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符合卫生设计的电缆接头

Cable glands complying with hygienic design

Leuchtturm
Automation

8



电缆接头
符合 EHEDG 认证
*Cable glands
certified by EHEDG*

8 Leuchtturm
Automation



图 1 – blueglobE CLEAN Plus® 带软管
Fig. 1 – blueglobE CLEAN Plus® with hoses

针对高要求卫生用途的电缆接头

对食品、化学和制药工业方面的产品进行生产和加工要求遵守较高的卫生规定。为了避免污染，产品设备的自动化程度非常高。需要使用大量的电缆和导线，这些电缆和导线必须符合卫生要求顺利的接入和密封到壳体和机器部件中。

根据对电缆接入卫生方面的高要求，使用的部件必须易于清洁以及承受对刺激性强的洗涤剂侵蚀。因此在这些工业领域中一般使用不锈钢和高品质塑料。由于国际卫生条例规定，例如用于食品工业的 DIN EN 1672-2，必须尽量着力缩小附着物形成的预防工作。严禁有空隙、缝隙和裸露的螺纹。因此那里由可能造成卫生死角和产生细菌。

符合 EHEDG 标准的卫生设计

作为电缆接头生产制造的领头羊，PFLITSCH 为卫生用途开发了一系列电缆接头，在结构和材料方面符合制药和食品工业的所有要求。blueglobe CLEAN Plus® 根据卫生设计指令设计并通过 EHEDG 认证。采用高品质不锈钢制造，光面 ($R_a < 0,8 \mu\text{m}$)，与封闭范围之间磨圆过渡以及 $R = 6 \text{ mm}$ 的大半径，这些使 blueglobe CLEAN Plus® 实现了卫生安全性。blueglobe CLEAN Plus® 还有 PVDF 塑料材质版本。

blueglobe CLEAN Plus® 大范围的密封保护使其达到 IP 66、IP 68 (至 15 bar) 和 IP 69K 的高防护等级。在应变消减能力方面，PFLITSCH 的数值远超过欧盟标准 62444。

在安装方面，blueglobe CLEAN Plus® 同样令人信服：由于系统部件少，电缆接头的安装非常简单并且无需特殊工具。

将符合卫生安规应用设计理念同防电磁波干扰应用融汇一体

blueglobe® TRI CLEAN Plus 电缆接头除了符合卫生设计还满足电磁兼容的高要求。内置的三角弹簧与电缆的屏蔽编织层全方位可靠接触，直至千兆赫兹仍可达到明显高于传统电缆接头的屏蔽衰减值。

Cable glands for demanding hygiene applications

The production and preparation of goods in food, chemicals, and pharmaceuticals requires strict hygiene regulations. To eliminate contamination, the level of automation is very high in manufacturing plants. Many cables and leads are used, which must be sealed in casings and machine components in a hygienically impeccable manner.

According to the high requirements in cable connections for hygiene applications, the components used must be easily cleaned and withstand the toughest cleaning materials. Therefore this area of industry chooses stainless steel and high-quality plastics. Because of international hygiene regulations, e.g. DIN EN 1672-2 for the food industry, adhesion must in addition be minimized and if possible prevented. Cavities, gaps and open threads are therefore taboo, for here cleaning residues can build up and colonies of bacteria develop.

Hygienic design according to EHEDG standards

As a leading producer of cable glands, PFLITSCH has developed for hygiene purposes a series with cable glands, which correspond constructively and material-related to all requirements of the pharma and food industry. The blueglobe CLEAN Plus® is constructed in accordance with hygienic design standards and is certified by EHEDG. Made of high-quality stainless steel, blueglobe CLEAN Plus® takes care of hygiene safety with its smooth surface ($R_a < 0,8 \mu\text{m}$) on rounded surfaces of the spanner widths and the large 6 mm radii. The blueglobe CLEAN Plus® is available also as a plastic variant made of PVDF.

The extensive and gentle sealing of blueglobe CLEAN Plus® takes care of the high protection levels IP 66, IP 68 (up to 15 bar) and IP 69K. Even with strain relief the PFLITSCH concept has values well over the EU norm 62444. The assembly of blueglobe CLEAN Plus® convinces also because: With its few system parts the cable gland can be very simply installed without special tools.

Hygiene and EMC go together

In the blueglobe® TRI CLEAN Plus version the cable gland complying with hygienic design also fulfils the high EMC requirements. The internal triangular spring contacts the shield braid of the cable securely all round and thus reaches screening attenuation values into the GHz range clearly higher than ordinary cable glands.



图 1 - blueglobe CLEAN Plus®
Fig. 1 - blueglobe CLEAN Plus®

图 2 - 部件 EMC 电缆接头 blueglobe® TRI CLEAN Plus
Fig. 2 - Components EMC cable gland blueglobe® TRI CLEAN Plus

无缝净化应用
Flawless cleanability



图 1 – blueglobe CLEAN Plus® 通过 EHEDG 认证
Fig. 1 – blueglobe CLEAN Plus® certified by EHEDG

材质符合食品法规条例及高抗菌耐用性。

在可净化性方面，由于部分使用腐蚀性强的介质，因此要求高化学抗蚀性和高耐热性。因此，PFLITSCH 接头本体采用高品质不锈钢 1.4404 和 1.4305 以及稳定性塑料 PVDF。蓝色的内塞和密封垫片采用符合 FDA 21 CFR §177.2600 标准的塑料制造，符合欧盟规定 10/2011，可抵御对食品工业使用的清洁剂、消毒剂、酸和碱以及凝结水的侵蚀。清洁剂和消毒剂的抗蚀性已由 Ecolab 公司实验室进行测试。总结：blueglobe CLEAN Plus® 成功通过了材料抗蚀性测试。

确保通过严格检测

DGUV 的 NV 13132 检测证书证明了 blueglobe CLEAN Plus® 符合以下检测基础：GS-NV-2 食品机械和 GS-NV-6 卫生。其他检测基础是 9 中对食品机械方面的卫生要求。ProdSV 机械规定和 DIN EN 1672-2:2009。

blueglobe CLEAN Plus® 还通过了 Riboflavin 测试，测试结果为“优秀”。进行这个用于检测部件的可净化性的荧光性测试时，用水溶性核黄素将试件浸湿后，用紫外线照射发出荧光。然后将试件处于工作状态下并用 VE（完全去盐）水或 WFI（注射用水）清洁。用紫外线照射试件后显示 blueglobe CLEAN Plus® 没有荧光剂残留。

完美连接软管

blueglobe CLEAN Plus® 电缆接头可以和 PFLITSCH 提供的软管完美组合。

对于在生产过程中需要对电缆进行额外机械保护或者要穿过多根电缆的应用来说，这很有意义，没有软管达不到的卫生方面的更高要求。

PFLITSCH 产品目录中包含带或不带加强层的内光面和外光面软管，以及套有不带外护套波纹管的高活性软管。

Materials conform to food legislation and are resistant.

The cleanability of the components with partially aggressive cleaning materials requires high chemical and thermal stability. For the bodies of the glands PFLITSCH therefore uses high-quality stainless steel 1,4404 and 1,4305 alongside the stable plastic PVDF. The blue sealing inserts and sealing washers are manufactured from plastics corresponding to FDA 21 CFR §177.2600, which is suitable according to the EU regulation 10/2011 for contact with food and resistant to most cleaning and disinfectants used in the food industry, acids, lyes and condensation. The resistance to cleaning agents and disinfectants was tested in Ecolab's laboratory. Conclusion: blueglobe CLEAN Plus® passed the material resistance test.

Strict tests easily passed

Under the test certificate NV 13132 the DGUV also confirmed the conformity of blueglobe CLEAN Plus® according to the following test basis: GS-NV-2 food processing machines and GS-NV-6 Hygiene (comprehensive). Further test bases were the hygiene requirements of food processing machines from 9. ProdSV machine ordinance and the DIN EN 1672-2:2009.

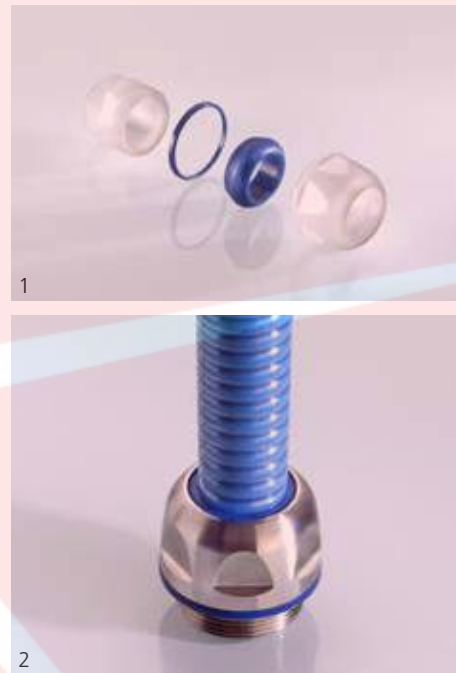
blueglobe CLEAN Plus® withstood the Riboflavin Test with "Excellent". In this fluorescence test designed to prove the cleanability of components, the item under examination is moistened with a test solution soluble in water, containing riboflavin, which fluoresces when exposed to ultra-violet light. In this connection the tested component was brought into its operational condition and cleaned with VE (demineralized water) or WFI (water for injection). After the test UV-light revealed no remaining traces of riboflavin on the blueglobe CLEAN Plus®.

Ideally combining with hoses

The cable gland blueglobe CLEAN Plus® can be combined optimally with the hoses offered by PFLITSCH.

This is significant in applications, for example, in which the cable must be mechanically protected in the production process or several cables are to be run together, which may not conform to strict hygiene requirements unless there is a hose.

The hoses that are smooth both inside and outside with or without fabric reinforcement and the especially flexible coated corrugated hose belong to the PFLITSCH product portfolio.



1



2

图 1 - blueglobe CLEAN Plus® PVDF 根据 EHEDG 标准设计
Fig. 1 - blueglobe CLEAN Plus® PVDF designed according to the EHEDG standards

图 2 - blueglobe CLEAN Plus® 带波纹软管
Fig. 2 - blueglobe CLEAN Plus® with hose corrugated conduit

blueglobe CLEAN Plus®



图 1
Fig. 1



图 2
Fig. 2

外部部件 1.4404
内部部件 1.4305
垫片
公制螺纹 EN 60423
防护等级 IP 68 至 15 bar, IP 69K
Outer parts AISI 316L, Inner parts AISI 303
Including washers
Metric thread EN 60423
Type of protection IP 68 up to 15 bar, IP 69K

i 如需 15 mm 长度接口螺纹可提出要求
Long connection thread 15 mm on request

螺纹接头外壳材质 Material gland body	规格/颜色 Version/colour	塞子材质 Material sealing insert	颜色 Colour	温度范围最小值/最大值 Temperature range min./max.
VA 1.4404 AISI 316L	乳白色 blank	TPU	龙胆蓝 - RAL 5010 gentian-blue	-40 °C / +85 °C

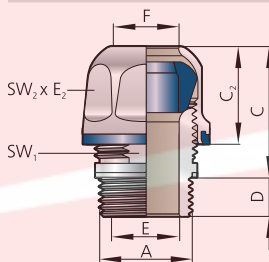


图 3
Fig. 3



连接螺纹/长度 Connection thread/length		料号 Art. no.	线径范围 Sealing range	安装高度 Mounting height C	安装高度 Mounting height C2	扳手开口宽度 Spanner width SW ₁ /SW ₂ x E ₂	
A	D mm		最大/最小 mm	mm	mm	mm	
M8x1,0	4,5	bgc 9208VA cp	4.5 – 4.0	15.0	12.0	7/11x11.9	5
M10x1,0	6,0	bgc 9210VA cp	7.0 – 5.0	19.0	15.0	10/15x16.5	5
M12x1,5	7,0	bgc 9212VA5 cp bgc 9212VA cp	5.0 – 3.5 7.0 – 5.0	19.0 19.0	15.0 15.0	10/17x19.4 10/17x19.4	5 5
M16x1,5	9,0	bgc 9216VA cp	9.0 – 7.0	21.0	18.0	14/20x23.4	5
M20x1,5	9,0	bgc 9220VA cp	12.0 – 9.0	27.0	21.0	19/24x27.4	5
M25x1,5	10,0	bgc 9225VA15 cp bgc 9225VA cp	15.0 – 12.0 18.0 – 15.0	27.0 27.0	23.0 23.0	24/30x33.4 24/30x33.4	5 5
M32x1,5	11,0	bgc 9232VA21 cp bgc 9232VA cp	21.0 – 18.0 23.0 – 20.0	27.0 27.0	24.0 24.0	30/36x39.4 30/36x39.4	5 5
M40x1,5	11,0	bgc 9240VA26 cp bgc 9240VA cp	26.0 – 23.0 29.0 – 26.0	32.0 32.0	28.0 28.0	36/45x48.4 36/45x48.4	4 4

45400 | TT10200

blueglobe CLEAN Plus® — HTS 用于高温
blueglobe CLEAN Plus® – HTS for high temperatures



图 1
Fig. 1



图 2
Fig. 2

外部部件 1.4404
内部部件 1.4305
包括垫片
公制螺纹 EN 60423
防护等级 IP 68 至 15 bar, IP 69K
Outer parts AISI 316L, Inner parts AISI 303
Including washers
Metric thread EN 60423
Type of protection IP 68 up to 15 bar, IP 69K

i 准备工作
In preparation

螺纹接头外壳材质 Material gland body	规格/颜色 Version/colour	塞子材质 Material sealing insert	颜色 Colour	温度范围最小值/最大值 Temperature range min./max.
VA 1.4404 AISI 316L	乳白色 blank	硅树脂 Silicone	龙胆蓝 - RAL 5010 gentian-blue	-55 °C / +180 °C

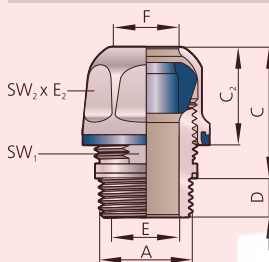


图 3
Fig. 3

连接螺纹/长度 Connection thread/length		料号 Art. no.	线径范围 Sealing range	安装高度 Mounting height C	安装高度 Mounting height C2	扳手开口宽度 Spanner width SW ₁ /SW ₂ x E ₂	
A	D mm		最大/最小 mm	mm	mm	mm	
M8x1.0	4.5	bgc 9208VA HTS cp	4.5 – 4.0	15.0	12.0	7/11x11.9	5
M10x1.0	6.0	bgc 9210VA HTS cp	7.0 – 5.0	19.0	15.0	10/15x16.5	5
M12x1.5	7.0	bgc 9212VA HTS cp	7.0 – 5.0	19.0	15.0	10/17x19.4	5
M16x1.5	9.0	bgc 9216VA HTS cp	9.0 – 7.0	21.0	18.0	14/20x23.4	5
M20x1.5	9.0	bgc 9220VA HTS cp	12.0 – 9.0	27.0	21.0	19/24x27.4	5
M25x1.5	10.0	bgc 9225VA HTS cp	18.0 – 15.0	27.0	23.0	24/30x33.4	5
M32x1.5	11.0	bgc 9232VA HTS cp	23.0 – 20.0	27.0	24.0	30/26x39.4	5
M40x1.5	11.0	bgc 9240VA HTS cp	29.0 – 26.0	32.0	28.0	36/45x48.4	4
M50x1.5	11.0	bgc 9250VA35 HTS cp	35.0 – 30.0	34.0	29.0	46/55x58.4	1
M63x1.5	11.0	bgc 9263VA43 HTS cp bgc 9263VA55 HTS cp	44.0 – 40.0 55.0 – 52.0	33.0 33.0	29.0 29.0	60/68x71.4 60/68x71.4	1 1

47900 | TT10300

i 如需 15 mm 长度接口螺纹可提出要求
Long connection thread 15 mm on request

blueglobe CLEAN Plus® – PVDF
blueglobe CLEAN Plus® – PVDF



图 1
Fig. 1



图 2
Fig. 2

PVDF
垫片
公制螺纹 EN 60423
防护等级 IP 68 至 15 bar, IP 69K

PVDF
Including washers
Metric thread EN 60423
Type of protection IP 68 up to 15 bar, IP 69K

螺纹接头外壳材质 Material gland body	规格/颜色 Version/colour	塞子材质 Material sealing insert	颜色 Colour	温度范围最小值/最大值 Temperature range min./max.
PVDF	透明 transparent	TPU	龙胆蓝 - RAL 5010 gentian-blue	-40 °C / +85 °C

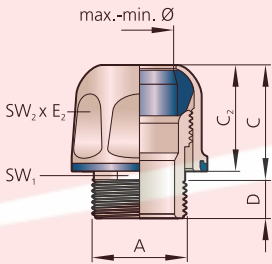


图 3
Fig. 3

连接螺纹/长度 Connection thread/length		料号 Art. no.	线径范围 Sealing range	安装高度 Mounting height C	安装高度 Mounting height C2	扳手开口宽度 Spanner width SW ₁ /SW ₂ x E ₂	
A	D mm		最大/最小 ø mm	mm	mm	mm	
M12x1.5	7.0	bgc 9212y cp	7.0 – 5.0	18.0	15.0	10/18x20.9	5
M16x1.5	9.0	bgc 9216y cp	9.0 – 7.0	25.0	20.0	14/22x24.9	5
M20x1.5	9.0	bgc 9220y cp	12.0 – 9.0	30.0	24.0	18/26x28.9	5
M25x1.5	10.0	bgc 9225y15 cp	15.0 – 12.0	30.0	27.0	24/32x34.9	5
		bgc 9225y cp	18.0 – 15.0	30.0	27.0	24/32x34.9	5
M32x1.5	11.0	bgc 9232y21 cp	21.0 – 18.0	32.0	28.0	30/38x40.9	5
		bgc 9232y cp	23.0 – 20.0	32.0	28.0	30/38x40.9	5
M40x1.5	11.0	bgc 9240y cp	29.0 – 26.0	30.0	28.0	36/50x58.4	4

47800 | TT10200

blueglobe CLEAN Plus® – PVDF – HTS 用于高温
blueglobe CLEAN Plus® – PVDF – HTS for high temperatures



图 1
Fig. 1



图 2
Fig. 2

PVDF
垫片
公制螺纹 EN 60423
防护等级 IP 68 至 15 bar, IP 69K

PVDF
Including washers
Metric thread EN 60423
Type of protection IP 68 up to 15 bar, IP 69K

i 准备工作
In preparation

螺纹接头外壳材质 Material gland body	规格/颜色 Version/colour	塞子材质 Material sealing insert	颜色 Colour	温度范围最小值/最大值 Temperature range min./max.
PVDF	透明 transparent	硅树脂 Silicone	龙胆蓝 - RAL 5010 gentian-blue	-40 °C / +150 °C

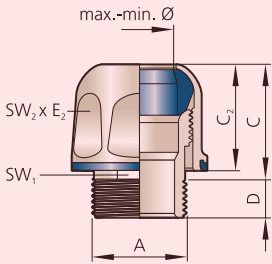


图 3
Fig. 3

连接螺纹/长度 Connection thread/length		料号 Art. no.	线径范围 Sealing range	安装高度 Mounting height C	安装高度 Mounting height C2	扳手开口宽度 Spanner width SW ₁ /SW ₂ x E ₂	
A	D mm		最大/最小 ø mm	mm	mm	mm	
M12x1.5	7.0	bgc 9212y HTS cp	7.0 – 5.0	18.0	15.0	10/18x20.9	5
M16x1.5	9.0	bgc 9216y HTS cp	9.0 – 7.0	20.0	25.0	14/22x24.9	5
M20x1.5	9.0	bgc 9220y HTS cp	12.0 – 9.0	30.0	24.0	18/26x28.9	5
M25x1.5	10.0	bgc 9225y HTS cp	18.0 – 15.0	30.0	27.0	24/32x34.9	5
M32x1.5	11.0	bgc 9232y HTS cp	23.0 – 20.0	32.0	28.0	30/38x40.9	5
M40x1.5	11.0	bgc 9240y HTS cp	29.0 – 26.0	30.0	28.0	36/50x58.4	4

48000 | TT10200



图1
Fig. 1



图2
Fig. 2

外部件 1.4404-
内部件 1
2 个垫片
公制螺纹 EN 60423
防护等级 IP 68 至 15 bar, IP 69K
Outer parts AISI 316L, Inner parts AISI 303
Including 2 washers
Metric thread EN 60423
Type of protection IP 68 up to 15 bar, IP 69K

i 如需 15 mm 长度接口螺纹可提出要求
Long connection thread 15 mm on request

螺纹接头外壳材质 Material gland body	规格/颜色 Version/colour	塞子材质 Material sealing insert	颜色 Colour	温度范围最小值/最大值 Temperature range min./max.
VA 1.4404 AISI 316L	乳白色 blank	TPU	龙胆蓝 - RAL 5010 gentian-blue	-40 °C / +85 °C

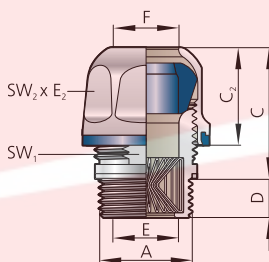


图3
Fig. 3



连接螺纹/长度 Connection thread/length		料号 Art. no.	線徑范围 Sealing range	屏蔽层 Ø Shield-Ø	安装高度 Mounting height	安装高度 Mounting height	扳手开口宽度 Spanner width
A	D mm		最大/最小 ø mm	最大/最小 ø mm	C mm	C2 mm	SW ₁ /SW ₂ x E ₂ mm
M12x1.5	7.0	bgc 9212VA tri cp	7.0 – 5.0	5.0 – 3.0	19.0	15.0	10/17x19.4 5
M16x1.5	9.0	bgc 9216VA tri cp	9.0 – 7.0	9.0 – 5.0	21.0	18.0	14/20x23.4 5
M20x1.5	9.0	bgc 9220VA tri cp	12.0 – 9.0	12.0 – 7.0	27.0	21.0	19/24x27.4 5
M25x1.5	11.0	bgc 9225VA15 tri cp	15.0 – 12.0	16.0 – 10.0	27.0	23.0	24/30x33.4 5
		bgc 9225VA tri cp	18.0 – 15.0	16.0 – 10.0	27.0	23.0	24/30x33.4 5
M32x1.5	12.0	bgc 9232VA21 tri cp	21.0 – 18.0	20.0 – 13.0	27.0	24.0	30/36x39.4 5
		bgc 9232VA tri cp	23.0 – 20.0	20.0 – 13.0	27.0	24.0	30/36x39.4 5
M40x1.5	22.5	bgc 9240VA26 tri cp	26.0 – 23.0	28.0 – 20.0	32.0	28.0	36/45x48.4 4
		bgc 9240VA tri cp	29.0 – 26.0	28.0 – 20.0	32.0	28.0	36/45x48.4 4

45600 | TT10210

不带编织层的软管
Hose without fabric

RoHS



图1
Fig. 1



图2
Fig. 2

耐磨压力软管
不带加强层、内外光滑
PUR 401
温度范围: -40 °C 至 +90 °C
Abrasion resistant pressure hose
Without reinforcement, smooth inside and outside
PUR 401
Temperature range: -40 °C up to +90 °C

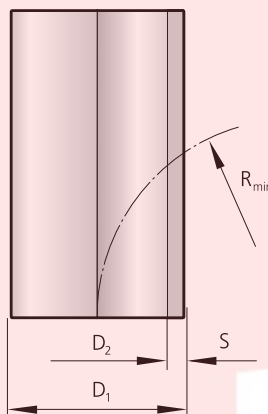


图3
Fig. 3

额定值 Rated size	料号 Art. no.	D1 x D2 D1 x D2	壁厚 Wall thickness	适合 bg cp Compatible with bg cp	最小半径 Radius min.
		mm	S mm		R mm
08	CHGT912	12.0 x 8.0	2.0	bgc 9220... cp	46 100 m
10	CHGT914	14.0 x 10.0	2.0	bgc 9225... cp	55 100 m
13	CHGT918	18.0 x 13.0	2.5	bgc 9225... cp	78.5 50 m
19	CHGT925	25.0 x 19.0	3.0	bgc 9240... cp	115.5 50 m

48100 | TT07500

带编织层的软管

Hose with fabric

RoHS



图 1
Fig. 1

图 2
Fig. 2

耐磨压力软管
编织加强层、耐压、内外光滑
PUR 441
温度范围: -40 °C 至 +90 °C

Abrasion resistant pressure hose
Fabric reinforced, resistant to pressure, smooth inside and outside
PUR 441
Temperature range: -40 °C up to +90 °C

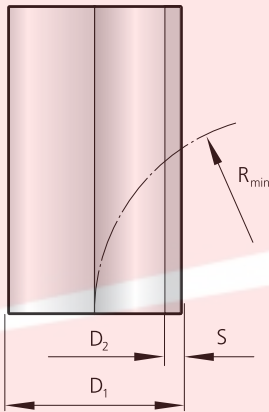


图 3
Fig. 3

额定值 Rated size	料号 Art. no.	D1 x D2 D1 x D2 mm	壁厚 Wall thickness S mm	适合 bg cp Compatible with bg cp	最小半径 Radius min. R mm	
08	CHGG912	12.0 x 8.0	2.0	bgc 9220... cp	26	50 m
10	CHGG914	14.5 x 10.0	2.3	bgc 9225... cp	55	50 m
13	CHGG919	19.0 x 13.0	3.0	bgc 9232... cp	78.5	50 m
19	CHGG925	25.0 x 19.0	3.0	bgc 9240... cp	115.5	50 m

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软管 波纹管

Corrugated hose

RoHS



图 1
Fig. 1

图 2
Fig. 2

不带护套的波纹管、灵活、重量中等
多层尼龙
FDA CFR 21/EU 10/2011
温度范围: -20 °C 至 +95 °C (短时至 +120 °C)

Corrugated hose, overextruded, flexible, medium-duty
Coated polyamide
FDA CFR 21/EU 10/2011
Temperature range: -20 °C up to +95 °C (for a short time up to +120 °C)

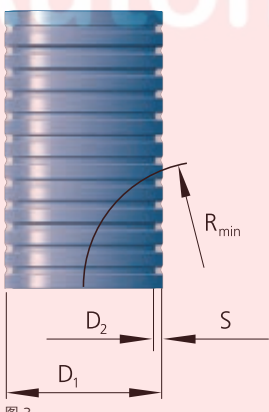


图 3
Fig. 3

额定值 Rated size	料号 Art. no.	D1 x D2 D1 x D2 mm	壁厚 Wall thickness S mm	最小半径 Radius min. R mm	
12	CHGW 912	16.0 x 11.8	2.1	100	50 m
17	CHGW 917	21.6 x 15.6	3.0	125	50 m
23	CHGW 923	28.8 x 21.7	3.5	160	50 m
29	CHGW 929	34.7 x 27.4	3.6	200	50 m
36	CHGW 936	42.7 x 35.8	3.4	260	50 m
48	CHGW 948	54.6 x 46.7	3.9	300	50 m

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