



产品目录 Products catalogue



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对品质的追求成就我们的稳健发展

五十多年的发展历程成就了 Castel 公司在制冷和空调行业中的领军地位，优异的产品质量闻名全球，深受广大用户青睐，完美演绎着其孜孜追求的质量目标。追求高品质在 Castel 具有特殊优先权，并始终贯穿于产品生产的各个环节，堪称 Castel 长期专注的发展焦点。我们采用 ICIM 认证机构签发的 UNI EN ISO 9001:2008 质量管理体系，同时还拥有多项符合 EEC 指令以及欧美质量认证标准的证书。Castel 严格遵循当前的安全和环境标准，拥有高科技的生产设备和最新的自动化生产线。

我们的所有产品均执行严格的质量控制，出厂前全部通过相关测试，可用于制冷、空调市场，以及供其他设备制造商配套使用，并完全适合于目前制冷及工业空调所采用的 HCFC 和 HFC 制冷剂。

凭借在碳氟化合物制冷剂市场的丰富经验，Castel 十分自豪地为制冷和空调市场的经销商和制造商提供一系列新产品，它们专为使用天然制冷剂系统设计并经过相关试验：碳氢化合物（HC 制冷剂）和二氧化碳（R744）。

FROM QUALITY OUR NATURAL DEVELOPMENT

Achieved the goal of fifty years working in the industry of Refrigeration and Air Conditioning, Castel Quality Range of Products is well known and highly appreciated all over the world. Quality is the main issue of our Company and it has a special priority, in every step, all along the production cycle. UNI EN ISO 9001:2008, issued by ICIM, certifies the Quality System of the Factory. Moreover Castel Products count a number of certifications in conformity with EEC Directives and with European and American Quality Approval.

We produce on high tech machinery and updated automatic production lines, operating in conformity with the safety and environment standards currently enforced.

Castel offers to the Refrigeration and Air Conditioning Market and to the Manufacturers fully tested products suitable with HCFC and HFC Refrigerants currently used in the Refrigeration & Air Conditioning Industry.

Based on the experience obtained in the refrigeration market that uses fluorocarbon fluids Castel is proud to present to the same operators of the Refrigeration and Air Conditioning Market and to the Manufacturers a new range of products specifically designed and tested to operate on systems that use natural refrigerants: hydrocarbons (HC fluids) e carbon dioxide (R744)..

通用销售条款

订单

买方表示完全接受我们的“通用销售条款”

交货

买方承担货物运输的风险,即使交货条款是“工厂交货”。在此类情况下, 客户将必须为货物投保。

包装

价格中包括一次性包装的费用, 退货时不能退还该部分费用。

交货条款

条款为非强制性条款, 而且卖方不承担因延迟产生的费用和责任。交货延迟不能成为解决合同纠纷的理由。

支付条款

汇款只能汇到我们的总部。如果出现支付延迟, 我们保留中止或取消挂单的权利。

索赔通知

交货错误的相关索赔应在客户仓库收货后十 (10) 日内进行书面通知。

保修

Castel 公司所有产品的保修期均为 12 个月。在保修期内, 如产品或产品零件存在缺陷, 我们将会对该产品进行保修。在此情况下, 客户需自费将有缺陷的产品返回 Castel 公司, 并详细说明缺陷情况。如因客户或第三方安装不当、未按 Castel 公司的相关说明或规定使用等失误而造成的缺陷, 本公司一律不予保修。对于缺陷产品, Castel 公司只负责更换存在缺陷的产品或零部件, 而不承担任何形式的损失赔偿金。本产品目录上所示的技术数据仅供参考, Castel 公司保留对技术数据做出随时修改的权利, 恕不提前通知。

退货

没有通过提交索赔程序获得 Castel 的相关批准之前, 均不接受退货。

价格

为工厂交货价如果原材料或其他成本以无法维持的方式增长, Castel 保留在“不可抗力”情况下调整价格的权利, 恕不另行通知。

争议

对与协议相关的任何争议, 米兰法院均享有专属管辖权。

欧洲议会和理事会 1997 年 5 月 29 日第 97/23/EC 号关于压力设备的指令在 CASTEL 制冷产品中的应用

97/23/EC (PED) 指令适用于最大承受压力“PS”高于 0.5 bar 的压力设备及组件的设计、制造及合格评定, 此指令中第 1 条第 3 款所列的可能性除外。自 2002 年 5 月 30 日起, 该指令被强制执行, 在欧共体成员国中, 只有按照 PED 认证, 具有 CE 标志的产品才能上市。

见下列规定 (应用于本手册中) 以了解此指令的目的:

- **压力设备:** 指容器、管道、安全部件和压力部件
- **容器:** 指设计制造用来盛装承压流体的壳体。
- **管道:** 是指连接在一起作为压力系统的组成部分, 用于输送流体的管道部件。
- **安全部件:** 是指设计用于保护压力设备不超过允许极限的部件。
- **压力部件:** 指具有操作功能并带有承压壳体的部件。例如: 电磁阀、阀门、指示装置等。
- **组件:** 指由制造商组装在一起构成一个功能整体的几个压力设备。
- **最大允许压力 (PS):** 是指制造商设计时对设备规定的最大压力。
- **最大/最小允许温度 (TS):** 制造商设计时对设备规定的最大/最小温度。

- **容积 (V):** 指腔室的内部容积, 包括喷嘴到第一个连接点或焊接点的容积, 永久性内部部件的容积除外。
- **公称尺寸 (DN):** 指对于管道系统的所有部件所通用的尺寸数字表示法。
- **流体:** 指单相的气体、液体和蒸气及其混合物。

第 3 条所述的压力设备根据附件 II 中的类别, 按危险等级从小到大分类, 并基于如下:

- 流体状态
- 流体危险类别
- 设备类型
- 尺寸和潜在能量; V、DN、PS、PS x V、PS x DN

必须满足 PED 附件 I 所规定的基本安全要求。

分别低于或等于第 3 条第 1.1、1.2、1.3 款和第 2 款的极限值的压力设备一定不满足附件 I 的基本安全要求。必须按照成员国的良好工程规范进行设计和制造, 以确保使用安全。(第 3 条第 3 款)。这些产品不带有 CE 标志。

在 PED 第 9 条, 按照其危险程度, 流体分为两组:

- **第一组**为危险流体危险流体是 1967 年 6 月 27 日欧洲联盟理事会关于有害物质的分类、包装和标签的 67/584/EEC 指令第 2 条以及此后的修订版的定义所涉及的某种物质或制剂。第一组的流体被定义为: 易爆、极易燃、高度易燃、易燃、毒性非常大、有毒、氧化。
- **第二组**包括第一组中没有涉及到的所有其他流体。

欧盟议会和欧盟理事会 2003 年 1 月 27 日第 2002/95/EC 号关于在电气电子设备中限制使用某些有害物质指令的应用

2011/65/UE (被称为 RoHS 2 或 RoHS 2 Recast Directive) 指令的目的是防止或限制有害物质在电气和电子设备上的使用, 并对废弃电气和电子设备进行环保回收和处理。2011/65/UE 指令取代了先前的 2002/95/EC 指令, 并于 2013 年 1 月 3 日起生效。

RoHS 2 指令应适用于属于本指令附录 1 中规定的类别 1、2、3、4、5、6、7、10、11 的 EEE (电子电气设备)。

“大型家用电器”和第 10 类别——“自动售货机”属于指令 2012/19/UE 附录 2 中规定的第一类别, WEEE-重铸指令 (Recast Directive) —— (废弃电子电气设备) 将取代先前的指令 2002/96/EC, 并于 2014 年 2 月 15 日起生效。附录 2 中罗列了这些产品。

- 大型冷却电器
- 冰箱
- 冷冻机
- 其他用于食品冷藏、保藏和储存的大型家用电器。
- 空调设备
- 其他风扇、排气和调节设备
- 用于冷或热瓶和罐的自动售货机

RoHS 2 指令第 4 条确立将电子电气设备投入市场, 包括对电缆和备用备件进行修理、重复利用, 并对其功能和容量进行更新, 不得包含下列物质:

- 铅 – (0,1%)
- 汞 – (0,1%)
- 镉 – (0,01%)
- 六价铬 – (0,1%)
- 多溴联苯 (PBB) – (0,1%)
- 多溴二苯醚 (PBDE) – (0,1%)

上述这些有害物质的使用限制不适用于附录三中所列的应用；在这些应用中，下列例外事项在空调/制冷系统中尤为突出：

- 作为钢的合金成分，铅含量可达 0.35（按重量计），铝中铅含量可达 0.4（按重量计），而作为铜合金，铅含量可达 4（按重量计）。
- 在吸收式冰箱中，六价铬作为碳钢冷却系统的防腐剂。

长时间以来，早在 2005 年之前，Castel 公司及其供应商一直仔细调查，以确定其产品或生产过程中是否存在上述有害物质，并主动去除。

在对产品和工艺进行的检查和持续监测结束时，Castel 公司声明其向顾客所提供的所有产品均符合指令 2011/65/UE 中规定的《有害物质限制》。

特定的 Castel 产品：

1. 不含汞、镉、多溴联苯 (PBB) 和多溴二苯醚 (PBDE)。
2. 根据 RoHS 2 指令的附录 3，在公认范围内，包含铅作为钢、铝、铜合金中的合金元素。

Castel 还声明其向顾客所提供的所有产品，包括电子电气设备中使用的组件/备用备件将：

- 根据指令 2011/65/UE 第 15 条中的要求，不带有 CE 标志
- 根据同一指令的附录 6，不具有书面符合性声明。

根据第 7 章-第 Q7.3 段、第 8 章第 Q8.5 段中的规定，欧盟委员会于 2012 年 12 月 12 日所发布的 RoHS 2 常见问题指南。

欧洲议会和理事会 2006 年 12 月 18 日第 1907/2006/EC 号关于化学品注册、评估、许可和用限制的法规在 CASTEL 制冷产品中的应用

关于化学品注册、评估、许可和限制的欧洲法规 1907/2006/EC，即 REACH 法规，于 2007 年 5 月 29 日在 GUCE L136 上发布，并于 2007 年 6 月 1 日在欧盟实施。该法规要求所生产或进口到欧洲的化学物质都要在欧洲化学品管理局 (ECHA) 进行预注册和注册。

长时间以来，Castel 公司一直在研究这部新法规的内容和目的。公司这样做的目的是根据 REACH 法规确定其在供应链中的准则以及必须履行的义务。

Castel 不是物质“制造商”也不是物质“进口商”，因此，公司没有义务进行预注册和/或注册。

Castel 不是制剂“制造商”也不是制剂“进口商”，因此，公司不必为客户提供有关所含物质注册的信息或有关安全的信息。

Castel 不是含有在常规和合理可预见的使用情况下有意释放出来的物质的物品“制造商”或“进口商”（REACH 法规的第 7.1 条），因此，公司没有义务对这些物质进行预注册和/或注册。

对于其供应商而言，Castel 是物质、制剂和物品的“下游用户”，将其用于其制造工艺和产品中。长时间以来，公司及其物质/制剂供应商一直仔细调查，以确定：

- 他们熟知 REACH 法规的内容和目的
- 他们在努力履行法规规定的属于他们的义务
- 他们保证未来也能够不断为我们供货

对于客户而言，Castel 是物品“制造商”，按照该规定，公司始终验证其产品：

- 根据 REACH 法规第 67 条，附录 XVII 中列出的限用物质没有以不符合限制的方式进行使用
- 附录 XIV 中列出的高度关注物质 (SVHC) 在我们供应给您的物品中质量不超过 0.1%（0.1% 的阈值与物品的总重量相关），并且同时满足 REACH 法规第 7.2 条规定所有条件。根据 REACH 法规第 33 条，若情况属实，我公司有义务及时与客户沟通，确保提供足够的信息，保障安全使用第 33 条。

GENERAL SALES CONDITIONS

Orders

The purchaser confirms his full acceptance of our "General Sales Conditions".

Delivery

Goods travel at the risk of the buyer, even if delivery terms are "ex works". Customers will have to insure goods and case they wish.

Packing

Disposable packing is included in the price and will not be credited if returned.

Terms of Delivery

Terms are not mandatory and no charges for delay or responsibility will be accepted by the seller. Delay in deliveries will not be cause for contract resolutions.

Terms of Payment

Remittances should be done to our Head Office only. In case of payment delays we reserve our right to interrupt or cancel the fulfilment of the pending orders.

Notice of Claims

Claims concerning wrong deliveries of goods must be informed - by written - within ten (10) days from reception of delivery in the customer's warehouses.

Guarantee

Castel products are guaranteed for 12 months. This only includes those products or parts of products which have defects within the guarantee period. The client will send goods back to his costs with a detailed description of the claimed defects. The guarantee is not recognized when the defect claimed is due to client's mistakes or wrong installations, or application is not allowed by the technical indications supplied by Castel. In case of defects of the products Castel will only replace the defective goods and will not refund any kind of damages of any types. Castel reserves to bring variations of charges to its own products without any notice and in any moment.

Returned Goods

Not returns of goods are accepted without obtaining a proper Castel authorisation by submissions of a Claim Code.

Prices

Are ex works. Castel reserves the right to modify without notice its prices in : "Force Majeur" cases if costs of raw materials or other costs increase in an unsustainable measure.

Disputes

For any dispute arising in connection with the agreements the courts of Milan shall have exclusive jurisdiction.

APPLICATION OF DIRECTIVE 97/23/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL, OF 29 MAY 1997, CONCERNING PRESSURE EQUIPMENT TOWARDS CASTEL REFRIGERATION PRODUCTS

The Directive 97/23/EC (PED) applies to the design, manufacture and conformity assessment of pressure equipment and assemblies with a maximum allowable pressure "PS" greater than 0,5 bar with the exception of the possibilities listed in Article 1, Section 3 of the same Directive. Since 30 May 2002 the Directive has become mandatory and, in the Member States of European Community, it has been possible to place on the market only pressure equipments CE marked according to PED.

For the purposes of the Directive see the following definitions, used in this Catalogue too:

- **Pressure equipment:** vessels, piping, safety accessories, and pressure accessories.
- **Vessel:** a housing designed and built to contain fluids under pressure.
- **Piping:** piping components intended for the transport of fluids, when connected together for integration into a pressure system.
- **Safety accessories:** devices designed to protect pressure equipment against the allowable limits being exceeded.
- **Pressure accessories:** devices with an operational function and having pressure-bearing housing. For example: solenoid valves, valves, indicators.
- **Assemblies:** several pieces of pressure equipment assembled by a manufacturer to constitute an integrated and functional whole.
- **Maximum allowable pressure (PS):** the maximum pressure for which the equipment is designed, as specified by the manufacturer.
- **Maximum/minimum allowable temperature (TS):** the maximum/minimum temperatures for which the equipment is designed, as specified by the manufacturer.
- **Volume (V):** the internal volume of a chamber, including the volume of nozzles to the first connection or weld and excluding the volume of permanent internal parts.
- **Nominal size (DN):** numerical designation of size, which is common to all components in a piping system.

- **Fluids:** gases, liquids and vapours in pure phase as well as mixture thereof. Pressure equipments referred to in Article 3 are classified by categories in accordance with Annex II, according to ascending level of hazard, on the basis of:
 - State of the fluid
 - Danger classification of the fluid
 - Type of equipment
 - Dimensions and energetic potential; V, DN, PS, PS x V, PS x DNand must satisfy the Essential Safety Requirement set out in Annex I of PED.
- Pressure equipments below or equal to the limits in Article 3, sections 1.1, 1.2 and 1.3 and section 2, must not satisfy the Essential Safety Requirement set out in Annex I. They must be designed and manufactured in accordance with the sound engineering practice of a Member State in order to ensure safe use (Article 3, Section 3). These products don't bear CE marking.

In Article 9 of PED the fluids are classified, according to their hazard, into two groups:

- **Group 1** comprises dangerous fluids. A dangerous fluid is a substance or preparation covered by the definitions in Article 2 of Council Directive 67/548/EEC of 27 June 1967 and following amendments, relating to the classification, packaging and labeling of dangerous substance. Group 1 comprises fluids defined as : explosive, extremely flammable, highly flammable, flammable, very toxic, toxic, oxidizing.
- **Group 2** comprises all the others fluids not referred to in group I.

APPLICATION OF DIRECTIVE 2002/95/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL, OF 27 JANUARY 2003, ON THE RESTRICTION OF THE USE OF CERTAIN HAZARDOUS SUBSTANCES IN ELECTRICAL AND ELECTRONIC EQUIPMENT TOWARDS CASTEL REFRIGERATION PRODUCTS

Application of Directive 2011/65/UE of the European Parliament and of the Council, of 8 July 2011, on the restriction of the use of certain hazardous substances in electrical and electronic equipment towards Castel refrigeration products

The purpose of Directive 2011/65/UE, the so called RoHS 2 or RoHS Recast Directive, is to prevent or restrict the use of hazardous substances in electrical and electronic equipment and to contribute to the environmentally sound recovery and disposal of waste electrical and electronic equipment.

Directive 2011/65/UE replaces the previous Directive 2002/95/EC that is repealed with the effect from 3 January 2013.

RoHS 2 Directive shall apply to EEE (Electrical and Electronic Equipment) falling under the categories 1, 2, 3, 4, 5, 6, 7, 10, 11 set out in Annex 1 of the same Directive.

The equipment proper to the first category - "Large household appliances", and to the 10th category - "Automatic dispensers", are set out in Annex 2 of Directive 2012/19/UE, WEEE-Recast Directive (Waste electrical and electronic equipment) that replaces the previous Directive 2002/96/EC, repealed from 15 February 2014. The list of Annex 2 shows these products:

- Large cooling appliance
- Refrigerators
- Freezers
- Other large appliances used for refrigeration, conservation and storage of food
- Air conditioner appliances
- Other fanning, exhaust ventilation and conditioning equipment
- Automatic dispenser for hot or cold bottles and cans

Article 4 of RoHS 2 Directive establishes that EEE placed on the market, including cable and spare parts for its repair, its reuse, updating of its functionalities or upgrading of its capacities, do not contain the following substances:

- Lead - (0,1%)
- Mercury - (0,1%)
- Cadmium - (0,001%)
- Hexavalent chromium - (0,1%)
- Polybrominated biphenyls (PBB) - (0,1%)
- Polybrominated diphenyl ethers (PBDE) - (0,1%)

The restriction of use of these hazardous substances shall not apply to the applications listed in Annex 3; among these applications the following exceptions are particularly interesting in air conditioning / refrigerating systems:

- Lead as an alloying element in steel containing up to 0,35% lead by weight, aluminium containing up to 0,4% lead by weight and as a copper alloy containing up to 4% lead by weight
- Hexavalent chromium as an anti-corrosion of the carbon steel cooling system in absorption refrigerators

For a long time, before year 2005, Castel Company has started a careful inquiry, together with its suppliers, to identify the presence or not of the above-mentioned hazardous substances, either in its own products or in its own production processes, and to remove them progressively.

At the end of this wide examination and continuously monitoring its products and processes, Castel Company may declare that all the products supplied to its customers are compliant to the Restriction on Hazardous Substances, as defined in the Directive 2011/65/UE.

Specially Castel products:

1. Do not contain mercury, cadmium, hexavalent chromium, polybrominated biphenyls (PBB), polybrominated diphenyl ethers (PBDE)
2. Contain lead as an alloying element in steel, aluminium and copper alloys within the accepted limits according to the Annex 3 of RoHS 2 Directive.

Castel also declares that all the products supplied to its customers, since components / spare parts used in EEE do not have:

- to be CE marked, as requested in article 15 of Directive 2011/65/UE
 - a Declaration of Conformity, written according to Annex 6 of the same directive.
- as specified in Chap. 7 – par. Q7.3 and in Chap. 8 par. Q8.5 of the RoHS 2 FAQ Guidance published by European Commission, dated 12/12/2012.

APPLICATION OF REGULATION 1907/2006/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL, OF 18 DECEMBER 2006, ON THE REGISTRATION, EVALUATION, AUTHORISATION AND RESTRICTION OF CHEMICALS (REACH) TOWARDS CASTEL REFRIGERATION PRODUCTS

The European Regulation 1907/2006/EC concerning the Registration, Evaluation, Authorization and Restrictions of Chemicals, the so called REACH Regulation, was published on GUCE L136 dated 29 May 2007 and came into force in the European Union on the 1st June 2007. This Regulation requires to pre-register and register chemical substances produced or imported into Europe at the European Agency for Chemicals (ECHA).

Castel investigates for a long time about the contents and the aims of this new law. The purpose of our company is to define its rules in the supply chain and the possible obligations we have to fulfil to, according to the REACH Regulation.

Castel is not a “manufacturer” or an “importer” of substances and so the company has not the obligation to pre-register and/or register.

Castel is not a “manufacturer” or an “importer” of preparations and so the company has not to give to its customers either information about registrations of the contained substances or information about safety.

Castel is not a “manufacturer” or an “importer” of articles that have substances intended to be realised during normal and reasonable foreseeable conditions of use (Art. 7.1 of REACH) and so the company has not the obligation to pre-register and/or register these substances.

For its suppliers, Castel is a “downstream users” of substances, preparations and articles, used in its own manufacturing processes and in its own products. For a long time our Company has started, together with its suppliers of substances/preparations and articles, a careful inquiry to verify that:

- They well know the contents and the aims of REACH Regulation
- They are working to fulfil the obligations pertaining to them, foreseen by the Regulation
- They guarantee us smooth continuity of their supplies also in the future

For its customers, Castel is a “manufacturer” of articles and in this rule our company is constantly engaged to verify that in its products:

- The restricted substances listed in Annex XVII are not used in a manner not conform to restrictions, in compliance with Art. 67 of REACH
- The SVHC, Substances of Very High Concern, listed in the Candidate List of Annex XIV; are not present in the articles we supply you in more than 0,1% mass/mass. (the 0,1% threshold relates to the total weight of the articles) and simultaneously satisfied all the conditions listed in Art. 7.2 of REACH. If this case happens our company binds itself to communicate it in time to its own customers, ensuring sufficient information to safety use, according to Art. 33 of REACH.

外部泄漏

本手册中所展示的全部产品，百分之百进行功能和密封测试。测试过程中可测量的允许外部泄漏符合 EN 12284: 2003 标准第 9.4 部分中所制定的定义：

“测试过程中，当产品浸入低表面张力水中时，至少在超过一分钟的时间段内，不形成气泡，……”

耐压实验

对本手册中展示的相关产品进行液压试验时，遵循 97/23/EC 指令的规定，保证压力强度至少为 1.43 x PS。

Castel 的所有产品若进行耐破度测试，保证压力强度等于或大于 EN 378-2:2008 标准规定的 3 x PS。

Castel 产品的接头

Castel 产品可配备不同的接头进行供货。Castel 产品生产时可使用螺纹接头或焊接接头。

表 1 显示 Castel 代码和英寸尺寸之间的等效值。这些代码在国际市场上经常使用。

表 2 显示 Castel 代码和毫米尺寸之间的等效值。

目前用于 Castel 产品的接头说明。

1) 螺纹连接

它们有三种不同的类型：

SAE 扩口（喇叭口）

直螺纹接头（根据 SAE J513-92; ASME B1.1-89），使用合适的螺母与带有合适喇叭端的铜管连接（见表 3）。

NPT（布立格螺纹）

锥形螺纹接头（根据 ASME B1.20.1-92），用于将管接件、阀门、安全阀连接到容器或钢管上。

FPT（内管螺纹）

内螺纹直接头（根据 UNI ISO 228/1），在液压系统中将管接件或阀门连接到容器或钢管上（见表 4）。

2) 焊接连接

有四种类型，可用于英制以及公制连接：

ODS（或 ODF）

用于铜管的内连接焊接接头。标示的大小与所要连接铜管的外径对应。

ODM

用于铜管的外连接焊接接头。标示的大小与所要连接铜管的外径对应。

IDS

用于铜管的外连接焊接接头。标示的大小与所要连接铜管的内径对应。

W

用于钢管的焊接接头。标示的大小与所要连接钢管的外径对应。



适合于碳氢制冷剂的产品

本目录所列的碳氢制冷剂用产品可供以下制冷剂使用：R290（丙烷）、R600（丁烷）和 R600a（异丁烷）。

根据 EN 378-1: 2008 + A1 标准，上述制冷剂属于安全组 A3 中易燃液体。

上述产品必须单独用于制冷系统且必须符合 8EN 60335 关于易燃制冷剂的规定。仅能由经授权且具有在含有易燃碳氢化合物的制冷系统上作业资格的人员执行安装、维护和维修作业。

EXTERNAL LEAKAGE

All the Castel products are submitted, one by one, to tightness tests besides to functional tests. Allowable external leakage, measurable during the test, agrees to the definition given in the Standard EN 12284 : 2003 , Par. 9.4:

“During the test, no bubbles shall form over a period of at least one minute when the specimen is immersed in water with low surface tension, ...”

PRESSURE CONTAINMENT

All Castel products, if submitted to hydrostatic test, guarantee a pressure strength at least equal to 1,43 x PS in compliance with the Directive 97/23/EC.

All Castel products, if submitted to burst test, guarantee a pressure strength at least equal to 3 x PS according to the EN 378-2:2008 Standard.

CONNECTIONS OF CASTEL PRODUCTS

Castel products can be supplied with different connections. In particular Castel products are produced either with threaded connections or solder connections.

Table 1 shows the equivalence between Castel codes and dimensions in inches. These codes are commonly used in the international market.

Table 2 shows the equivalence between Castel codes and dimensions in millimetres.

DESCRIPTION OF CONNECTIONS THAT ARE CURRENTLY USED FOR CASTEL PRODUCTS.

1) THREADED CONNECTIONS

They can be of three different types:

FLARE

Straight threaded connection (according to SAE J513-92; ASME B1.1-89) for junction to a copper pipe with a suitable flared end, using a right nut (see Table 3).

NPT

Taper threaded connection (according to ASME B1.20.1-92) to joint fittings, valves, safety valves to vessel or steel pipes.

FPT

Straight female threaded connection (according to UNI ISO 228/1) used in the hydraulic system to joint fittings or valves to vessel or steel pipes (see table 4).

2) SOLDER CONNECTIONS

They can be of four different types and can fit pipes with diameter both in inches and in millimetres:

ODS (or ODF)

Female solder connection for copper tubes. The indicated size corresponds to the outer diameter of the copper tube which to joint.

ODM

Male solder connection for copper tubes. The indicated size corresponds to the outer diameter of the copper tube which to joint.

IDS

Male solder connection for copper tube. The indicated size corresponds to the inner diameter of the copper tube which to joint.

W

Solder connection for steel pipes. The indicated size corresponds to the external diameter of the steel pipe which to joint.



PRODUCTS SUITABLE FOR HYDROCARBONS REFRIGERANTS

The products for hydrocarbons refrigerants shown in this catalogue can be used with the following refrigerant fluids: R290 (propane), R600 (butane) and R600a (isobutane).

These refrigerants are classified as flammable fluids proper to Safety Group A3 according to EN 378-1: 2008 + A1 Standard.

The aforesaid products must be used solely on refrigerating systems that are in compliance with regulations about flammable refrigerant fluids 8EN 60335).

Only authorized persons, qualified to work on refrigerating systems containing flammable hydrocarbons, may do installation, maintenance and repair.

表 1 - CASTEL 代码与英寸尺寸之间的等效值
TABLE 1 - Equivalence between Castel codes and dimensions in inches

Castel 代码 Castel code	尺寸 Dimension [in]
.../1	1/8"
.../2	1/4"
.../2,5	5/16"
.../3	3/8"
.../4	1/2"
.../5	5/8"
.../6	3/4"
.../7	7/8"
.../8	1"
.../9	1" 1/8
.../11	1" 3/8
.../13	1" 5/8
.../17	2" 1/8
.../21	2" 5/8
.../24	3"
.../25	3" 1/8
.../28	3" 1/2
.../29	3" 5/8
.../33	4" 1/8
.../34	4" 1/4

表 2 - CASTEL 代码与毫米尺寸之间的等效值
TABLE 2 - Equivalence between Castel codes and dimensions in millimeters

Castel 代码 Castel Code	尺寸 Dimension [mm]
.../M6	6
.../M10	10
.../M12	12
.../M15	15
.../M18	18
.../M22	22
.../M28	28
.../M42	42
.../M64	64

表 3 - 扩口接头
TABLE 3 - Flare Connection

Castel 代码 Castel Code	扩口 FLARE	适合铜管 Suitable for copper tube	螺纹 Thread
.../2	1/4"	Ø 1/4"	7/16" - 20 UNF
.../2,5	5/16"	Ø 5/16"	1/2" - 20 UNF
.../3	3/8"	Ø 3/8"	5/8" - 18 UNF
.../4	1/2"	Ø 1/2"	3/4" - 16 UNF
.../5	5/8"	Ø 5/8"	7/8" - 14 UNF
.../6	3/4"	Ø 3/4"	1.1/16" - 14 UNS
.../7	7/8"	Ø 7/8"	1.1/4" - 12 UNF
.../8	1"	Ø 1"	1.3/8" - 12 UNF

表 4 - FPT 连接方式
TABLE 4 - FPT Connection

Castel 代码 Castel Code	螺纹 Thread
.../01	G 1/8"
.../02	G 1/4"
.../03	G 3/8"
.../04	G 1/2"
.../06	G 3/4"
.../08	G 1"
.../010	G 1.1/4"
.../012	G 1.1/2"
.../016	G 2"
.../020	G 2.1/2"
.../024	G 3"

Kv 系数

制冷系统管道和组件的正确尺寸对于各种制冷设备而言最为重要；应避免尺寸过大和尺寸过小，因为其和系统的正确操作具有同等的重要性。
组件的正确选用是基于对该组件的制冷量和压力降之间的关系的了解。
因此，标准 EN 60534-1、EN 60534-2-1 和 EN 60534-2-3 要求制造商规定每个产品的 Kv 系数。

Kv 系数定义为以 m³/h 为单位、在阀门完全打开时 1 bar 的压力降所引起的冷水流量（体积质量 $\rho=1000 \text{ kg/m}^3$ ）。

该定义适用于本手册中所述的所有产品。仅从物理含义来看，该系数精确定义了本产品的流体动力和结构特点，因此，在考虑到与该液体的性质和条件密切相关的其他参数的情况下，可精确确定容量/压力降比。
Castel 提供了典型制冷设备工作条件下最常用的制冷剂相应的表格，以便帮助工程师正确选择产品。表 1 根据 AHRI 标准 760-2007 显示了与标准额定条件相关的 Kv 为单位的制冷量。
应以表 2 至表 7 中的数值为基础计算相应的校正系数；这将可能预计实际的工作条件。

结果：

- 液管：

$$Q = Kv \times Q_1 \times L_1 \times L_2$$

- 吸气管：

$$Q = Kv \times Q_1 \times S_1 \times S_2$$

- 排气管：

$$Q = Kv \times Q_1 \times H_1 \times H_2$$

其中：

Q = 所需的制冷量 [kW]；

Kv = 阀特性系数 [m³/h]；

Q₁ = 参考制冷量 [kW]（见表 1）。

L₁ ; S₁ ; H₁ = 在与参考条件不同的操作温度下制冷量的校正系数。

L₂ ; S₂ ; H₂ = 在与参考条件不同的压力降情况下制冷量的校正系数。

HC 制冷剂应用举例

1) 液管：

下列操作条件下阀门中压力降评估：

Castel 1078V/4 阀门：Kv = 2,20 [m³/h]

制冷剂：R600

设定的制冷量：35 [kW]

冷凝温度：+ 50 [°C]

蒸发温度：0 [°C]

$$Q = Kv \times Q_1 \times L_1 \times L_2 \quad ==> \quad 35 = 2,20 \times 23,90 \times 0,87 \times L_2 \quad [kW]$$
$$==> \quad 35 / 45,74 = 0,76$$

其中：

Q₁ = 23.90 [kW] 液管上 R600 的制冷量

（表1）

L₁ = 0.87，当 T_{Liquid} = 50 °C 且 T_{evaporation} = 0 °C 时，R600 的校正系数

（表2）

根据表 3b，0.08 bar 的压力降对应的校正系数为 L₂ = 0.76。此类压力降可与阀门所需的最小差压兼容。

2) 吸气管：

下列条件下的阀门选择：

制冷剂：R290

设定的制冷量：5 [kW]

冷凝温度：+ 40 [°C]

蒸发温度：- 5 [°C]

设定压力降：0,11 [bar]

$$Q = Kv \times Q_1 \times S_1 \times S_2 \quad [kW] \quad ==> \quad 5 = Kv \times 3,05 \times 0,84 \times 0,86 \quad [kW]$$
$$==> \quad 5 / 2,2 = 2,27 \quad [m^3/h]$$

其中：

Q₁ = 3.05 [kW] 吸气管上 R290 的制冷量

（表 1）

S₁ = 0.84，当 T_{condensation} = 40 °C 且 T_{evaporation} = -5 °C 时，R290 的校正系数

（表 4）

S₂ = 0.86 压力降 0.11 bar 时的校正系数

（表 5a）

结果包含 Kv = 2.61 [m³/h] 时 1078V/5 阀门的选择。

3) 排气管：

下列条件下的阀门选择：

制冷剂：R600a

设定的制冷量：4 [kW]

冷凝温度：+ 40 [°C]

蒸发温度：0 [°C]

设定压力降：0,5 [bar]

$$Q = Kv \times Q_1 \times H_1 \times H_2 \quad [kW] \quad ==> \quad 4 = Kv \times 7,44 \times 0,95 \times 0,71 \quad [kW]$$
$$==> \quad 4 / 5,02 = 0,79 \quad [m^3/h]$$

其中：

Q₁ = 7.44 [kW] 排气管上 R600a 的制冷量

（表 1）

H₁ = 0.95，当 T_{condensation} = 40 °C 且 T_{evaporation} = 0 °C 时，R600a 的校正系数

（表6）

H₂ = 0.71，压力降 0.5 bar 时的校正系数

（表 7a）

结果包含 Kv = 0.80 [m³/h] 时 1068V/4 阀门的选择。

THE Kv FACTOR

The correct sizing of tubes and components of a refrigerating system is of the utmost importance for all kinds of plants; over-sizing and under-sizing are both to be avoided since they are equally hazardous for the correct operation of the system.

The correct selection of a component is based on the knowledge of the relationship between capacity and pressure drop through that component.

For this purpose, EN 60534-1, EN 60534-2-1 and EN 60534-2-3 standards require manufacturers to specify the Kv coefficient for every product.

The Kv factor is defined as the cold water flow (volumic mass $\rho = 1000 \text{ kg/m}^3$) in m^3/h resulting in a 1 bar pressure drop with a completely open valve.

This definition applies to all products described in this handbook. The merely physical meaning, this coefficient precisely defines the fluid-dynamic and construction characteristics of the product, so that, with the addition of other parameters more closely related to the nature and conditions of the fluid under consideration, the capacity/pressure drop ratio may be precisely determined.

Castel provides appropriate tables for the most commonly used refrigerants in typical plant working conditions in order to help engineers in the correct selection of products. 1«Table 1» shows refrigeration capacity values with unit Kv related to the standard rating conditions according to AHRI Standard 760-2007.

Appropriate corrective coefficients may be calculated taking the values shown from Table 2 to Table 7 as a basis; this will make it possible to predict actual working conditions.

As a result:

- Liquid line

$$Q = Kv \times Q_1 \times L_1 \times L_2$$

- Suction line

$$Q = Kv \times Q_1 \times S_1 \times S_2$$

- Hot gas line

$$Q = Kv \times Q_1 \times H_1 \times H_2$$

since:

Q = required refrigeration capacity [kW]

Kv = characteristic valve coefficient [m^3/h]

Q_1 = reference refrigeration capacity [kW] (see table 1)

L_1 ; S_1 ; H_1 = are correction factors of the refrigeration capacity in the presence of operating temperatures different from reference conditions

L_2 ; S_2 ; H_2 = are correction factors of the refrigeration capacity for pressure drops different from reference conditions

2) Suction line:

Valve selection under the following conditions:

Refrigerant: R290

Set refrigeration capacity: 5 [kW]

Condensation: + 40 [°C]

Evaporation: - 5 [°C]

Set pressure drop: 0,11 [bar]

$$Q = Kv \times Q_1 \times S_1 \times S_2 \text{ [kW]} \implies 5 = Kv \times 3,05 \times 0,84 \times 0,86 \text{ [kW]} \\ \implies Kv = 5 / 2,2 = 2,27 \text{ [m}^3/\text{h]}$$

with:

$Q_1 = 3,05$ [kW] refrigeration capacity of R290 on suction line (table 1)

$S_1 = 0,84$ correction factor of R290 for $T_{\text{condensation}} = 40 \text{ °C}$ e $T_{\text{evaporation}} = -5 \text{ °C}$

(table 4)

$S_2 = 0,86$ correction factor for pressure drop of 0,11 bar

(table 5a)

The result involves the selection of a 1078V/5 valve with $Kv = 2,61 \text{ [m}^3/\text{h]}$

3) Hot gas line:

Valve selection under the following conditions:

Refrigerant: R600a

Set refrigeration capacity: 4 [kW]

Condensation: + 40 [°C]

Evaporation: 0 [°C]

Set pressure drop: 0,5 [bar]

$$Q = Kv \times Q_1 \times H_1 \times H_2 \text{ [kW]} \implies 4 = Kv \times 7,44 \times 0,95 \times 0,71 \text{ [kW]} \\ \implies Kv = 4 / 5,02 = 0,79 \text{ [m}^3/\text{h]}$$

with:

$Q_1 = 7,44$ [kW] refrigeration capacity of R600a on hot gas line (table 1)

$H_1 = 0,95$ correction factor of R600a for $T_{\text{condensation}} = 40 \text{ °C}$ e $T_{\text{evaporation}} = 0 \text{ °C}$

(table 6)

$H_2 = 0,71$ correction factor for pressure drop of 0,5 bar

(table 7a)

The result involves the selection of a 1068V/4 valve with $Kv = 0,80 \text{ [m}^3/\text{h]}$

APPLICATION EXAMPLES WITH HC REFRIGERANTS

1) Liquid line:

Evaluation of pressure drop across the valve under the following operating conditions:

Castel 1078V/4 valve: $Kv = 2,20 \text{ [m}^3/\text{h]}$

Refrigerant: R600

Set refrigeration capacity: 35 [kW]

Condensation: + 50 [°C]

Evaporation: 0 [°C]

$$Q = Kv \times Q_1 \times L_1 \times L_2 \text{ [kW]} \implies 35 = 2,20 \times 23,90 \times 0,87 \times L_2 \text{ [kW]} \\ \implies 35 / 45,74 = 0,76$$

with:

$Q_1 = 23,90$ [kW] refrigeration capacity of R600 on liquid line (table 1)

$L_1 = 0,87$ coefficiente correttivo dell'R600 per $T_{\text{Liquid}} = 50 \text{ °C}$ e $T_{\text{evaporation}} = 0 \text{ °C}$

(table 2)

Using table 3b a pressure drop of 0,08 bar corresponds to a correction factor $L_2 = 0,76$. Such a pressure drop is compatible with the minimum differential pressure required by the valve.

表 1 - 制冷量 [KW]
TABLE 1 - Refrigeration capacities [KW]

Kv 系数 Kv Factor [m³/h]	液管 Liquid line			吸气管 Suction line			排气管 Hot gas line		
	压力降 0.15 bar Pressure drop 0,15 bar			压力降 0.15 bar Pressure drop 0,15 bar			压力降 1 bar Pressure drop 1 bar		
	R290	R600	R600a	R290	R600	R600a	R290	R600	R600a
1	20,38	23,90	21,20	3,05	1,29	1,58	12,76	6,46	7,44

根据AHRI标准760-2007的标准额定条件
Standard rating conditions according to AHRI Standard 760-2007

冷凝温度 Condensing temperature	110 °F	(43,3 °C)
液体温度 Liquid temperature	100 °F	(37,8 °C)
过冷度 Subcooling	10 °R	(5,5 °K)
蒸发温度 Evaporating temperature	40 °F	(4,4 °C)
吸气温度 Suction temperature	65 °F	(18,3 °C)
过热度 Superheating	25 °R	(13,9 °K)
排气温度 Discharge temperature	160 °F	(71,1 °C)

表 2 - 校正系数 L_f - 不同于标准值温度下的制冷量
TABLE 2 - Correction factors - L_f of the refrigeration capacity for temperatures different from standard values

液体温度 [°C] Liquid temperature [°C]	制冷剂 Refrigerant	蒸发温度 [°C] Evaporating temperature [°C]										
		+ 10	+ 5	0	- 5	- 10	- 15	- 20	- 25	- 30	-35	- 40
0	R290							1,35	1,33	1,31	1,28	1,26
	R600							1,25	1,22	1,20	1,17	1,15
	R600a							1,27	1,24	1,22	1,19	1,17
10	R290							1,24	1,22	1,19	1,17	1,15
	R600							1,15	1,13	1,10	1,08	1,06
	R600a							1,17	1,14	1,11	1,09	1,06
20	R290	1,25	1,23	1,21	1,19	1,17	1,14	1,12	1,10	1,08	1,06	1,03
	R600	1,21	1,18	1,16	1,13	1,11	1,08	1,06	1,04	1,01	0,99	0,97
	R600a	1,22	1,19	1,16	1,14	1,11	1,09	1,06	1,04	1,01	0,99	0,96
30	R290	1,13	1,11	1,09	1,07	1,05	1,03	1,00	0,98	0,96	0,94	0,92
	R600	1,11	1,09	1,06	1,04	1,01	0,99	0,97	0,94	0,92	0,90	0,87
	R600a	1,11	1,09	1,06	1,03	1,01	0,98	0,96	0,94	0,91	0,89	0,86
40	R290	1,01	0,99	0,97	0,95	0,93	0,91	0,89	0,86	0,84	0,82	0,80
	R600	1,02	0,99	0,97	0,94	0,92	0,90	0,87	0,85	0,83	0,80	0,78
	R600a	1,00	0,98	0,95	0,93	0,90	0,88	0,86	0,83	0,81	0,78	0,76
50	R290	0,88	0,86	0,84	0,82	0,80	0,78	0,76	0,74	0,72	0,70	0,68
	R600	0,92	0,89	0,87	0,85	0,82	0,80	0,78	0,75	0,73	0,71	0,69
	R600a	0,90	0,87	0,85	0,82	0,80	0,77	0,75	0,73	0,70	0,68	0,65
60	R290	0,75	0,74	0,72	0,70	0,68	0,66	0,64	0,62	0,60	0,58	0,56
	R600	0,82	0,80	0,77	0,75	0,73	0,70	0,68	0,66	0,64	0,61	0,59
	R600a	0,79	0,76	0,74	0,72	0,69	0,67	0,64	0,62	0,60	0,57	0,55

表 3a
压力降 $\neq 0,15$ bar 时制冷量的校正系数 L_2
TABLE 3a
Correction factors L_2 of the refrigeration capacity for pressure drops $\neq 0,15$ bar

表 3b
校正系数 L_2 的压力降 $\neq 1$
TABLE 3b
Pressure drops for correction factors $L_2 \neq 1$

压力降 Pressure drops [bar]	L_2 系数 L_2 Factor	L_2 系数 L_2 Factor	压力降 Pressure drops [bar]
0,01	0,26	0,20	0,01
0,03	0,45	0,25	0,01
0,05	0,58	0,30	0,01
0,07	0,68	0,35	0,02
0,09	0,77	0,40	0,02
0,11	0,86	0,45	0,03
0,13	0,93	0,50	0,04
0,15	1,00	0,55	0,05
0,17	1,06	0,60	0,05
0,19	1,13	0,65	0,06
0,21	1,18	0,70	0,07
0,23	1,24	0,75	0,08
0,25	1,29	0,80	0,10
0,27	1,34	0,85	0,11
0,29	1,39	0,90	0,12
0,31	1,44	0,95	0,14
0,33	1,48	1,00	0,15
0,35	1,53	1,05	0,17
0,37	1,57	1,10	0,18
0,39	1,61	1,15	0,20
0,41	1,65	1,20	0,22
0,43	1,69	1,25	0,23
0,45	1,73	1,30	0,25
0,47	1,77	1,35	0,27
0,49	1,81	1,40	0,29
0,51	1,84	1,45	0,32
0,53	1,88	1,50	0,34
0,55	1,91	1,55	0,36
0,57	1,95	1,60	0,38
0,59	1,98	1,65	0,41
0,61	2,02	1,70	0,43
0,63	2,05	1,75	0,46
0,65	2,08	1,80	0,49
0,67	2,11	1,85	0,51
0,69	2,14	1,90	0,54
0,71	2,18	1,95	0,57
0,73	2,21	2,00	0,60
0,75	2,24	2,05	0,63

表 4 - 校正系数 S_1 - 不同于标准值温度下的制冷量
TABLE 4 - Correction factors - S_1 of the refrigeration capacity for temperatures different from standard values

冷凝温度 [°C] Condensing temperature [°C]	制冷剂 Refrigerant	蒸发温度 [°C] Evaporating temperature [°C]										
		+ 10	+ 5	0	- 5	- 10	- 15	- 20	- 25	- 30	-35	- 40
30	R290	1,28	1,15	1,03	0,92	0,82	0,72	0,63	0,54	0,47	0,40	0,33
	R600	1,31	1,13	0,97	0,82	0,68	0,56	0,46	0,37	0,29	0,23	0,17
	R600a	1,31	1,15	0,99	0,85	0,73	0,61	0,51	0,42	0,34	0,27	0,21
35	R290	1,23	1,10	0,99	0,88	0,78	0,68	0,60	0,52	0,44	0,38	0,32
	R600	1,27	1,09	0,93	0,79	0,66	0,54	0,44	0,35	0,28	0,22	0,17
	R600a	1,26	1,10	0,95	0,82	0,69	0,58	0,49	0,40	0,32	0,26	0,20
40	R290	1,17	1,05	0,94	0,84	0,74	0,65	0,57	0,49	0,42		
	R600	1,22	1,05	0,89	0,75	0,63	0,52	0,42	0,34	0,27		
	R600a	1,21	1,05	0,91	0,78	0,66	0,56	0,46	0,38	0,31		
45	R290	1,12	1,00	0,89	0,79	0,70	0,62	0,54				
	R600	1,17	1,01	0,86	0,72	0,60	0,49	0,40				
	R600a	1,16	1,01	0,87	0,74	0,63	0,53	0,44				
50	R290	1,06	0,95	0,85	0,75	0,66	0,58	0,50				
	R600	1,12	0,96	0,82	0,69	0,57	0,47	0,38				
	R600a	1,10	0,96	0,83	0,71	0,60	0,50	0,41				
55	R290	1,00	0,89	0,80	0,71	0,62						
	R600	1,07	0,92	0,78	0,66	0,54						
	R600a	1,05	0,91	0,78	0,67	0,56						
60	R290	0,94	0,84	0,75	0,66	0,58						
	R600	1,02	0,87	0,74	0,62	0,52						
	R600a	0,99	0,86	0,74	0,63	0,53						

表 5a 压力降 $\neq 0,15$ bar 时制冷量的校正系数 S_2 TABLE 5a Correction factors S_2 of the refrigeration capacity for pressure drops $\neq 0,15$ bar		表 5b 校正系数 S_2 的压力降 $\neq 1$ TABLE 5b Pressure drops for correction factors $S_2 \neq 1$	
压力降 Pressure drops [bar]	S_2 系数 S_2 Factor	S_2 系数 S_2 Factor	压力降 Pressure drops [bar]
0,01	0,26	0,20	0,01
0,03	0,45	0,25	0,01
0,05	0,58	0,30	0,01
0,07	0,68	0,35	0,02
0,09	0,77	0,40	0,02
0,11	0,86	0,45	0,03
0,13	0,93	0,50	0,04
0,15	1,00	0,55	0,05
0,17	1,06	0,60	0,05
0,19	1,13	0,65	0,06
0,21	1,18	0,70	0,07
0,23	1,24	0,75	0,08
0,25	1,29	0,80	0,10
0,27	1,34	0,85	0,11
0,29	1,39	0,90	0,12
0,31	1,44	0,95	0,14
0,33	1,48	1,00	0,15
0,35	1,53	1,05	0,17
0,37	1,57	1,10	0,18
0,39	1,61	1,15	0,20
0,41	1,65	1,20	0,22
0,43	1,69	1,25	0,23
0,45	1,73	1,30	0,25
0,47	1,77	1,35	0,27
0,49	1,81	1,40	0,29
0,51	1,84	1,45	0,32
0,53	1,88	1,50	0,34
0,55	1,91	1,55	0,36
0,57	1,95	1,60	0,38
0,59	1,98	1,65	0,41
0,61	2,02	1,70	0,43
0,63	2,05	1,75	0,46
0,65	2,08	1,80	0,49
0,67	2,11	1,85	0,51
0,69	2,14	1,90	0,54
0,71	2,18	1,95	0,57
0,73	2,21	2,00	0,60
0,75	2,24	2,05	0,63

表 6 - 校正系数 H_f - 不同于标准值温度下的制冷量
TABLE 6- Correction factors - H_f of the refrigeration capacity for temperatures different from standard values

冷凝温度 [°C] Condensing temperature [°C]	制冷剂 Refrigerant	蒸发温度 [°C] Evaporating temperature [°C]										
		+ 10	+ 5	0	- 5	- 10	- 15	- 20	- 25	- 30	-35	- 40
30	R290	0,95	0,94	0,92	0,90	0,89	0,87	0,85	0,83	0,82	0,80	0,78
	R600	0,86	0,84	0,82	0,81	0,79	0,77	0,75	0,73	0,72	0,70	0,68
	R600a	0,90	0,88	0,86	0,84	0,82	0,80	0,78	0,76	0,75	0,73	0,71
35	R290	0,98	0,97	0,95	0,93	0,91	0,89	0,88	0,86	0,84	0,82	0,80
	R600	0,93	0,91	0,89	0,87	0,85	0,83	0,81	0,79	0,77	0,75	0,73
	R600a	0,95	0,93	0,91	0,89	0,87	0,85	0,82	0,80	0,78	0,76	0,74
40	R290	1,01	0,99	0,97	0,95	0,94	0,92	0,90	0,88	0,86		
	R600	0,99	0,96	0,94	0,92	0,90	0,88	0,85	0,83	0,81		
	R600a	1,00	0,98	0,95	0,93	0,91	0,88	0,86	0,84	0,81		
45	R290	1,03	1,01	0,99	0,97	0,95	0,93	0,91				
	R600	1,04	1,02	1,00	0,97	0,95	0,92	0,90				
	R600a	1,04	1,02	0,99	0,96	0,94	0,91	0,89				
50	R290	1,05	1,03	1,01	0,99	0,97	0,94	0,92				
	R600	1,10	1,07	1,04	1,02	0,99	0,96	0,94				
	R600a	1,08	1,05	1,02	1,00	0,97	0,94	0,91				
55	R290	1,06	1,04	1,02	1,00	0,97						
	R600	1,14	1,11	1,08	1,05	1,02						
	R600a	1,11	1,08	1,05	1,02	0,99						
60	R290	1,07	1,05	1,02	1,00	0,97						
	R600	1,18	1,15	1,12	1,09	1,06						
	R600a	1,13	1,10	1,07	1,04	1,00						

表 7a 压力降 $\neq 1$ bar 时制冷量的校正系数 H_2 TABLE 7a Correction factors H_2 of the refrigeration capacity for pressure drops $\neq 1$ bar		表 7b 校正系数 H_2 的压力降 $\neq 1$ TABLE 7b Pressure drops for correction factors $H_2 \neq 1$	
压力降 Pressure drops [bar]	H_2 系数 H_2 Factor	S_2 系数 H_2 Factor	压力降 Pressure drops [bar]
0,10	0,32	0,20	0,04
0,20	0,45	0,25	0,06
0,30	0,55	0,30	0,09
0,40	0,63	0,35	0,12
0,50	0,71	0,40	0,16
0,60	0,77	0,45	0,20
0,70	0,84	0,50	0,25
0,80	0,89	0,55	0,30
0,90	0,95	0,60	0,36
1,00	1,00	0,65	0,42
1,10	1,05	0,70	0,49
1,20	1,10	0,75	0,56
1,30	1,14	0,80	0,64
1,40	1,18	0,85	0,72
1,50	1,22	0,90	0,81
1,60	1,26	0,95	0,90
1,70	1,30	1,00	1,00
1,80	1,34	1,05	1,10
1,90	1,38	1,10	1,21
2,00	1,41	1,15	1,32
2,10	1,45	1,20	1,44
2,20	1,48	1,25	1,56
2,30	1,52	1,30	1,69
2,40	1,55	1,35	1,82
2,50	1,58	1,40	1,96
2,60	1,61	1,45	2,10
2,70	1,64	1,50	2,25
2,80	1,67	1,55	2,40
2,90	1,70	1,60	2,56
3,00	1,73	1,65	2,72
3,10	1,76	1,70	2,89
3,20	1,79	1,75	3,06
3,30	1,82	1,80	3,24
3,40	1,84	1,85	3,42
3,50	1,87	1,90	3,61
3,60	1,90	1,95	3,80
3,70	1,92	2,00	4,00
3,80	1,95	2,05	4,20

表 1 - 制冷量 [KW]
TABLE 1 - Refrigeration capacities [KW]

Kv 系数 Kv Factor [m³/h]	液管 Liquid line	吸气管 Suction line	排气管 Hot gas line
	压力降 0.15 bar Pressure drop 0,15 bar	压力降 0.15 bar Pressure drop 0,15 bar	压力降 1 bar Pressure drop 1 bar
	R744	R744	R744
1	26,70	5,52	18,39

根据 AHRI 标准 760-2007 的标准额定条件
Standard rating conditions according to AHRI Standard 760-2007

冷凝温度 Condensing temperature	20 °F	(- 6,7 °C)
液体温度 Liquid temperature	20 °F	(- 6,7 °C)
过冷度 Subcooling	0 °R	(0 °K)
蒸发温度 Evaporating temperature	- 20 °F	(-28,9 °C)
吸气温度 Suction temperature	5 °F	(-15 °C)
过热度 Superheating	25 °R	(13,9 °K)
排气温度 Discharge temperature	70 °F	(21,1 °C)

表 2 - 校正系数 L_1 - 不同于标准值温度下的制冷量
TABLE 2 - Correction factors - L_1 of the refrigeration capacity for temperatures different from standard values

液体温度 [°C] Liquid temperature [°C]	制冷剂 Refrigerant	蒸发温度 [°C] Evaporating temperature [°C]									
		- 5	- 10	- 15	- 20	- 25	- 30	-35	- 40	- 45	-50
-20	R744							1,15	1,15	1,14	1,14
-15							1,10	1,10	1,09	1,09	1,08
-10						1,04	1,04	1,04	1,03	1,03	1,02
-5					0,98	0,98	0,98	0,98	0,97	0,97	0,96
0				0,92	0,92	0,92	0,92	0,92	0,91	0,91	
5			0,85	0,85	0,86	0,86	0,86	0,85	0,85		
10		0,78	0,78	0,79	0,79	0,79	0,79	0,79			

表 3a 压力降 $\neq 0,15$ bar 时制冷量的校正系数 L_2 TABLE 3a Correction factors L_2 of the refrigeration capacity for pressure drops $\neq 0,15$ bar		表 3b 校正系数 L_2 的压力降 $\neq 1$ TABLE 3b Pressure drops for correction factors $L_2 \neq 1$	
压力降 Pressure drops [bar]	L_2 系数 L_2 Factor	L_2 系数 L_2 Factor	压力降 Pressure drops [bar]
0,01	0,26	0,20	0,01
0,03	0,45	0,25	0,01
0,05	0,58	0,30	0,01
0,07	0,68	0,35	0,02
0,09	0,77	0,40	0,02
0,11	0,86	0,45	0,03
0,13	0,93	0,50	0,04
0,15	1,00	0,55	0,05
0,17	1,06	0,60	0,05
0,19	1,13	0,65	0,06
0,21	1,18	0,70	0,07
0,23	1,24	0,75	0,08
0,25	1,29	0,80	0,10
0,27	1,34	0,85	0,11
0,29	1,39	0,90	0,12
0,31	1,44	0,95	0,14
0,33	1,48	1,00	0,15
0,35	1,53	1,05	0,17
0,37	1,57	1,10	0,18
0,39	1,61	1,15	0,20
0,41	1,65	1,20	0,22
0,43	1,69	1,25	0,23
0,45	1,73	1,30	0,25
0,47	1,77	1,35	0,27
0,49	1,81	1,40	0,29
0,51	1,84	1,45	0,32
0,53	1,88	1,50	0,34
0,55	1,91	1,55	0,36
0,57	1,95	1,60	0,38
0,59	1,98	1,65	0,41
0,61	2,02	1,70	0,43
0,63	2,05	1,75	0,46
0,65	2,08	1,80	0,49
0,67	2,11	1,85	0,51
0,69	2,14	1,90	0,54
0,71	2,18	1,95	0,57
0,73	2,21	2,00	0,60
0,75	2,24	2,05	0,63

表 4 - 校正系数 S_t - 不同于标准值温度下的制冷量
TABLE 4 - Correction factors - S_t of the refrigeration capacity for temperatures different from standard values

冷凝温度 [°C] Condensing temperature [°C]	制冷剂 Refrigerant	蒸发温度 [°C] Evaporating temperature [°C]									
		- 5	- 10	- 15	- 20	- 25	- 30	-35	- 40	- 45	-50
-20	R744							0,98	0,88	0,78	0,69
-15							1,05	0,94	0,85	0,75	0,67
-10						1,12	1,01	0,91	0,81	0,72	0,64
-5					1,18	1,07	0,96	0,87	0,77	0,69	0,61
0				1,23	1,12	1,01	0,92	0,82	0,74	0,66	
5			1,28	1,17	1,06	0,96	0,87	0,78	0,70		
10		1,32	1,21	1,10	1,00	0,90	0,82	0,73			

表 5a 压力降 $\neq 0,15$ bar 时制冷量的校正系数 S_2 TABLE 5a Correction factors S_2 of the refrigeration capacity for pressure drops $\neq 0,15$ bar		表 5b 校正系数 S_2 的压力降 $\neq 1$ TABLE 5b Pressure drops for correction factors $S_2 \neq 1$	
压力降 Pressure drops [bar]	S_2 系数 S_2 Factor	S_2 系数 S_2 Factor	压力降 Pressure drops [bar]
0,01	0,26	0,20	0,01
0,03	0,45	0,25	0,01
0,05	0,58	0,30	0,01
0,07	0,68	0,35	0,02
0,09	0,77	0,40	0,02
0,11	0,86	0,45	0,03
0,13	0,93	0,50	0,04
0,15	1,00	0,55	0,05
0,17	1,06	0,60	0,05
0,19	1,13	0,65	0,06
0,21	1,18	0,70	0,07
0,23	1,24	0,75	0,08
0,25	1,29	0,80	0,10
0,27	1,34	0,85	0,11
0,29	1,39	0,90	0,12
0,31	1,44	0,95	0,14
0,33	1,48	1,00	0,15
0,35	1,53	1,05	0,17
0,37	1,57	1,10	0,18
0,39	1,61	1,15	0,20
0,41	1,65	1,20	0,22
0,43	1,69	1,25	0,23
0,45	1,73	1,30	0,25
0,47	1,77	1,35	0,27
0,49	1,81	1,40	0,29
0,51	1,84	1,45	0,32
0,53	1,88	1,50	0,34
0,55	1,91	1,55	0,36
0,57	1,95	1,60	0,38
0,59	1,98	1,65	0,41
0,61	2,02	1,70	0,43
0,63	2,05	1,75	0,46
0,65	2,08	1,80	0,49
0,67	2,11	1,85	0,51
0,69	2,14	1,90	0,54
0,71	2,18	1,95	0,57
0,73	2,21	2,00	0,60
0,75	2,24	2,05	0,63

表 6 - 校正系数 H_i - 不同于标准值温度下的制冷量
TABLE 6- Correction factors - H_i of the refrigeration capacity for temperatures different from standard values

冷凝温度 [°C] Condensing temperature [°C]	制冷剂 Refrigerant	蒸发温度 [°C] Evaporating temperature [°C]									
		- 5	- 10	- 15	- 20	- 25	- 30	-35	- 40	- 45	-50
-20	R744							0,88	0,88	0,87	0,87
-15							0,93	0,93	0,92	0,92	0,91
-10						0,97	0,97	0,97	0,97	0,96	0,96
-5					1,01	1,01	1,01	1,01	1,01	1,00	0,99
0				1,04	1,05	1,05	1,05	1,04	1,04	1,03	
5			1,07	1,07	1,08	1,08	1,08	1,07	1,07		
10		1,08	1,09	1,09	1,10	1,10	1,10	1,09			

表 7a 压力降 $\neq 1$ bar 时制冷量的校正系数 H_2 TABLE 7a Correction factors H_2 of the refrigeration capacity for pressure drops $\neq 1$ bar		表 7b 校正系数 H_2 的压力降 $\neq 1$ TABLE 7b Pressure drops for correction factors $H_2 \neq 1$	
压力降 Pressure drops [bar]	H_2 系数 H_2 Factor	S_2 系数 H_2 Factor	压力降 Pressure drops [bar]
0,10	0,32	0,20	0,04
0,20	0,45	0,25	0,06
0,30	0,55	0,30	0,09
0,40	0,63	0,35	0,12
0,50	0,71	0,40	0,16
0,60	0,77	0,45	0,20
0,70	0,84	0,50	0,25
0,80	0,89	0,55	0,30
0,90	0,95	0,60	0,36
1,00	1,00	0,65	0,42
1,10	1,05	0,70	0,49
1,20	1,10	0,75	0,56
1,30	1,14	0,80	0,64
1,40	1,18	0,85	0,72
1,50	1,22	0,90	0,81
1,60	1,26	0,95	0,90
1,70	1,30	1,00	1,00
1,80	1,34	1,05	1,10
1,90	1,38	1,10	1,21
2,00	1,41	1,15	1,32
2,10	1,45	1,20	1,44
2,20	1,48	1,25	1,56
2,30	1,52	1,30	1,69
2,40	1,55	1,35	1,82
2,50	1,58	1,40	1,96
2,60	1,61	1,45	2,10
2,70	1,64	1,50	2,25
2,80	1,67	1,55	2,40
2,90	1,70	1,60	2,56
3,00	1,73	1,65	2,72
3,10	1,76	1,70	2,89
3,20	1,79	1,75	3,06
3,30	1,82	1,80	3,24
3,40	1,84	1,85	3,42
3,50	1,87	1,90	3,61
3,60	1,90	1,95	3,80
3,70	1,92	2,00	4,00
3,80	1,95	2,05	4,20

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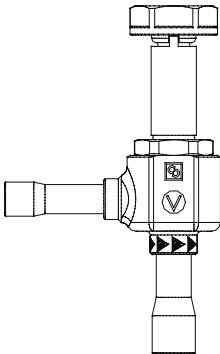
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可换芯的电子膨胀阀
SOLENOID EXPANSION VALVES WITH INTERCHANGEABLE ORIFICE

图纸 Drawing	部件号 Part number	连接方式 Connections				Kv [m³/h]	额定冷量 (I) Rated capacity (I) [kW]			PS [bar]	TS [°C]		包装件数 Package pcs
		In		Out			R290	R600	R600a		最小 min	最大 max	
		Ø [in.]	Ø [mm]	Ø [in.]	Ø [mm]								
	2028V/3S01	3/8"	-	1/2"	-	0,010	1,0	0,6	0,7	35	-20	+100	40
	2028V/M10S01	-	10	-	12								
	2028V/3S02	3/8"	-	1/2"	-	0,017	2,2	1,4	1,5				
	2028V/M10S02	-	10	-	12								
	2028V/3S03	3/8"	-	1/2"	-	0,023	2,8	1,7	1,9				
	2028V/M10S03	-	10	-	12								
	2028V/3S04	3/8"	-	1/2"	-	0,043	4,5	2,8	3,0				
	2028V/M10S04	-	10	-	12								
	2028V/3S05	3/8"	-	1/2"	-	0,065	6,4	4,4	4,8				
	2028V/M10S05	-	10	-	12								
	2028V/3S06	3/8"	-	1/2"	-	0,113	11,0	6,9	7,4				
	2028V/M10S06	-	10	-	12								
	2028V/4S07	1/2"	-	5/8"	-	0,200	17,5	10,9	11,7				
	2028V/M12S07	-	12	-	16								
	2028V/4S08	1/2"	-	5/8"	-	0,230	20,8	13,0	14,0				
	2028V/M12S08	-	12	-	16								
	2028V/4S09	1/2"	-	5/8"	-	0,250	23,2	14,5	15,6				
	2028V/M12S09	-	12	-	16								

注释:

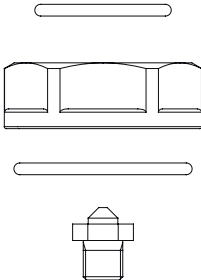
Note:

(1) 额定冷量是根据: 蒸发温度 T_{evap} = +5 °C / 冷凝温度 T_{cond} = +32 °C / 阀前的制冷剂液体温度 T_{liq} = +28 °C

(1) Rated capacities are based on: Evaporating temperature T_{evap} = + 5 °C / Condensing temperature T_{cond} = + 32 °C / Refrigerant liquid temperature ahead of valve T_{liq} = + 28 °C

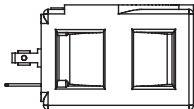
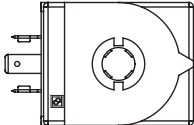
阀芯组件

ORIFICE ASSEMBLIES

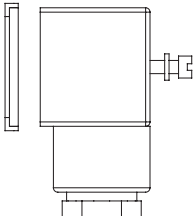
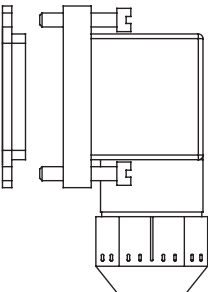
图纸 Drawing	部件号 Part number	阀芯型号 Orifice type	额定冷量 (1) Rated capacity (1)			包装件数 Package pcs.
			[kW]			
			R290	R600	R600a	
	9150V/R63	01	1,0	0,6	0,7	10
	9150V/R64	02	2,2	1,4	1,5	
	9150V/R65	03	2,8	1,7	1,9	
	9150V/R66	04	4,5	2,8	3,0	
	9150V/R67	05	6,4	4,4	4,8	
	9150V/R68	06	11,0	6,9	7,4	
	9150V/R69	07	17,5	10,9	11,7	
	9150V/R78	08	20,8	13,0	14,0	
	9150V/R79	09	23,2	14,5	15,6	



线圈
COILS

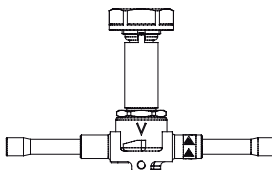
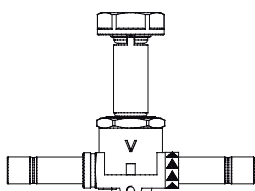
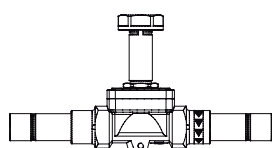
图纸 Drawing	部件号 Part number	电压 Voltage [V]	频率 Frequency [Hz]	连接方式 Connections		包装件数 Package pcs
				电气保护等级 IP65 Degree of protection IP 65	电气保护等级 IP68 Degree of protection IP 68	
 	9160/RA2	24 A.C.	50	9150/R02 9900/X66	9155/R01 9155/R02	90
	9160/RA4	110 A.C.	50			
	9160/RA6	220/230 A.C.	50			
	9160/RD1	12 D.C.	-			
	9160/RD2	24 D.C.	-			

接头
CONNECTORS

图纸 Drawing	部件号 Part number	防护等级 Degree of protection	电缆长度 Cable lenght [m]	包装件数 Package pcs
	9150/R02	IP 65	-	240
	9900/X66		1	100
	9155/R01	IP 65 / IP 68	-	120
	9155/R02		1	1

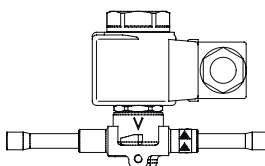
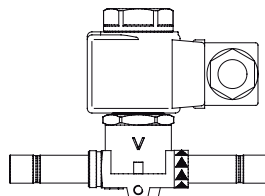
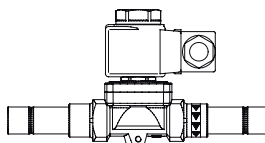


常闭电磁阀 ODS 连接，不带线圈
N.C. SOLENOID VALVES ODS CONNECTIONS WITHOUT COILS

工作原理 Operating principle	图纸 Drawing	部件号 Part Number	ODS 接头直径 Connections ODS Ø		Kv [m³/h]	PS [bar]	TS [°C]		包装件数 Package pcs
			[in.]	[mm]			最小 Min	最大 Max	
直动式 Direct acting		1028V/2S	1/4"	-	0,15	35	-20	+105	40
		1028V/2S.E	1/4"	-	0,23				
		1028V/3S	3/8"	-					
		1028V/M10S	-	10					
隔膜先导式 Diaphragm pilot operated		1068V/3S	3/8"	-	0,80	35	-20	+105	40
		1068V/M10S	-	10					
		1068V/M12S	-	12					
		1068V/4S	1/2"	-					
		1078V/M12S	-	12	2,20	35	-20	+105	17
		1078V/4S	1/2"	-					
		1078V/5S	5/8"	16	2,61				

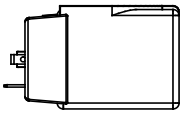
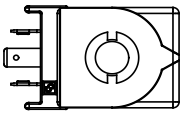
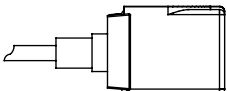
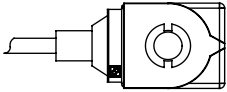


常闭电磁阀 ODS 连接，带 220/230 VAC 线圈（非 ATEX 批准）
N.C. SOLENOID VALVES ODS CONNECTIONS WITH COILS 220/230 VAC (no ATEX approval)

工作原理 Operating principle	图纸 Drawing	部件号 Part Number	连接方式 ODS Ø Connections ODS Ø		Kv [m³/h]	PS [bar]	TS [°C]		包装件数 Package pcs
			[in.]	[mm]			最小 Min	最大 Max	
直动式 Direct acting		1028V/2A6	1/4"	-	0,15	35	-20	+105	40
		1028V/2A6.E	1/4"	-	0,23				
		1028V/3A6	3/8"	-					
		1028V/M10A6	-	10					
隔膜先导式 Diaphragm pilot operated		1068V/3A6	3/8"	-	0,80	35	-20	+105	40
		1068V/M10A6	-	10					
		1068V/M12A6	-	12					
		1068V/4A6	1/2"	-					
		1078V/M12A6	-	12	2,20	35	-20	+105	17
		1078V/4A6	1/2"	-					
		1078V/5A6	5/8"	16	2,61				



线圈
COILS

图纸 Drawing	线圈类型 Coil Type	部件号 Part number	电压 Voltage [V]	频率 Frequency [Hz]	功率 Power [W]	注释 Note	包装件数 Package pcs
 	HM2	9100/RA2	24	50/60	8	-	90
		9100/RA4	110			-	
		9100/RA6	220/230			-	
		9100/RA7	240			-	
		9100EX/RA2	24	50/60	8	ATEX 批准用于爆炸区域 2 ATEX approval for use in EX Zone 2	90
		9100EX/RA4	110				
		9100EX/RA6	220/230				
		9100EX/RA7	240				
 	CM2 (1)	9110/RA2	24	50/60	8	-	10
		9110/RA4	110			-	
		9110/RA6	220/230			-	
		9110/RA7	240			-	
		9110EX/RA2	24	50/60	8	ATEX 批准用于爆炸区域 2 ATEX approval for use in EX Zone 2	10
		9110EX/RA4	110				
		9110EX/RA6	220/230				
		9110EX/RA7	240				

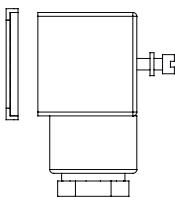
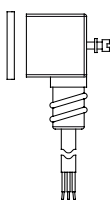
注释:

Note:

(1) 电缆长度 1 mm / (1) Cable length 1 mm /

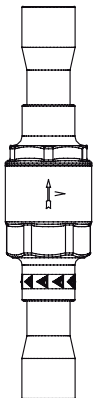
接头

CONNECTORS

图纸 Drawing	部件号 Part number	防护等级 Degree of protection	电缆长度 Cable lenght [m]	注释 Note	包装件数 Package pcs
	9150/R02	IP 65	-	-	240
	9150EX/R02	IP 65	-	ATEX 批准用于爆炸区域 2 ATEX approval for use in EX Zone 2	240
	9900/X66	IP 65	1	-	100
	9900/X84		1,5	-	1
	9900/X73		2	-	80
	9900/X55		3	-	80
	9900/X54		5	-	50



直通式止回阀
STRAIGHT CHECK VALVES

图纸 Drawing	部件号 Part number	连接方式 Connections		Kv [m³/h]	PS [bar]	TS [°C]		包装件数 Package pcs
		ODS Ø				最小 min	最大 max	
		Ø [in.]	Ø [mm]					
	3132V/2	1/4"	-	0,5	35	-20	+105	90
	3132V/3	3/8"	-	1,5				45
	3132V/M10	-	10	1,5				45
	3132V/M12	-	12	1,8				34
	3132V/4	1/2"	-	1,8				34
	3132V/5	5/8"	16	3,3				42
	3132V/M18	-	18	5				42
	3132V/6	3/4"	-	5				42
	3132V/7	7/8"	22	5				42

3133V 型带加强弹簧 / Type 3133V with reinforced spring /

视镜 (水份指示器)
MOISTURE INDICATORS

图纸 Drawing	部件号 Part number	连接方式 Connections		PS [bar]	TS [°C]		包装件数 Package pcs
		ODS			最小 min	最大 max	
		Ø [in.]	Ø [mm]				
	3740V/3	3/8"	-	35	-20	+105	42
	3740V/M10	-	10				42
	3740V/M12	-	12				42
	3740V/4	1/2"	-				42
	3740V/5	5/8"	16				42
	3740V/M18	-	18				42
	3740V/6	3/4"	-				42
	3740V/7	7/8"	22				42
	3740V/9	1.1/8"	-				17



水分指示器的部件和备件
ACCESSORIES AND SPARE PARTS FOR MOISTURE INDICATORS

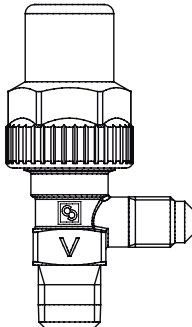
部件号 Part number	说明 Description	适用于: Suitable for:	注释 Note
9150/R87	预装配的螺母	水份-液体指示器类型 3740V/..	
	保护盖		
	螺母/主体 O 形圈		
	Pre-assembled nut	Moisture-liquid indicators type 3740V/..	
	Protection cap		
	Nut/body O Ring		

实芯干燥过滤器, 100% 分子筛
SOLID CORE FILTER DRIERS 100% MOLECULAR SIEVES

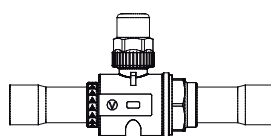
图纸 Drawing	部件号 Part number	国际代码 International code	连接方式 Connections				标称容积 Nominal volume [cm³]	PS [bar]	TS [°C]		包装件数 Package pcs			
			ODS		ODM				最小 min	最大 max				
			Ø [in.]	Ø [mm]	Ø [in.]	Ø [mm]								
	4303V/2S	032S	1/4"	-	3/8"	-	50	35	-40	+80	45			
	4305V/3S	053S	3/8"	-	1/2"	-	80				34			
	4305V/M10S	-	-	10	-	12	80				34			
	4308V/3S	083S	3/8"	-	1/2"	-	130				24			
	4308V/M10S	-	-	10	-	12	130				24			
	4308V/M12S	-	-	12	-	14	130				24			
	4308V/4S	084S	1/2"	-	5/8"	16	130				24			
	4316V/3S	163S	3/8"	-	1/2"	-	250				28			
	4316V/M10S	-	-	10	-	12	250				28			
	4316V/M12S	-	-	12	-	14	250				28			
	4316V/4S	164S	1/2"	-	5/8"	16	250				28			
	4316V/5S	165S	5/8"	16	3/4"	-	250				28			
	4330V/4S	304S	1/2"	-	5/8"	16	500				12			
	4330V/5S	305S	5/8"	16	3/4"	-	500				12			
	4330V/7S	307S	7/8"	-	1.1/8"	-	500				12			
	4330V/9S	309S	1.1/8"	-	1.3/8"	-	500				12			
	4375V/7S	757S	7/8"	-	1.1/8"	-	1340	24			1			
	4375V/9S	759S	1.1/8"	-	1.3/8"	-	1340				1			



贮液器阀门
RECEIVER VALVES

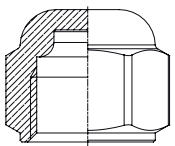
图纸 Drawing	部件号 Part number	连接方式 Connections		Kv [m³/h]	PS [bar]	TS [°C]		包装件数 Package pcs
		SAE 扩口 SAE Flare	NPT			最小 min	最大 max	
	6110V/22	1/4"	1/4"	0,44	35	-20	+105	90
	6110V/33	3/8"	3/8"	1,35				90
	6110V/43	1/2"	3/8"	2,4				90

球阀
BALL VALVES

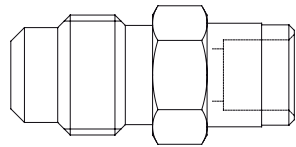
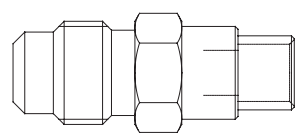
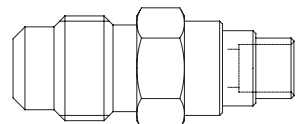
图纸 Drawing	部件号 Part number	连接方式 Connections		球端口直径 Ball port Ø [mm]	Kv [m³/h]	PS [bar]	TS [°C]		包装件数 Package pcs
		ODS					最小 min	最大 max	
		Ø [in.]	Ø [mm]						
	6590V/M6	-	6	10	0,8	35	-20	+150	40
	6590V/2	1/4"	-	10	0,8				40
	6590V/3	3/8"	-	10	3				40
	6590V/M10	-	10	10	3				40
	6590V/M12	-	12	10	5				40
	6590V/4	1/2"	-	10	5				40
	6590V/5	5/8"	16	15	14,5				30
	6590V/M18	-	18	15	14,5				30
	6590V/6	3/4"	-	15	14,5				30
	6590V/7	7/8"	22	19	24				17
	6590V/M28	-	28	25	40				14
	6590V/9	1.1/8"	-	25	40				14



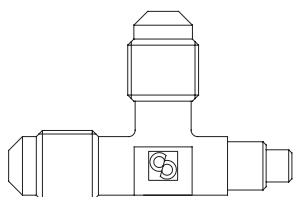
SAE 扩口带帽螺母
SAE FLARE CAP NUTS

图纸 Drawing	部件号 Part number	国际代码 International code	SAE 扩口 SAE Flare	PS [bar]	包装件数 Package pcs
	7020/20	N5-4 CAP NUT	1/4"	35	500

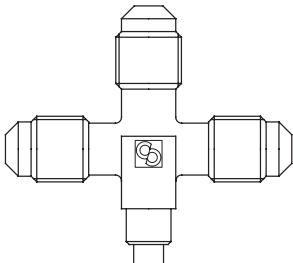
直通路管件（单向加注针阀）
STRAIGHT ACCESS FITTINGS

图纸 Drawing	部件号 Part number	连接方式 Connections									PS [bar]	包装件数 Package pcs
		SAE 扩口 SAE Flare			NPT	ODS		IDS				
		阀芯 Valve core	M	F		Ø [in.]	Ø [mm]	Ø [in.]	Ø [mm]	L [mm]		
	8350/22	1/4"	—	—	—	1/4"	—	3/8"	—	—	35	1000
	8350/X10	1/4"	—	—	—	1/4"	—	—	10	—		1000
	8351/2	1/4"	—	—	—	—	6	—	8 10	—	35	900
	8351/X01	1/4"	—	—	—	—	1/8"	—	6	—	35	800
												

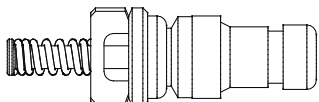
三通通路管件（单向加注针阀）
TEE ACCESS FITTINGS

图纸 Drawing	部件号 Part number	连接方式 Connections					PS [bar]	包装件数 Package pcs
		SAE 扩口 SAE Flare		NPT	IDS			
		阀芯 Valve core	F		Ø [in.]	Ø [mm]		
	8380/X01	1/4"	—	—	—	6	35	300

十字通路管件（单向加注针阀）
CROSS ACCESS FITTINGS

图纸 Drawing	部件号 Part number	连接方式 Connections				PS [bar]	包装件数 Package pcs	
		SAE 扩口 SAE Flare		NPT	IDS			
		阀芯 Valve core	F		Ø [in.]			Ø [mm]
	8382/X01	1/4"	—	—	—	7-10	35	200

备用阀芯
SPARE VALVE CORES

图纸 Drawing	部件号 Part number	连接方式 Connections		静压力 Static pressure [bar]	工作压力 Working pressure [bar]	TS [°C]		包装件数 Package pcs
		SAE 扩口 SAE Flare				最小 min	最大 max	
		M	F					
	8395/A3 (1)	-	-	140	60	-35	+130	5000

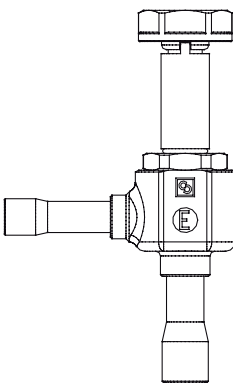
注释:
Note:
(1) 外弹簧
(1) Outside spring

二氧化碳制冷剂 (R744)

CO₂ REFRIGERANT (R744)

二氧化碳制冷剂 (R744)
CO₂ REFRIGERANT (R744)

带可互换的阀芯的电磁膨胀阀
SOLENOID EXPANSION VALVES WITH INTERCHANGEABLE ORIFICE

图纸 Drawing	部件号 Part number	连接方式 Connections				Kv [m³/h]	额定冷量 (1) Rated capacity (1)	PS [bar]	TS [°C]		包装件数 Package pcs
		入口 In		出口 Out			[kW]		最小 min	最大 max	
		Ø [in.]	Ø [mm]	Ø [in.]	Ø [mm]		R744				
	2028E/3S01	3/8"	-	1/2"	-	0,010	2,3	75	-50	+100	40
	2028E/M10S01	-	10	-	12						
	2028E/3S02	3/8"	-	1/2"	-	0,017	7,8				
	2028E/M10S02	-	10	-	12						
	2028E/3S03	3/8"	-	1/2"	-	0,023	9,9				
	2028E/M10S03	-	10	-	12						
	2028E/3S04	3/8"	-	1/2"	-	0,043	12,6				
	2028E/M10S04	-	10	-	12						
	2028E/3S05	3/8"	-	1/2"	-	0,065	14,9				
	2028E/M10S05	-	10	-	12						
	2028E/3S06	3/8"	-	1/2"	-	0,113	24,9				
	2028E/M10S06	-	10	-	12						
	2028E/4S07	1/2"	-	5/8"	-	0,200	37				30
	2028E/M12S07	-	12	-	16						

注释:

Note:

(1) 额定冷量是根据:

- 蒸发温度 T_{evap} = -35 °C
- 冷凝温度 T_{cond} = +0 °C
- 阀前的制冷剂液体温度 T_{liq} = -4 °C

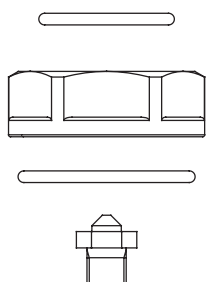
(1) Rated capacities are based on:

- Evaporating temperature T_{evap} = -35 °C
- Condensing temperature T_{cond} = +0 °C
- Refrigerant liquid temperature ahead of valve T_{liq} = -4 °C

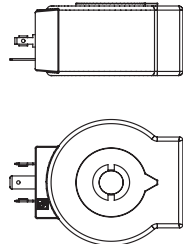
阀芯组件

ORIFICE ASSEMBLIES

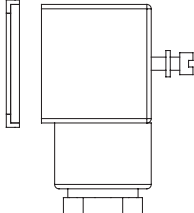
图纸 Drawing	部件号 Part number	阀芯型号 Orifice type	额定冷量 (1) Rated capacity (1)	包装件数 Package pcs.
			[kW]	
			R744	

	9150E/R63	01	2,9	10
	9150E/R64	02	4,9	
	9150E/R65	03	6,6	
	9150E/R66	04	11,8	
	9150E/R67	05	17,8	
	9150E/R68	06	30,8	
	9150E/R69	07	54,1	

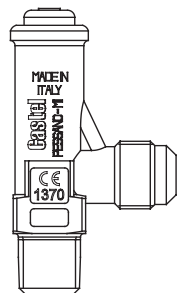
线圈
COILS

图纸 Drawing	部件号 Part number	电压 Voltage [V]	频率 Frequency [Hz]	连接方式 Connections	包装件数 Package pcs
				电气保护等级 IP65 Degree of protection IP 65	
	9120/RA6	220/230 A.C.	50	9150/R02 9900/X66	45
	9120/RD1	12 D.C.	-		
	9120/RD2	24 D.C.	-		

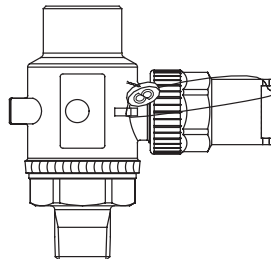
接头
CONNECTORS

图纸 Drawing	部件号 Part number	防护等级 Degree of protection	电缆长度 Cable lenght [m]	包装件数 Package pcs
	9150/R02	IP 65	-	240
	9900/X66		1	100

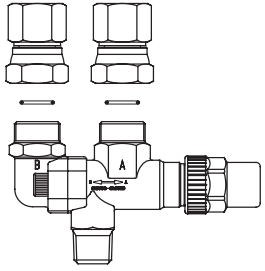
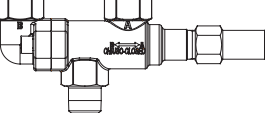
安全阀
SAFETY VALVES

图纸 Drawing	部件号 Part Number	连接方式 Connections		阀芯部分 Orifice section [mm²]	排量系数 Kd Discharge coefficient Kd	设定压力 Set pressure range [bar]	PS [bar]	TS [°C]		包装件数 Package pcs
		入口 IN	出口 OUT					最小 Min	最大 Max	
	3030/88C	1" NPT	1.1/4" G	298	0,83	8→50	55	-50	+150	8
	3030/66C	3/4" NPT	3/4" G	113	0,9					15
	3030/44C	1/2" NPT	3/4" G	113	0,9					15
	3060/46C	1/2" NPT	3/4" G	78,5	0,93	9→50	55	-50	+120	24
	3060/36C	3/8" NPT	3/4" G	78,5	0,92					24
	3060/45C	1/2" NPT	5/8" SAE	70,9	0,45					45
	3060/34C	3/8" NPT	1/2" SAE	38,5	0,69					45
	3060/33C	3/8" NPT	3/8" SAE	38,5	0,63					45
	3060/24C	1/4" NPT	1/2" SAE	38,5	0,69					45
	3060/23C	1/4" NPT	3/8" SAE	38,5	0,63					45

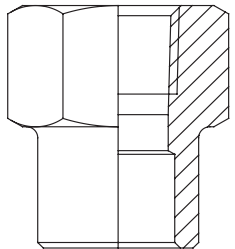
安全阀用球阀关闭
BALL SHUT OFF VALVES

图纸 Drawing	部件号 Part Number	SAE 扩口连接 Connections SAE Flare	Kv [m³/h]	PS [bar]	TS [°C]		包装件数 Package pcs
		NPT			最小 Min	最大 Max	
	3063E/22	1/4"	2,5	75	-55	+150	40
	3063E/33	3/8"	5				40
	3063E/44	1/2"	5				40
	3033E/44	1/2"	10				24
	3033E/88	1"	20				14

安全阀用切换阀
CHANGEOVER VALVES

图纸 Drawing	部件号 Part Number	针对阀门而设计 Designed for valve	连接方式 Connections		Kv [m³/h]	PS [bar]	TS [°C]		包装件数 Package pcs
			入口 IN	出口 OUT			最小 Min	最大 Max	
	3032E/33	3060/33C 3060/34C 3060/36C	3/8" NPT	3/8" NPT	2,5	120	-55	+150	14
	3032E/44	3060/45C 3060/46C	1/2" NPT	1/2" NPT	3,3				14
	3032E/64	3030/44C	3/4" NPT	1/2" NPT	9	120	-55	+150	15
	3032E/66	3030/66C	3/4" NPT	3/4" NPT	9				15
	3032E/88	3030/88C	1" NPT	1" NPT	14,5				1
	3032E/108		1.1/4" NPT	1" NPT	20				1

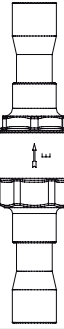
活接头
UNIONS

图纸 Drawing	部件号 Part Number	连接方式 Connections		PS [bar]	包装件数 Package pcs
		NPT	ODS 直径 ODS Ø [mm]		
	3035/2	1/4"	12	120	100
	3035/3	3/8"	18		100
	3035/4	1/2"	22		60
	3035/6	3/4"	28		30
	3035/8	1"	35		20
	3035/10	1.1/4"	42		6

直通式止回阀
STRAIGHT CHECK VALVES

图纸 Drawing	部件号 Part number	连接方式 Connections			最低开启压差 Minimum Opening Pressure Differential [bar]	Kv [m³/h]	PS [bar]	TS [°C]		包装件数 Package pcs
		ODS		W						
		Ø [in.]	Ø [mm]	Ø [mm]				最小 min	最大 max	

ODS 铜接头 / WITH COPPER ODS CONNECTIONS /

	3132E/3	3/8"	-	-	0,1 (1)	1,5	75	-40	+120	45
	3132E/M10	-	10	-		1,5				45
	3132E/M12	-	12	-		1,8				34
	3132E/4	1/2"	-	-		1,8				34
	3132E/5	5/8"	16	-		3,3				42
	3132E/M18	-	18	-		5				42
	3132E/6	3/4"	-	-		5				42
	3132E/7	7/8"	22	-		5				42
	3133E/3	3/8"	-	-	0,3 (1)	1,5	75	-40	+120	45
	3133E/M10	-	10	-		1,5				45
	3133E/M12	-	12	-		1,8				34
	3133E/4	1/2"	-	-		1,8				34
	3133E/5	5/8"	16	-		3,3				42
	3133E/M18	-	18	-		5				42
	3133E/6	3/4"	-	-		5				42
	3133E/7	7/8"	22	-		5				42

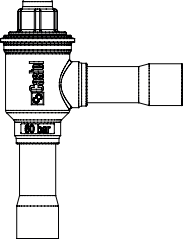
(1): 阀完全开启所需的最低压力。

(1): minimum pressure at which the valve is completely open.

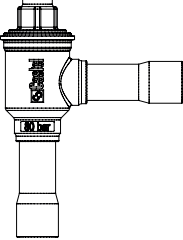
直角式止回阀
RIGHT-ANGLE CHECK VALVES

图纸 Drawing	部件号 Part number	连接方式 Connections			最低开启压差 Minimum Opening Pressure Differential [bar]	Kv [m³/h]	PS [bar]	TS [°C]		包装件数 Package pcs
		ODS		W						
		Ø [in.]	Ø [mm]	Ø [mm]				最小 min	最大 max	

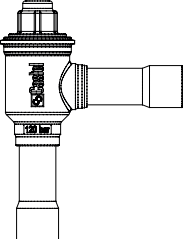
ODS 铜接头 / WITH COPPER ODS CONNECTIONS /

	3185EL/7	7/8"	22	—	0,3 (1)	9	60	-40	150	14
	3185EL/M28	—	28	—		19				1
	3185EL/9	1.1/8"	—	—		19				1
	3185EL/11	1.3/8"	35	—		29				1

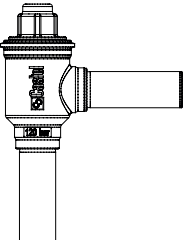
ODS 铜接头 / WITH COPPER ODS CONNECTIONS /

	3185E/7	7/8"	22	—	0,3 (1)	9	80	-40	150	14
	3185E/M28	—	28	—		19				1
	3185E/9	1.1/8"	—	—		19				1
	3185E/11	1.3/8"	35	—		29				1

带 ODS 铜接头 (K65) / WITH REINFORCED COPPER ODS CONNECTIONS (K65) /

	3187E/7	7/8"	22	—	0,3 (1)	9	120	-40	150	14
	3187E/9	1.1/8"	—	—		19				1
	3187E/11	1.3/8"	35	—		29				1

不锈钢接头 / WITH STAINLESS STEEL CONNECTIONS /

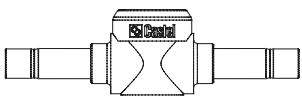
	3188E/M22	—	—	22	0,3 (1)	9	120	-40	150	14
	3188E/M28	—	—	28		19				1
	3188E/M35	—	—	33,4		29				1

(1): minima pressione a cui la valvola è completamente aperta
(1): 完全开启阀所需的最低压力。

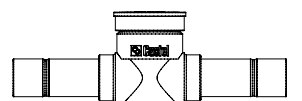
视液镜（水份指示器）
MOISTURE INDICATORS

图纸 Drawing	部件号 Part number	连接方式 Connections			PS [bar]	TS [°C]		包装件数 Package pcs
		ODS		W		最小 min	最大 max	
		Ø [in.]	Ø [mm]	Ø [mm]				

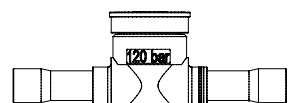
ODS 铜接头 / WITH COPPER ODS CONNECTIONS /

	3940EL/M6	-	6	-	60	-40	+120	42
	3940EL/2	1/4"	-	-				42
	3940EL/3	3/8"	-	-				42
	3940EL/M10	-	10	-				42
	3940EL/M12	-	12	-				42
	3940EL/4	1/2"	-	-				42
	3940EL/5	5/8"	16	-				42
	3940EL/M18	-	18	-				42
	3940EL/6	3/4"	-	-				42
	3940EL/7	7/8"	22	-				42
	3940E/M28	-	28	-				17
	3940EL/9	1.1/8"	-	-				17

ODS 铜接头 / WITH COPPER ODS CONNECTIONS /

	3740E/M6	-	6	-	80	-40	+120	42
	3740E/2	1/4"	-	-				42
	3740E/3	3/8"	-	-				42
	3740E/M10	-	10	-				42
	3740E/M12	-	12	-				42
	3740E/4	1/2"	-	-				42
	3740E/5	5/8"	16	-				42
	3740E/M18	-	18	-				42
	3740E/6	3/4"	-	-				42
	3740E/7	7/8"	22	-				42
	3740E/M28	-	28	-				17
	3740E/9	1.1/8"	-	-				17

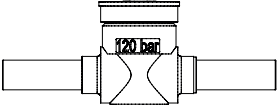
ODS 铜接头 / WITH COPPER ODS CONNECTIONS /

	3747E/3	3/8"	-	-	120	-40	+120	42
	3747E/4	1/2"	-	-				42
	3747E/5	5/8"	16	-				42
	3747E/6	3/4"	-	-				42
	3747E/7	7/8"	22	-				42
	3747E/9	1.1/8"	-	-				17

视液镜（水份指示器）
MOISTURE INDICATORS

图纸 Drawing	部件号 Part number	连接方式 Connections			PS [bar]	TS [°C]		包装件数 Package pcs
		ODS		W		最小 min	最大 max	
		Ø [in.]	Ø [mm]	Ø [mm]				

不锈钢接头 / WITH STAINLESS STEEL CONNECTIONS /

	3748E/M6	-	-	6	120	-40	+120	42
	3748E/M10	-	-	10				42
	3748E/M12	-	-	12				42
	3748E/M16	-	-	16				42
	3748E/M18	-	-	18				42
	3748E/M22	-	-	22				42
	3748E/M28	-	-	28				17

水分指示器的部件和备件
ACCESSORIES AND SPARE PARTS FOR MOISTURE INDICATORS

部件号 Part number	说明 Description	适用于： Suitable for:	注释 Note
9150/R88	预装配的螺母	指示器类型 3740E/.. ; 3747E/.. ; 3748E/..	
	保护盖		
	螺母/主体 O 形圈		
	Pre-assembled nut	Indicators type 3740E/.. ; 3747E/.. ; 3748E/..	
	Protection cap		
	Nut/body O Ring		

二氧化碳制冷剂 (R744)
CO₂ REFRIGERANT (R744)

实芯干燥过滤器，100% 分子筛，带水份指示器 - 焊接接头

SOLID CORE FILTER DRIERS 100% MOLECULAR SIEVES, WITH MOISTURE INDICATOR - SOLDER CONNECTIONS

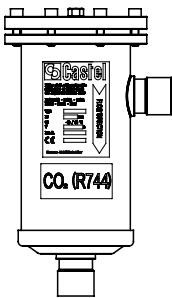
图纸 Drawing	部件号 Part number	国际代码 International code	连接方式 Connections				标称容积 Nominal volume [cm³]	PS [bar]	TS [°C]		包装件数 Package pcs
			ODS		ODM				最小 min	最大 max	
			Ø [in.]	Ø [mm]	Ø [in.]	Ø [mm]					
	4108E/3S	083S	3/8"	-	1/2"	-	130	52	-40	+80	24
	4108E/M10S	-	-	10	-	12					24
	4108E/M12S	-	-	12	-	14					24
	4108E/4S	084S	1/2"	-	5/8"	16	250				24
	4116E/M12S	-	-	12	-	14					14
	4116E/4S	164S	1/2"	-	5/8"	16					14
	4116E/5S	165S	5/8"	16	3/4"	-	14				

实芯干燥过滤器，100% 分子筛

SOLID CORE FILTER DRIERS 100% MOLECULAR SIEVES

图纸 Drawing	部件号 Part number	国际代码 International code	连接方式 Connections				标称容积 Nominal volume [cm³]	PS [bar]	TS [°C]		包装件数 Package pcs
			ODS		ODM				最小 min	最大 max	
			Ø [in.]	Ø [mm]	Ø [in.]	Ø [mm]					
	4303E/2S	032S	1/4"	-	3/8"	-	50	60	-40	+80	45
	4303E/3S	032S	1/4"	-	3/8"	-	50				45
	4305E/2S	053S	3/8"	-	1/2"	-	80				34
	4305E/3S	053S	3/8"	-	1/2"	-	80				34
	4305E/M10S	-	-	10	-	12	80				34

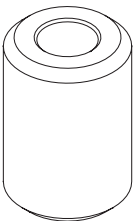
干燥过滤器，实心滤芯可换 - 钢接头
FILTER DRIERS WITH REPLACEABLE SOLID CORE - STEEL CONNECTIONS

图纸 Drawing	部件号 Part number.	连接方式 Connections			滤芯类型 Cores type	滤芯数量 N° of cores	公称容积 Nominal volume [cm³]	PS [bar]	TS [°C]		包装件数 Package pcs
		ODS		W							
		Ø [in.]	Ø [mm]	Ø [mm]					最小 min	最大 max	
	4411E/5AF	5/8"	16	21,3	4490/B	1	800	62	-40	+80	1
	4411E/7AF	7/8"	22	26,9							
	4411E/9AF	1.1/8"	-	33,7							
	4411E/11AF	1.3/8"	35	42,4							
	4411E/M42AF	-	42	48,3							
	4411E/17AF	2.1/8"	54	60,3							
	4412E/7AF	7/8"	22	26,9		2	1600	62	-40	+80	1
	4412E/9AF	1.1/8"	-	33,7							
	4412E/11AF	1.3/8"	35	42,4							
	4412E/M42AF	-	42	48,3							
	4412E/17AF	2.1/8"	54	60,3							

实心滤芯可换干燥过滤器的部件和备件
ACCESSORIES AND SPARE PARTS FOR FILTER DRIERS WITH REPLACEABLE SOLID CORE

部件号 Part number	说明 Description	适用于: Suitable for:	注释 Note
003319	弹簧 Spring	滤芯类型: Filters type: 4411E/_ ; 4412E/_	
111134	1/4" NPT 螺纹盖 1/4" NPT threaded cover		
111135	盖垫片 Cover gasket		
9150/R80	带有 8 个 M8 X 35 螺丝 Package 8 screws M8 x 35		
009406	脱水滤芯盖 Dehydrating block top	滤芯类型: Filters type: 4411E/_AF ; 4412E/_AF	
003324	脱水滤芯底 Dehydrating block bottom		
007677	一个滤芯的过滤管 Filtering tube for one block		
9150/R57	机械滤芯的盖和底 Top and bottom for mechanical block	滤芯类型: Filters type: 4411E/_CF	

滤芯
CARTRIDGES

图纸 Drawing	部件号 Part number	脱水部分 Dehydrating charge	滤芯数量 N° of cores [cm²]	适用于过滤器 Suitable for filter	包装件数 Package pcs
	4490/A (1)	100 % 分子筛	800	4411E/_AF 4412E/_AF	15
		100% Molecular sieve			
	4490/B (2)	100 % 分子筛	800	4411E/_AF 4412E/_AF	15
		100% Molecular sieve			
	4490/AA (1)	80% 分子筛 + 20% 活性氧化铝	800	4411E/_AF 4412E/_AF	15
		80% Molecular sieve + 20% activated alumina			
	4490/AB (2)	80% 分子筛 + 20% 活性氧化铝	800	4411E/_AF 4412E/_AF	15
		80% Molecular sieve + 20% activated alumina			

注释:

Note:

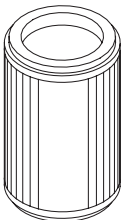
(1) 供货时包括垫片备件

(1) Supplied with filter cover gasket as spare part

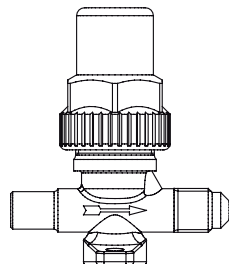
(2) 供货时不包括垫片备件

(2) Supplied without cover gasket as spare part

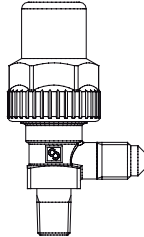
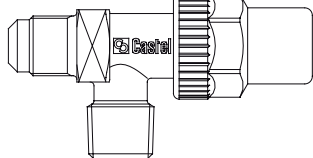
机械滤芯
MECHANICAL BLOCKS

图纸 Drawing	部件号 Part number	过滤面积 Filtering surface [cm²]	适用于过滤器 Suitable for filter	包装件数 Package pcs
	4495/C	820	4411E/_CF	15

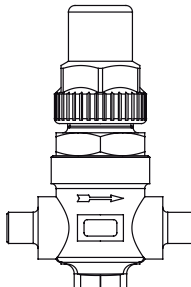
气密封系统阀门
VALVES FOR HERMETIC SYSTEMS

图纸 Drawing	部件号 Part number	通路管件（单向 加注针阀） Access fitting SAE 扩口 SAE Flare	连接方式 Connections				Kv [m³/h]	PS [bar]	TS [°C]		包装件数 Package pcs
			通路管件 （单向加 注针阀） Access fitting SAE 扩口 SAE Flare	ODS		最小 min			最大 max		
				Ø [in.]	Ø [mm]						
	6010E/2	-	1/4"	1/4"	-	-	0,27	120	-60	+130	45
	6012E/22		1/4"	-	1/4"						72

贮液器阀门
RECEIVER VALVES

图纸 Drawing	部件号 Part number	连接方式 Connections		Kv [m³/h]	PS [bar]	TS [°C]		包装件数 Package pcs
		SAE 扩口 SAE Flare	NPT			最小 min	最大 max	
	6110/22	1/4"	1/4"	0,44	120	-60	+130	90
	6110/33	3/8"	3/8"	1,35				90
	6110/44	1/2"	1/2"	3,4				90
	6120/22	1/4"	1/4"	0,44	120	-60	+130	90
	6120/33	3/8"	3/8"	1,35				90
	6120/44	1/2"	1/2"	3,4				90

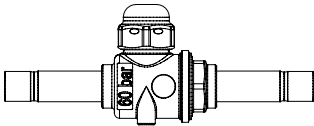
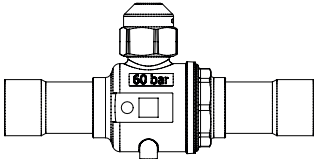
顶盖阀
CAPPED VALVES

图纸 Drawing	部件号 Part number	连接方式 Connections		Kv [m³/h]	PS [bar]	TS [°C]		包装件数 Package pcs	
		SAE 扩口 SAE FLARE	ODS			最小 min	最大 max		
			Ø [in.]						Ø [mm]
	6420/2	-	1/4"	-	0,4	120	-60	+110	45
	6420/3	-	3/8"	-	1				45
	6420/3S3	3/8" - OUT	3/8" - IN	-	1				45
	6420/4	-	1/2"	-	1,45				45

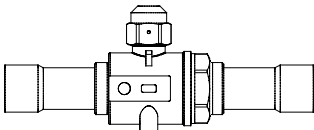
球阀
BALL VALVES

图纸 Drawing	部件号 Part number	连接方式 Connections			球端口直径 Ball port Ø [mm]	Kv [m³/h]	PS [bar]	TS [°C]		包装件数 Package pcs
		ODS		W						
		Ø [in.]	Ø [mm]	Ø [mm]				最小 min	最大 max	

ODS 铜接头 / WITH COPPER ODS CONNECTIONS /

	6570EL/M6	—	6	—	10	0,8	60	-40	+150	25	
	6570EL/2	1/4"	—	—		25					
	6570EL/3	3/8"	—	—		25					
	6570EL/M10	—	10	—		25					
	6570EL/M12	—	12	—		25					
	6570EL/4	1/2"	—	—	15	5				25	
	6570EL/5	5/8"	16	—		16					
	6570EL/M18	—	18	—		16					
	6570EL/6	3/4"	—	—		16					
	6570EL/7	7/8"	22	—		19				29	21
	6570EL/M28	—	28	—		25				51	16
6570EL/9	1.1/8"	—	—	16							
	6590EL/11	1.3/8"	35	—	32	86	60	-40	-150	5	
	6590EL/13	1.5/8"	—	—	38	117				10	
	6590EL/M42	—	42	—						10	
	6590EL/17	2.1/8"	54	—	50	214				1	

ODS 铜接头 / WITH COPPER ODS CONNECTIONS /

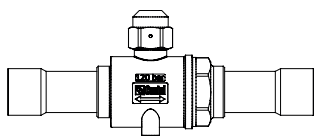
	6590E/M6	—	6	—	10	0,8	80	-40	+150	40
	6590E/2	1/4"	—	—						40
	6590E/3	3/8"	—	—		40				
	6590E/M10	—	10	—		40				
	6590E/M12	—	12	—		40				
	6590E/4	1/2"	—	—	15	5				40
	6590E/5	5/8"	16	—						30
	6590E/M18	—	18	—		17				30
	6590E/6	3/4"	—	—						30
	6590E/7	7/8"	22	—		19				29
	6590E/M28	—	28	—	25	51				14
	6590E/9	1.1/8"	—	—						14
	6590E/11	1.3/8"	35	—	32	86				5
	6590E/13	1.5/8"	—	—	38	117				5
	6590E/M42	—	42	—						5

二氧化碳制冷剂 (R744)
CO₂ REFRIGERANT (R744)

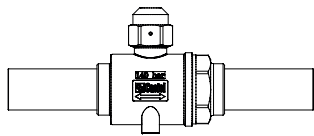
球阀
BALL VALVES

图纸 Drawing	部件号 Part number	连接方式 Connections			球端口直径 Ball port Ø [mm]	Kv [m³/h]	PS [bar]	TS [°C]		包装件数 Package pcs
		ODS		W						
		Ø [in.]	Ø [mm]	Ø [mm]				最小 min	最大 max	

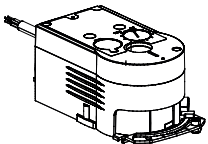
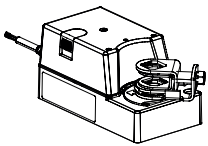
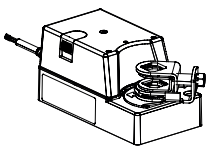
带 ODS 铜接头 (K65) / WITH REINFORCED COPPER ODS CONNECTIONS (K65) /

	6597E/3	3/8"	—	—	10	3	120	-40	+150	40
	6597E/4	1/2"	—	—		5				40
	6597E/5	5/8"	16	—	15	17				30
	6597E/6	3/4"	—	—		17				30
	6597E/7	7/8"	22	—	19	29				17
	6597E/9	1.1/8"	—	—	25	51				14
	6597E/11	1.3/8"	35	—	32	86				5
	6597E/13	1.5/8"	—	—	38	117				5
	6597E/17	2.1/8"	54	—	50	214				1

不锈钢接头 / WITH STAINLESS STEEL CONNECTIONS /

	6598E/M6	—	—	6	10	0,8	140	-40	+150	40
	6598E/M10	—	—	10		3				40
	6598E/M12	—	—	12		5				40
	6598E/M16	—	—	16	15	5				30
	6598E/M18	—	—	18		17				30
	6598E/M22	—	—	22	19	29				17
	6598E/M28	—	—	28	25	51				14
	6598E/M35	—	—	34,4	32	86				5
	6598E/M42	—	—	42,2	38	117				5

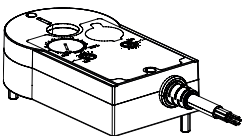
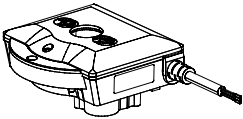
球阀驱动器
ACTUATORS

图纸 Drawing	部件号 Part number	针对阀门而设计 Designed for valve	旋转角 Rotation angle	转矩 Torque [Nm]	运行时间 Running time [sec]	电压 Voltage [V]	频率 Frequency [Hz]	功率 Power [W]	环境温度 Ambient temperature [°C]		防护等级 Degree of protection	包装件数 Package pcs
									最小 Min	最大 Max		
	9700/RA2 (1)	6590E/7; 6590E/M28; 6590E/9 6597E/7; 6597E/9 6598E/M22; 6598E/M28	90°	10	60	24	50/60	4,8	-20	+55	IP 54	1
	9700/RA6 (2)	6590E/7; 6590E/M28; 6590E/9 6597E/7; 6597E/9 6598E/M22; 6598E/M28	90°	10	60	230	50/60	2,9	-20	+55	IP 54	1
	9720/RA2 (1)	6590E/11; 6590E/13; 6590E/M42 6597E/11; 6597E/13 6598E/M35; 6598E/M42	90°	30	120	24	50/60	2,4	-20	+55	IP 54	1
	9720/RA6 (2)	6590E/11; 6590E/13; 6590E/M42 6597E/11; 6597E/13 6598E/M35; 6598E/M42	90°	30	120	230	50/60	3,7	-20	+55	IP 54	1

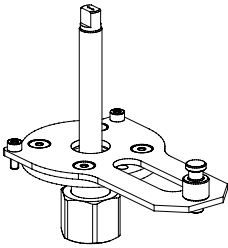
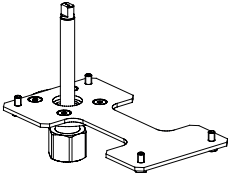
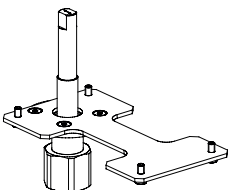
(1) 接线：两位开关输出（断开/闭合）或连续输出（0 ÷ 10V）
(1) Wiring connections : switching output 2 points (open/close) or continous output (0 ÷ 10V)

(2) 接线：两位开关输出（断开/闭合）
(2) Wiring connections : switching output 2 points (open/close)

辅助开关单元
AUXILIARY SWITCH UNITS

图纸 Drawing	部件号 Part number	针对驱动器设计 Designed for actuator	触点式 Contact type [Nm]	最大允许电流 Max loading [A]	环境温度 Ambient temperature [°C]		防护等级 Degree of protection	包装件数 Package pcs
					最小 Min	最大 Max		
	9750/X01	9700/RA2	两个触点 Double	5	-20	+55	IP 54	1
	9750/X02	9700/RA6 ; 9720/RA2 ; 9720/RA6	两个触点 Double	5	-20	+55	IP 54	1

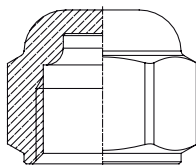
伺服电机转接器
SERVOMOTOR ADAPTERS

图纸 Drawing	部件号 Part number	针对阀门而设计 Designed for valve	针对驱动器设计 Designed for actuator	包装件数 Package pcs
	9901/X21	6590E/7 ; 6590E/M28 ; 6590E/9 6597E/7 ; 6597E/9 6598E/M22 ; 6598E/M28	9700/RA2	1
	9901/X22	6590E/7 ; 6590E/M28 ; 6590E/9 6597E/7 ; 6597E/9 6598E/M22 ; 6598E/M28	9700/RA6	1
	9901/X23	6590E/11 ; 6590E/13 ; 6590E/M42 6597E/11 ; 6597E/13 6598E/M35 ; 6598E/M42	9720/RA2 ; 9720/RA6	1

螺纹黄铜管件
THREADED BRASS FITTINGS

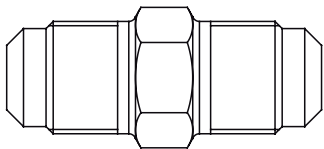
图纸 Drawing	部件号 Part number	国际代码 International code	SAE 扩口 SAE Flare	PS [bar]	包装件数 Package pcs
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SAE 扩口带帽螺母 / SAE FLARE CAP NUTS /

	7020/20	N5-4 CAP NUT	1/4"	120	500
	7020/30	N5-6 CAP NUT	3/8"		250
	7020/40	N5-8 CAP NUT	1/2"		200

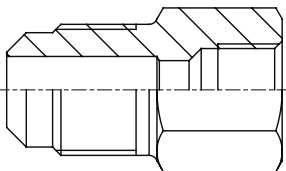
图纸 Drawing	部件号 Part number	国际代码 International code	连接方式 Connections	PS [bar]	包装件数 Package pcs
			SAE 扩口 SAE Flare		

SAE 扩口活接头 / SAE FLARE UNIONS /

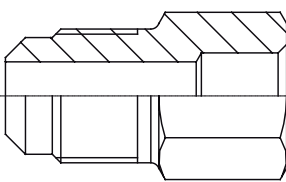
	7110/2	U2-4	1/4"	120	500
	7110/3	U2-6	3/8"		200
	7110/4	U2-8	1/2"		150
	7110/5	U2-10	5/8"		75
	7110/6	U2-12	3/4"		10

图纸 Drawing	部件号 Part number	国际代码 International code	连接方式 Connections				PS [bar]	包装件数 Package pcs
			SAE 扩口 SAE Flare		ODS			
			M	F	Ø [in.]	Ø [mm]		

外螺纹 - 内螺纹异径活接头 (异径内螺纹) / MALE - FEMALE REDUCING UNIONS (REDUCED FEMALE) /

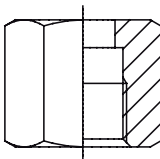
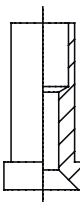
	7150/32	UR3-46	3/8"	1/4"	—	—	120	250
	7150/42	UR3-48	1/2"	1/4"	—	—		150
	7150/43	UR3-68	1/2"	3/8"	—	—		150
	7150/54	UR3-810	5/8"	1/2"	—	—		150
	7150/64	UR3-812	3/4"	1/2"	—	—		100
	7150/65	UR3-1012	3/4"	5/8"	—	—		10

外螺纹 SAE 扩口 - 焊接活接头 / MALE SAE FLARE - SOLDER UNIONS /

	7170/22	US3-44	1/4"	—	1/4"	—	120	750
	7170/2M8	—	1/4"	—	—	8		750
	7170/33	US3-66	3/8"	—	3/8"	—		300
	7170/3M10	—	3/8"	—	—	10		250
	7170/44	US3-88	1/2"	—	1/2"	—		200
	7170/4M12	—	1/2"	—	—	12		50
	7170/55	US3-1010	5/8"	—	5/8"	16		100

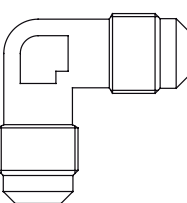
图纸 Drawing	部件号 Part number	项目位置 Item position	连接方式 Connections			PS [bar]	包装件数 Package pcs
			SAE 扩口 SAE Flare	ODS			
				Ø [in.]	Ø [mm]		

扩口 - ODS 转接头 / FLARE - ODS ADAPTERS /

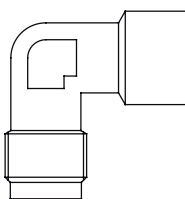
POS.1 	9901/X11	1 + 2 + 3	1/4"	—	6	120	10 + 10 + 10
	9901/X12	1 + 2 + 3	3/8"	—	10		10 + 10 + 10
	9901/X13	1 + 2 + 3	1/2"	—	12		10 + 10 + 10
	9901/X14	1 + 2 + 3	5/8"	5/8"	16		5 + 5 + 5
	9901/X15	1 + 2 + 3	3/4"	—	18		5 + 5 + 5
	9901/X16	1 + 2 + 3	1/4"	1/4"	—		10 + 10 + 10
	9901/X17	1 + 2 + 3	3/8"	3/8"	—		10 + 10 + 10
	9901/X18	1 + 2 + 3	1/2"	1/2"	—		10 + 10 + 10
	9901/X19	1 + 2 + 3	3/4"	3/4"	—		5 + 5 + 5
POS.2 							
POS.3 							

图纸 Drawing	部件号 Part number	国际代码 International code	连接方式 Connections		PS [bar]	包装件数 Package pcs
			SAE 扩口 SAE Flare			
			M	F		

SAE 扩口弯头 / SAE FLARE ELBOWS /

	7210/2	E2-4	1/4"	—	120	400
	7210/3	E2-6	3/8"	—		50
	7210/4	E2-8	1/2"	—		50
	7210/5	E2-10	5/8"	—		25
	7210/6	E2-12	3/4"	—		10

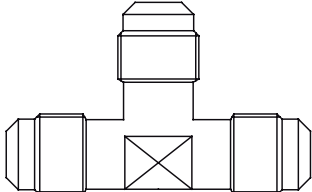
内螺纹/外螺纹-内螺纹 SAE 扩口弯头 / MALE - FEMALE SAE FLARE ELBOWS /

	7240/2	—	1/4"	1/4"	120	50
	7240/3	—	3/8"	3/8"		200
	7240/4	—	1/2"	1/2"		10

螺纹黄铜管件
THREADED BRASS FITTINGS

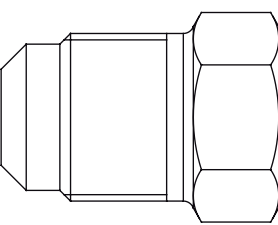
图纸 Drawing	部件号 Part number	国际代码 International code	连接方式 Connections			PS [bar]	包装件数 Package pcs
			SAE 扩口 SAE Flare				
			(1)	(2)	(3)		

SAE 扩口三通 / SAE FLARE TEE /

	7310/2	T2-4	1/4"	1/4"	1/4"	120	200
	7310/3	T2-6	3/8"	3/8"	3/8"		50
	7310/4	T2-8	1/2"	1/2"	1/2"		25
	7310/5	T2-10	5/8"	5/8"	5/8"		10
	7310/6	T2-12	3/4"	3/4"	3/4"		10

图纸 Drawing	部件号 Part number	国际代码 International code	连接方式 Connections	PS [bar]	包装件数 Package pcs
			SAE 扩口 SAE Flare		

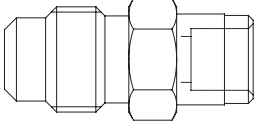
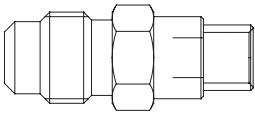
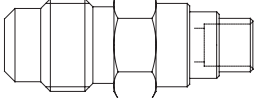
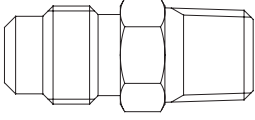
SAE 扩口管塞 / SAE FLARE PLUGS /

	7510/2	P2-4	1/4"	120	25
	7510/3	P2-6	3/8"		25
	7510/4	P2-8	1/2"		10

通路管件（单向加注针阀）
ACCESS FITTINGS

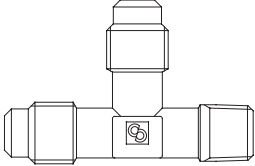
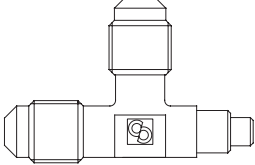
图纸 Drawing	部件号 Part number	连接方式 Connections								PS [bar]	包装件数 Package pcs	
		SAE 扩口 SAE Flare			NPT	ODS		IDS				
		阀芯 Valve core	M	F		Ø [in.]	Ø [mm]	Ø [in.]	Ø [mm]			L [mm]

直通路管件（单向加注针阀） / STRAIGHT ACCESS FITTINGS /

	8350/22	1/4"	—	—	—	1/4"	—	3/8"	—	—	120	1000
	8350/X10	1/4"	—	—	—	1/4"	—	—	10	—		1000
	8351/2	1/4"	—	—	—	—	6	—	8 10	—	120	900
	8351/X01	1/4"	—	—	—	—	1/8"	—	6	—	120	800
	8354/21	1/4"	—	—	1/8"	—	—	—	—	—	120	800
	8354/22	1/4"	—	—	1/4"	—	—	—	—	—		500

图纸 Drawing	部件号 Part number	连接方式 Connections					PS [bar]	包装件数 Package pcs
		SAE 扩口 SAE Flare		NPT	IDS			
		阀芯 Valve core	F		Ø [in.]	Ø [mm]		

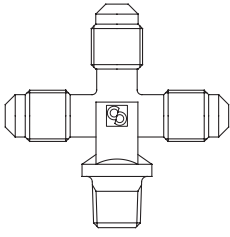
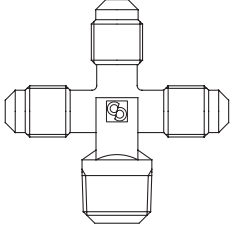
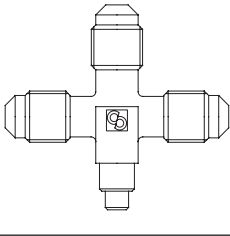
三通通路管件（单向加注针阀） / TEE ACCESS FITTINGS /

	8380/122	1/4"	—	1/8"	—	—	120	300
	8380/222	1/4"	—	1/4"	—	—		300
	8380/X01	1/4"	—	—	—	6	120	300

通路管件（单向加注针阀）
ACCESS FITTINGS

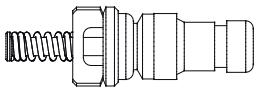
图纸 Drawing	部件号 Part number	连接方式 Connections				PS [bar]	包装件数 Package pcs	
		SAE 扩口 SAE Flare		NPT	IDS			
		阀芯 Valve core	F		Ø [in.]			Ø [mm]

十字通路管件（单向加注针阀） / CROSS ACCESS FITTINGS /

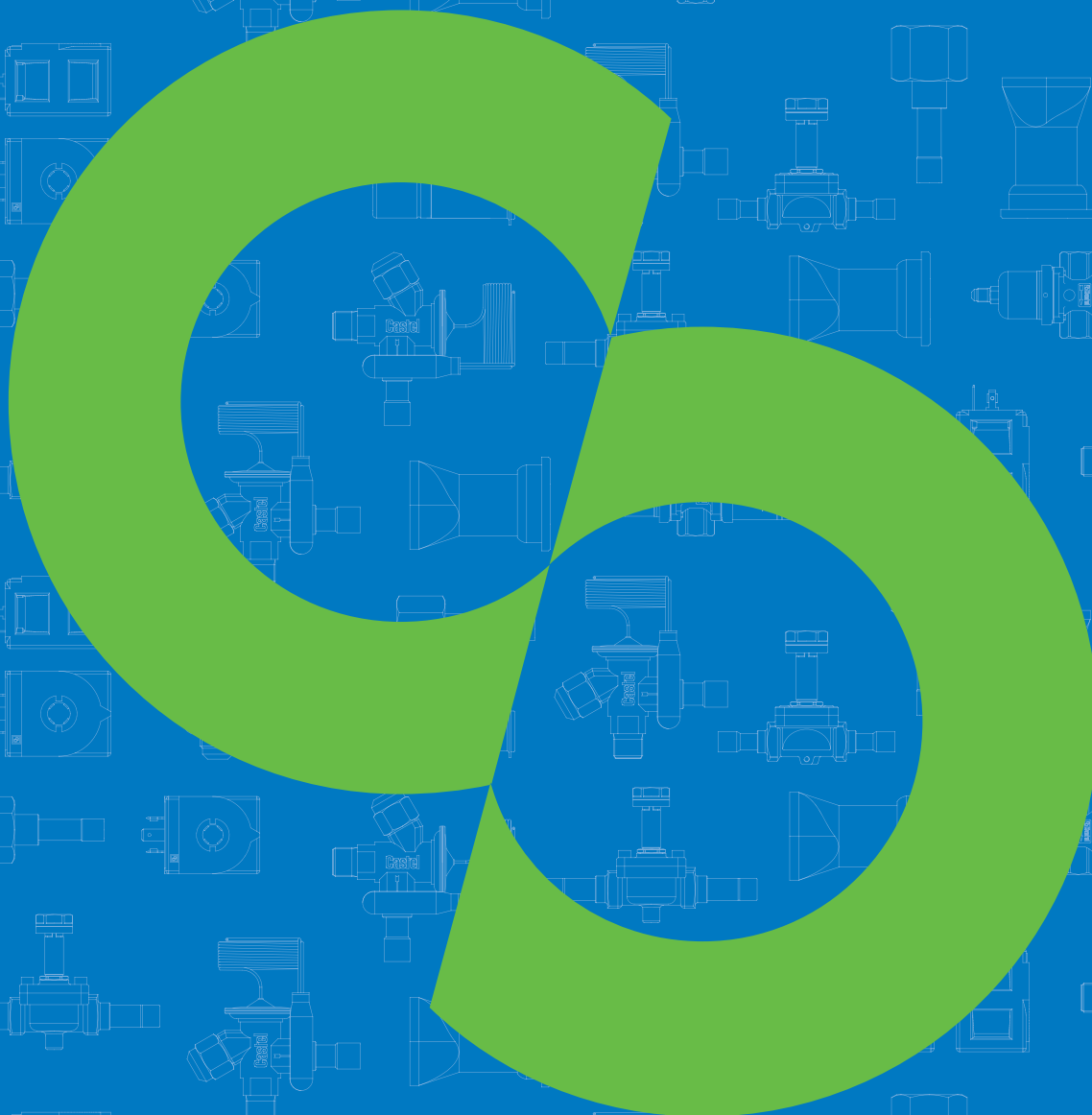
	8382/1222	1/4"	—	1/8"	—	—	120	150
	8382/X02	1/4"	—	1/4"	—	—	120	150
	8382/X01	1/4"	—	—	—	7-10	120	200

图纸 Drawing	部件号 Part number	连接方式 Connections		静压力 Static pressure [bar]	工作压力 Working pressure [bar]	TS [°C]		包装件数 Package pcs
		SAE 扩口 SAE Flare				最小 min	最大 max	
		M	F					

备用阀芯 / SPARE VALVE CORES /

	8395/A4 (1)	-	-	140	80	-35	+120	5000

注释：
Note:
(1) 外弹簧
(1) Outside spring



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