HYDAC INTERNATIONAL

Hydraulic Accumulators with Back-Up Nitrogen Bottles

1. GENERAL

To complete the accumulator range, HYDAC provides a variety of useful accessory products. They guarantee correct installation and optimum functioning of HYDAC hydraulic accumulators. These include, amongst others, nitrogen bottles which can be used to back up bladder and piston accumulators. Nitrogen bottles used as back-ups increase the gas volume in the accumulator. This means that smaller accumulators can be used for the same gas volume and costs can be reduced.

For further information, please turn to the sections:

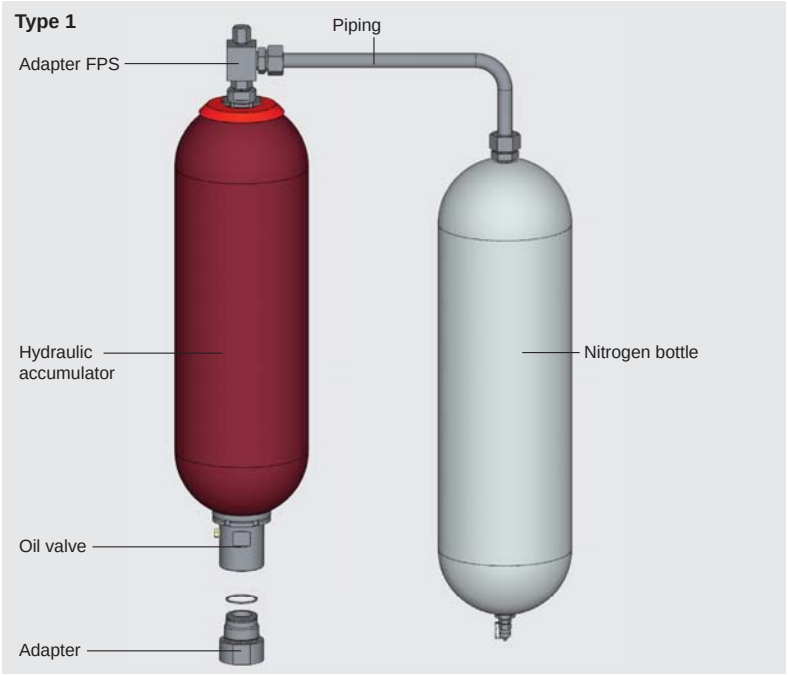
- Bladder Accumulators Standard No. 3.201
- Piston Accumulators Standard No. 3.301

2. BACK-UP VERSIONS

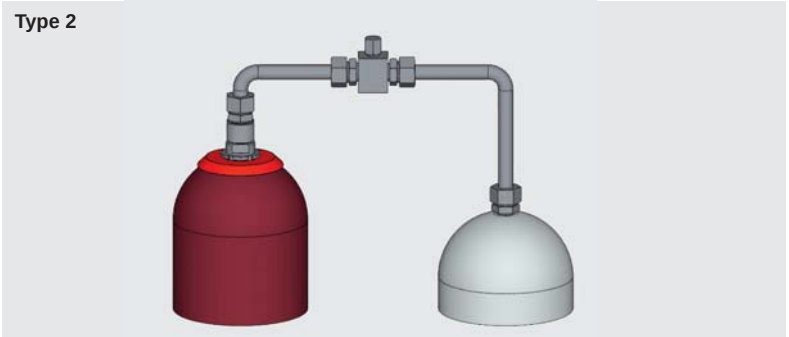
2.1. SET-UP USING THE EXAMPLE OF A BLADDER ACCUMULATOR

Based on bladder accumulator models 20 ... 50 l, the gas-side of these transfer accumulators is designed especially for connecting to nitrogen bottles. A diffuser rod prevents damage to the bladder when the accumulator is charged. This design can also be used for the separation of fluids (taking into account the volume ratios which apply to bladder accumulators).

Type 1



Type 2



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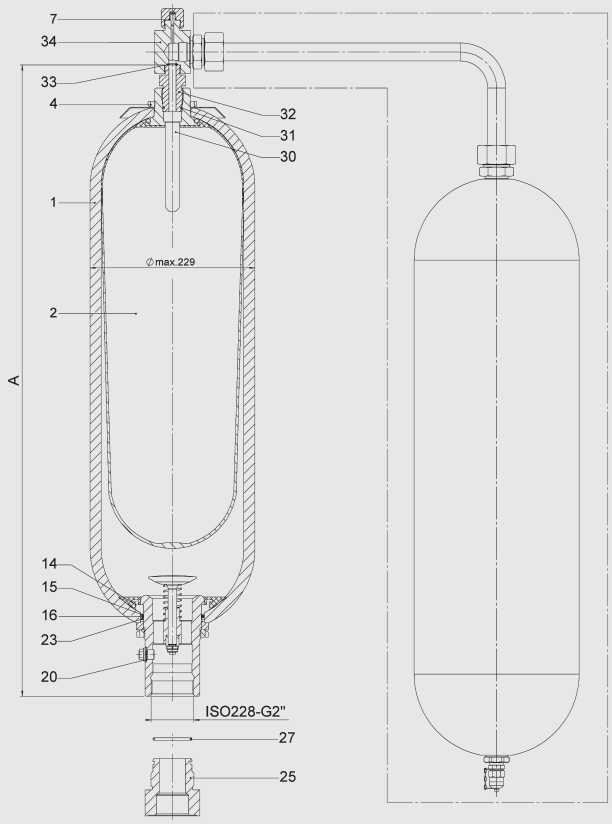
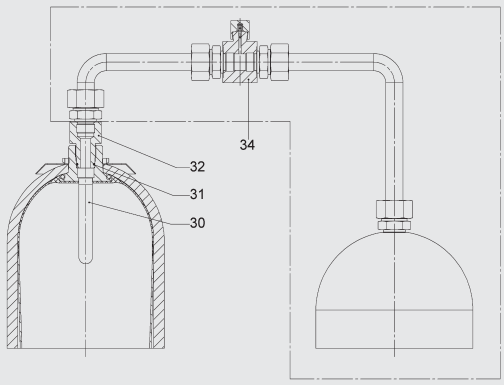
2.2. DIMENSIONS

Type 1



Type 2



Nominal volume [l]	Effective gas volume [l]	Weight [kg]	A max. [mm]
20	17.5	53.5	905
24	24	72	1070
32	32.5	89	1420
50	47.5	119.5	1930

others on request

2.3. SPARE PARTS

NBR, carbon steel, standard gas valve

Nominal volume of accum. [l]	Seal kit Part no.	Repair kit Type 1 Part no.	Repair kit Type 2 Part no.
20	353621	3119500	3897464
24		3119502	3897463
32		3119498	3897462
50		3119499	3897461

Description	Item
Bladder assembly consisting of:	
Bladder	2
Lock nut	4
Diffuser rod	30
O-ring 22x2.5 [1]	31
Adapter for Type 1/2	32
Seal kit consisting of:	
O-ring 7.5x2 [1]	7
Washer	15
O-ring 80x5 [1]	16
Seal ring	20
Back-up ring	23
O-ring 48x3 [1]	27
Repair kit consisting of:	
Bladder assembly (see above)	
Seal kit (see above)	
O-ring 11x2 [1]	33
Anti-extrusion ring	14
Adapter FPS for Type 1/2 [2]	34

Recommended spare parts

[1] For code 663 and 665 different dimensions

[2] see Point 4.

Item 1 not available as a spare part.

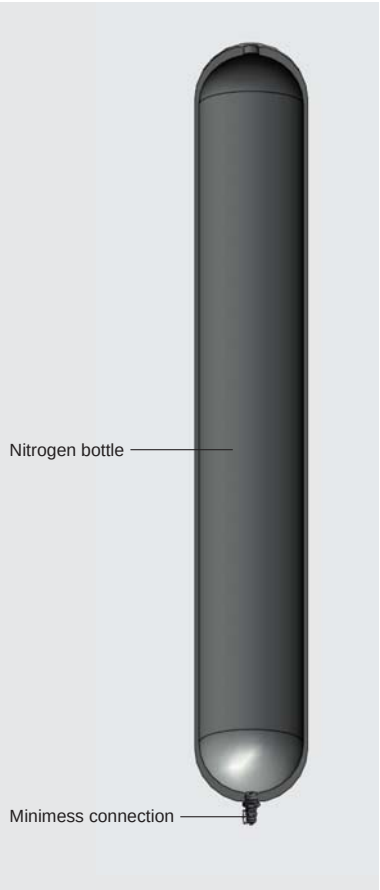
Item 25 must be ordered separately, see Bladder Accumulator Standard, No. 3.201 (Point 4.2)

Item 32 Type 1 is standard.

For other spare parts, see Point 3.

3. NITROGEN BOTTLES

3.1. DESCRIPTION AND CONSTRUCTION



HYDAC nitrogen bottles are used to take in and store nitrogen. HYDAC offers a wide selection of bottle types, such as forged vessels and bladder shells or piston cylinders.

3.2. ADVANTAGES

The use of HYDAC nitrogen bottles provides the following benefits:

- Cost-effective increase of the accumulator volume and as a result
- smaller accumulators for the same gas volume.

3.3. TECHNICAL DATA

3.3.1 Model code
(also order example)

SN360 _ - 50 AA / 010 U - 360 D D

Series

Code letter
No details = standard
B = bladder accumulator shell [1)]
K = piston accumulator cylinder [2)]
M = diaphragm accumulator half-sections [3)]

Nominal volume [l]

Connection type

Connection type on connection side*
A = ISO 228 (BSP)
B = DIN 13 to ISO 965/1 (metric)
C = ANSI B1.1 (UNF seal SAE)
D = ANSI B2.1
F = flange

Drain side (condensate)*
A = ISO 228 (BSP)
B = DIN 13 to ISO 965/1 (metric)
C = ANSI B1.1 (UNF seal SAE)
D = ANSI B2.1
F = flange
1 = sealed with blanking plug
2 = with condensate drain, hex. socket cap screw
3 = with condensate drain valve
4 = with Minimess valve

Material code

Material (connection)
0 = no installed parts
1 = carbon steel
3 = stainless steel
4 = carbon steel with protective coating
6 = low temperature steel

Housing material
1 = carbon steel
2 = carbon steel with protective coating
4 = stainless steel
6 = low temperature steel

Seal material (elastomer)
0 = no elastomer used
2 = NBR (Perbunan)
4 = IIR (Butyl)
5 = TT-NBR
6 = FKM (fluoro rubber)

Certificate code
U = PED 97/23/EC [4)]

Permitted operating pressure [bar]

Size for connection side (see Table 3.3.2)

Size for drain side (see Table 3.3.2)
0 = for type 1-4

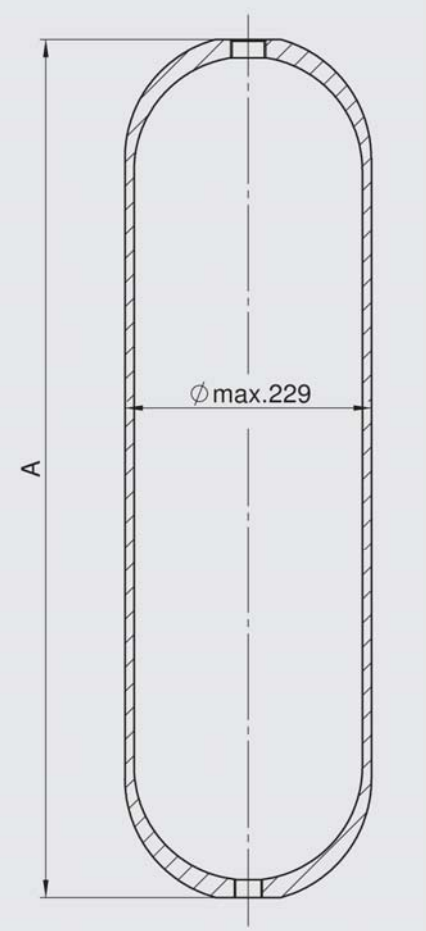
[1)] see catalogue section: Bladder Accumulators Standard, No. 3.201
[2)] see catalogue section: Piston Accumulators Standard, No. 3.301
[3)] see catalogue section: Diaphragm Accumulators, No. 3.100
[4)] see catalogue section: HYDAC Accumulator Technology, No. 3.000, Point 3.

3.3.2 Connections*

Type / Size	A BSP ISO228	B metric DIN13 ISO965/1	C SAE ANSI B1.1	D NPT ANSI B2.1	F Flange connection
A	G 1/4"	M12x1.5	7/16"-20UNF	1/4"	1/2" 3000 psi Code 61
B	G 3/8"	M18x1.5	9/16"-18UNF	3/8"	3/4"
C	G 1/2"	M22x1.5	3/4"-16UNF	1/2"	1"
D	G 3/4"	M27x2	1 1/16"-12UN	3/4"	1 1/4"
E	G 1"	M33x2	1 5/16"-12UN	1"	1 1/2"
F	G 1 1/4"	M42x2	1 5/8"-12UN	1 1/4"	2"
G	G 1 1/2"	M48x2	1 7/8"-12UN	1 1/2"	1/2" 6000 psi Code 62
H	G 2"	M14x1.5	2 1/2"-12UN	2"	3/4"
I	G 1 3/4"	M8			
K		M16x1.5			1 1/4"
L			7/8"-14UNF	5/8"	1 1/2"
M					2"
S	Special version				

* not all combinations are possible, others on request

3.3.3 Dimensions of standard bottle



Designation	Vol. [l]	Connections to ISO 228		Weight [kg]	A max. [mm]	Part no.
SN360-50AA/010U-360DD	50	G 3/4	G 3/4	87	1615	3176324
SN360-50AA/010U-360DG	50	G 3/4	G 1 1/2	87	1615	3418347
SN500-50AA/010U-500DD	50	G 3/4	G 3/4	112	1745	3107549
SN600-50AA/010S-345DD	50	G 3/4	G 3/4	128	1750	3528730
SN360-75AA/010U-360DE	75	G 3/4	G 1	133	2305	3233527
SN360-75AA/010U-360DG	75	G 3/4	G 1 1/2	133	2305	3561595

others on request

4. ACCESSORIES

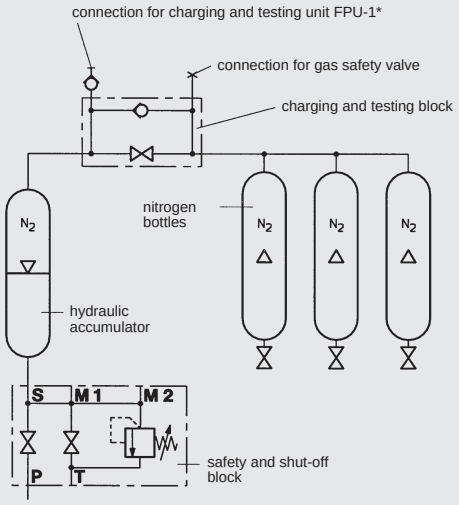
4.1. CHARGING AND TESTING BLOCK F + P

4.1.1 Description

The HYDAC charging and testing block F+P is used to charge and test back-up type hydraulic accumulators. It has connections for the charging and testing unit FPU-1 and for pressure gauges. As a safety function, a gas safety valve GSV6 (see catalogue section given below) can be fitted. In addition, it allows the back-up nitrogen bottles to be shut off from the hydraulic accumulator.

- Safety Equipment for Hydraulic Accumulators No. 3.552

4.1.2 Hydraulic circuit with charging and testing block

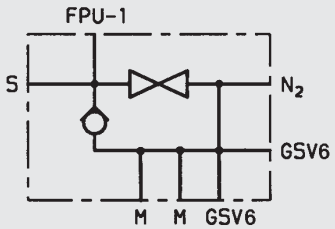


* for further information, see catalogue section:
- Universal Charging and Testing Unit FPU-1 No. 3.501

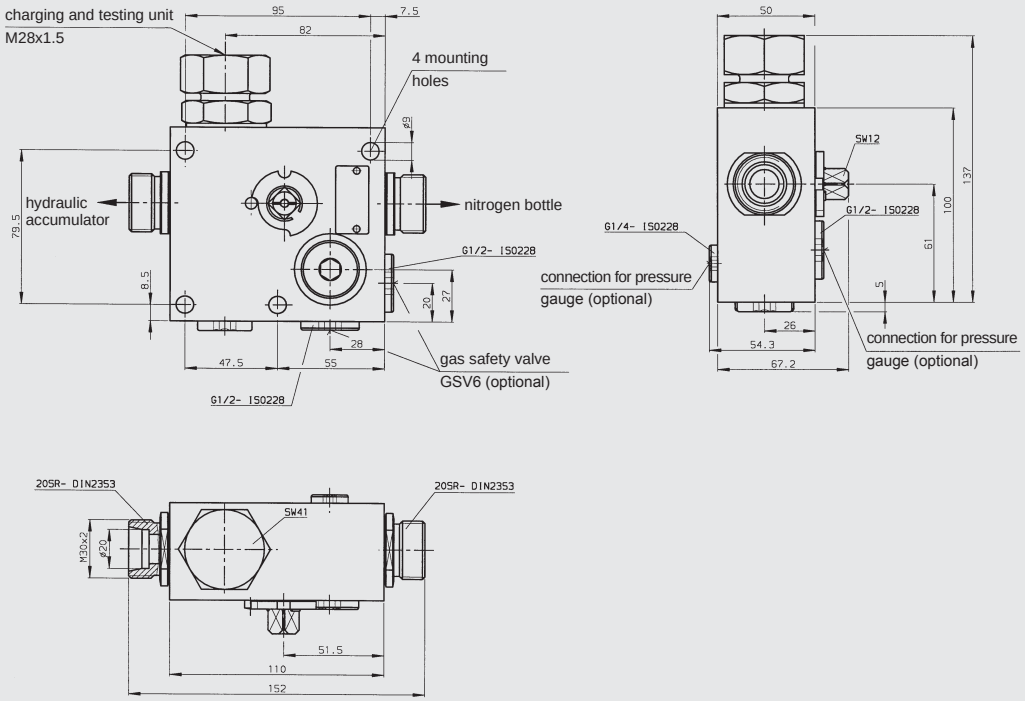
4.1.3 Preferred models / Spare parts

Designation	Max. operating pressure [bar]	Weight [kg]	Part no.	Seal kit [1]
F+P-16-20SR-6112-02X	400	4.3	850233	2115776
F+P-32-38SR-6112-02X	350	14	552193	2112088

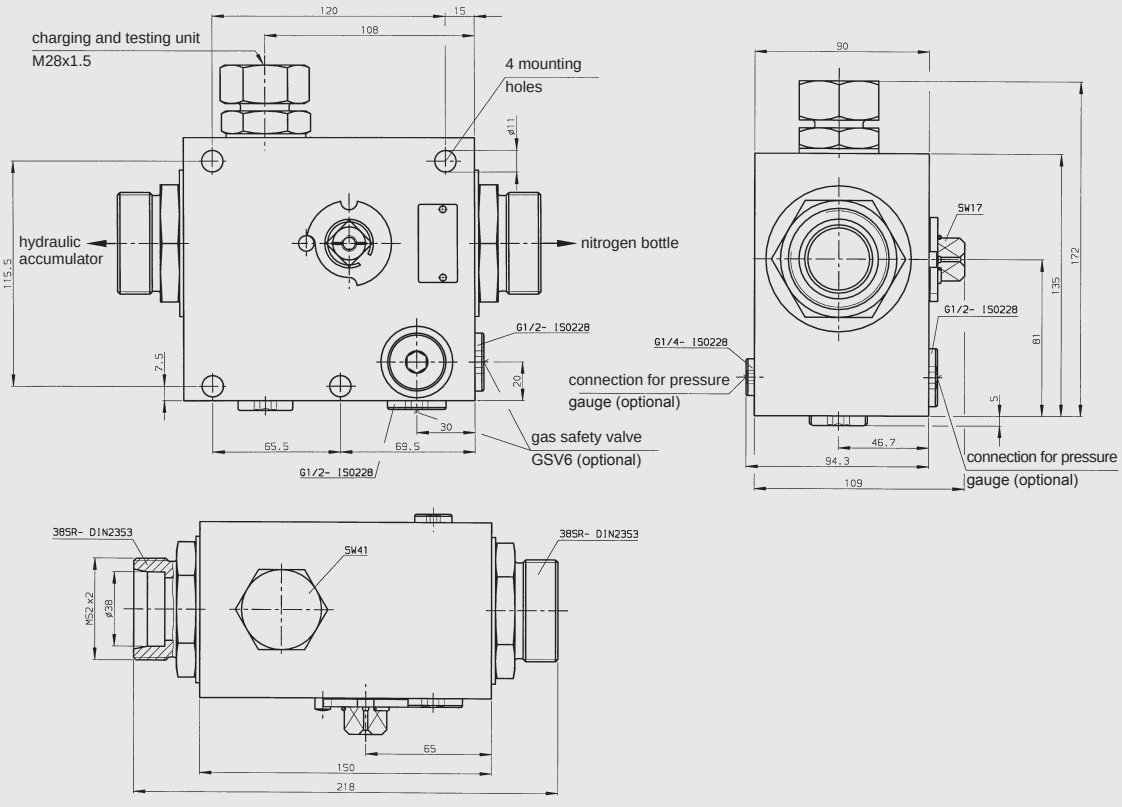
[1] recommended spare parts



4.1.4 **Technical specifications/dimensions**
Charging and testing block DN 16



Charging and testing block DN 32



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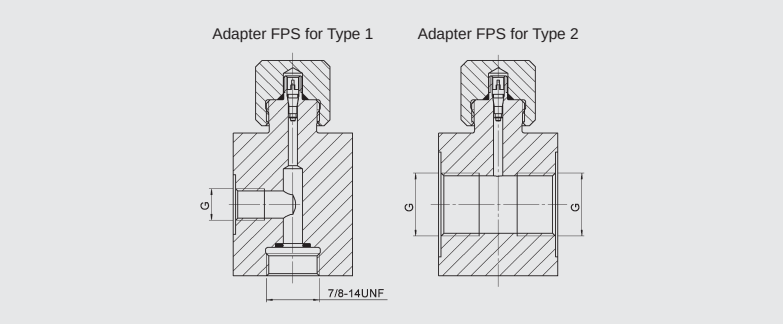
4.2. FPS ADAPTER

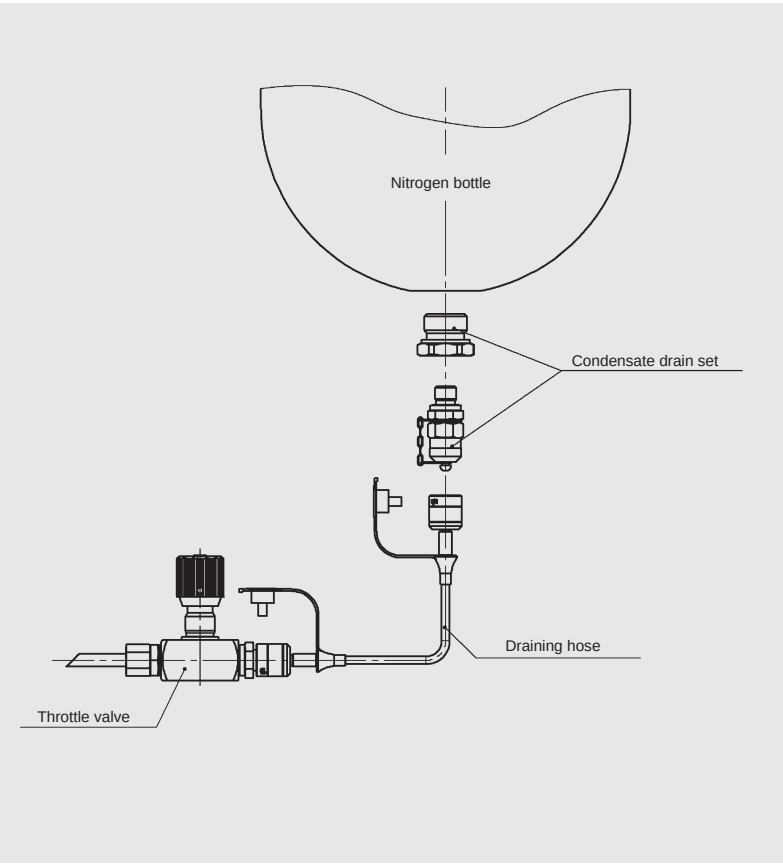
The HYDAC FPS adapter is used to charge back-up type hydraulic accumulators.
For this it has a connection for the Charging and Testing Unit FPU-1.



Description	G ISO228	Part no.	Type
Adapter FPS 7/8-14UNF	G 3/4	363226	1
Adapter FPS	G 3/4	243218	2

4.3. CONDENSATE DRAIN SET

The condensate drain set consists of a throttle valve and a suitable condensate draining hose.
It is used to drain any condensate from the nitrogen bottle, in a controlled way.



Description	Length [m]	Part no.
Condensate drain G 3/4 – Minimess M16x1.5	–	3219496
Condensate drain set	0.4	3472820
	1	3472823
	1.6	3472824

4.3. NITROGEN CHARGING UNIT

HYDAC nitrogen charging units facilitate fast and cost-effective charging or testing of the required pre-charge pressures in bladder, diaphragm and piston accumulators. They guarantee optimum use of standard nitrogen bottles up to a residual pressure of 20 bar and a maximum accumulator charging pressure of 350 bar. Portable, mobile and stationary types of N_2-Server are available.

For further information and technical specifications, see catalogue section:

- Nitrogen charging units N_2-Server No. 2.201

5. NOTE

The information in this brochure relates to the operating conditions and applications described. For applications and operating conditions not described. please contact the relevant technical department. Subject to technical modifications.