DUE
/
STAUFF
WARNING
NITROGEN PRECHARGED TO

Bladder Accumulator Assemblies
Type STBA



Fluid Port
BSPP Female Flat Face
(standard)

Fluid Port
1-1/2" SAE Code 62
(optional)

Product Description

STAUFF bladder accumulator assemblies consist of three key components; shell, bladder, fluid port assembly, and are available in sizes 1 - 55 Litres with pressures up to 400 bar. STAUFF bladder accumulators can be used in applications such as pulsation dampening, surge alleviation, thermal expansion and energy storage.
STAUFF bladder accumulators comply with AS1210 standards and are suitable in all states of Australia, New Zealand and are accepted throughout Asia.

Features

- Meets AS1210 and ASME VIII Div 1 specifications
- Full flow fluid port
- STAUFF Test coupling and Integrated gas valve options
- Standard Nitrile rubber high strength bladder
- High flow bladder / port design
- Bottom repairable accumulators via fluid port
- High strength chrome molybdenum / alloy steel shell
- Corrosion resistant black acrylic polyurethane coating
- 4:1 design factor at normal operating pressure
- Interchangeable with most competitors units
- Fluid port assembly high-grade steel, zinc plated
- Fluid bleed port connection supplied standard with STAUFF Test coupling
- Assembled and tested in Australia

Technical Data

- Range of connections from G3/4" to 2" BSPP and 1-1/2" SAE flange
- NBR (Buna-N®) diaphragm material (standard)
- Maximum compression ratio 4:1
- Operating temperature shell -40°C … +93°C
- Operating temperature bladder - according to material used
- Operating pressure to 360 Bar AS1210 (standard) 4000 PSI ASME APP 22 (standard)
- Capacity up to 55 Litres
- Bladder compatibility to most common fluids, refer to page 11
- Fluid bleed port connection G1/4"

Options

- Housing materials
- Fluid ports
- Gas valves
- Bladder materials
- Private branding
- Brackets, charging kits and accessories

Applications

- Mobile and stationary hydraulic systems
- Test benches
- Light and heavy industrial plants
- Transport equipment

Components and Material

Main Components	Standard Material		Material Options	
Shell	Chrome-Molybdenum Alloy Steel SA 372 - 34 CrMo4 Black RAL 9017 Acrylic Polyurethane		Internal PTFE lined shell Stainless Steel shell	
Bladder	NBR (Buna-N®)	Temperature	Material	Temperature
		-15°C ... +100°C	FKM (Viton®)	-20°C ... +140°C
			Butyl	-15°C ... +120°C
			EPDM	-40°C ... +120°C
			Hydrin (ECO)	-32°C ... +115°C
Fluid Port Assembly	Steel SCM 440 material specification with Zinc Plating		Stainless Steel 630 Grade	

Bladders

STAUFF bladder accumulators offer excellent system performance and operational life, the key component being the bladder (available in various types of elastomer). STAUFF's standard NBR (Buna-N®) range offers resistance to permeation and a wide temperature range (it is essential that the bladder selected is compatible with the fluid media and operating temperature range).

Compatibility Resistance Table

Compatibility		Mineral Oil	Aromatic - unleaded	Water glycol	Phosphates Ester (Skydrol)	High Temperature	Low Temperature	Mechanical characteristics	Permeation
0	Exceptional resistance								
1	Good resistance								
2	Average resistance								
3	Minor resistance								
4	Little or no resistance								
Shaded	Heavy duty								
NBR (Buna-N®) 28		2	3	2	4	3	1	2	4
NBR (Buna-N®) 33 (STD)		1	3	2	4	3	2	2	3
NBR (Buna-N®) 40		1	2	2	4	1	3	2	1
ECO		1	2	2	4	2	1	2	2
EPDM		4	4	1	1	2	1	3	4
BUTYL		4	4	1	2	2	2	3	2
FPM		1	1	1	4	1	3	3	4

Other materials are available on request.

Bladder Storage

Bladders are required to be stored away from direct sunlight or in the close vicinity of machinery and electrical equipment that can generate electromechanical forces. It is recommended that bladders be slightly inflated to less than 0.4 bar air pressure and stored in the original plastic packaging shipped by STAUFF (it is not recommended that they be pre-charged or slightly inflated with gas). If bladders cannot be stored slightly inflated then it is recommended that they be stored flat and not folded. If stored correctly bladders can retain their elastomer properties for a long period of time without any deteriorating effect to the elastomer. If stored inside an accumulator, bladders can remain in good condition for up to 5 years.

Gas Valve Connections

Option T

Integrated Gas Valve (standard)

Option A

1/4" BSPP Gas Valve (optional)

Option Y

STAUFF US Style Gas Valve (optional)

Option S

STAUFF SKK-20 Gas Valve (optional)

Option T
Integrated Gas Valve (standard)

The valve seats internally inside the bladder stem. Direct coupling to the bladder stem is via the 7/8–14 UNF connection. The valve cannot become loose when removing the charge head, therefore it is impossible to remove the gas valve whilst the accumulator is pre-charged.

Option A
1/4" BSPP Gas Valve

The 1/4" BSPP gas valve, used extensively in Australia, is being phased out and replaced by STAUFF's integrated gas valve.

Option Y
STAUFF US Style Gas Valve

The STAUFF US style gas valve provides a robust connection (0.305"-32 UNS 2A) as the valve seals deep inside the bladder stem (if the male connection is damaged the valve still retains its seal and prevents the loss of the nitrogen gas).

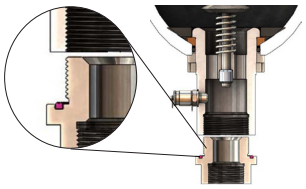
Option S
STAUFF SKK-20 Gas Valve

The STAUFF SKK-20 gas valve (gas rated) allows easy connection to the accumulator using a standard test fitting. The advantage is that the pre-charge can be checked by simply using a STAUFF safety pattern gauge fitted with a direct gauge adaptor. The safety pattern gauge and gauge adaptor can either be installed on the accumulator permanently or used to check the pre-charge during service intervals. No charge kit is required to check pre-charge pressure.

Note: Gas valve options T, A, Y and S are designed to suit STAUFF bladders only

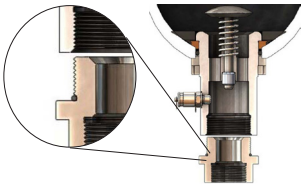
Fluid Port Connections

Option B



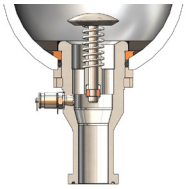
BSPP Female Connection Flat Face (standard)

Option G



BSPP Female Connection O-Ring seal (optional)

Option F



1-1/2" SAE Code 62 (optional)

Option B
BSPP Female Connection Flat Face seal (Steel)

Designed to connect a fitting that can incorporate either a bonded washer or encapsulated seal. Also available in stainless steel.

Available for sizes:

1 and 2.5 Litre - G3/4" BSPP

4 and 6 Litre - G1-1/4" BSPP

10 - 55 Litres - G2" BSPP

Option G
BSPP Female Connection O-Ring seal

This connection is fitted with an O-Ring seal positioned at the root of the male thread. This is a European style adaptor and is not suitable for use with a bonded washer.

Available for sizes:

10 - 55 Litres - G2" BSPP only

Option F
1-1/2" SAE Code 62

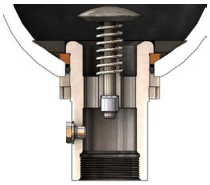
This Fluid Port is manufactured with a 1-1/2" SAE code 62 connection and is ideally suited to allow connection directly onto a manifold without requiring adaptors. Also available in stainless steel.

Available for sizes:

10 - 55 Litres only

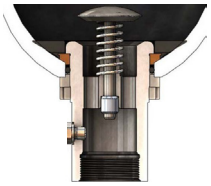
Refer to page 26 for range of SAE Flange Clamps

Option U



1-7/8" UNF (special)

Option N



2" NPT (special)

Option U
1-7/8" UNF

Designed to take a UNF fitting commonly used in the U.S

Only available in Carbon Steel to suit accumulator sizes 10 - 55 Litres

Option N
2" NPT

Designed to a NPT fitting commonly used in the U.S

Only available in Carbon Steel to suit accumulator sizes 10 - 55 Litres

STBA Assemblies
Order Codes

STBA	-	020	-	360A1	-	B	T	-	U10S	-	G	-	A
①		②		③		④	⑤		⑥		⑦		⑧

① Type

Bladder Accumulator	**STBA**

② Size Code

1 Ltr / 1 qrt	**001**
2.5 Ltr / 2.5 qrt	**002**
4 Ltr / 1 Gal	**004**
6 Ltr / 1.5 Gal	**006**
10 Ltr / 2.5 Gal	**010**
20 Ltr / 5 Gal	**020**
35 Ltr / 10 Gal	**035**
40 Ltr / 11 Gal	**040**
50 Ltr / 13 Gal	**050**
55 Ltr / 15 Gal	**055**

③ Pressure Rating and Design Code

AS1210 (only)	**360A**
AS1210 360 Bar + ASME 4000 PSI	**360A1**

④ Bladder Material

NBR (Buna-N®) (standard)	**B**
NBR (Buna-N®) (Low Permeation) For Special Fuels	**B40**
EPDM	**E**
Butyl II R	**I**
FKM (Viton®)	**V**
NBR (Buna-N®) Special High Flexibility	**W**

⑤ Gas Valve Connection

Integrated Gas Valve 7/8–14 UNF (standard)	**T**
1/4" BSPP	**A**
STAUFF US Style Gas Valve 0.305"-32 UNS 2A	**Y**
STAUFF SKK-20 Gas Valve	**S**
Gas Valve USA 3000 PSI 0.305" x 32 TPI	**U**
Not Fitted	**0**

⑥ Bladder Stem Size

7/8–14 UNF (standard)	**U10S**
2–12 UNF	**U26S**

⑦ Fluid Port Connection

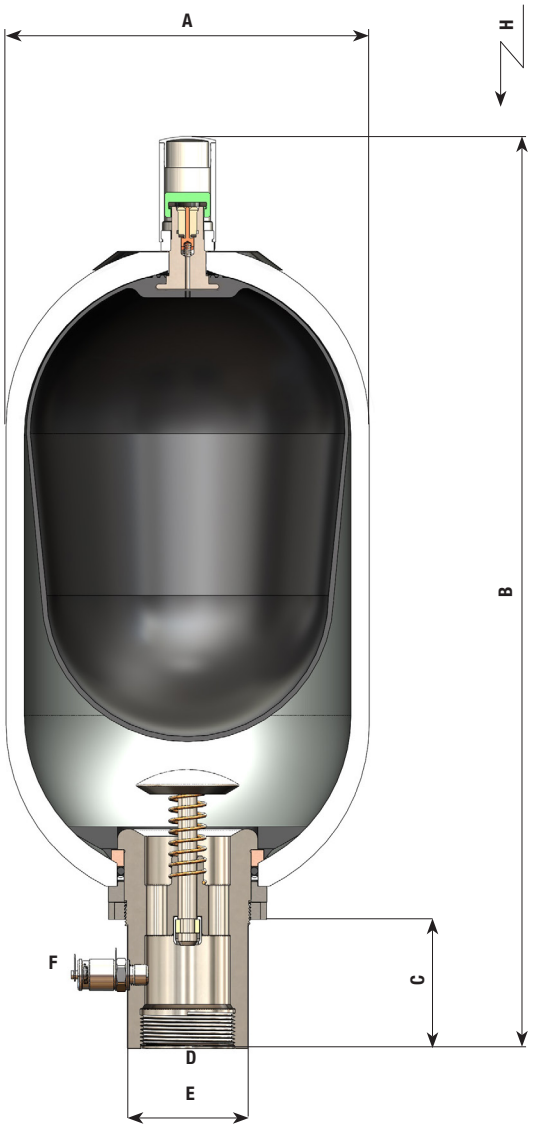
BSPP Flat Face Seal (standard)	**G**
BSPP O-Ring Seal	**GO**
SAE Threaded	**U**
NPT	**N**
1-1/2" SAE Code 61 Flanged	**F324**
1-1/2" SAE Code 62 Flanged	**F624**

⑧ Material / Surface Protection

Gas Valve	Bladder Stem	Fluid Port	Shell		
Stainless Steel	Carbon Steel / Zinc-Nickel	Carbon Steel	Carbon Steel	(standard)	**A**
Carbon Steel / Zinc-Nickel	Carbon Steel / Zinc-Nickel	Carbon Steel	Carbon Steel		**B**
Carbon Steel / Zinc-Nickel	Carbon Steel / Zinc-Nickel	Zinc Phosphate	Carbon Steel	(USA standard)	**C**
Stainless Steel	Carbon Steel / Zinc-Nickel	17/4 PH Stainless Steel	Carbon Steel		**D**
Stainless Steel	Stainless Steel	17/4 PH Stainless Steel	Carbon Steel		**F**
Stainless Steel	Stainless Steel	17/4 PH Stainless Steel	Carbon Steel Internally PTFE Lined		**P**

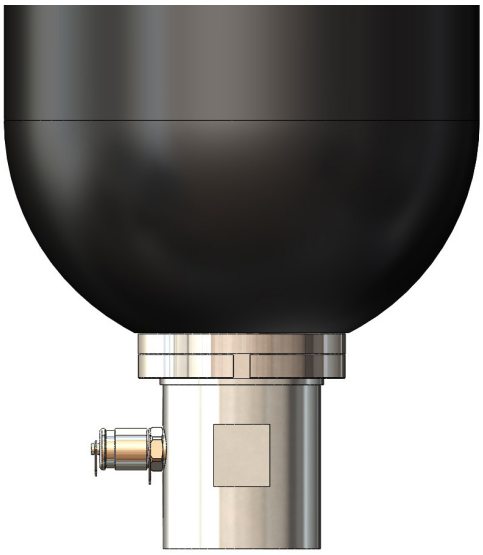
Bladder Accumulator Assemblies

Gas Valve ▪ Integrated 7/8–14 UNF ▪ Fluid Port BSPP ▪ Female Flat Face
360 bar AS1210 ▪ 4000 PSI ASME



Option T

Integrated Gas Valve



Fluid Port
BSPP Female Flat Face

Size (Ltr)	Maximum Recommended Flow Rate L/Min
1 & 2.5	110
4 & 6	470
10 - 55	970

Order Codes and Dimensions

Item No.	Designation	Size (Ltr)	Effective Gas Volume (Ltr)	Maximum Working Pressure (bar)	Dimensions (mm)							Weight (kg)
							BSPP Flat Face			Bleed Port		
					A	B	C	D	E	F	H (min)	
3426010622	STBA-001-360A1-BT-U10S-G-A	1	1.1	360	114	305	50	G3/4	42	No bleed port	200	5
3426010623	STBA-002-360A1-BT-U10S-G-A	2.5	2.4	360	114	495	50	G3/4	42	No bleed port	200	9.5
3426010624	STBA-004-360A1-BT-U10S-G-A	4	3.8	360	168	440	87	G1-1/4	61	G1/4	200	14
6100043538	STBA-006-360A1-BT-U10S-G-A	6	5.8	360	168	554	87	G1-1/4	61	G1/4	200	19
3426010625	STBA-010-360A1-BT-U10S-G-A	10	9.6	360	229	569	95	G2	76	G1/4	200	36
3426010626	STBA-020-360A1-BT-U10S-G-A	20	18.4	360	229	879	95	G2	76	G1/4	200	54
3426010628	STBA-035-360A1-BT-U10S-G-A	35	34	360	229	1401	95	G2	76	G1/4	200	95
3426010629	STBA-040-360A1-BT-U10S-G-A	40	41	360	229	1541	95	G2	76	G1/4	200	110
3426010630	STBA-050-360A1-BT-U10S-G-A	50	49.3	360	229	1916	95	G2	76	G1/4	200	125
3426010631	STBA-055-360A1-BT-U10S-G-A	55	54	360	229	2011	95	G2	76	G1/4	200	135

4000 PSI in accordance with ASME VIII APP 22 360 bar in accordance with AS1210 Sizes 12 and 25 available on request in limited options, contact STAUFF for more information

All fluid ports supplied with SMK-20-G1/4-B-C-W3 fitted as standard

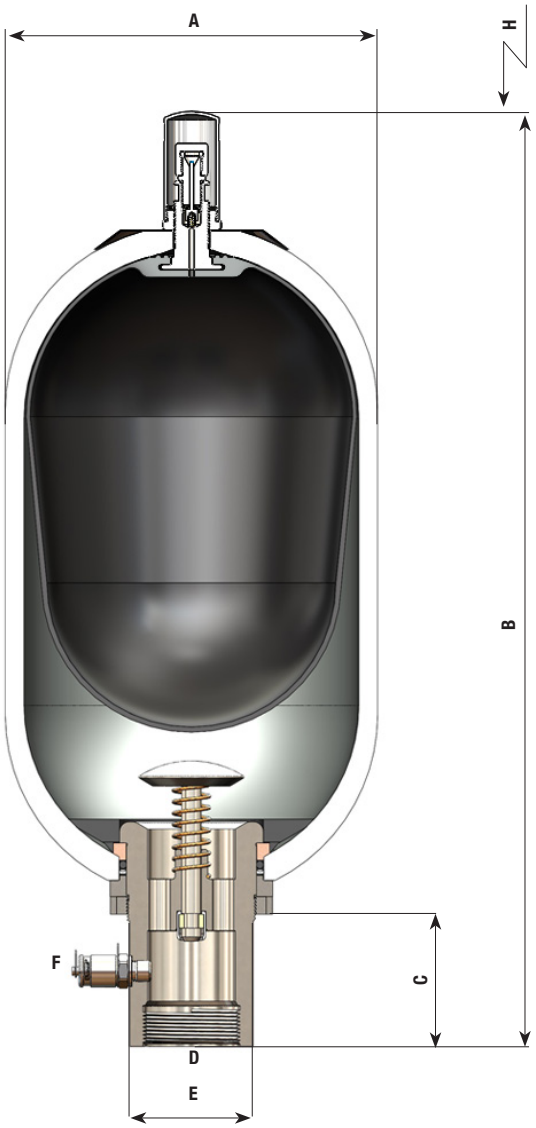
Refer to pages 38 - 39 for accumulator clamps

Refer to pages 40 - 43 for safety blocks

Refer to page 27 for fluid port adaptors

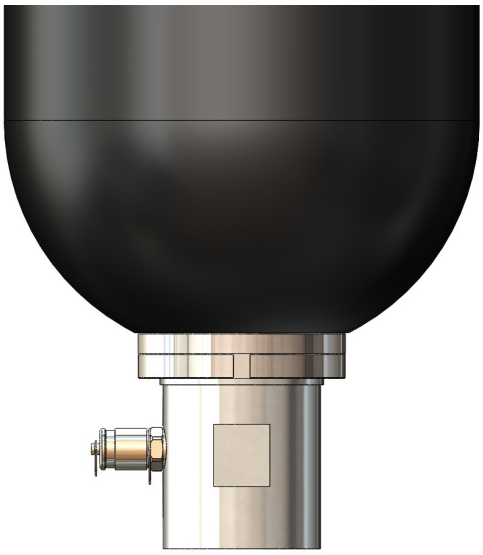
Bladder Accumulator Assemblies

Gas Valve ▪ 1/4" BSPP ▪ Fluid Port ▪ BSPP Female Flat Face
360 bar AS1210 ▪ 4000 PSI ASME



Option A

1/4" BSPP Gas Valve



Fluid Port
BSPP Female Flat Face

Size (Ltr)	Maximum Recommended Flow Rate L/Min
1 & 2.5	110
4 & 6	470
10 - 55	970

Order Codes and Dimensions

Item No.	Designation	Size (Ltr)	Effective Gas Volume (Ltr)	Maximum Working Pressure (bar)	Dimensions (mm)							Weight (kg)
							BSPP Flat Face			Bleed Port		
					A	B	C	D	E	F	H (min)	
3426010612	STBA-001-360A1-BA-U10S-G-A	1	1.1	360	114	305	50	G3/4	42	No bleed port	200	5
3426010613	STBA-002-360A1-BA-U10S-G-A	2.5	2.4	360	114	495	50	G3/4	42	No bleed port	200	9.5
3426010614	STBA-004-360A1-BA-U10S-G-A	4	3.8	360	168	440	87	G1-1/4	61	G1/4	200	14
6100043615	STBA-006-360A1-BA-U10S-G-A	6	5.8	360	168	554	87	G1-1/4	61	G1/4	200	19
3426010615	STBA-010-360A1-BA-U10S-G-A	10	9.6	360	229	569	95	G2	76	G1/4	200	36
3426010616	STBA-020-360A1-BA-U10S-G-A	20	18.4	360	229	879	95	G2	76	G1/4	200	54
3426010618	STBA-035-360A1-BA-U10S-G-A	35	34	360	229	1401	95	G2	76	G1/4	200	95
6100206842	STBA-040-360A1-BA-U10S-G-A	40	41	360	229	1541	95	G2	76	G1/4	200	110
3426010620	STBA-050-360A1-BA-U10S-G-A	50	49.3	360	229	1916	95	G2	76	G1/4	200	125
3426010648	STBA-055-360A1-BA-U10S-G-A	55	54	360	229	2011	95	G2	76	G1/4	200	135

4000 PSI in accordance with ASME VIII APP 22 360 bar in accordance with AS1210 Sizes 12 and 25 available on request in limited options, contact STAUFF for more information

All fluid ports supplied with SMK-20-G1/4-B-C-W3 fitted as standard

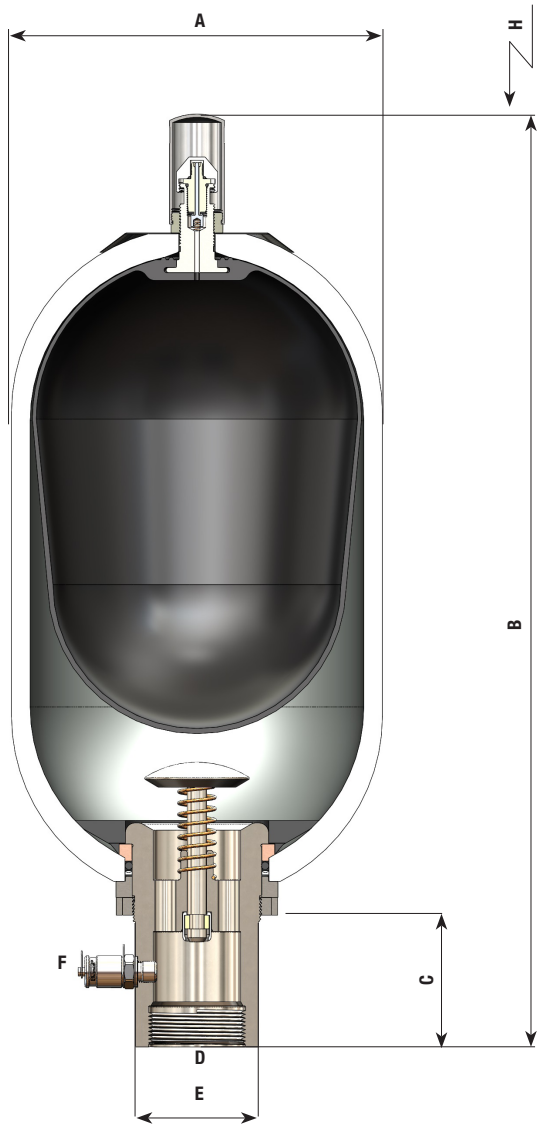
Refer to pages 38 - 39 for accumulator clamps

Refer to pages 40 - 43 for safety blocks

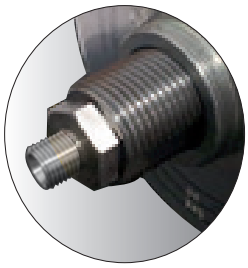
Refer to page 27 for fluid port adaptors

Bladder Accumulator Assemblies

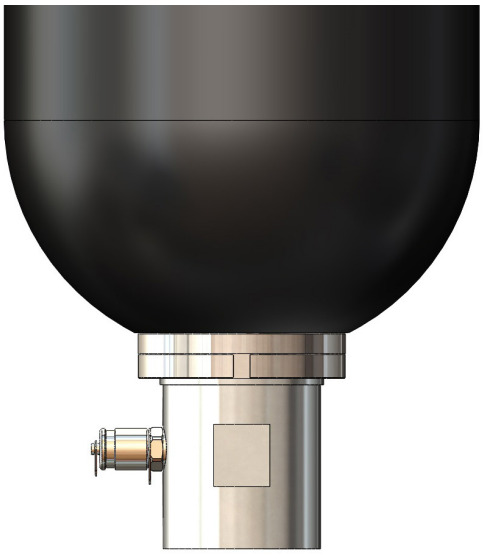
Gas Valve ▪ STAUFF US Style Gas Valve 0.305" x 32 UNS 2A ▪ Fluid Port BSPP ▪ Female Flat Face
360 bar AS1210 ▪ 4000 PSI ASME



Option Y



STAUFF US Style Gas Valve



Fluid Port
BSPP Female Flat Face

Size (Ltr)	Maximum Recommended Flow Rate L/Min
1 & 2.5	110
4 & 6	470
10 - 55	970

Order Codes and Dimensions

Item No.	Designation	Size (Ltr)	Effective Gas Volume (Ltr)	Maximum Working Pressure (bar)	Dimensions (mm)							Weight (kg)
							BSPP Flat Face			Bleed Port		
					A	B	C	D	E	F	H (min)	
3426010771	STBA-001-360A1-BY-U10S-G-A	1	1.1	360	114	305	50	G3/4"	42	No bleed port	200	5
3426010772	STBA-002-360A1-BY-U10S-G-A	2.5	2.4	360	114	495	50	G3/4"	42	No bleed port	200	9.5
3426010773	STBA-004-360A1-BY-U10S-G-A	4	3.8	360	168	440	87	G1-1/4"	61	G1/4	200	14
6100043545	STBA-006-360A1-BY-U10S-G-A	6	5.8	360	168	554	87	G1-1/4"	61	G1/4	200	19
3426010774	STBA-010-360A1-BY-U10S-G-A	10	9.6	360	229	569	95	G2"	76	G1/4	200	36
3426010775	STBA-020-360A1-BY-U10S-G-A	20	18.4	360	229	879	95	G2"	76	G1/4	200	54
3426010777	STBA-035-360A1-BY-U10S-G-A	35	34	360	229	1401	95	G2"	76	G1/4	200	95
6100206843	STBA-040-360A1-BY-U10S-G-A	40	41	360	229	1541	95	G2"	76	G1/4	200	110
3426010779	STBA-050-360A1-BY-U10S-G-A	50	49.3	360	229	1916	95	G2"	76	G1/4	200	125
3426010873	STBA-055-360A1-BY-U10S-G-A	55	54	360	229	2011	95	G2"	76	G1/4	200	135

4000 PSI in accordance with ASME VIII APP 22 360 bar in accordance with AS1210 Sizes 12 and 25 available on request in limited options, contact STAUFF for more information

All fluid ports supplied with SMK-20-G1/4-B-C-W3 fitted as standard

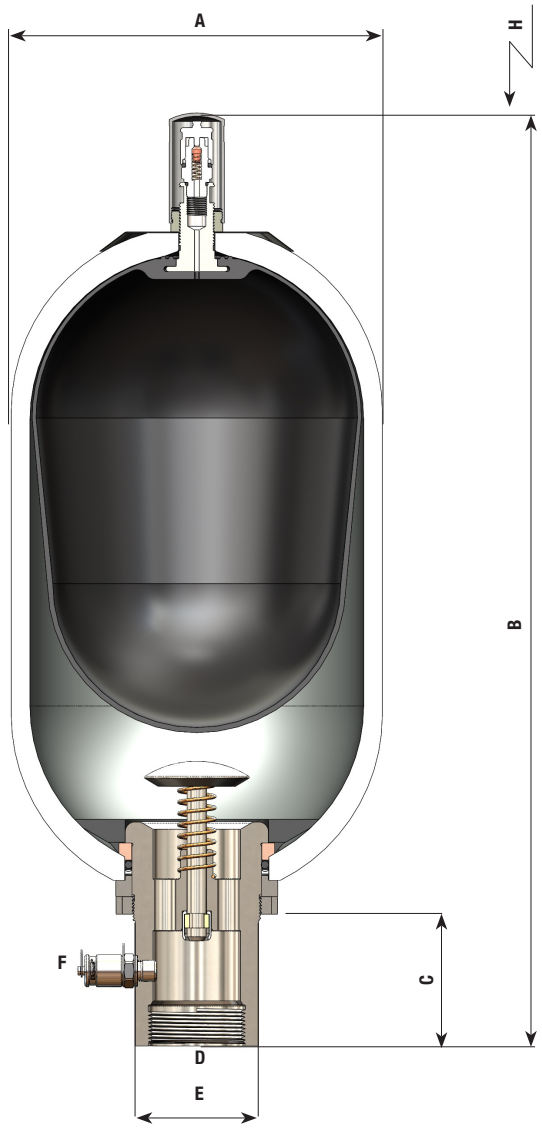
Refer to pages 38 - 39 for accumulator clamps

Refer to pages 40 - 43 for safety blocks

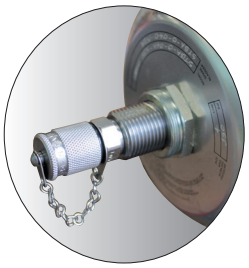
Refer to page 27 for fluid port adaptors

Bladder Accumulator Assemblies

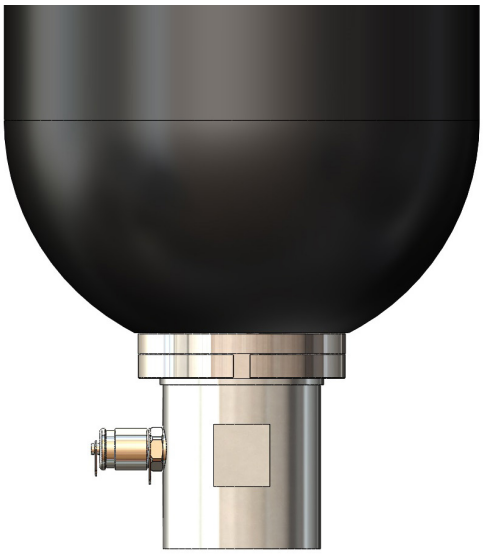
Gas Valve ▪ STAUFF SKK-20 Gas Valve ▪ Fluid Port ▪ BSPP Female Flat Face
360 bar AS1210 ▪ 4000 PSI ASME



Option S



STAUFF SKK-20 Gas Valve



Fluid Port
BSPP Female Flat Face

Size (Ltr)	Maximum Recommended Flow Rate L/Min
1 & 2.5	110
4 & 6	470
10 - 55	970

Order Codes and Dimensions

Item No.	Designation	Size (Ltr)	Effective Gas Volume (Ltr)	Maximum Working Pressure (bar)	Dimensions (mm)							Weight (kg)
							BSPP Flat Face			Bleed Port		
					A	B	C	D	E	F	H (min)	
3426010945	STBA-001-360A1-BS-U10S-G-A	1	1.1	360	114	305	50	G3/4	42	No bleed port	200	5
3426010946	STBA-002-360A1-BS-U10S-G-A	2.5	2.4	360	114	495	50	G3/4	42	No bleed port	200	9.5
3426010947	STBA-004-360A1-BS-U10S-G-A	4	3.8	360	168	440	87	G1-1/4	61	G1/4	200	14
6100043570	STBA-006-360A1-BS-U10S-G-A	6	5.8	360	168	554	87	G1-1/4	61	G1/4	200	19
3426010948	STBA-010-360A1-BS-U10S-G-A	10	9.6	360	229	569	95	G2	76	G1/4	200	36
3426010949	STBA-020-360A1-BS-U10S-G-A	20	18.4	360	229	879	95	G2	76	G1/4	200	54
3426010950	STBA-035-360A1-BS-U10S-G-A	35	34	360	229	1401	95	G2	76	G1/4	200	95
6100039506	STBA-040-360A1-BS-U10S-G-A	40	41	360	229	1541	95	G2	76	G1/4	200	110
3426010951	STBA-050-360A1-BS-U10S-G-A	50	49.3	360	229	1916	95	G2	76	G1/4	200	125
3426010874	STBA-055-360A1-BS-U10S-G-A	55	54	360	229	2011	95	G2	76	G1/4	200	135

4000 PSI in accordance with ASME VIII APP 22 360 bar in accordance with AS1210 Sizes 12 and 25 available on request in limited options, contact STAUFF for more information

All fluid ports supplied with SMK-20-G1/4-B-C-W3 fitted as standard

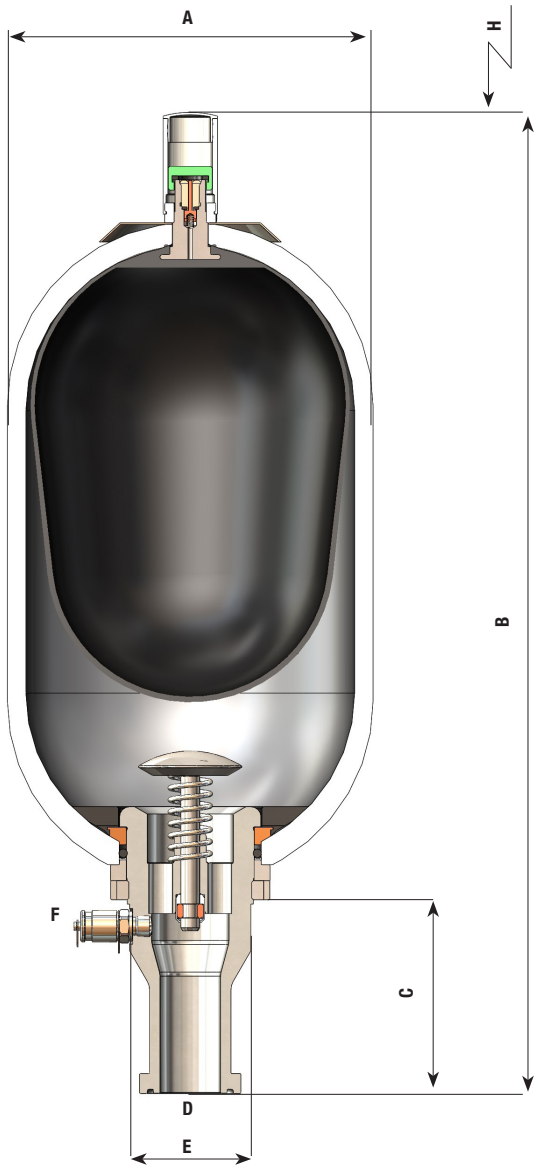
Refer to pages 38 - 39 for accumulator clamps

Refer to pages 40 - 43 for safety blocks

Refer to page 27 for fluid port adaptors

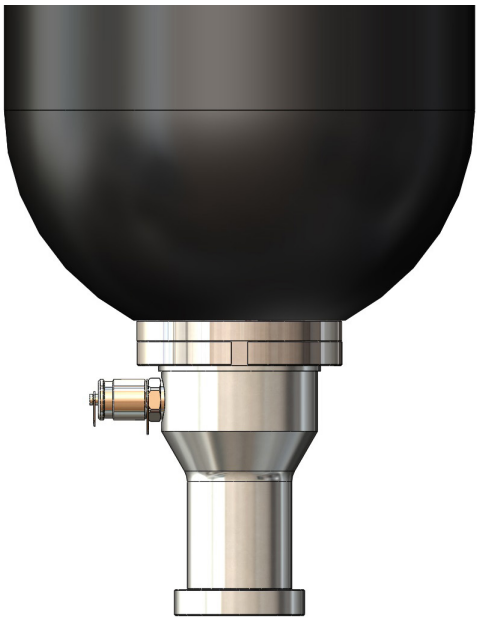
Bladder Accumulator Assemblies

Gas Valve ▪ Integrated 7/8–14 UNF ▪ Fluid Port ▪ 1-1/2" SAE Code 62
360 bar AS1210 ▪ 4000 PSI ASME



Option T

Integrated Gas Valve



Fluid Port
1-1/2" SAE Code 62

Size (Ltr)	Maximum Recommended Flow Rate L/Min
10 - 55	970

Order Codes and Dimensions

Item No.	Designation	Size (Ltr)	Effective Gas Volume (Ltr)	Maximum Working Pressure (bar)	Dimensions (mm)							Weight (kg)
							BSPP Flat Face			Bleed Port		
					A	B	C	D	E	F	H (min)	
3426010649	STBA-010-360A1-BT-U10S-F624-A	10	9.6	360	229	604	130	1-1/2	76	G1/4	200	36
3426010650	STBA-020-360A1-BT-U10S-F624-A	20	18.4	360	229	914	130	1-1/2	76	G1/4	200	54
3426010652	STBA-035-360A1-BT-U10S-F624-A	35	34	360	229	1436	130	1-1/2	76	G1/4	200	95
3426010654	STBA-050-360A1-BT-U10S-F624-A	50	49.3	360	229	1951	130	1-1/2	76	G1/4	200	125
3426010655	STBA-055-360A1-BT-U10S-F624-A	55	54	360	229	2046	130	1-1/2	76	G1/4	200	135

4000 PSI in accordance with ASME VIII APP 22 360 bar in accordance with AS1210

Refer to page 26-27 for SAE flange clamps and adaptors

All fluid ports supplied with SMK-20-G1/4-B-C-W3 fitted as standard

Refer to pages 38 - 39 for accumulator clamps

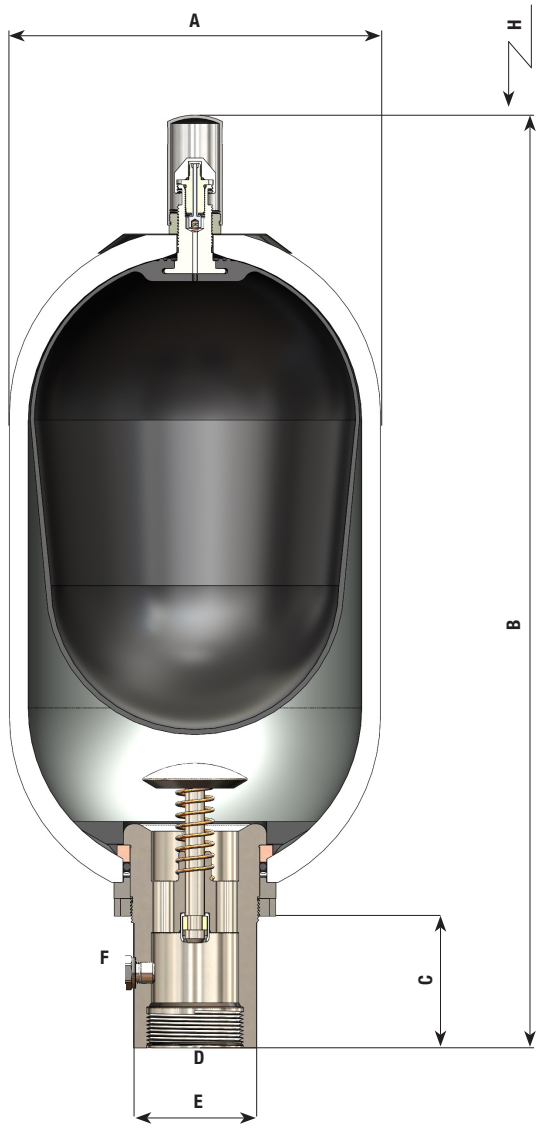
Refer to pages 40 - 43 for safety blocks

Refer to page 26 for SAE flange clamp

Bladder Accumulator Assemblies - Suitable for Oil and Gas Industry

Special 40 Ltr / 11 Gal Accumulators

360 bar AS1210 • 4000 PSI ASME



Option T

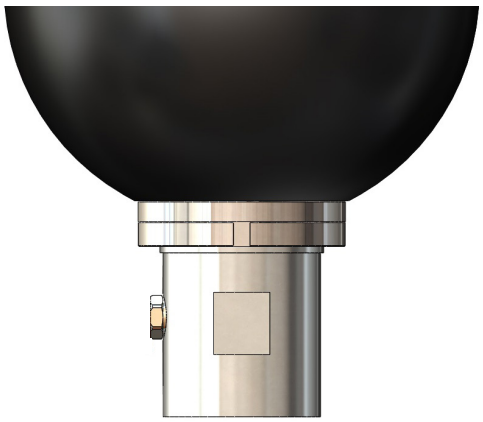
Integrated Gas Valve (standard)

Option S

STAUFF SKK-20 Gas Valve (optional)

Option Y

STAUFF US Style Gas Valve (optional)



Fluid Port
1-7/8" UNF • 2" NPT

Size (Ltr)	Maximum Recommended Flow Rate L/Min
40	970

Order Codes and Dimensions

Item No.	Designation	Size (Ltr)	Effective Gas Volume (Ltr)	Maximum Working Pressure (bar)	Dimensions (mm)							Weight (kg)
							BSPP Flat Face			Bleed Port		
					A	B	C	D	E	F	H (min)	
6100039512	STBA-040-360A1-BY-U10S-U-C	40	41	360	229	1541	95	1-7/8 UNF	76	9/16-18 UNF	200	110
6100039516	STBA-040-360A1-BT-U10S-U-C	40	41	360	229	1541	95	1-7/8 UNF	76	9/16-18 UNF	200	110
6100039517	STBA-040-360A1-BS-U10S-U-C	40	41	360	229	1541	95	1-7/8 UNF	76	9/16-18 UNF	200	110
6100062734	STBA-040-360A1-BY-U10S-N-C	40	41	360	229	1541	95	2" NPT	76	1/4" NPT	200	110

4000 PSI in accordance with ASME VIII APP 22 360 bar in accordance with AS1210

Fluid port bleed valve is plugged

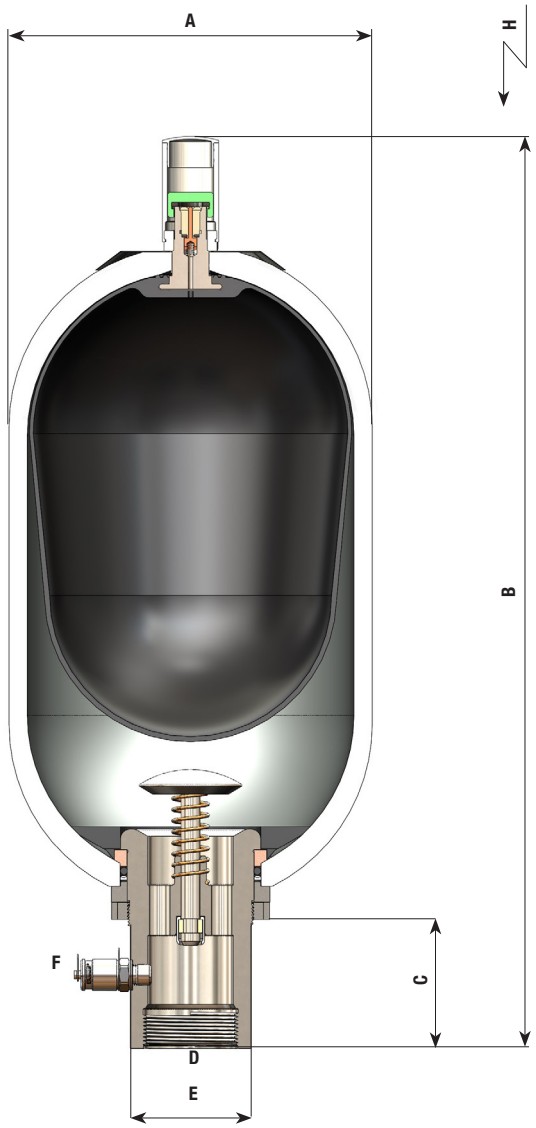
Refer to pages 38 - 39 for accumulator clamps

Refer to pages 40 - 43 for safety blocks

Refer to page 27 for fluid port adaptors

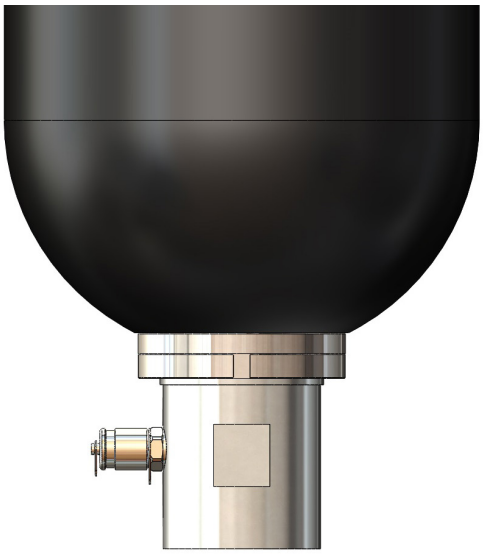
Bladder Accumulator Assemblies - Suitable for Water Service

Gas Valve ▪ Integrated 7/8–14 UNF ▪ Fluid Port ▪ BSPP Female Flat Face
360 bar AS1210 ▪ 4000 PSI ASME



Option T

Integrated Gas Valve



Fluid Port
BSPP Female Flat Face

Size (Ltr)	Maximum Recommended Flow Rate L/Min
1 & 2.5	110
4 & 6	470
10 - 55	970

Order Codes and Dimensions

Item No.	Designation	Size (Ltr)	Effective Gas Volume (Ltr)	Maximum Working Pressure (bar)	Dimensions (mm)							Weight (kg)
							BSPP Flat Face			Bleed Port		
					A	B	C	D	E	F	H (min)	
6100105333	STBA-001-360A1-BT-U10S-G-P	1	1.1	360	114	305	50	G3/4	42	No bleed port	200	5
6100105334	STBA-004-360A1-BT-U10S-G-P	4	3.8	360	168	440	87	G1-1/4	61	G1/4	200	14
6100105335	STBA-010-360A1-BT-U10S-G-P	10	9.6	360	229	569	95	G2	76	G1/4	200	36
6100105336	STBA-020-360A1-BT-U10S-G-P	20	18.4	360	229	879	95	G2	76	G1/4	200	54
6100105338	STBA-035-360A1-BT-U10S-G-P	35	34	360	229	1401	95	G2	76	G1/4	200	95
6100105337	STBA-050-360A1-BT-U10S-G-P	50	49.3	360	229	1916	95	G2	76	G1/4	200	125

4000 PSI in accordance with ASME VIII APP 22 360 bar in accordance with AS1210

All fluid ports supplied with SMK-20-G1/4-B-C-W3 fitted as standard

Refer to pages 38 - 39 for accumulator clamps

Refer to pages 40 - 43 for safety blocks

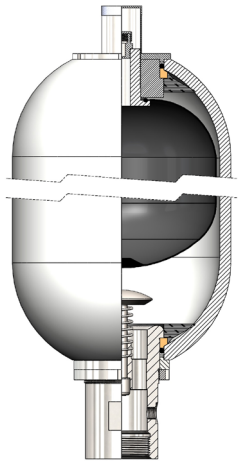
Refer to page 27 for fluid port adaptors

Special Products

STAUFF offer a range of special options for bladder and diaphragm accumulators and alleviators for controlling surge and pipeline shock in systems both in onshore / offshore applications and where the application environment is aggressive.

Stainless Steel Bladder Accumulators

Construction Shell and External components



Characteristics

Standard Construction

Material of body:	Stainless Steel AISI 316L
Material of other components:	Stainless Steel ANSI 304 -17/4 PH
Bladder:	According to fluid
Gas connection valve:	Integrated 7/8–14 UNF STAUFF US Style Gas Valve 1/4" BSPP
Fluid port connection:	2" BSPP or 1-1/2" SAE Code 62

Technical Data

Operating pressure:	100 bar (Australian Design Approval)
Gas filling (nitrogen only):	Max. 90% of min. operating pressure
Admissible pressure ratio:	Max. ≤ 4/1
Sizes:	10 - 55 Litre

Surge Alleviators - Low Pressure Large Volume

Characteristics

Standard Construction

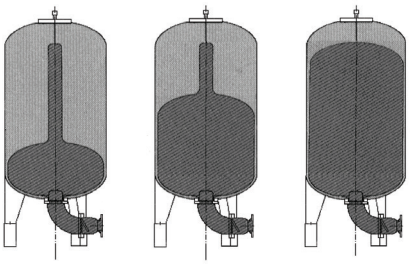
Material of body:	Carbon Steel
Bladder material:	Buna N
Flange outlet:	DN100, DB150 PN16
Pressure rating:	16 bar AS1210
Sizes:	100, 200, 300 and 500 Litre

Description

Used to eliminate surge pressures in large water supply lines caused through valve closure.

Primary Advantages

As the system fluid is contained within NBR (Buna-N®) bladder, there is no need for special corrosion resistance materials, unlike standard bladder accumulators.



Note: Special products are available on request only, contact STAUFF for more information.

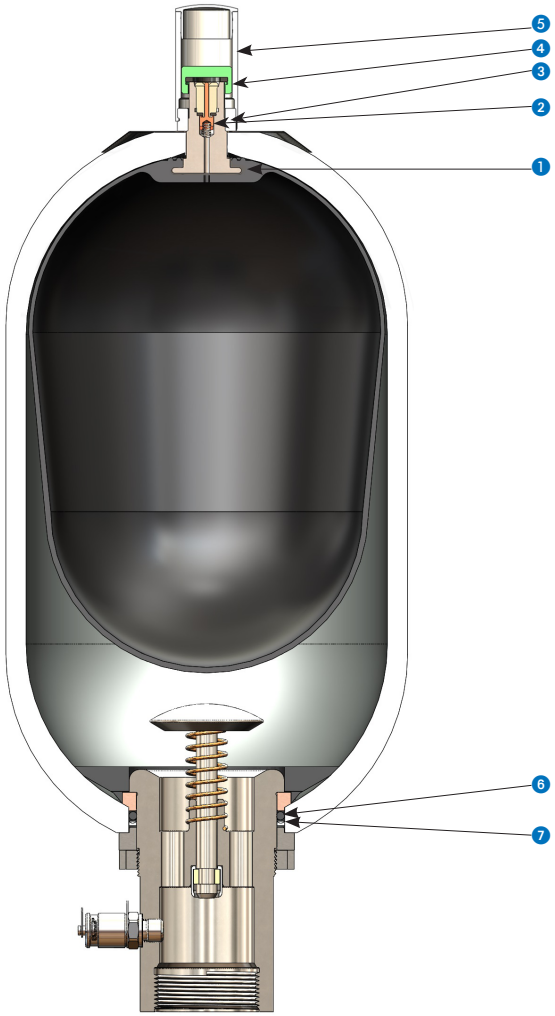
Bladder Kits
Type STB

Integrated Gas Valve
(standard)

1/4" BSPP Gas Valve
(optional)

STAUFF US Style Gas Valve
(optional)

STAUFF SKK-20 Gas Valve
(optional)

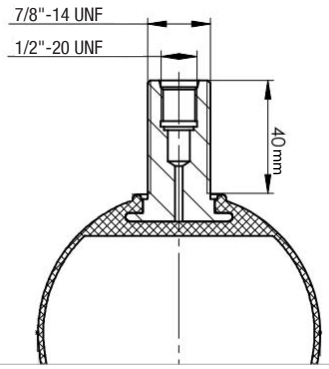


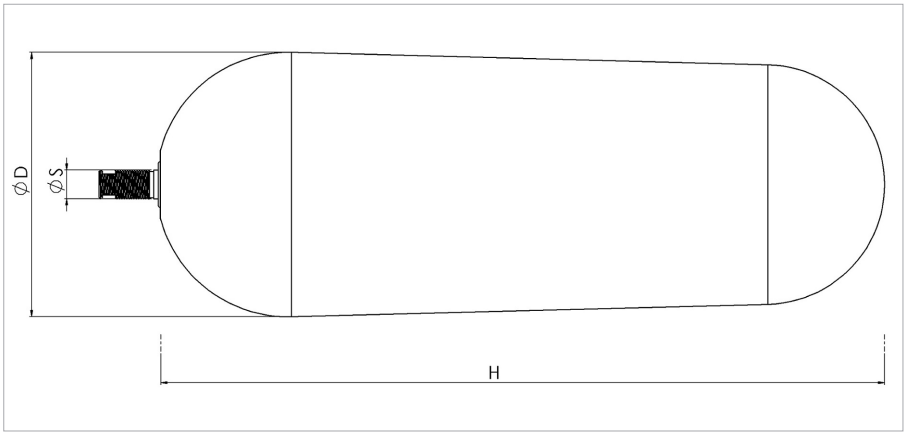
Specifications

- Bladders are supplied in NBR (Buna-N®) rubber with a 7/8–14 UNF steel stem
  Other options available on request
- Supplied with integrated gas valve (standard)
  Other options available on request

1. Bladder and stem
2. Gas valve (integrated valve shown)
3. Bladder lock nut
4. Gas valve cap
5. Protection cap
6. Fluid port O-Ring
7. Back-up washer

1 & 2.5 Ltr bladder kits supplied with a fluid port O-Ring	4 - 55 Litre bladder kits supplied with a fluid port O-Ring and back-up ring
	





Dimensions

Volume (Litre)	Height (H) (mm)	Diameter (D) (mm)	Stem Thread (S)
1	149	100	7/8–14 UNF
3	331	100	7/8–14 UNF
4	208	150	7/8–14 UNF
6	316	150	7/8–14 UNF
10	286	200	7/8–14 UNF
20	590	200	7/8–14 UNF
35	1114	200	7/8–14 UNF
40	1215	200	7/8–14 UNF
50	1611	200	7/8–14 UNF
55	1733	200	7/8–14 UNF

Bladder Kits
Order Codes

STB	-	020	-	B	-	T	-	W4	-	U10S	-	W3	-	0
①		②		③		④		⑤		⑥		⑦		⑧

① Type

Bladder	STB

② Size Code

1 Ltr / 1 qrt	001
2.5 Ltr / 2.5 qrt	002
4 Ltr / 1 Gal	004
6 Ltr / 1.5 Gal	006
10 Ltr / 2.5 Gal	010
12 Ltr / 3.2 Gal	012
20 Ltr / 5 Gal	020
25 Ltr / 6.6 Gal	025
35 Ltr / 10 Gal	035
40 Ltr / 11 Gal	040
50 Ltr / 13 Gal	050
55 Ltr / 15 Gal	055

③ Bladder Material

NBR (Buna-N®) (standard)	B
NBR (Buna-N®) (Low Permeation) For Special Fuels	B40
EPDM	E
Butyl II R	I
FKM (Viton®)	V
NBR (Buna-N®) Special High Flexibility	W

④ Gas Valve Connection

Integrated Gas Valve 7/8–14 UNF (standard)	T
1/4" BSPP	A
STAUFF US Style Gas Valve 0.305"-32 UNS 2A	Y
STAUFF SKK-20 Gas Valve	S
Gas Valve USA 3000 PSI 0.305" x 32 TPI	U

⑤ Gas Valve Material

Stainless steel 1.4301 / 1.4305 (AISI 304 / 303)	W4
Stainless steel 316	W5

⑥ Bladder Stem Size

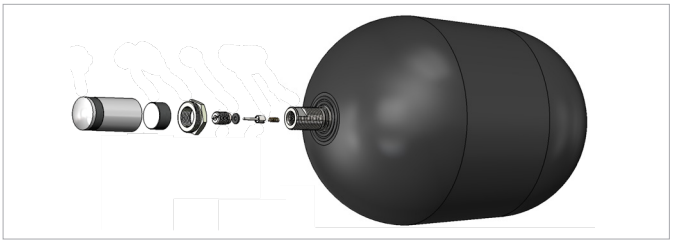
7/8–14 UNF (standard)	U10S

⑦ Bladder Stem Material

Steel / zinc-nickel plated	W3
Stainless steel 1.4301 / 1.4305 (AISI 304 / 303)	W4

⑧ Bladder Kit Type

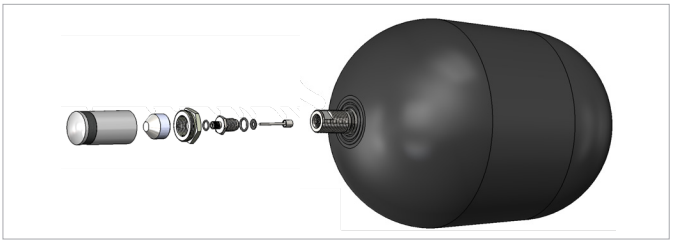
Bladder Assembly without Anti-Extrusion Ring (AER)	0
Bladder Assembly with Anti-Extrusion Ring (AER)	A



Bladder Kit - Integrated Gas Valve - NBR (Buna-N®)

Item No.	Designation	Size
6100218102	STB-001-B-T-W4-U10S-W3-0	1
6100218108	STB-002-B-T-W4-U10S-W3-0	2.5
6100218114	STB-004-B-T-W4-U10S-W3-0	4
6100218128	STB-006-B-T-W4-U10S-W3-0	6
6100218133	STB-010-B-T-W4-U10S-W3-0	10
6100218140	STB-020-B-T-W4-U10S-W3-0	20
6100218149	STB-035-B-T-W4-U10S-W3-0	35
6100218154	STB-040-B-T-W4-U10S-W3-0	40
6100218158	STB-050-B-T-W4-U10S-W3-0	50
6100218164	STB-055-B-T-W4-U10S-W3-0	55

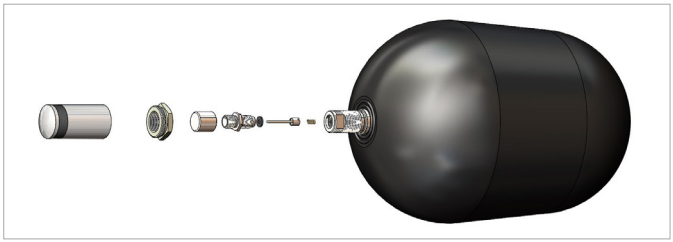
Other materials available on request



Bladder Kit - STAUFF US Style Gas Valve - NBR (Buna-N®)

Item No.	Designation	Size
6100218104	STB-001-B-Y-W4-U10S-W3-0	1
6100218110	STB-002-B-Y-W4-U10S-W3-0	2.5
6100218116	STB-004-B-Y-W4-U10S-W3-0	4
6100218129	STB-006-B-Y-W4-U10S-W3-0	6
6100218135	STB-010-B-Y-W4-U10S-W3-0	10
6100218142	STB-020-B-Y-W4-U10S-W3-0	20
6100218151	STB-035-B-Y-W4-U10S-W3-0	35
6100218155	STB-040-B-Y-W4-U10S-W3-0	40
6100218160	STB-050-B-Y-W4-U10S-W3-0	50
6100218165	STB-055-B-Y-W4-U10S-W3-0	55

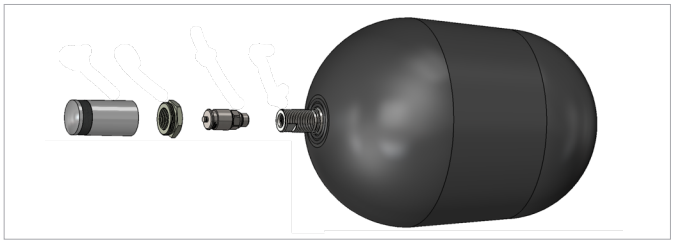
Other materials available on request



Bladder Kit - 1/4" BSPP Gas Valve - NBR (Buna-N®)

Item No.	Designation	Size
6100218100	STB-001-B-A-W4-U10S-W3-0	1
6100218106	STB-002-B-A-W4-U10S-W3-0	2.5
6100218112	STB-004-B-A-W4-U10S-W3-0	4
6100218126	STB-006-B-A-W4-U10S-W3-0	6
6100218130	STB-010-B-A-W4-U10S-W3-0	10
6100218137	STB-020-B-A-W4-U10S-W3-0	20
6100218146	STB-035-B-A-W4-U10S-W3-0	35
6100136018	STB-040-B-A-W4-U10S-W3-0	40
6100218156	STB-050-B-A-W4-U10S-W3-0	50
6100218162	STB-055-B-A-W4-U10S-W3-0	55

Other materials available on request



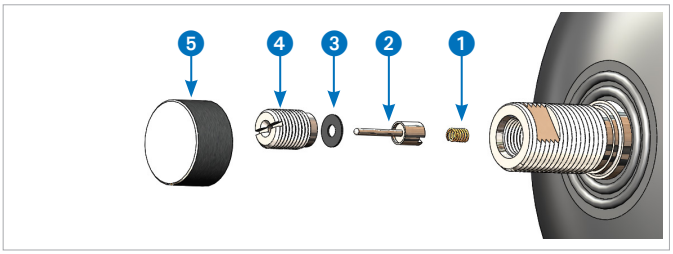
Bladder Kit - STAUFF SKK-20 Gas Valve - NBR (Buna-N®)

Item No.	Designation	Size
6100218101	STB-001-B-S-W5-U10S-W3-0	1
6100218107	STB-002-B-S-W5-U10S-W3-0	2.5
6100218113	STB-004-B-S-W5-U10S-W3-0	4
6100218127	STB-006-B-S-W5-U10S-W3-0	6
6100218132	STB-010-B-S-W5-U10S-W3-0	10
6100218139	STB-020-B-S-W5-U10S-W3-0	20
6100218148	STB-035-B-S-W5-U10S-W3-0	35
6100218153	STB-040-B-S-W5-U10S-W3-0	40
6100218157	STB-050-B-S-W5-U10S-W3-0	50
6100218163	STB-055-B-S-W5-U10S-W3-0	55

Other materials available on request

Note: Bladder kits are not supplied with an anti-extrusion ring (STA-AER) as this can be re-used in most cases. Refer to page 26

Gas Valves ▪ Assemblies and Spares

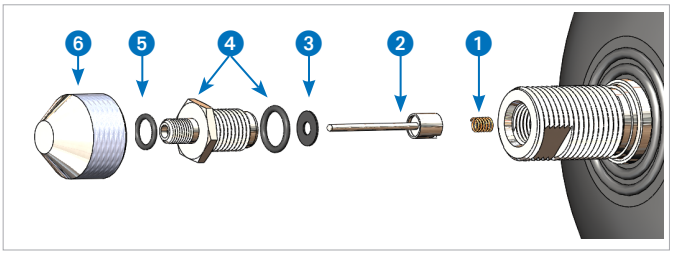


Assembly - Integrated Gas Valve

Item No.	Designation
3426010228	STA-GV-ASSY-T-W4

Spares - Integrated Gas Valve

Part No.	Item No.	Designation
1	3426010154	STA-GV-SPRING-T-W3
2	3426010153	STA-GV-PIN-T-W4
3	3426010155	STA-GV-SEAL-T-B
4	3426010151	STA-GV-SEAT-T-W4
5	3426010496	STA-GV-CAP-T-W5

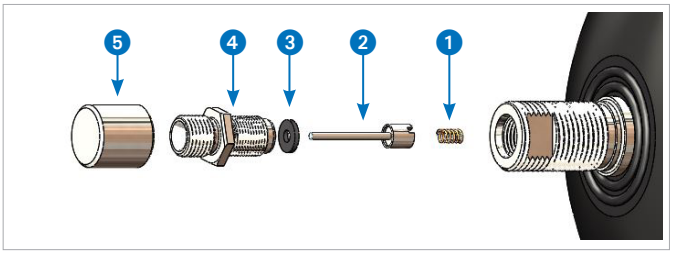


Assembly - STAUFF US Style Gas Valve

Item No.	Designation
3426010598	STA-GV-ASSY-Y-W4

Spares - STAUFF US Style Gas Valve

Part No.	Item No.	Designation
1	3426010154	STA-GV-SPRING-T-W3
2	3426010174	STA-GV-PIN-Y-W4
3	3426010155	STA-GV-SEAL-T-B
4	3426010173	STA-GV-SEAT-Y-W4
5	3404004357	O-Ring-7.65x1.78-V75
6	3426010497	STA-GV-CAP-Y-W5

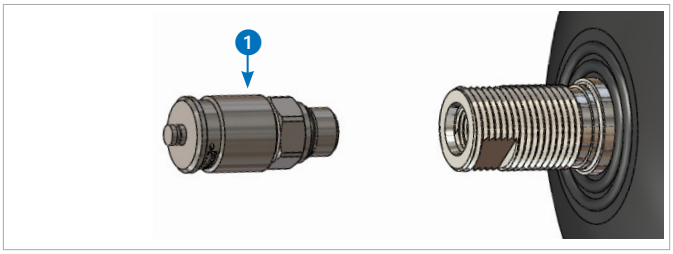


Assembly - 1/4" BSPP Gas Valve

Item No.	Designation
6100018949	STA-GV-ASSY-A-W4

Spares - 1/4" BSPP Gas Valve

Part No.	Item No.	Designation
1	3426010154	STA-GV-SPRING-T-W3
2	6100017556	STA-GV-PIN-A-W4
3	3426010155	STA-GV-SEAL-T-B
4	6100017783	STA-GV-SEAT-A-W4
5	3426010276	STA-GV-CAP-A-W69



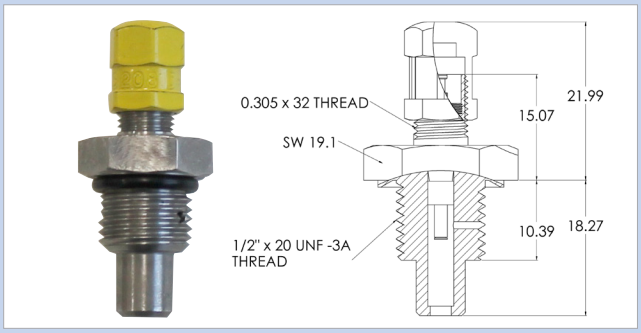
Assembly - STAUFF SKK-20 Gas Valve

Part No.	Item No.	Designation
Stainless Steel		
1	1210024743	SKK-20-1/2UNF-V-E-GAS-W5

Optional

3000 PSI Schrader Gas Valve

Commonly used on accumulators manufactured in the USA



Item No.	Designation
3426010691	STA-GV-ASSY-U-W3

Fluid Port Assemblies
Order Codes

STA	-	FPA	-	010	-	G32	-	W3	-	S20	-	B
①		②		③		④		⑤		⑥		⑦

① Type

Bladder Accumulator	**STA**

② Series

Fluid Port Assembly - 5000 PSI	**FPA**
Fluid Port Assembly - 3000 PSI	**FPA-L**
Fluid Port Sub Assembly - 3000 PSI	**FPSA-L**

③ Group Size

1 & 2.5 Ltr / 1 & 2.5 qrt	**001**
4 & 6 Ltr / 1 & 1.5 Gal	**004**
10 - 55 Ltr / 2.5 - 15 Gal	**010**

④ Connection Type

3/4" BSPP Flat Seal (Group 001 only)	**G12**
1-1/4" BSPP Flat seal (Group 004 only)	**G20**
2" BSPP Flat Seal (Group 010 only)	**G32**
2" BSPP O-Ring seal (Group 010 only)	**G32-O**
1-1/2" SAE Flange Code 62	**F624**
2" NPT (Group 010 only)	**N32**
1-7/8" UNF-thread (Group 010 only)	**U24**

⑤ Material / Surface Protection

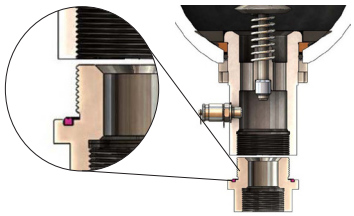
Steel phosphated	**W2**
Steel / zinc-nickel plated	**W3**
Stainless steel 17/4 PH or equivalent	**W79**

⑥ Bleed Plug

STAUFF Test SKK-20 fitted	**S20**
9/16–18 UNF (SAE-6)	**U06**

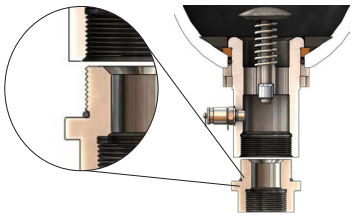
⑦ AER Rubber Material

NBR (Buna-N®) (standard)	**B**



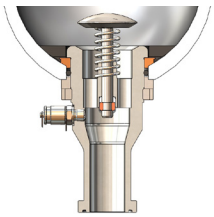
Fluid port Assembly - BSPP Female Connection Flat Face

Item No.	Designation	Connection	Size
Steel			
3426010189	STA-FPA-001-G12-W3-S20-B	3/4 BSPP	1 & 2.5 Ltr
3426010238	STA-FPA-004-G20-W3-S20-B	1-1/4 BSPP	4 & 6 Ltr
3426010239	STA-FPA-010-G32-W3-S20-B	2 BSPP	10 - 55 Ltr
Stainless Steel			
3426010602	STA-FPA-001-G12-W79-S20-B	3/4 BSPP	1 & 2.5 Ltr
3426010603	STA-FPA-004-G20-W79-S20-B	1-1/4 BSPP	4 & 6 Ltr
3426010604	STA-FPA-010-G32-W79-S20-B	2 BSPP	10 - 55 Ltr



Fluid Port Assembly - BSPP Female Connection O-Ring Seal

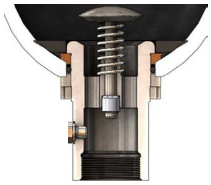
Item No.	Designation	Connection	Size
Steel			
3426010609	STA-FPA-010-G32-O-W3-S20-B	2 BSPP	10 - 55 Ltr



Size 10 - 55 Ltr Only

Fluid port Assembly - 1-1/2" SAE Code 62

Item No.	Designation	Connection	Size
Steel			
3426010606	STA-FPA-010-F624-W3-S20-B	1-1/2 SAE	10 - 55 Ltr
Stainless Steel			
3426010605	STA-FPA-010-F624-W79-S20-B	1-1/2 SAE	10 - 55 Ltr



Size 10 - 55 Ltr Only

Fluid Port Assembly - 1-7/8" UNF and 2" NPT Options

Item No.	Designation	Connection	Size
Steel			
6100062735	STA-FPA-L-010-N32-W2-U06-B	2 NPTF	10 - 55 Ltr
6100020442	STA-FPSA-L-010-U24-W2	1-7/8 UNF	10 - 55 Ltr

Note: All fluid ports are supplied with an anti-extrusion ring, STAUFF Test bleed valve, fluid port O-Ring, and back-up ring.

Fluid Port Anti-Extrusion Rings
Order Codes

STA - AER - 010 - B - W3 - IT

① ② ③ ④ ⑤ ⑥

① Type

Bladder Accumulator	**STA**

② Series

Anti-Extrusion Ring	**AER**

③ Group Size

1 & 2.5 Ltr / 1 & 2.5 qrt	**001**
4 & 6 Ltr / 1 & 1.5 Gal	**004**
10 - 55 Ltr / 2.5 - 15 Gal	**010**

④ Rubber Material

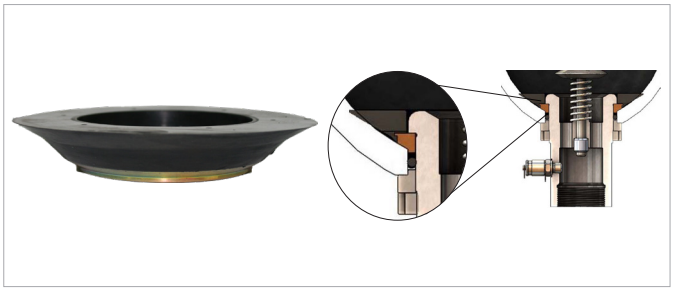
NBR (Buna-N®) (standard)	**B**

⑤ Metal Ring Material

Carbon steel / zinc-nickel plated	**W3**
17/4 PH Stainless steel (1.4542) or equivalent	**W79**

⑥ Special Options

No options	**(None)**
CHARPY Impact (V-notch) Test -40 °C	**IT**

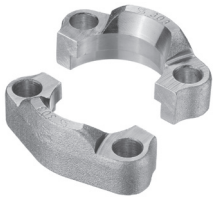


Fluid Port Anti-Extrusion Rings

Item No.	Designation	Size	Suits Shell Bore Opening
Steel			
3426010113	STA-AER-001-B-W3-IT	1 & 2.5 Ltr	50.8 mm
3426010116	STA-AER-004-B-W3-IT	4 & 6 Ltr	70 mm
3426010119	STA-AER-010-B-W3-IT	10 - 55 Ltr	89 mm
Stainless Steel			
3426010382	STA-AER-001-B-W79	1 & 2.5 Ltr	50.8 mm
3426010384	STA-AER-004-B-W79	4 & 6 Ltr	70 mm
3426010386	STA-AER-010-B-W79	10 - 55 Ltr	89 mm

Note: Anti-extrusion rings have a split metal ring to allow for folding during installation.

SAE Flange Clamps for Fluid Port



SAE Flange Clamp
to suit Accumulators with 1-1/2" SAE Code 62 Fluid Ports

Item No.	Designation
1730000036	DB-605-W66
1730000153	DB-605-W5

W66 = Steel Galvanised, thick layer passivated
W5 = Stainless Steel 316
Sold as pair

SAE O-Ring Seal

Item No.	Designation
1730000052	O-Ring-47.22x3.53-B90

Fluid Port Adaptors to suit sizes
1 and 2.5 Litre - G3/4" BSPP
4 and 6 Litre - G1-1/4" BSPP

FI	-	RED	-	R3/4	-	WD	-	R1/4	-	B	-	W3
①		②		③		④		⑤		⑥		⑦

① Series
Fittings	FI

② Type
Thread Reducer	RED

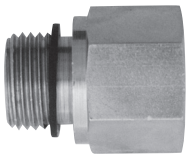
③ Male Thread Type / Size
Whitworth Parallel Pipe Thread 3/4" BSPP	R3/4
Whitworth Parallel Pipe Thread 1-1/4" BSPP	R1-1/4

④ Sealing Type
Elastomeric seal	WD

⑤ Female Thread Type / Size
Whitworth Parallel Pipe Thread 1/4" BSPP	R1/4
Whitworth Parallel Pipe Thread 1/2" BSPP	R1/2
Whitworth Parallel Pipe Thread 1" BSPP	R1

⑥ Sealing Material
NBR (Buna-N®)	B

⑦ Surface Material
Steel / zinc-nickel plated	W3



Fluid Port Adaptor - Threaded Reducer

Item No.	Designation	Suits Sizes	Pressure Rating
6020000333	FI-RED-R3/4-WD-R1/4-B-W3	1 & 2.5 Ltr	400 bar
6020000329	FI-RED-R3/4-WD-R1/2-B-W3	1 & 2.5 Ltr	400 bar
6020000326	FI-RED-R3/4-WD-R1-1/4-B-W3	1 & 2.5 Ltr	400 bar
6020000349	FI-RED-R1-1/4-WD-R1/2-B-W3	4 & 6 Ltr	400 bar
6020000347	FI-RED-R1-1/4-WD-R3/4-B-W3	4 & 6 Ltr	400 bar
6020000345	FI-RED-R1-1/4-WD-R1-B-W3	4 & 6 Ltr	400 bar

Fluid Port Adaptors to suit sizes
10 - 55 Litre - G2" BSPP only

ADP	-	C	-	G32WD/G12	-	MFX	-	W66	A	-	WD-U	-	MA-GK
①		②		③		④		⑤	⑥		⑦		⑧

① Adaptor
Adaptor	ADP

② Type
Connector	C

③ Thread Types
BSPP Parallel	G
BSPP Parallel with a WD Sealing face	G..WD

③ Thread Sizes
3/4" BSPP	12
1" BSPP	16
1-1/4" BSPP	20
1-1/2" BSPP	24
2" BSPP	32

④ Gender Types
Male / Female Fixed	MFX

⑤ Surface Protection
Steel Galvanised, thick layer passivated	W66

⑥ Manufacturer
STAUFF	(None)
Externally Bought	A

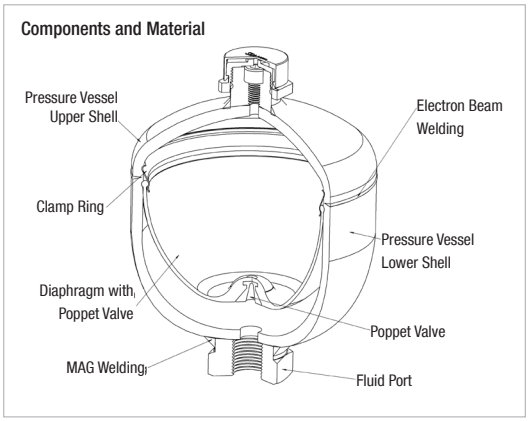
⑦ Assembly Status
Polyurethane Elastomeric sealing	WD-U

⑧ Additional Information
Machined flat body - Capped	MA-GK

Fluid Port Adaptor - Connector

Item No.	Designation	Pressure Rating
6100114279	ADP-C-G32WD/G12-MFX-W66A-WD-U-MA-GK	360 bar
6100114280	ADP-C-G32WD/G16-MFX-W66A-WD-U-MA-GK	360 bar
6100114281	ADP-C-G32WD/G20-MFX-W66A-WD-U-MA-GK	360 bar
6100114282	ADP-C-G32WD/G24-MFX-W66A-WD-U-MA-GK	360 bar

Diaphragm Accumulators
Type STDA



Product Description

STAUFF diaphragm accumulators (non-repairable compact type) are used to store low volumes for oil service for 0.075 - 2.8 Litre models, with pressure up to 350 bar. The compact design and construction includes a 1/2" or 3/4" BSPP fluid port connection (depending on accumulator size) as standard, fitted with a resilient diaphragm and the housing made of high tensile steel construction.

Features

- Full flow fluid port
- Standard Nitrile rubber high strength bladder
- High flow button style bladder / port design
- Non-repairable diaphragm accumulator
- Electron beam welded steel shell
- Paint Specification:
  UV Lacquer (0.075 - 1.4 Litre)
  zinc phosphating spray-type UV-lacquer and UV-hardening
  2K-Epoxy Resin Varnish (2 - 2.8 Litre)
  iron phosphating spray-paint with 2K-Epoxy resin varnish

Technical Data

- M28x1.5 connection with socket head cap screw (standard)
- NBR (Buna-N®) diaphragm material (standard)
- Maximum compression ratio of
  8:1 up to 1.4 Litres
  6:1 2 and 2.8 Litres
- Operating temperature -10°C ... +80°C
- Operating pressure to 250 - 350 bar
- Capacity up to 2.8 Litres

Options

Gas Port

- USA Schrader Valve

Oil Port

- BSPP, metric, male / female metric combination

Oil Port Adaptors (for 0.075 -1.4 Litres)

- 1/2 BSPP - M27x2 metric male / male adaptor

Diaphragm Material

- NBR (Buna-N®)
- FKM (Viton®)

Other materials available on request

Applications

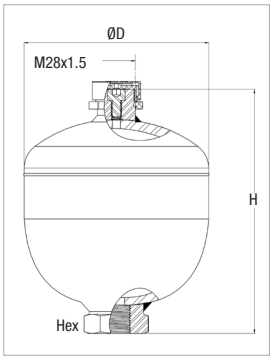
- Mobile and stationary hydraulics
- Light industrial
- Transport

Components and Material

Main Components	Standard Material		Material Options	
Shell	High strength alloy steel black enamel coating (non-repairable electron-beam welded construction)		Other materials available on request	
Diaphragm	NBR (Buna-N®)	Temperature Rating -10°C ... +80°C	Hydrin (ECO)	Temperature Rating -32°C ... +115°C
			FKM (Viton®)	-20°C ... +140°C
Gas Valve	Connection M28 with M6 socket head cap screw		–	
Fluid Port Shut-Off Valve	Delrin		–	

Maximum Flow Rates

Size (Ltr)	Maximum Recommended Flow			
	Normal Operation		Fully Discharging	
	GPM	LPM	GPM	LPM
0.075 & 0.16	11	40	2.6	10
0.32 & 1.40	26	100	11	40
2.00 & 2.80	42	160	16	60



Refer to pages 38 - 39 for accumulator clamps

Refer to page 31 for dimensions

Diaphragm Accumulators
Type STDA

STDA	-	075	-	NBR	-	P3	-	B	-	M	-	N	-	1
①		②		③		④		⑤		⑥		⑦		⑧

① Type

STAUFF Diaphragm Non Repairable Accumulator	**STDA**

② Accumulator Volume

0.075 Ltr	250 bar	**007**
0.16 Ltr	250 bar	**016**
0.32 Ltr	210 bar	**032**
0.5 Ltr	210 bar	**050**
0.75 Ltr	210 or 350 bar	**075**
1 Ltr	210 bar	**100**
1.4 Ltr	210 bar	**140**
2 Ltr	250 bar	**200**
2.8 Ltr	250 bar	**280**

Other pressures available on request

③ Diaphragm Material

NBR (Buna-N®)	**NBR**
Hydrin for Low Temp ECO	**ECO**
Fluoroelastomer FKM	**FKM**

④ Maximum Working Pressure

210 bar	**P3**
250 bar	**P4**
350 bar	**P5**

⑤ Oil Port Connection

Refer to table below

⑥ Gas Port Connection

M28x1.5 (standard)	**M**
STAUFF US Style Gas Valve (adaptor)	**U**

⑦ Non-Repairable

Non-Repairable	**N**

⑧ Special Option

Standard	**1**
25 bar Pre-charge	**25**
50 bar Pre-charge	**50**

⑤

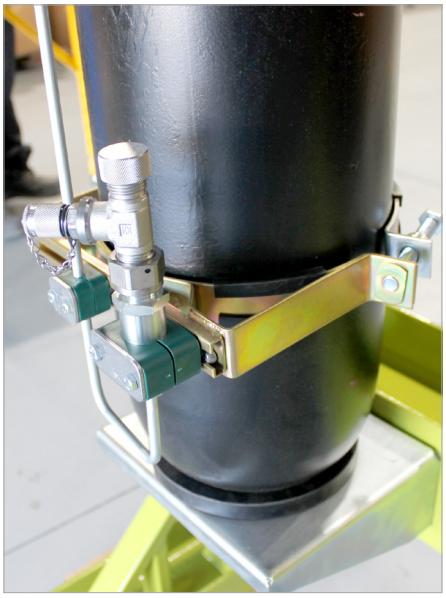
Connection Type	Volume (Ltr)									Note	Code
	0.075	0.16	0.32	0.5	0.75	1	1.4	2	2.8		
BSPP	G1/2"	G1/2"	G1/2"	G1/2"	G1/2"	G1/2"	G1/2"	G3/4"	G3/4"	* Standard for Australia, Brazil, China and Europe	**B**
Metric Male					M33x2.0						**D**
BSPP Female					G1/2"						
UNF	9/16–18	9/16–18	9/16–18	3/4–16	3/4–16	3/4–16	3/4–16	1-1/6–12	1-1/6–12	** Standard for North America	**U**

Order Codes and Dimensions

Item No.	Designation	Nominal Capacity (Ltr)	Maximum Working Pressure (bar)	Gas Valve Connection	Fluid Port Connection	Dimensions (mm)			Weight (kg)
						D	H	Maximum Pre-Charge (bar)	
3426001010	STDA-007-NBR-P4-B-M-N-1	0.075	250	M28x1.5	G1/2	64	111	130	0.7
3426001011	STDA-016-NBR-P4-B-M-N-1	0.16	250	M28x1.5	G1/2	75	119	130	1
3426001012	STDA-032-NBR-P3-B-M-N-1	0.32	210	M28x1.5	G1/2	92.5	134	130	1.4
3426001013	STDA-050-NBR-P3-B-M-N-1	0.5	210	M28x1.5	G1/2	107	151	130	2
3426001014	STDA-075-NBR-P3-B-M-N-1	0.75	210	M28x1.5	G1/2	121	166	130	2.6
3426001015	STDA-075-NBR-P5-D-M-N-1	0.75	350	M28x1.5	M33x2.0 (M) / G1/2 (F)	128.5	184	130	4.4
3426001016	STDA-100-NBR-P3-B-M-N-1	1	210	M28x1.5	G1/2	136	180	130	3.5
3426001017	STDA-140-NBR-P3-B-M-N-1	1.4	210	M28x1.5	G1/2	147	191	130	6.6
3426001018	STDA-200-NBR-P4-B-M-N-1	2	250	M28x1.5	G3/4	156	252	130	9.2
3426001019	STDA-280-NBR-P4-B-M-N-1	2.8	250	M28x1.5	G3/4	174	267	125	10


WARNING
NITROGEN
PRECHARGED TO
BAR
NEXT INSPECTION

Bladder Accumulator
Remote Monitoring System ▪ STA-RMS
Designed to suit STAUFF Accumulators only



Product Features

- Additional safety feature enabling easy access to the gas valve for pre-charging or pre-charge monitoring.
- Reduce the need for lifting equipment or ladders required to access the accumulator gas valve mounted in hard to access locations.

Order Codes

STA-RMS - 050 - CV - T - SKK-20 - 08

① ② ③ ④ ⑤ ⑥

① Type

STAUFF Accumulator Remote Monitor System	**STA-RMS**

② Size Code

20 Ltr / 5 Gal	**020**
35 Ltr / 10 Gal	**035**
40 Ltr / 11 Gal	**040**
50 Ltr / 13 Gal	**050**
55 Ltr / 15 Gal	**055**

③ Bladder Stem Connection

7/8–14 UNF Changeable Valve 19mm A/F	**CV**

④ Gas Valve installed both ends of installation

Integrated Gas Valve 7/8–14 UNF (standard)	**T**
STAUFF US Style Gas Valve	**Y**

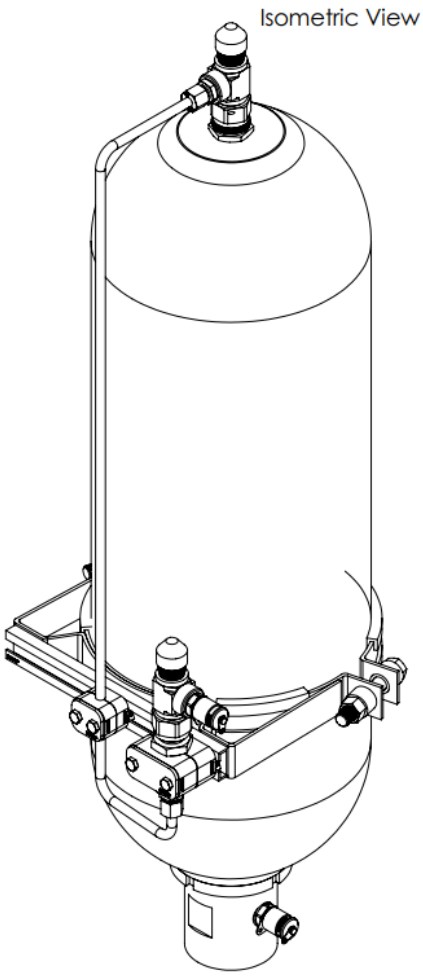
⑤ Auxiliary Port Type bottom Connection

SKK-20 Test Coupling	**SKK-20**

⑥ Tube Size

8mm Diameter Steel Tube (standard)	**08**

STA-RMS-050-CV-T-SKK-20-08



Item No.	Designation	Suits Accumulator Size (Ltr)	Gas Valve installed both ends of installation
6100223052	STA-RMS-020-CV-T-SKK-20-08	20	Integrated Gas Valve 7/8–14 UNF
6100223053	STA-RMS-035-CV-T-SKK-20-08	35	Integrated Gas Valve 7/8–14 UNF
6100223054	STA-RMS-040-CV-T-SKK-20-08	40	Integrated Gas Valve 7/8–14 UNF
6100223055	STA-RMS-050-CV-T-SKK-20-08	50	Integrated Gas Valve 7/8–14 UNF
6100223056	STA-RMS-055-CV-T-SKK-20-08	55	Integrated Gas Valve 7/8–14 UNF
6100223057	STA-RMS-020-CV-Y-SKK-20-08	20	STAUFF US Style Gas Valve
6100223058	STA-RMS-035-CV-Y-SKK-20-08	35	STAUFF US Style Gas Valve
6100223059	STA-RMS-040-CV-Y-SKK-20-08	40	STAUFF US Style Gas Valve
6100223060	STA-RMS-050-CV-Y-SKK-20-08	50	STAUFF US Style Gas Valve
6100223061	STA-RMS-055-CV-Y-SKK-20-08	55	STAUFF US Style Gas Valve

Permanent Charging Heads
Bladder Accumulators with 19 mm A/F ▪ STBA-A-CV

Order Codes

STBA-A	-	CV	-	U10	-	T	-	SKK-20	-	100SG	-	W3
①		②		③		④		⑤		⑥		⑦

① Series

STAUFF Accumulator Bladder Adaptor	**STBA-A**

② Bladder Stem

Bladders with 19mm A/F (standard)	**CV**

③ Accumulator Connection

7/8–14 UNF	**U10**

④ Gas Valve Type

Integrated Gas Valve (standard)	**T**
1/4" BSPP Gas Valve	**A**
STAUFF US Style Gas Valve	**Y**

⑤ Adaptor Port Connection

SKK-20 Test Coupling	**SKK-20**

⑥ Additional Equipment Connecting to Adaptor Port

100 bar/PSI Pressure Gauge with SMD Adaptor	**100SG**
250 bar/PSI Pressure Gauge with SMD Adaptor	**250SG**
400 bar/PSI Pressure Gauge with SMD Adaptor	**400SG**
160 bar PT-RF Pressure Transmitter	**B160R**
400 bar PT-RF Pressure Transmitter	**B400R**
Without Additional Equipment	**(None)**

⑦ Material

Carbon steel / zinc-nickel plated	**W3**

Product Description

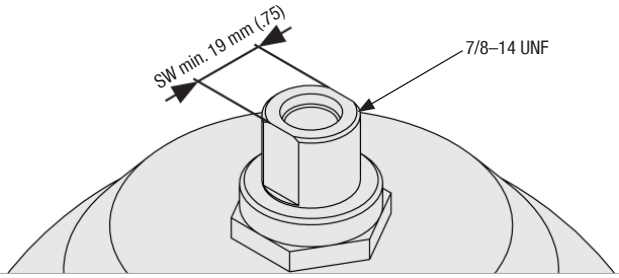
The STAUFF permanent charge head allows accessory equipment to be mounted directly onto the gas side of a bladder accumulator. For accumulators already installed in a system, the pre-charge pressure must be at zero pressure, then the existing gas valve fitted to the accumulator can be removed. The permanent charge head is then fitted directly to the accumulator's 7/8" UNF bladder stem connection with 19 mm A/F.

The STAUFF permanent charge head is supplied as standard with a STAUFF SKK-20 test coupling, which can easily allow other STAUFF accessories e.g. Safety pattern analogue pressure gauge, PT-RF pressure sensor or DIGI gauge to be fitted to the charge head.

Features

- Allows accessory equipment such as pressure gauges, PT-RF pressure sensors or DIGI gauge to be mounted to the gas side of the bladder accumulator
- Safety Patten analogue pressure gauge enables the checking of the pre-charge without having to use an accumulator charging kit
- Suits most common brands of bladder accumulators fitted with a 7/8–14 UNF bladder stem connection

Type CV - Bladders with 19 mm A/F



Option T
Integrated Gas Valve with SKK-20 only

Item No.	Designation
6100087028	STBA-A-CV-U10-T-SKK-20-W3

Option A
1/4" BSPP Gas Valve with SKK-20 only

Item No.	Designation
6100087033	STBA-A-CV-U10-A-SKK-20-W3

Option Y
STAUFF US Style Gas Valve with SKK-20 only

Item No.	Designation
6100087032	STBA-A-CV-U10-Y-SKK-20-W3

Option T
Integrated Gas Valve and Gauge

Item No.	Designation
6100162739	STBA-A-CV-U10-T-SKK-20-100SG-W3
6100162740	STBA-A-CV-U10-T-SKK-20-250SG-W3
6100162736	STBA-A-CV-U10-T-SKK-20-400SG-W3

Option A
1/4" BSPP Gas Valve and Gauge

Item No.	Designation
6100162737	STBA-A-CV-U10-A-SKK-20-100SG-W3
6100162738	STBA-A-CV-U10-A-SKK-20-250SG-W3
6100162734	STBA-A-CV-U10-A-SKK-20-400SG-W3

Option Y
STAUFF US Style Gas Valve and Gauge

Item No.	Designation
6100162735	STBA-A-CV-U10-Y-SKK-20-100SG-W3
6100162742	STBA-A-CV-U10-Y-SKK-20-250SG-W3
6100162741	STBA-A-CV-U10-Y-SKK-20-400SG-W3

Option T
Integrated Gas Valve and Pressure Transmitter

Item No.	Designation
6100087624	STBA-A-CV-U10-T-SKK-20-B160R-W3
6100087625	STBA-A-CV-U10-T-SKK-20-B400R-W3

Option A
1/4" BSPP Gas Valve and Pressure Transmitter

Item No.	Designation
6100087621	STBA-A-CV-U10-A-SKK-20-B160R-W3
6100087620	STBA-A-CV-U10-A-SKK-20-B400R-W3

Option Y
STAUFF US Style Gas Valve and Pressure Transmitter

Item No.	Designation
6100087626	STBA-A-CV-U10-Y-SKK-20-B160R-W3
6100087622	STBA-A-CV-U10-Y-SKK-20-B400R-W3

Permanent Charging Heads
Bladder Accumulators with 16 mm A/F ▪ STBA-A-FV

Order Codes

STBA-A	-	FV	-	U10	-	T	-	SKK-20	-	100SG	-	W3
①		②		③		④		⑤		⑥		⑦

① Series

STAUFF Accumulator Bladder Adaptor	**STBA-A**

② Bladder Stem

Bladders with 16mm A/F	**FV**

③ Accumulator Connection

7/8–14 UNF	**U10**

④ Gas Valve Type

STAUFF US Style Gas Valve (standard)	**Y**

⑤ Adaptor Port Connection

SKK-20 Test Coupling	**SKK-20**

⑥ Additional Equipment Connecting to Adaptor Port

100 bar/PSI Pressure Gauge with SMD Adaptor	**100SG**
250 bar/PSI Pressure Gauge with SMD Adaptor	**250SG**
400 bar/PSI Pressure Gauge with SMD Adaptor	**400SG**
160 bar PT-RF Pressure Transmitter	**B160R**
400 bar PT-RF Pressure Transmitter	**B400R**
Without Additional Equipment	**(None)**

⑦ Material

Carbon steel / zinc-nickel plated	**W3**

Product Description

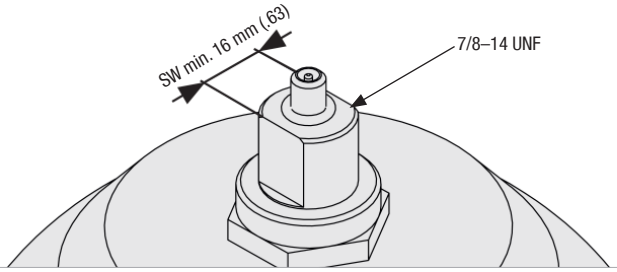
The STAUFF permanent charge head allows accessory equipment to be mounted directly onto the gas side of a bladder accumulator. For accumulators already installed in a system, the pre-charge pressure must be at zero pressure, then the existing gas valve fitted to the accumulator can be removed. The permanent charge head is then fitted directly to the accumulator's 7/8" UNF bladder stem connection with 16 mm A/F.

The STAUFF permanent charge head is supplied as standard with a STAUFF SKK-20 test coupling, which can easily allow other STAUFF accessories e.g. Safety pattern analogue pressure gauge, PT-RF pressure sensor or DIGI gauge to be fitted to the charge head.

Features

- Allows accessory equipment such as pressure gauges, PT-RF pressure sensors or DIGI gauge to be mounted to the gas side of either the bladder accumulator
- Safety Patten analogue pressure gauge enables the checking of the pre-charge without having to use an accumulator charging kit
- Suits most common brands of bladder accumulators fitted with a 7/8–14 UNF bladder stem connection

Type FV - Bladders with 16 mm A/F



Option Y
STAUFF US Style Gas Valve with SKK-20 only

Item No.	Designation
6100205126	STBA-A-FV-U10-Y-SKK-20-W3

Option Y
STAUFF US Style Gas Valve and Gauge

Item No.	Designation
6100162743	STBA-A-FV-U10-Y-SKK-20-100SG-W3
6100162744	STBA-A-FV-U10-Y-SKK-20-250SG-W3
6100162745	STBA-A-FV-U10-Y-SKK-20-400SG-W3

Option Y
STAUFF US Style Gas Valve and Pressure Transmitter

Item No.	Designation
6100134467	STBA-A-FV-U10-Y-SKK-20-B160R-W3
6100134468	STBA-A-FV-U10-Y-SKK-20-B400R-W3

Permanent Charging Heads
Diaphragm Accumulators ▪ STDA Series

Order Codes

STDA-A - M28 - M28 - SKK-20 - 100SG - W3

① ② ③ ④ ⑤ ⑥

① Series

STAUFF Accumulator Diaphragm Adaptor	**STDA-A**

② Accumulator Connection

M28x1.5	**M28**

③ Gas Valve Type

M28 with M8 female Socket Head Cap Screw	**M28**

④ Adaptor Port Connection

1/4" BSPP	**G04**
SKK-20 Test Coupling	**SKK-20**

⑤ Additional Equipment Connecting to Adaptor Port

100 bar/PSI Pressure Gauge with SMD Adaptor	**100SG**
250 bar/PSI Pressure Gauge with SMD Adaptor	**250SG**
400 bar/PSI Pressure Gauge with SMD Adaptor	**400SG**
160 bar PT-RF Pressure Transmitter	**B160R**
400 bar PT-RF Pressure Transmitter	**B400R**
Without Additional Equipment	**(None)**

⑥ Material

Carbon steel / zinc-nickel plated	**W3**

Product Description

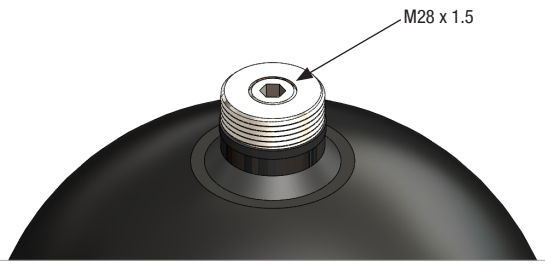
The STAUFF permanent charge head allows accessory equipment to be mounted directly onto the gas side of a diaphragm accumulator. For accumulators already installed in a system, the pre-charge pressure must be at zero pressure, then the existing gas valve (typically a 6 mm socket head cap screw) and sealing washer fitted to the accumulator can be removed. The removed gas valve and sealing washer must then be fitted to the permanent charge head to allow normal pre-charge of the unit. The permanent charge head can then be fitted to any Diaphragm Accumulators that have a M28x1.5 gas valve connection.

The STAUFF permanent charge head is supplied as standard with a STAUFF SKK-20 test coupling, which can easily allow other STAUFF accessories e.g. Safety pattern analogue pressure gauge, PT-RF pressure sensor or DIGI gauge to be fitted to the charge head.

Features

- Allows accessory equipment such as pressure gauges, PT-RF pressure sensors or DIGI gauge to be mounted to the gas side of the diaphragm accumulator
- Safety Patten analogue pressure gauge enables the checking of the pre-charge without having to use an accumulator charging kit
- Suits most common brands of diaphragm accumulators fitted with a M28x1.5 connection

Type M28 - Diaphragm Accumulators with M28 x 1.5 connection



Option M28
M28 Gas Valve with SKK-20 only

Item No.	Designation
6100087023	STDA-A-M28-M28-SKK-20-W3

Option M28
M28 Gas Valve and Gauge

Item No.	Designation
6100162733	STDA-A-M28-M28-SKK-20-100SG-W3
6100162732	STDA-A-M28-M28-SKK-20-250SG-W3
6100162731	STDA-A-M28-M28-SKK-20-400SG-W3

Option M28
M28 Gas Valve and Pressure Transmitter

Item No.	Designation
6100087616	STDA-A-M28-M28-SKK-20-B160R-W3
6100087615	STDA-A-M28-M28-SKK-20-B400R-W3

Spares

The following items are supplied to allow connection to STBA-A / STDA-A Permanent Charging Heads with SKK-20 only.

Pressure Transmitter with Test Adaptor

Item No.	Designation
6100046248	PT-RF-B00160-B04-SDA-20
6100046269	PT-RF-B00400-B04-SDA-20

Gauge Adaptor to SKK-20 Test Point

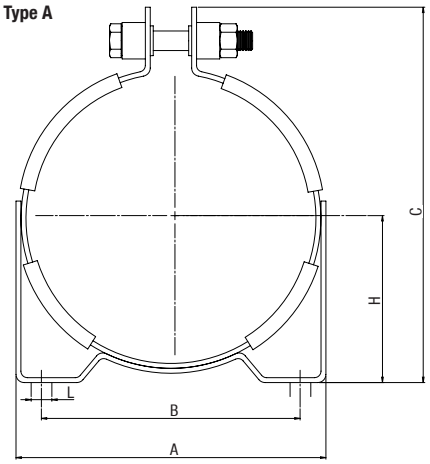
Item No.	Designation
1210026219	SMD-20-G1/4-B-OR-W3

Safety Pattern Gauge

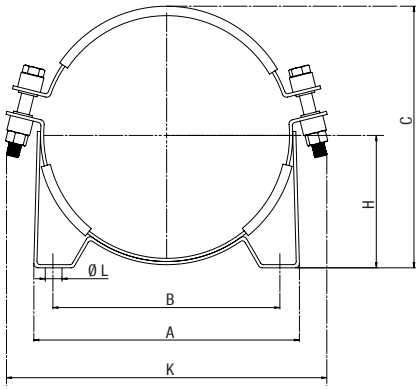
Item No.	Designation
6100161935	SPG-063-00100-01-P-B04-490179
6100161937	SPG-063-00250-01-P-B04-490179
6100161939	SPG-063-00400-01-P-B04-490179

Accumulator Clamps ▪ Steel
to suit STBA and STDA Accumulators

Type A



Type B

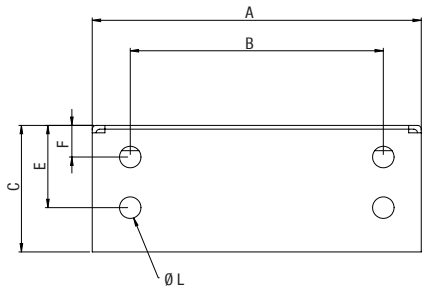


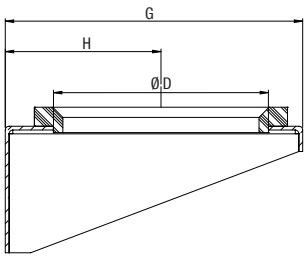
Order Codes and Dimensions

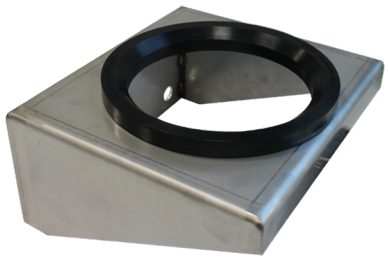
Item No.	Designation	Nominal Clamp Diameter (mm)	To suit Diaphragm Accumulator STDA (Ltr)	To suit Bladder Accumulator STBA (Ltr)	Dimensions (mm)							
					A	B	C	H	K	Dia L	Hole Width	Type
3426010280	STA-AMP-108-1	108	0.5	0.5	138	100	150	64	-	12.7	9.7	A
3426010887	STA-AMP-108-LIGHT	108	0.5	0.5	138	100	150	64	-	12.7	9.7	A
3426010230	STA-AMP-114-1	114	-	1 & 2.5	134	100	170	73	-	12.7	9.7	A
3426010791	STA-AMP-126-LIGHT	126	0.75	-	175	136	181	77	-	12.7	9.7	A
3426010792	STA-AMP-136-LIGHT	136	1	-	175	136	181	77	-	12.7	9.7	A
3426010290	STA-AMP-146-1	146	1.4	-	168	136	197	89	-	12.7	9.7	A
6100004125	STA-AMP-156-1	156	2	-	168	136	197	89	-	12.7	9.7	A
3426010240	STA-AMP-172-1	172	2.8	4 & 6	191	153	224	100	-	12.7	9.7	A
3426010247	STA-AMP-228-2	232	-	10 - 55	254	216	251	126	315	15.0	-	B

Rubber mouldings fitted to supports are made from Nitrile rubber

Accumulator Supports ▪ Steel
to suit STBA Accumulators





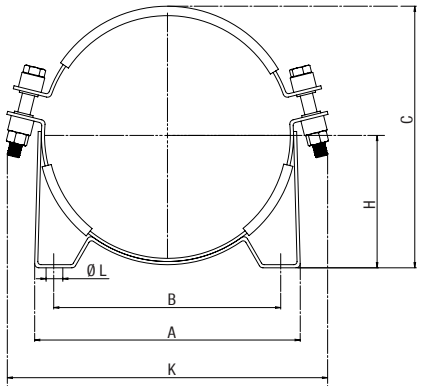


Order Codes and Dimensions

Item No.	Designation	To suit Bladder Accumulator STBA (Ltr)	Dimensions (mm)								
			A	B	C	D	E	F	G	H	L
3426010725	STA-BRK-ASSY-004	4 & 6	260	200	100	120	75	35	225	100	17
3426010726	STA-BRK-ASSY-010	10 - 55	260	200	100	170	75	35	225	123	17

Supplied with Nitrile rubber cushion ring

Accumulator Clamps ▪ Stainless Steel to suit STBA and STDA Accumulators

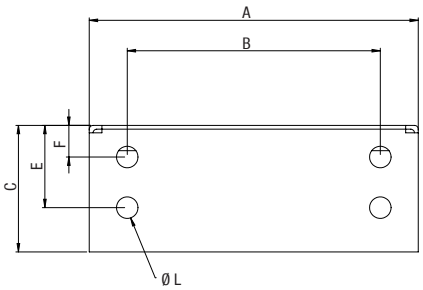


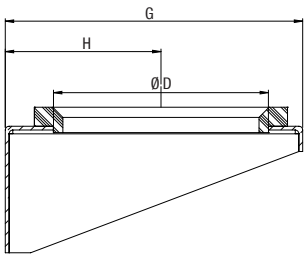
Order Codes and Dimensions

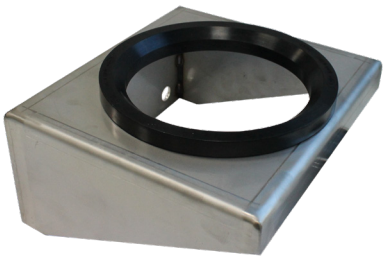
Item No.	Designation	Nominal Clamp Diameter (mm)	To suit Bladder Accumulator STBA (Ltr)	Dimensions (mm)						
				A	B	C	H	K	Dia L	Clamp Width
6100007695	STA-AMP-228-2-W5-01	209-230	10 - 55	255	216	230-251	126	300	10 x 20	30

Rubber mouldings fitted to supports are made from Nitrile rubber

Accumulator Supports ▪ Stainless Steel to suit STBA Accumulators





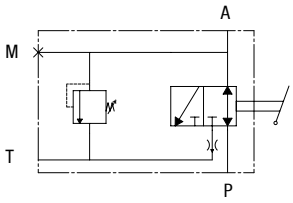


Order Codes and Dimensions

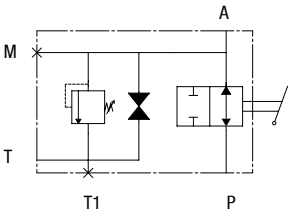
Item No.	Designation	To suit Bladder Accumulator STBA (Ltr)	Dimensions (mm)								
			A	B	C	D	E	F	G	H	L
6100007696	STA-BRK-ASSY-010-W5-01	10 - 55	260	200	120	170	100	30	132	125	17

Supplied with Nitrile rubber cushion ring

Safety Blocks ▪ Type BS-10 / 25 / 32



BS - Size 10



BS - Size 25 / 32

Product Description

Type BS safety blocks are designed for mounting, pressure isolation, pressure relief protection, and manual or remote discharge (blowing down) of hydraulic accumulators. The main ports match common accumulator fluid ports for simple mounting. A rapid shut-off function is achieved by a 90° turn of a leak-free ball valve handle during emergencies or routine maintenance. Note: This valve is not intended for throttling flow in and out of the accumulator (doing so can damage the ball seats). An integral relief valve provides overpressure protection for the accumulator shell (valve is set at 360 bar, other pressure settings are available on request). Type BS safety blocks also have a port (M) for monitoring fluid pressure within the accumulator. Safety blocks are supplied with NBR (Buna-N®) O-Rings to take BSPP chamfer seal. Additional metal ring to suit BSPP flat face seal available separately.

Technical Data

Max operating pressure (Ps):	420 bar
Pressure test (Pt):	1.43 X Ps
Nominal passage diameter:	10 mm, 25 mm, 32 mm
Working temperature:	-40°C... +150°C
Fluid viscosity range:	10 - 400 cSt
Recommended viscosity:	36 cSt
Fluid contamination level, Max:	Class 21/19/16 according to ISO 4406/99
Shut-off valve:	Ball type
Safety valve:	Type DBDS cartridge safety relief valve
Discharge valve:	Manual or electric
Mounting position:	Vertical or horizontal
Body material:	Carbon steel phosphated in compliance with directive 2002/95/ec (RoHS) to resist to corrosion
Valve material:	Carbon steel phosphated or galvanized in compliance with directive 2002/95/ec (RoHS) to resist to corrosion
Seal material:	NBR (Buna-N®)
Accumulator connection:	3/4" BSPP 1-1/4" BSPP 2" BSPP

Order Codes

BS	-	10	-	M	P	-	360	-	A	5	-	G	4	-	C	-	P
①		②		③	④		⑤		⑥	⑦		⑧	⑨		⑩		⑪

① Type

STAUFF Safety Block	**BS**

② Internal Nominal Diameter

10 mm	**10**
25 mm	**25**
32 mm	**32**

③ Discharge

Manual operation only	**M**
Manual operation only with plugged port for solenoid (dump) valve	**F**

④ Relief Valve

Valve Type DBDS (CE certified)	**P**

⑤ Valve Relief Setting Pressure

360 bar relief	**360**

⑥ Accumulator Side Connection Thread

BSPP ISO 228 with O-Ring chamfer	**A**

⑦ Accumulator Side Connection Adaptor

3/4" BSPP O-Ring seal	**5**
1-1/4" BSPP O-Ring seal	**7**
2" BSPP O-Ring seal	**9**

⑧ Installation Side Connection Thread

BSPP ISO 228 with O-Ring chamfer	**G**

⑨ System Side Connection

1/2" BSPP for BS10	**4**
1" BSPP for BS25	**6**
1-1/2" BSPP for BS32	**8**

⑩ Block Material

Carbon Steel + Phosphated	**C**

⑪ Seal Material

NBR (Buna-N®)	**P**

Safety Blocks ▪ Type BS-10 / 25 / 32

BS-10

Item No.	Designation
3426000314	BS-10-MP-360-A5-G4-C-P

Isolation valve, manual drain, relief valve 360 bar
Accumulator connection 3/4" BSPP
System connection 1/2" BSPP

BS-25

Item No.	Designation
6100011938	BS-25-MP-360-A7-G6-C-P

Isolation valve, manual drain, relief valve 360 bar
Accumulator connection 1-1/4" BSPP
System connection 1" BSPP

BS-32

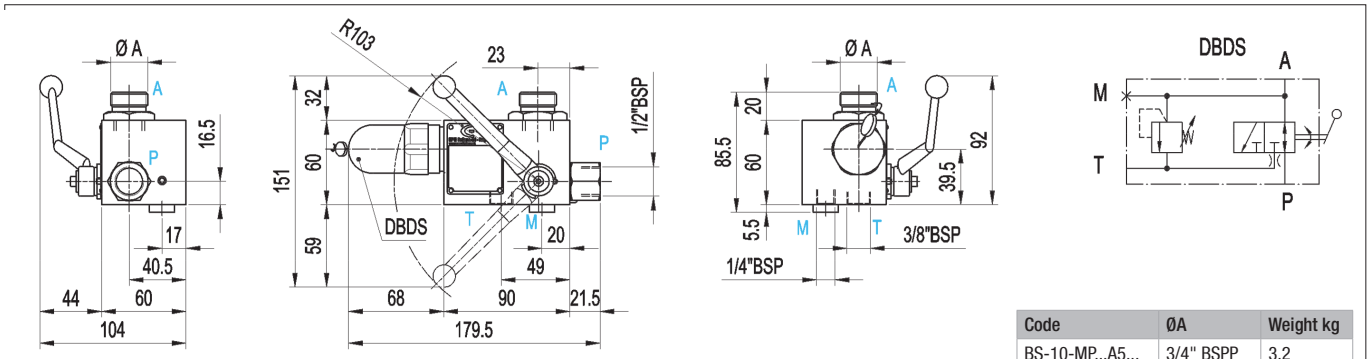
Item No.	Designation
3426000119	BS-32-MP-360-A9-G8-C-P

Isolation valve, manual drain, relief valve 360 bar
Accumulator connection 2" BSPP
System connection 1-1/2" BSPP

Safety Blocks ▪ Type BS-10 / 25 / 32

Dimensions

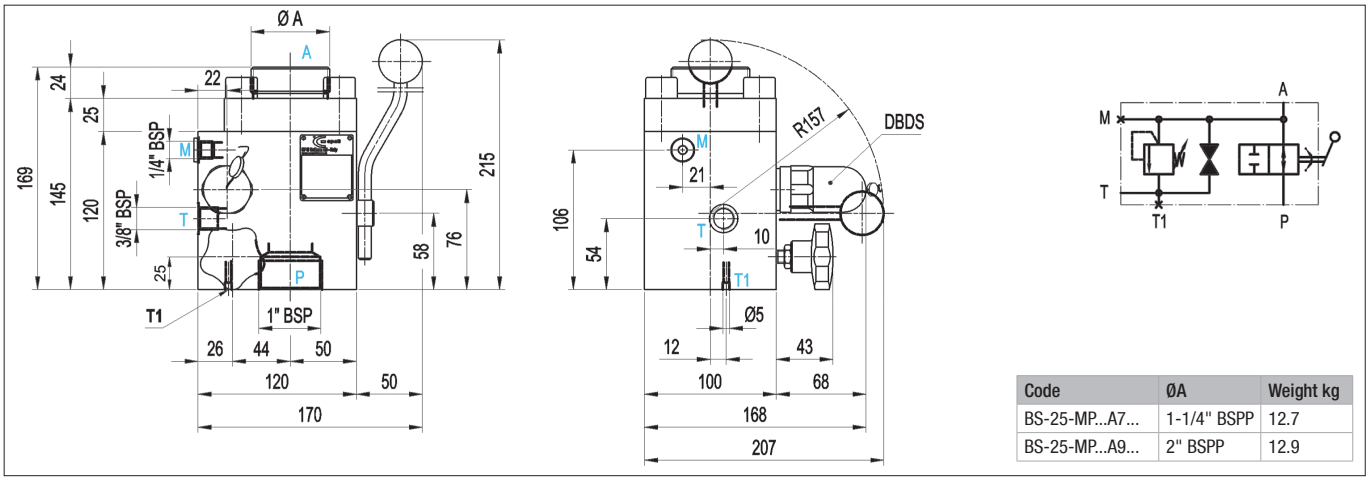
BS10



BS10

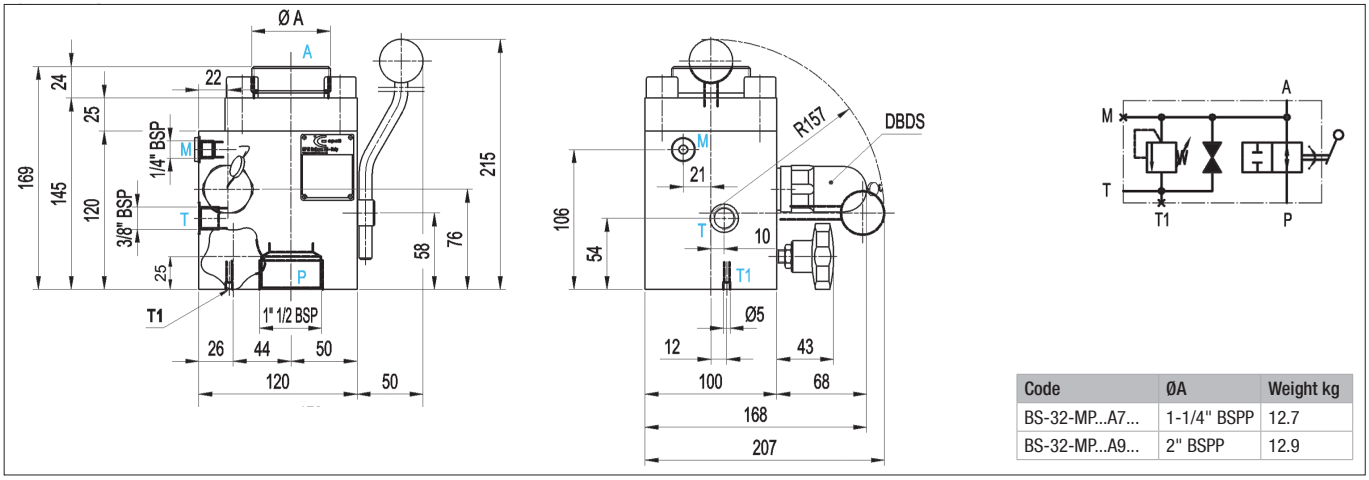
Code	ØA	Weight kg
BS-10-MP...A5...	3/4" BSPP	3.2
BS-10-MP...A7...	1-1/4" BSPP	3.4
BS-10-MP...A9...	2" BSPP	3.5

BS25



Code	ØA	Weight kg
BS-25-MP...A7...	1-1/4" BSPP	12.7
BS-25-MP...A9...	2" BSPP	12.9

BS32



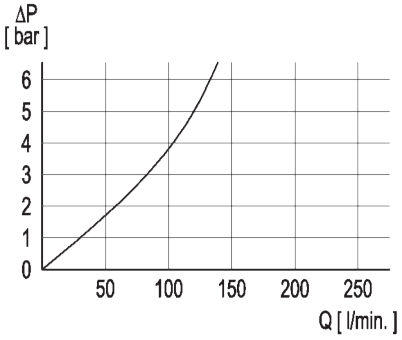
Code	ØA	Weight kg
BS-32-MP...A7...	1-1/4" BSPP	12.7
BS-32-MP...A9...	2" BSPP	12.9

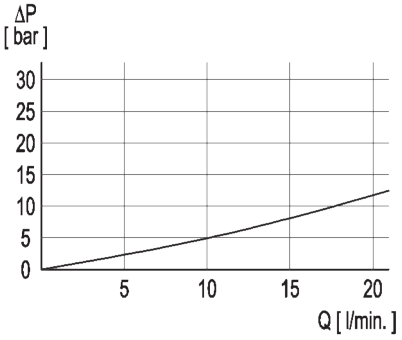
Safety Blocks ▪ Type BS-10 / 25 / 32
Characteristic Curves

Flow rate from the pump to the accumulator

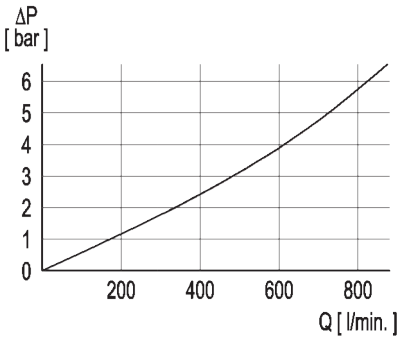
Flow rate from the accumulator to the tank

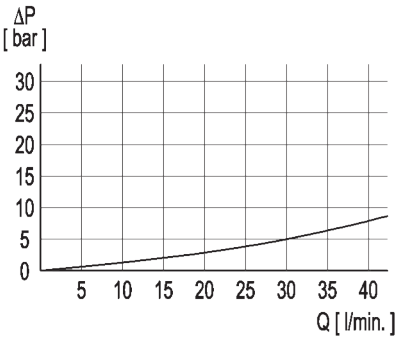
BS10



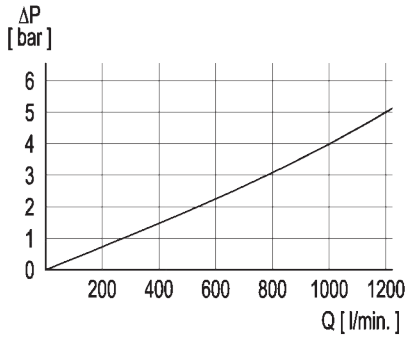


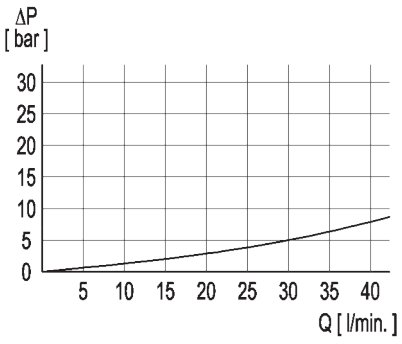
BS25





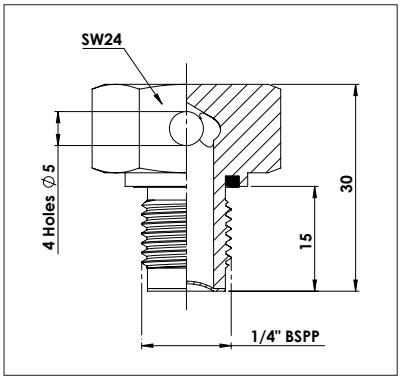
BS32





Curves measured using mineral oil with viscosity of 36 cSt at 50°C

Burst Discs ▪ Type DR (Pressure)



Product Description

Burst discs are a pressure safety device that can be mounted to an adaptor fitted on the gas side of both bladder and piston accumulators. The function of a burst disc is to protect the accumulator from any excessive pressure that may exceed the accumulators maximum design limits. To protect the accumulator the burst disc releases the excessive gas (nitrogen) pressure securely via a calibrated concave membrane within the stainless steel AISI 316L cap, therefore safeguarding both operation personnel and equipment.

STAUFF recommend the use of one burst disc per accumulator vessel. In the event pressure has been exceeded, the release of the excessive gas (nitrogen) will rupture the concave membrane and subsequently the burst disc will be unusable and will need to be replaced.

Technical Data

Internal diameter:	8 mm
Influx diameter:	4 mm
Maximum operating pressure:	400 bar
Overpressure:	0 + 10%
Testing certificate:	CE/PED (97/23/EC)
Material:	Stainless Steel AISI 316L
Medium:	Nitrogen (N2) gas
Temperature range:	-10°C… +80 °C

Order Codes

STA - DR - 08 - B0210 - W5 - G04

① ② ③ ④ ⑤ ⑥

① Series

STAUFF Accumulator Component	**STA**

② Type

Burst Disc Pressure Operated	**DR**

③ Orifice Size

8 mm	**08**

④ Pressure Rating

210 bar	**B0210**
330 bar	**B0330**
360 bar	**B0360**

⑤ Material

Stainless Steel 316 (standard)	**W5**

⑥ Connection Port

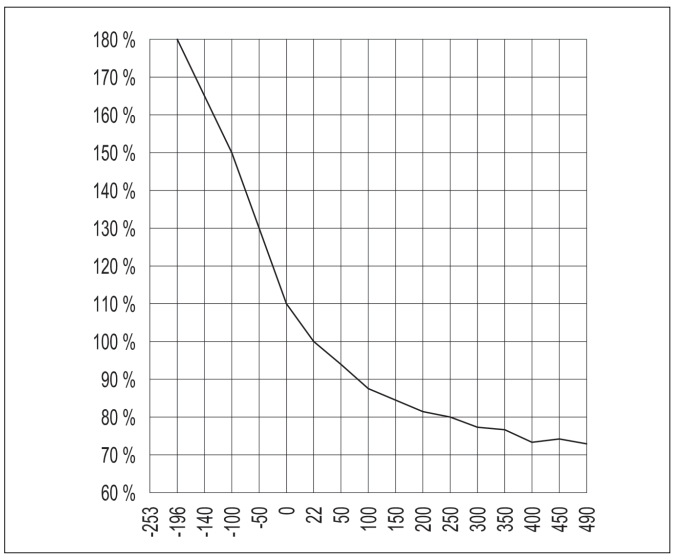
1/4 BSPP	**G04**

Item No.	Designation
6100157828	STA-DR-08-B0210-W5-G04
6100157831	STA-DR-08-B0330-W5-G04
6100157833	STA-DR-08-B0360-W5-G04 (standard)

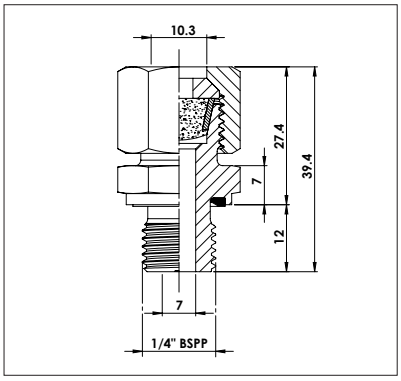
Selection

The nominal pressure setting has a tolerance 0 + 10% (the burst pressure varies according to the temperature).

Refer to the table below.



Fuse Discs ▪ Type DF (Temperature)



Product Description

Fuse discs are a temperature safety device that can be mounted to an adaptor fitted on the gas side of both bladder and piston accumulators. The function of a fuse disc is to release the gas (nitrogen) pressure of an accumulator securely when the temperature exceeds a maximum level of 142°C. To protect the accumulator the fuse disc releases the accumulators gas (nitrogen) pressure securely via a calibrated concave membrane within the stainless steel AISI 316L cap, therefore safeguarding both operation personnel and equipment.

In the event temperature has been exceeded, the release of the gas (nitrogen) pressure will rupture the concave membrane and subsequently the fuse disc will be unusable and will need to be replaced.

Technical Data

Internal diameter:	8 mm
Influx diameter:	4 mm
Maximum operating pressure:	≤ 500
Working temperature:	-10°C... +80°C
Melting point:	Approx. 142°C
Testing certificate:	CE/PED (97/23/EC)
Material:	Stainless Steel AISI 316L
Medium:	Nitrogen (N2) gas

Order Codes

STA	-	DF	-	08	-	T0142	-	W5	-	G04
①		②		③		④		⑤		⑥

① Series

STAUFF Accumulator Component	**STA**

② Type

Fuse Disc Temperature Operated	**DF**

③ Orifice Size

8 mm	**08**

④ Temperature Rating

142 °C	**T0142**

⑤ Material

Stainless Steel 316 (standard)	**W5**

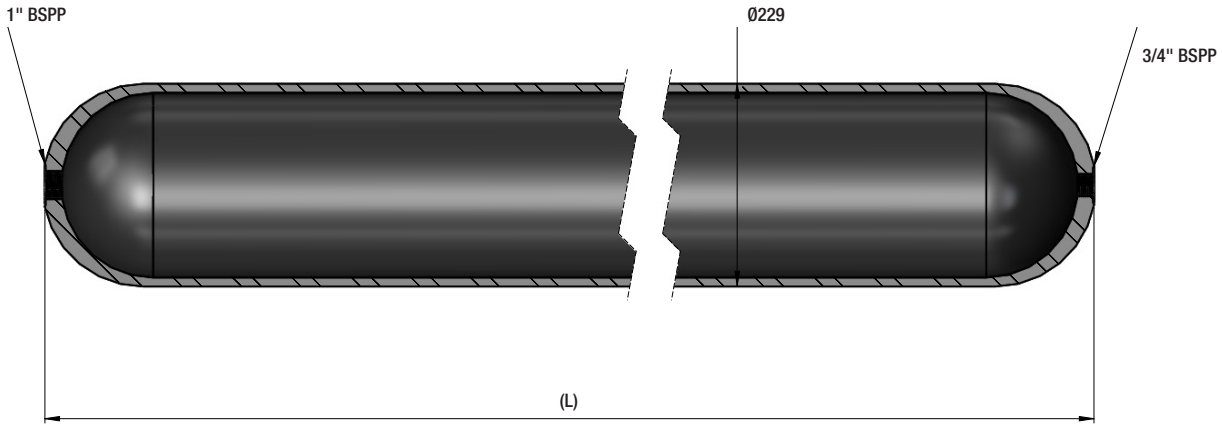
⑥ Connection Port

1/4 BSPP	**G04**

Item No.	Designation
6100157857	STA-DF-08-T0142-W5-G04

Accumulator Replacement Back-up Bottle

50 and 75 Litre rated to 350 bar



Product Description

STAUFF accumulator replacement back-up bottles are available to customers that have existing installed accumulator stations (both bladder and piston) that utilize back-up bottles.

Technical Data

Maximum design pressure: 350 bar (AS1210 design approval)
Design temperature: -20°C... +80°C
Test pressure: 540 bar
Nominal volume: 50 and 75 Litre
Body material: Steel

Available in sizes 50 and 75 Litre
Contact STAUFF for more information.

Accumulator Lifting Lugs to suit STBA Accumulators

Accumulator Lifting Lug

Item No.	Designation	Suitable lifting weight (kg)	To suit Bladder Accumulator STBA (Ltr)
3426010520	STA-LIFTLUG-U10-W2-150	140	1 - 55

Universal Accumulator Charging Kit

Analogue

Digital

Product Description

STAUFF universal accumulator charging kit is an essential instrument for the verification, pressurisation and gas bleeding of hydraulic accumulators, suitable for most common bladder and diaphragm accumulators.

Features - Analogue Gauges

The standard kit is delivered in a 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
6. 1 x Adaptor (short) Integrated 7/8–14 UNF
8. 1 x 0 - 100 bar/PSI safety pattern pressure gauge + adaptor SMD-20-G1/4-B-OR-W3
9. 1 x 0 - 250 bar/PSI safety pattern pressure gauge + adaptor SMD-20-G1/4-B-OR-W3
10. 1 x Adaptor 5/8–18 UNF - 0.305"
11. 1 x High-pressure gas hose (2000 mm long) for connecting to a nitrogen gas source - SKK-20-1/4" BSPP female
12. 1 x Safety goggles
13. 1 x Hex key 6 mm
14. 1 x Operating instructions

Features - Digital Gauge

15. 1 x 0 - 400 bar digital pressure gauge + adaptor SDA-20-G1/4-W3

Optional Bottle Adaptors

- Type 50 gas bottle adaptor (17,000 kPa)
- Type 51 gas bottle adaptor (30,000 kPa)

Refer to page 49

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.

Order Codes

STA-CK - 250/100S-G - HA21 - A1 - 0

① ② ③ ④ ⑤

① Type

STAUFF Accumulator Charge Kit	**STA-CK**

② Pressure Gauges Including Gauge Adaptor

0 - 250 bar/PSI + 0 - 100 bar/PSI	**250/100S-G**
0 - 400 bar/PSI + 0 - 250 bar/PSI	**400/250S-G**
0 - 400 bar (digital pressure gauge)	**B0400D-G**

③ Charging Hose

SGS-D Test 20 - 1/4" BSPP DN4 Gas Hose 2000 mm (standard)	**HA21**

④ Charging Adaptors

1/4" BSPP (STAUFF – Olaer)	**A1**
5/8–18 UNF (EPE)	
7/8–14 UNF Long (Hydac)	
7/8–14 UNF Short (STAUFF – Olaer Integrated)	
0.305" x 32 TPI (USA)	

⑤ Gas Bottle Adaptors

Without Gas Bottle Adaptors (standard)	**0**

Item No.	Designation
6100162729	STA-CK-250/100S-G-HA21-A1-0 (standard)
6100162730	STA-CK-400/250S-G-HA21-A1-0
6100045971	STA-CK-B0400D-G-HA21-A1-0

Typical Installation

Bladder accumulator

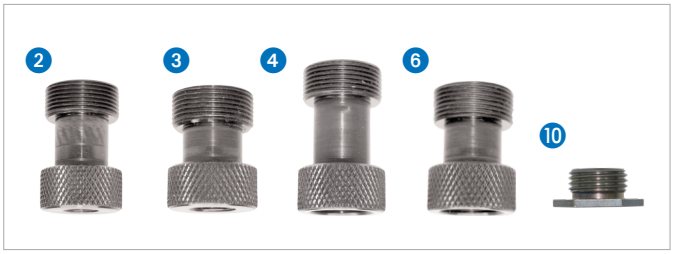
Diaphragm accumulator

Bladder accumulator (DIGI Gauge)

Diaphragm accumulator (DIGI Gauge)

Note: STAUFF pressure gauges are safety pattern type according to AS1349 with safety glass, solid baffle wall, and a stainless steel construction with excellent stability and shock resistance.

Universal Accumulator Charging Kit • Component Contents



Charging head

Part No.	Item No.	Designation
1	3426010190	STA-CK-CHRG-HEAD-M28

Replacement Bleed Valve to suit STA-CK-CHRG-HEAD-M28 (sold separately)

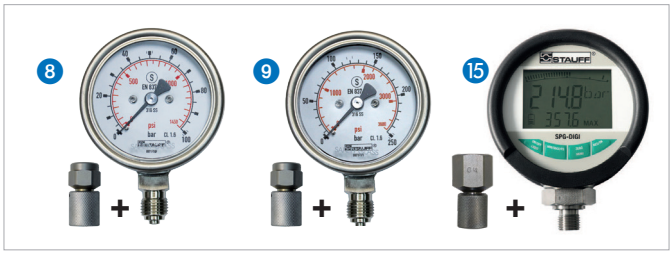
Item No.	Designation
3426010196	STA-BLEED-CK

Replacement Seal Kit to suit items 1, 2, 3, 4 and 6 (sold separately)

Item No.	Designation
6100227577	SEAL-KIT-STA-CK-M28

Charging Adaptors

Part 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
6	3426010215	STA-CK-ADP-M28-7/8S
10	3426010854	STA-CK-ADP-5/8-0.305



Gauges

Part No..	Item	Item No.	Designation
8	Gauge	6100161936	SPG-063-00100-01-S-B04-490179
	SMD	1210026219	SMD-20-G1/4-B-OR-W3
9	Gauge	6100161938	SPG-063-00250-01-S-B04-490179
	SMD	1210026219	SMD-20-G1/4-B-OR-W3
15	Gauge	1810000168	SPG-DIGI-B0400-B
	SMD	1210026153	SDA-20-G1/4-W3

Accessories

Part No..	Item No.	Designation
11	6100017542	SGS-20/B1/4-2000-C-W3
12	3499000031	CK-GOGGLES-S
13	1930020934	CK-HEX-TOOL-06

Optional

Type 50 & 51 Gas bottle adaptors (sold separately)

Item No.	Designation
6100065980	STA-N2-ADP-M07-50-N04
6100065981	STA-N2-ADP-M07-51-N04

Note: Component slot available in charging kit for gas adaptors.
Type 50 & 51 Gas bottle adaptors suit STAUFF nitrogen regulator.

Optional

Adaptor to suit Chinese M14 gas valve - (sold separately)

Item No.	Designation
3426010762	STA-CK-ADP-M28-M14

Direct Accumulator Charging Kits

SKK-20 Gas Valve

USA Gas Valve

Product Description - SKK-20 Gas Valve

STAUFF accumulator direct charging kit - SKK-20 is an essential instrument for the verification, pressurisation and nitrogen gas bleeding of STAUFF accumulators that are fitted with a SKK-20 gas valve connection. Pre-charge pressure can be easily checked by coupling the safety gauge directly to the SKK-20 gas valve connection on the STAUFF accumulator.

Features

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

1. 1 x Charging head
2. 1 x SKK-20 Test coupling 1/4" NPT (for regulator connection)
3. 1 x Safety pattern pressure gauge 0 - 250 bar (standard) according to AS1349
4. 1 x 2000 mm hose
5. 1 x Safety goggles
6. 1 x Operating instructions

Available on request

- 0 - 25, 0 - 100 and 0 - 400 bar kit

Application

- For checking and pre-charging of accumulators with M16x2.0 (Test 20) STAUFF Test coupling connection

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

Product Description - USA Gas Valve

STAUFF's accumulator charging kit is designed to suit accumulators fitted with gas valve type USA 0.305" x 32 TPI. It allows for the verification, pressurisation and nitrogen gas bleeding of the accumulator. Pre-charge pressure can be easily checked by using STAUFF charging head (1) which combines a bleed valve, safety pattern gauge and 0.305" x 32 TPI charging chuck adaptor.

Features

The USA gas valve kit is delivered in a storage case containing the same components as standard SKK-20 gas valve option with the addition of the following:

7. 1 x STA-CK-CHRG-HEAD-0.305-SKK20 (for accumulator connection)

Available on request

- 0 - 25 and 0 - 100 bar kit

Application

- For checking and pre-charging of accumulators with gas valve type USA 0.305" x 32 TPI

⚠ Maximum working pressure of this equipment (excluding individual pressure rating of gauges) is 207 bar.

Order Codes

STA-CK - SKK-20 - 250S - HA21 - N04 - CA

(1) (2) (4) (5) (6) (7)

① Type

STAUFF Accumulator Charge Kit	**STA-CK**

② Charge Head Connection

Test 20 Coupling (standard)	**SKK-20**
Accumulator USA Charge Head 0.305" x 32 TPI with SKK-20 Test Connection	**305**

③ Safety Gauges Including Gauge Adaptor

0 - 25 bar/PSI	**025**
0 - 100 bar/PSI (AS1349)	**100S**
0 - 250 bar/PSI (AS1349) (standard)	**250S**
0 - 400 bar/PSI (AS1349)	**400S**

Other options available on request.

AS1349 Safety pattern pressure gauges

④ Charging Adaptors

SGS-D Test 20 - 1/4" BSPP DN4 Gas Hose 2000 mm (standard)	**HA21**
No hose supplied	**HA00**

⑤ Outlet Connection to Regulator

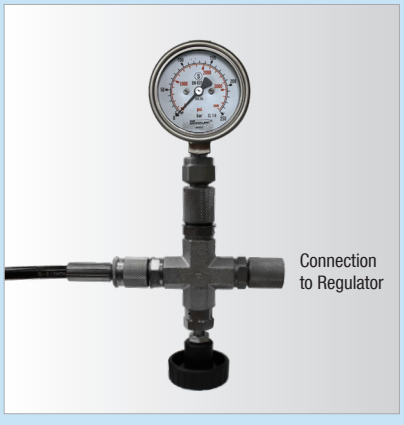
1/4" NPT male (standard)	**N04**
1/4" BSPT male	**T04**

⑥ Case

Supplied with case	**CA**

Item No.	Designation
6100162717	STA-CK-SKK-20-100S-HA21-N04-CA
6100162718	STA-CK-SKK-20-250S-HA21-N04-CA (standard)
6100162719	STA-CK-SKK-20-400S-HA21-N04-CA
6100156904	STA-CK-305-250S-HA21-N04-CA

Typical Installation

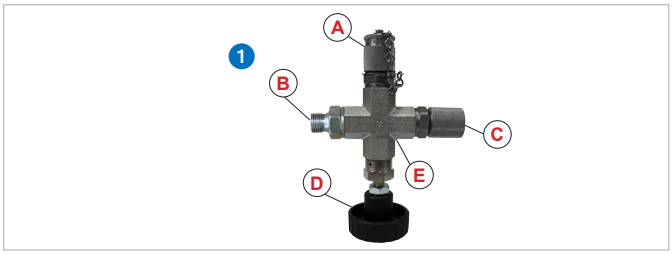


Pre-charging

Checking

Note: STAUFF pressure gauges are safety pattern type according to AS1349 with safety glass, solid baffle wall, and a stainless steel construction with excellent stability and shock resistance.

Direct Accumulator Charging Kit ▪ Component Contents



Assembly - Charging Head

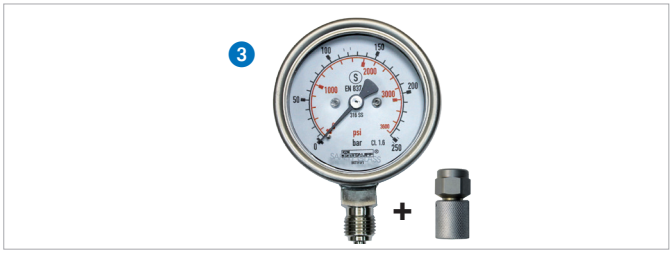
Part No.	Item No.	Designation
1	6100011999	STA-CK-CHRG-HEAD-SKK-20

Charging Adaptors

Part No.	Item No.	Designation
2	1210026178	SKK-20-1/4NPT-B-D-W3
7	6100156902	STA-CK-CHRG-HEAD-0.305-SKK20

Components - Charging Head

Part No.	Item No.	Designation
A	1210026012	SKK-20-G1/4-B-C-W3
B	6100164219	ADH-C-G04/G04-MM-W66
	2020001905	BD-Ring-G04-W66-B-SC
C	1210026426	SDA-20-G1/4-B-C-W3
D	3426000268	STA-1-BL-VALVE-PC-O-O-B04-W
E	6100075482	ADP-X-G04-FFFFX-FG-W66A



Gauge + Adaptor

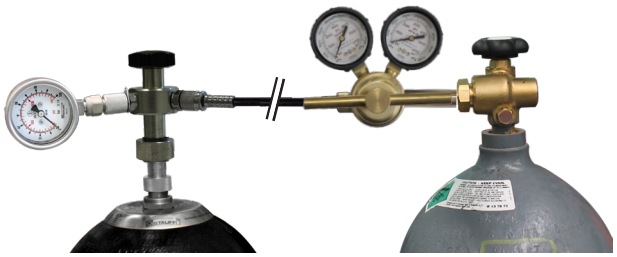
Part No.	Item	Item No.	Designation
3	Gauge	6100161938	SPG-063-00250-01-S-B04-490179
	SMD	1210026219	SMD-20-G1/4-B-OR-W3

Accessories

Part No.	Item No.	Designation
4	6100017542	SGS-20/B1/4-2000-C-W3
5	3499000031	CK-GOGGLES-S

Accumulator Pre-charging Service

Diaphragm Accumulator Size 0.075 - 2.8 Litre



Bladder Accumulator Size 1 - 55 Litre

Bladder and Diaphragm Accumulator Pre-charging Service	Size (Ltr)	Max. Working Pressure (bar / PSI)	Pre-charge Pressure Range	
			bar	PSI
	0 to 0.75	up to 250 / up to 3626	1-70	14.5-1015
			71-140	1029-2030
	1 to 1.4	360 / 5221	1-70	14.5-1015
			71-140	1029-2030
			141-210	2045-3045
			211-280	3060-4061
	2 to 2.8	360 / 5221	1-70	14.5-1015
			71-140	1029-2030
			141-210	2045-3045
			211-280	3060-4061
	4	360 / 5221	1-70	14.5-1015
			71-140	1029-2030
			141-210	2045-3045
			211-280	3060-4061
	6	360 / 5221	1-70	14.5-1015
			71-140	1029-2030
			141-210	2045-3045
			211-280	3060-4061
	10	360 / 5221	1-70	14.5-1015
			71-140	1029-2030
			141-210	2045-3045
			211-280	3060-4061
	20	360 / 5221	1-70	14.5-1015
			71-140	1029-2030
			141-210	2045-3045
			211-280	3060-4061
	35	360 / 5221	1-70	14.5-1015
			71-140	1029-2030
			141-210	2045-3045
			211-280	3060-4061
	40	360 / 5221	1-70	14.5-1015
			71-140	1029-2030
			141-210	2045-3045
			211-280	3060-4061
	50	360 / 5221	1-70	14.5-1015
			71-140	1029-2030
			141-210	2045-3045
			211-280	3060-4061
	55	360 / 5221	1-70	14.5-1015
			71-140	1029-2030
			141-210	2045-3045
			211-280	3060-4061

Note: Price excludes freight. Pre-charged accumulators are classified as dangerous goods and freight charges apply accordingly.
Contact STAUFF for Premium Services (including urgent orders) and pre-charging of Extra High Pressure (EHP bottles).

Order Codes

PRECHARGE - 00100 - B075

① ② ③

① Service

Accumulator Pre-charging Service	**PRECHARGE**

② Accumulator Volume

0.075 Ltr	**00007**
0.16 Ltr	**00016**
0.32 Ltr	**00032**
0.5 Ltr	**00050**
0.75 Ltr	**00075**
1 Ltr	**00100**
1.4 Ltr	**00140**
2 Ltr	**00200**
2.5 Ltr	**00250**
2.8 Ltr	**00280**
4 Ltr	**00400**
6 Ltr	**00600**
10 Ltr	**01000**
20 Ltr	**02000**
35 Ltr	**03500**
40 Ltr	**04000**
50 Ltr	**05000**
55 Ltr	**05500**

③ Bar

bar	**B**

Pre-charge Pressure (bar)

Actual Pre-charge pressure required (bar)	**XXX**

Order code example: PRECHARGE-00100-B075

1 Ltr Accumulator pre-charged to 75 bar

Contact STAUFF for more information.

Nitrogen Gas Regulators ▪ Type STA-NR

Product Description

Nitrogen gas regulators are used to control the pressure and incoming gas flow from the nitrogen cylinder or bank of cylinders. The dual gauge allows visual control of both the inlet and outlet pressure.

Application

When pre-charging hydraulic accumulators it is important that initially the accumulator be charged slowly. This is due to the fact that the bladder / diaphragm has to expand and stretch uniformly to take up the volume of the vessel internally. The pressure required to do this properly is less than 1 bar. Pre-charging an accumulator too quickly and/or without the correct lubrication can damage or in some cases cause failure of the bladder / diaphragm. In order to pre-charge an accumulator properly STAUFF recommends the use of a nitrogen gas regulator.

Technical Data

Specifications

Max inlet pressure:	(see order codes for options)
Max outlet pressure:	(see order codes for options)
Flow rate:	360 M3/Hr @ 10,000 kPa outlet pressure
Inlet connections:	AS 2473
Operating temp:	-20°C ... +50°C
Gauges:	AS 4706-2001
Outlet connections:	1/4" BSPP male

Materials

Body:	Machined brass
Bonnet:	Machined brass
Pressure Gauges:	Mild steel with copper and brass internals. Plastic lens.
Seat:	Polyurethane
O-Rings - Oxygen:	FKM (Viton®)
O-Rings - Other Gases:	NBR (Buna-N®)
Safety Relief Valve:	Brass housing, steel spring, FKM (Viton®) seal
Filter:	Sintered bronze
Stem O-Ring:	FKM (Viton®)

⚠ For use with nitrogen (N_2) gas only

⚠ Safety goggles must be worn at all times

Order Codes

STA-NR	-	400	-	300	-	T51	-	400S	-	400S	-	G04
①		②		③		④		⑤		⑥		⑦

① Type

STAUFF Nitrogen Gas Regulator	**STA-NR**

② Inlet Pressure Rating

400 bar	**400**

③ Outlet Pressure Rating

300 bar	**300**

④ Nitrogen Gas Cylinder Connection

(AS2473 Type 51) EHP N2 Bottle (standard)	**T51**

⑤ Regulator Inlet Pressure Gauge (AS4706)

40,000 kPa	**400S**

⑥ Regulator Outlet Pressure Gauge (AS4706)

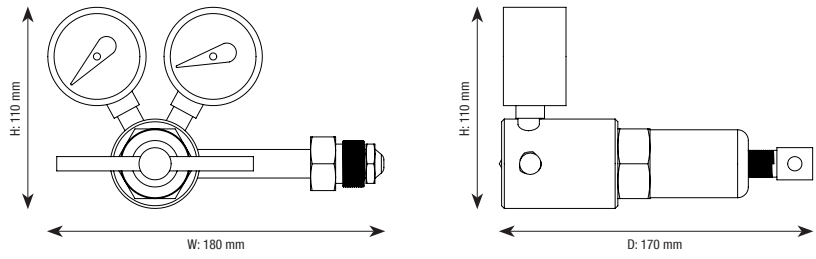
40,000 kPa	**400S**

⑦ Output Connection

1/4" BSPP male (standard)	**G04**

Nitrogen Gas Regulators

Item No.	Designation
6100206346	STA-NR-400-300-T51-400S-400S-G04 (standard)



Safety Information

High-pressure nitrogen gas regulators are not fitted with safety relief valves. In the event of internal failure of the regulator, the outlet connection and the accumulator could potentially see the full pressure from the nitrogen gas cylinder. In cases where the nitrogen gas bottle pressure is greater than the pressure rating of the accumulator, a safety relief device should be fitted between the nitrogen gas regulator and the accumulator.

Reader Set • Type PT-RF-SET

Applications

Connected through SKK test coupling

Connected through fluid port

Product Description

STAUFF PT-RF readers combined with STAUFF PT-RF transmitters are used to measure and record temperature and pressure data. The energy required for a measurement is transferred to the pressure transmitter via the antenna of the PT-RF reading device using wireless RFID technology. A maximum distance of only 1.5cm is required from the antenna to the tip of the PT-RF transmitter for the duration of the measurement. The PT-RF transmitter is activated by the press of a button (the measured value is determined within only 0.5 seconds), and then the data is transmitted immediately to the PT-RF reader together with additional relevant information, displayed on the screen and recorded. Over 15,000 measurement recordings can be stored in the internal memory of the device.

The PT-RF reader along with PT-RF transmitter is an ideal tool to check the pre-charge pressure of an accumulator fitted with a STAUFF SKK gas valve. Each PT-RF transmitter has its own identifiable serial number that can be recorded by the PT-RF reader, therefore each accumulator can be logged separately and the data can be downloaded to a computer at a later date.

Technical Data

Material

Housing made of ABS

Dimensions / Weight

Dimensions:	76 x 35 x 240 mm
Weight:	220 g

Measurements / Display

Pressure:	in bar and PSI
Temperature:	in °C and °F
Display:	graphic, LED backlit
Visible area:	55 x 46 mm
Resolution:	128 x 64 Pixels

Power Supply

Battery:	Lithium Ion (3,7 V DC / 900 mAh)
	Operating time approx. 6 hours (approx. 1800 individual measurements)

Temperature Range

Ambient temp.:	-20°C ... +70°C
Storage temp.:	-25°C ... +60°C

CE certified

Electrical Data / Interface

Sampling rate:	typ. 250 ms / max. 400 ms
Interface:	Micro USB
EMV:	EN 61326-1:2013 EN 300330

Protection Rating

IP65 protection rating: Dust tight and protected against water jets

Order Code

PT-RF-SET

① Series and Type

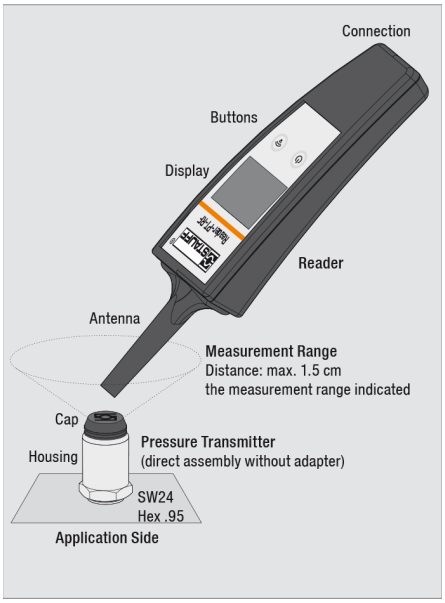
Reader (standard)	**PT-RF-SET**

- Reader-PT-RF
- Manual and software on CD
- Quick guide
- USB 2.0 cable (1 m / 3.28 ft)
- 5 V DC / 1 A power supply including country-specific adaptors
- Case

Item No.	Designation
6100104678	PT-RF-SET

Supplied with charger and software

Set Up



PC Software

The software included allows transmission of the stored measured values from the reading device to the PC, subsequent evaluation and export, e.g. to Microsoft Excel®.

Spare Parts / Accessories

Order Code

Case-Reader-PT-RF

① Type

Case, small	**Case-Reader-PT-RF**

Order Code

Reader-PT-RF

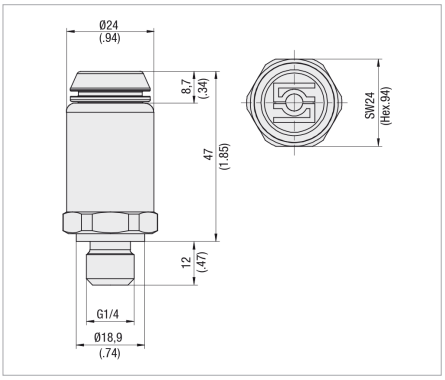
① Type

Reader (standard)	**Reader-PT-RF**

- Reader-PT-RF
- Manual and software on CD
- Quick guide
- USB 2.0 cable (1 m / 3.28 ft)
- 5 V DC / 1 A power supply including country-specific adaptors

Item No.	Designation
1810011067	Reader-PT-RF
6100000353	Case-Reader-PT-RF

Pressure Transmitter ▪ Type PT-RF



Process connection G1/4" (B04)
Dimensional drawings: All dimensions in mm

Product Description

STAUFF PT-RF pressure transmitters are integrated into fluid technology plants and systems (temporarily or permanently) using the appropriate process connection adapters to measure and record temperature and pressure data. The energy required for a measurement is transferred to the pressure transmitter via the antenna of the STAUFF PT-RF reading device using wireless RFID technology. As a result the pressure transmitter requires neither internal nor external power supply, is completely maintenance free, and the recording process is automated therefore minimising the possibilities of human error.

The pressure transmitter for the PT-RF along with the PT-RF reader is an ideal tool to check the pre-charge pressure of an accumulator fitted with a STAUFF SKK gas valve. Each PT-RF transmitter has its own identifiable serial number that can be recorded by the PT-RF reader, therefore each accumulator can be logged separately and the data can be downloaded to a computer at a later date.

Technical Data

Wetted Parts

Suitable for liquid and gaseous media

Materials

Housing:	Stainless Steel 1.4305
Sealing (B04):	FKM (Viton®)
Cap:	Polyamide (glass fibre-reinforced)

Dimensions / Weight

Dimensions:	59 x 26 mm
Weight:	80 g

Temperature Range

Media temp.:	-40°C ... +85°C
Ambient temp.:	-40°C ... +85°C
Storage temp.:	-55°C ... +125°C

Electrical Data

Sampling rate:	typ. 250 ms / max. 400 ms
Long-term stability:	according to IEC EN 60770-1 max. ± 0.25 % FS* /a
Load cycles (106):	10
Vibration loading:	acc. to IEC 60068-2-6 (20 g)
Shock loading:	acc. to IEC 60068-2-27 (30 g) 11ms

Protection Rating

IP69 protection rating:	Dust tight and protected against high-pressure water and steam cleaning

Order Codes

PT - RF - B00400 - B04 - SDA-20

① ② ③ ④ ⑤

① Series and Type

Pressure Transmitter	**PT**

② Version

Signal transmission via RFID technology	**RF**

③ Pressure Range

0-16 bar (refer to table below)	**B00016**
0-60 bar (refer to table below)	**B00060**
0-160 bar (refer to table below)	**B00160**
0-400 bar (refer to table below)	**B00400**
0-600 bar (refer to table below)	**B00600**

④ Process Connection

G1/4"	**B04**

⑤ Test Adaptor

G1/4 Test 20 Adaptor	**SDA-20**

③ Pressure Range and Accuracies

Version	Pressure Range and Accuracies					
Pressure Transmitter PT-RF	Pressure Range (bar/PSI)	Type of Measurement	Maximum Pressure (bar)	Burst Pressure (bar)	Accuracy (±% FS*) typ.	Accuracy (±% FS*) max.
B00016	0 ...16	Relative pressure	32	48	0.25	0.5
	0 ... 232		464	696		
B00060	0 ... 60	Relative pressure	120	180	0.25	0.5
	0 ... 870		1740	2610		
B00160	0 ... 160	Relative pressure	320	480	0.25	0.5
	0 ... 2320		4641	6961		
B00400	0 ... 400	Relative pressure	800	1200	0.25	0.5
	0 ... 5801		11603	17405		
B00600	0 ... 600	Relative pressure	1200	1800	0.25	0.5
	0 ... 8702		17404	26107		

Process Connection Adaptors for Pressure Transmitter PT-RF

Various adaptors are available in addition to the pressure transmitters from the PT-RF series allowing easy connection to the STAUFF Test 20 system as well as installation in pipes.

SDA-20-G1/4-W3
Adaptor for process connection G1/4 on test coupling STAUFF Test 20 (connection thread M16 x 2)

Pressure Transmitter with Test Adaptor

Item No.	Designation
6100046234	PT-RF-B00016-B04-SDA-20
6100046235	PT-RF-B00060-B04-SDA-20
6100046248	PT-RF-B00160-B04-SDA-20
6100046269	PT-RF-B00400-B04-SDA-20
6100046270	PT-RF-B00600-B04-SDA-20

Pressure Transmitter

Item No.	Designation
1810011057	PT-RF-B00016-B04
1810011058	PT-RF-B00060-B04
1810011059	PT-RF-B00160-B04
1810011060	PT-RF-B00400-B04
1810011061	PT-RF-B00600-B04

Test Adaptor

Item No.	Designation
1210026153	SDA-20-G1/4-W3

PT-RF Software Monitoring System

Application Information

Accumulator pre-charge pressure must be regularly checked and maintained to maintain peak system performance and full bladder/diaphragm life. The STAUFF PT-RF system digitally monitors and records accumulator pre-charge pressure without incurring incremental pressure loss through traditional connect /disconnect processes. Additionally, as each PT-RF transducer is individually serially traced, uncertainty arising from manual records is permanently eliminated.

The natural effect of gas permeation through the bladder/diaphragm causes a loss of pre-charge pressure, the amount of which varies from system to system. Gas permeation loss is dependent on factors such as:

- Operating pressures
- Operating temperatures
- System fluid type
- Cycles times
- Tank volume

To prevent the bladder/diaphragm or piston coming into contact with the bottom of the accumulator shell and causing damage to these components, accumulator pre-charge pressure should be set to 80% - 90% of system minimum operating pressure.

If pre-charge pressure falls below the recommended range, accumulators suffer from reduced storage capacity, affecting overall hydraulic system performance.

Once the operating pressure ratio (max system pressure / pre-charge pressure) exceeds 4:1 for bladder accumulators or 6:1/8:1 for diaphragm accumulators, the bladder / diaphragm then has a high risk of failure.

Bladder / diaphragm failure and reduced system operating performance can also result if pre-charge pressure is set too high, or if ambient temperature variation (pre-charge ambient temperature versus operating ambient temperature) is not managed.

Additionally, STAUFF PT/RF allows accurate comparison of pre-charge pressure at a recorded ambient temperature vs. specified pre-charge pressure and temperature. You can similarly set a pre-charge pressure tolerance and use this to highlight if the nitrogen pre-charge has fallen below your nominated range.

PT-RF Software Functions

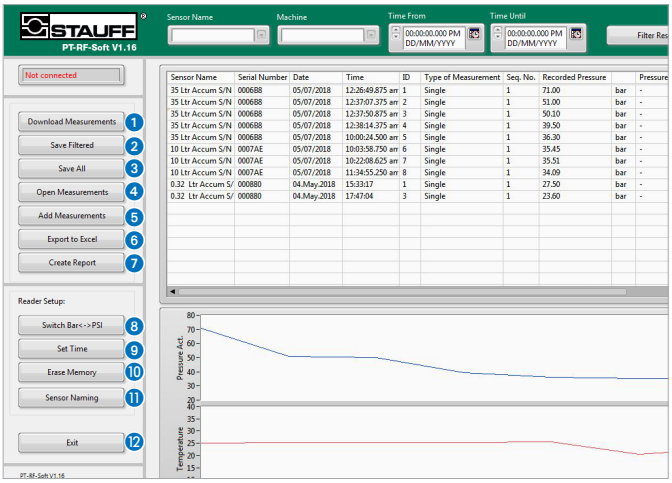
Sort Function

The software incorporates a sort function which can be filtered by:

1. Each sensor with a unique serial number
2. Machine name (Set-up in the Sensor Naming function Initially – see Sensor Naming Function below)
3. By date

Operation Functions

1. Download measurements
2. Save filtered measurements
3. Save all
4. Open measurements
5. Add measurements
6. Export to Excel
7. Create report (Using existing excel templates)
8. Switch bar <-> PSI
9. Set time
10. Erase memory
11. Sensor naming function (See below)
12. Exit



PT-RF Software

Sensor Naming Function

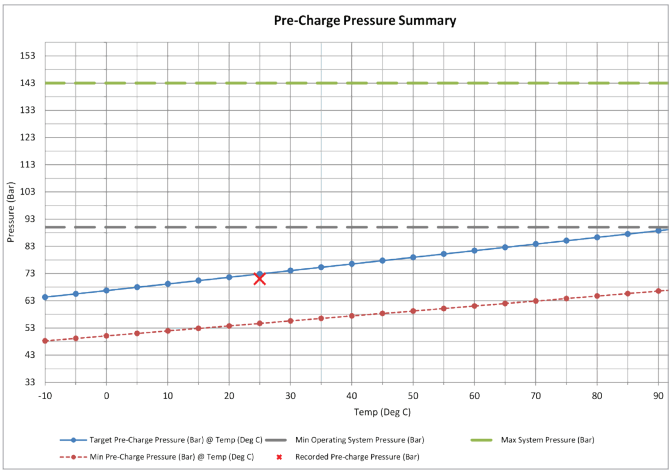
The sensor naming function plays an important role in creating customised reports and using the PT-RF equipment as a data logger.

It allows you to store customised information about each sensor with regard to where the sensor is installed – including technical information, such as operating pressures of the equipment.

Once this information is added to the software and saved the information will be retained for future use and is specific to each sensor.

Key naming functions that can be set:

- Sensor serial number
- Sensor name
- Desired pressure
- Tolerance +%
- Tolerance -%
- Machine name
- Minimum system pressure
- Maximum system pressure
- Customer



Pre-charge Pressure Summary Graph

Safety Pattern Pressure Gauge (analogue) ▪ Type SPG in accordance with AS1349

Type SPG (Stem Mounting)

Type SPG (Panel Mounting)

Application

Mechanical pressure measurement of nitrogen gas pre-charge in accumulators

Features

- Increased safety requirements for personal protection
- Solid baffle wall
- Suitable for gaseous media compatible with stainless steel
- Available in nominal sizes 63 mm / 2.5 in
- Thread form: for BSPP (G1/4"),
- Stainless Steel 316L housing
- Laminated safety glass
- Single scales with pressure indication in bar
- Excellent load cycle stability and shock resistance

Note: Contact STAUFF before using SPG-490179 with other media.

Technical Data

- Pressure gauge according to EN 837-1
- Subject to technical modifications

Accuracy

SPG-063: 1.6%

Permissible Temperatures

Ambient: -40 °C ... +60 °C without liquid
Media: max. +200 °C without liquid

Protection Ratings

IP 65: IP 65 protection rating: Dust tight and protected against water jets per IEC/EN 60529

Order Codes

SPG - 063 - 00100 - 01 - S - B04 - 490179

① ② ③ ④ ⑤ ⑥ ⑦

① Series and Type

Stainless Steel Pressure Gauge	**SPG**

② Size

Ø 63 mm with G1/4" connection	**063**

③ Outlet Pressure Rating

0 ... 100 bar / 0 ... 1450 PSI	**00100**
0 ... 250 bar / 0 ... 3625 PSI	**00250**
0 ... 400 bar / 0 ... 5801 PSI	**00400**

Note: Additional Pressure Ranges available on request

④ Styles of Scales

bar / PSI 9bar outside/PSI inside)	**01**

⑤ Adaption

Stem mounting	**S**
Panel mounting	**P**

⑥ Process Connection

G1/4"	**B04**

⑦ Special Type

Safety Pattern Gauge	**490179**
(Pressure gauge according to Safety series EN 837-1, Measuring system XrNi-steel, without glycerine)	

Ø 63mm

Safety Pattern Pressure Gauge 1/4" BSPP Stem Mount

Item No.	Designation
6100161936	SPG-063-00100-01-S-B04-490179
6100161938	SPG-063-00250-01-S-B04-490179
6100161940	SPG-063-00400-01-S-B04-490179

Ø 63mm

Safety Pattern Pressure Gauge 1/4" BSPP Panel Mount

Item No.	Designation
6100161935	SPG-063-00100-01-P-B04-490179
6100161937	SPG-063-00250-01-P-B04-490179
6100161939	SPG-063-00400-01-P-B04-490179

Universal Accumulator Charging Kit
Operating and Maintenance Instructions

Product Description

STAUFF's universal accumulator charging kit is an essential instrument for the verification, pressurisation and gas bleeding of hydraulic accumulators, suitable for most common bladder and diaphragm accumulators.

Features

The standard kit is delivered in a 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
6. 1 x Adaptor (short) Integrated 7/8–14 UNF
8. 1 x 0 - 100 bar/PSI safety pattern pressure gauge + adaptor SMD-20-G1/4-B-OR-W3
9. 1 x 0 - 250 bar/PSI safety pattern pressure gauge + adaptor SMD-20-G1/4-B-OR-W3
10. 1 x Adaptor 5/8–18 UNF - 0.305"
11. 1 x High-pressure gas hose (2000 mm long) for connecting to a nitrogen gas source - SKK-20-1/4" BSPP female
12. 1 x Safety goggles
13. 1 x Hex key 6 mm
14. 1 x Operating instructions

Optional Nitrogen Gas Bottle Adaptors (sold separately)

STAUFF Nitrogen Regulator (recommended) (refer to page 53)
Type 50 gas bottle adaptor
Type 51 gas bottle adaptor

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.

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 (8 or 9) 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).

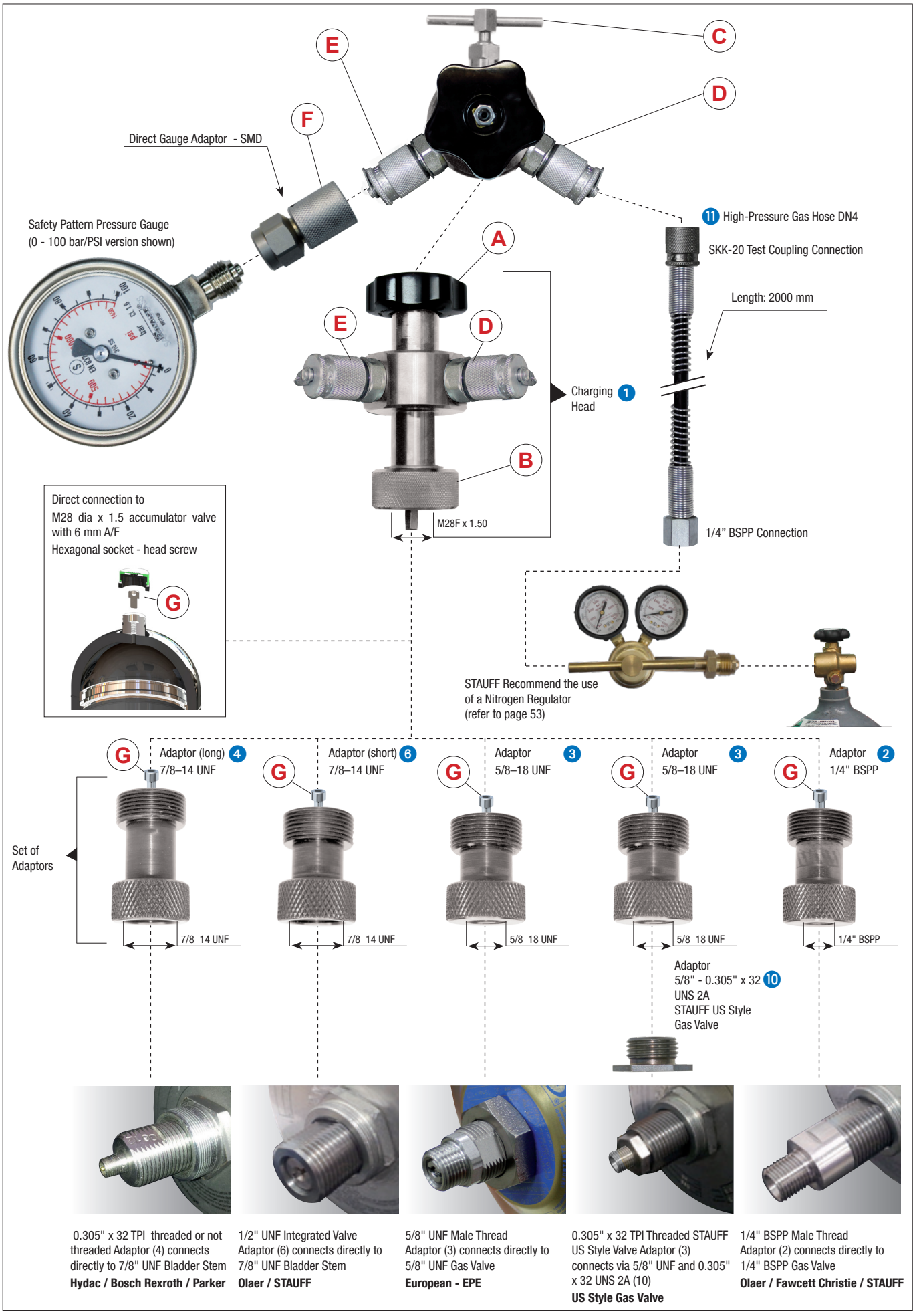
⚠ Only use “gas approved" test hose

⚠ 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 (6) 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 Threaded STAUFF US Style Valve Adaptor (3) connects via 5/8" UNF and 0.305" x 32 UNS 2A (10)
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 specifications 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 72 for inflation pressure corrections table.

Bladder Accumulators

Refer to page 61 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 (4 or 6), (3+10), (3 or 2)
- 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 (4 or 6), (3+10), (3 or 2), 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 61 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
- 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

Service Options

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

Refer to page 61 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 (4 or 6), (3+10), (3 or 2)
- For bladder accumulators unscrew the adaptor (4 or 6), (3+10), (3 or 2) 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 61 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 (4 or 6), (3+10), (3 or 2)
- For bladder accumulators unscrew the adaptor (4 or 6), (3+10), (3 or 2) 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

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

Refer to page 61 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 (4 or 6), (3+10), (3 or 2)
- For bladder accumulators unscrew the adaptor (4 or 6), (3+10), (3 or 2) 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

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 61 for connection flow chart

- Select the adaptor according to the gas valve fitted to the accumulator (4 or 6), (3+10), (3 or 2)
- 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 below for applying the pre-charge pressure

Diaphragm Accumulators

Refer to page 61 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 below for applying the pre-charge pressure

Applying the Pre-Charge Pressure (Accumulator has no gas)

Refer to page 61 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 gas source 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 (4 or 6), (3+10), (3 or 2)
- For bladder accumulators unscrew the adaptor (4 or 6), (3+10), (3 or 2) 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

Direct Accumulator Charging Kit for SKK Gas Valve
Operating and Maintenance Instructions

Product Description

STAUFF's accumulator direct charging kit - SKK is an essential instrument for the verification, pressurisation and nitrogen gas bleeding of STAUFF accumulators fitted with a SKK-20 gas valve connection. Pre-charge pressure can be easily checked by coupling the safety gauge directly to the SKK gas valve connection on the STAUFF accumulator.

Features

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

1. 1 x Charging head
2. 1 x SKK Test coupling 1/4" NPT (for regulator connection)
3. 1 x Safety pattern pressure gauge according to AS1349
4. 1 x 2000 mm hose
5. 1 x Safety goggles
6. 1 x Operating instructions

Available pressure gauges

- 0 - 25, 0 - 100 and 0 - 400 bar kit

Application

- For checking and pre-charging of accumulators with M16 x 2.0 (Test 20) or M16 x 1.5 (Test 15) or M12 x 1.65 (Test 12) STAUFF Test coupling connection (optional)

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

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 valve (1) and pressure gauge (3) 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).

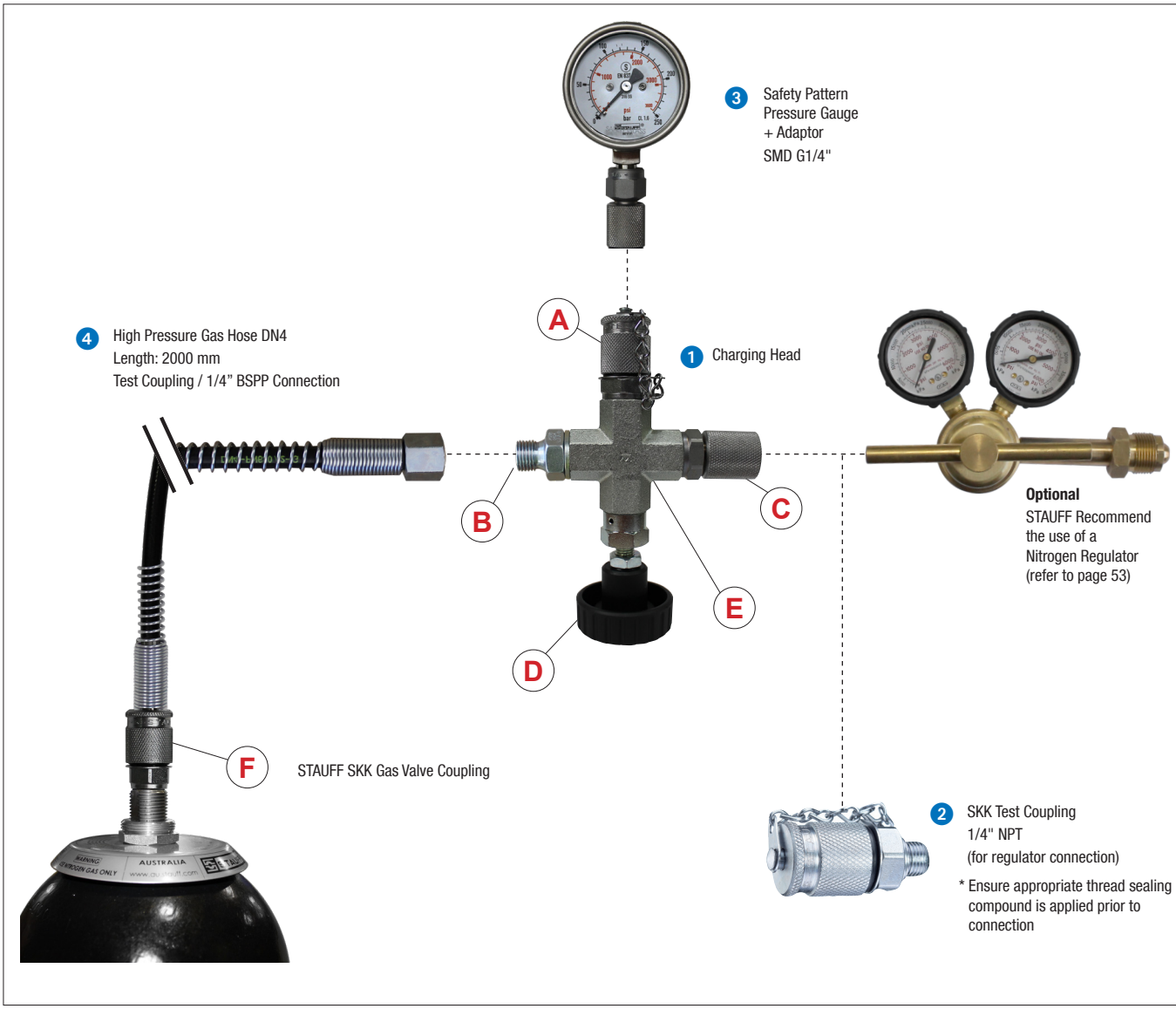
⚠ Only use “gas approved" test hose

⚠ 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



Connection to Regulator

Pre-Charging - Optional Installation

Checking - Typical Installation

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 SKK 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.

Bladder Accumulators

Refer to page 65 for connection flow chart

- Remove the protection cap on the SKK gas valve coupling (F) fitted to the gas side of the accumulator
- Select the safety pattern pressure gauge and adaptor (3) and couple directly to the SKK gas valve coupling (F) on the STAUFF accumulator – pressure should now be indicated on the gauge
- To remove, uncouple the gauge from the STAUFF accumulator

Pre-charging Accumulators Instruction

General

Note: The following 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
- 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 head 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 65 for connection flow chart

- Ensure regulator used is fitted with STAUFF SKK test coupling (2)
- Make sure main valve on nitrogen gas bottle is closed
- Connect SDA adaptor end (C) of charging valve to SKK test coupling (2) fitted on regulator
- Connect gauge + adaptor (3) to charging valve (A)
- Connect the test coupling on one end of the hose to the SKK gas valve coupling (F) on the accumulator
- Connect the other end of the hose 1/4" BSPP to the charging valve (B) and tightened with a spanner
- Slightly open the valve on the nitrogen gas source until a small amount of gas can be heard coming from the bleed valve (D) which should be open
- After 5 seconds (0.7 Ltr - 4 Ltr) and 10 to 20 seconds (10 Ltr - 55 Ltr) slowly close the bleed valve (D), 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
- Disconnect the hose end connected to the SKK gas valve coupling (F) and then disconnect from the charging valve (B)
- Remove the gauge and adaptor (3) from the charge valve (A) and then attach it to SKK gas valve coupling (F) on the accumulator.Check to ensure the pre-charge pressure is correct.
- After confirming the pre-charge pressure is correct, remove the gauge and gauge adaptor (3) from the SKK gas valve coupling on the accumulator (F)

⚠ **Important:** Whilst the gas hose (4) is connected to the SKK gas valve coupling (F), the SKK gas valve coupling is always open. Before attempting to remove any of the charge equipment, the gas hose (4) connected to the SKK gas valve coupling (F) must first be removed. Failure to do so will drain the nitrogen gas pressure from the accumulator.

Optional Installation - Only applies to SKK-20 & SKK-12 Charging Kits

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 65 for connection flow chart

- Ensure regulator used is fitted with STAUFF SKK test coupling (2)
- Make sure main valve on nitrogen gas bottle is closed
- Connect SDA adaptor end (C) of charging valve to SKK gas valve coupling (F) fitted on STAUFF accumulator
- Connect gauge + adaptor (3) to charging valve (A)
- Connect the 1/4" BSPP end of the hose to the charging valve (B) and tightened with a spanner
- Connect the other end of the test hose (4) to the SKK test coupling (2) fitted to the regulator
- Slightly open the valve on the nitrogen gas source until a small amount of gas can be heard coming from the bleed valve (D) which should be open
- After 5 seconds (0.7 Ltr - 4 Ltr) and 10 to 20 seconds (10 Ltr - 55 Ltr) slowly close the bleed valve (D), 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
- Disconnect the SDA adaptor (C) of charge valve from the SKK gas coupling (F) fitted on the STAUFF Accumulator
- Remove the gauge and adaptor (3) from the charge valve (A) and then attach it to SKK gas valve coupling (F) on the accumulator.Check to ensure the pre-charge pressure is correct.
- After confirming the pre-charge pressure is correct, remove the gauge and gauge adaptor (3) from the SKK gas valve coupling on the accumulator (F)

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

Direct Accumulator Charging Kit for USA Gas Valve
Operating and Maintenance Instructions

Product Description

STAUFF's accumulator charging kit is designed to suit accumulators fitted with gas valve type USA 0.305" x 32 TPI. It allows for the verification, pressurisation and nitrogen gas bleeding of the accumulator. Pre-charge pressure can be easily checked by using STAUFF charging valve (1) which combines a bleed valve, safety pattern gauge and 0.305" x 32 TPI charging chuck adaptor.

Features

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

1. 1 x Charging valve
2. 1 x STA-CK-CHRG-HEAD-0.305-SKK20 (for accumulator connection)
3. 1 x SKK-20 Test coupling 1/4" NPT (for regulator connection)
4. 1 x Safety pattern pressure gauge 0 - 250 bar (standard) according to AS1349
5. 1 x 2000 mm hose
6. 1 x Safety goggles
7. 1 x Operating instructions

Available on request

- 0 - 25 and 0 - 100 bar kit

Application

- For checking and pre-charging of accumulators with gas valve type USA 0.305" x 32 TPI

⚠ Maximum working pressure of this equipment (excluding individual pressure rating of gauges) is 207 bar.

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) incorporating pressure gauge (4) and charging chuck adaptor (2) are tools for checking gas pressure and pre-charging pressure of accumulators only. These items are not designed to be permanently attached to the accumulator during normal operation.

⚠ 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

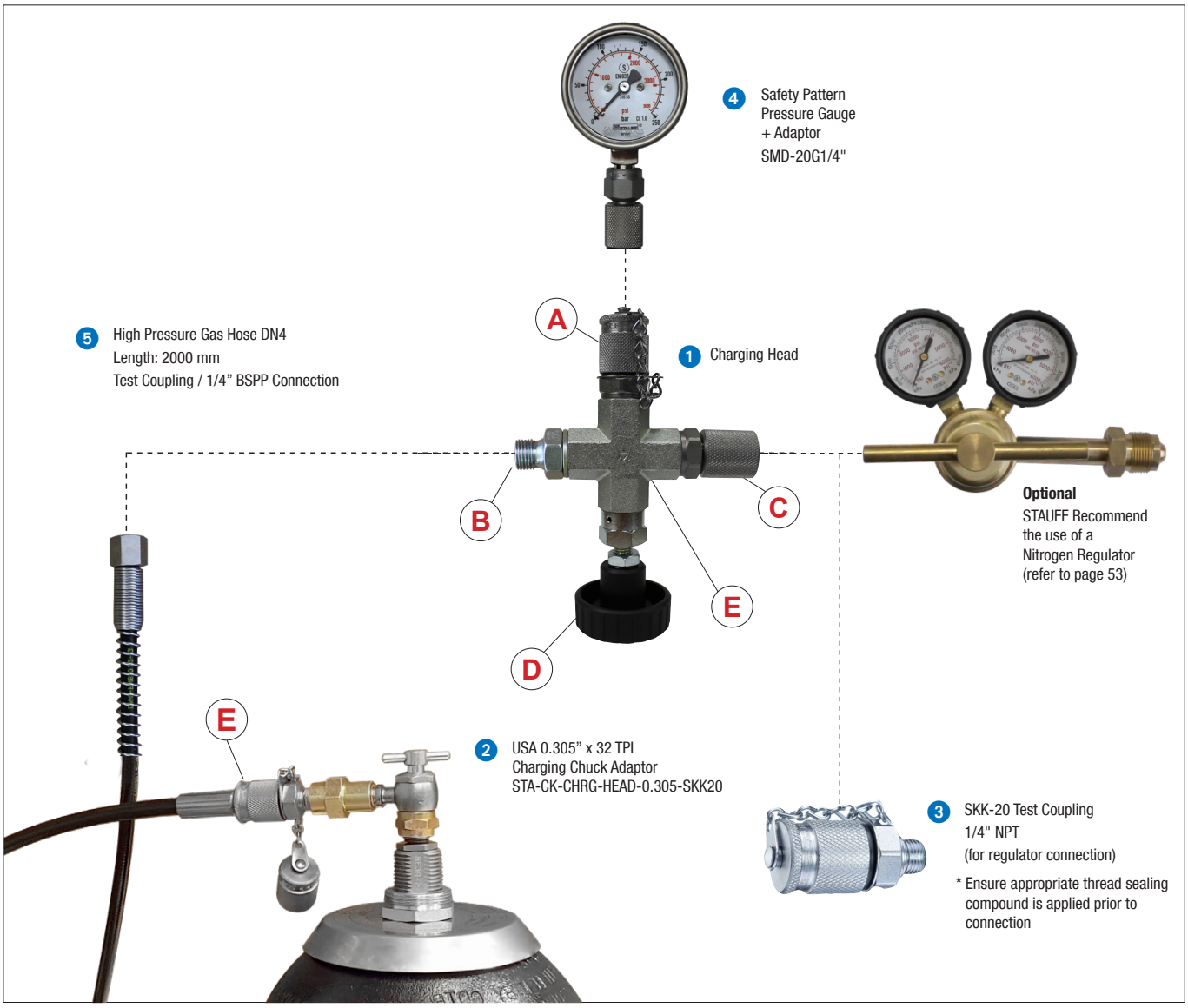
⚠ For use with nitrogen (N_2) gas only

⚠ Safety goggles must be worn at all times

⚠ STAUFF pressure gauges are safety pattern type according to AS1349

Connection Flow Chart

Pre-Charging -Typical Installation



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 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 72 for inflation pressure corrections table.

Bladder Accumulators

Refer to page 69 for connection flow chart

- Remove the gas valve cap fitted to the accumulator gas valve.
- Ensure the tee handle on the charging chuck adaptor (2) is screwed back fully anti-clockwise.
- Fit the charging chuck adaptor (2) to the gas valve on the accumulator. Be sure not to overtighten.
- Select a safety patten gauge and adaptor (4) and couple directly to the SKK-20 fitting on the the charging chuck adaptor (2)
- Slowly turn the tee handle on the charging chuck adaptor (2) clockwise until pressure is indicated on the gauge.
- Once the pressure measurement is read from the gauge, turn the tee handle on the charging chuck adaptor (2) fully anti-clockwise.
- Remove the safety patten gauge and adaptor (4) from the charging chuck adaptor (2). Note a small amount of gas will be released.
- Remove the charging chuck adaptor (2) by unscrewing the hex nut that connects the charging chuck adaptor (2) 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
- Safety goggles must be worn at all times
- 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 69 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 (C) of charging valve (1) to SKK-20 test coupling (3) fitted to the regulator
- Connect gauge + adaptor (4) to charging valve (A)
- Ensure that the bleed valve (D) on the charging Valve (1) is fully closed.
- Connect one end of the gas hose to the SKK test coupling (E) and the charging chuck adaptor (2)
- Connect remaining gas hose end to the charging valve connection (B)
- Ensure the tee handle on the charging chuck adaptor (2) is screwed back fully (turn anti-clockwise).
- Fit the charging chuck adaptor (2) 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 chuck adaptor (2) clockwise until pressure is read on the gauge (4).
- 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 chuck adaptor (2) fully anti-clockwise. Open the bleed valve (D) to drain any residual pressure remaining in the charging chuck adaptor (2) Charging valve (1) and the gas hose (5)

⚠ **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 chuck adaptor (2) when fitting to the accumulator gas valve

⚠ **Important:** Do not attempt to remove the hose assembly from the fittings (B) or (E) whilst pressure is still monitored on the gauge (4)

⚠ **Important:** Do not attempt to remove the charging valve (1) by removing the test coupling (C) whilst pressure is still monitored on the gauge (4)

Applying the Pre-charge Pressure (Accumulator has no gas) Charging head 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 69 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 (C) of charging valve (1) to SKK-20 test coupling (3) fitted to the regulator
- Connect gauge + adaptor (4) to charging valve (A)
- Connect one end of the gas hose to the SKK test coupling (E) on the charging chuck adaptor (2)
- Connect remaining gas hose end to the charging valve connection (B)
- Ensure the tee handle on the charging chuck adaptor (2) is screwed back fully (turn anti-clockwise).
- Fit the charging chuck adaptor (2) 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 chuck adaptor (2) 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 (D) 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 (D)
- After approx. 20 seconds slowly close the bleed valve (D), 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 chuck adaptor (2) fully anti-clockwise. Open the bleed valve (D) to drain any residual pressure remaining in the charging chuck adaptor (2), charging valve (1) and the gas hose (5).

⚠ **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 chuck adaptor (2) when fitting to the accumulator gas valve

⚠ **Important:** Do not attempt to remove the hose assembly from the fittings (B) or (E) whilst pressure is still monitored on the gauge (4)

⚠ **Important:** Do not attempt to remove the charging valve (1) by removing the test coupling (C) whilst pressure is still monitored on the gauge (4)

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

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

Conversion Factors

Length

Multiply	By	To Obtain
inch	25.4	millimetres (mm)
inch	0.0254	metres (m)
foot	0.3048	metres (m)
yards	0.9144	metres (m)
mile	1.6109	kilometres (km)

Pressure

Multiply	By	To Obtain
lbs/sq.in. (psi)	0.069	bar
lbs/sq.in. (psi)	6.89	kilopascals (kPa)
atmosphere (atm)	1.013	bar
kg/cm^2	0.981	bar
bar	100	kilopascals (kPa)
megapascal (MPa)	10	bar
inch mercury (Hg)	3.377	kilopascals (kPa)
foot water (H_2O)	2.99	kilopascals (kPa)
metre (H_2O)	9.81	kilopascals (kPa)

Mass (Weight)

Multiply	By	To Obtain
ounce	28.35	grams (gms)
pound	0.4536	kilograms (kg)
ton (long) 2240 lbs	1.0161	tonne
ton (short) 2000 lbs	0.9072	tonne
tonne	1,000	kilograms (kg)

Power and Torque

Multiply	By	To Obtain
horsepower (hp)	.7457	kilowatts (kW)
foot lbs (lb/ft)	1.356	Newton metres (Nm)
inch lbs (in/lb)	0.113	Newton metres (Nm)

Volume

Multiply	By	To Obtain
gallon (Imp.)	4.546	litres (l)
gallon (US)	3.785	litres (l)
cubic inch	16.39	cubic centimetres (cm^3)
cubic inch	16.39	millilitres (ml)
cubic foot	0.0283	cubic metres (m^3)
cubic foot	28.2	litres (l)

Flow

Multiply	By	To Obtain
gal/min (Imp)	4.546	litres/min (lpm)
gal/min (US)	3.785	litres/min (lpm)
std.cu.ft./min (air)	0.472	litres/sec (Nl/sec)

Notes

Bladder Replacement
Assembly Procedure

⚠ Note: Prior to assembly of the accumulator please ensure the following are checked first

A. Always ensure that the assembly is carried out in a clean area

B. Make sure that the replacement bladder is designed and sized for the accumulator being repaired

C. Where possible, ensure that any potential system fluid still in the accumulator is not harmful or can cause harm if it comes into contact with human skin, especially in the case of phosphate ester fluids. If necessary wear protective clothing

D. Make sure there is no internal or external corrosion on the accumulator or any evidence of damage to the shell prior to assembling the accumulator

E. It is the responsibility of the person doing the repair to ensure that the accumulator complies with any relevant government requirements such as design verification and registration including regular inspections

If a problem is discovered regarding D. and E. (above) then the accumulator should not be reassembled and preferably discarded

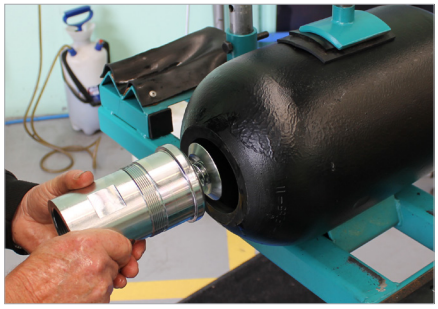
Assembly Instructions

1. Ensure that the inside of the shell is well lubricated with system fluid.

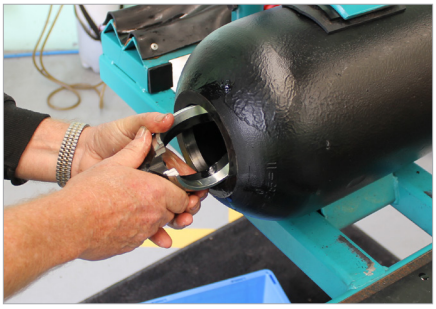
Note: In some cases standard hydraulic fluid may not be compatible with the system fluid therefore an alternative fluid may need to be used.

2. Remove all air from the bladder and fold neatly. Position bladder inside accumulator so that the bladder stem protrudes through the small opening at the other end of the shell.

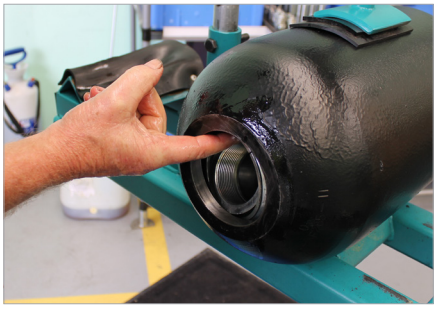
3. Fit nameplate and locknut to bladder stem.



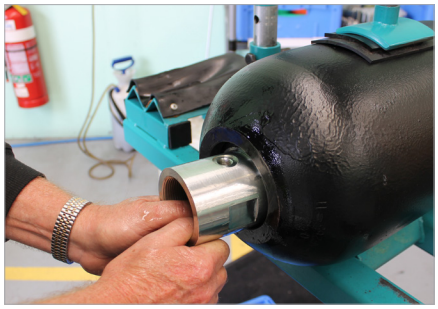
4. Place fluid port inside the shell poppet valve facing inwards.



5. Place anti-extrusion ring inside the shell by folding ring. Once inside make sure the metal ring is facing outwards.

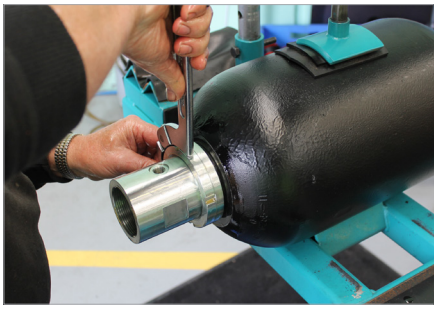


6. Slide the anti-extrusion ring over the fluid port inside the accumulator shell.



7. Grip the fluid port body from inside the shell and pull out as far as possible.

8. Holding the fluid port body firmly install the O-Ring by hand.



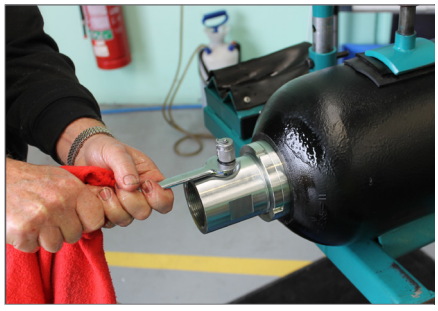
9. Using existing flanged washer and locknut, tighten until O-Ring is inserted evenly into position.

Bladder Replacement
Assembly Procedure continued...

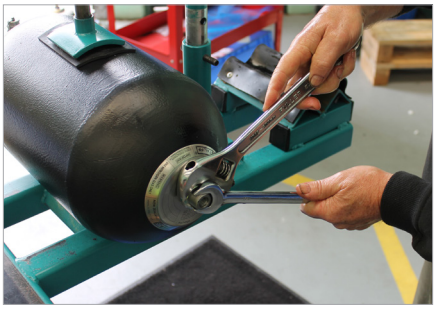
10. Remove flanged washer and locknut to enable installation of nylon back-up washer.

11. Ensuring the fluid port body does not get dislodged - insert the nylon back-up washer so that the concave face on the washer faces the O-Ring.

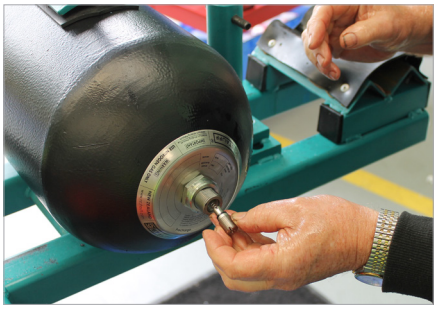
12. Attach first the flanged washer and then the locknut. Ensure the locknut is tightened using an appropriate spanner.



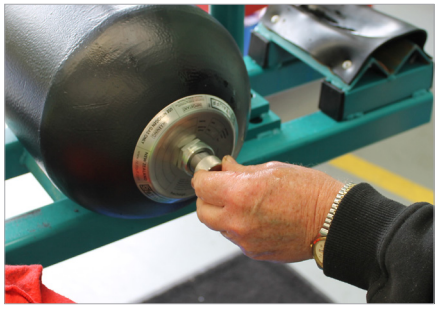
13. Fit the bleed plug or STAUFF test coupling (if fitted) and tighten.



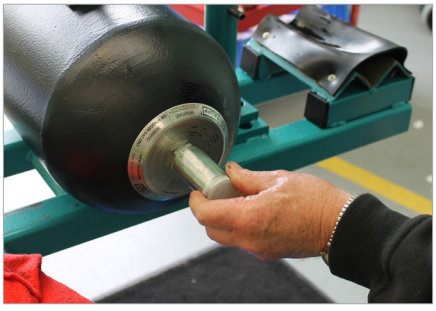
14. Tighten locknut to the bladder stem. Ensure that when tightened the bladder stem does not rotate.



15. Fit the gas valve assembly.



16. Fit the gas valve assembly cap.



17. Fit the gas valve protection cap.

Disposal Information

Dispose of used hydraulic fluid and damaged parts responsibly and according to local disposal regulations.

Bladder Replacement
Disassembly Procedure

As accumulators store fluid under pressure they are considered a pressure vessel, and therefore must comply with the relevant design standards for the country in which they are used. All work on accumulators must be completed by a qualified person.

⚠ Note: Prior to disassembly of the accumulator please ensure the following are checked first:

A. The pre-charge pressure is released from the accumulator and there is no gas pressure left in the accumulator. Use an appropriate pre-charging head connected to the gas valve and check to see that the gauge reads zero pressure. Open the bleed valve on the charging head and make sure no gas can be heard coming from the accumulator Refer to pages 61 and 65 for STAUFF pre-charging instructions

B. Check to make sure that the poppet valve located in the fluid port is fully in the open position. Refer to figure 4a

⚠ Note: If the poppet valve is still in the closed position and the stem is extended (out position), DO NOT attempt to service the vessel and contact the manufacturer

C. Where possible, ensure that any potential system fluid still in the accumulator is not harmful or can cause harm if it comes into contact with human skin, especially in the case of phosphate ester fluids. If necessary wear protective clothing

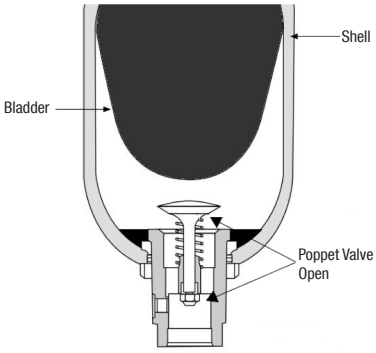
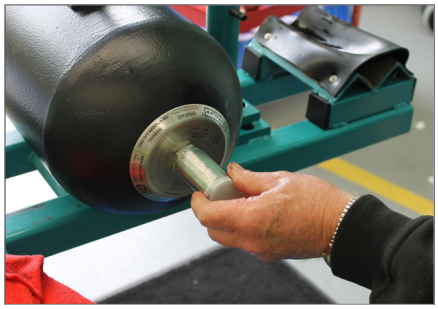
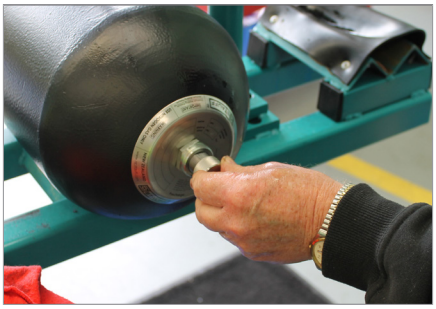
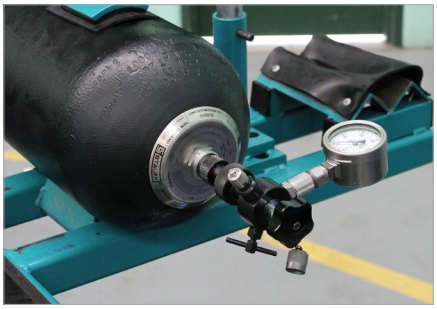


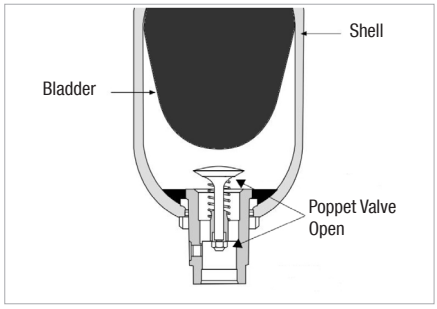
Figure 4a.

Disassembly Instructions

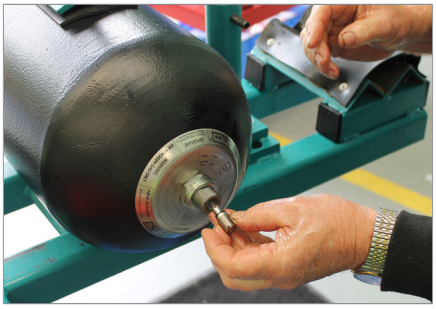

1. Remove the protection cap.

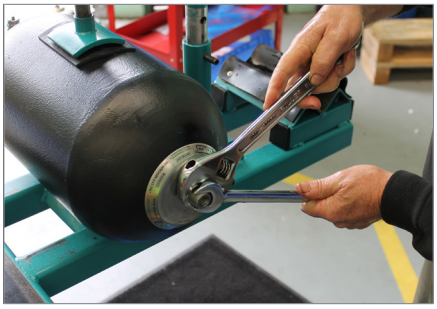

2. Remove the gas valve assembly cap.

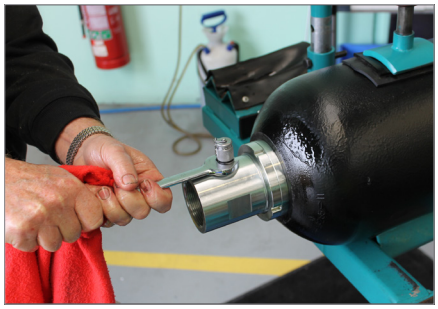

3. Attach STAUFF pre-charging head and release any pre-charge from the accumulator.



4. Ensure that the poppet valve is fully open. The poppet valve stem should be fully retracted as per above.


5. Remove the gas valve assembly or gas valve core.

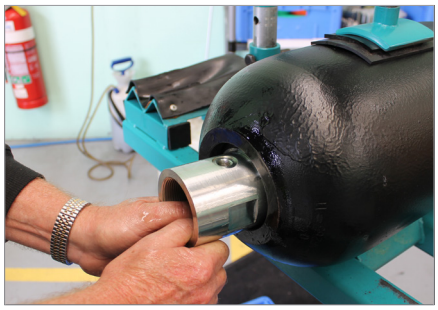

6. Remove the bladder locknut and nameplate.


7. Remove the bleed valve on the fluid port.

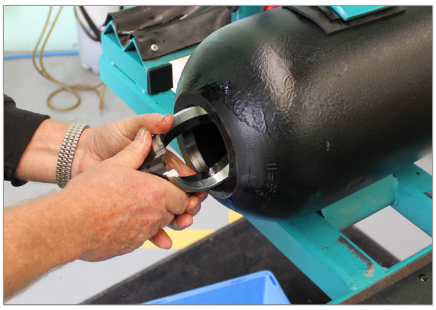

8. Remove the fluid port locknut with an appropriate "C" spanner along with the flanged washer.


9. Remove the nylon back-up washer along with the O-Ring.

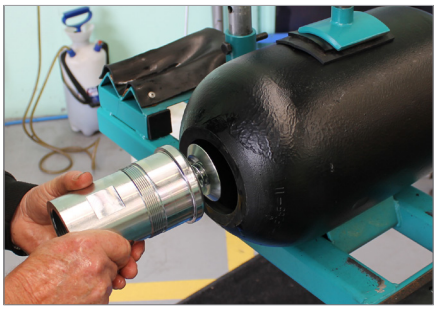
Bladder Replacement
Disassembly Procedure continued...



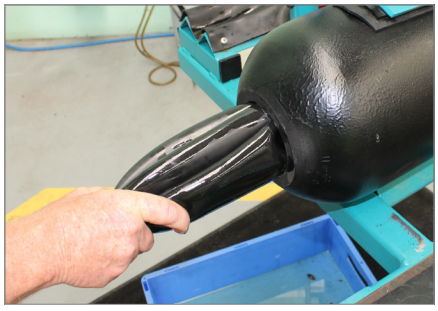
10a. Remove the fluid port assembly by first pushing the fluid port back into the inside of the shell.



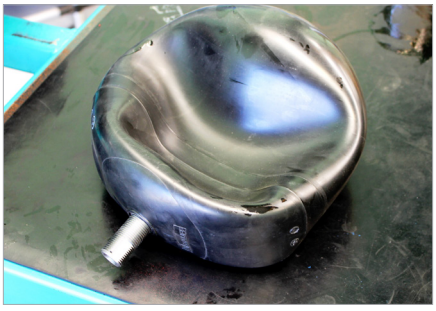
10b. From inside the shell slide the anti-extrusion ring off the fluid port body. Fold ring and remove from the shell.



10c. The fluid port can then be removed from the shell.



11. Remove as much air as possible from the bladder, then remove the bladder from the shell. DO NOT use any sharp objects that could damage the bladder.

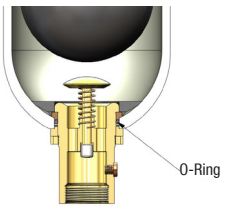
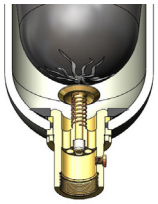
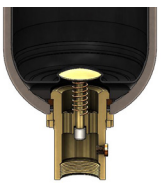


12. Inspect the bladder. In cases where there are signs of damage, wear or swelling then the bladder should be replaced. Refer to page 74 and 75 outlining potential damages, causes and response.

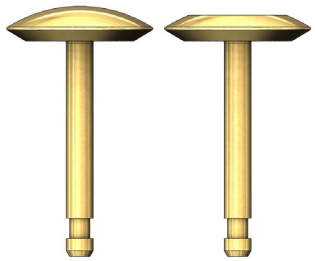
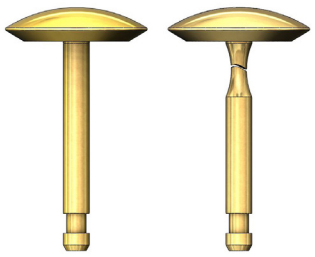
Disposal Information

Dispose of used hydraulic fluid and damaged parts responsibly and according to local disposal regulations.

Trouble Shooting Guide

Type of Damage	Cause	Response	
External Leakage from Gas Valve			
Any leakage from the gas valve if not detected will eventually lead to bladder failure.	Any loss of nitrogen from the gas valve will cause the compression ratio on the bladder to be exceeded and cause early bladder failure.	Always ensure that after pre-charging or during service intervals where the pre-charge is checked, that the gas valve is inspected for leaks.	
Severe leakage from the gas valve.	Gas valve assembly or valve core damaged. Incorrect charge valve used. Gas valve has been tampered with.	Replace gas valve. Ensure the correct charging equipment is used.	
External Leakage from Fluid Port			
Leaking oil between fluid port body and accumulator shell.	Damaged O-Ring caused during assembly or O-Ring has become hard due to high oil temperatures.	Replace fluid port O-Ring. Check assembly methods. Check oil system temperature.	
Internal Leakage from Bladder			
Upon pre-charge and less than 29 PSI (2 bar) the bladder fails leaving a star shaped burst pattern at the bottom of the bladder.	The accumulator was not lubricated properly and / or pre-charged too quickly. Excessive stretching of the bladder or the lower region has been caught in the poppet valve.	Replace bladder. Ensure that the shell and bladder are well lubricated with system fluid. Pre-charge very slowly until the poppet valve is closed.	
Bladder has abrasion lines on 1, 2 or 3 sides. There is a failure along one of the marked lines.	The compression ratio between max. and min. pressure is too high. The pre-charge pressure is too low or has not been checked for a long time. Gas permeation is an issue.	Replace bladder. Ensure that the compression ratio is below 4:1 Check pre-charge pressure more frequently. Replace with bladder that has a higher acrylonitrile percentage.	
Bladder has failed at the bonded seam Vulcanizing failure.	Bladder has rubbed on the inside of the shell due to the compression ratio too high. Manufacturing or material fault.	Replace bladder. Ensure that the compression ratio is below 4:1 Check pre-charge pressure more frequently. Replace with bladder that has a higher acrylonitrile percentage.	
Bladder has a circular cut mark on the base.	Pre-charge pressure is too high.	Lower pre-charge pressure.	
Bladder has a pin hole.	Loss of pre-charge pressure, leaking gas valve, the pre-charge pressure has not been checked.	Replace bladder. Check pre-charge more frequently.	

Trouble Shooting Guide

Type of Damage	Cause	Response	
Internal Leakage from Bladder			
Bladder has hardened and is carbonized.	Accumulator cycle time is very quick along with a very high compression ratio, causing high gas temperature. Oil temperature is too high.	Replace bladder. Check accumulator cycle time and reduce or increase size of accumulator. Ensure oil temperature is lowered to the correct level.	
Bladder is swollen.	Incorrect bladder material. System fluid is not compatible with the bladder material.	Check compatibility of the bladder material with the fluid used. Consult accumulator manufacturer.	
Anti-Extrusion Ring			
Anti-extrusion ring has split into two halves after disassembly.	Normal wear and tear.	Replace anti-extrusion ring.	
Fluid Port Assembly			
Worn poppet valve. Excessive side movement in the poppet valve or poppet valve is sticking when pushed down.	Normal wear. Poppet valve is operated during each cycle. The pre-charge is too close or higher than the minimum working pressure. The flow rate from the accumulator is above the recommend flow rate for that model.	Replace fluid port assembly. Ensure pre-charge pressure is lowered to <90% of minimum working pressure. Decrease flow rate or use a larger accumulator with bigger port. Increase the number of accumulators used to reduce the output flow.	
Poppet valve is broken. Very high cycling application.	Poppet valve is operated during each cycle. The pre-charge is too close or higher than the minimum working pressure. The flow rate from the accumulator is above the recommend flow rate for that model.	Replace fluid port assembly. Ensure pre-charge pressure is lowered to <90% of minimum working pressure. Decrease flow rate, use a larger accumulator with bigger port. Increase the number of accumulators used to reduce the output flow.	

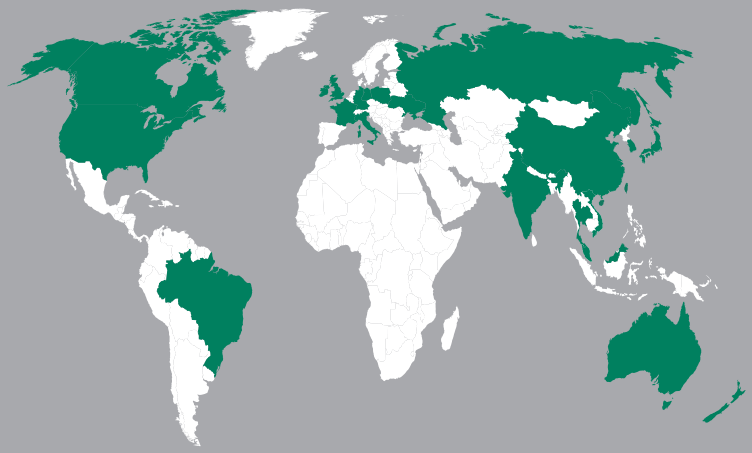
Contact STAUFF for more information.

Product-Specific Abbreviations

Abbreviation	Product Category	Product Description	Page
ADP-C-G32WD/G	Bladder Accumulators	Fluid Port Adaptors	27
BS	Accumulator Accessories	Safety Blocks	40 - 41
DB-605	Bladder Accumulators	Fluid Port Adaptors - SAE Flanges to suit Accumulators with 1-1/2" SAE Code 62 Fluid Ports	26
FI-RED-R	Bladder Accumulators	Fluid Port Adaptors	27
PRECHARGE	Pre-charging and Testing Equipment	Accumulator Pre-charging Service	52
PT-RF	Pre-charging and Testing Equipment	PT-RF Pressure Transmitter and Reader	54 - 56
SPG-063-...-B04-490179	Pre-charging and Testing Equipment	Safety Pattern Pressure Gauges in accordance with AS1349	57
STA-AER	Bladder Accumulators	Fluid Port Anti-Extrusion Rings	26
STA-AMP	Accumulator Accessories	Accumulator Clamps	38 - 39
STA-BRK	Accumulator Accessories	Accumulator Supports	38 - 39
STA-CK	Pre-charging and Testing Equipment	Universal Accumulator Charging Kit	48 - 49
STA-CK-SKK-20	Pre-charging and Testing Equipment	Direct Accumulator Charging Kit	50 - 51
STA-DF	Accumulator Accessories	Fuse Discs - Temperature	45
STA-DR	Accumulator Accessories	Burst Discs - Pressure	44
STA-FPA	Bladder Accumulators	Fluid Port Assemblies	25
STA-GV-ASSY	Bladder Accumulators	Gas Valve Assemblies	24
STA-LIFTLUG	Accumulator Accessories	Accumulator Lifting Lug to suit STBA Accumulators	46
STA-NR	Pre-charging and Testing Equipment	Nitrogen Gas Regulators	53
STA-RMS	Accumulator Accessories	Accumulator Remote Monitoring System	34
STB	Bladder Accumulators	Bladder Kits	22 - 23
STBA	Bladder Accumulators	Bladder Accumulator Assemblies for Standard Applications	14 - 18
STBA	Bladder Accumulators	Bladder Accumulator Assemblies for Special Applications	19 - 20
STBA-A-CV	Accumulator Accessories	Permanent Charging Heads for Bladder Accumulators with 19 mm A/F	35
STBA-A-FV	Accumulator Accessories	Permanent Charging Heads for Bladder Accumulators with 16 mm A/F	36
STDA	Diaphragm Accumulators	Diaphragm Accumulators - 0.075 Ltr - 2.8 Ltr	30 - 31
STDA-A	Accumulator Accessories	Permanent Charging Heads for Diaphragm Accumulators	37
STNB	Accumulator Accessories	Replacement Back-up Bottles	46

Catalogue 10.1

STAUFF Accumulators



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