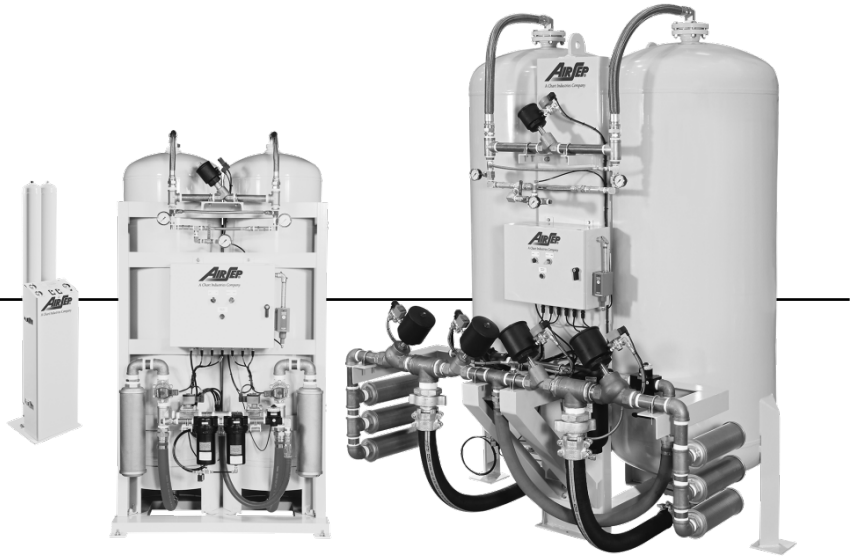
A Chart Industries Company

AS-A – AS-P型

PSA 制氧机



说明书

ALPHA 系列

所有者数据

请花点时间了解下面有关您的 AirSep® Corporation PSA 制氧机的重要信息。请保留此说明手册和您的发票，用作永久的购买证明。

***PSA* 制氧机**

型号：

序列号：

发票日期：

启动日期：

***AirSep* 代表**

公司：

联系方式：

地址：

市/县：　　州/省：　　邮编：

国家/地区：　　传真：

电话：　　电传：

WARNING	在安装、操作或维修制氧机之前，请阅读并充分理解本说明手册。不当操作会导致严重的身体伤害、制氧机损坏或性能低下。

目录

1.0 前言 ..... Error! Bookmark not defined.

1.1 综述 1-1

1.2 警告、小心和注意 1-1

1.3 带有标记或标签的控件和指示器的参考 1-2

2.0 安全 2-1

2.1 综述 2-1

2.2 潜在危险 2-1

2.3 安全出版物 2-3

3.0 系统介绍 3-1

3.1 综述 3-1

4.0 组件介绍 4-1

4.1 外部组件 4-1

4.2 控制面板 4-3

4.3 歧管组件 4-5

4.4 配件套件 4-9

5.0 安装 5-1

5.1 处理和拆封 5-1

5.2 安装前指南 5-2

5.3 安装说明 5-3

6.0 运行 6-1

6.1 初次启动 6-1
6.2 运行 6-3
6.3 关闭 6-3
6.4 正常启动 6-3
6.5 长期关闭 6-4
6.6 长期关闭后启动 6-4
7.0 维护 7-2
7.1 每日监查 7-2
7.2 每月监查 7-2
7.3 拆下外壳前盖 7-3
7.4 降低过滤器的压力 7-4
7.5 更换滤芯 7-5
7.6 释放制氧机的压力 7-6
7.7 调整原料空气稳压器 7-7
7.8 调整压力开关 7-8
8.0 故障处理 8-1
8.1 技术支持 8-1
8.2 故障处理表 8-1
A 附录 技术数据 A-1
B 附录 零件表 B-1
C 附录 组件文献 C-1

图示目录

图 4.1：外部组件 — 正视图 4-1
图 4.2：控制面板 — AS-B 和 AS-D 型号 4-3
图 4.3：歧管组件 — AS-B 型号 4-5
图 4.4：歧管组件 — AS-L 型号 4-6
图 5.1：常见的安装布局 5-3
图 7.1：AS-B 型号的内视图 7-4
图 7.2：AS-A – AS-D 型号的压力开关 7-9
图 A.1：标准的压力分布图和阀门循环顺序 A-14
图 A.2：常见的安装布局 A-15
图 A.3：总体布局图 — AS-A A-16
图 A.4：流程示意图 — AS-A A-17
图 A.5：电路图 — AS-A (120 V) A-18
图 A.6：电路图 — AS-A (240 V) A-19
图 A.7：总体布局图 — AS-B A-20
图 A.8：总体布局图 — AS-D A-21
图 A.9：流程示意图 — AS-B 和 AS-D A-22
图 A.10：电路图 — AS-B 和 AS-D (120 V) A-23
图 A.11：电路图 — AS-B 和 AS-D (240 V) A-24
图 A.12：总体布局图 — AS-D+ A-25
图 A.13：流程示意图 — AS-D+ A-26
图 A.14：总体布局图 — AS-E A-27
图 A.15：流程示意图 — AS-E A-28
图 A.16：总体布局图 — AS-G A-29
图 A.17：流程示意图 — AS-G A-30
图 A.18：总体布局图 — AS-J A-31

图 A.19：流程示意图 — AS-J A-32
图 A.20：总体布局图 — AS-K A-33
图 A.21：流程示意图 — AS-K A-34
图 A.22：总体布局图 — AS-L A-35
图 A.23：流程示意图 — AS-L A-36
图 A.24：总体布局图 — AS-N A-37
图 A.25：流程示意图 — AS-N A-38
图 A.26：总体布局图 — AS-P A-39
图 A.27：流程示意图 — AS-P A-40
图 A.28：电路图 — AS-D+ 到 AS-P - I A-41
图 A.29：电路图 — AS-D+ 到 AS-P – II A-42
图 A.30：电路图 — AS-D+ 到 AS-P – III A-43

1.0 综述

本说明手册将介绍 AS-A、AS-B、AS-D、AS-D+、AS-E、AS-G、AS-J、AS-K、AS-L、AS-N 和 AS-P 型号的 AirSep Corporation PSA 制氧机，以及这些制氧机的安装、操作和维护方法。本说明手册的附录还包括相关的图示和组件文献。

为确保安全地操作和适当地维护制氧机，AirSep Corporation 建议您将本说明手册放在方便易取的位置，以便随时参考。

1.1 警告、小心和注意

阅读本说明手册的过程中，请特别注意“警告”、“小心”和“注意”提示。这些提示包含安全指南和其他重要信息，具体如下：

提供防止发生严重身体伤害或死亡的信息。

关于触电风险的小心注意事项。

注意

提供需要强调或重复的重要信息。

1.2 带有标记或标签的控件和指示器的参考

本说明手册使用大写字符（例如：ON/OFF 开关）指示通过标记或标签识别的控件和指示器。括号内的数字（例如：V-2）表示手动操作流程控件（例如：手动阀）。请参阅第 4 章，了解各个制氧机型号的部件说明。

2.0 安全

2.1 综述

氧是地壳中含量最多的元素，约占 50%。在游离状态下，氧元素即形成约占空气五分之一-的氧气。尽管被归类为非易燃气体，但氧气可助燃。作为一种活性元素，它可以直接或间接地与所有元素组合，除了稀有气体元素。氧气是一种无色、无臭、无味的不可见气体。

为确保您的安全，请仔细通读并熟悉本说明手册中的这一节内容。此外，AirSep Corporation 还强烈建议您定期复习这一节内容。

2.2 潜在危险

氧气可大力促进可燃物的燃烧。在富含氧气的环境中，许多在标准空气中不会燃烧的物质只需一点微小的火花或适当的热量即可燃烧。

为降低着火或爆炸的风险，请将制氧机放在远离汽油、煤油、燃油、油脂、棉纤维、木头、油漆和其他易燃物的地方。

禁止在制氧机附近吸烟、制造明火或使用可能产生火花的电子设备（例如：手机）。

在制氧机附近显眼的位置张贴“禁止吸烟或明火”标志。

应格外小心保持所有氧气管道和容器清洁。为避免着火或爆炸，应对接触产品氧气的所有表面进行氧气清洁。使用氧气兼容的泄漏检测解决方案检查所有氧气配件是否存在泄漏情况。

为防止着火或触电，应将制氧机放在室内，并远离雨水或任何潮湿的地方。

在安装、操作或维修制氧机之前，请仔细阅读并熟悉本说明手册和本说明手册附录 D 中的组件手册。不当安装、操作或维修会导致严重的身体伤害、制氧机损坏或性能低下。

制氧机控制舱内包含电子部件，如果操作不当，这些电子部件会产生触电危险。为防止触电，请在保养制氧机之前阅读并充分理解本说明手册的“第 8 章 — 故障处理”。

AirSep 制氧机仅限于工业应用。将此设备用于任何医疗用途之前，请联系 AirSep Corporation 或经授权的 AirSep 代表。

保养制氧机之前，请先断电。

切勿断开保护性接地连接。

Cet appareil produit de l'oxygène à concentration élevée, favorisant une combustion rapide. Ne pas permettre de fumer ou des flammes nues dans la même chambre: (1) cet appareil ou (2) tout accessoire contenant de l'oxygène. Ne pas utiliser de produits à base d'huile, de graisse ou de pétrole sur ou à proximité de l'unité. Déconnecter le cordon d'alimentation de la prise électrique avant de nettoyer ou de faire l'entretien de l'unité.

Risque de choc électrique.Seuls votre fournisseur d'équipement ou un technicien de service qualifié devrait faire l'entretien de l'unité.

2.3 安全出版物

本说明手册中的安全章节并未完整地总结所有必要的安全预防措施。请阅读下列出版物，获取有关氧气安全处理的详细信息：

- "Installation of Bulk Oxygen Systems at Consumer Sites;" NFPA No. 50; National Fire Protection Association; 1 Batterymarch Park; P. O. Box 9101; Quincy, Massachusetts 02269-9101 USA.
- "Oxygen;" Pamphlet G-4; Compressed Gas Association; 1725 Jefferson Davis Highway; Arlington, Virginia 22202-4102 USA.
- "Cleaning Equipment For Oxygen Service," Pamphlet G-4.1; Compressed Gas Association; 1725 Jefferson Davis Highway; Arlington, Virginia 22202-4102 USA.

3.0 系统介绍

3.1 综述

空气包含 21% 的氧气、78% 的氮气、0.9% 的氩气和 0.1% 的其他气体。AirSep PSA 氧气设备采用独特的变压吸附 (PSA) 程序从压缩空气中分离出氧气。压缩空气先经过滤器总成，然后再进入吸附器容器。微粒过滤器会滤除原料空气中的冷凝水、油、尘埃、粉尘等，然后单独的凝聚式过滤器（安装于大部分型号中）会滤除额外的油和水蒸气。

制氧机的吸附器容器使用一种称为分子筛的惰性陶瓷材料，可将压缩空气分离为氧气和其他气体。分子筛具有独特的特性，能够以物理方式聚集或吸附压缩空气中的氮气。这样，从吸附器内排出的氧气即可作为产品气体。然后，氧气经制氧机内的流程控制阀进入氧气储罐，存储以供使用。

当一个吸附器产生氧气时，另一个吸附器就降压排出产氧周期内吸附（聚集）的废气。整个制氧过程是完全可再生的，因此设备不仅非常可靠，而且实际几乎不用维护。一般情况下，无需更换分子筛。

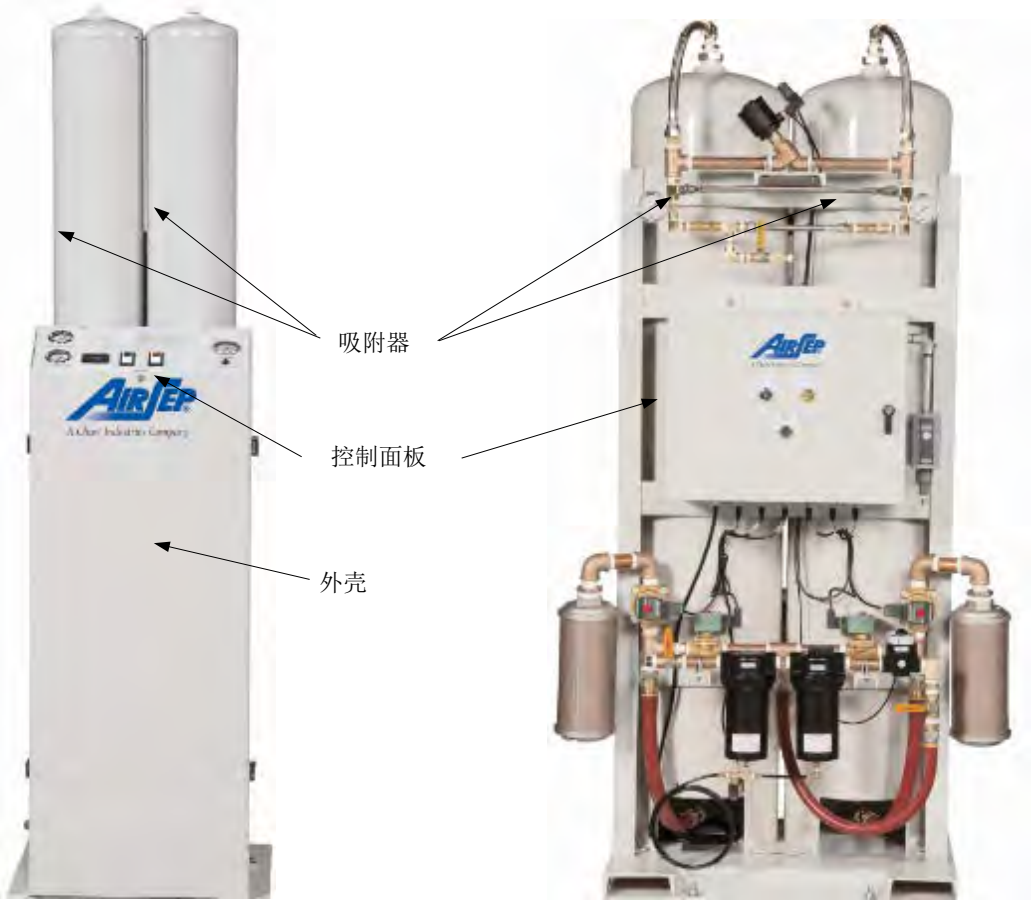
本说明手册可用作 AS-A 到 AS-P 标准型号的指南。请参阅本说明手册附录 A 中的图示，详细了解流程图、电气原理图和本说明手册提及的制氧机型号的总体布局图。

4.0 组件介绍

本章节的图示展示了各型号制氧机中主要组件的位置。除非另有说明，否则所有型号都采用类似的组件；但这些组件在各个型号内的位置和尺寸有所不同。请参阅本说明手册的附录，了解本手册提及的各个制氧机型号的总体布局图示和规格参数。此外，制氧机需要使用氧气储罐，以便在短期激增给氧量（超出制氧机的额定容量）的情况下提供稳定的流量和浓度。

4.1 外部组件

下面的图 4-1 以正视图展示了两种制氧机型号的外部组件。



AS-B 系列型号 **AS-E 系列型号**

图 4.1：外部组件 — 正视图

4.1.1 吸附器

吸附器或吸附床是指包含分子筛的容器，用于吸附（凝聚）压缩空气中的氮气，让氧气穿过，从而获得产品气体。

4.1.2 外壳

外壳的作用是保护设备的控制系统组件（例如：电路板、压力开关、保险丝和变压器）。仅 AS-A 到 AS-D 型号才有。在 AS-D+ 到 AS-P 型号的设备中，控制系统组件位于控制面板内部。

打开和/或拆卸外壳之前，应先断开电源。

电源线

电源线及其接地插头用于将制氧机连接到适当的接地插座，以便为制氧机供电。如果使用其他类型的电插头，则必须由合格的电工在电源线的末端安装适当的电插头，以便使用适当的接地电插座为制氧机供电。

保险丝座

保险丝座包含用于保护制氧机电子组件的保险丝。在 AS-D+ 到 AS-P 系列型号中，保险丝座安装在控制面板内部。

如要替换，必须使用与原保险丝类型和额定电流相同的保险丝。

4.1.3 连接件

制氧机提供如下所述的连接件。

空气入口

原料空气入口的作用是连接原料空气软管与空气压缩机。

氧气出口

氧气出口的作用是连接氧气软管与氧气储罐。

冷凝物排出口

冷凝物排出口的作用是连接冷凝物排出软管与制氧机过滤器（并不适用于所有型号）。

4.2 控制面板

制氧机的控制面板包括操作制氧机和监控制氧机运行所需的控件。标准的控制面板如图 4-2 所示。并非每种型号的制氧机都有提及的所有组件。在 AS-D+ 到 AS-P 型号中，计量表直接安装在歧管上，但计时表则安装在控制面板内部。

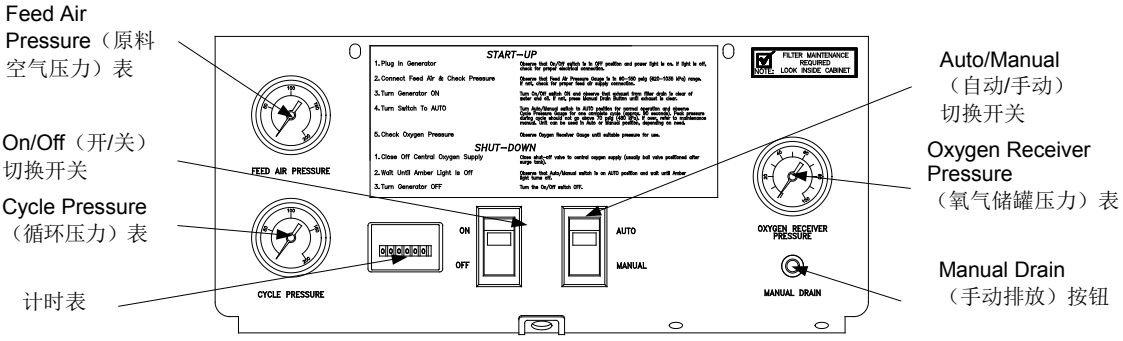


图 4.2：控制面板 — AS-B 和 AS-D 型号

On/Off（开/关）切换开关

I/O 电源开关，用于启动和停止设备运行。绿色指示灯亮，表示制氧机通电。

Auto/Manual（自动/手动）切换开关

AUTO/MANUAL（自动/手动）切换开关，用于选择制氧机的操作模式。切换到 AUTO（自动）位置时，制氧机循环会根据氧气需求量自动开关。切换到 MANUAL（手动）位置时，制氧机周期会持续循环。AUTO/MANUAL（自动/手动）切换开关的黄色指示灯仅在制氧机制氧时亮起。

Manual Drain（手动排放）按钮

制氧机使用自动阀门定期排出从原料空气中分离出的过多水分。通过 Manual Drain（手动排放）按钮，您可以在操作期间随时手动操作自动排放阀。

本地/远程切换开关（AS-D+ 到 AS-P 型号的选配件）

本地/远程操作开关的作用是在设备的本地操作和远程操作之间切换。在本地操作模式下，制氧机只能由面板上的本地开关操作。如果开关拨至远程模式，就可以向设备发送信号以启动制氧周期。在远程模式下，本地 ON/OFF（开/关）切换开关应置于 ON（开）位置，这样可以通过在本地将开关置于 OFF（关）位置来停止机器。请参阅附录

计时表（在 AS-A 型号中不可用）

计时表的作用是，指示制氧机循环的总小时数。

FEED AIR PRESSURE（原料空气压力）表（在 AS-D+ — AS-P 型号中不可用）

FEED AIR PRESSURE（原料空气压力）表的作用是，指示原料空气在稳压器之前进入制氧机的压力。

CYCLE PRESSURE（循环压力）表（在 AS-D+ — AS-P 型号中不可用）

CYCLE PRESSURE（循环压力）表的作用是，指示原料空气进入吸附器前的压力。原料空气稳压器的作用是，控制 CYCLE PRESSURE（循环压力）表上显示的压力。

吸附器压力表（仅限 AS-D+ — AS-P 型号）

吸附器压力表的作用是，指示两个吸附器内的压力。

氧气储罐/产品氧气压力表

氧气储罐/产品氧气压力表的作用是，指示氧气储罐/产品歧管出口处的氧气压力。

氧气浓度指示灯（仅作为 AS-D+ -- AS-P 型号的选配件）

此灯位于控制柜左边用于指示氧气浓度是否高于 90%。

4.3 岐管组件

下图 4-3 和 4-4 展示了制氧机的岐管组件。组件的位置和样式根据制氧机型号的不同而不同。

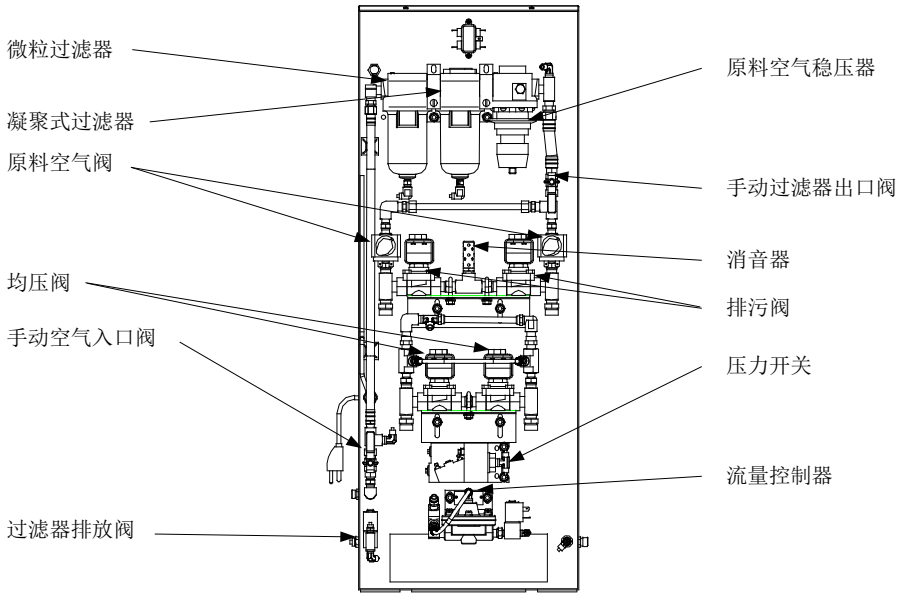


图 4.3：岐管组件 — AS-B 型号

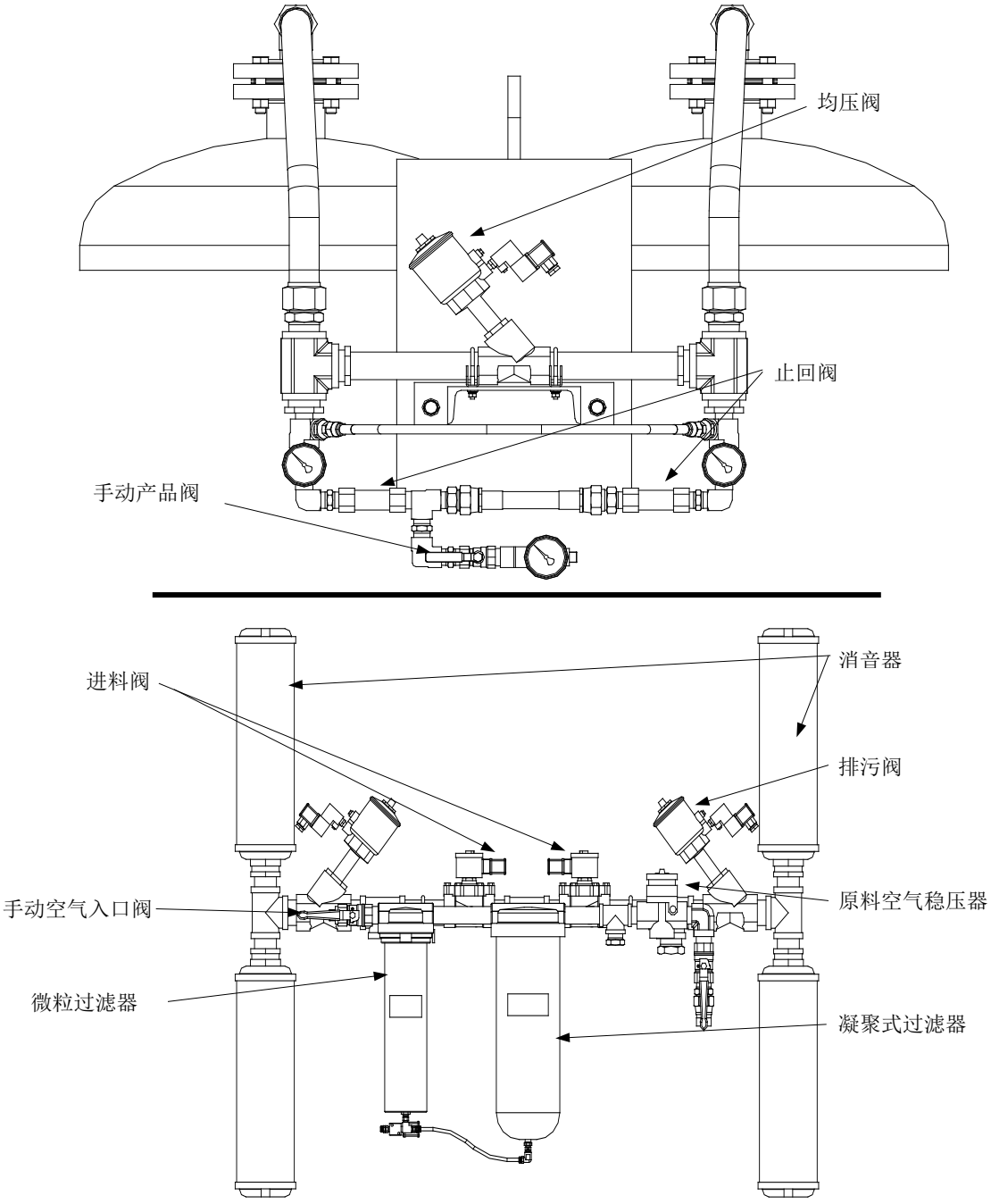


图 4.4：歧管组件 — AS-L 型号

手动入口阀

此手动阀的作用是，控制原料空气从空气压缩机到过滤器总成的流量。其名称为手动进料 #1 阀 (V-1)。

微粒过滤器（在 AS-A 型号中不可用）

微粒过滤器或预过滤器的作用是，在原料空气依次进入凝聚式过滤器和吸附器之前去除其中的微粒物质。

凝聚式过滤器

凝聚式过滤器的作用是，在原料空气进入吸附器之前去除其中的冷凝水、油蒸气和其他杂质。

原料空气稳压器

原料空气稳压器由 AirSep Corporation 工厂进行装配设置。用于控制制氧机循环的最大压力。稳压器的装配设置根据您的氧气应用需求定制。如果需要更改原料空气稳压器设置，请务必先咨询 AirSep Corporation。

注意

如果对阀门的原料空气稳压器设置的值使制氧机循环最大压力达到 80 psig 或以上，则会对吸附器内的分子筛造成严重损坏，而这将不属于 AirSep 的保修范围。

过滤器排放阀

此自动阀门通过连接到过滤器出口的管道排除过滤器内的水分。在更高系列的型号中，并未使用自动阀门，而是由 PLC 控制水分去除操作。

手动过滤器出口阀

此手动阀的作用是，控制原料空气在经过过滤器后从稳压器到自动原料空气阀之间的流量。其名称为手动进料 #2 阀(V-2)。

自动原料空气阀

自动原料空气阀的作用是，控制原料空气进入吸附器的流量。

自动排污阀

自动排污阀的作用是，控制废气从吸附器内流出的流量。

气动均压阀（仅限 AS-D+ — AS-P 型号）

气动均压阀的作用是，当产品氧气从其中一个吸附器内流出后，均衡两个吸附器内的压力。

自动产品阀

自动产品阀的作用是，控制产品氧气从吸附器内流出的流量。此阀门是 AS-D+ 到 AS-P 型号中的手动阀门，命名为手动产品阀 (V-3)。

止回阀（在 AS-D+ 型号中不可用）

止回阀的作用是确保产品气体不会倒流入吸附器。

电路板/PLC

电路板/PLC 的作用是控制循环时间，以及电磁阀和排放阀的操作顺序。

流量控制器（在 AS-A 和 AS-E — AS-P 型号中不可用）

流量控制器的作用是确保产品氧气的流量稳定一致。

压力开关

当制氧机在自动模式下运行时，压力开关的作用是监控氧气储罐内的压力。当氧气储罐内的压力增加至开关的上限设定点时，压力开关回路就会关闭，且制氧机开始定时关闭，在关闭序列的最后一步停止设备。当氧气储罐内的压力降低到开关的下限设置点时，压力开关就会打开以激活制氧机，开始氧气生产周期。如果制氧机在手动模式下运行，压力开关回路将被忽略，且制氧机循环会持续进行。

释压阀（未展示）

释压阀（每个吸附器上一个）的作用是，确保吸附器内的压力不会超出吸附器的额定最大压力。

变压器

变压器的作用是，为制氧机的电气组件提供适当的电压。

4.4 配件套件

本章节所述的物件根据订单提供。如需获取有关 AS-N 和 AS-P 配件套件的信息，请联系 AirSep Corporation 销售代表。

基本套件适用于各个型号的制氧机。下面的表格包含基本套件中的一系列物件。

型号	物件
AS-A、AS-B	空气软管（¼" x 10' 长） 氧气软管（#6 x 10' 长） 稳压器套件 Magnalube-G 管道，外径 ⅜"，尼龙材质，黑色
AS-D	空气软管（⅜" x 10' 长） 氧气软管（#6 x 10' 长） 稳压器套件 Magnalube-G 管道，外径 ⅜"，尼龙材质，黑色
AS-D+	空气软管（⅜" x 10' 长） 氧气软管（#6 x 10' 长） 稳压器套件 Magnalube-G
AS-E	空气软管（½" x 10' 长） 氧气软管（#8 x 10' 长） 稳压器套件 Magnalube-G
AS-G、AS-J	空气软管（1" x 10' 长） 氧气软管（#12 x 10' 长） 稳压器套件 Magnalube-G
AS-K、AS-L	空气软管（1" x 10' 长） 氧气软管（#16 x 10' 长） 稳压器套件 Magnalube-G

表 4.1：基本套件内的部件介绍

如需订购基本套件，请联系 AirSep Corporation 销售代表。下面的内容简要介绍了基本套件所包含的部件。

空气软管

红色的橡胶管，用于连接制氧机入口。

氧气软管

不锈钢编织软管，用于连接制氧机出口。

稳压器套件/总成

此总成包含以下物件：

- 产品氧气调压器
- 压力表
- 带消音器的排气阀（帮助排除初次启动产生的低浓度氧气。请参阅第 6 章，详细了解）

此总成应安装在氧气储罐的出口处。

Magnalube-G

润滑原料空气稳压器的油脂

除了基本套件外，另有一些其他配件供应。如下所列。

型号	物件
AS-A、AS-B	从空气压缩机到空气储罐的软管总成 (½" MPT) 用于氧气供应的软管，#6，¼" MPT 接头 空气储罐 (120 VAC ~ ±10%) 空气储罐 (220 VAC ~ ±10%) 氧气储罐 手动备用切换
AS-D、AS-D+	从空气压缩机到空气储罐的软管总成 | (½" MPT) 用于氧气供应的软管，#6，¼" MPT 接头 空气储罐 (120 VAC ~ ±10%) 空气储罐 (220 VAC ~ ±10%) 氧气储罐 手动备用切换
AS-E	从空气压缩机到空气储罐的软管总成 (½" MPT) 用于氧气供应的软管，#8，⅜" MPT 接头

	空气储罐 (120 VAC ~ ±10%) 空气储罐 (220 VAC ~ ±10%) 氧气储罐 手动备用切换
AS-G、AS-J	从空气压缩机到空气储罐的软管总成 (¾" MPT) 用于氧气供应的软管，#12，¾" MPT 接头 空气储罐 (120 VAC ~ ±10%) 空气储罐 (220 VAC ~ ±10%) 氧气储罐 手动备用切换
AS-K	从空气压缩机到空气储罐的软管总成 (1-½" MPT) 用于氧气供应的软管，#16，1" MPT 接头 空气储罐 (120 VAC ~ ±10%) 空气储罐 (220 VAC ~ ±10%) 氧气储罐
AS-L	从空气压缩机到空气储罐的软管总成 (2" MPT) 用于氧气供应的软管，#16，1" MPT 接头 空气储罐 (120 VAC ~ ±10%) 空气储罐 (220 VAC ~ ±10%) 氧气储罐

表 4.2：其他可用配件

如需获取订购信息，请联系 AirSep Corporation 销售代表。请参阅第 8 章获取联系方式。

5.0 安装

5.1 处理和拆封

AirSep Corporation 使用封闭的滑木箱包装配送制氧机。滑木箱内还包含一个配件盒（仅限 AS-A 到 AS-L 型号），其中包含适用于对应设备的所有配件，以及正确安装设备需要的说明手册。氧气储罐（如提供）使用单独的滑木箱运输。

如需拆封制氧机，请按照以下指南操作：

1) 收到货物后，立即检查并打开运输包装箱。

2) 如果外包装受到严重损坏，则应在签收之前于运货单上注明。

注意

您必须**在收货后 24 小时内**提交损坏声明。对于隐蔽或隐藏的损坏，则必须**在收货后 15 天内**提交声明。只有收货人才能提交声明。AirSep 产品保修范围**不**涵盖运输损坏。

3) 拆封设备，并拆下任何保护性包裹和包装。保留纸箱和包装，方便今后装运和运输设备。

4) 将设备直立放置，并仔细检查外壳和所有外部组件（例如：控制面板）是否有任何损坏。

5) 打开外壳或控制面板，并检查内部是否有任何部件出现松脱或损坏。

为防止触电，请务必在下列情况下断开主电源：拆卸外壳、检查内部组件，以及安装制氧机和氧气储罐。

6) 检查所有配线，确保没有线缆存在破损，且没有插入式接头从其端子上脱落。如果线缆连接断开，应根据电路示意图重新连接。

7) 检查完内部组件后，关闭外壳或设备的控制面板。

8) 找到放在配件盒内的说明手册。在安装和操作设备之前仔细阅读整本手册。

5.2 安装前指南

安装制氧机和氧气储罐（如提供）之前，请参阅本说明手册附录的规格参数部分，确定针对您的特定型号的地面空间、原料空气和电源要求。

注意

制氧机可以使用本说明手册附录部分所述规格以外的原料空气；但使用这样的原料空气可能需要 AirSep Corporation 工厂修改制氧机，才能确保产品氧气符合规格要求。请咨询您的销售代表，了解您的制氧机是否需要根据应用条件进行修改。

应将制氧机放在符合以下条件的区域：环境温度保持在 4°C (40°F) 和 44°C (112°F) 之间，以防出现 AirSep Corporation 产品保修涵盖范围之外的损坏。

为防止着火或触电，应将制氧机放在远离雨水或任何潮湿的地方。

注意

AirSep 制氧机仅限室内使用。确保放置制氧机的区域通风良好，并在设备周围留出足够的空间（至少一米[三英尺]），以便冷却空气，同时便于安全操作和维护。

切勿断开保护性接地连接：

5.3 安装说明

请参阅下方的图 5-1，了解制氧机的推荐安装布局。

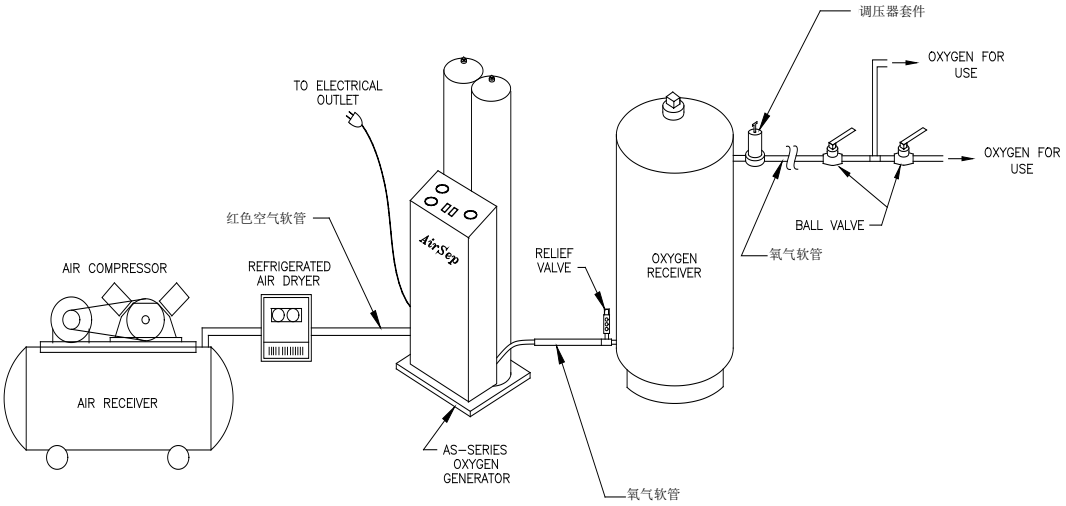


图 5.1：常见的安装布局

1) 使用制氧机配件随附的红色空气软管连接现场的空气供给装置和制氧机的原料空气进口。请参阅表 5-1，确定您的设备型号的原料空气入口连接件和原料空气软管的正确尺寸。

型号系列	原料空气入口连接件尺寸	原料空气软管尺寸
AS-A、AS-B	¼" NPT 内螺纹隔板接头和 ¼" NPT 外螺纹 x ¼" NPSM 球端接头连接器	最小内径 ¼"
AS-D	¼" NPT 内螺纹隔板接头和 ¼" NPT 外螺纹 x ⅜" NPSM 球端接头连接器	最小内径 ⅜"
AS-D+	⅜" NPT 内螺纹接头	最小内径 ⅜"
AS-E	½" NPT 内螺纹接头	最小内径 ½"
AS-G、AS-J、AS-K	¾" NPT 内螺纹接头	最小内径 ¾"
AS-L	1" NPT 内螺纹接头	最小内径 1"
AS-N、AS-P	1-½" NPT 内螺纹接头	最小内径 1-½"

表 5.1：原料空气连接件尺寸和软管尺寸

2) 安装氧气储罐。如果您的氧气储罐由 AirSep Corporation 提供，请按照以下步骤装配（如未装配）：

a) 将释压阀总成连接到氧气储罐的氧气入口（如尚未装配）。完全拧紧连接件。

b) 将氧气调压器套件连接到氧气储罐的氧气出口。完全拧紧连接件。请参阅图 A.2，了解氧气调压器套件的安装位置。

注意

使用 Teflon™ 胶带密封氧气储罐上的螺纹连接件。如果您的氧气储罐由 AirSep Corporation 提供，则配件套件中随附的螺纹连接件已使用 Teflon™ 胶带包封。

如果您的氧气储罐并非由 AirSep Corporation 提供，请确保其尺寸符合本说明手册附录指定的参数，以符合制氧机型号的要求。此外，AirSep Corporation 建议在氧气储罐的氧气入口处安装释压阀，在氧气储罐的氧气出口处安装调压器和压力表，或手动球阀和压力表。

3) 使用制氧机配件随附的氧气清洁软管连接制氧机的氧气出口连接件和氧气储罐的氧气入口处的释压阀总成。请参阅下面的表格，了解氧气出口连接件的适当尺寸。如果 AirSep Corporation 未提供软管，则请确保使用的软管尺寸适当，且能够与氧气兼容使用。

型号系列	氧气出口连接件尺寸
AS-A、AS-B、AS-D	¼" NPT 内螺纹隔板接头和 ¼" NPT 外螺纹 x B 尺寸氧气接头
AS-D+	¼" NPT 内螺纹接头
AS-E、AS-G、AS-J	⅜" NPT 内螺纹接头
AS-K、AS-L	¾" NPT 内螺纹接头
AS-N、AS-P	¾" NPT 内螺纹接头

表 5-2：氧气出口连接件尺寸

4) 将制氧机配件随附的内径为 3/8" 的尼龙管道连接到制氧机后端的冷凝物出口（在 AS-D+ 到 AS-P 型号中不可用）。

注意

确保冷凝物出口和尼龙管道永远不会堵塞。 这可能需要每天进行排放系统检查。

5) 将电源线连接到接地电插座。

通过接地插座为制氧机提供适当的电压。电压不当造成的损坏不在 AirSep Corporation 的产品保修范围内。

现在，制氧机即准备就绪，可以开始运行了。在运行制氧机之前，请先参阅本说明手册的第 6 章。

6.0 运行

按照前面章节的说明完成安装后，制氧机就准备就绪，您可以轻松启动和运行。本说明手册的这一章节将介绍启动和关闭制氧机的步骤。启动制氧机之前，请阅读并完全理解任何有关向制氧机提供原料空气的空气压缩机的介绍或说明手册。

6.1 初次启动

首次启动制氧机，或在长期或意外关闭后启动时，请按照下面的步骤操作：

1) 确保将控制面板上的 ON/OFF（开/关）切换开关设置为 *OFF*（关）。

2) 将控制面板上的 AUTO/MANUAL（自动/手动）开关设置为 *MANUAL*（手动）。

3) 将接地电源线连接到接地电插座。确保电源线路不会意外断电。

注意

如果电源意外中断，设备将停止循环。断电时，如果您的应用正在使用氧气，氧气储罐的压力就会降低。

将制氧机的插头连接到电源回路后，ON/OFF（开/关）切换开关上的绿色指示灯点亮，表示制氧机已通电。

4) 完全关闭手动进料 #2 阀 (V-2)。

5) 根据制氧机型号的指定规格参数为其提供原料空气。确保 FEED AIR PRESSURE（原料空气压力）表显示的压力值在本说明手册附录 A 所指定的原料空气压力范围内。

6) 将控制面板上的 ON/OFF（开/关）切换开关设置为 *ON*（开）。

7) 慢慢地完全打开手动进料 #2 阀 (V-2)。

8) **仅限于 AS-E 到 AS-P 型号：**关闭手动产品阀（参阅图 4-4，了解阀门的位置）。在这些设备上配置手动产品阀的目的是，在关闭时确保有预设流量的产品经过阀门。这让产品压力能够逐渐增加，即使在阀门关闭后。

9) 按下 Manual Drain（手动排放）按钮，确保从过滤器排放管排出的废物不包含水或油。如果废物包含水或油，请长按控制面板上的 Manual Drain（手动排放）按钮，直到废物不再包含液体。

排出氧气时，禁止抽烟或明火。避免让排出的氧气与布料或碳氢化合物类材料接触。

10) 让制氧机运行，直到 OXYGEN RECEIVER PRESSURE（氧气储罐压力）表的读数接近 276-310 kPa (40-45 psig)，然后完全打开手动产品阀门（AS-E 到 AS-P 型号）。

11) 制氧机在手动模式下运行时，要清除氧气储罐中浓度低于预期的氧气，请打开氧气储罐上的手动排气阀，排出氧气。打开手动排气阀不得透支制氧机。也就是说，通过氧气储罐上的手动排气阀排出的产品氧气的流速必须在指定的规格范围内。

12) 如果低浓度氧气不再从氧气储罐内排出，则完全关闭氧气储罐上的手动排气阀。

13) 将控制面板上的 AUTO/MANUAL（自动/手动）切换开关设置为 *AUTO*（自动）。

注意

制氧机循环运行时（即生产氧气），AUTO/MANUAL（自动/手动）切换开关的黄色指示灯会点亮。当设备进入待机状态时（即制氧机仍然为 *ON*（开），但未生产氧气），AUTO/MANUAL（自动/手动）切换开关上的黄色指示灯就会熄灭。

14) 注意控制面板上的 OXYGEN RECEIVER PRESSURE（氧气储罐压力）表。当氧气储罐中的压力增加到接近压力开关的上限设置点时，制氧机就会再运行五个周期，然后进入待机状态。如果产品氧气的输出将氧气储罐内的压力降低至压力开关的下限设置点，制氧机就开始循环，且 AUTO/MANUAL（自动/手动）切换开关上的黄色指示灯点亮。

注意

正常使用的情况下，制氧机内的压力开关无需调整。如需调整压力开关，请参阅本说明手册的维护章节。

15) 氧气储罐加压，且制氧机进入待机模式后，调整氧气储罐出口处的调压器，直到产品氧气的压力符合您的应用需求。

6.2 运行

制氧机可在自动或手动这两种模式下运行，具体视您的应用要求而定。为根据本说明手册的附录 A 针对您的设备型号列出的规格参数使用产品氧气，请将 AUTO/MANUAL（自动/手动）切换开关设置为 *AUTO*（自动），仅在需要使用氧气的时段生产氧气。

6.3 关闭

1) 完全关闭氧气储罐的出口与应用的入口之间的所有手动阀门，即可让产品氧气停止从氧气储罐流至您的应用。
2) 确保将控制面板上的 AUTO/MANUAL（自动/手动）切换开关设置为 *AUTO*（自动）。
3) 完全对氧气储罐重新加压。氧气储罐重新加压后，制氧机会在延迟五个周期的时间后停止循环，且 AUTO/MANUAL（自动/手动）切换开关上的黄色指示灯熄灭。

注意

让制氧机在关闭期间进入待机模式，可确保氧气储罐中的氧气在之后的重新启动期间达到预期浓度，同时也确保设备能够在循环的适当时间点关闭。如果未等到制氧机进入待机模式，会导致氧气浓度在之后的重新启动过程中暂时降低。

4) 将控制面板上的 ON/OFF（开/关）开关设置为 *OFF*（关）。
5) 将控制面板上的 AUTO/MANUAL（自动/手动）开关设置为 *MANUAL*（手动）。

6.4 正常启动

注意

要执行正常启动，首先需要按照“第 6.3 节 — 关闭”所述的步骤关闭制氧机。如果制氧机因断电而关闭，请按照“第 6.1 节 — 初次启动”所述步骤重新启动制氧机。

1) 根据对应设备型号指定的规格为制氧机提供原料空气。确保控制面板上 FEED AIR PRESSURE（原料空气压力）表显示的压力值在本说明手册附录 A 所指定的原料空气压力范围内。
2) 将控制面板上的 ON/OFF（开/关）切换开关设置为 *ON*（开）。
3) 完全打开氧气储罐出口与应用入口之间的所有手动阀门，即可让产品氧气开始从氧气储罐流至您的应用。

4) 确保过从过滤器排放管排出的废物不包含水或油。如果废物包含水或油，请按控制面板上的 Manual Drain（手动排放）按钮，直到废物不再包含液体。

5) 将控制面板上的 AUTO/MANUAL（自动/手动）切换开关设置为 *AUTO*（自动）。

6.5 长期关闭

要关闭制氧机 24 小时或更长时间，请完成“第 6.3 节 — 关闭”所述的所有步骤。此外，还需执行以下步骤：

1) 完全关闭氧气储罐上的所有手动阀门，隔离其中的氧气，以防氧气储罐内的压力损失，同时让设备能够正常启动。

2) 关闭制氧机并断电。

6.6 长期关闭后启动

长期关闭或意外关闭（例如：断电）后，您必须先排除氧气储罐内的所有低浓度氧气，然后制氧机才能提供符合浓度规格的氧气。要排除氧气储罐中的低浓度氧气，请按照“第 6.1 节 — 初次启动”所述的所有步骤操作。

以高于本手册附录 A 指定规格 15% 以上的流量使用制氧机，会导致分子筛床受到污染。这类损坏不包含在标准保修范围内。

7.0 维护

您可以对制氧机执行的最重要的维护操作是，确保过滤器的自动排放阀正常运行。定期监查此排放阀的运行状态，可确保制氧机拥有较长的使用寿命。按照本说明手册的本章节所述的步骤进行每日、半年和年度维护。请注意，子章节所述的某些步骤可能只适用于特定的型号。

根据下列图表定期执行维护：

时间周期	操作
每日	确保自动排放阀正常运行。
每月	检查过滤器和滤碗。必要时清洗滤碗或更换过滤器。
六个月	更换微粒过滤器滤芯。
每年	更换凝聚式过滤器滤芯。
	检查自动阀门和启动装置的性能。
	清洁并润滑原料空气稳压器。

表 7-1：维护表

7.1 每日监查

1) 确保冷凝物出口和排放阀管道未堵塞。当控制面板上的 ON/OFF（开/关）开关设置为 *ON*（开），且开关上的绿色指示灯亮起时，冷凝物应该每 10 分钟从此出口或管道排出一次，每次的排出时间约为三到五秒。

2) 按控制面板上的 Manual Drain（手动排放）按钮，并注意观察排放情况。排放物应快速顺畅地流动，排放时间不超出 5 秒，且没有油和水。

7.2 每月监查

每月监查要求，检查过滤器并测试自动排放阀的性能。要执行此流程，请拆下外壳的前盖、让设备减压并拆下过滤器滤碗，步骤如下。（参阅第 7.3 节 — 拆下外壳前盖、第 7.4 节 — 降低过滤器的压力，以及第 7.5 节 — 更换滤芯），拆下并清洁过滤器滤碗后，执行下列步骤：

1) 检查滤芯。更换任何出现损坏或太脏的滤芯。

2) 重新将排放管连接到滤碗底部。

3) 向滤碗加入约两盎司的水。

4) 重新安装滤碗，确保其牢固地固定到位。

5) 慢慢地完全打开手动入口阀，为滤碗加压。

6) 检查排放管道时，将控制面板上的 ON/OFF（开/关）切换开关设置为 *ON*（开），并确定自动排放阀是否会排出水分。

7) 完全关闭手动入口阀，并按照下述步骤为设备降压。（参阅第 7.4 节 — 降低过滤器的压力。）

8) 按照下面所述的步骤拆卸滤碗。（参阅第 7.5 节 — 更换滤芯。）检查水是否从滤碗中排出。

   如果滤碗内仍然有水，请参阅本说明手册的故障处理章节。如果滤碗内没有水，则重新安装滤碗，再对系统加压并按照下述步骤更换外壳前盖。（参阅第 7.5 节 — 更换滤芯。）

7.3 拆下外壳前盖

先断开制氧机的电源，然后再拆下外壳的前盖。

注意

外壳前盖的作用是保护设备组件免受损坏和灰尘污染。前盖应始终保留在外壳上，且应只在需要按照本章节所述进行维护或维修的情况下拆卸。

1) 拆下连接前盖顶部和控制面板底部的有槽螺钉。

2) 将释放杆朝设备前面拉动，释放前盖两侧的四个闩锁。

3) 小心地抓住前盖，并朝设备正面将其从设备上滑出。前盖是独立部件，所以可以搁置在任何位置。

7.4 降低过滤器的压力

制氧机过滤器包含压缩空气。要执行每月维护或安全地更换滤芯，应按照本章节所述的步骤完全释放过滤器总成的压力。要安全释放所有制氧机组件的压力，请参阅本章节后面部分所述的步骤。（参阅第 7.6 节 — 释放制氧机的压力。）

1) 确保 AUTO/MAN（自动/手动）切换开关设置为 *AUTO*（自动），以便在氧气储罐完全加压后停止制氧机制氧。

2) 将 ON/OFF（开/关）切换开关设置为 *OFF*（关）。

3) 断开制氧机的电源。

4) 拆下外壳的前盖（如适用）。（参阅第 7.3 节 — 拆下外壳前盖。）

5) 完全关闭手动入口阀 (V-1) 和手动过滤器出口阀 (V-2)。

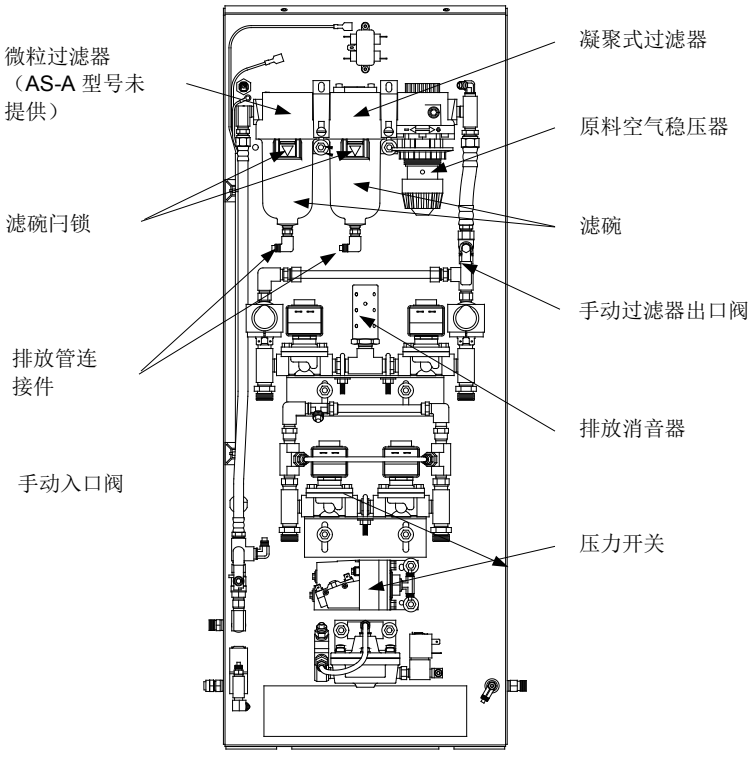


图 7.1：AS-B 型号的内视图

6) 关闭空气压缩机或集气管中原料空气的供应。

7) 重新安装外壳的前盖（如适用）。

8) 重新为制氧机接通电源。

9) 按下控制面板上的 Manual Drain（手动排放）按钮，直到 CYCLE PRESSURE（循环压力）表的读数为零，或排放管不再有空气排出。

注意

如果压力表未降低为零，应关闭设备，并致电 AirSep Corporation 的商用产品部门。

10) 将控制面板上的 ON/OFF（开/关）开关设置为 *OFF*（关）。

7.5 更换滤芯

下列程序描述了半年更换微粒过滤器（AS-A 型号未提供）滤芯或每年更换凝聚式过滤器滤芯的方法。

1) 降低过滤器总成的压力，并关闭制氧机。（参阅第 7.4 节 — 降低过滤器的压力。）

仅在过滤器总成按照第 7.4 节所述完全降压后，才能尝试拆下滤碗。

2) 设备降压和断开电源后，拆下外壳的前盖。（参阅第 7.3 节 — 拆下外壳前盖。）

3) 要从过滤器中拆下滤碗，请向下推滤碗闩锁，然后轻轻地左右旋转并下拉滤碗。如果滤碗有螺丝钉，请将其拧松。

4) 拆下滤碗后，从滤碗底部取下排放管。对于带有螺丝钉的过滤器型号，可能有防松螺母，必须将其取下才能拆卸滤芯。

5) 使用温肥皂水清洗滤碗，然后将其冲洗干净。

6) 轻轻地旋开旧滤芯，并将其丢弃。

7) 如果更换凝聚式过滤器滤芯，请拆下并丢弃滤芯顶部与过滤器壳连接处的黑色垫圈。

8) 如果更换凝聚式过滤器滤芯，请确保将黑色垫圈安装到新滤芯的顶部。

9) 注意不要碰到新滤芯的过滤部分，将其旋入取出旧滤芯的位置。

10) 重新将排放管连接到滤碗底部。

11) 重新安装滤碗，确保其牢固地锁定到位。

12) 慢慢地完全打开手动入口阀和手动过滤器出口阀。

13) 打开空气压缩机或集气管中原料空气的供应。

14) 重新安装外壳的前盖。

15) 为制氧机接通电源。

16) 将控制面板上的 ON/OFF（开/关）切换开关设置为 *ON*（开），运行制氧机。

7.6 释放制氧机的压力

制氧机的运行涉及压缩空气和氧气。要安全地对设备进行维护，应按照本章节所述的步骤完全释放制氧机组件的压力。

1) 关闭制氧机并断开电源。（请参阅第 6.3 节 — 关闭。）

2) 拆下外壳的前盖。（请参阅第 7.3 节 — 拆下外壳前盖）（不适用于 AS-D+ – AS-P 型号）

3) 完全关闭手动过滤器出口阀（AS-A – AS-D 型号）或手动进料 #2 阀 (V-2)，以及手动产品阀 (V-3)（AS-D+-AS-P 型号）。

4) 重新安装外壳的前盖（如适用）。

5) 为制氧机接通电源。

6) 将 ON/OFF（开/关）切换开关设置为 *ON*（开），将 AUTO/MAN（自动/手动）切换开关设置为 *MAN*（手动）。

7) 让设备运行，直到气体不再从消音器中排出，且 FEED AIR（原料空气）压力表和 CYCLE PRESSURE（循环压力）表的读数均显示为零。

注意

要完全释放制氧机组件的压力，请按照第 7.4 节所述的过滤器总成释压步骤 2-9 操作。

注意

如果压力表读数未降低为零，请关闭设备，并致电 AirSep Corporation 的商用产品部门。

8) 如有需要，在设备释放压力后断电并继续进行维护。

7.7 调整原料空气稳压器

进行任何维护后，原料空气稳压器可能需要重新调整。重新调整期间，切勿更改原料空气稳压器的设置。

注意

如果对阀门的原料空气稳压器设置的值使制氧机循环最大压力达到 80 psig 或以上，则会对吸附器内的分子筛造成严重损坏，而这将不属于 AirSep 的保修范围。

如果原料空气稳压器需要调整，请执行以下步骤。适用时，拆下外壳的前盖，即可看见稳压器。（参阅第 7.3 节 — 拆下外壳前盖。）

执行这一步骤时，请务必格外小心，因为这需要在设备通电时拆下外壳的前盖。

1) 拧开调节旋钮上的防松螺母。

2) 要增加原料空气的压力，请顺时针旋转此旋钮。要减小原料空气的压力，请逆时针旋转此旋钮。

注意

原料空气稳压器刻度盘上显示的数字不会始终与系统内实际的循环压力确切相符。调整稳压器时，始终以循环压力表作为依据。

注意

作出略微调整后，先让设备运行至少一个周期，然后再作出其他调整。循环完成后，如果压力读数仍然不正确，应继续进行略微地调整，并运行设备周期，直到压力读数在附录 A 所列的规格范围内。

7.8 调整压力开关

在 AUTO（自动）模式下，压力开关的作用是控制制氧机的启动和停止。当氧气储罐中的压力增加到接近压力开关的上限设置点时，制氧机就会再运行五个周期，然后进入待机状态。此时，AUTO/MANUAL（自动/手动）切换开关上的黄色指示灯就会熄灭。如果产品氧气的输出将氧气储罐内的压力降低至压力开关的下限设置点，制氧机就开始循环，且 AUTO/MANUAL（自动/手动）切换开关上的黄色指示灯点亮。

尽管在 AirSep Corporation 工厂预设了最小和最大的特定压力，但如果氧气储罐内的氧气压力读数不在指定的范围内，仍然需要调整压力开关。需要时，按照本章节的步骤调整压力开关设置。

执行这一步骤时，请务必格外小心，因为这需要在设备通电时拆下外壳的前盖。

AS-A – AS-D 制氧机

通常，压力开关的常开触点用于接线目的。请参阅图 7.2，了解以下调整步骤：

1) 如果在进行调整（信号设置）时，压力开关安装到了最终应用系统，则确保在对该开关进行测试操作时不会影响其他设备。

2) 拆下开关护盖（如有）。

3) 顺时针旋转开关顶部的调校螺母，直到设置指示器完全到达上部。尽可能顺时针旋转开关正面的不感区调节旋钮。请参阅图 7.2。

注意

调校螺母和调节旋钮可以轻松旋转，直到停止点。切勿过度扭转。过度扭转可能导致损坏。

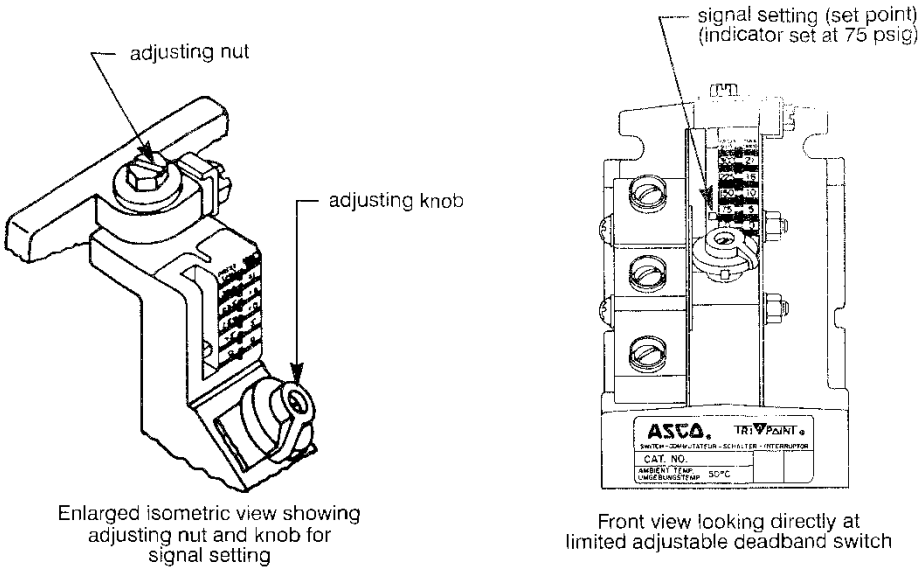


图 7.2：AS-A – AS-D 型号的压力开关

4) 按照以下图表中的步骤操作，进行信号设置。

调整步骤	常开	
	到开关的电气连接	测试灯的位置 开-关
1. 从零信号开始，将测试灯连接到共接点。	常开端子	关（开路）
2. 应用需要的启动信号。然后反向（逆时针）旋转顶部调校螺母，直到开关启动（设置点增加）。	常开端子	开（闭路）
3. 将信号降低为需要的重启信号。然后逆时针旋转不感区调节旋钮，直到开关重启（设置点降低）。	常开端子	关（开路）

表 7.2：信号设置表

5) 在两个期望信号之间循环，并根据需要微调调校螺母和调节旋钮，以获得准确的设置点。

6) 设置后，进行永久性电气连接。

注意

如果开关在调整时未安装到最终应用系统，则在安装到最终应用系统时应进行再次测试。按照调整说明操作。确保在测试开关操作时不会影响其他设备。

AS-D+ - AS-P 制氧机

注意

请参阅本说明手册的附录 D，了解有关压力开关的其他信息。

1) 将制氧机控制面板上的 ON/OFF（开/关）切换开关设置为 ON（开）。

2) 打开外壳的前盖，并找到压力开关。（在 AS-E – AS-L 型号中，压力开关安装在控制面板的侧边。）

找到分别用于上限压力设置和下限压力设置的两个调节螺钉。使用 ¼ 英寸的扳手或螺丝刀进行调整。

注意

调节螺钉需要的旋转幅度通常不超过 ¼ 转。

注意

将上限调节螺钉或下限调节螺钉顺时针旋转 ¼ 转即可增加其压力设置。逆时针旋转这两个螺钉即可降低其压力设置。

为防止损坏压力开关，切勿强行旋转调节螺钉至超出其停止点。

3) 将制氧机控制面板上的 AUTO/MAN（自动/手动）切换开关设置为 *AUTO*（自动）。

4) 关闭氧气储罐上的氧气出口阀。（此阀门的作用是控制氧气从储罐流向应用的流量）。

5) 检查 AUTO/MAN（自动/手动）切换开关。如果开关上的黄色指示灯熄灭，即表示制氧机停循环，应注意 OXYGEN RECEIVER PRESSURE（氧气储罐压力）表上的压力。如果制氧机在定时的五个周期结束后继续循环，且黄色指示灯在氧气储罐的压力超出压力开关的最大设置压力时仍然亮起，请执行步骤 8。如果制氧机在接近压力开关的最大设置压力时（定时的五个周期结束后）停止循环，请执行步骤 9。否则执行步骤 6。

注意

制氧机的一个周期只包含特定步骤（例如：吸附床 A 加压）重复一次所需要的时间。

6) 将上限压力调节螺钉顺时针旋转 ¼ 转，增加压力设置。

7) 重复步骤 5。

8) 将上限压力调节螺钉逆时针旋转 ¼ 转，降低压力设置。

注意

如果制氧机在定时的五个周期后停止循环，则执行步骤 9。如果制氧机在五个周期后未停止循环，则重复步骤 8。

9) 打开氧气储罐上的氧气排气阀。

10) 查看制氧机控制面板上的 AUTO/MAN（自动/手动）切换开关。如果开关上的黄色指示灯亮起，即表示制氧机开始循环，应注意 OXYGEN RECEIVER PRESSURE（氧气储罐压力）表上的压力。当氧气储罐中的氧气压力降低至压力开关的最小设置压力时，如果制氧机未开始循环，则执行步骤 13。如果制氧机在氧气压力保持高于压力开关的最小设置压力时开始循环，则执行步

骤 11。如果制氧机在接近压力开关的最小设置压力时开始循环，则压力开关调整适当。执行步骤 15。

11) 将下限压力调节螺钉逆时针旋转 ¼ 转，降低压力设置。

12) 重复步骤 10。

13) 以 ¼ 转的增量慢慢地顺时针旋转下限压力调节螺钉，直到制氧机开始循环，且 AUTO/MAN（自动/手动）切换开关上的黄色指示灯亮起。

14) 重复完整的步骤，直到获得需要的设置。

15) 完全关闭氧气储罐上的氧气排气阀。

16) 关闭外壳的前盖，并恢复制氧机的正常运行。

8.0 故障处理

8.1 技术支持

如需获取有关故障处理或维修设备的帮助，或订购替换部件，请于东部时间周一到周五早上 7:30 到下午 4:30 拨打以下电话 联系 AirSep 商用产品服务部门。美国或加拿大：拨打400-9937-99。查询信函寄送地址：

AirSep Corporation
260 Creekside Drive
Buffalo
NY 14228-2075 USA（美国）
Attention：Commercial Products Service Department

电子邮箱：customerservice.china@chartindustries.com

访问 **www.airsep.com**，了解我们全系列的标准制氧机。

8.2 故障处理表

按照下列图表处理制氧机故障。

问题	可能的原因	解决方案
制氧机未进行制氧循环。ON/OFF（开/关）切换开关上的绿色指示灯未亮起。	设备的控制舱未通电或保险丝熔断。	确保将设备插入壁式插座，且壁式插座有电。
	设备的保险丝熔断。	更换设备中的保险丝。
制氧机运行。ON/OFF（开/关）切换开关上的绿色指示灯未亮起。	ON/OFF（开/关）切换开关上的指示灯烧坏。	更换开关。
	与开关连接的线缆松脱或故障。	维修或更换线缆。
制氧机未运行，但 ON/OFF（开/关）切换开关上的绿色指示灯亮起。AUTO/MAN（自动/手动）切换开关设置为 *MAN*（手动），但 AUTO/MAN（自动/手动）切换开关上的黄色指示灯未亮起。	将 ON/OFF（开/关）切换开关设置为 OFF（关）。	将 ON/OFF（开/关）切换开关设置为 *ON*（开）。
	ON/OFF（开/关）切换开关损坏。	更换开关。
	连接电路板/PLC 的电源线	维修或更换线缆。

问题	可能的原因	解决方案
	松脱或损坏。	
	电路板/PLC 故障。	更换电路板/PLC。
	低电压。	检查电源。
制氧机在 AUTO/MAN（自动/手动）切换开关设置为 *MAN*（手动）的情况下运行循环。但 AUTO/MAN（自动/手动）切换开关上的黄色指示灯未亮起。	AUTO/MAN（自动/手动）切换开关的灯泡烧坏。	更换开关。
	与开关连接的线缆松脱或故障。	维修或更换线缆。
	电路板/PLC 故障。	更换电路板/PLC。
制氧机未运行，但 ON/OFF（开/关）切换开关上的绿色指示灯亮起。AUTO/MAN（自动/手动）切换开关上的黄色指示灯未亮起，且开关设置为 *AUTO*（自动）。氧气压力低于氧气开关的下限设置点。	将 ON/OFF（开/关）切换开关设置为 *OFF*（关）。	将 ON/OFF（开/关）切换开关设置为 *ON*（开）。
	ON/OFF（开/关）切换开关损坏。	更换开关。
	连接电路板的电源线松脱或损坏。	维修或更换线缆。
	压力开关设置不当。	按第 7 章所述调整压力开关。
	压力开关故障。	更换压力开关。
	电路板/PLC 故障。	更换电路板/PLC。
制氧机持续运行。AUTO/MAN（自动/手动）切换开关上的黄色指示灯亮起，且开关设置为 *AUTO*（自动）。氧气压力超出压力开关的上限设置点。	压力开关设置不当。	按第 7 章所述调整压力开关。
	压力开关故障。	更换压力开关。
	连接压力开关的电源线松脱或损坏。	维修或更换线缆。
	AUTO/MAN（自动/手动）切换开关故障。	更换开关。
	电路板/PLC 故障。	更换电路板/PLC。
制氧机持续运行。特定浓度的氧气压力低于压力开关的下限设置点。	原料空气压力不够。	确保原料空气阀保持完全打开，且管道未堵塞。

问题	可能的原因	解决方案
	循环压力不够。	调整或更换原料空气稳压器。
	氧气需求超出制氧机的生产能力。	检查氧气使用情况，或检查设备和氧气软管和管道是否有泄漏情况。
氧气浓度未达到规定的浓度(50 – 70%)。	在初次启动期间产生的低浓度氧气。	按第 6 章所述启动设备。
	设备长时间关闭 — 氧气系统内没有压力。	按第 6 章所述启动设备。
	瞬时断电。	按照第 6 章所述排除系统内的低浓度氧气。
	原料空气不够。	检查空气管道是否堵塞，或调整或更换原料空气稳压器。
	阀门未正常循环。	参阅附录 A 中的阀门顺序。
	电路板/PLC 故障或布线不当。	检查布线或更换电路板/PLC。
	阀门隔膜撕裂	找到损坏的阀门，并将其修复。
	电磁阀未正确运行。检查是否是下列原因：	
	线圈损坏。	更换线圈。
	与阀门连接的线缆松脱或损坏。	维修或更换线缆。
	电路板/PLC 故障（没有电源输出到阀门。）	更换电路板/PLC。
	阀门保持通电且打开。	检查阀门或电路板/PLC。
	阀门故障。	修复阀门
	阀门内部零件破损。	修复阀门
阀门发出较大的“震颤”噪音。	低电压。	检查电源。
	低电压电路板/PLC 输出。	更换电路板/PLC。
	阀门脏了。	清洁或修复阀门。
	阀芯磨损。	修复阀门
	EMI 过滤器故障。	更换 EMI 过滤器。
输出的氧气浓度非常低(21 – 50%)。	止回阀泄漏。	清洁或更换止回阀。
	消音器堵塞。	更换消音器。
	吸附器内的分子筛受到污染。	更换分子筛。
制氧机输出微粒（粉尘）。	原料空气稳压器设置不当。	调节原料空气稳压器。

问题	可能的原因	解决方案
	吸附器内的分子筛受到污染。	吸附器内的分子筛受到污染。
	系统未正确循环。	检查并维修或更换存在故障的线缆和/或电路板。
原料空气稳压器的排放孔泄漏。	原料空气稳压器的主阀门总成被卡住。	清洁并润滑稳压器主阀门总成。
	主阀门总成底座故障。	修复或更换稳压器。
制氧机释压阀打开。	循环压力超出规定的最大压力。	调节原料空气稳压器。
	原料空气稳压器的主阀门总成被卡住。	修复或更换稳压器。
	原料空气稳压器的主阀门总成被冻住。	确保环境温度在 40 °F 以上。
	循环压力表故障。	更换压力表并调整原料空气稳压器。
	释压阀故障。	更换释压阀。
过滤器排放阀保持打开（阀门未通电。）	阀门堵塞。	清洁或更换阀门。
过滤器排放阀保持通电。	MANUAL DRAIN（手动排放）阀按钮被卡住。	更换按钮。
	电路板故障。	更换电路板。
过滤器排放阀未通电。	MANUAL DRAIN（手动排放）阀按钮故障。	更换按钮。
	与阀门连接的线缆松脱或损坏。	维修或更换线缆。
	阀门线圈故障。	更换阀门。
	阀芯卡在闭合位置。	更换阀门。
	电路板/PLC 故障（没有电源输出到阀门。）	更换电路板/PLC。
过滤器排放阀通电，且设备加压，但没有空气排出。	排放阀堵塞或卡在闭合位置。	清洁或更换阀门。
	排放管道堵塞或被挤压。	清洁或更换管道。

A 附录 技术数据

规格参数

本章节的数据涉及 AS-A 到 AS-P 标准型号的制氧机。制氧机可以使用本章节所示规格以外的原料空气；但使用这样的原料空气可能需要 AirSep Corporation 工厂修改制氧机，才能确保产品氧气符合规格要求。请咨询您的销售代表，了解您的制氧机是否需要根据应用条件进行修改。

通过接地插座为制氧机提供适当的电压。主电源电压的波动范围不得超出额定电源电压的 10%。

AS-A	
氧气流量	20 – 25 SCFH* 0.53 – 0.66 Nm3/hr* 9 – 11 LPM*
氧气压力	45 – 50 psig* 310 – 345 kPa* 3.0 – 3.4 barg*
氧气浓度	Up to 95%
氧气露点温度	-100°F (-73°C)
尺寸(W x D x H)（名义）	13 x 11 x 56 in (33 x 28 x 142 cm)
重量	140 lb (64 kg)
物理连接** **压缩空气进气口** **氧气排气口**	 ¼” FNPT x ¼ NPSM ¼” FNPT x JIC-8
运行环境条件	将制氧机置于不受天气影响的，通风良好的，且保持在 40°F (4°C) 到 104°F (40°C)的环境中
原料空气要求	
压力（最小）	90 psig 621 kPa 6.2 barg
温度（最高）	122° F（50° C）
原料空气调压阀设置***	70 – 75 psig 483 – 517 kPa 4.8 – 5.1 barg
控制电源要求 （单相）	120 V ~ ±10%, 50/60 Hz, 1.0 A 220 V ~±10%, 50/60 Hz, 0.5 A
压力开关设置***	
（最小）	46 – 48 psig 317 – 331 kPa 3.1 – 3.3 barg
（最大）	54 – 56 psig 372 – 386 kPa 3.7 – 3.8 barg
其它规格参数 **污染等级** **安装类别** **海拔**	 2 II 2000 m

*SCF（标准立方英尺）气体的测量条件为：1 个大气压和 70°F。Nm3（标准立方米）气体的测量条件为：1 个大气压和 0°C。LPM（升每分钟）气体的测量条件为：1 个大气压和 21°C。

**查看控制面板上的标签，了解正确的电源参数。

***数据可能根据客户的要求而不同。

AS-B	
氧气流量	45 – 55 SCFH* 1.18 – 1.45 Nm^3/hr* 21 – 25 LPM*
氧气压力	45 – 55 psig* 310 – 379 kPa* 3.0 – 3.7 barg*
氧气浓度	Up to 95%
氧气露点温度	-100°F (-73°C)
尺寸(W x D x H)（名义）	17 x 15 x 58 in (43 x 38 x 147 cm)
重量	246 lb (112 kg)
物理连接** **压缩空气进气口** **氧气排气口**	 ¼" FNPT ¼" FNPT
运行环境条件	将制氧机置于不受天气影响的，通风良好的，且保持在 40°F (4°C) 到 104°F (40°C)的环境中
原料空气要求	
压力（最小）	90 psig 621 kPa 6.2 barg
温度（最高）	122°F (50°C)
原料空气调压阀设置***	70 – 75 psig 483 – 517 kPa 4.8 – 5.1 barg
控制电源要求 （单相）	120 V ~ ±10%, 50/60 Hz, 1.0 A 220 V ~ ±10%, 50/60 Hz, 0.5 A
压力开关设置***	
（最小）	46 – 48 psig 317 – 331 kPa 3.1 – 3.3 barg
（最大）	54 – 56 psig 372 – 386 kPa 3.7 – 3.8 barg
其它规格参数 **污染等级** **安装类别** **海拔**	 2 II 2000 m

*SCF（标准立方英尺）气体的测量条件为：1 个大气压和 70°F。Nm3（标准立方米）气体的测量条件为：1 个大气压和 0°C。LPM（升每分钟）气体的测量条件为：1 个大气压和 21°C。

**查看控制面板上的标签，了解正确的电源参数。

***数据可能根据客户的要求而不同。

AS-D	
氧气流量	80 – 90 SCFH* 2.10 – 2.37 Nm^3/hr* 37 – 42 LPM*
氧气压力	45 – 55 psig* 310 – 379 kPa* 3.0 – 3.7 barg*
氧气浓度	Up to 95%
氧气露点温度	-100°F (-73°C)
尺寸(W x D x H)（名义）	20 x 16 x 60 in (51 x 41 x 152 cm)
重量	361 lb (164 kg)
物理连接** **压缩空气进气口** **氧气排气口**	 ¼" FNPT ¼" FNPT
运行环境条件	将制氧机置于不受天气影响的，通风良好的，且保持在 40°F (4°C) 到 104°F (40°C)的环境中
原料空气要求	
压力（最小）	90 psig 621 kPa 6.2 barg
温度（最高）	122°F (50°C)
原料空气调压阀设置***	70 – 75 psig 483 – 517 kPa 4.8 – 5.1 barg
控制电源要求 （单相）	120 V ~ ±10%, 50/60 Hz, 1.0 A 220 V ~ ±10%, 50/60 Hz, 0.5 A
压力开关设置***	
（最小）	46 – 48 psig 317 – 331 kPa 3.1 – 3.3 barg
（最大）	54 – 56 psig 372 – 386 kPa 3.7 – 3.8 barg
其它规格参数 **污染等级** **安装类别** **海拔**	 2 II 2000 m

*SCF（标准立方英尺）气体的测量条件为：1 个大气压和 70°F。Nm3（标准立方米）气体的测量条件为：1 个大气压和 0°C。LPM（升每分钟）气体的测量条件为：1 个大气压和 21°C。

**查看控制面板上的标签，了解正确的电源参数。

***数据可能根据客户的要求而不同。

AS-D+	
氧气流量	80 – 100 SCFH* 2.10 – 2.63 Nm^3/hr* 37 – 47 LPM*
氧气压力	45 – 65 psig* 310 – 448 kPa* 3.0 – 4.4 barg*
氧气浓度	Up to 95%
氧气露点温度	-100°F (-73°C)
尺寸(W x D x H)（名义）	27 x 22 x 69 in (69 x 56 x 175 cm)
重量	498 lb (226 kg)
物理连接** **压缩空气进气口** **氧气排气口**	 ⅜" FNPT ¼" FNPT
运行环境条件	将制氧机置于不受天气影响的，通风良好的，且保持在 40°F (4°C) 到 104°F (40°C)的环境中
原料空气要求	
压力（最小）	90 psig 621 kPa 6.2 barg
温度（最高）	122°F (50°C)
原料空气调压阀设置***	70 – 75 psig 483 – 517 kPa 4.8 – 5.1 barg
控制电源要求 （单相）	120 V ~ ±10%, 50/60 Hz, 3.0 A 220 V ~±10%, 50/60 Hz, 1.0 A
压力开关设置***	
（最小）	65 – 70 psig 448 – 483 kPa 4.4 – 4.8 barg
（最大）	72 – 75 psig 496 – 517 kPa 4.9 – 5.1 barg
其它规格参数 **污染等级** **安装类别** **海拔**	 2 II 2000 m

*SCF（标准立方英尺）气体的测量条件为：1 个大气压和 70°F。Nm3（标准立方米）气体的测量条件为：1 个大气压和 0°C。LPM（升每分钟）气体的测量条件为：1 个大气压和 21°C。

**查看控制面板上的标签，了解正确的电源参数。

***数据可能根据客户的要求而不同。

AS-E	
氧气流量	160 – 195 SCFH* 4.21 – 5.13 Nm^3/hr* 75 – 92 LPM*
氧气压力	45 – 65 psig* 310 – 448 kPa* 3.0 – 4.4 barg*
氧气浓度	Up to 95%
氧气露点温度	-100°F (-73°C)
尺寸(W x D x H)（名义）	33 x 27 x 68 in (84 x 69 x 173 cm)
重量	721 lb (327 kg)
物理连接** **压缩空气进气口** **氧气排气口**	 ½" FNPT ⅜" FNPT
运行环境条件	将制氧机置于不受天气影响的，通风良好的，且保持在 40°F (4°C) 到 104°F (40°C)的环境中
原料空气要求	
压力（最小）	90 psig 621 kPa 6.2 barg
温度（最高）	122°F (50°C)
原料空气调压阀设置***	70 – 75 psig 483 – 517 kPa 4.8 – 5.1 barg
控制电源要求 （单相）	120 V ~ ±10%, 50/60 Hz, 3.0 A 220 V ~ ±10%, 50/60 Hz, 1.0 A
压力开关设置***	
（最小）	65 – 70 psig 448 – 483 kPa 4.4 – 4.8 barg
（最大）	72 – 75 psig 496 – 517 kPa 4.9 – 5.1 barg
其它规格参数 **污染等级** **安装类别** **海拔**	 2 II 2000 m

*SCF（标准立方英尺）气体的测量条件为：1 个大气压和 70°F。Nm3（标准立方米）气体的测量条件为：1 个大气压和 0°C。LPM（升每分钟）气体的测量条件为：1 个大气压和 21°C。

**查看控制面板上的标签，了解正确的电源参数。

***数据可能根据客户的要求而不同。

AS-G	
氧气流量	250 – 320 SCFH* 6.57 – 8.41 Nm^3/hr* 117 – 151 LPM*
氧气压力	45 – 65 psig* 310 – 448 kPa* 3.0 – 4.4 barg*
氧气浓度	Up to 95%
氧气露点温度	-100°F (-73°C)
尺寸(W x D x H)（名义）	36 x 29 x 75 in (91 x 74 x 191 cm)
重量	956 lb (434 kg)
物理连接** **压缩空气进气口** **氧气排气口**	 ¾" FNPT ³ / ₈" FNPT
运行环境条件	将制氧机置于不受天气影响的，通风良好的，且保持在 40°F (4°C) 到 104°F (40°C)的环境中
原料空气要求	
压力（最小）	90 psig 621 kPa 6.2 barg
温度（最高）	122°F (50°C)
原料空气调压阀设置***	70 – 75 psig 483 – 517 kPa 4.8 – 5.1 barg
控制电源要求 （单相）	120 V ~ ±10%, 50/60 Hz, 3.0 A 220 V ~ ±10%, 50/60 Hz, 1.0 A
压力开关设置***	
（最小）	65 – 70 psig 448 – 483 kPa 4.4 – 4.8 barg
（最大）	72 – 75 psig 496 – 517 kPa 4.9 – 5.1 barg
其它规格参数 **污染等级** **安装类别** **海拔**	 2 II 2000 m

*SCF（标准立方英尺）气体的测量条件为：1 个大气压和 70°F。Nm3（标准立方米）气体的测量条件为：1 个大气压和 0°C。LPM（升每分钟）气体的测量条件为：1 个大气压和 21°C。

**查看控制面板上的标签，了解正确的电源参数。

***数据可能根据客户的要求而不同。

AS-J	
氧气流量	450 – 600 SCFH* 11.83 – 15.77 Nm^3/hr* 212 – 283 LPM*
氧气压力	45 – 65 psig* 310 – 448 kPa* 3.0 – 4.4 barg*
氧气浓度	Up to 95%
氧气露点温度	-100°F (-73°C)
尺寸(W x D x H)（名义）	42 x 34 x 78 in (107 x 86 x 198 cm)
重量	1,771 lb (803 kg)
物理连接** **压缩空气进气口** **氧气排气口**	 ¾" FNPT 3 / 8" FNPT
运行环境条件	将制氧机置于不受天气影响的，通风良好的，且保持在 40°F (4°C) 到 104°F (40°C)的环境中
原料空气要求	
压力（最小）	90 psig 621 kPa 6.2 barg
温度（最高）	122°F (50°C)
原料空气调压阀设置***	70 – 75 psig 483 – 517 kPa 4.8 – 5.1 barg
控制电源要求 （单相）	120 V ~ ±10%, 50/60 Hz, 3.0 A 220 V ~ ±10%, 50/60 Hz, 1.0 A
压力开关设置***	
（最小）	65 – 70 psig 448 – 483 kPa 4.4 – 4.8 barg
（最大）	72 – 75 psig 496 – 517 kPa 4.9 – 5.1 barg
其它规格参数 **污染等级** **安装类别** **海拔**	 2 II 2000 m

*SCF（标准立方英尺）气体的测量条件为：1 个大气压和 70°F。Nm3（标准立方米）气体的测量条件为：1 个大气压和 0°C。LPM（升每分钟）气体的测量条件为：1 个大气压和 21°C。

**查看控制面板上的标签，了解正确的电源参数。

***数据可能根据客户的要求而不同。

AS-K	
氧气流量	750 – 900 SCFH* 19.72 – 23.66 Nm^3/hr* 353 – 424 LPM*
氧气压力	45 – 65 psig* 310 – 448 kPa* 3.0 – 4.4 barg*
氧气浓度	Up to 95%
氧气露点温度	-100°F (-73°C)
尺寸(W x D x H)（名义）	58 x 38 x 91 in (147 x 97 x 231 cm)
重量	2,690 lb (1,220 kg)
物理连接** **压缩空气进气口** **氧气排气口**	 ¾" FNPT ¾" FNPT
运行环境条件	将制氧机置于不受天气影响的，通风良好的，且保持在 40°F (4°C) 到 104°F (40°C)的环境中
原料空气要求	
压力（最小）	90 psig 621 kPa 6.2 barg
温度（最高）	122°F (50°C)
原料空气调压阀设置***	70 – 75 psig 483 – 517 kPa 4.8 – 5.1 barg
控制电源要求 （单相）	120 V ~ ±10%, 50/60 Hz, 3.0 A 220 V ~ ±10%, 50/60 Hz, 1.0 A
压力开关设置***	
（最小）	65 – 70 psig 448 – 483 kPa 4.4 – 4.8 barg
（最大）	72 – 75 psig 496 – 517 kPa 4.9 – 5.1 barg
其它规格参数 **污染等级** **安装类别** **海拔**	 2 II 2000 m

*SCF（标准立方英尺）气体的测量条件为：1 个大气压和 70°F。Nm3（标准立方米）气体的测量条件为：1 个大气压和 0°C。LPM（升每分钟）气体的测量条件为：1 个大气压和 21°C。

**查看控制面板上的标签，了解正确的电源参数。

***数据可能根据客户的要求而不同。

AS-L	
氧气流量	1,000 – 1,300 SCFH* 26.29 – 34.18 Nm^3/hr* 471 – 613 LPM*
氧气压力	45 – 65 psig* 310 – 448 kPa* 3.0 – 4.4 barg*
氧气浓度	Up to 95%
氧气露点温度	-100°F (-73°C)
尺寸(W x D x H)（名义）	62 x 40 x 100 in (158 x 102 x 254 cm)
重量	3,400 lb (1,542 kg)
物理连接** **压缩空气进气口** **氧气排气口**	 1” FNPT ¾” FNPT
运行环境条件	将制氧机置于不受天气影响的，通风良好的，且保持在 40°F (4°C) 到 104°F (40°C)的环境中
原料空气要求	
压力（最小）	90 psig 621 kPa 6.2 barg
温度（最高）	122°F (50°C)
原料空气调压阀设置***	70 – 75 psig 483 – 517 kPa 4.8 – 5.1 barg
控制电源要求 （单相）	120 V ~ ±10%, 50/60 Hz, 3.0 A 220 V ~ ±10%, 50/60 Hz, 1.0 A
压力开关设置***	
（最小）	65 – 70 psig 448 – 483 kPa 4.4 – 4.8 barg
（最大）	72 – 75 psig 496 – 517 kPa 4.9 – 5.1 barg
其它规格参数 **污染等级** **安装类别** **海拔**	 2 II 2000 m

*SCF（标准立方英尺）气体的测量条件为：1 个大气压和 70°F。Nm3（标准立方米）气体的测量条件为：1 个大气压和 0°C。LPM（升每分钟）气体的测量条件为：1 个大气压和 21°C。

**查看控制面板上的标签，了解正确的电源参数。

***数据可能根据客户的要求而不同。

AS-N	
氧气流量	1,500 – 1,800 SCFH* 39.43 – 47.32 Nm^3/hr* 707 – 849 LPM*
氧气压力	45 – 65 psig* 310 – 448 kPa* 3.0 – 4.4 barg*
氧气浓度	Up to 95%
氧气露点温度	-100°F (-73°C)
尺寸(W x D x H)（名义）	84 x 48 x 110 in (213 x 122 x 279 cm)
重量	4,950 lb (2,245 kg)
物理连接** **压缩空气进气口** **氧气排气口**	 1½" FNPT ¾" FNPT
运行环境条件	将制氧机置于不受天气影响的，通风良好的，且保持在 40°F (4°C) 到 104°F (40°C)的环境中
原料空气要求	
压力（最小）	90 psig 621 kPa 6.2 barg
温度（最高）	122°F (50°C)
原料空气调压阀设置***	70 – 75 psig 483 – 517 kPa 4.8 – 5.1 barg
控制电源要求 （单相）	120 V ~ ±10%, 50/60 Hz, 3.0 A 220 V ~ ±10%, 50/60 Hz, 1.0 A
压力开关设置***	
（最小）	65 – 70 psig 448 – 483 kPa 4.4 – 4.8 barg
（最大）	72 – 75 psig 496 – 517 kPa 4.9 – 5.1 barg
其它规格参数 **污染等级** **安装类别** **海拔**	 2 II 2000 m

*SCF（标准立方英尺）气体的测量条件为：1 个大气压和 70°F。Nm3（标准立方米）气体的测量条件为：1 个大气压和 0°C。LPM（升每分钟）气体的测量条件为：1 个大气压和 21°C。

**查看控制面板上的标签，了解正确的电源参数。

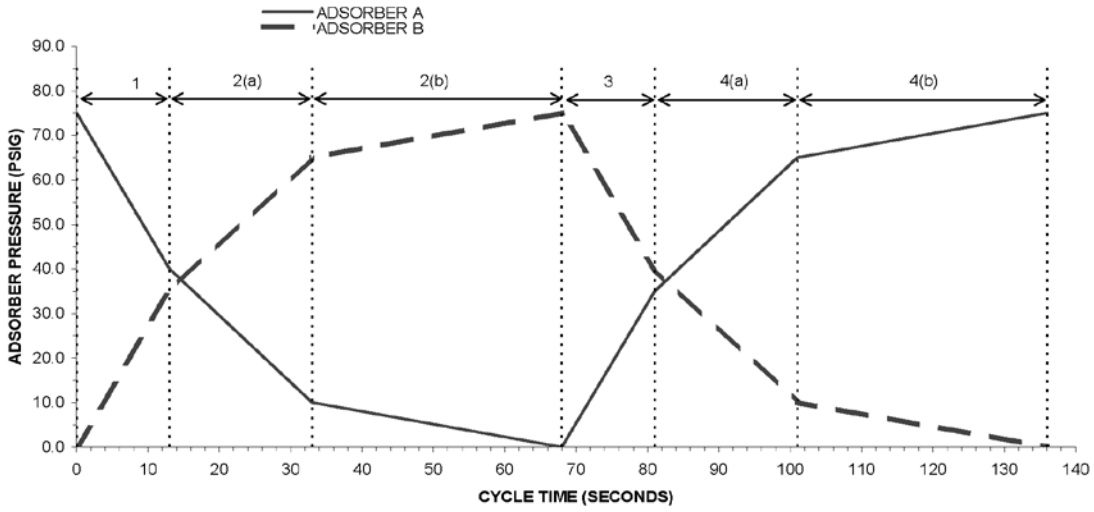
***数据可能根据客户的要求而不同。

AS-P	
氧气流量	2,000 – 2,300 SCFH* 52.58 – 60.46 Nm^3/hr* 943 – 1,085 LPM*
氧气压力	45 – 65 psig* 310 – 448 kPa* 3.0 – 4.4 barg*
氧气浓度	Up to 95%
氧气露点温度	-100°F (-73°C)
尺寸(W x D x H)（名义）	85 x 64 x 111 in (216 x 163 x 282 cm)
重量	6,250 lb (2,835 kg)
物理连接** **压缩空气进气口** **氧气排气口**	 1½" FNPT ¾" FNPT
运行环境条件	将制氧机置于不受天气影响的，通风良好的，且保持在 40°F (4°C) 到 104°F (40°C)的环境中
原料空气要求	
压力（最小）	90 psig 621 kPa 6.2 barg
温度（最高）	122°F (50°C)
原料空气调压阀设置***	70 – 75 psig 483 – 517 kPa 4.8 – 5.1 barg
控制电源要求 （单相）	120 V ~ ±10%, 50/60 Hz, 3.0 A 220 V ~ ±10%, 50/60 Hz, 1.0 A
压力开关设置***	
（最小）	65 – 70 psig 448 – 483 kPa 4.4 – 4.8 barg
（最大）	72 – 75 psig 496 – 517 kPa 4.9 – 5.1 barg
其它规格参数 **污染等级** **安装类别** **海拔**	 2 II 2000 m

*SCF（标准立方英尺）气体的测量条件为：1 个大气压和 70°F。Nm3（标准立方米）气体的测量条件为：1 个大气压和 0°C。LPM（升每分钟）气体的测量条件为：1 个大气压和 21°C。

**查看控制面板上的标签，了解正确的电源参数。

***数据可能根据客户的要求而不同。图纸和示意图



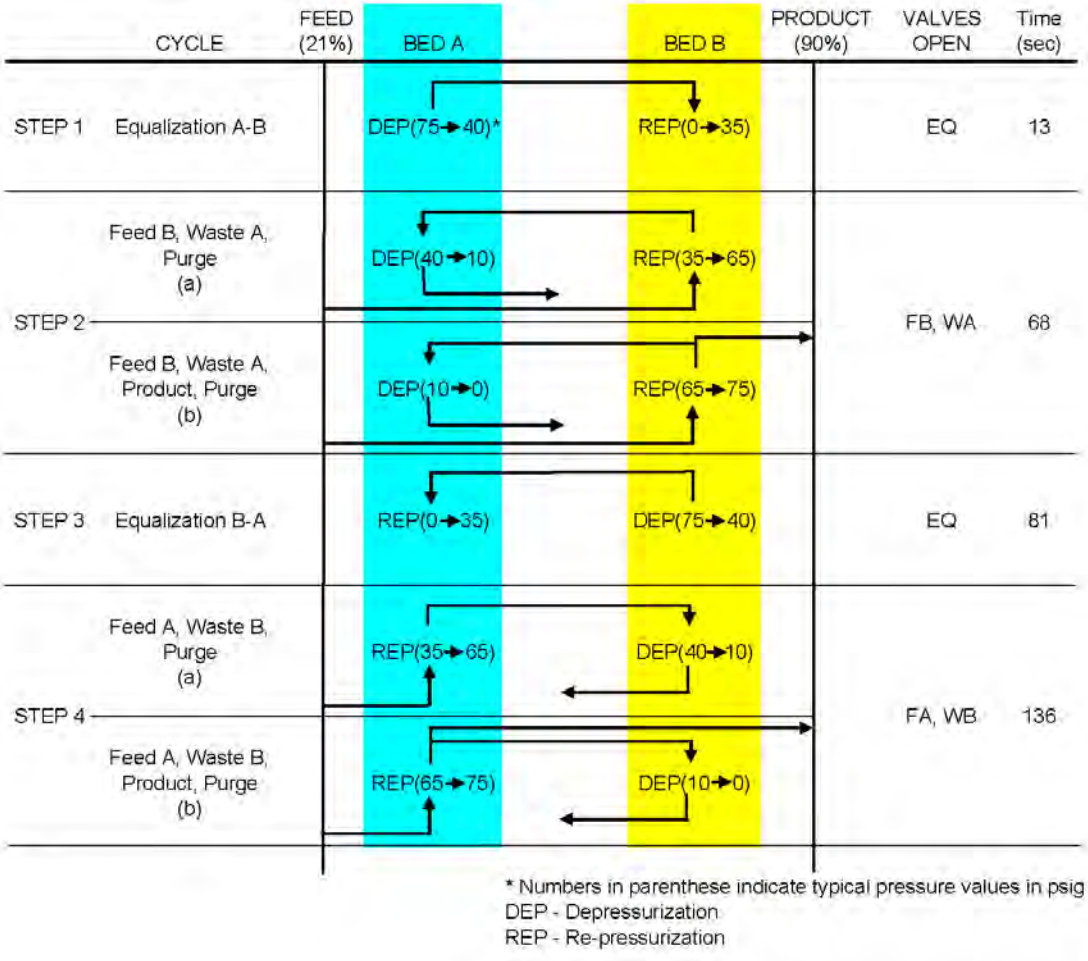


图 A.1：标准的压力分布图和阀门循环顺序

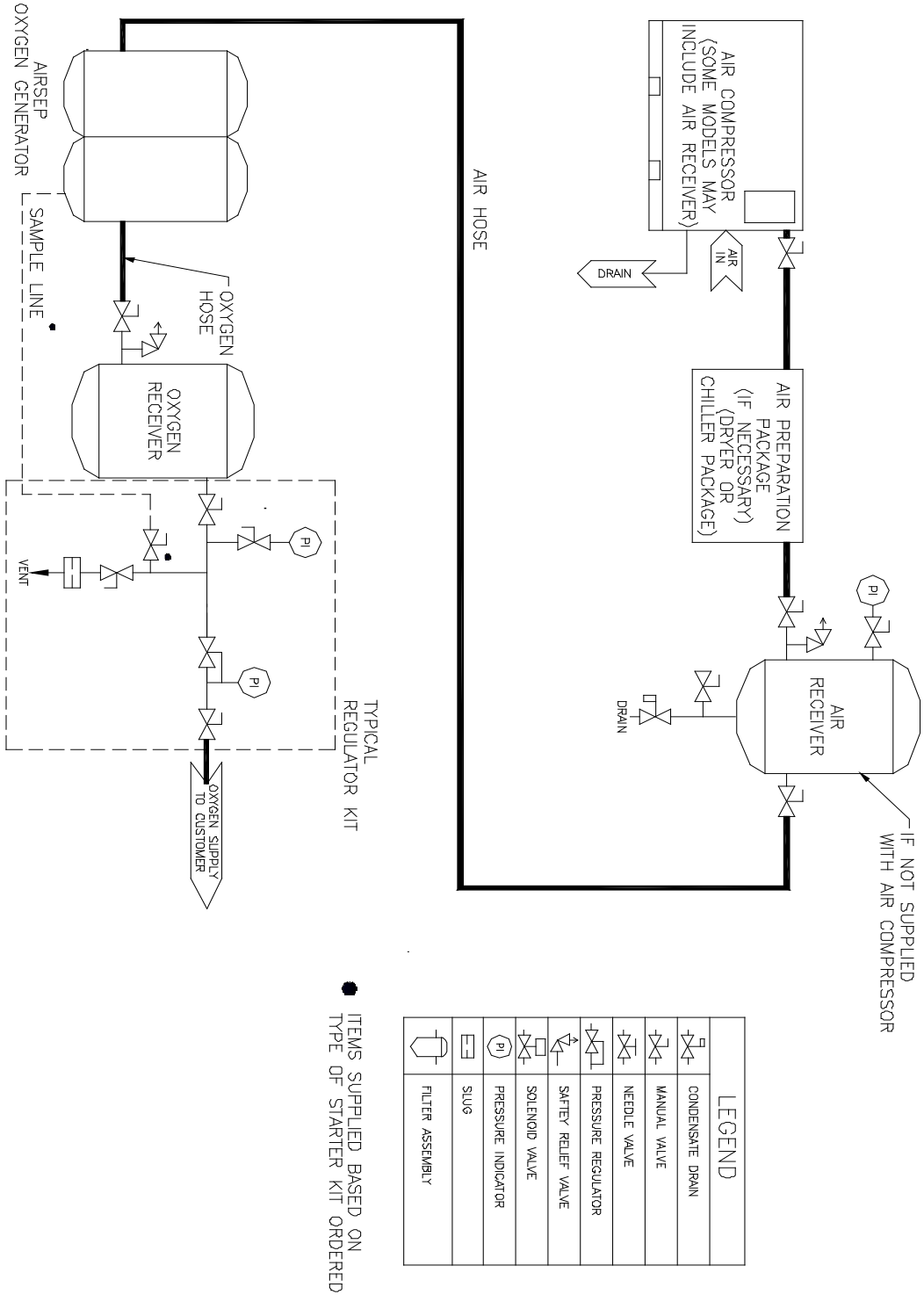

AIR COMPRESSOR (SOME MODELS MAY INCLUDE AIR RECEIVER)
AIR IN
DRAIN
AIR PREPARATION PACKAGE (IF NECESSARY) (DRYER OR CHILLER PACKAGE)
AIR RECEIVER
DRAIN
PI
IF NOT SUPPLIED WITH AIR COMPRESSOR
AIR HOSE
AIRSEP OXYGEN GENERATOR
SAMPLE LINE
OXYGEN HOSE
OXYGEN RECEIVER
VENT
TYPICAL REGULATOR KIT
OXYGEN SUPPLY TO CUSTOMER
LEGEND
CONDENSATE DRAIN
MANUAL VALVE
NEEDLE VALVE
PRESSURE REGULATOR
SAFTEY RELIEF VALVE
SOLENOID VALVE
PRESSURE INDICATOR
SLUG
FILTER ASSEMBLY
ITEMS SUPPLIED BASED ON TYPE OF STARTER KIT ORDERED

图 A.2：常见的安装布局

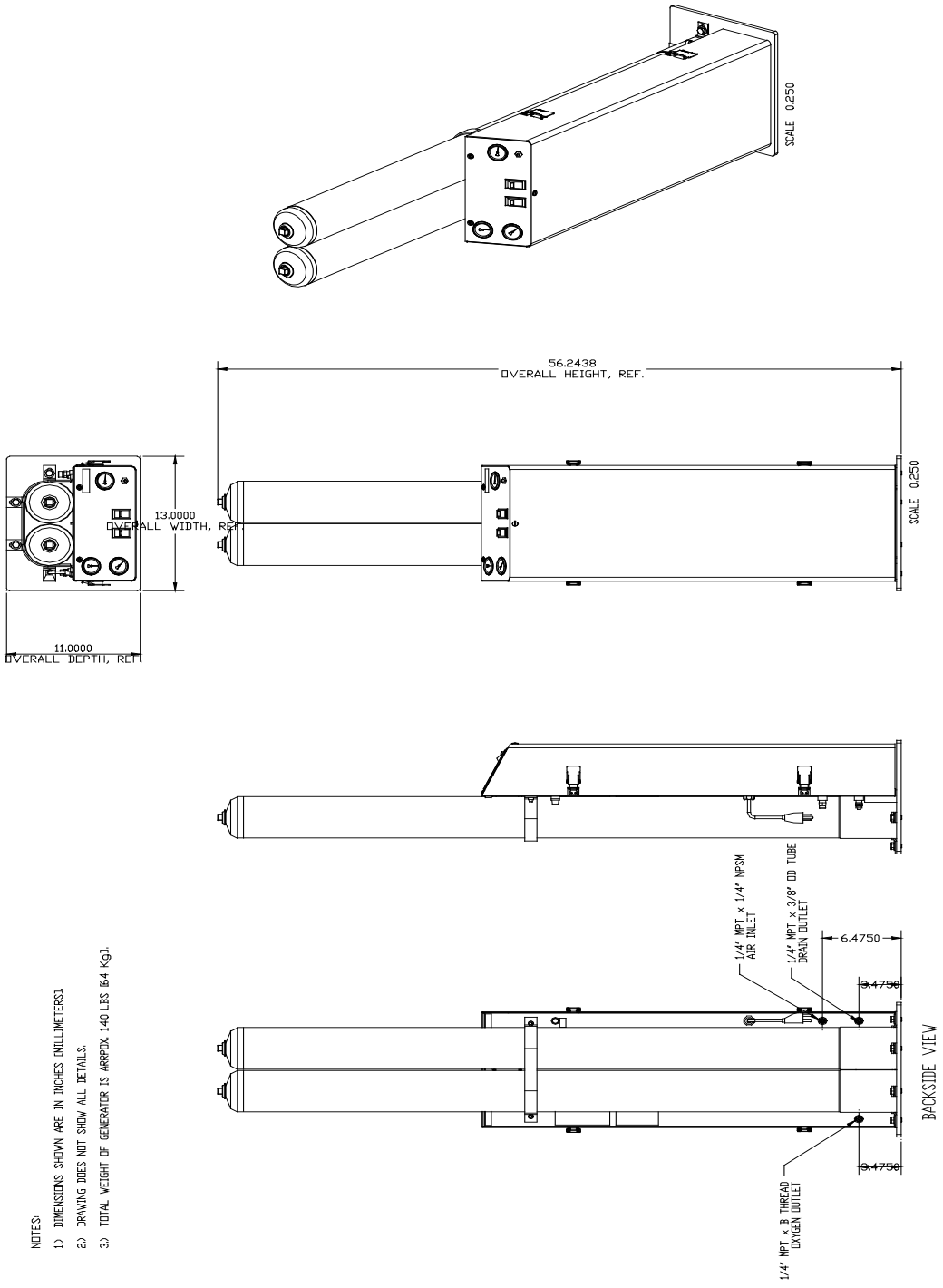


图 A.3：总体布局图 — AS-A

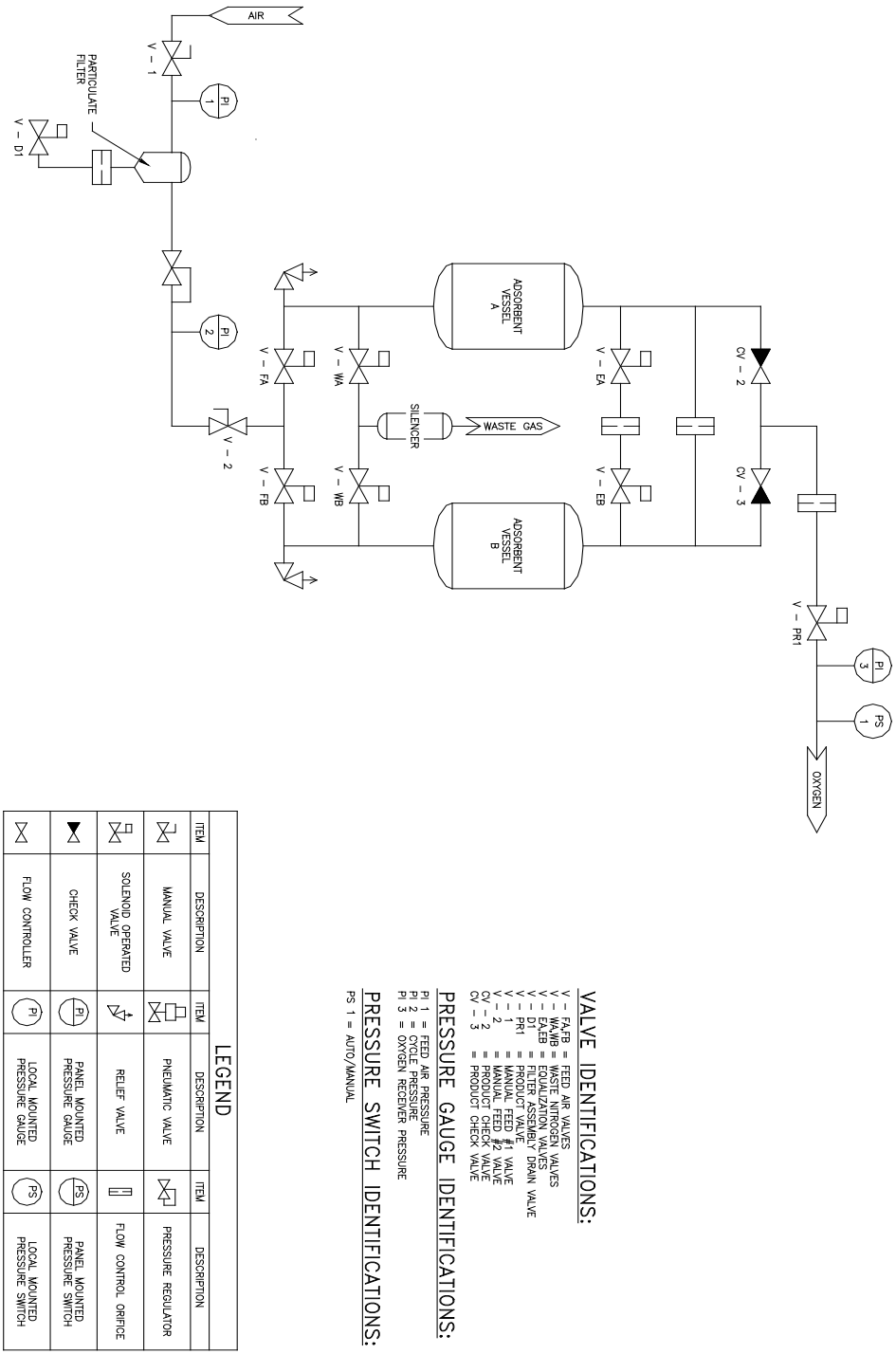


图 A.4：流程示意图 — AS-A

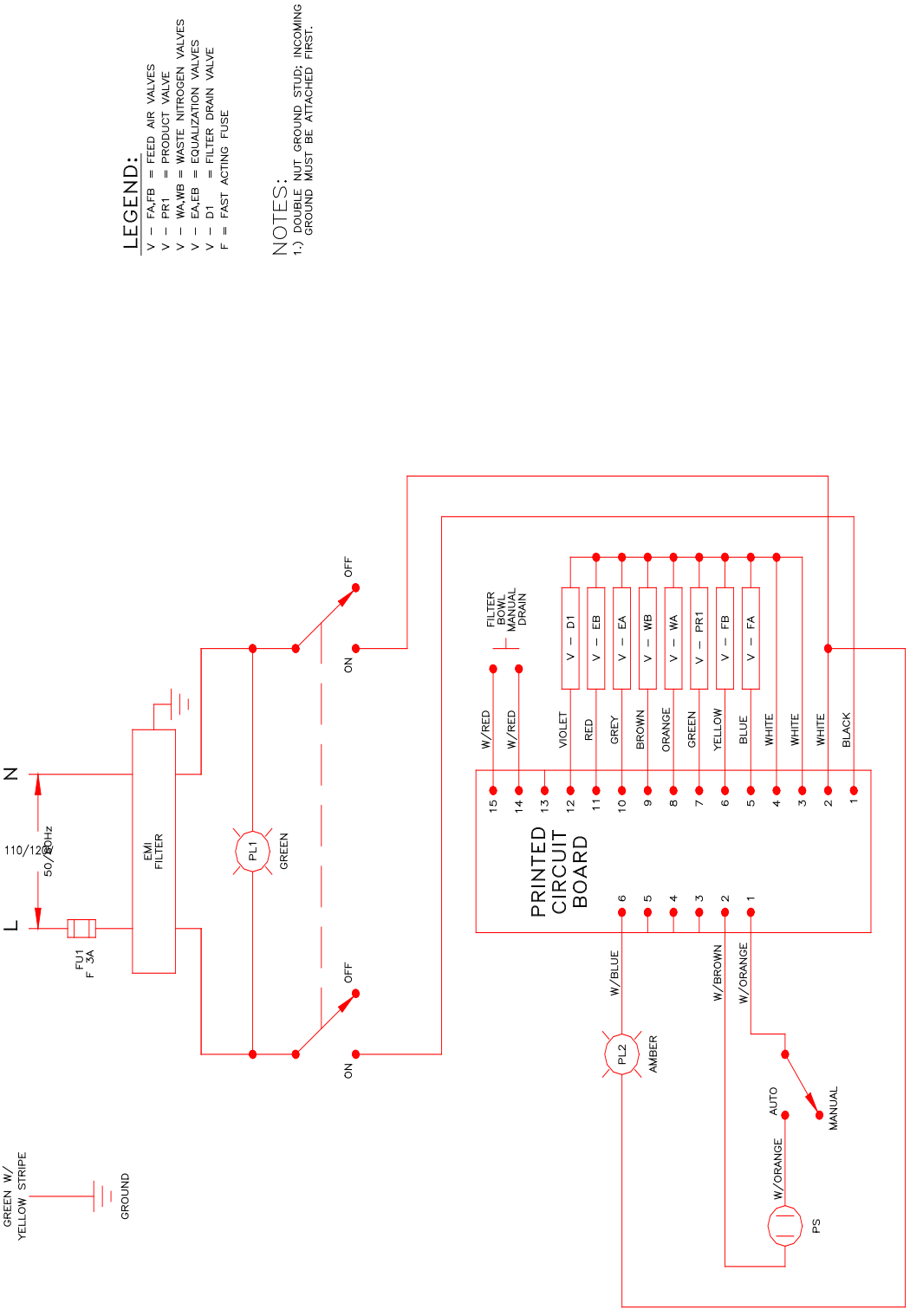


图 A.5：电路图 — AS-A (120 V)

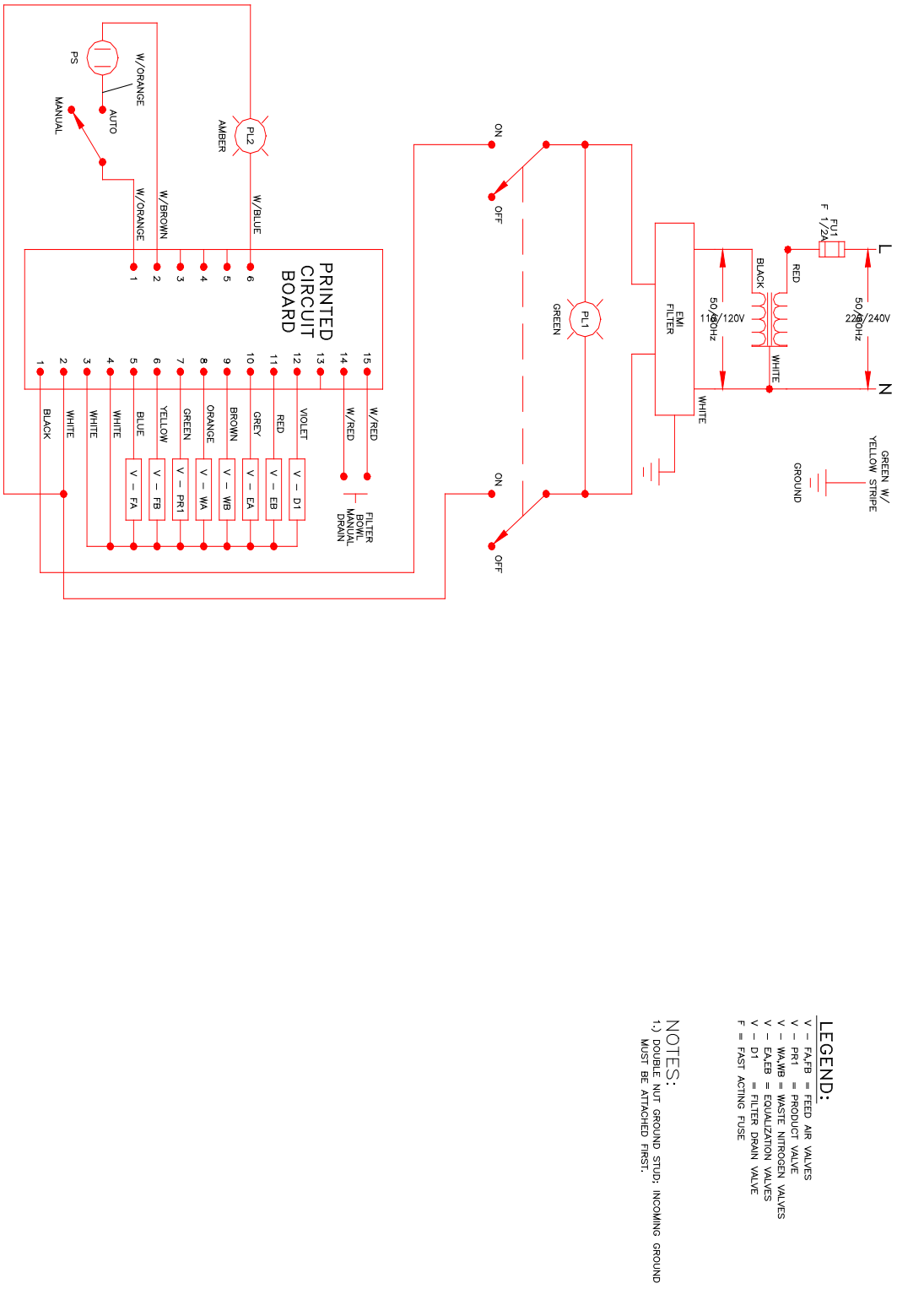


图 A.6：电路图 — AS-A (240 V)

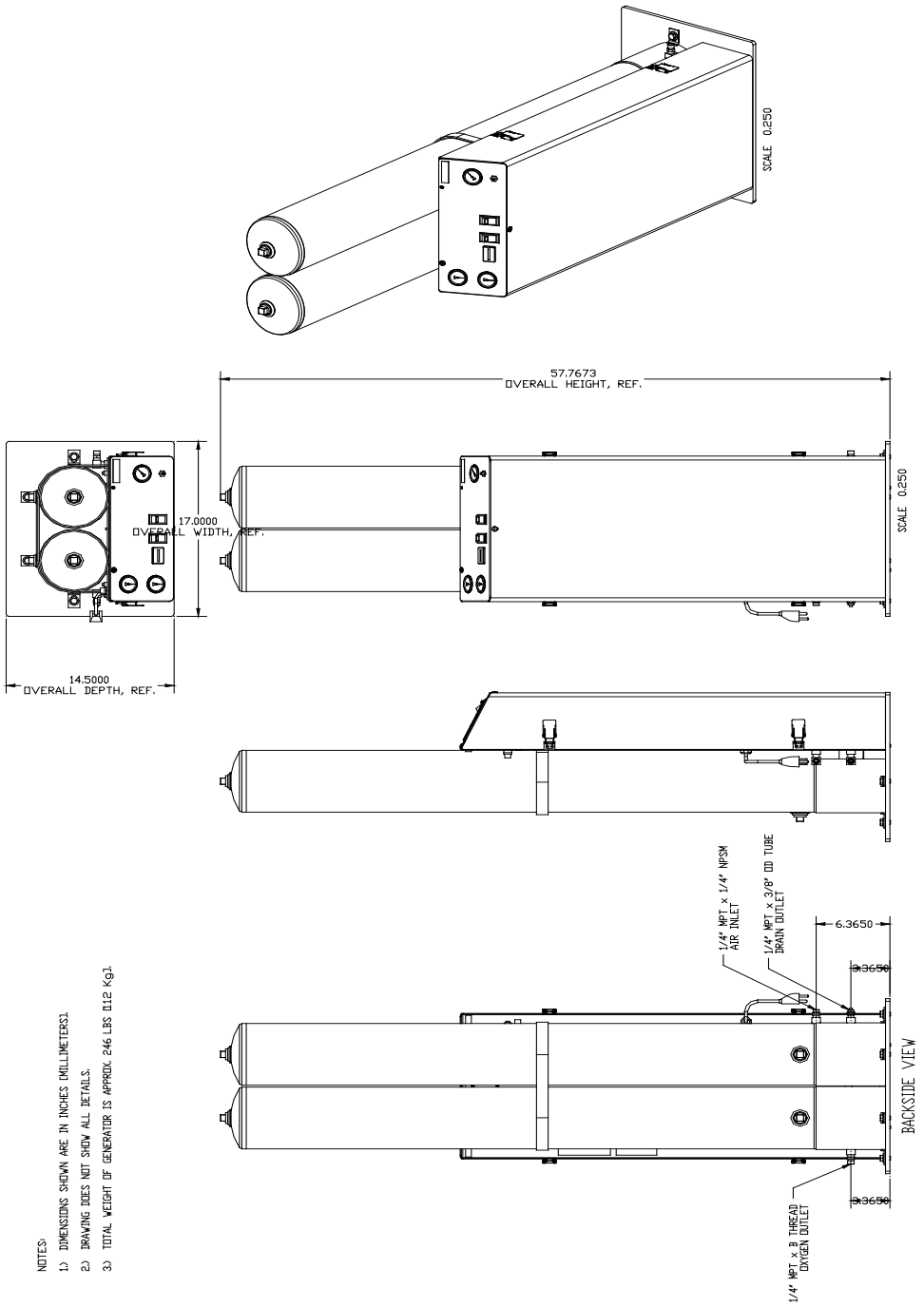


图 A.7：总体布局图 — AS-B

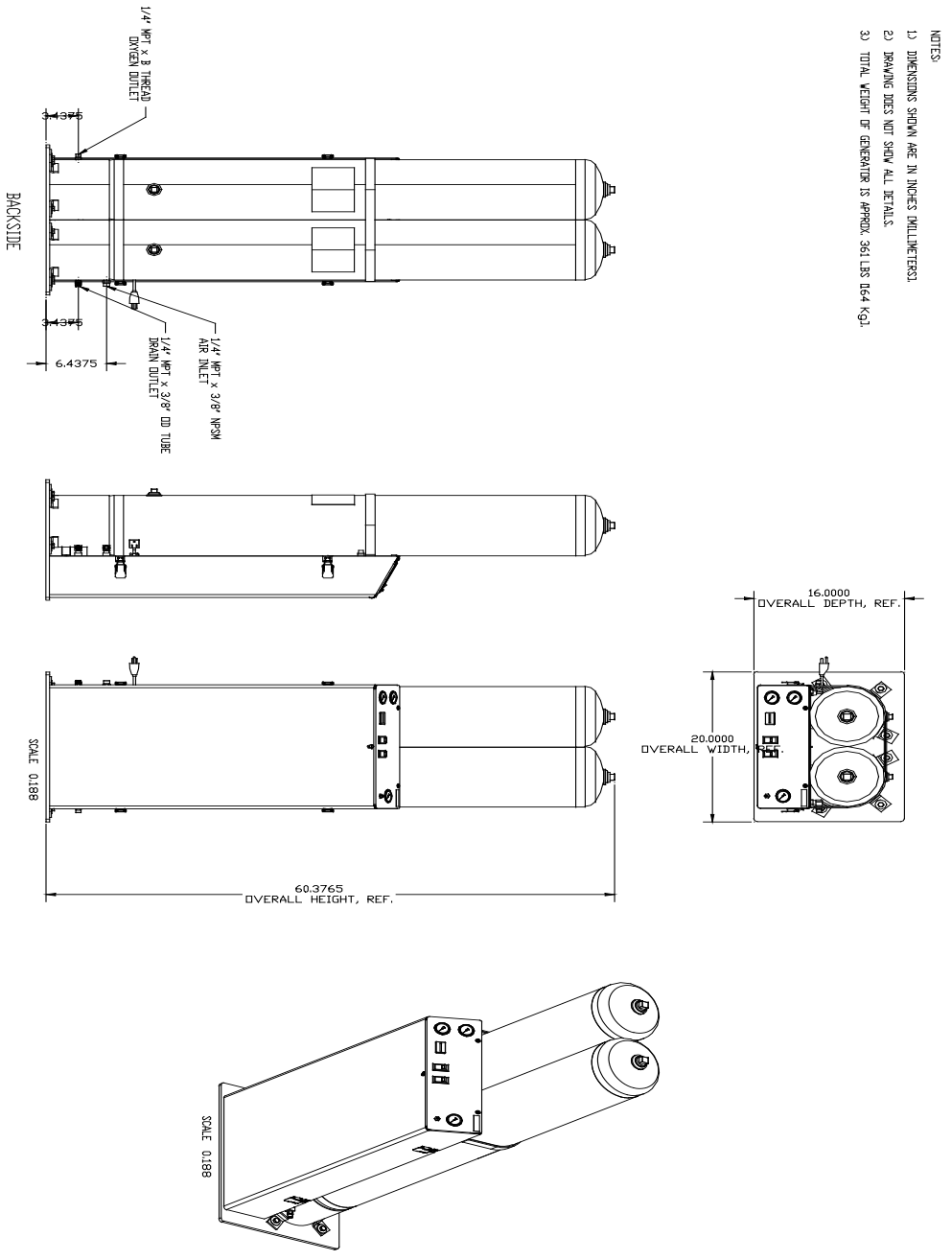


图 A.8：总体布局图 — AS-D

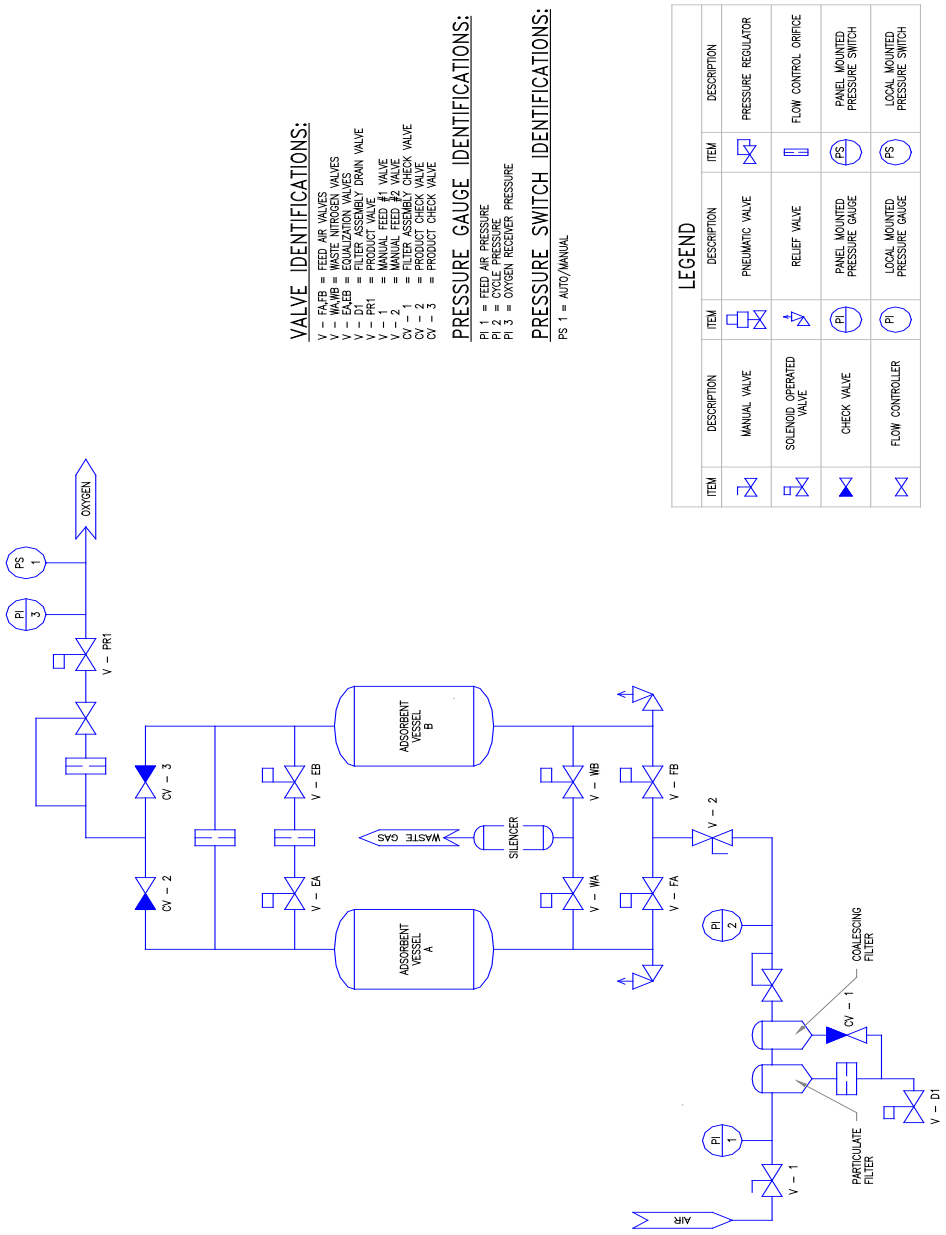


图 A.9：流程示意图 — AS-B 和 AS-D

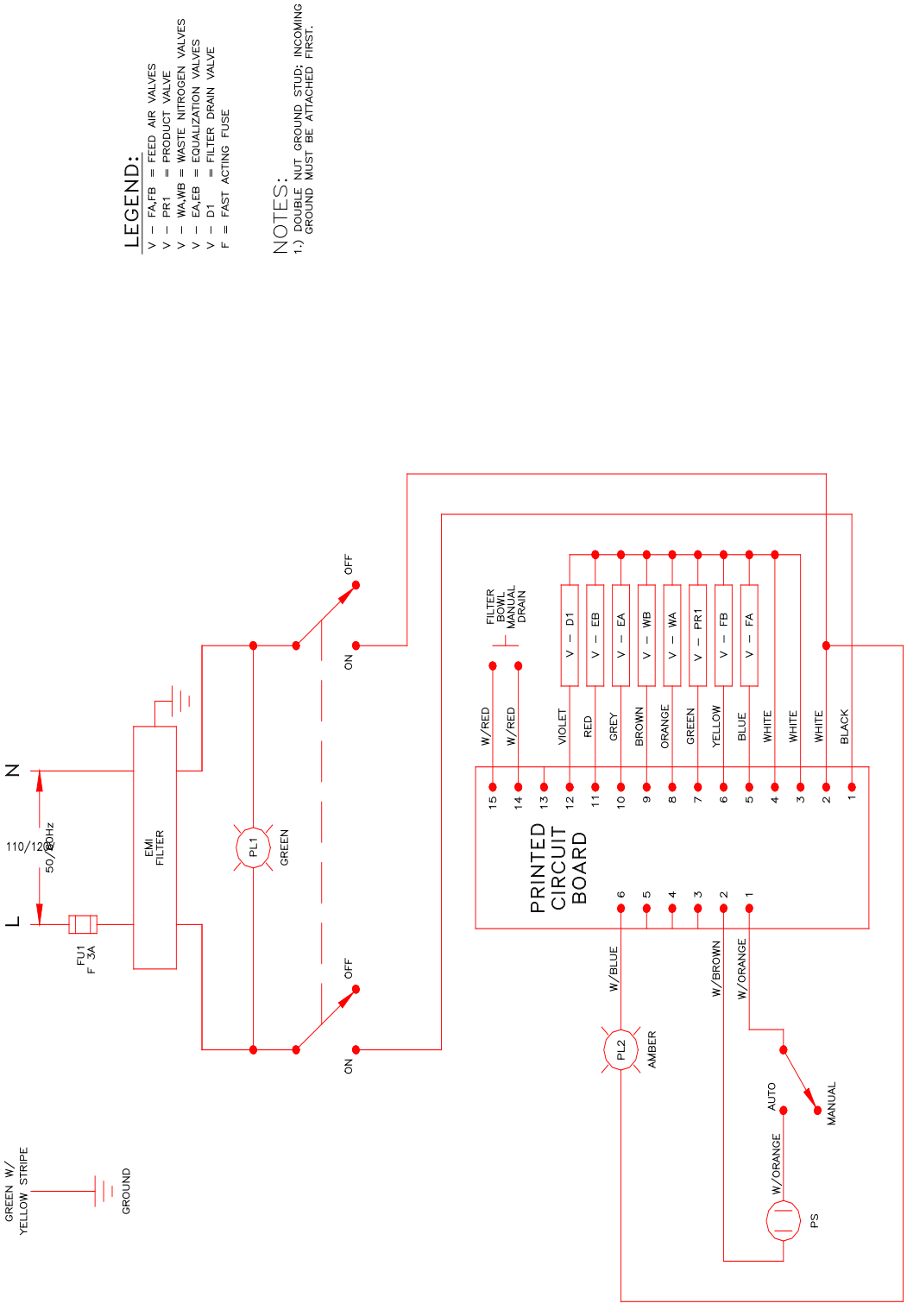
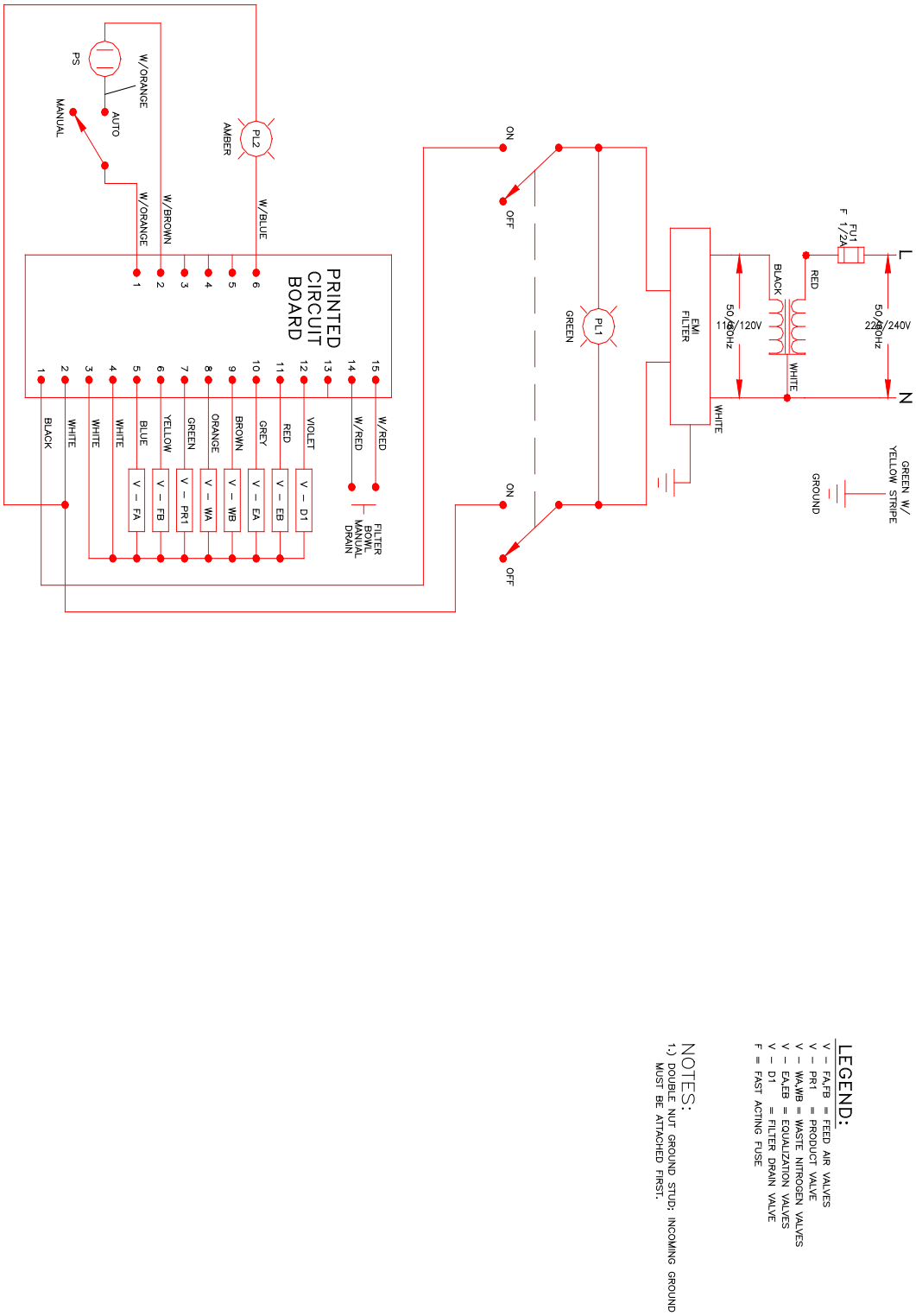


图 A.10：电路图 — AS-B 和 AS-D (120 V)



LEGEND:

V – FA,FB = FEED AIR VALVES
V – PR1 = PRODUCT VALVE
V – WA,WB = WASTE NITROGEN VALVES
V – EA,EB = EQUALIZATION VALVES
V – D1 = FILTER DRAIN VALVE
F = FAST ACTING FUSE

NOTES:

1.) DOUBLE NUT GROUND STUD; INCOMING GROUND MUST BE ATTACHED FIRST.

图 A.11：电路图 — AS-B 和 AS-D (240 V)

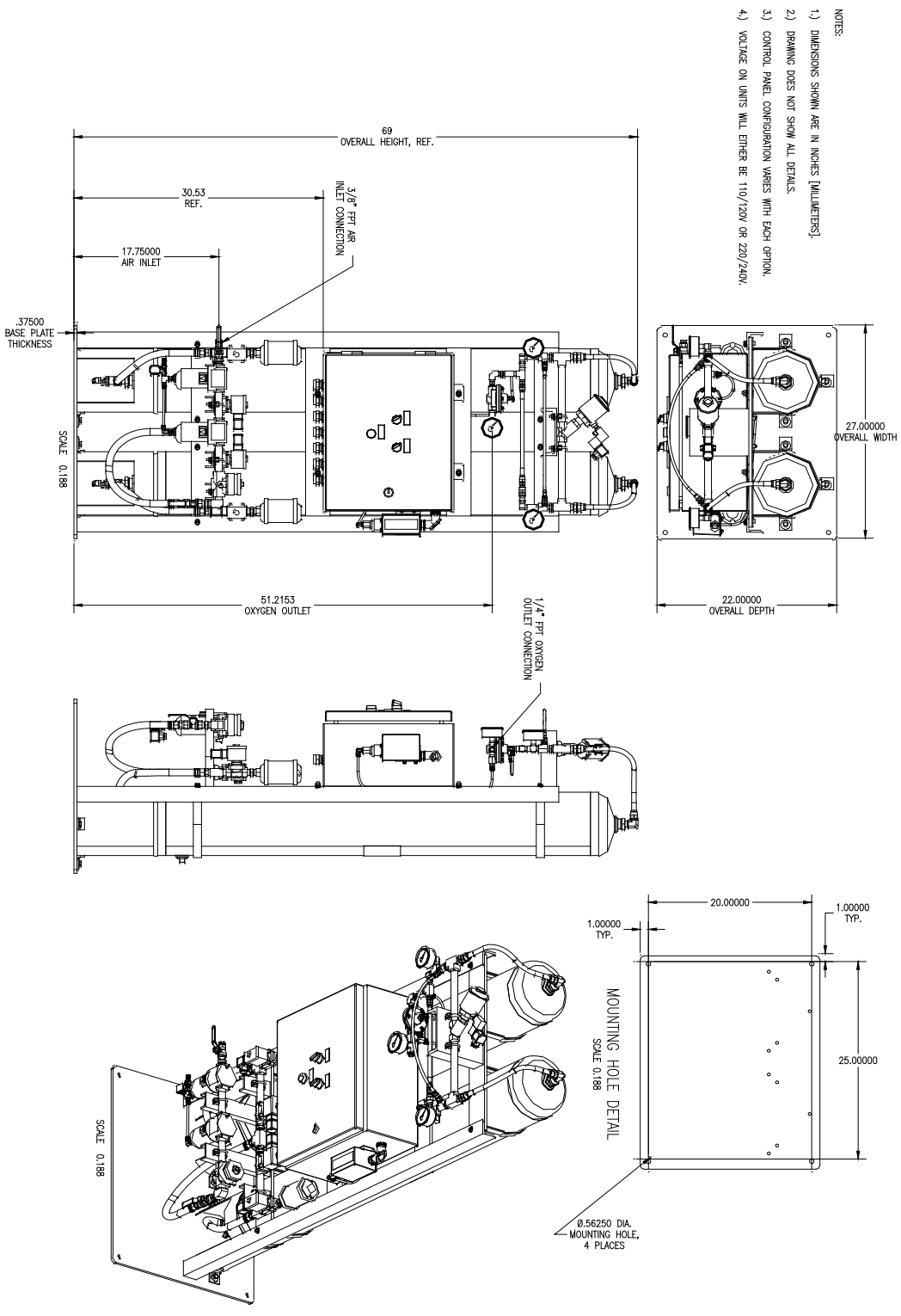


图 A.12：总体布局图 — AS-D+

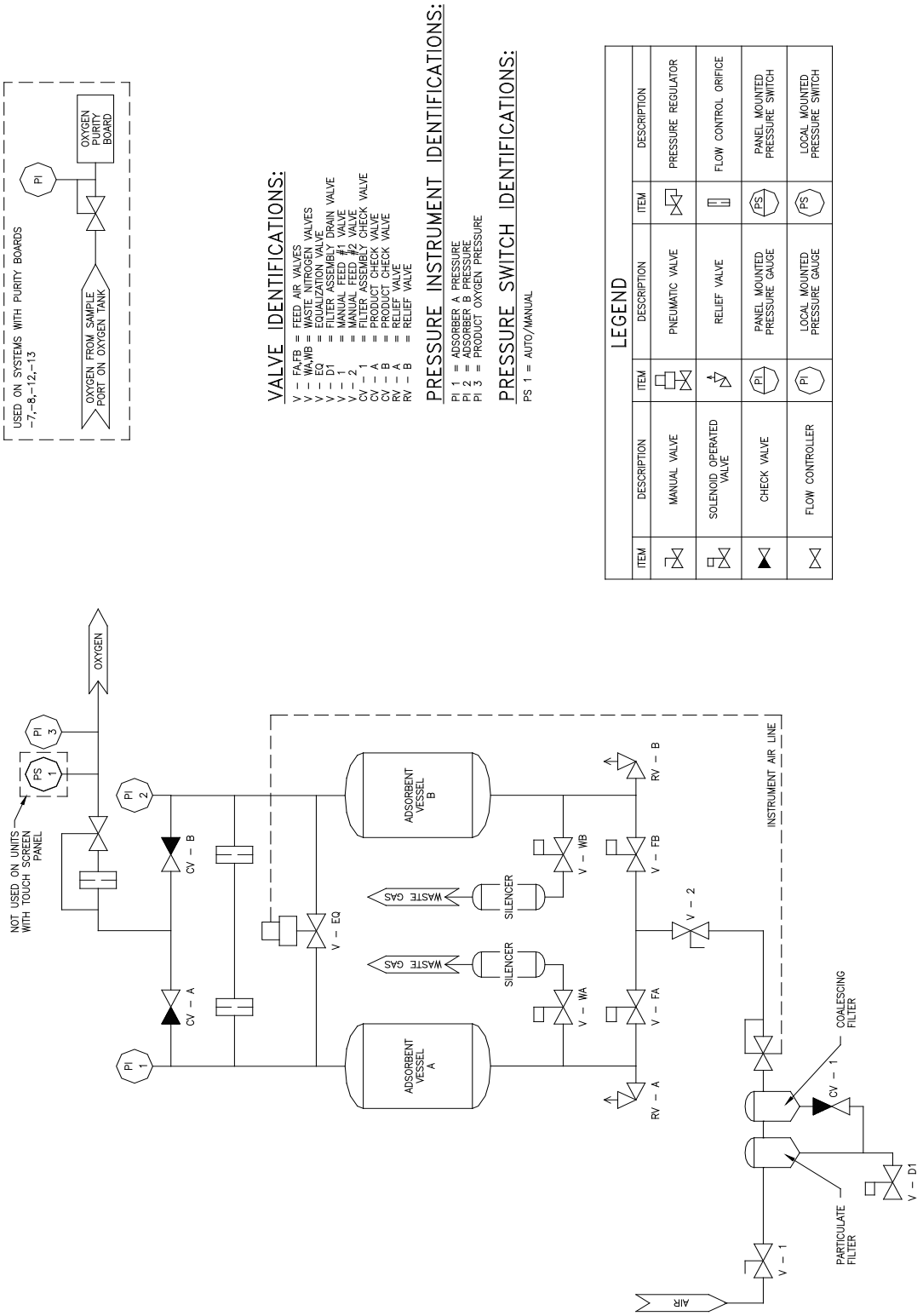


图 A.13：流程示意图 — AS-D+

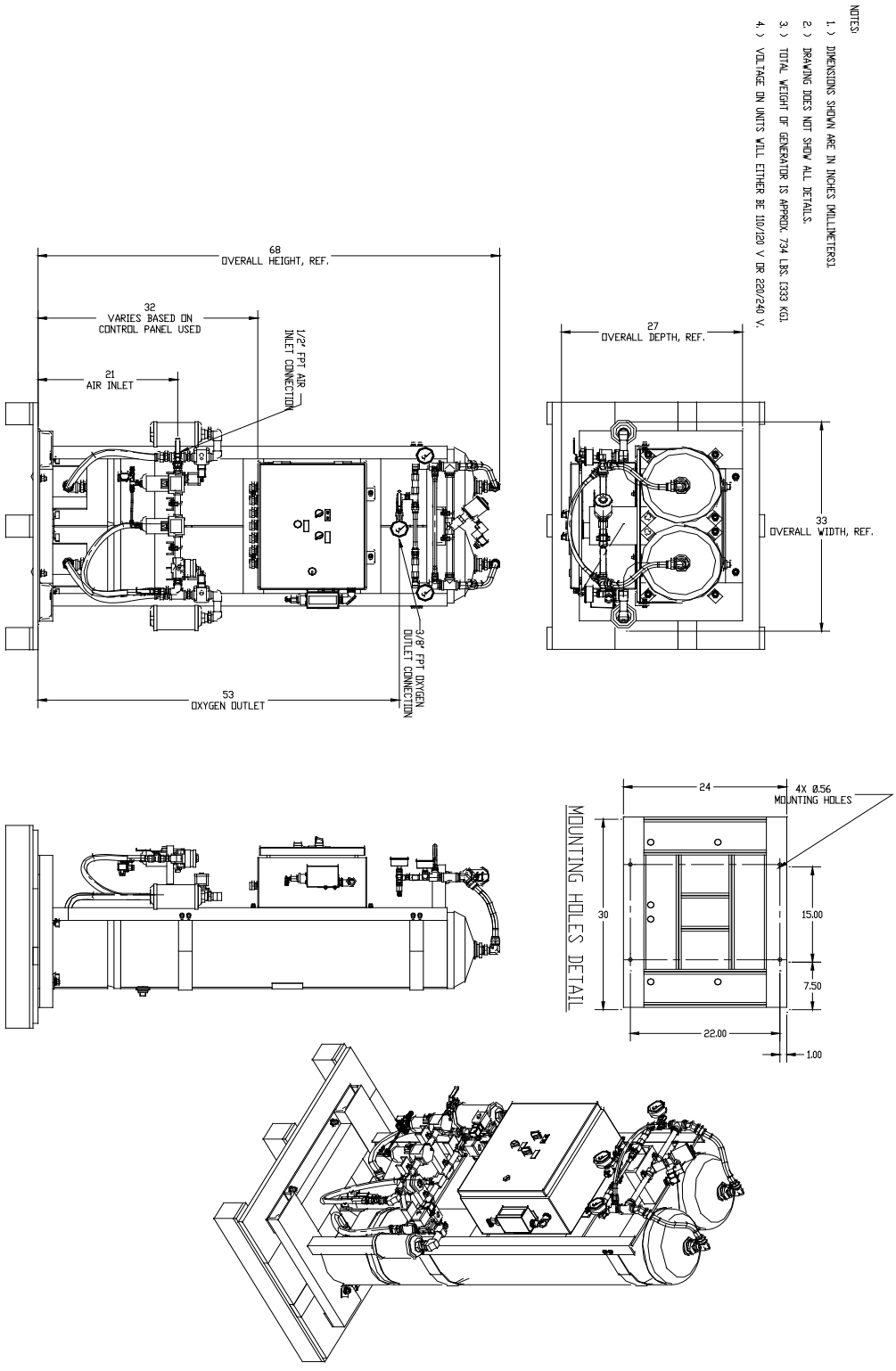


图 A.14：总体布局图 — AS-E

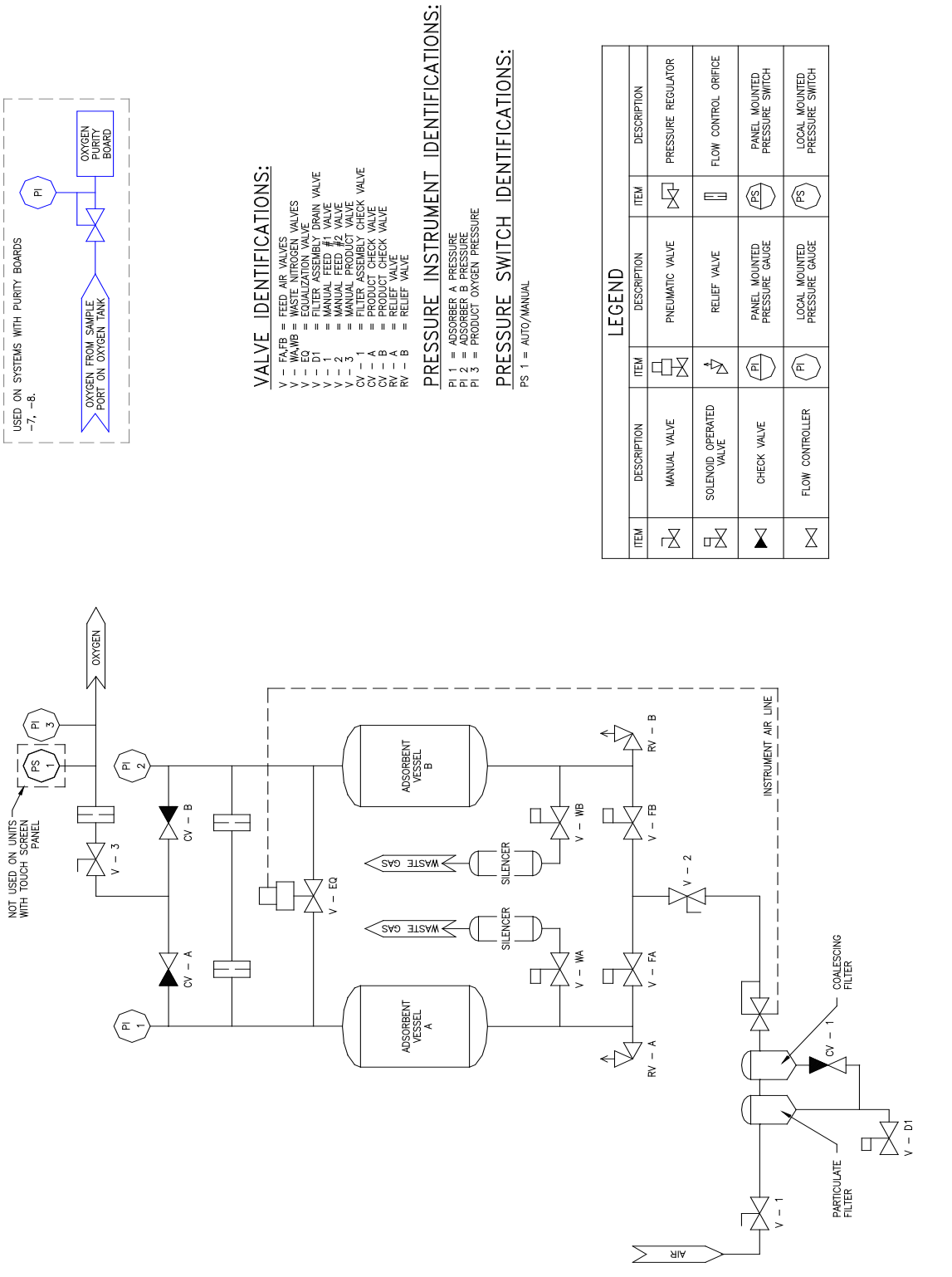


图 A.15：流程示意图 — AS-E

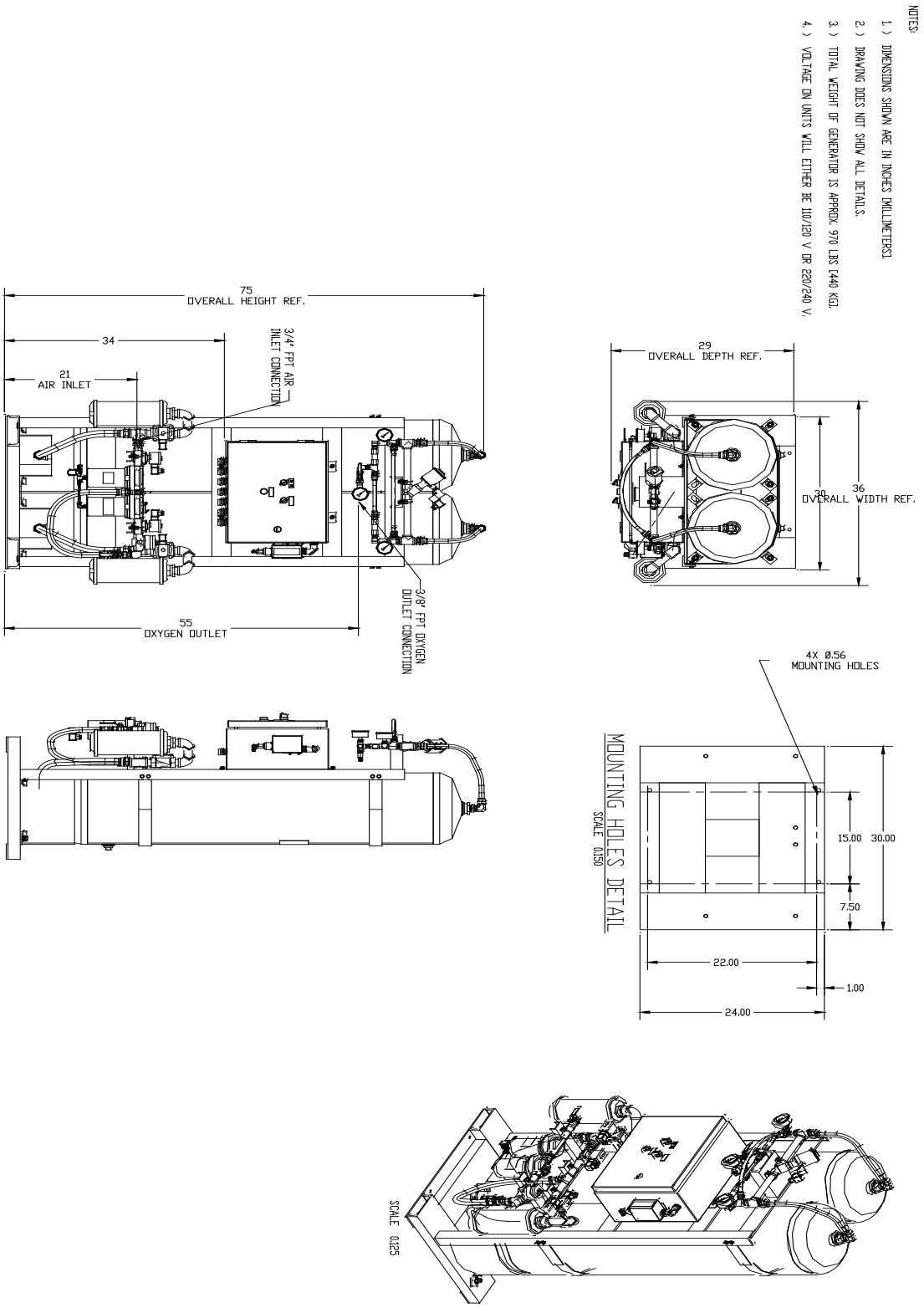


图 A.16：总体布局图 — AS-G

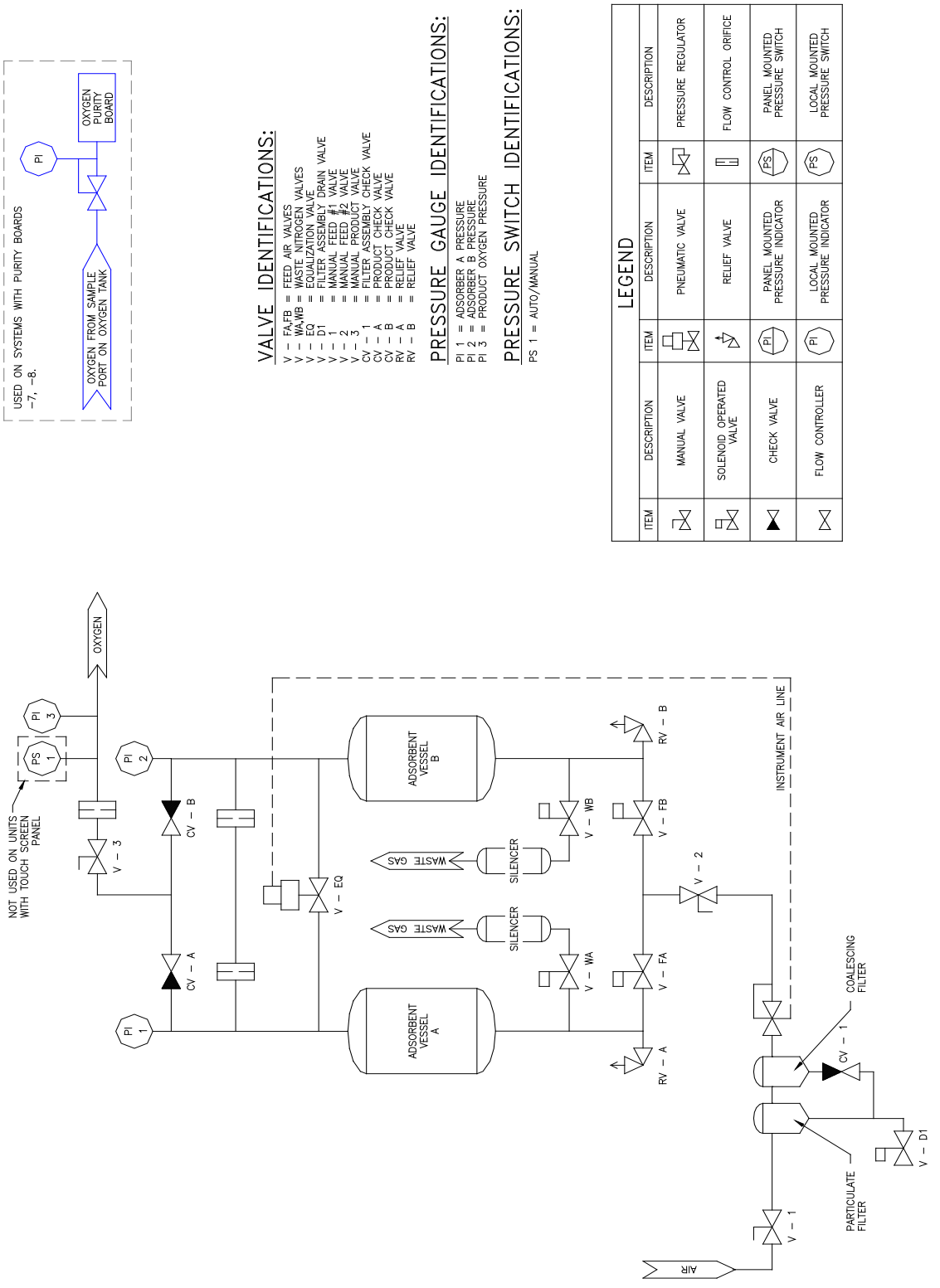


图 A.17：流程示意图 — AS-G

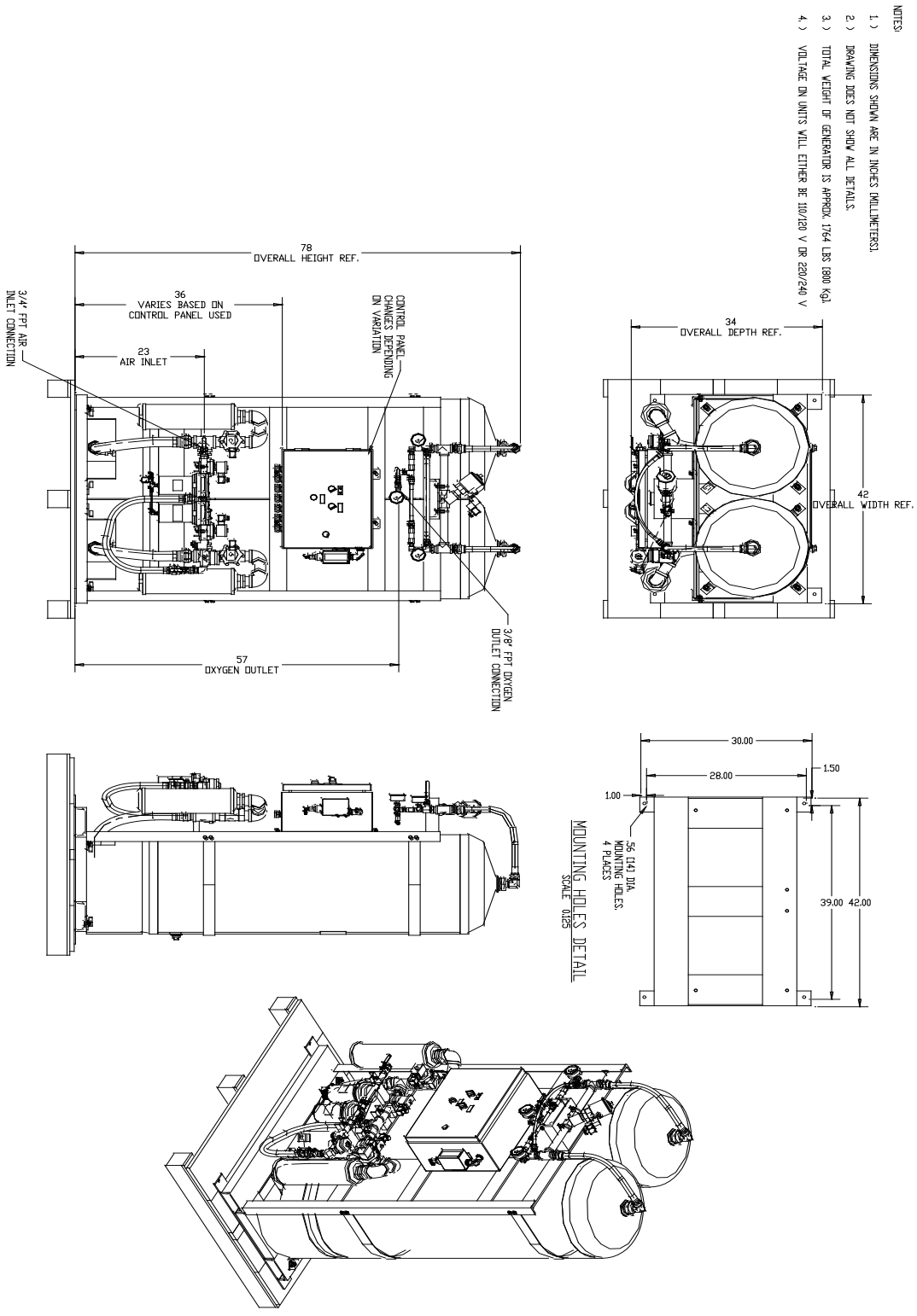


图 A.18：总体布局图 — AS-J

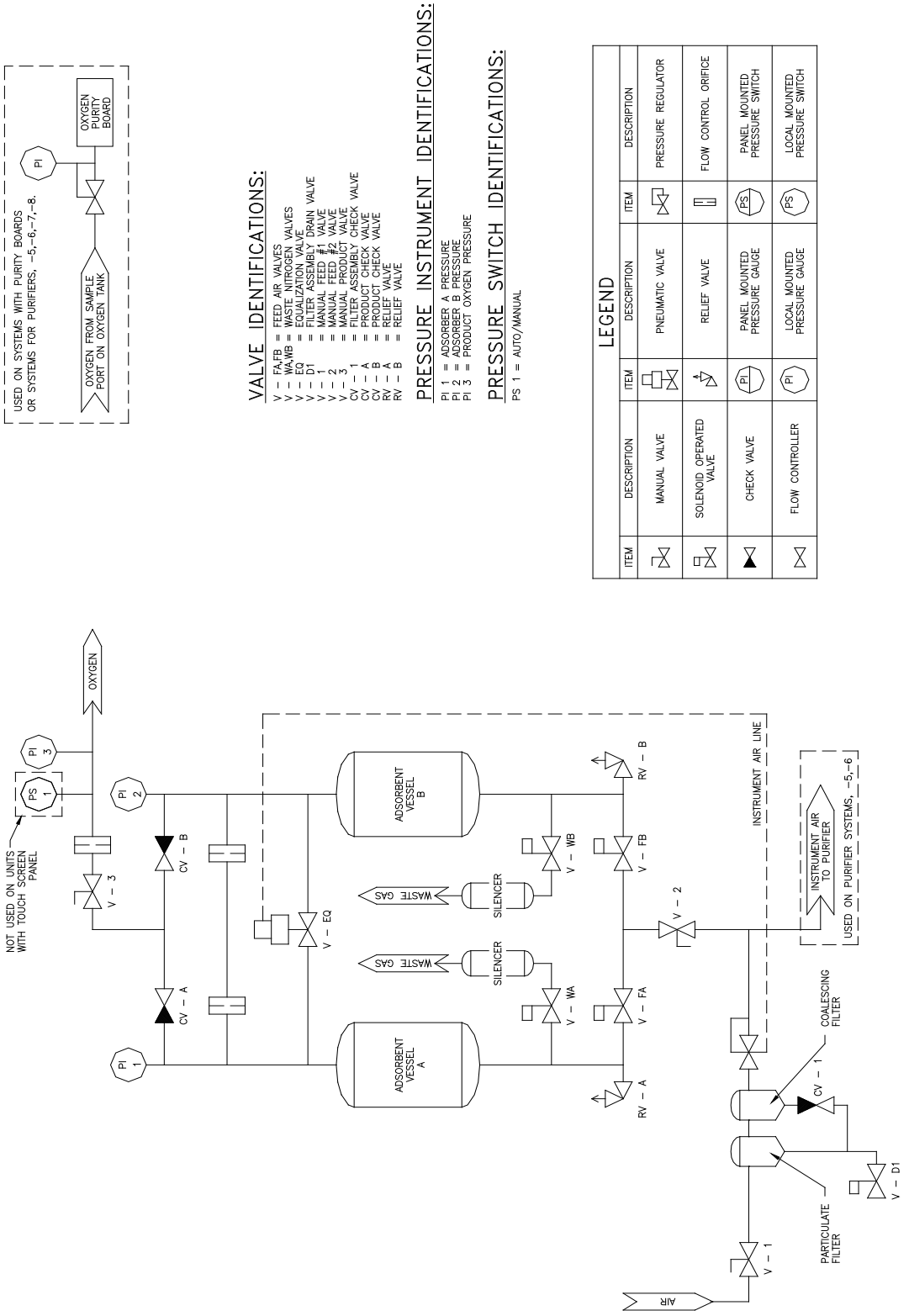


图 A.19：流程示意图 — AS-J

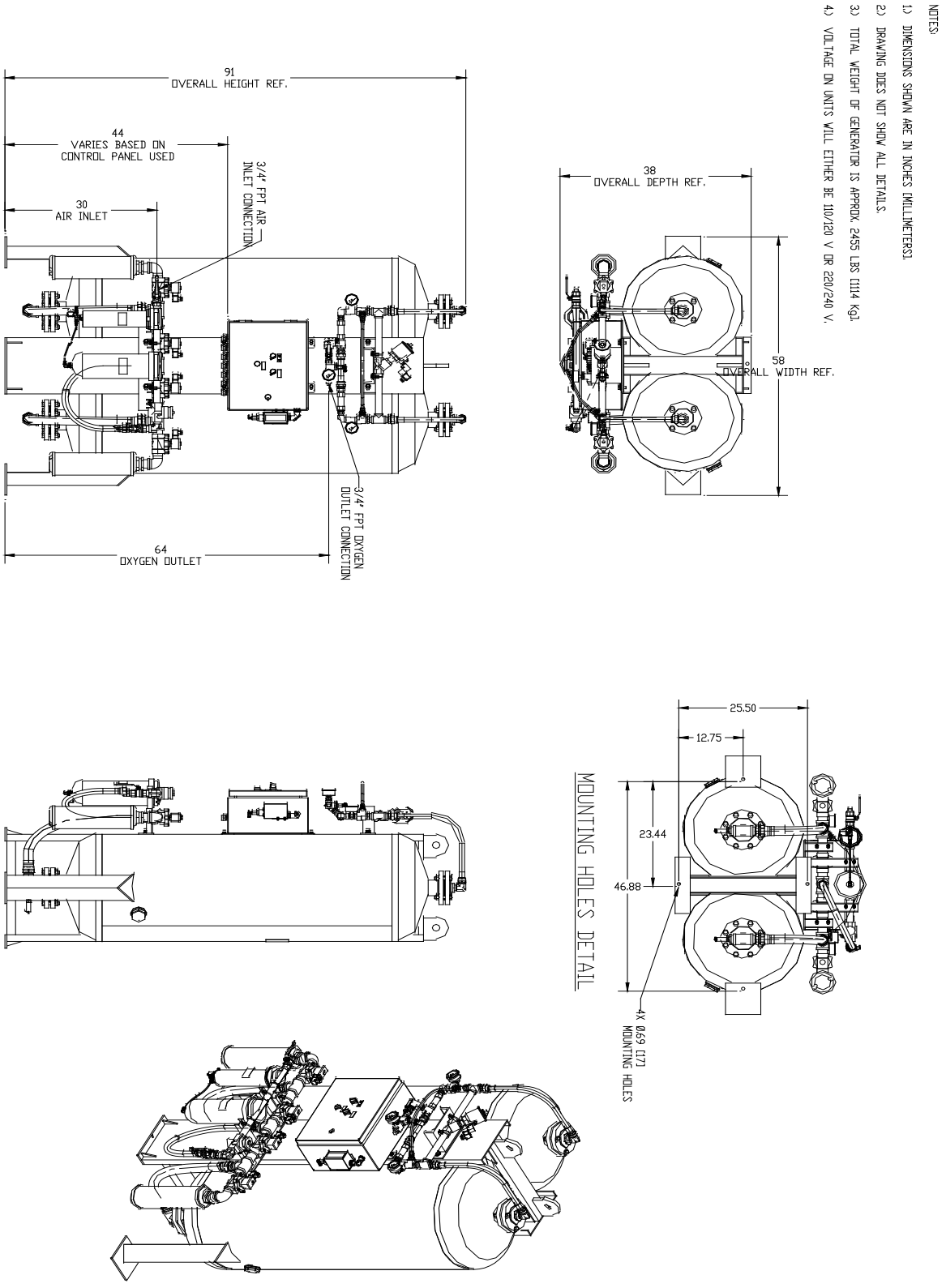


图 A.20：总体布局图 — AS-K

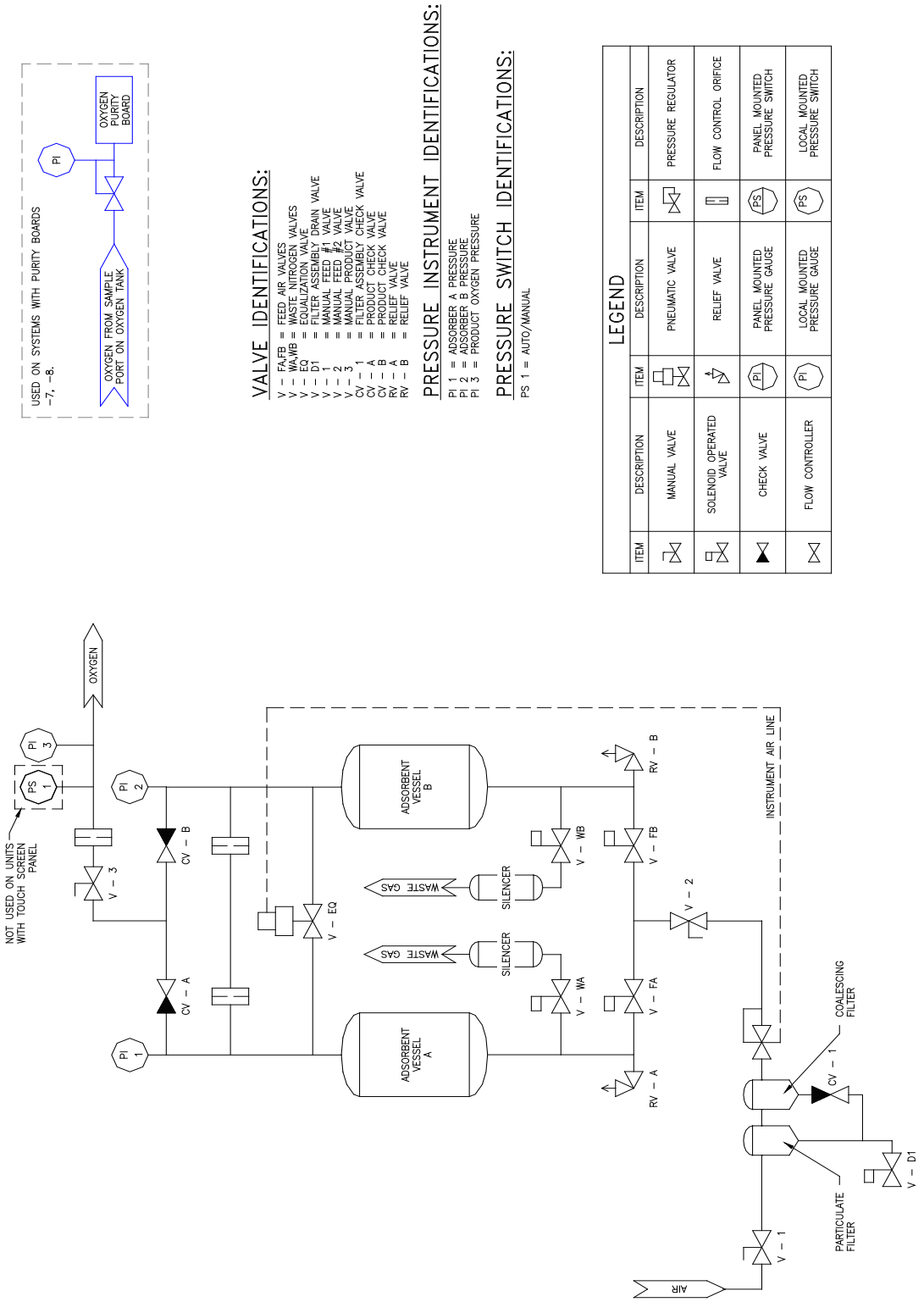


图 A.21：流程示意图 — AS-K

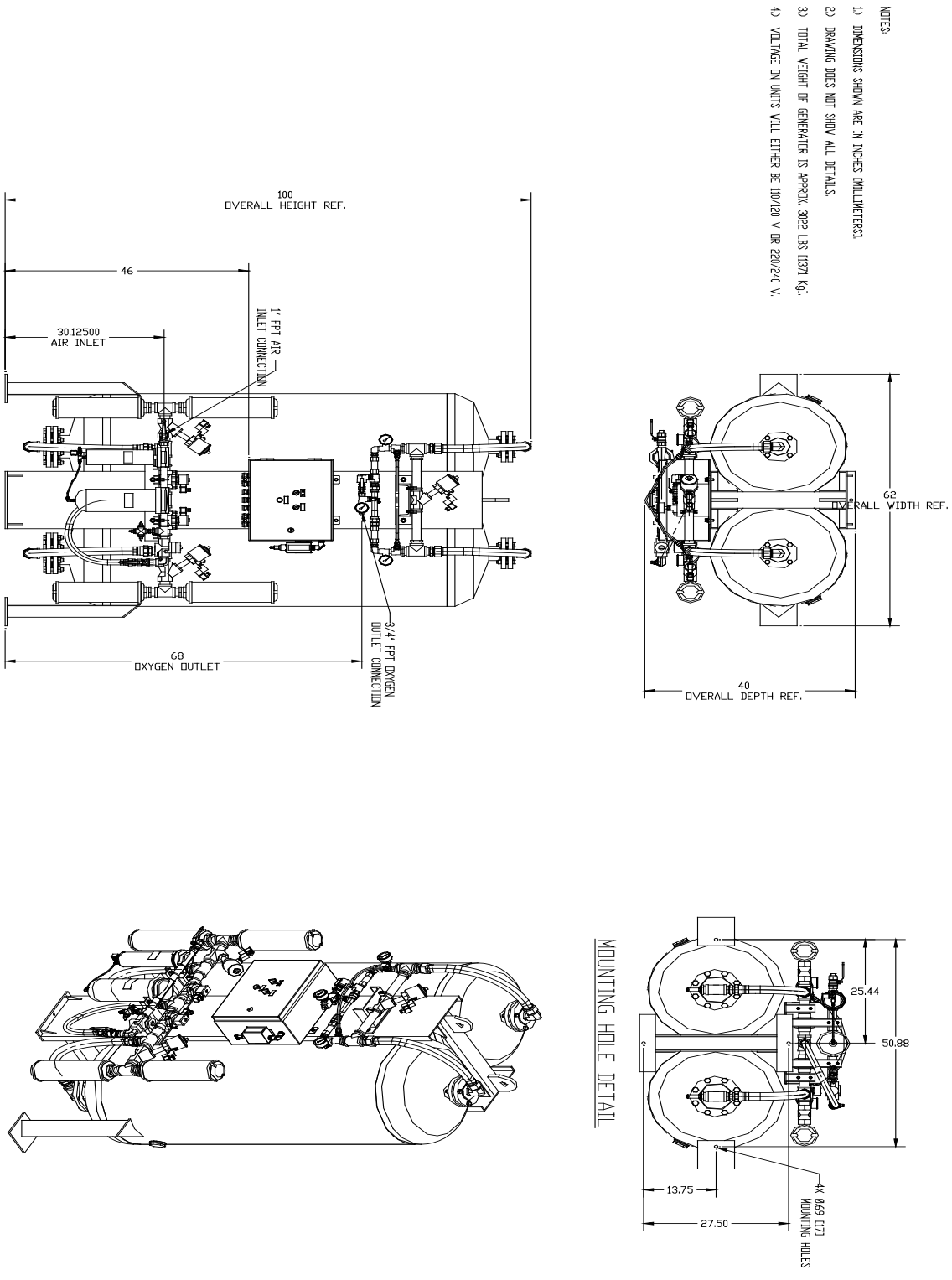


图 A.22：总体布局图 — AS-L

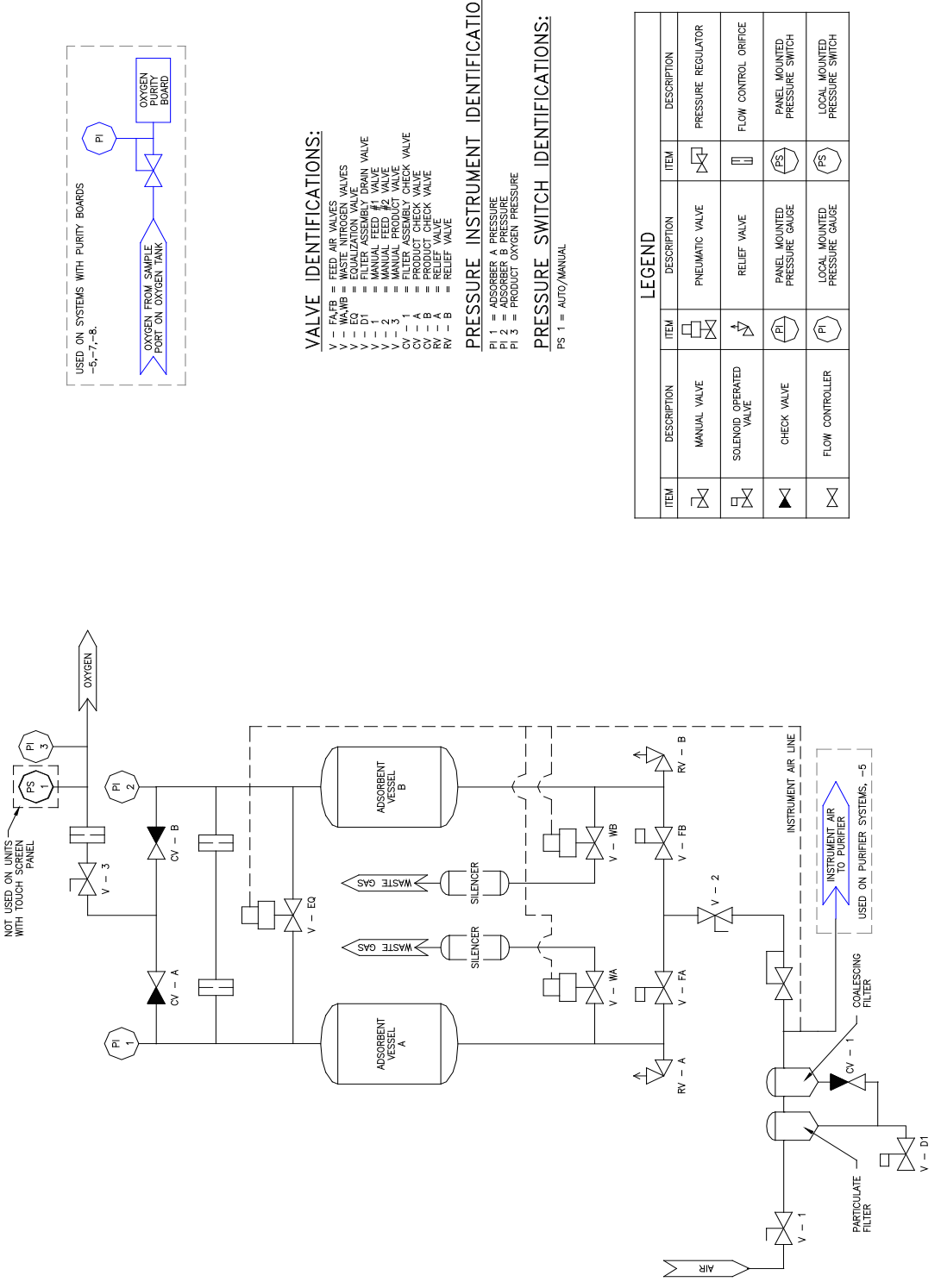


图 A.23：流程示意图 — AS-L

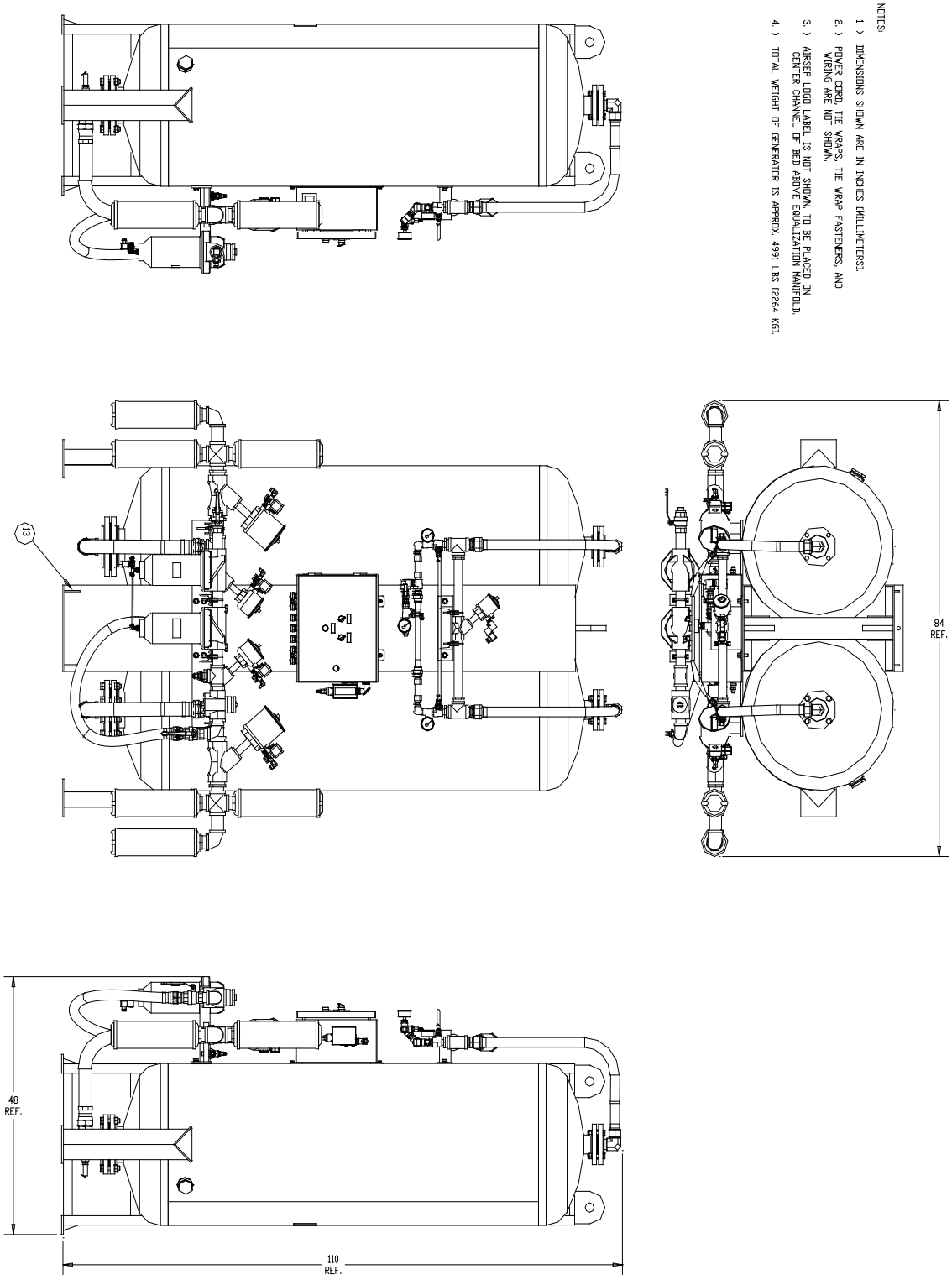


图 A.24：总体布局图 — AS-N

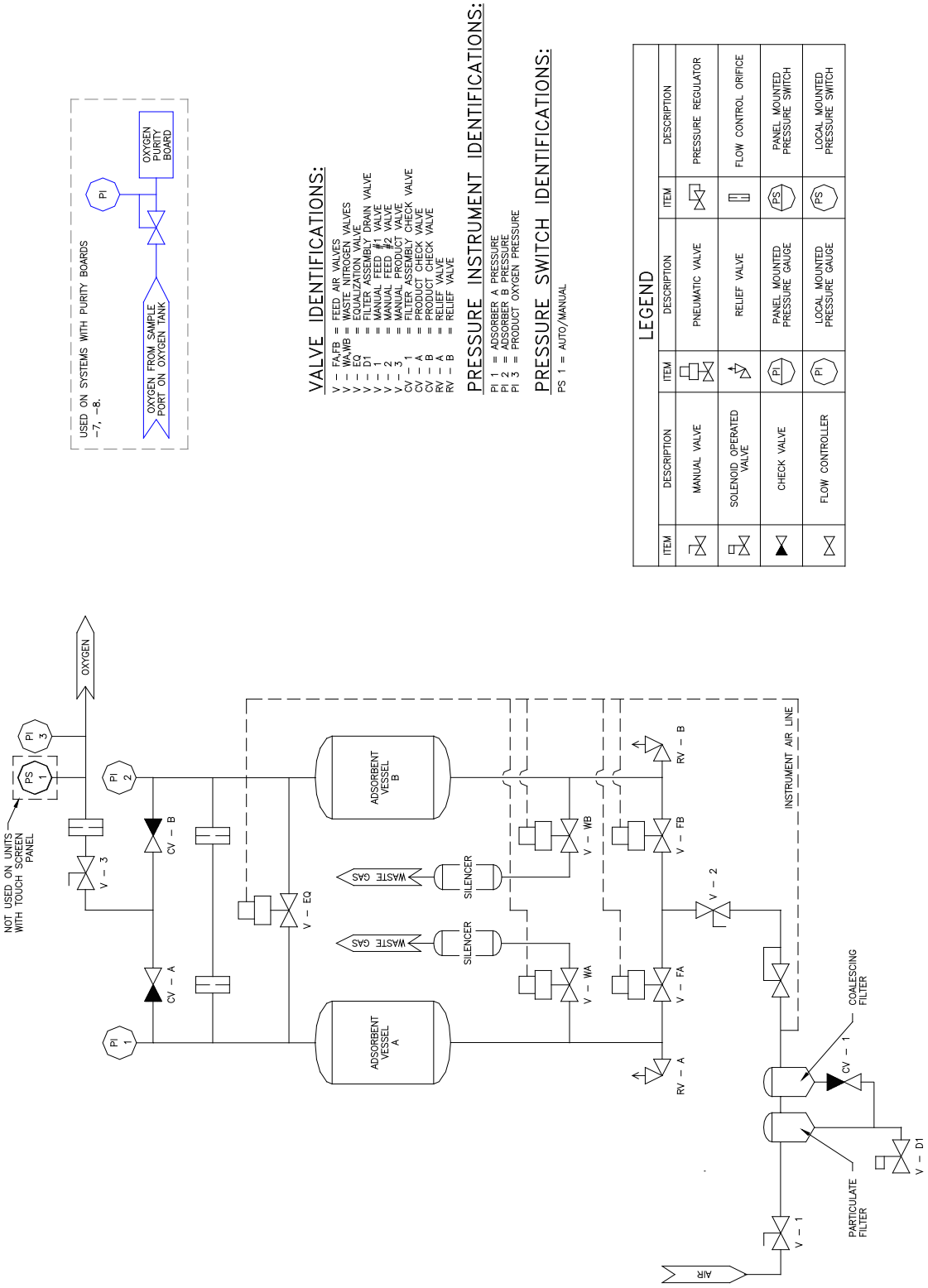


图 A.25：流程示意图 — AS-N

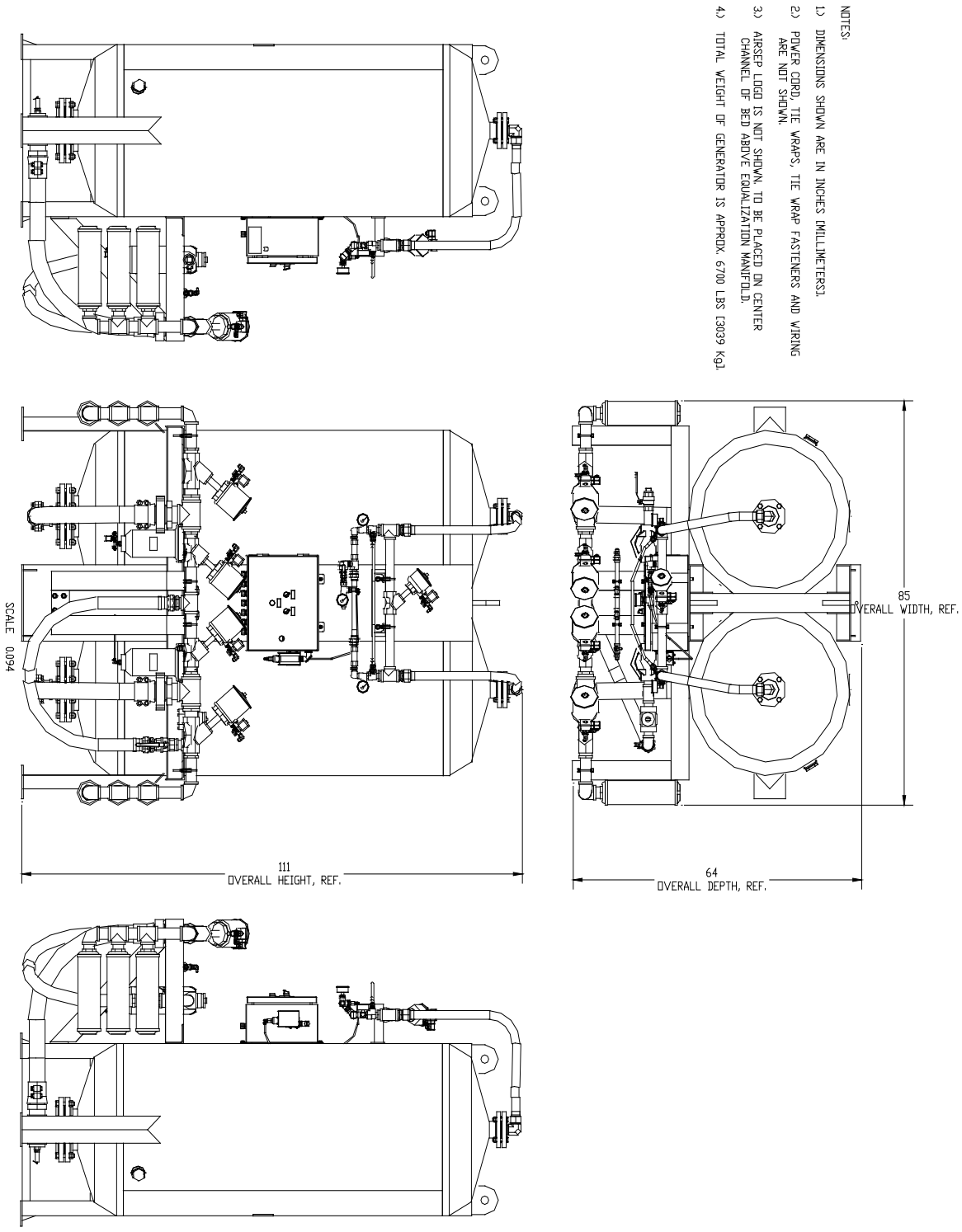


图 A.26：总体布局图 — AS-P

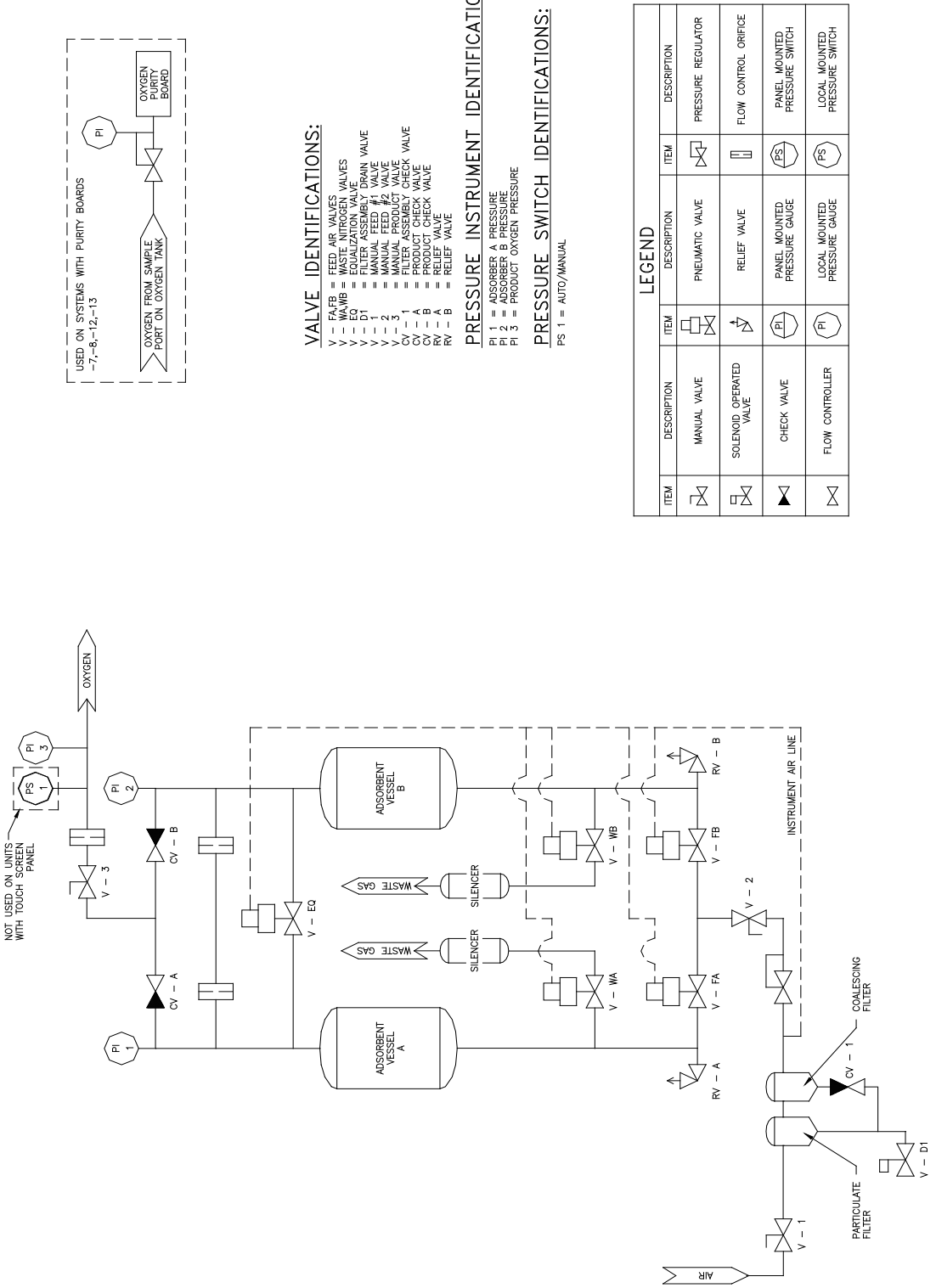


图 A.27：流程示意图 — AS-P

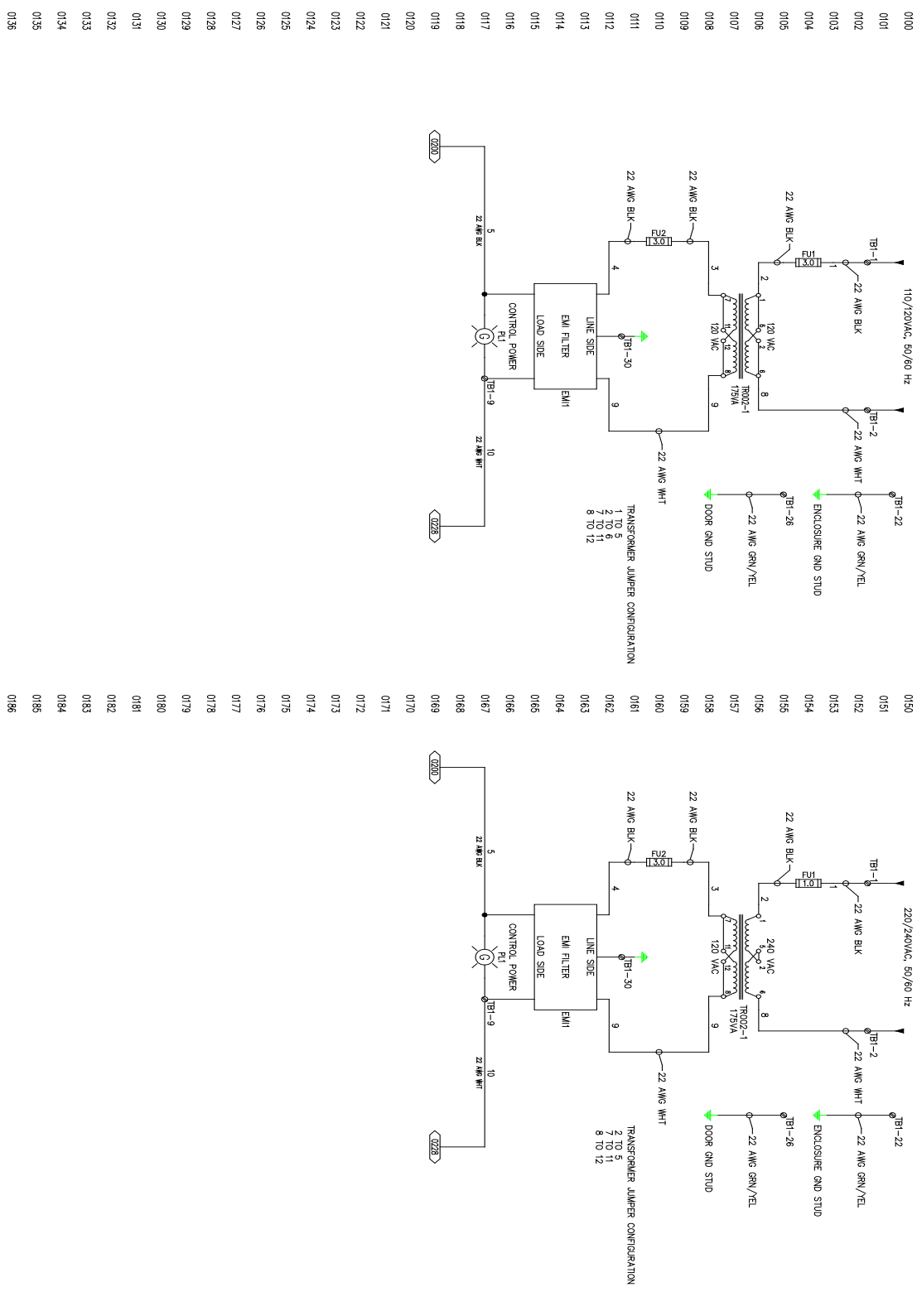


图 A.28：电路图 — AS-D+ 到 AS-P - I

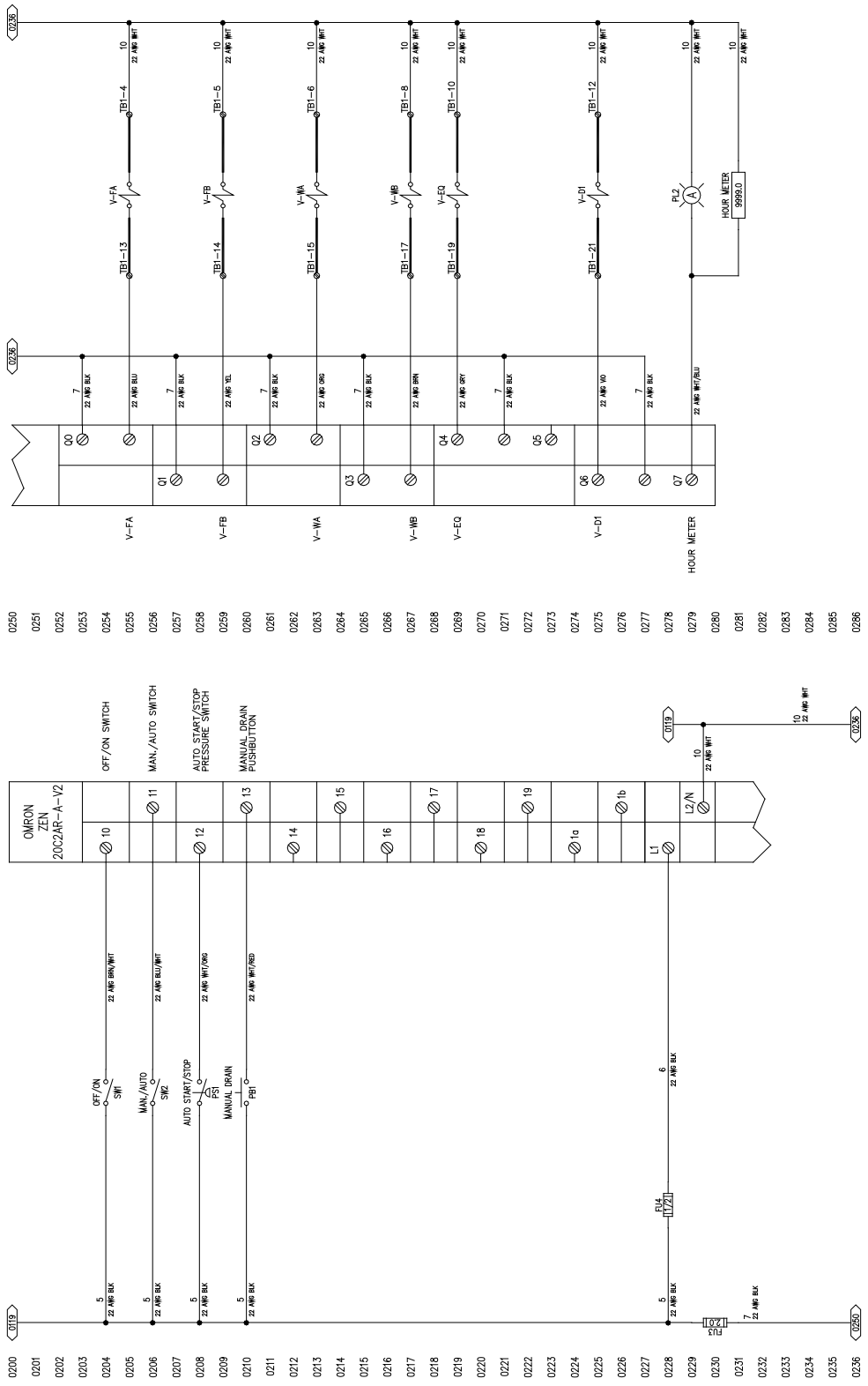


图 A.29：电路图 — AS-D+ 到 AS-P – II

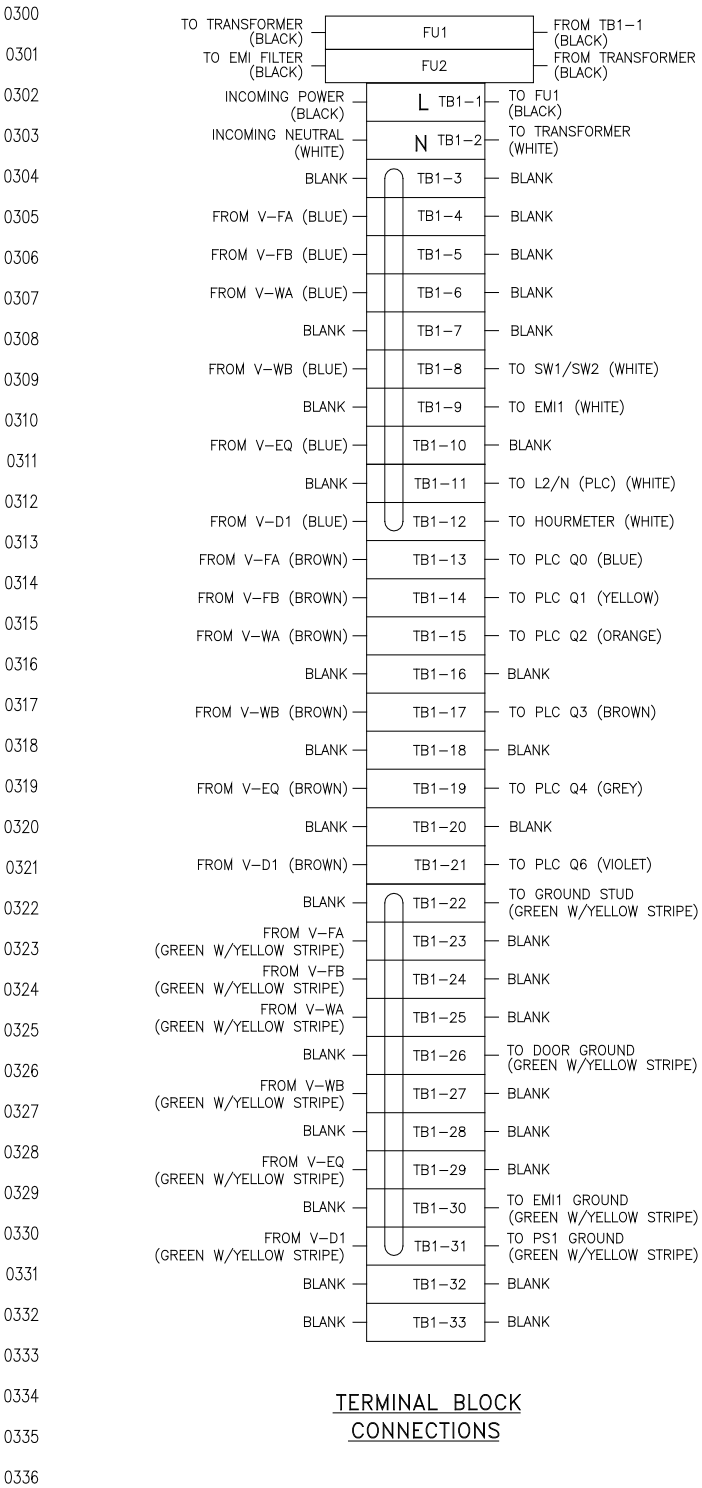


图 A.30：电路图 — AS-D+ 到 AS-P – III

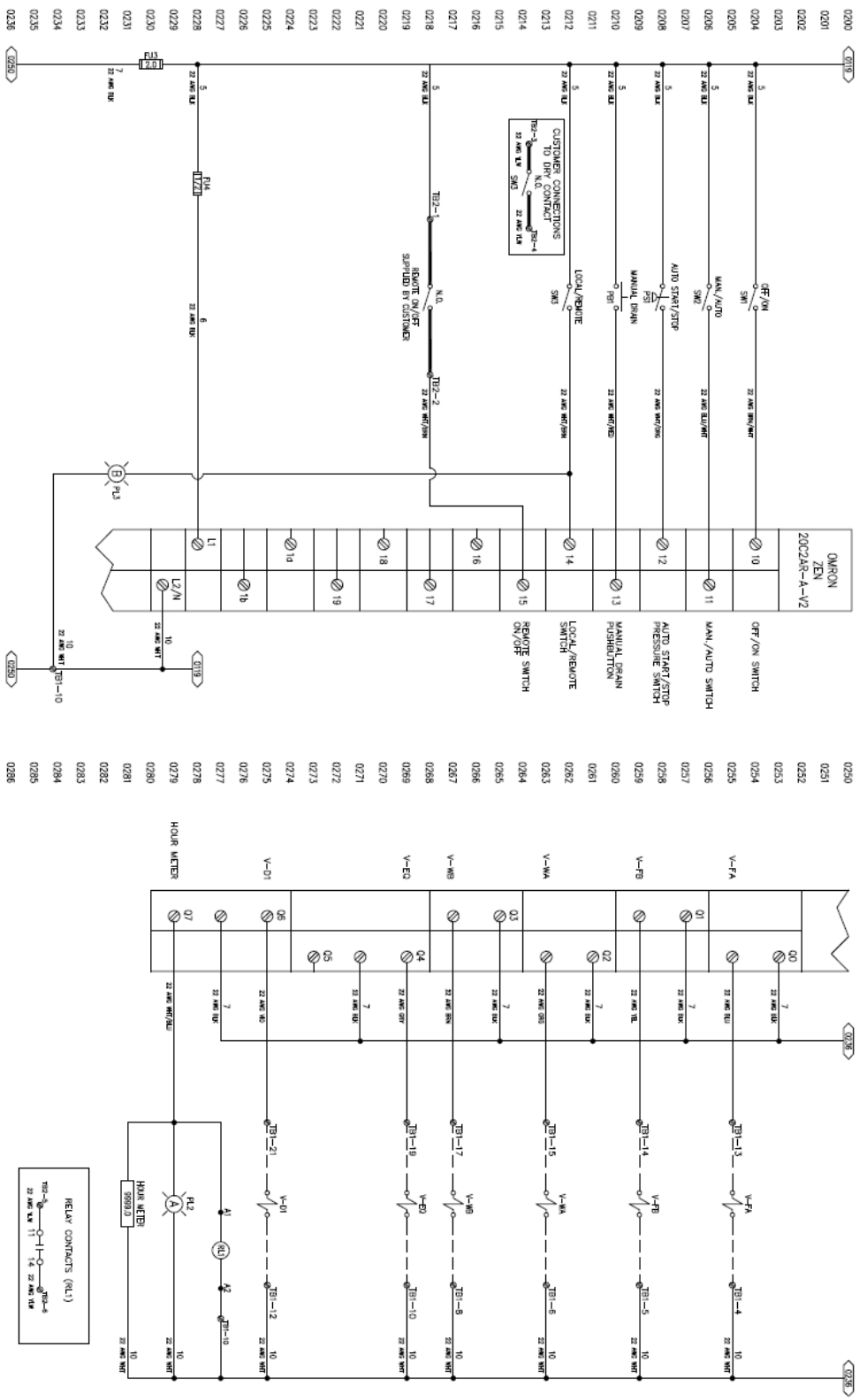


图 A.29：电路图 — AS-D+ 到 AS-P 本地/远程 – IV

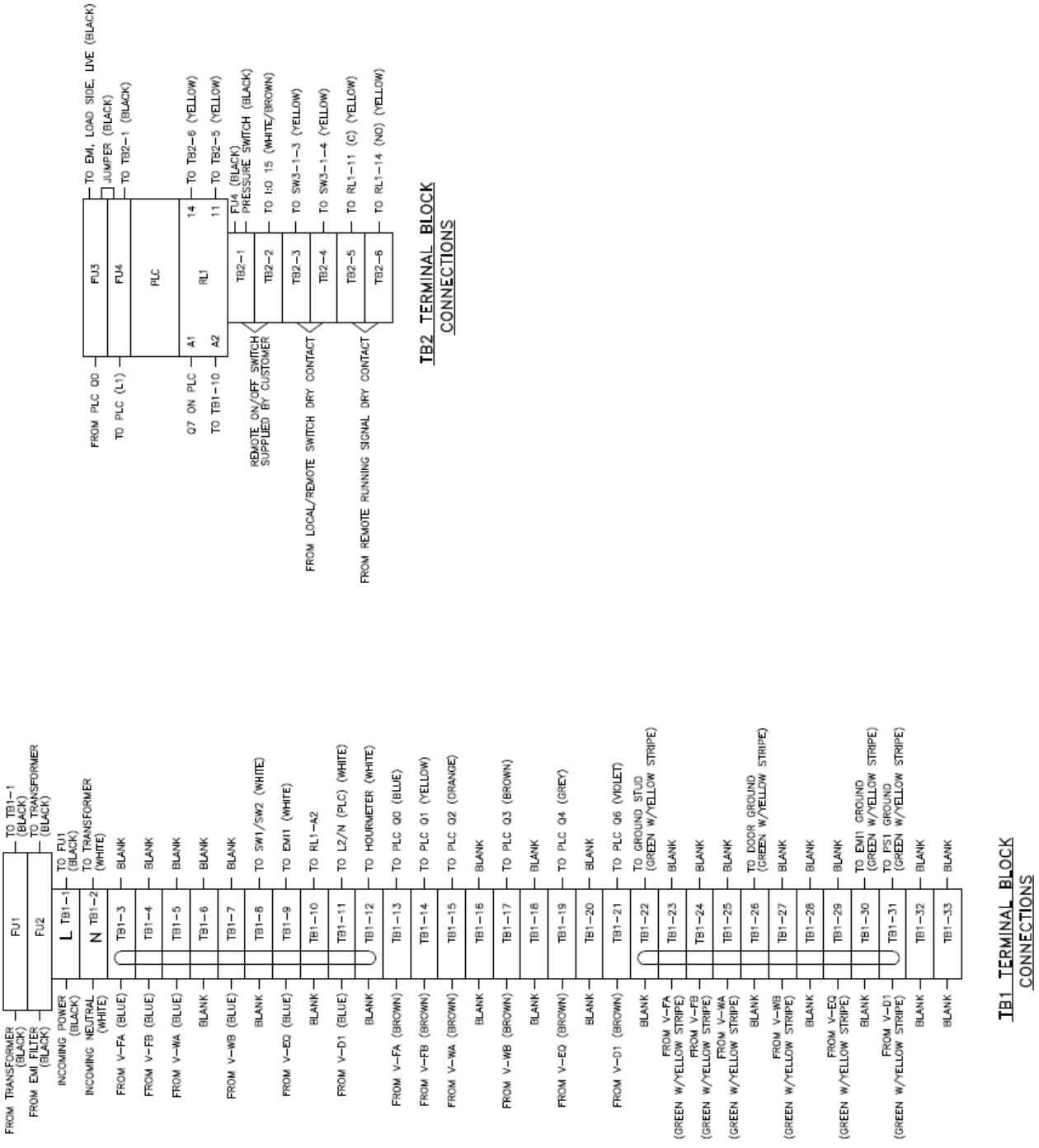


图 A.29：电路图 — AS-D+ 到 AS-P 本地/远程 – V

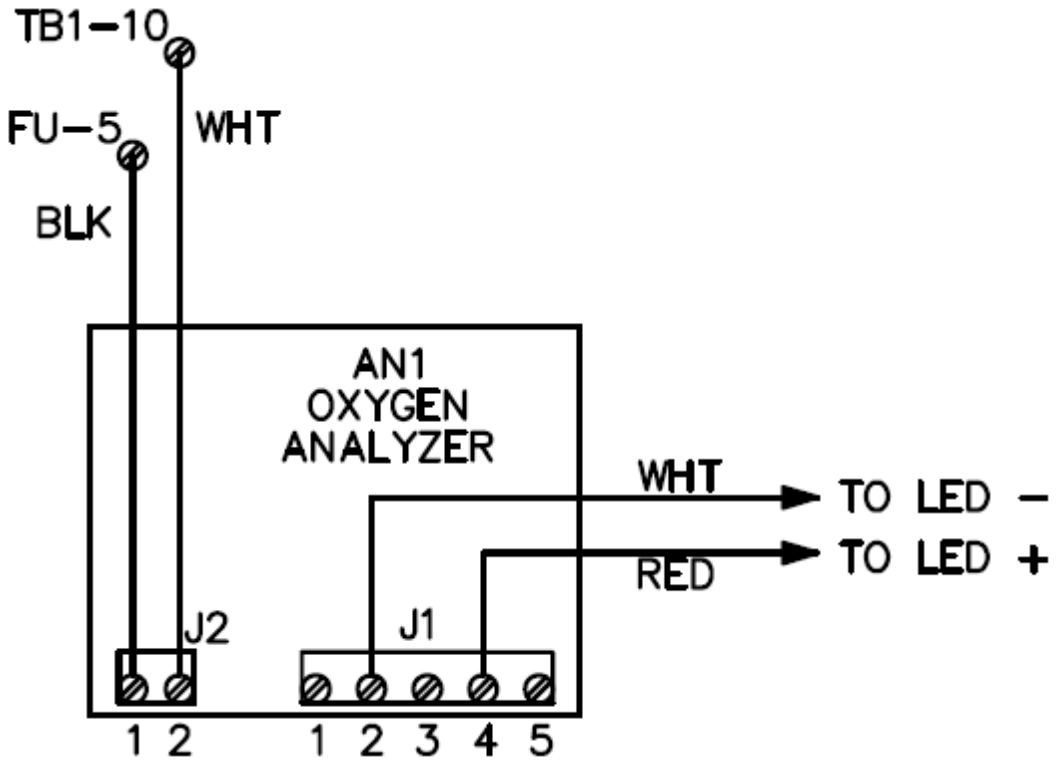


图 A.29：电路图 — AS-D+ 到 AS-P 浓度报警接线– *VI*

附录　保修/退货

产品保修

AirSep Corporation（简称“AirSep”）向从 AirSep 购买的一方（简称“原始购买者”）保证，自启动之日起一年（但不超出自向原始购买者发货之日起 18 个月）为 PSA 制氧机的零件和工艺提供保修服务，条件是：正常使用、维护和运行*。在适用法律允许的范围内，所有关于这类产品的保修政策仅扩展至和适用于原始购买者的利益，不得转让、扩展至或针对任何其他方的利益。AirSep 在本保修政策下的义务（由 AirSep 选择）仅限于维修或更换其认为零件或工艺存在缺陷的整套设备（或其中的某些部件），或针对存在缺陷的整套设备或其中的部件全额退款；但前提是 AirSep 必须在上述适用的保修期内收到这类缺陷的书面通知，否则 AirSep 不会承担本保修政策中规定的责任。

应 AirSep 要求，在预付费的前提下将提出保修请求的每套设备及对应的购买日期证明退回给 AirSep 指定的工厂，费用由原始购买者承担。更换部件应按照上述规定获得保修，期限为原始保修期的未到期时段。本保修政策不涵盖存在下列情况的任何设备或部件：被误用（由 AirSep 独立判断）、出现事故、维护或应用不当，或在未事先获得 AirSep 书面授权的情况下在 AirSep 工厂以外进行维修或替换。

即使出现任何与本政策规定相抵触的情况，在如上所述适用的保修期内，AirSep 也会向最初购买者支付退货运费，前提是经授权的 AirSep 代表批准退回 AirSep 发现存在缺陷的任何整套设备或其中的零件。对于自发票日期起 90 天内进行的质保维修，AirSep 会支付双程运费。适用的部件保修期到期后，将由原始购买者支付双程运费。

* 请参阅适当的产品文档，了解适用的安装和操作要求。

责任限制

上述保修政策是 AIRSEP 针对相关设备（或其中的零件）作出的唯一担保，且会替代任何其他事实或法律上的明示或默示担保，包括但不限于任何关于商销性或特殊用途适用性的担保。各方明确了解对于任何零件或工艺缺陷的唯一及排他性补救措施仅限于执行上述 AIRSEP 义务，且 AIRSEP 不对原始购买者或其他方在设备使用和利润方面的损失承担任何责任，也不对原始购买者或其他方的任何其他特殊性、间接性、附带性或后果性损害承担责任（即使 AIRSEP 已被告知这类损害的可能性）。

AirSep 制氧机仅限于工业应用。将此设备用于任何医疗用途之前，请联系 AirSep Corporation 或经授权的 AirSep Corporation 代表。

退回制氧机或组件进行维修

如果制氧机或存在缺陷的零件需要维修，请联系您的经销商。如果经销商让您联系 AirSep Corporation，请按照下面的步骤退回制氧机或组件接受维修或予以贷记。

1) 从 AirSep 商用产品服务部获得退货商品授权 (RGA) 号。（请参阅“第 8 章，故障处理”，获得 AirSep Corporation 的联系方式。） 致电获得维修帮助之前，请准备好提供下列信息：

   - 制氧机型号
   - 序列号
   - 使用小时数
   - 发票日期

注意

AirSep Corporation 不会对任何质保范围内的物件作出承诺，除非您提供制氧机的型号、序列号和发票日期，并将有缺陷的零件退回 AirSep Corporation。

2) 在运输包装箱表面清楚地写明 RGA。

注意

只有在 AirSep Corporation 事先发出书面授权后，AirSep Corporation 才会接收物件进行维修或予以贷记。

3) 以原始的材料包装退回物件。包装商品，安全退回。对于在运输过程中出现的损坏，AirSep Corporation 不承担任何责任。任何因未遵守本程序对制氧机或组件造成的损坏，由客户自行承担责任。

注意

仅在预支付运费的情况下返回商品。

B 附录 零件表

根据下面的列表订购制氧机零件。如需订购，请联系您的经销商。如果经销商让您联系 AirSep Corporation，请按照“第 8 章 — 故障处理”所述联系 AirSep 商用产品服务部。如果您需要的零件不在列表内，请在联系时提供所需零件的准确描述。

AS-A 零件

备件

物件	数量	部件编号
8000 小时套件/1 年		
Microalescer 过滤器滤芯 MTP-95-548	1	FI019-1
16000 小时套件/2 年		
Microalescer 过滤器滤芯 MTP-95-548	2	FI019-1
1/4" 进料阀维修工具包 304817	2	VA089-1
1/4" 排污阀维修工具包 304817	2	VA089-1
1/4" 均压阀维修工具包 304817N	2	VA088-1
1/8" 产品阀 SC8225B004V	1	VA495-3
1/8" 排放阀 SC82253V	1	VA495-2
40000 小时套件/5 年		
Microalescer 过滤器滤芯 MTP-95-548	5	FI019-1
1/4" 进料阀维修工具包 304817	4	VA089-1
1/4" 排污阀维修工具包 304817	4	VA089-1
1/4" 均压阀维修工具包 304817N	4	VA088-1
1/8" 产品阀 SC8225B004V	2	VA495-3
1/8" 排放阀 SC82253V	2	VA495-2
紧急备件		
主板		CB039-1
3 Amp 保险丝		FU004-1
止回阀		VA141-2
1/4" 均压阀线圈、进料阀线圈、排污阀线圈 2184101		VA110-1
MagnaLube		PS211-1
压力开关		SW003-3
辅助设备		
氧气分析仪		AN009-2

AS-B 零件

备件

物件	数量	部件编号
8000 小时套件/1 年		
预过滤器滤芯 FRP-95-115 1/4000 小时	2	FI029-1
Microalescer 过滤器滤芯 MTP-95-549 1/8000 小时	1	FI020-1
16000 小时套件/2 年		
预过滤器滤芯 FRP-95-115 1/4000 小时	4	FI029-1
Microalescer 过滤器滤芯 MTP-95-549 1/8000 小时	2	FI020-1
1/4" 进料阀维修工具包 304817	2	VA089-1
3/8" 排污阀维修工具包 302272	2	VA096-1
3/8" 均压阀维修工具包 302272N	2	VA095-1
1/8" 产品阀 SC8225B004V	1	VA495-3
1/8" 排放阀 SC82253V	1	VA495-2
40000 小时套件/5 年		
预过滤器滤芯 FRP-95-115 1/4000 小时	10	FI029-1
Microalescer 过滤器滤芯 MTP-95-549 1/8000 小时	5	FI020-1
1/4" 进料阀维修工具包 304817	4	VA089-1
3/8" 排污阀维修工具包 302272	4	VA096-1
3/8" 均压阀维修工具包 302272N	4	VA095-1
1/8" 产品阀 SC8225B004V	2	VA495-3
1/8" 排放阀 SC82253V	2	VA495-2
MagnaLube		PS211-1
紧急备件		
主板		CB039-2
3 Amp 保险丝		FU004-1
止回阀		VA141-2
1/4" 进料阀线圈 2184101		VA110-1
3/8" 排污阀线圈、均压阀线圈 2184103		VA112-1
压力开关		SW003-3
辅助设备		
氧气分析仪		AN009-2

AS-D 零件

备件

物件	数量	部件编号
8000 小时套件/1 年		
预过滤器滤芯 FRP-95-115 1/4000 小时	2	FI029-1
Microalescer 过滤器滤芯 MTP-95-549 1/8000 小时	1	FI020-1
16000 小时套件/2 年		
预过滤器滤芯 FRP-95-115 1/4000 小时	4	FI029-1
Microalescer 过滤器滤芯 MTP-95-549 1/8000 小时	2	FI020-1
3/8" 进料阀维修工具包 302272	2	VA096-1
3/8" 排污阀维修工具包 302272	2	VA096-1
3/8" 均压阀维修工具包 302272N	2	VA095-1
1/4" 产品阀维修工具包 304817N	1	VA088-1
1/8" 排放阀 SC82253V	1	VA495-2
40000 小时套件/5 年		
预过滤器滤芯 FRP-95-115 1/4000 小时	10	FI029-1
Microalescer 过滤器滤芯 MTP-95-549 1/8000 小时	5	FI020-1
3/8" 进料阀维修工具包 302272	4	VA096-1
3/8" 排污阀维修工具包 302272	4	VA096-1
3/8" 均压阀维修工具包 302272N	4	VA095-1
1/4" 产品阀维修工具包 304817N	2	VA088-1
1/8" 排放阀 SC82253V	2	VA495-2
紧急备件		
主板		CB039-3
3 Amp 保险丝		FU004-1
止回阀		VA141-2
1/4" 产品阀线圈 2184101		VA110-1
3/8" 进料阀线圈、排污阀线圈、均压阀线圈 2184103		VA112-1
MagnaLube		PS211-1
压力开关		SW003-3
辅助设备		
氧气分析仪		AN009-2

AS-D+ 零件

备件

物件	数量	部件编号
8000 小时套件/1 年		
预过滤器滤芯 FRP-95-115 1/4000 小时	2	FI029-1
Microalescer 过滤器滤芯 MTP-95-549 1/8000 小时	1	FI020-1
16000 小时套件/2 年		
预过滤器滤芯 FRP-95-115 1/4000 小时	4	FI029-1
Microalescer 过滤器滤芯 MTP-95-549 1/8000 小时	2	FI020-1
3/8" 进料阀维修工具包 302272	2	VA096-1
3/8" 排污阀维修工具包 302272	2	VA096-1
3/8" 均压阀维修工具包	1	VA432-1
1/8" 排放阀	1	VA495-2
40000 小时套件/5 年		
预过滤器滤芯 FRP-95-115 1/4000 小时	10	FI029-1
Microalescer 过滤器滤芯 MTP-95-549 1/8000 小时	5	FI020-1
3/8" 进料阀维修工具包 302272	4	VA096-1
3/8" 排污阀维修工具包 302272	4	VA096-1
3/8" 均压阀维修工具包	4	VA432-1
1/8" 排放阀	2	VA495-2
紧急备件		
3/8" 进料阀、排污阀、均压阀线圈 2184103		VA112-1
均压器 电磁阀		VA430-1
0-100psi 压力表		GA052-1
绿色 Led 灯泡		IL057-2
黄色 Led 灯泡		IL057-3
MagnaLube		PS211-1
辅助设备		
氧气分析仪		AN009-2

AS-E 零件

备件

物件	数量	部件编号
8000 小时套件/1 年		
预过滤器滤芯 FRP-95-115 1/4000 小时	2	FI029-1
Microalescer 过滤器滤芯 MTP-95-549 1/8000 小时	1	FI020-1
16000 小时套件/2 年		
预过滤器滤芯 FRP-95-115 1/4000 小时	4	FI029-1
Microalescer 过滤器滤芯 MTP-95-549 1/8000 小时	2	FI020-1
1/2" 进料阀维修工具包 302272	2	VA096-1
3/4" 排污阀维修工具包 302276	2	VA101-1
1/2" 均压阀维修工具包 C131204	1	VA432-1
1/8" 排放阀 SC8225B003V	1	VA495-2
40000 小时套件/5 年		
预过滤器滤芯 FRP-95-115 1/4000 小时	10	FI029-1
Microalescer 过滤器滤芯 MTP-95-549 1/8000 小时	5	FI020-1
1/2" 进料阀维修工具包 302272	4	VA096-1
3/4" 排污阀维修工具包 302276	4	VA101-1
1/2" 均压阀维修工具包 C131204	2	VA432-1
1/8" 排放阀 SC8225B003V	2	VA495-2

紧急备件

消音器元件 1"	MU055-1
绿色 LED 灯泡	IL057-2
黄色 LED 灯泡	IL057-3
0-100 PSIG 压力表	GA052-1
1/2" 均压阀和操作器	VA426-1
操作器电磁阀	VA430-1
OMRON PLC 计时器	CM089-1
3 Amp 保险丝	FU004-1
2 Amp 保险丝	FU015-1
0.5 Amp 保险丝	FU024-1
3/8" 止回阀	VA027-1
进料阀线圈、排污阀线圈 238612032	VA389-1
MagnaLube	PS211-1

辅助设备

氧气分析仪	AN009-2

AS-G 零件

备件

物件	数量	部件编号
8000 小时套件/1 年		
预过滤器滤芯 FRP-95-209 1/4000 小时	2	FI030-1
Microalescer 过滤器滤芯 MTP-95-551 1/8000 小时	1	FI016-1
16000 小时套件/2 年		
预过滤器滤芯 FRP-95-209 1/4000 小时	4	FI030-1
Microalescer 过滤器滤芯 MTP-95-551 1/8000 小时	2	FI016-1
3/4" 进料阀维修工具包 302276	2	VA101-1
1" 排污阀维修工具包 302283	2	VA103-1
3/4" 均压阀维修工具包 C131205	1	VA433-1
1/8" 排放阀 SC8225B003V	1	VA495-2
40000 小时套件/5 年		
预过滤器滤芯 FRP-95-209 1/4000 小时	10	FI030-1
Microalescer 过滤器滤芯 MTP-95-551 1/8000 小时	5	FI016-1
3/4" 进料阀维修工具包 302276	4	VA101-1
1" 排污阀维修工具包 302283	4	VA103-1
3/4" 均压阀维修工具包 C131205	2	VA433-1
1/8" 排放阀 SC8225B003V	2	VA495-2

紧急备件

消音器元件 1 1/2"	MU056-1
绿色 LED 灯泡	IL057-2
黄色 LED 灯泡	IL057-3
3/4" 均压阀和操作器	VA427-1
操作器电磁阀	VA430-1
OMRON PLC 计时器	CM090-1
3 Amp 保险丝	FU004-1
2 Amp 保险丝	FU015-1
0.5 Amp 保险丝	FU024-1
3/8" 止回阀	VA027-1
3/4" 进料阀线圈 238612032	VA389-1
1" 排污阀线圈 272612032	VA360-1
MagnaLube	PS211-1

辅助设备

氧气分析仪	AN009-2

AS-J 部件

备件

物件	数量	部件编号
8000 小时套件/1 年		
预过滤器滤芯 FRP-95-209 1/4000 小时	2	FI030-1
Microalescer 过滤器滤芯 MTP-95-551 1/8000 小时	1	FI016-1
16000 小时套件/2 年		
预过滤器滤芯 FRP-95-209 1/4000 小时	4	FI030-1
Microalescer 过滤器滤芯 MTP-95-551 1/8000 小时	2	FI016-1
1" 进料阀维修工具包 302283	2	VA103-1
1 1/2" 排污阀维修工具包 302286N	2	VA104-1
1" 均压阀维修工具包 C131206	1	VA434-1
1/8" 排放阀 SC8225B003V	1	VA495-2
40000 小时套件/5 年		
预过滤器滤芯 FRP-95-209 1/4000 小时	10	FI030-1
Microalescer 过滤器滤芯 MTP-95-551 1/8000 小时	5	FI016-1
1" 进料阀维修工具包 302283	4	VA103-1
1 1/2" 排污阀维修工具包 302286N	4	VA104-1
1" 均压阀维修工具包 C131206	2	VA434-1
1/8" 排放阀 SC8225B003V	2	VA495-2

紧急备件

消音器元件 2"	MU057-1
绿色 LED 灯泡	IL057-2
黄色 LED 灯泡	IL057-3
1" 均压阀和操作器	VA428-1
操作器电磁阀	VA430-1
OMRON PLC 计时器	CM083-1
3 Amp 保险丝	FU004-1
2 Amp 保险丝	FU015-1
0.5 Amp 保险丝	FU024-1
3/8" 止回阀	VA027-1
进料阀线圈、排污阀线圈 272612032	VA360-1
MagnaLube	PS211-1

辅助设备

氧气分析仪	AN009-2

AS-K 部件

备件

物件	数量	部件编号
8000 小时套件/1 年		
预过滤器滤芯 FRP-95-209 1/4000 小时	2	FI030-1
Microalescer 过滤器滤芯 MTP-95-559 1/8000 小时	1	FI017-1
16000 小时套件/2 年		
预过滤器滤芯 FRP-95-209 1/4000 小时	4	FI030-1
Microalescer 过滤器滤芯 MTP-95-559 1/8000 小时	2	FI017-1
1 1/2" 进料阀维修工具包 302286N	2	VA104-1
1 1/2" 排污阀维修工具包 302286N	2	VA104-1
1" 均压阀维修工具包 C131206	1	VA434-1
1/8" 排放阀 SC8225B003V	1	VA495-2
40000 小时套件/5 年		
预过滤器滤芯 FRP-95-209 1/4000 小时	10	FI030-1
Microalescer 过滤器滤芯 MTP-95-559 1/8000 小时	5	FI017-1
1 1/2" 进料阀维修工具包 302286N	4	VA104-1
1 1/2" 排污阀维修工具包 302286N	4	VA104-1
1" 均压阀维修工具包 C131206	2	VA434-1
1/8" 排放阀 SC8225B003V	2	VA495-2

紧急备件

OMRON PLC 计时器	CM084-1
3 Amp 保险丝	FU004-1
2 Amp 保险丝	FU015-1
0.5 Amp 保险丝	FU024-1
3/4" 止回阀	VA027-3
1 1/2" 进料阀线圈、排污阀线圈 272612032	VA360-1
1" 均压阀和操作器	VA428-1
操作器电磁阀	VA430-1
0-100 PSIG 压力表	GA052-1
消音器元件 2"	MU057-1
MagnaLube	PS211-1
绿色 LED 灯泡	IL057-2
黄色 LED 灯泡	IL057-3

辅助设备

氧气分析仪	AN009-2

AS-L 部件

备件

物件	数量	部件编号
8000 小时套件/1 年		
预过滤器滤芯 FRP-95-209 1/4000 小时	2	FI030-1
Microalescer 过滤器滤芯 MTP-95-559 1/8000 小时	1	FI017-1
16000 小时套件/2 年		
预过滤器滤芯 FRP-95-209 1/4000 小时	4	FI030-1
Microalescer 过滤器滤芯 MTP-95-559 1/8000 小时	2	FI017-1
1 1/2" 进料阀维修工具包 302286N	2	VA104-1
1 1/2" 排污阀维修工具包 302286N	4	VA104-1
1 1/4" 均压阀维修工具包 C131207	1	VA435-1
1/8" 排放阀 SC8225B003V	1	VA495-2
40000 小时套件/5 年		
预过滤器滤芯 FRP-95-209 1/4000 小时	10	FI030-1
Microalescer 过滤器滤芯 MTP-95-559 1/8000 小时	5	FI017-1
1 1/2" 进料阀维修工具包 302286N	4	VA104-1
1 1/2" 排污阀维修工具包 302286N	8	VA104-1
1 1/4" 均压阀维修工具包 C131207	2	VA435-1
1/8" 排放阀 SC8225B003V	2	VA495-2

紧急备件

消音器元件 2"	MUO57-1
绿色 LED 灯泡	IL057-2
黄色 LED 灯泡	IL057-3
0-100psig 压力表	GA052-1
1 1/4" 均压阀和操作器	VA431-1
操作器电磁阀	VA430-1
OMRON PLC 计时器	CM085-1
3 Amp 保险丝	FU004-1
2 Amp 保险丝	FU015-1
0.5 Amp 保险丝	FU024-1
3/4" 止回阀	VA027-3
1 1/2" 进料阀线圈、排污阀线圈 272 612 032	VA360-1
MagnaLube	PS211-1

辅助设备

氧气分析仪	AN009-2

AS-N 零件

备件

物件	数量	部件编号
8000 小时套件/1 年		
预过滤器滤芯 FRP-95-209 1/4000 小时	2	FI081-1
Microalescer 过滤器滤芯 MTP-95-559 1/8000 小时	1	FI049-1
16000 小时套件/2 年		
预过滤器滤芯 FRP-95-209 1/4000 小时	4	FI081-1
Microalescer 过滤器滤芯 MTP-95-559 1/8000 小时	2	FI049-1
1 1/2" 进料阀维修工具包 C131208	2	VA451-1
2 1/2" 排污阀维修工具包 C131622	2	VA490-1
1 1/4" 均压阀维修工具包 C131207	1	VA435-1
1/8" 排放阀 SC8225B003V	1	VA009-2
40000 小时套件/5 年		
预过滤器滤芯 FRP-95-209 1/4000 小时	10	FI081-1
Microalescer 过滤器滤芯 MTP-95-559 1/8000 小时	5	FI049-1
1 1/2" 进料阀维修工具包 C131208	4	VA451-1
2 1/2" 排污阀维修工具包 C131622	4	VA490-1
1 1/4" 均压阀维修工具包 C131207	2	VA435-1
1/8" 排放阀 SC8225B003V	2	VA009-2

紧急备件

消音器元件 2"	MUO57-1
绿色 LED 灯泡	IL057-2
黄色 LED 灯泡	IL057-3
0-100psig 压力表	GA052-1
1 1/4" 均压阀和操作器	VA431-1
操作器电磁阀 VA431-1 均压阀	VA430-1
1 1/2" 进料阀和操作器	VA429-2
操作器电磁阀 VA429-2 均压阀和 VA447-1 排污阀	VA444-1
2 1/2" 排污阀和操作器	VA447-1
3 Amp 保险丝	FU004-1
2 Amp 保险丝	FU015-1
0.5 Amp 保险丝	FU024-1
3/4" 止回阀	VA027-3
1 1/2" 进料阀线圈 272 612 032	VA360-1
MagnaLube	PS211-1

辅助设备

氧气分析仪	AN009-2

AS-P 部件

备件

物件	数量	部件编号
8000 小时套件/1 年		
预过滤器滤芯 FRP-95-209 1/4000 小时	2	FI079-1
Microalescer 过滤器滤芯 MTP-95-559 1/8000 小时	1	FI010-1
16000 小时套件/2 年		
预过滤器滤芯 FRP-95-209 1/4000 小时	4	FI079-1
Microalescer 过滤器滤芯 MTP-95-559 1/8000 小时	2	FI010-1
2" 进料阀维修工具包	2	VA489-1
2 1/2" 排污阀维修工具包 C131622	2	VA490-1
1 1/2" 均压阀维修工具包	1	VA451-1
1/8" 排放阀 SC8225B003V	1	VA009-2
40000 小时套件/5 年		
预过滤器滤芯 FRP-95-209 1/4000 小时	10	FI079-1
Microalescer 过滤器滤芯 MTP-95-559 1/8000 小时	5	FI010-1
2" 进料阀维修工具包	4	VA489-1
2 1/2" 排污阀维修工具包 C131622	4	VA490-1
1 1/2" 均压阀维修工具包	2	VA451-1
1/8" 排放阀 SC8225B003V	2	VA009-2
紧急备件		
消音器元件 2"		MUO57-1
绿色 LED 灯泡		IL057-2
黄色 LED 灯泡		IL057-3
0-100psig 压力表		GA052-1
1 1/2" 均压阀和操作器		VA429-3
操作器进料阀电磁阀、均压阀和排污阀		VA444-1
2 1/2" 排污阀和操作器		VA447-1
2" 进料阀和操作器		VA446-1
三通阀操作器维修工具包		VA452-1
3 Amp 保险丝		FU004-1
2 Amp 保险丝		FU015-1
0.5 Amp 保险丝		FU024-1
3/4" 止回阀		VA027-3
MagnaLube		PS211-1
辅助设备		
氧气分析仪		AN009-2

C 附录 组件文献

可编程逻辑控制器

- OMRON
  ZEN V2 Units
  Programmable Logic Controller (PLC)
  Data Sheets

过滤器

- Wilkerson Corporation
  ½" FPT, Type C
  MICROalescer Filter
  Installation and Maintenance Sheet

- Standard Filter
  ½", ¾" and 1" FPT, 83-531-000 REV 1
  Installation and Maintenance Sheet

- Wilkerson Corporation
  ¾" FPT, Type C
  MICROalescer Filter
  Installation and Maintenance Sheet

- Wilkerson Corporation
  Filter Model M32
  Installation and Maintenance Sheet

- Wilkerson Corporation
  Filter Model F35
  Installation and Maintenance Sheet

- Wilkerson Corporation
  Filter Model M35
  Installation and Maintenance Sheet

稳压器

- Wilkerson Corporation
  ½" FPT, Flow Regulator
  Installation and Maintenance Sheet

- Wilkerson Corporation
  ¾" FPT, Dial-Air™ Regulator
  Installation and Maintenance Sheet
- Wilkerson Corporation
  1" FPT, Dial-Air™ Regulator
  Installation and Maintenance Sheet
- Siemens Energy & Automation
  Moore Constant Differential Type Flow Controllers
  Installation, Operation and Maintenance Sheet

压力开关

- ASCO Switch Co.
  Tri-point pressure switches
  PG-Series
  Installation and Maintenance Sheet
- Allen-Bradley
  Style C pressure switches
  Bulletin 836
  Instruction Sheet

阀门

- Neles-Jamesbury
  ½-inch – 2-inch Series 4000
  3 Piece Ball Valves
  Installation, Maintenance and Operating Instructions
- ASCO Valves
  ⅛", ¼", or ⅜" NPT Solenoid Valves
  Series 8262 and 8263
  Installation and Maintenance Instructions
- ASCO Valves
  Open-Frame Solenoids
  Series U8003 and US8003
  Installation and Maintenance Instructions
- ASCO Valves
  ⅜", ½" and ¾" Solenoid Valves
  Series 8210 and 8211
  Installation and Maintenance Instructions
- ASCO Valves
  1", 1 – ¼" and 1-½" Solenoid Valves
  Series 8210 and 8211
  Installation and Maintenance Instructions

- ASCO Valves
  Red-Hat II
  Series 8017G and 8014
  Installation, Maintenance and Operating Instructions

- ASCO Valves
  2-way Auxiliary-Operated Pilot Controlled Piston Valves
  Series 8290
  Installation and Maintenance Instructions

- Banjo
  Direct Mounted Control Solenoid Valve
  Installation Instructions

Magnalube-G

- Saunders Enterprises, Inc.
  Grease for Feed Air Regulators
  Material Safety Data Sheet

OMRON

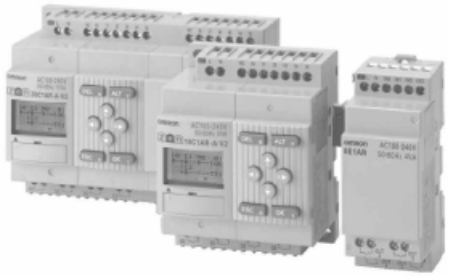
Programmable Relay
ZEN V2 Units

Please read and understand this catalog before purchasing the products. Please consult your OMRON representative if you have any questions or comments. Refer to "*Warranty and Application Considerations*" on page 36, and "*Precautions for Safe Use*" on page 34.

Even Broader Applications with Increased Functionality and Higher Precision

- Increased functionality in a compact body (70 mm wide × 90 mm high).
- Easy programming is available using the LCD and operation buttons. (See note 1.)
- This single Unit easily provides relay, timer, counter, and time switch functions.
- Expansion is easy with Expansion I/O Units, allowing up to 44 I/O points. (See note 2.)
- Economy-type and Communications-type CPU Units have been added to series.
- Improved Weekly Timers (See note 1.)
  Increased timing accuracy with a monthly deviation of ±15 s max. Multiple-day operation and pulse output operation have been added.
- Select from two power supply options:
  100 to 240 VAC or 12 to 24 VDC.

Note: 1. Not supported for ZEN-□C2□□-□-V2 models.
2. When using CPU Units with 20 I/O points.



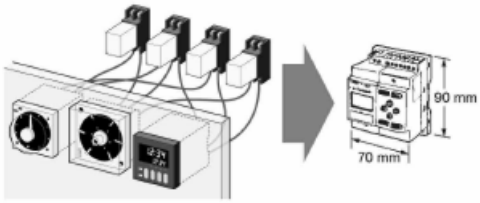
NEW

Features

■ Easy and Simple Programming for Automatic Small-scale Control

Saves Space, Wiring, and Installation Steps

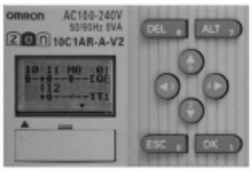
- Versatile functionality in a compact body (70 mm wide × 90 mm high).
- This single Unit easily provides relay, timer, counter, and time switch functions. Wiring work is greatly reduced because separate wiring is not required for devices such as timers and counters.



Easy Programming

The LCD screen comes with 8 operation buttons on the front panel to enable programming in ladder view format. The LCD screen also has a backlight, making it easier to see when the ZEN is used in dark locations.

Note: Not supported for ZEN-□C2□□-□-V2 models.

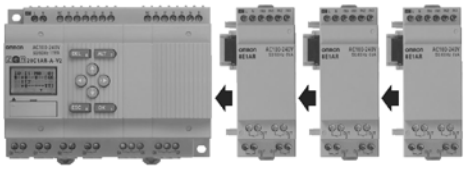


OMRON

Flexible Expansion Enables Up to 44 I/O Points

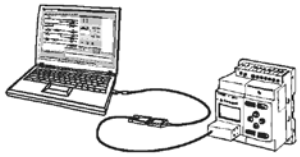
Up to three Expansion I/O Units can be connected if there are not enough I/O points. Expansion I/O Units are only 35 mm wide.

Note: CPU Units with 10 I/O points can be expanded to 34 I/O points. Expansion I/O Units cannot be connected to Economy-type CPU Units.



Support Software with Simulation Function

- Programs can be easily written, saved, and monitored by personal computer.
- Programs can be simulated on the personal computer without connecting to the ZEN.



Note: For notebook computers that do not have an RS-232C serial port, connect the computer to the ZEN by connecting an OMRON CS1W-CIF31 USB-Serial Conversion Cable to the ZEN-CIF01 Connecting Cable.

Other Versatile Functions

- Use of a Memory Cassette makes it easy to copy and save programs.
- Equipped with two analog input channels (CPU Units with DC power supply only).
- Password function ensures security. (See note.)
- Multi-language display in six languages (English, Japanese, German, French, Spanish, Italian). (See note.)
- Display user-set messages or analog-converted values. (See note.)

Note: Not supported for ZEN-□C2□□-□-V2 models.

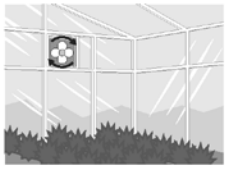
■ Enhanced Features of V2 CPU Units

Improved Weekly Timer and Calendar Timer Functions

Note: Not supported for ZEN-□C2□□-□-V2 models.

- The time precision has been increased.
  Conventional model: 2-min difference/month
  ↓
  -V2 models: ±15-s difference/month (at 25°C)
- Multiple-day operation and pulse-output operation are now possible.
- These improved functions are convenient for time-controlled applications such as lighting and air conditioning control.

Lighting control



Air conditioning control

Economy-type Added to the Series

- Economy-type CPU Units with a more affordable price have been added to the series, although Expansion I/O Units cannot be added.

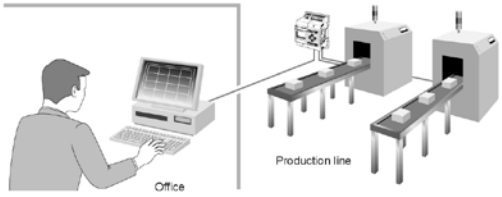
12 to 24 VDC Line Voltage Operation

Operation is now possible with 12 VDC.

Expansion I/O Units have been reduced to half-size (35 mm wide).

RS-485 Communications Model Added to Series

Production line conditions can be remotely monitored by monitoring the ZEN control status.



More Precise Analog Input

Conventional model: ± 10% FS → -V2 models: ± 1.5% FS
DC power supply models are equipped with two analog inputs (0 to 10 V). There are four analog comparators. The increased precision makes it even easier to use the Unit in simple control applications with voltage, current, temperature, and other analog values.

8-digit Counter, 150-Hz Counter

- An 8-digit counter and 8-digit comparator have been added.
- The maximum count for DC power supply models is 150 Hz.

Twin-timer Operation Added

Twin-timer operation allows you to set ON and OFF times separately, greatly simplifying intermittent operation.

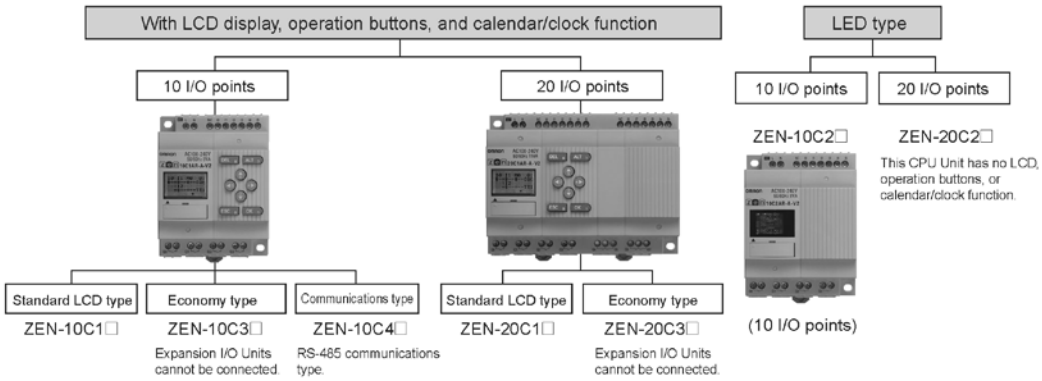
Programmable Relay **ZEN V2 Units**

OMRON

■ Series Configuration

CPU Units

Power supply voltage: 100 to 240 VAC, 12 to 24 VDC, Output: Relay, transistor output



Expansion I/O Units

Only 35-mm wide.
4 input, 4 output points

Power Supply Unit

Same shape and design as ZEN.
24 VDC, 30 W

Support Software

Allows easy programming and operation simulation.

Programmable Relay **ZEN V2 Units**

OMRON

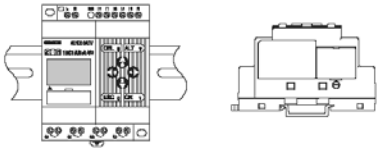
Specifications

■ Ratings

Item	Specification	
	ZEN-□C□AR-A-V2/ZEN-8E1AR	ZEN-□C□D□-D-V2/ZEN-8E1D□
Rated supply voltage	100 to 240 VAC, 50/60 Hz	12 to 24 VDC (DC ripple rate: 5% max.)
Operating voltage range	85 to 264 VAC	10.8 to 28.8 VDC
Power consumption	CPU Units without Expansion I/O Units • ZEN-10C1AR-A-V2/ZEN-10C2AR-A-V2/ ZEN-10C3AR-A-V2 100 V AC: 5 VA max. 240 V AC: 7 VA max. • ZEN-10C4AR-A-V2 100 V AC: 6 VA max. 240 V AC: 8 VA max. • ZEN-20C□AR-A-V2 100 V AC: 7 VA max. 240 V AC: 10 VA max. CPU Units with three Expansion I/O Units • ZEN-10C1AR-A-V2/ZEN-10C2AR-A-V2 100 V AC: 6 VA max. 240 V AC: 8 VA max. • ZEN-10C4AR-A-V2 100 V AC: 7 VA max. 240 V AC: 9 VA max. • ZEN-20C□AR-A-V2 100 V AC: 8 VA max. 240 V AC: 11 VA max. Expansion I/O Units • ZEN-8E1AR 100 V AC: 3 VA max. 240 V AC: 4 VA max.	CPU Units without Expansion I/O Units • ZEN-10C□DR-D-V2 12/24 V DC: 3 W max. (ZEN-10C3DR-D-V2: 2.8 W max.) • ZEN-10C□DT-D-V2 12/24 V DC: 2 W max. • ZEN-20C□DR-D-V2 12/24 V DC: 4 W max. • ZEN-20C□DT-D-V2 12/24 V DC: 2 W max. CPU Units with three Expansion I/O Units • ZEN-10C□DR-D-V2 12/24 V DC: 4 W max. • ZEN-10C□DT-D-V2 12/24 V DC: 3 W max. • ZEN-20C□DR-D-V2 12/24 V DC: 5 W max. • ZEN-20C□DT-D-V2 12/24 V DC: 3 W max. Expansion I/O Units • ZEN-8E1DR 12/24 V DC: 2 W max.
Inrush current	ZEN-10C□AR-A-V2: 4.5 A max. ZEN-20C□AR-A-V2: 4.5 A max. ZEN-8E1AR: 4 A max.	ZEN-10C□D□-D-V2: 30 A max. ZEN-20C□D□-D-V2: 30 A max. ZEN-8E1DR: 15 A max.
Ambient temperature	0 to 55°C (–25 to 55°C for ZEN-□C2□□-□-V2 models)	
Ambient storage temperature	–20 to 75°C (–40 to 75°C for ZEN-□C2□□-□-V2 models)	
Ambient humidity	10% to 90% (with no condensation)	
Ambient conditions	No corrosive gases	
Mounting method	Surface mounting, DIN track mounting (standard (vertical) installation and horizontal installation) (See notes 1 and 2.)	
Terminal block	Solid-line terminal block (use solid wire or fine-stranded wire)	
Terminal screw tightening torque	0.565 to 0.6 N·m (5 to 5.3 in-lb)	
Degree of protection	IP20 (Mounted inside a control panel)	

Note: 1. Can be mounted to 35-mm DIN Track.

2. Standard (Vertical) installation Horizontal installation



WILKERSON
CORPORATION

MICROalescer® Filter

MANUFACTURER'S WARRANTY

Manufacturer's products are warranted to be free from defects in material and workmanship under proper use, installation, application and maintenance in accordance with manufacturer's written recommendations and specifications for one year from the date of shipment from the factory. Manufacturer's obligation under this warranty is limited to and the sole remedy for any such defect shall be the repair or replacement (at manufacturer's option) of unaltered products returned to manufacturer and proven to have such defect, provided such defect is promptly reported to manufacturer within said one year period.

THIS IS THE ONLY AUTHORIZED MANUFACTURER'S WARRANTY AND IS IN LIEU OF ALL OTHER EXPRESS OR IMPLIED WARRANTIES OR REPRESENTATIONS, INCLUDING ANY IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS, OR OF ANY OTHER OBLIGATIONS ON THE PART OF MANUFACTURER. Warranty claims must be submitted and shall be processed in accordance with manufacturer's established warranty claim procedure. In no event will manufacturer be liable for business interruptions, loss of profits, personal injury, costs of delay or for any other special indirect, incidental or consequential losses, costs or damages.

⚠ WARNING ⚠

USE LIMITATIONS

Manufacturer's warranties are void and manufacturer assumes no responsibility for any resulting cost, loss injury or any other damages whatsoever with respect to any plastic bowl unit for which a bowl guard is standard equipment if the unit is placed in service without the bowl guard and except as otherwise specified in writing by manufacturer with respect to any manufacturer's products which are used in other than compressed air service. Specific warnings with respect to these and other use limitations appear elsewhere in this product instruction sheet.

ATTENTION: Make sure bowl is fully inserted into body, and then fully turned to lock bowl in place before applying air pressure to unit. When bowl is properly installed, the alignment markings on the bowl/bowlguard assembly and the marks on the body will line up, indicating proper assembly. Failure to do so may cause air pressure to blow bowl off of unit, resulting in serious personal injury or death. Depressurize unit before attempting to service.

YOU have selected a quality product, and we appreciate it... To be assured of maximum performance and satisfaction please read these instructions before installing this product.

WARNING: IF YOUR UNIT HAS A PLASTIC BOWL:

1. **DO NOT** use plastic bowl units without a bowl guard installed.* Plastic bowl units are sold only with bowl guards to minimize the danger of flying fragments in the event of bowl failure. If this unit is in service without a bowl guard installed, manufacturer's warranties are void, and the manufacturer assumes no responsibility for any resulting loss. **(*EXCEPT M00 MODEL)**
2. **DO NOT** install the unit where it will be subjected to temperatures higher than 125°F (52°C).
3. **DO NOT** install the unit where it will be subjected to pressures higher than 150 psig (10,3 bar).
4. **CAUTION:** Certain compressor oils, household cleaners, chemicals, solvents, paints and fumes will attack plastic bowls and can cause plastic bowl failure. See manufacturer's list shown elsewhere on this sheet.
5. **WHEN BOWL** becomes dirty replace bowl or wipe only with a clean, dry cloth.
6. **DO NOT** install on a compressed air line where the compressor is lubricated with, or the air contains, a material that will attack plastic bowls.
7. **DO** inspect plastic bowls to detect crazing, cracking, damage or other deterioration. Immediately replace any crazed, cracked, damaged or deteriorated bowl with a metal bowl or a new plastic bowl and bowl guard.
8. **IF A UNIT HAS BEEN IN SERVICE AND DOES NOT HAVE A BOWL GUARD, ORDER ANOTHER ONE AND INSTALL BEFORE PLACING BACK IN SERVICE.**

IMPORTANT INSTALLATION INSTRUCTIONS FOR MICROALESCER® FILTERS (TYPE C)

1. **DO NOT** install the unit until you have read this entire product information sheet. If your unit has a plastic bowl, note the special warning information listed above.
2. **EXCEPT** as otherwise specified by manufacturer, this product is specifically designed for compressed air service, and use with any other fluid (liquid or gas) is a misapplication. For example, use with or injection of certain hazardous liquids or gases in the system (such as alcohol or liquid petroleum gas) could be harmful to the unit or result in a combustible condition or hazardous external leakage. Before using with fluids other than air, or for non-industrial applications, or for life support systems, consult manufacturer for written approval. Manufacturer's warranties are void in the event of misapplication and manufacturer assumes no responsibility for any resulting loss. Maximum pressure and temperature ratings for plastic bowls are 150 psig (10,3 bar) and 125°F (52°C); and for metal bowls 200 psig (14 bar) and 175°F (79°C). [(08/18/28 Series-250 psig (17 bar) and 175°F (79°C)]
3. **INSTALL** as close as possible to point where air is being used.
4. **REDUCING THE PIPE SIZE** down to accommodate a smaller inlet/outlet pipe size of a MICROalescer® filter does not affect proper operation of filter. **DO NOT** select MICROalescer® filters by inlet and outlet port sizes. MICROalescer® filters should be selected by the airflow and inlet pressure required.
5. **INSTALL** a 5-micron prefilter ahead of the MICROalescer® filter to prolong life of the element.
6. **INSTALL** a pressure differential gauge (available from the manufacturer) to determine when to change the disposable elements, or install an air pressure gauge at inlet and another at outlet of MICROalescer® filter. When the pressure differential reaches 10 psig (0,7 bar), change the element.
7. **PURGE** all traces of oil on the downstream side of coalescing filter prior to installation.
8. **DO NOT INSTALL** MICROalescer® filter on an air line if there are any chemicals in the compressed air that will attack the polyurethane foam cover of the element.
9. **WHEN INSTALLING** filter element **DO NOT** touch the foam plastic cover. Always handle it by the end plates. DO NOT touch the MICROalescer® element once it has been placed in service. Pressure on the outer foam cover can damage it once it is in service.
10. **WHEN INSTALLING** a chemical dryer, mount it after the MICROalescer® filter.
11. **WHEN INSTALLING** a refrigerated air dryer, it may be installed before a MICROalescer® filter. (See schematic elsewhere in these instructions.)
12. **WHEN INSTALLING** a Type D filter with an AC Pak element (Activated Carbon for oil vapor adsorption), mount filter after air dryer.
13. DO NOT INSTALL a quick-opening valve if this causes a flow surge beyond the flow rating of the unit.

WHEN TO CHANGE THE TYPE C ELEMENT

1. **CHANGE ELEMENT** when pressure differential reaches 10 psig (0,7 bar). Units with differential pressure indicator will move to red at 10 psid.
2. **DO NOT** change element if oil stains appear on lower 1/5 of element. This is normal; oil or water stains on the outer foam cover do not indicate a need to change the element.
3. **WHEN INSTALLING** element using bottom retainer nut, tighten nut to 5-6 ft. lbs.
4. DO NOT use oils or grease on element or bowl seals. NOTE: Only excessive pressure drop requires the replacement of the element. Excessive pressure drop indicates that the filter has been removing solid contaminants as well as oil and water particulates.

TROUBLE-SHOOTING MICROALESCER® FILTER INSTALLATIONS

IF OIL AEROSOLS APPEAR DOWNSTREAM FROM MICROALESCER® FILTER

1. This could indicate lines were not properly purged of previous contaminants.
2. Check to see if sealing gasket/o-ring (depending on model) is in place and making proper seal between the top of the element and the cover casting. Make sure element is tightened firmly in place.
3. Make sure you are not flowing more air through the unit than its rated capacity. Momentary high flows could cause oil bypass.
4. For maximum efficiency, air inlet temperature should be between 70°F (21°C) and 90°F (32°C).
5. If inlet temperatures up to the maximum of 125°F (52°C) cannot be avoided, install the Type C filter with a Type D element downstream. This will catch the oil vapors that are usually responsible for oil downstream at higher temperatures. Check that compressor is not drawing air at the intake contaminated with harmful chemicals or hydrocarbons.
6. If the foam sock is torn or ruptured, oil may pass downstream from the element. If this should occur, replace the element.
7. In compressors which have been running for a long time without changing of oil, most oils will gradually change their chemical compositions and may develop impurities which attack the plastic bowl, filter seals, or outer foam sock. Periodic replacement of the compressor oil will prevent this occurrence and extend compressor life.

FRENCH CANADIAN

VOUS avez choisi un produit de qualité et nous l'apprécions. Pour être assuré d'obtenir des performances et un fonctionnement parfait, lisez ces instructions avant l'installation de notre matériel.

ATTENTION: SI VOTRE APPAREIL A UN BOL PLASTIQUE

1. **NE PAS** utiliser les unités à bol en plastique sur lesquelles il n'y pas de dispositif de protection installé.* Toutes les unités à bol en plastique sont vendues équipées d'un dispositif de protection afin de minimiser le danger que présente la projection de fragments résultant de l'éclatement du bol. La mise en service de cette unité sans dispositif de protection installé annule les garanties accordées par le fabricant. Le fabricant décline alors toute responsabilité pour toute perte qui en résulterait. **(*SAUF MODÈLE M00)**
2. **NE PAS** installer l'appareil dans un endroit où la température est supérieure à 52°C.
3. **NE PAS** utiliser l'appareil à des pressions supérieures à 10,3 bar.
4. **ATTENTION:** certains huiles de compresseur, produits d'entretien, produits chimiques, solvants, peintures et vapeurs, attaquent les bols plastiques et sont cause de détérioration. Voir la liste sur cette feuille. à ne pas utiliser à proximité de ces produits.
5. **QUAND LE BOL** devient sale le remplacer ou le nettoyer avec un chiffon propre et sec.
6. **NE PAS** installer l'appareil sur une ligne d'air comprimé où le compresseur est lubrifié avec un produit qui attaque les bols plastiques, ou si l'air en contient.
7. **INSPECTER** pour détecter fêlures, craquelures ou autres détériorations. Remplacer immédiatement tout bol fêlé, craquelé, endommagé ou détérioré par un bol métal ou un nouveau bol plastique avec bol de protection métallique.
8. **SI UNE UNITÉ MISE EN SERVICE NE POSSÈDE PAS DE DISPOSITIF DE PROTECTION, COMMANDEZ-EN UN ET INSTALLEZ-LE AVANT DE CONTINUER À VOUS SERVIR DE L'UNITÉ.**

INSTRUCTIONS IMPORTANTES POUR L'INSTALLATION DES FILTRES SUBMICRONIQUES.

1. **NE PAS** installer l'appareil sans avoir préalablement lu la présente notice d'installation. Si l'appareil a un bol en plastique, tenir compte des avertissements spéciaux ci-haut.
2. **SAUF** spécifications contraires du constructeur, cet appareil est prévu pour l'air comprimé, un emploi avec

83-536-000 9/98
Printed in U.S.A.

1. **NO** instale la unidad hasta que haya leído completamente esta hoja de información sobre el producto. Si su unidad tiene una taza de plástico, observe la información de precauciones especiales indicada anteriormente.
2. **SALVO** que el fabricante especifique lo contrario, este producto está diseñado específicamente para el uso con aire comprimido, y su uso con cualquier otro fluido (líquido o gas) es una aplicación indebida. Por ejemplo, el uso con o la inyección de ciertos líquidos o gases peligrosos en el sistema (tales como el alcohol o el gas de petróleo líquido) podría ser nocivo para la unidad o resultar en una condición de combustión o una fuga externa peligrosa. Antes de utilizar con fluidos que no sean aire, para aplicaciones no industriales, o para sistemas de soporte de vida, consulte al fabricante para obtener una aprobación por escrito. Las garantías del fabricante no tendrán validez en el caso de aplicación indebida y éste no asume ninguna responsabilidad por cualquier pérdida resultante. Los valores máximos de presión y temperatura de las tazas de plástico son 150 lbs/pulgada2 (10,3 barias) y 125°F (52°F); y de las tazas de metal 200 lbs/pulgada2 (14 barias) y 175°F (79°C). [(Serie 08/18/28-250 lbs/pulgada2 (17 barias) y 175°F (79°C)]
3. **INSTALE** el producto lo más cerca posible del punto donde se está utilizando el aire.
4. **REDUCIR EL TAMAÑO DEL CAÑO** para acomodar un caño de entrada/salida de tamaño más pequeño de un filtro MICROalescer® no afecta el buen funcionamiento del filtro. **NO** seleccione los filtros MICROalescer® por los tamaños de orificio de entrada y salida. Los filtros MICROalescer® se deben seleccionar por el flujo de aire y la presión de entrada requeridos.
5. **INSTALE** un prefiltro de 5 micrones delante del filtro MICROalescer® para prolongar la vida útil del elemento.
6. **INSTALE** un manómetro diferencial (disponible del fabricante) para determinar cuándo cambiar los elementos desechables o instale un manómetro en la entrada y otro en la salida del filtro MICROalescer®. Cuando la diferencia de presiones llegue a 10 lbs/pulgada2 (0,7 barias), cambie el elemento.
7. **PURGUE** todos los vestigios de aceite dentro de los conductos antes de la instalación del filtro.
8. **NO INSTALE** el filtro MICROalescer® en una línea de aire si hubiera algún producto químico en el aire comprimido que dañe la cubierta de plástico celular de poliuretano del elemento.
9. **CUANDO INSTALE** el elemento de filtro, **NO** toque la cubierta de plástico celular. Siempre tómelo por las placas terminales. **NO** toque el elemento MICROnaught® una vez que se le haya puesto en uso. La presión sobre la cubierta de plástico celular exterior puede dañarlo una vez que esté en uso.
10. **CUANDO INSTALE** un secador químico, móntelo después del filtro MICROalescer®.
11. **CUANDO INSTALE** un secador de aire refrigerado, puede instalárselo antes de un filtro MICROalescer®. (Vea el esquema correspondiente en otra parte de estas instrucciones.)
12. **CUANDO INSTALE** un filtro de Tipo C con un elemento AC Pak (carbón activado para adsorción de vapor de aceite), monte el filtro después del secador de aire.
13. **NO INSTALE** una válvula de apertura rápida si ésto causara un flujo excesivo que sobrepase la capacidad de flujo de la unidad.

CUANDO SE DEBE CAMBIAR EL ELEMENTO DE TIPO C

1. **CAMBIE EL ELEMENTO** cuando la diferencia de presiones llegue a 10 lbs/pulgada2 (0,7 barias). Las unidades con indicador de diferencia de presiones se moverán al rojo a 0.7 barias.
2. **NO** cambie el elemento si aparecen manchas de aceite en la parte inferior equivalente a 1/5 del elemento. Esto es normal; las manchas de aceite o agua en la cubierta de plástico celular exterior no indican una necesidad de cambiar el elemento.
3. **CUANDO INSTALE** el elemento utilizando la tuerca inferior de sujeción, apriete la tuerca entre 5 y 6 libras/pie.
4. **NO** utilice aceites o grasa en el elemento o las juntas de la taza. NOTA: Sólo una caída excesiva de presión requiere el cambio del elemento. La caída excesiva de presión indica que el filtro ha filtrado contaminantes sólidos, así como partículas de aceite y agua.

LOCALIZACION DE FALLAS EN LAS INSTALACIONES DEL FILTRO

MICROALESCER® SI LOS AEROSOLES DE ACEITE APARECIERAN EN EL CIRCUITO DESPUES DEL FILTRO MICROALESCER®

1. Esto podría indicar que los conductos no fueron debidamente purgados de contaminantes anteriores.
2. Verifique que la junta obturadora/anillo tórico (según el modelo) esté en su lugar y que haya un sellado adecuado entre la parte superior del elemento y la tapa moldeada. Asegúrese de que el elemento esté sujetado firmemente en su lugar.
3. Controle que el flujo de aire a través de la unidad no sea superior a su capacidad. Los flujos elevados momentáneos podrían ser la causa de un paso de aceite.
4. Para una mayor eficiencia, la temperatura de entrada del aire debe ser entre 70°F (21°C) y 90°F (32°C).
5. Si no pueden evitarse las temperaturas de entrada de hasta el máximo de 125°F (52°C), instale el filtro de Tipo C con un elemento de Tipo D. Esto captará los vapores de aceite que normalmente son responsables del aceite que aparece a temperaturas más altas. Verifique que el compresor no esté aspirando en la entrada, aire contaminado con productos químicos nocivos.
6. Si la funda de espuma está rasgada o rota, el aceite podría filtrarse desde el elemento. Si ocurriera esto, cambie el elemento.
7. En compresores que han estado funcionando durante largo tiempo sin cambiarle el aceite, la mayoría de los aceites cambiarán gradualmente sus composiciones químicas y pueden acumular impurezas que dañan a la taza de plástico, las juntas de los filtros o la funda exterior de espuma. El cambio periódico del aceite del compresor evitará que esto suceda y prolongará la vida útil del compresor.

SOME OF THE MATERIALS THAT WILL ATTACK POLYCARBONATE PLASTIC BOWLS.

Acetaldehyde
Acetic acid (conc.)
Acetone
Acrylonitrile
Ammonia
Ammonium flouride
Ammonium hydroxide
Ammonium sulfide
Anaerobic adhesives and sealants
Antifreeze
Benzene
Benzoic acid
Benzyl alcohol
Brake fluids
Bromobenzine
Butyric acid
Carbolic acid
Carbon disulfide
Carbon tetrachloride
Caustic potash solution
Caustic soda solution
Chlorobenzine
Chloroform
Cresol
Cyclohexanol
Cyclohexanone
Cyclohexene
Dimethyl formamide
Dioxane
Ethane tetrachloride
Ethyl acetate
Ethyl ether
Ethylamine
Ethylene chlorohydrin
Ethylene dichloride
Ethylene glycol
Formaic acid (conc.)
Freon (refrig.and propell)
Gasoline (high aromatic)
Hydrazine
Hydrochloric acid (conc.)
Methylene chloride
Methylene salicylate
Milk of lime (CaOH)
Nitric acid(conc.)
Nitrobenzine
Nitrocellulose laquer
Perchlorethylene
Phenol
Phosphorous hydroxy chloride
Phosphorous trichloride
Propionic acid
Pyridine
Sodium hydroxide
Sodium sulfide
Styrene
Sulfuric acid (conc.)
Sulphural chloride
Thiophene
Toluene
Turpentine
Sulfuric acid (conc.)
Sulphural chloride
Tetrahydronaphtalene
Thiophene
Toluene
Turpentine
Xylene and others

TRADE NAMES OF SOME COMPRESSOR OILS, RUBBER COMPOUNDS AND OTHER MATERIALS THAT WILL ATTACK POLYCARBONATE PLASTIC BOWLS

Atlas "Perma-Guard"
Buna N *
Cellulube #510 and #250
Crylex #5 cement
*Eastman 910
Garlock #98403 (polyurethane)
Haskel #568-023
Hilgard Co's hil phene
Houghton and Co. oil #1120, #1130 & #1055
Houtosafe 1000
Kano Kroil
Keystone penetrating oil #2
Marvel Mystery Oil
Minn. Rubber 366Y
National Compound #N11
"Nylock" VC 3
Parco #1306 Neoprene
Petron PD287
Prestone
Pydraul AC
Sears Regular Motor Oil
Sinclair oil "Lily White"
Some Loctite Compounds
Stillman #269-75 (polyurethane)
Stillman #SR-513 (neoprene)
Stauffer Chemical FYRQUEL #150
Tannergas
Telar
Tenneco anderol #495 and #500 oils
Tilton
Zerex

WE CANNOT POSSIBLY LIST ALL HARMFUL SUBSTANCES, CHECK WITH A MOBAY CHEMICAL OR GENERAL ELECTRIC OFFICE FOR FURTHER INFORMATION ON POLYCARBONATE PLASTIC

LISTA DE MATERIALES QUE DAÑAN LAS TAZAS DE PLASTICO DE POLICARBONATO

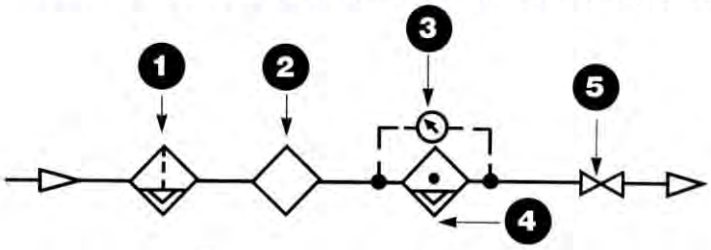
Acetaldehido
Acetato etílico
Acetona
Acido acético (conc.)
Acido benzoico
Acido butírico
Acido carbólico
Acido clorhídrico (conc.)
Acido fórmaico (conc.)
Acido nítrico (conc.)
Acido propiónico
Acido sulfúrico (conc.)
Acrilonitrilo
Adhesivos y compuestos obturadores anaeróbicos
Alcohol bencílico
Amoníaco
Anticongelante
Benceno
Bromobenceno
Ciclohexano
Ciclohexanol
Ciclohexanona
Clorobenceno
Cloroformo
Clorohidrina de etileno
Cloruro de azufre
Cloruro de metileno
Creosol
Dicloruro de etileno
Dimetil formamida
Dioxano
Disulfuro de carbono
Estireno
Eter etílico
Etilamina
Fenol
Fluoruro amónico
Freón (refrig. y propelente)
Gasolina (altamente aromática)
Glicol etilénico
Hidrazina
Hidroxicloruro de fósforo
Hidróxido amónico
Hidróxido sódico
Laca nitrocelulosa
Lechada de cal (CaOH)
Líquidos para frenos
Nitrobenceno
Percloretileno
Piridina
Salicilato de metileno
Solución de potasa cáustica
Solución de soda cáustica
Sulfuro amónico
Sulfuro sódico
Tetracloruro de carbono
Tetracloruro de etano
Tetrahidronaftaleno
Tiofeno
Tolueno
Trementina
Tricloruro de fósforo
Xileno y otros

NOMBRES COMERCIALES DE ALGUNOS LUBRICANTES PARA COMPRESORES, COMPUESTOS DE CAUCHO Y OTROS MATERIALES QUE DAÑAN LAS TAZAS DE PLASTICO DE POLICARBONATO

Aceite #1120, #1130 y #1055 de Houghton y Co.
Aceite Marvel Mystery
Aceite penetrante Keystone #2
Aceite Sinclair "Lily White"
Aceites Tenneco anderol #495 y #500
Algunos compuestos Loctite
Atlas "Perma-Guard"
Buna N
Caucho Minn 366 y Cellulube #510 y #250
Cemento Crylex #5
Eastman 910
Garlock #98403 (poliuretano)
Haskel #568-023
Hilgard Co's hil phene
Houtosafe 1000
Kano Kroil
National Compound #N11
Neopreno Parco #1306
Nylock* VC-3
Petron PD287
Prestone
Pydraul AC
Aceite de motor regular Sears
Stauffer Chemical FYRQUEL #150
Stillman #269-75 (poliuretano)
Stillman #SR-513 (neopreno)
Tannergas
Telar
Titon
Zerex

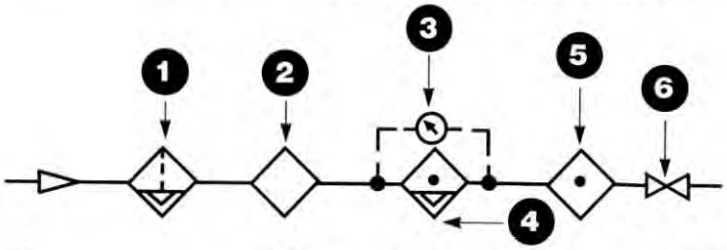
OBVIAMENTE, NO PODEMOS LISTAR TODAS LAS SUSTANCIAS NOCIVAS; CONSULTE A UNA OFICINA DE MOBAY CHEMICAL O DE GENERAL ELECTRIC PARA OBTENER MAS INFORMACION SOBRE EL PLASTICO DE POLICARBONATO

Typical Installation • Exemple d'installation • Typische Installation • Installazione tipica • Instalación normal



1. PREFILTER / PRÉFILTRE / VORFILTER / PREFILTRO / PREFILTRO
2. REFRIGERATED AIR DRYER / SÉCHEUR PAR RÉFRIGÉRATION / KÜHL TROCKNER / ESSICCATORE A REFRIGERAZIONE / SECADOR DE AIRE REFRIGERADO
3. DIFFERENTIAL PRESSURE GAUGE / MANOMÈTRE DIFFÉRENTIEL / DIFFERENTIALDRUCK-MANOMETER / MANOMETRO DIFFERENZIALE / MANOMETRO DIFERENCIAL
4. MICROALESCER® FILTER WITH MICRONAUGHT® ELEMENT / FILTRE SUBMICRONIQUE AVEC CARTOUCHE MICRONAUGHT® / MICROALESCER®-FILTER MIT MICRONAUGHT®-ELEMENT / FILTRO MICROALESCER® CON ELEMENTO MICRONAUGHT® / FILTRO MICROALESCER® CON ELEMENTO MICRONAUGHT®
5. VALVE / SOUPAPE / VENTIL / VALVOLA / VALVULA

MICROalescer® Filter Combination • Combinaison Filtre MICROalescer® • MICROalescer®-Filter-Kombination Combinazione Filtro MICROalescer® • Combinación de Filtros MICROalescer®



1. PREFILTER / PRÉFILTRE / VORFILTER / PREFILTRO / PREFILTRO
2. REFRIGERATED AIR DRYER / SÉCHEUR PAR RÉFRIGÉRATION / KÜHL TROCKNER / ESSICCATORE A REFRIGERAZIONE / SECADOR DE AIRE REFRIGERADO
3. DIFFERENTIAL PRESSURE GAUGE / MANOMÈTRE DIFFÉRENTIEL / DIFFERENTIALDRUCK-MANOMETER / MANOMETRO DIFFERENZIALE / MANOMETRO DIFERENCIAL
4. ELEMENT MICRO NAUGHT® / ÉLÉMENT MICRONAUGHT® / ELEMENTO MICRONAUGHT® / ELEMENTO MICRONAUGT®
5. ELEMENT ODERNAUGHT® / ÉLÉMENT ODERNAUGHT® / ELEMENTO ODERNAUGHT® / ELEMENTO ODERNAUGT®
6. VALVE / SOUPAPE / VENTIL / VALVOLA / VALVULA

ENGLISH

WARNING

ATTENTION: Make sure bowl is fully inserted into body, and then fully turned to lock bowl in place before applying air pressure to unit. When bowl is properly installed, the alignment markings on the bowl/bowlguard assembly and the marks on the body will line up, indicating proper assembly. Failure to do so may cause air pressure to blow bowl off of unit, resulting in serious personal injury or death. Depressurize unit before attempting to service.

WARNING: IF YOUR UNIT HAS A PLASTIC BOWL

1. **DO NOT** use plastic bowl units without a bowl guard installed.* Plastic bowl units are sold only with bowl guards to minimize the danger of flying fragments in the event of bowl failure. If this unit is in service without a bowl guard installed, manufacturer's warranties are void, and the manufacturer assumes no responsibility for any resulting loss. **(*EXCEPT F00, F08 MODEL)**
2. **DO NOT** install the unit where it will be subjected to temperatures higher than 125°F (52°C).
3. **DO NOT** install the unit where it will be subjected to pressures higher than
150 psig (10,3 bar).
4. **CAUTION**: Certain compressor oils, household cleaners, chemicals, solvents, paints and fumes will attack plastic bowls and can cause plastic bowl failure. See manufacturer's list shown elsewhere on this sheet. Do not use near these materials.
5. **WHEN BOWL** becomes dirty replace bowl or wipe only with a clean, dry cloth.
6. **DO NOT** install on a compressed air line where the compressor is lubricat-
ed with, or the air contains, a material that will attack plastic bowls.
7. **DO** inspect plastic bowls to detect crazing, cracking, damage or other deterioration. Immediately replace any crazed, damaged or deteriorated bowl with a metal bowl or a new plastic bowl and bowl guard.
8. **IF A UNIT HAS BEEN IN SERVICE AND DOES NOT HAVE A BOWL GUARD, ORDER ANOTHER ONE AND INSTALL BEFORE PLACING BACK IN SERVICE.**

SOME OF THE MATERIALS THAT WILL ATTACK POLYCARBONATE PLASTIC BOWLS.

Acetaldehyde	Bromobenzene	Ethane tetrachloride	Methylene salicylate	Styrene
Acetic acid (conc.)	Butyric acid	Ethyl acetate	Milk of lime (CaOH)	Sulfuric acid (conc.)
Acetone	Carbolic acid	Ethyl ether	Nitric acid(conc.)	Sulphural chloride
Acrylonitrile	Carbon disulfide	Ethylamine	Nitrobenzene	Thiophene
Ammonia	Carbon tetrachloride	Ethylene chlorohydrin	Nitrocellulose lacquer	Toluene
Ammonium flouride	Caustic potash solution	Ethylene dichloride	Perchlorethylene	Turpentine
Ammonium hydroxide	Caustic soda solution	Ethylene glycol	Phenol	Sulfuric acid (conc.)
Ammonium sulfide	Chlorobenzene	Formaic acid (conc.)	Phosphorous hydroxy chloride	Sulphural chloride
Anaerobic adhesives and sealants	Chloroform	Freon (refrig and propell)	Phosphorous trichloride	Tetrahydronaphtalene
Antifreeze	Cresol	Gasoline (high aromatic)	Propionic acid	Thiophene
Benzene	Cyclohexanol	Hydrazine	Pyridine	Toluene
Benzoic acid	Cyclohexanone	Hydrochloric acid (conc.)	Sodium hydroxide	Turpentine
Benzyl alcohol	Cyclohexene	Methylene chloride	Sodium sulfide	Xylene and others
Brake fluids	Dimethyl formamide			
	Dioxane			

TRADE NAMES OF SOME COMPRESSOR OILS, RUBBER COMPOUNDS AND OTHER MATERIALS THAT WILL ATTACK POLYCARBONATE PLASTIC BOWLS

Atlas "Perma-Guard"	Houghton and Co. oil #1120, #1130 & #1055	Parco #1306 Neoprene	Stillman #SR 513 (neoprene)
Buna N	Houghsafe 1000	Petron PD287	Stauffer Chemical FYRQUEL #150
Cellulube #510 and #250	Kano Kroil	Prestone	Tannergas
Crylex #5 cement	Keystone penetrating oil #2	Pydraul AC	Tekk
"Eastman 910	Marvel Mystery Oil	Sears Regular Motor Oil	Tenneco anderol #495 and #500 oils
Garlock #98403 (polyurethane)	Minn. Rubber 366Y	Sinclair or "Lily White"	Titan
Haskel #568-023	National Compound #N11	Some Loctite Compounds	Zerex
Higard Co's hi phene	"Nylock" VC 3	Stillman #299-75 (polyurethane)	

WE CANNOT POSSIBLY LIST ALL HARMFUL SUBSTANCES. CHECK WITH A MOBAY CHEMICAL OR GENERAL ELECTRIC OFFICE FOR FURTHER INFORMATION ON POLYCARBONATE PLASTIC

IMPORTANT INSTALLATION INSTRUCTIONS FOR FILTERS

1. **DO NOT** install the unit until you have read this entire product information sheet. If your unit has a plastic bowl, note the special warning information that applies.
2. **EXCEPT** as otherwise specified by manufacturer, this product is specifically designed for compressed air service, and use with any other fluid (liquid or gas) is a misapplication. For example, use with or injection of certain hazardous liquids or gases in the system (such as alcohol or liquid petroleum gas) could be harmful to the unit or result in a combustible condition or hazardous external leakage. Manufacturer's warranties arevoid in the event of misapplication and manufacturer assumes no responsibility for any resulting loss. **Maximum pressure and temperature ratings for plastic bowls are 150 psig (10,3 bar) and 125°F (52°C); and for metal bowl 200 psig (14 bar) and 150°F (65.5°C). [(08/18/28 Series—250 psig (17 bar) and 175°F (79°C)]**
3. **INSTALL** as close as possible to point where air is being used.
4. **INSTALL** the same size unit as the pipe line in use. Avoid using fittings, couplings, etc., that restrict the airflow.
5. **IF** unit is equipped with a float in the bowl, the unit must be installed in a vertical position.
6. **IF UNIT** is a piston operated, automatic draining filter (has a brass stem with o-ring on it protruding through the bottom), install only before an intermittent-operated device that will allow an occasional stop or interruption of the airflow through the unit. It takes a least one second between flow cycles to assureproper operation of drain.

IMPORTANT MAINTENANCE INSTRUCTIONS FOR FILTERS

1. **BEFORE SERVICING THIS UNIT READ THIS ENTIRE PRODUCT INFORMATION SHEET.** If your unit has a plastic bowl, note the special warning information that applies.
2. **DEPRESSURIZE UNIT BEFORE REMOVING GUARD AND /OR BOWL.**
3. If it is a plastic bowl unit, inspect daily to detect crazing, cracking, damage or other deterioration. Immediately replace any crazed, cracked, damaged or deteriorated bowl with a new metal bowl or a new plastic bowl and bowl guard.
4. A. If unit has filter element, clean periodically by removing from filter, tapping on surface, and blowing off with air blowgun.
B. If unit has soft cloth element, replace with a new one at least every six months, or sooner if it looks dirty or causes excessive pressure drop 10 psig (0,7 bar) or more at rated flow.
5. A. If unit is equipped with a manual petcock, drain bowl at least once per work shift.
B. If unit is equipped with a float in the bowl, clean the bowl each time the element is cleaned or change by turning the bowl upside down and tapping onto tabletop. Blow clean with blow gun.
6. If bowl seal is crazed, cracked or otherwise damaged or deteriorated, replace with manufacturer's approved seal.
7. On plastic bowl units reinstall bowl guard before pressurizing.

INSTRUCTIONS IMPORTANTES POUR L'INSTALLATION DES FILTRES.

1. **NES PAS** installer l'appareil sans avoir préalablement lu la présente notice d'installation. Si votre appareil a un bol plastique, faire attention à la notice s'y rapportant.
2. **SAUF** spécifications contraires du constructeur, cet appareil est prévu pour l'air comprimé, un emploi avec d'autres fluides (liquides ou gaz) est contreindiqué. Par exemple, l'utilisation avec certains liquides ou gaz dangereux, ou leur injection, (tels que alcool, gaz de pétrole liquéfié) peut étre dangereux pour l'appareil ou peut entrainer des risques d'explosion ou des fuites dangereuses. Lors de l'utilisation d'autres fluides que l'air ou pour des applications non-industrielles ou pour des systemes respiratoires artificiels priere de consulter fabricant pour approbation ecrite. La pression et la température maximales pour un ból plastique sont (10,3) bar et 52°C, et pour un bol métal (14 bar) et (65,5°C). [08/18/28 Série 17 bar (250 psig et 79°C (175°F)].
3. **MONTER** aussi près que possible de l'utilisation.
4. **MONTER** un appareil du même raccordement que la tuyanterie. Eviter l'utilisation de reccords, coupleurs . . .réduisant le débit.
5. **SI L'APPAREIL** est equipé d'un flotteur, il doit être monté verticalement.
6. **SI L'APPAREIL** est à purge automatique à piston (tige laiton dépassant au fond du filtre) le monterseulement avant un appareil à fonctionnement intermittant qui aura des arrêts occasionnels ou qui stop-pera le débit dans le filtre. Il doit y avoir au moins 1 seconde entre deux cycles pour permettre un fonctionnement correcte du drain.

INSTRUCTIONS IMPORTANTES POUR POUR L'ENTRETIEN DES FITRES

1. **AVANT DE METTRE CET APPAREIL EN SERVICE LIRE ENTIERMENT CETTE NOTICE D'INFORMATION SUR LE PRODUIT.** Si votre appareil a un bol plastique, noter les informations spéciales qui s'y appliquent.
2. **DEPRESSURISER L'APPAREIL AVANT DE DEMONTER LE BOL.**
3. Si c'est un bol plastique, inspecter quotidiennement pour détecter fêlures, craquelures, dommages ou autres détériorations. Remplacez immédiatement tout bol rayé, craqué, endommagé ou détérioré par un bol en métal ou par un bol en plastique neuf avec son dispositif de protection.
4. A.Si l'appareil est équipé d'une cartouche en feutre, la nettoyer periodiquement en la retirant du filtre, en la tapant sur une surface dure et soufflant de l'air comprimé.
B.Si l'appareil est équipé d'une cartouche en flanelle, la remplacer tous les 6 mois, ou plus souvent si elle est sale ou entraine one perte de charge excessive (0,7 bar).
5. A.Si l'appareil est équipé d'une purge manuelle, purger l'appareil ou moins une fois par unité de travail.
B.Si l'appareil est équipé d'une purge automatique, la nettoyer en renversant le bol et en le tapant sur une surface d

WILKERSON®

83-536-000 REV 1 08/02

MICROalescer® Filter

MANUFACTURER'S WARRANTY

Manufacturer's products are warranted to be free from defects in material and workmanship under proper use, installation, application and maintenance in accordance with manufacturer's written recommendations and specifications for one year from the date of shipment from the factory. Manufacturer's obligation under this warranty is limited to and the sole remedy for any such defect shall be the repair or replacement (at manufacturer's option) of unaltered products returned to manufacturer and proven to have such defect, provided such defect is promptly reported to manufacturer within said one year period.

THIS IS THE ONLY AUTHORIZED MANUFACTURER'S WARRANTY AND IS IN LIEU OF ALL OTHER EXPRESS OR IMPLIED WARRANTIES OR REPRESENTATIONS, INCLUDING ANY IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS, OR OF ANY OTHER OBLIGATIONS ON THE PART OF MANUFACTURER. Warranty claims must be submitted and shall be processed in accordance with manufacturer's established warranty claim procedure. In no event will manufacturer be liable for business interruptions, loss of profits, personal injury, costs of delay or for any other special indirect, incidental or consequential losses, costs or damages.

⚠ WARNING ⚠

USE LIMITATIONS

Manufacturer's warranties are void and manufacturer assumes no responsibility for any resulting cost, loss injury or any other damages whatsoever with respect to any plastic bowl unit for which a bowl guard is standard equipment if the unit is placed in service without the bowl guard and except as otherwise specified in writing by manufacturer with respect to any manufacturer's products which are used in other than compressed air service. Specific warnings with respect to these and other use limitations appear elsewhere in this product instruction sheet.

ATTENTION: Make sure bowl is fully inserted into body, and then fully turned to lock bowl in place before applying air pressure to unit. When bowl is properly installed, the alignment markings on the bowl/bowlguard assembly and the marks on the body will line up, indicating proper assembly. Failure to do so may cause air pressure to blow bowl off of unit, resulting in serious personal injury or death. Depressurize unit before attempting to service.

YOU have selected a quality product, and we appreciate it... To be assured of maximum performance and satisfaction please read these instructions before installing this product.

WARNING: IF YOUR UNIT HAS A PLASTIC BOWL:

1. **DO NOT** use plastic bowl units without a bowl guard installed.* Plastic bowl units are sold only with bowl guards to minimize the danger of flying fragments in the event of bowl failure. If this unit is in service without a bowl guard installed, manufacturer's warranties are void, and the manufacturer assumes no responsibility for any resulting loss. **(*EXCEPT M00 MODEL)**
2. **DO NOT** install the unit where it will be subjected to temperatures higher than 125°F (52°C).
3. **DO NOT** install the unit where it will be subjected to pressures higher than 150 psig (10,3 bar).
4. **CAUTION:** Certain compressor oils, household cleaners, chemicals, solvents, paints and fumes will attack plastic bowls and can cause plastic bowl failure. See manufacturer's list shown elsewhere on this sheet.
5. **WHEN BOWL** becomes dirty replace bowl or wipe only with a clean, dry cloth.
6. **DO NOT** install on a compressed air line where the compressor is lubricated with, or the air contains, a material that will attack plastic bowls.
7. **DO** inspect plastic bowls to detect crazing, cracking, damage or other deterioration. Immediately replace any crazed, cracked, damaged or deteriorated bowl with a metal bowl or a new plastic bowl and bowl guard.
8. **IF A UNIT HAS BEEN IN SERVICE AND DOES NOT HAVE A BOWL GUARD, ORDER ANOTHER ONE AND INSTALL BEFORE PLACING BACK IN SERVICE.**

IMPORTANT INSTALLATION INSTRUCTIONS FOR MICROALESCER® FILTERS (TYPE C)

1. **DO NOT** install the unit until you have read this entire product information sheet. If your unit has a plastic bowl, note the special warning information listed above.
2. **EXCEPT** as otherwise specified by manufacturer, this product is specifically designed for compressed air service, and use with any other fluid (liquid or gas) is a misapplication. For example, use with or injection of certain hazardous liquids or gases in the system (such as alcohol or liquid petroleum gas) could be harmful to the unit or result in a combustible condition or hazardous external leakage. Before using with fluids other than air, or for non-industrial applications, or for life support systems, consult manufacturer for written approval. Manufacturer's warranties are void in the event of misapplication and manufacturer assumes no responsibility for any resulting loss. Maximum pressure and temperature ratings for plastic bowls are 150 psig (10,3 bar) and 125°F (52°C); and for metal bowls 200 psig (14 bar) and 150°F (65,5°C). [(08/18/28 Series-250 psig (17 bar) and 150°F (65.5°C)]
3. **INSTALL** as close as possible to point where air is being used.
4. **REDUCING THE PIPE SIZE** down to accommodate a smaller inlet/outlet pipe size of a MICROalescer® filter does not affect proper operation of filter. **DO NOT** select MICROalescer® filters by inlet and outlet port sizes. MICROalescer® filters should be selected by the airflow and inlet pressure required.
5. **INSTALL** a 5-micron prefilter ahead of the MICROalescer® filter to prolong life of the element.
6. **INSTALL** a pressure differential gauge (available from the manufacturer) to determine when to change the disposable elements, or install an air pressure gauge at inlet and another at outlet of MICROalescer® filter. When the pressure differential reaches 7 psig (0,7 bar), change the element.
7. **PURGE** all traces of oil on the downstream side of coalescing filter prior to installation.
8. **DO NOT INSTALL** MICROalescer® filter on an air line if there are any chemicals in the compressed air that will attack the polyurethane foam cover of the element.
9. **WHEN INSTALLING** filter element **DO NOT** touch the foam plastic cover. Always handle it by the end plates. DO NOT touch the MICROalescer® element once it has been placed in service. Pressure on the outer foam cover can damage it once it is in service.
10. **WHEN INSTALLING** a chemical dryer, mount it after the MICROalescer® filter.
11. **WHEN INSTALLING** a refrigerated air dryer, it may be installed before a MICROalescer® filter. (See schematic elsewhere in these instructions.)
12. **WHEN INSTALLING** a Type D filter with an AC Pak element (Activated Carbon for oil vapor adsorption), mount filter after air dryer.
13. DO NOT INSTALL a quick-opening valve if this causes a flow surge beyond the flow rating of the unit.

WHEN TO CHANGE THE TYPE C ELEMENT

1. **CHANGE ELEMENT** when pressure differential reaches. Units with differential pressure indicator will move to red at 7 psid.
2. **DO NOT** change element if oil stains appear on lower 1/5 of element. This is normal; oil or water stains on the outer foam cover do not indicate a need to change the element.
3. **WHEN INSTALLING** element using bottom retainer nut, tighten nut to 5-6 ft. lbs.
4. DO NOT use oils or grease on element or bowl seals. NOTE: Only excessive pressure drop requires the replacement of the element. Excessive pressure drop indicates that the filter has been removing solid contaminants as well as oil and water particulates.

TROUBLE-SHOOTING MICROALESCER® FILTER INSTALLATIONS

IF OIL AEROSOLS APPEAR DOWNSTREAM FROM MICROALESCER® FILTER

1. This could indicate lines were not properly purged of previous contaminants.
2. Check to see if sealing gasket/o-ring (depending on model) is in place and making proper seal between the top of the element and the cover casting. Make sure element is tightened firmly in place.
3. Make sure you are not flowing more air through the unit than its rated capacity. Momentary high flows could cause oil bypass.
4. For maximum efficiency, air inlet temperature should be between 70°F (21°C) and 90°F (32°C).
5. If inlet temperatures up to the maximum of 125°F (52°C) cannot be avoided, install the Type C filter with a Type D element downstream. This will catch the oil vapors that are usually responsible for oil downstream at higher temperatures. Check that compressor is not drawing air at the intake contaminated with harmful chemicals or hydrocarbons.
6. If the foam sock is torn or ruptured, oil may pass downstream from the element. If this should occur, replace the element.
7. In compressors which have been running for a long time without changing of oil, most oils will gradually change their chemical compositions and may develop impurities which attack the plastic bowl, filter seals, or outer foam sock. Periodic replacement of the compressor oil will prevent this occurrence and extend compressor life.

FRENCH CANADIAN

VOUS avez choisi un produit de qualité et nous l'apprécions. Pour être assuré d'obtenir des performances et un fonctionnement parfait, lisez ces instructions avant l'installation de notre matériel.

ATTENTION: SI VOTRE APPAREIL A UN BOL PLASTIQUE

1. **NE PAS** utiliser les unités à bol en plastique sur lesquelles il n'y pas de dispositif de protection installé.* Toutes les unités à bol en plastique sont vendues équipées d'un dispositif de protection afin de minimiser le danger que présente la projection de fragments résultant de l'éclatement du bol. La mise en service de cette unité sans dispositif de protection installé annule les garanties accordées par le fabricant. Le fabricant décline alors toute responsabilité pour toute perte qui en résulterait. **(*SAUF MODÈLE M00)**
2. **NE PAS** installer l'appareil dans un endroit où la température est supérieure à 52°C.
3. **NE PAS** utiliser l'appareil à des pressions supérieures à 10,3 bar.
4. **ATTENTION:** certains huiles de compresseur, produits d'entretien, produits chimiques. solvants, peintures et vapeurs, attaquent les bols plastiques et sont cause de détérioration. Voir la liste sur cette feuille. à ne pas utiliser à proximité de ces produits.
5. **QUAND LE BOL** devient sale le remplacer ou le nettoyer avec un chiffon propre et sec.
6. **NE PAS** installer l'appareil sur une ligne d'air comprimé où le compresseur est lubrifié avec un produit qui attaque les bols plastiques, ou si l'air en contient.
7. **INSPECTER** pour détecter fêlures, craquelures ou autres détériorations. Remplacer immédiatement tout bol fêlé, craquelé, endommagé ou détérioré par un bol métal ou un nouveau bol plastique avec bol de protection métallique.
8. **SI UNE UNITÉ MISE EN SERVICE NE POSSÈDE PAS DE DISPOSITIF DE PROTECTION, COMMANDEZ-EN UN ET INSTALLEZ-LE AVANT DE CONTINUER À VOUS SERVIR DE L'UNITÉ.**

INSTRUCTIONS IMPORTANTES POUR L'INSTALLATION DES FILTRES SUBMICRONIQUES.

1. **NE PAS** installer l'appareil sans avoir préalablement lu la présente notice d'installation. Si l'appareil a un bol en plastique, tenir compte des avertissements spéciaux ci-haut.
2. **SAUF** spécifications contraires du constructeur, cet appareil est prévu pour l'air comprimé, un emploi avec

83-536-000 REV 1 08/02
Printed in U.S.A

1. **NO** instale la unidad hasta que haya leído completamente esta hoja de información sobre el producto. Si su unidad tiene una taza de plástico, observe la información de precauciones especiales indicada anteriormente.
2. **SALVO** que el fabricante especifique lo contrario, este producto está diseñado específicamente para el uso con aire comprimido, y su uso con cualquier otro fluido (líquido o gas) es una aplicación indebida. Por ejemplo, el uso con o la inyección de ciertos líquidos o gases peligrosos en el sistema (tales como el alcohol o el gas de petróleo líquido) podría ser nocivo para la unidad o resultar en una condición de combustión o una fuga externa peligrosa. Antes de utilizar con fluidos que no sean aire, para aplicaciones no industriales, o para sistemas de soporte de vida, consulte al fabricante para obtener una aprobación por escrito. Las garantías del fabricante no tendrán validez en el caso de aplicación indebida y éste no asume ninguna responsabilidad por cualquier pérdida resultante. Los valores máximos de presión y temperatura de las tazas de plástico son 150 lbs/pulgada2 (10,3 barias) y 125°F (52°F); y de las tazas de metal 200 lbs/pulgada2 (14 barias) y 150°F (65,5°C). [(Serie 08/18/28-250 lbs/pulgada2 (17 barias) y 150°F (65,5°C)]
3. **INSTALE** el producto lo más cerca posible del punto donde se está utilizando el aire.
4. **REDUCIR EL TAMAÑO DEL CAÑO** para acomodar un caño de entrada/salida de tamaño más pequeño de un filtro MICROalescer® no afecta el buen funcionamiento del filtro. **NO** seleccione los filtros MICROalescer® por los tamaños de orificio de entrada y salida. Los filtros MICROalescer® se deben seleccionar por el flujo de aire y la presión de entrada requeridos.
5. **INSTALE** un prefiltro de 5 micrones delante del filtro MICROalescer® para prolongar la vida útil del elemento.
6. **INSTALE** un manómetro diferencial (disponible del fabricante) para determinar cuándo cambiar los elementos desechables o instale un manómetro en la entrada y otro en la salida del filtro MICROalescer®. Cuando la diferencia de presiones llegue a 10 lbs/pulgada2 (0,7 barias), cambie el elemento.
7. **PURGUE** todos los vestigios de aceite dentro de los conductos antes de la instalación del filtro.
8. **NO INSTALE** el filtro MICROalescer® en una línea de aire si hubiera algún producto químico en el aire comprimido que dañe la cubierta de plástico celular de poliuretano del elemento.
9. **CUANDO INSTALE** el elemento de filtro, **NO** toque la cubierta de plástico celular. Siempre tómelo por las placas terminales. **NO** toque el elemento MICROnaught® una vez que se le haya puesto en uso. La presión sobre la cubierta de plástico celular exterior puede dañarlo una vez que esté en uso.
10. **CUANDO INSTALE** un secador químico, móntelo después del filtro MICROalescer®.
11. **CUANDO INSTALE** un secador de aire refrigerado, puede instalárselo antes de un filtro MICROalescer®. (Vea el esquema correspondiente en otra parte de estas instrucciones.)
12. **CUANDO INSTALE** un filtro de Tipo C con un elemento AC Pak (carbón activado para adsorción de vapor de aceite), monte el filtro después del secador de aire.
13. **NO INSTALE** una válvula de apertura rápida si ésto causara un flujo excesivo que sobrepase la capacidad de flujo de la unidad.

CUANDO SE DEBE CAMBIAR EL ELEMENTO DE TIPO C

1. **CAMBIE EL ELEMENTO** cuando la diferencia de presiones llegue a 10 lbs/pulgada2 (0,7 barias). Las unidades con indicador de diferencia de presiones se moverán al rojo a 0.7 barias.
2. **NO** cambie el elemento si aparecen manchas de aceite en la parte inferior equivalente a 1/5 del elemento. Esto es normal; las manchas de aceite o agua en la cubierta de plástico celular exterior no indican una necesidad de cambiar el elemento.
3. **CUANDO INSTALE** el elemento utilizando la tuerca inferior de sujeción, apriete la tuerca entre 5 y 6 libras/pie.
4. **NO** utilice aceites o grasa en el elemento o las juntas de la taza. NOTA: Sólo una caída excesiva de presión requiere el cambio del elemento. La caída excesiva de presión indica que el filtro ha filtrado contaminantes sólidos, así como partículas de aceite y agua.

LOCALIZACION DE FALLAS EN LAS INSTALACIONES DEL FILTRO

MICROALESCER® SI LOS AEROSOLES DE ACEITE APARECIERAN EN EL CIRCUITO DESPUES DEL FILTRO MICROALESCER®

1. Esto podría indicar que los conductos no fueron debidamente purgados de contaminantes anteriores.
2. Verifique que la junta obturadora/anillo tórico (según el modelo) esté en su lugar y que haya un sellado adecuado entre la parte superior del elemento y la tapa moldeada. Asegúrese de que el elemento esté sujetado firmemente en su lugar.
3. Controle que el flujo de aire a través de la unidad no sea superior a su capacidad. Los flujos elevados momentáneos podrían ser la causa de un paso de aceite.
4. Para una mayor eficiencia, la temperatura de entrada del aire debe ser entre 70°F (21°C) y 90°F (32°C).
5. Si no pueden evitarse las temperaturas de entrada de hasta el máximo de 125°F (52°C), instale el filtro de Tipo C con un elemento de Tipo D. Esto captará los vapores de aceite que normalmente son responsables del aceite que aparece a temperaturas más altas. Verifique que el compresor no esté aspirando en la entrada, aire contaminado con productos químicos nocivos.
6. Si la funda de espuma está rasgada o rota, el aceite podría filtrarse desde el elemento. Si ocurriera esto, cambie el elemento.
7. En compresores que han estado funcionando durante largo tiempo sin cambiarle el aceite, la mayoría de los aceites cambiarán gradualmente sus composiciones químicas y pueden acumular impurezas que dañan a la taza de plástico, las juntas de los filtros o la funda exterior de espuma. El cambio periódico del aceite del compresor evitará que esto suceda y prolongará la vida útil del compresor.

SOME OF THE MATERIALS THAT WILL ATTACK POLYCARBONATE PLASTIC BOWLS.

Acetaldehyde
Acetic acid (conc.)
Acetone
Acrylonitrile
Ammonia
Ammonium flouride
Ammonium hydroxide
Ammonium sulfide
Anaerobic adhesives and sealants
Antifreeze
Benzene
Benzoic acid
Benzyl alcohol
Brake fluids
Bromobenzine
Butyric acid
Carbolic acid
Carbon disulfide
Carbon tetrachloride
Caustic potash solution
Caustic soda solution
Chlorobenzine
Chloroform
Cresol
Cyclohexanol
Cyclohexanone
Cyclohexene
Dimethyl formamide
Dioxane
Ethane tetrachloride
Ethyl acetate
Ethyl ether
Ethylamine
Ethylene chlorohydrin
Ethylene dichloride
Ethylene glycol
Formaic acid (conc.)
Freon (refrig.and propell)
Gasoline (high aromatic)
Hydrazine
Hydrochloric acid (conc.)
Methylene chloride
Methylene salicylate
Milk of lime (CaOH)
Nitric acid(conc.)
Nitrobenzine
Nitrocellulose laquer
Perchlorethylene
Phenol
Phosphorous hydroxy chloride
Phosphorous trichloride
Propionic acid
Pyridine
Sodium hydroxide
Sodium sulfide
Styrene
Sulfuric acid (conc.)
Sulphural chloride
Thiophene
Toluene
Turpentine
Sulfuric acid (conc.)
Sulphural chloride
Tetrahydronaphtalene
Thiophene
Toluene
Turpentine
Xylene and others

TRADE NAMES OF SOME COMPRESSOR OILS, RUBBER COMPOUNDS AND OTHER MATERIALS THAT WILL ATTACK POLYCARBONATE PLASTIC BOWLS

Atlas "Perma-Guard"
Buna N "
Cellulube #510 and #250
Crylex #5 cement
"Eastman 910
Garlock #98403 (polyurethane)
Haskel #568-023
Hilgard Co's hil phene
Houghton and Co. oil #1120, #1130 & #1055
Houtosafe 1000
Kano Krol
Keystone penetrating oil #2
Marvel Mystery Oil
Minn. Rubber 366Y
National Compound #N11
"Nylock" VC 3
Parco #1306 Neoprene
Petron PD287
Prestone
Pydraul AC
Sears Regular Motor Oil
Sinclair oil "Lily White"
Some Loctite Compounds
Stillman #269-75 (polyurethane)
Stillman #SR-513 (neoprene)
Stauffer Chemical FYRQUEL #150
Tannergas
Telar
Tenneco anderol #495 and #500 oils
Tilon
Zerex

WE CANNOT POSSIBLY LIST ALL HARMFUL SUBSTANCES, CHECK WITH A MOBAY CHEMICAL OR GENERAL ELECTRIC OFFICE FOR FURTHER INFORMATION ON POLYCARBONATE PLASTIC

LISTA DE MATERIALES QUE DAÑAN LAS TAZAS DE PLASTICO DE POLICARBONATO

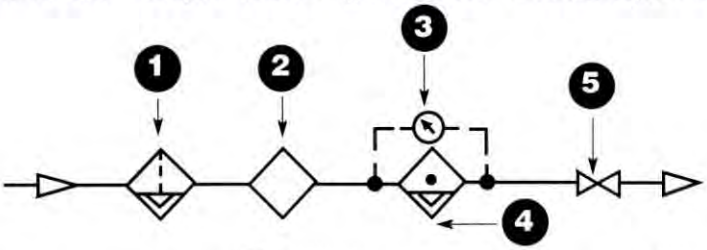
:etaldehido	Acido sulfúrico (conc.)	Ciclohexanona	Estireno	Hidróxido sódico	Sulfuro sódico
:etato etílico	Acrilonitrilo	Clorobenceno	Eter etílico	Laca nitrocelulosa	Tetracloruro de carbono
:etona	Adhesivos y compuestos	Cloroformo	Etilamina	Lechada de cal (CaOH)	Tetracloruro de etano
:ido acético (conc.)	obturadores anaeróbicos	Clorohidrina de etileno	Fenol	Líquidos para frenos	Tetrahidronaftaleno
:ido benzoico	Alcohol bencílico	Cloruro de azufre	Fluoruro amónico	Nitrobenceno	Tioleno
:ido butírico	Amoníaco	Cloruro de metileno	Freón (refrig. y propelente)	Percloretileno	Tolueno
:ido carbólico	Anticongelante	Creosol	Gasolina (altamente aromática)	Piridina	Trementina
:ido clorhídrico (conc.)	Benceno	Dicloruro de etileno	Glicol etilénico	Salicilato de metileno	Tricloruro de fósforo
:ido formaico (conc.)	Bromobenceno	Dimetil formamida	Hidrazina	Solución de potasa cáustica	Xileno y otros
:ido nítrico (conc.)	Ciclohexano	Dioxano	Hidroxicloruro de fósforo	Solución de soda cáustica	
:ido propiónico	Ciclohexanol	Disulfuro de carbono	Hidróxido amónico	Sulfuro amónico	

IOMBRES COMERCIALES DE ALGUNOS LUBRICANTES PARA COMPRESORES, COMPUESTOS DE CAUCHO Y OTROS MATERIALES QUE DAÑAN LAS TAZAS DE PLASTICO DE POLICARBONATO

ite #1120, #1130 y #1055	Aceites Tenneco anderol #495	Caucho Minn 366 y	Hilgard Co's hil phene	Petron PD287	Stillman #269-75 (poliuretano)
Houghton y Co.	y #500	Cellulube #510 y #250	Houtosafe 1000	Prestone	Stillman #SR-513 (neopreno)
ite Marvel Mystery	Algunos compuestos Loctite	Cemento Crylex #5	Kano Kroil	Pydraul AC	Tannergas
ite penetrante Keystone #2	Atlas "Perma-Guard"	Eastman 910	National Compound #N11	Aceite de motor regular Sears	Telar
ite Sinclair "Lily White"	Buna N	Garlock #98403 (poliuretano)	Neopreno Parco #1306	Stauffer Chemical	Tilon
		Haskel #568-023	Nyiock* VC-3	FYROUEL #150	Zerex

OBVIAMENTE, NO PODEMOS LISTAR TODAS LAS SUSTANCIAS NOCIVAS; CONSULTE A UNA OFICINA DE MOBAY CHEMICAL O DE GENERAL ELECTRIC PARA OBTENER MAS INFORMACION SOBRE EL PLASTICO DE POLICARBONATO

Typical Installation • Exemple d'installation • Typische Installation • Installazione tipica • Instalación normal



1 PREFILTER
PRÉFILTRE
VORFILTER
PREFILTRO
PREFILTRO

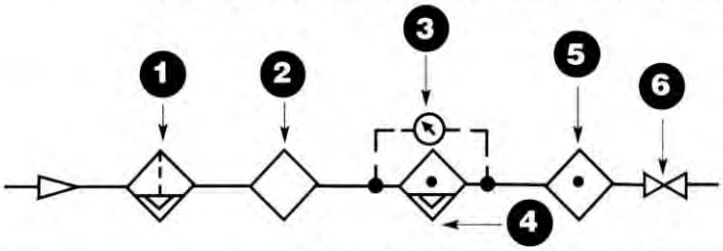
2 REFRIGERATED AIR DRYER
SÉCHEUR PAR RÉFRIGÉRATION
KÜHL TROCKNER
ESSICCATORE A REFRIGERAZIONE
SECADOR DE AIRE REFRIGERADO

3 DIFFERENTIAL PRESSURE GAUGE
MANOMÈTRE DIFFÉRENTIEL
DIFFERENTIALDRUCK-MANOMETER
MANOMETRO DIFFERENZIALE
MANOMETRO DIFERENCIAL

4 MICROALESCER® FILTER WITH MICRONAUGHT® ELEMENT
FILTRE SUBMICRONIQUE AVEC CARTOUCHE MICRONAUGHT®
MICROALESCER®-FILTER MIT MICRONAUGHT®-ELEMENT
FILTRO MICROALESCER® CON ELEMENTO MICRONAUGHT®
FILTRO MICROALESCER® CON ELEMENTO MICRONAUGHT®

5 VALVE
SOUPAPE
VENTIL
VALVOLA
VALVULA

MICROalescer® Filter Combination • Combinaison Filtre MICROalescer® • MICROalescer®-Filter-Kombination Combinazione Filtro MICROalescer® • Combinación de Filtros MICROalescer®



1 PREFILTER
PRÉFILTRE
VORFILTER
PREFILTRO
PREFILTRO

2 REFRIGERATED AIR DRYER
SÉCHEUR PAR RÉFRIGÉRATION
KÜHL TROCKNER
ESSICCATORE A REFRIGERAZIONE
SECADOR DE AIRE REFRIGERADO

3 DIFFERENTIAL PRESSURE GAUGE
MANOMÈTRE DIFFÉRENTIEL
DIFFERENTIALDRUCK-MANOMETER
MANOMETRO DIFFERENZIALE
MANOMETRO DIFERENCIAL

4 ELEMENT MICRO NAUGHT®
ÉLÉMENT MICRONAUGHT®
ELEMENTO MICRONAUGHT®
ELEMENTO MICRONAUGT®

5 ELEMENT ODERNAUGHT®
ÉLÉMENT ODERNAUGHT®
ELEMENTO ODERNAUGHT®
ELEMENTO ODERNAUGT®

4 VALVE
SOUPAPE
VENTIL
VALVOLA
VALVULA

WILKERSON®

83-212-000 REV 1 04/02

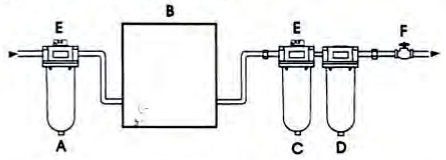
INSTALLATION AND MAINTENANCE SHEET

Coalescing Filter Model M32 With Variations and Accessories

INSTALLATION

1. Purge downstream air line of oil.
2. Install as close as possible to where regulated air is being used.
3. Install the unit with the air flowing in the direction indicated by the arrow on the body.
4. A drain line with 1/8" NPT connection (with red automatic drain) or 1/8" BSPT connection (with green automatic drain) or 1/4" NPT connection (without automatic drain) may be attached to drain port if desired. Drain line should be 1/4" tubing or larger, as short as possible, and crimp free.
5. Maximum inlet pressure and operating temperature ratings are: transparent plastic bowls, 150 psig (10,3 bar) and 125°F (52°C); metal bowls, 150 psig (10,3 bar) and 150°F (66°C).

TYPICAL INSTALLATION (not to scale)



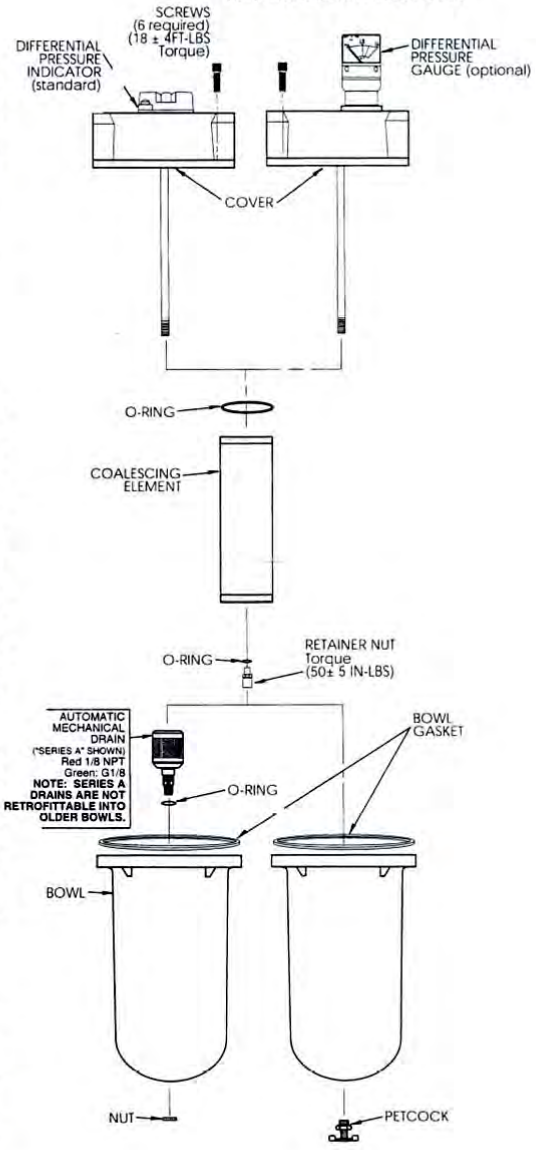
A. PREFILTER - It is recommended that a "B" Element coalescing (0.5 ppm) prefilter be installed upstream from the coalescer filter to prolong element life.
B. AIR DRYER - (Refrigerated or Desiccant). An air dryer is generally preferred for optimal results, but is optional.
C. HIGH EFFICIENCY COALESCER FILTER - It is recommended that a "C" element coalescer (.01 ppm) filter be installed to protect the compressed air system from oil and particulate contamination.
D. OIL VAPOR FILTER - The Type D element filter (0.003 PPM) is an adsorption type for removing oil vapors, oil-associated odors, whether petroleum base or synthetic base and nearly 100% of any remaining solid contaminants.
E. DIFFERENTIAL PRESSURE INDICATOR - Maximum recommended pressure drop across coalescer filters is 7 psi (0,5 bar). This can be monitored by installing a Wilkerson differential pressure indicator.
F. VALVE - Do not use a valve or shutoff device in conjunction with a coalescer filter that will allow a momentary or surge pressure drop greater than 50 psi (3,4 bar). To avoid high surges which can either ruin the element or momentarily allow downstream contamination, use a slow-opening type valve.

MAINTENANCE

1. The element operates effectively when it is saturated. The element's useful life will end only when the differential pressure indicator is completely red. The element cannot be cleaned or reused and must be replaced at the end of its useful life.
2. IF THE UNIT HAS A MANUAL DRAIN, DRAIN THE UNIT ONCE EVERY 8 HOURS. If the unit is equipped with an automatic drain clean the screen around the drain or replace the element by removing the nut and removing the drain assembly. Clean screen by blowing off with air blow gun.
3. When bowl becomes dirty, clean by wiping with a clean, dry cloth.
4. Before placing the unit in service, make sure that the bowl is properly installed, and securely bolted in place.

REPAIR KITS AND REPLACEMENT PARTS

Filter Element Kit Type D Element (carbon adsorption) (includes filter element and o-rings)	**MXP-95-558**
Filter Element Kit Type C Element (.01 ppm/wt) (includes filter element and o-rings)	**MTP-95-559**
Filter Element Kit Type B Element (includes filter element and o-rings)	**MSP-95-873**
Bowl Gasket Kit	**GRP-95-288**
Automatic Mechanical Drain ("Series A", 1/8" NPT; red color)—(includes Fluorocarbon seals, o-ring and nut)	**GRP-95-981**
Automatic Mechanical Drain ("Series A", G 1/8"; green color)—(includes Fluorocarbon seals, o-ring and retainer nut)	**GRP-95-300**
Automatic Mechanical Drain (includes Fluorocarbon seals, o-ring and retainer nut)	**GRP-95-914**
Differential Pressure Indicator (Standard)	**DP2-01-000**
Differential Pressure Gauge (Optional)	**DP3-01-000**



83-212-000 REV 1 04/02
Printed in the U.S.A.

WILKERSON
OPERATIONS

4—2

INSTALLATION AND MAINTENANCE SHEET

Filter Models F35, F36 and F37 with Variations and Accessories

⚠ WARNING ⚠

EXCEPT as otherwise specified by the manufacturer, this product is specifically designed for compressed air service, and use with any other fluid (liquid or gas) is a misapplication. For example, use with or injection of certain hazardous liquids or gases in the system (such as alcohol or liquid petroleum gas) could be harmful to the unit or result in a combustible condition or hazardous external leakage. Manufacturer's warranties are void in the event of misapplication, and manufacturer assumes no responsibility for any resulting loss. Before using with fluids other than compressed air, or for nonindustrial applications, or for life support systems consult manufacturer for written approval.

ATTENTION: Make sure bowl is fully inserted into body, and then fully turned to lock bowl in place before applying air pressure to unit. When bowl is properly installed, the alignment markings on the bowl/bowlguard assembly and the marks on the body will line up, indicating proper assembly. Failure to do so may cause air pressure to blow bowl off of unit, resulting in serious personal injury or death.

INSTALLATION

1. Purge downstream air line of oil.
2. Install the unit with the air flowing in the direction indicated by the arrow on the body and/or the DP2 Differential Pressure Indicator.
3. The drain line connection is dependent on the type of drain that is selected.
4. Maximum inlet pressure and operating temperature ratings are: units with DP2 150 psig (10,3 bar) 150°F (66°C); units without DP2: 300 psig (20 bar) 150°F (66°C).

NOTE: CONTAMINATES REMOVED FROM THE COMPRESSED AIR SYSTEM MUST BE DISPOSED OF IN ACCORDANCE WITH LOCAL, STATE AND FEDERAL STANDARDS.

MAINTENANCE

1. TO CLEAN OR REPLACE FILTER ELEMENT: Shut off air supply and reduce pressure in the unit to zero, remove the 8 screws from the filter housing, unscrew the filter support and remove filter element.

a. IF THE UNIT HAS A RIGID FILTER ELEMENT: remove and clean periodically by tapping on a hard surface, and blowing off with air gun. Torque element support to 8 ± 1 ft. lb. when replacing element. Element should be cleaned/replaced when the DP2 differential pressure indicator is completely red.

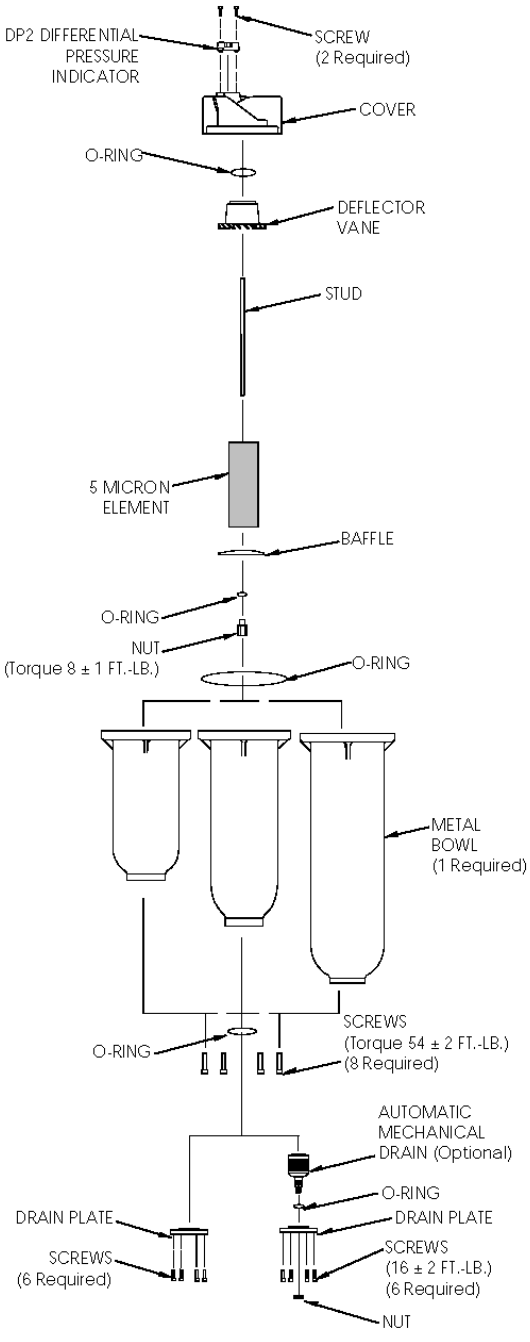
2. IF THE UNIT HAS A MANUAL DRAIN, DRAIN THE UNIT ONCE EVERY 8 HOURS MINIMUM. To do so, rotate the drain knob to the left one or two turns.* If the unit is equipped with an automatic drain, clean the screen around the drain. Clean screen by blowing off with air gun.
3. When the bowl becomes dirty, clean with a dry clean cloth.
4. **Before placing the unit in service, make sure that the bowl is properly reinstalled, and securely bolted in place.**

***NOTE: In the event the drain knob is over-rotated, it may become disengaged from the drain stem. In such a case, pull down on both the knob and the stem while rotating to the right to re-engage.**

REPAIR KITS AND REPLACEMENT PARTS

Filter Element Kit (F35)
(includes filter element and o-rings) **FRP-95-505**
Filter Element Kit Type (F36)
(includes filter element and o-rings) **FRP-95-506**
Filter Element Kit Type (F37)
(includes filter element, o-ring) **FRP-95-507**
Drain Plate Kits
Drain Plate (For use with internal Automatic Mechanical float drain No. GRP-95-981 or GRP-96-300) **GRP-95-391**
Drain Plate (¼ NPT) **GRP-95-392**
Drain Plate Rc ¼ **GRP-95-394**
Drain Plate (½ NPT) **GRP-95-393**
Drain Plate Rc ½ **GRP-95-395**
Differential Pressure Indicator (Standard) **DP2-01-001**
Differential Pressure Removal Cap Kit **GRP-95-022**
Bowl O-ring Kit **GRP-95-291**
Drains:
Internal Drains:
Automatic Mechanical Drain (Fluorocarbon seals w/⅛ NPT stem) **GRP-95-981**
Automatic Mechanical Drain (Fluorocarbon seals w/R ⅛ stem) **GRP-96-300**
Manual Override for Auto Drain (GRP-95-981 ⅛ NPT) **GRP-96-000**
(GRP-96-300 R ⅛) **GRP-96-100**
External Drains:
External Automatic Mechanical Drain **X01-04-000**
External Automatic Mechanical Drain **X02-04-F00**
External Automatic Mechanical Drain **XB3-04-000**

(See reverse side for Repair and Replacement Parts cont.)



83-719-000 REV B 11/96
Printed in the U.S.A.

REPAIR KITS AND REPLACEMENT PARTS Cont.

Automatic Electric Drain Valve

MODEL NUMBER KIT	PORT SIZE	ORIFICE SIZE	ELECTRICAL	OPERATING PRESS MIN.	MAX.
X20-02-ED00	1/4" NPT	7/64"	115 VAC/1Ph/50-60Hz	2 psig	300 psig
X20-02-EE00	1/4" NPT	7/64"	230 VAC/1PH/50-60Hz	2 psig	300 psig
X20-02-EC00	1/4" NPT	7/64"	24 VDC	5 psig	300 psig
X20-04-ED00	1/2" NPT	7/64"	115 VAC/1Ph/50-60Hz	2 psig	300 psig
X20-04-EE00	1/2" NPT	7/64"	230 VAC/1PH/50-60Hz	2 psig	300 psig
X20-04-EC00	1/2" NPT	7/64"	24 VDC	5 psig	300 psig

WILKERSON
OPERATIONS

4—2

INSTALLATION AND MAINTENANCE SHEET

Filter Models M35, M36 and M37 with Variations and Accessories

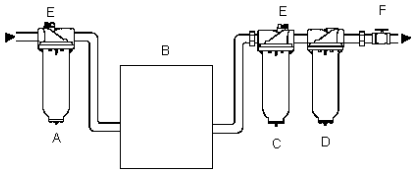
WARNING

EXCEPT as otherwise specified by manufacturer, this product is specifically designed for compressed air service only, and use with any other fluids (liquid or gas) is a misapplication. For example, use with or injection of certain hazardous liquids or gases in the system (such as alcohol or liquid petroleum gas) could be harmful to the unit or result in a combustible condition or hazardous external leakage. Manufacturer's warranties are void in the event of misapplication, and manufacturer assumes no responsibility for any resulting loss. Before using with fluids other than air, or for non-industrial applications, consult manufacturer for written approval.

INSTALLATION

1. Purge downstream air line of oil.
2. Install the unit with the air flowing in the direction indicated by the arrow on the body and/or the DP2 Differential Pressure Indicator.
3. The drain line connection is dependent on the type of drain that is selected.
4. Maximum inlet pressure and operating temperature ratings: units with DP2, 150 psig (10,3 bar) and 150°F (66°C);units without DP2: 300 psig (20,7 bar) 150°F (66°C).

TYPICAL INSTALLATION (not to scale)

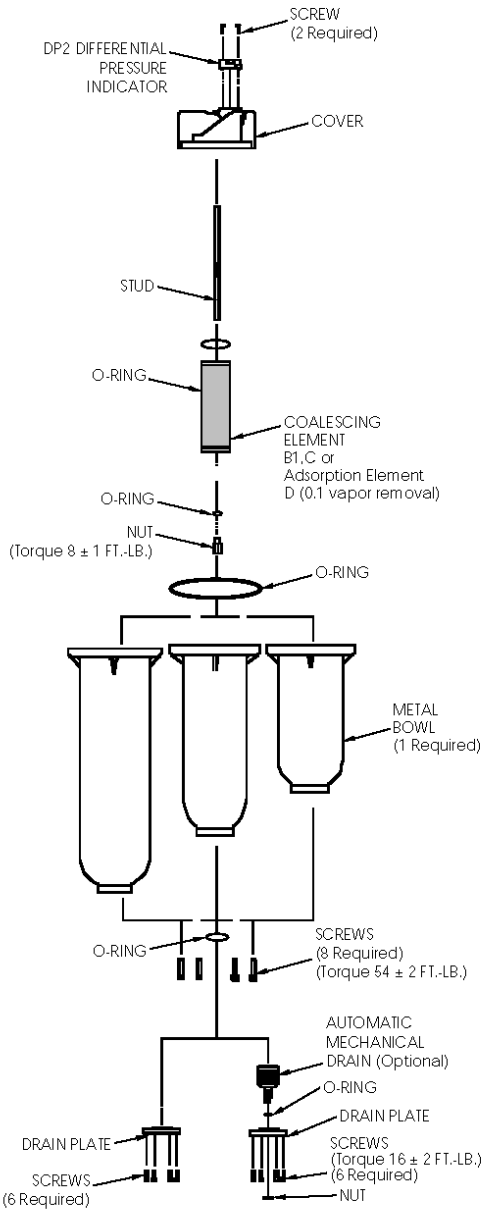


A. PREFILTER - It is recommended that a Wilkerson "B1" Element coalescing prefilter (particle removal down to 1.0 micron; maximum downstream remaining oil content is 0.5 ppm/wt.) is installed to protect the dryer from contaminants and extend the element life in the high efficiency coalescing filter (filter "C").
B. AIR DRYER - (Refrigerated or Desiccant). An air dryer is recommended if water vapor condensation is a problem.
C. HIGH EFFICIENCY COALESCER FILTER - It is recommended that a Wilkerson "C" element coalescer (particle removal down to 0.01 micron; maximum downstream remaining oil content 0.01 ppm/wt) be installed to protect the compressed air system from oil and particulate contamination.
D. OIL VAPOR FILTER - The Type D element filter (maximum downstream remaining oil content 0.003 ppm/wt) is an adsorption type for removing oil vapors, oil-associated odors, whether petroleum base or synthetic base and nearly 100% of any remaining solid contaminants.
E. DIFFERENTIAL PRESSURE INDICATOR/GAUGE - Maximum recommended pressure drop across coalescer filters is 7 psi (0,5 bar). This can be monitored by installing a Wilkerson DP2 differential pressure indicator.
F. VALVE - Do not use a valve or shutoff device in conjunction with a coalescer filter that will allow a momentary or surge pressure drop greater than 50 psid (3,4 bar). To avoid high surges which can either ruin the element or momentarily allow downstream contamination, use a slow-opening type valve.

MAINTENANCE

1. The element operates effectively when it is saturated. The element's useful life will end only when the DP2 differential pressure indicator is completely red. The element cannot be cleaned or reused and must be replaced at the end of its useful life.
2. IF THE UNIT HAS A MANUAL DRAIN, DRAIN THE UNIT ONCE EVERY 8 HOURS MINIMUM. If the unit is equipped with an automatic drain clean the screen around the drain. Clean screen by blowing off with air gun.
3. When bowl becomes dirty, clean with a dry clean cloth.
4. Before placing the unit in service, make sure that the bowl is properly reinstalled, and securely bolted in place per noted torque specification.

(See reverse side for Repair and Replacement Kits)



83-718-000 REV B 10/96
Printed in the U.S.A.

REPAIR KITS AND REPLACEMENT PARTS

Filter Element Kit (kit includes filter element, element o-ring and retainer o-ring)

	Element Types		
Model	Type B1 (1 micron)	Type C (0.01 micron)	Type D (oil vapor, adsorption)
M35	**MSP-95-502**	**MTP-95-502**	**MXP-95-502**
M36	**MSP-95-503**	**MTP-95-503**	**MXP-95-503**
M37	**MSP-95-504**	**MTP-95-504**	**MXP-95-504**

Drain Plate Kit
- Drain Plate (Use with internal automatic mechanical float drain no. GRP-95-981 or GRP-96-300)...**GRP-95-391**
- Drain Plate (¼ NPT)...**GRP-95-392**
- Drain Plate (Rc ¼)...**GRP-95-394**
- Drain Plate (½ NPT)...**GRP-95-393**
- Drain Plate (Rc ½)...**GRP-95-395**

Bowl O-ring Kit...**GRP-95-291**
Differential Pressure Indicator (Standard)...**DP2-01-001**
DP2 Removal Cap Kit (for 300 psig appl.)...**GRP-95-022**
Internal Drains:
- Automatic Mechanical Drain (Fluorocarbon seals w/⅛ NPT stem)...**GRP-95-981**
- Automatic Mechanical Drain (Fluorocarbon seals w/R ⅛ stem)...**GRP-96-300**
- Manual Override for Auto Drain (GRP-95-981 ⅛ NPT)...**GRP-96-000**
  (GRP-96-300 R ⅛)...**GRP-96-100**

External Drains
- External Automatic Mechanical Drain ...**X01-04-000**
- External Automatic Mechanical Drain...**X02-04-F00**
- External Automatic Mechanical Drain...**XB3-04-000**

Automatic Electric Drain Valve

MODEL NUMBER KIT	PORT SIZE	ORIFICE SIZE	ELECTRICAL	OPERATING PRESS MIN.	OPERATING PRESS MAX.
X20-02-EE00	¼" NPT	7/64"	115 VAC/1Ph/50-60Hz	2 psig	300 psig
X20-02-ED00	¼" NPT	7/64"	230 VAC/1PH/50-60Hz	2 psig	300 psig
X20-02-EC00	¼" NPT	7/64"	24 VDC	5 psig	300 psig
X20-04-EE00	½" NPT	7/64"	115 VAC/1Ph/50-60Hz	2 psig	300 psig
X20-04-ED00	½" NPT	7/64"	230 VAC/1PH/50-60Hz	2 psig	300 psig
X20-04-EC00	½" NPT	7/64"	24 VDC	5 psig	300 psig

Standard Regulator Literature No. 83-538-000 REV 1 08/02

MANUFACTURER'S WARRANTY

Manufacturer's products are warranted to be free from defects in material and workmanship under proper use, installation, application and maintenance in accordance with manufacturer's written recommendations and specifications for one year from the date of shipment from the factory. Manufacturer's obligation under this warranty is limited to and the sole remedy for any such defect shall be the repair or replacement (at manufacturer's option) of unaltered products returned to manufacturer and proven to have such defect provided such defect is promptly reported to manufacturer within one year period.

THIS IS THE ONLY AUTHORIZED MANUFACTURER'S WARRANTY AND IS IN LIEU OF ALL OTHER EXPRESS OR IMPLIED WARRANTIES OR REPRESENTATIONS, INCLUDING ANY IMPLIED WARRANTIES OF MERCHANTABILITY OF FITNESS, OR OF ANY OTHER OBLIGATIONS ON THE PART OF MANUFACTURER. Warranty claims must be submitted and shall be processed in accordance with manufacturer's established warranty claim procedure. In no event will manufacturer be liable for business interruptions, loss of profits, personal injury, costs of delay or for any other special indirect incidental or consequential losses, costs or damages.

WARNING: USE LIMITATIONS

Manufacturer's warranties are void, and manufacturer assumes no responsibility for any resulting cost loss, injury or any other damages whatsoever with respect to any plastic bowl unit for which a metal bowl guard is standard equipment if the unit is placed in service without the metal bowl guard and except as otherwise specified in writing by manufacturer with respect to any manufacturer's products which are used in other than compressed air service. Specific warnings with respect to these and other use limitations appear elsewhere in this product instruction sheet.

YOU *have selected a quality product, and we appreciate it.*
To be assured of maximum performance and satisfaction please read these instructions before installing this product.

VOUS *Avez choisi un produit de qualité et nous l'apprécions.*
Pour être assuré d'obtenir des performances et un fonctionnement parfait, lisez ces instructions avant l'installation de notre matériel.

SIE *Haben ein Qualitätsprodukt ausgewählt und wir danken Ihnen für das uns erwiesene Vertrauen.*
Damit das Gerät mit optimaler Leistung und Sicherheit arbeitet, bitten wir Sie, vor dem Einbau die nachfolgenden Instruktionen zu lesen.

VOI *avete scelto un prodotto di qualità e noi lo abbiamo apprezzato.*
Per ottenere le maggiore prestazioni e la massima soddisfazione da questi prodotti, Vi consigliamo di leggere queste istruzioni prima dell'installazione.

USTED *ha seleccionado un producto de calidad y lo apreciamos. Para asegurar un máximo rendimiento y satisfacción, sírvase leer estas instrucciones antes de instalar este producto.*

ENGLISH

IMPORTANT INSTALLATION INSTRUCTIONS FOR REGULATORS

1. **DO NOT** install the unit until you have read this entire product information sheet.
2. **EXCEPT** as otherwise specified by manufacturer, this product is specifically designed for compressed air service, and use with any other fluid (liquid or gas) is a misapplication. For example, use with or injection of certain hazardous liquids or gases in the system (such as alcohol or liquid petroleum gas) could be harmful to the unit or result in a combustible condition or hazardous external leakage. Manufacturer's warranties are void in the event of misapplication and manufacturer assumes no responsibility for any resulting loss. Maximum pressure and temperature ratings are 300 psig (21 bar) 150°F (65.5°C).
3. **INSTALL** a filter before the regulator for maximum trouble-free operation.
4. **INSTALL** regulator after the filter when mounting in a combination.
5. **INSTALL** regulator in any convenient position.
6. **MOUNT** gauge in either gauge port.
7. **GAUGE PORTS** may be used as additional regulated air pressure outlet ports.
8. **TO ADJUST** air pressure turn adjustment knob/handle clockwise to raise the regulatedpressure, and counterclockwise to lower the regulated pressure.

IMPORTANT MAINTENANCE INSTRUCTIONS FOR REGULATORS

1. **TURN** air pressure off and vent air from system.
2. **REMOVE** the bottom plug and clean valve and seat. It is not necessary to remove regulator from the air line to remove plug.

FRENCH CANADIAN

INSTRUCTIONS IMPORTANTES POUR L'INSTALLATION DES REGULATEURS DE PRESSION

1. **NE PAS** installer l'appareil avant d'avoir lu en entier cette notice d'information sur let produit.
2. **SAUF** spécifications contraires du constructeur, cet appareil est prévu pour l'air comprimé, un emploi avec d'autres fluides (liquides ou gaz) est contre-indiqué. Par exemple, l'utilisation avec certains liquides ou gaz dangereux, ou leur injection, (tels que alcool, gaz de pétrole liquéfié) peut être dangereuz pour l'appareil ou peut entrainer des risques d'explosion ou des fuites dangereuses. Les garanties du constructeur sont nulles dans le cas d'une mauvaise utilisation et le constructeur dégage sa responsabilité dans le cas d'accident. La pression et la température maximales sont de (21 bar) et (65.5°C).
3. **INSTALLER** un filtre avant le régulateur pour une utilisation maximale sans problèmes.
4. **INSTALLER** le régulateur après le filtre quand il est monté dans une combinaison
5. **INSTALLER** le régulateur dans n'importe quelle position.
6. **MONTER** le manomètre sur l'un ou l'autre des orifices de raccordement du manomètre.
7. **LES ORIFICES** de raccordement du manomètre peuvent être utilisés comme des sorties additionnelles d'air régule.
8. **POUR REGLER** la pression tourner le bouton de réglage dans le sens des aiguilles d'une montre pour augmenter la pressio régulée, et dans le sens inverse des aiguilles d'une montre pour diminuer la pression régulée.

INSTRUCTIONS IMPORTANTES POUR LA MAINTENANCE DES REGULATEURS DE PRESSION

1. **COUPER** l'air comprimé et purger l'installation.
2. **OTER** le bouchon inférieur et nettoyer la valve et le siège. Il n'est pas nécessaire d'ôter le régulateur de la ligne d'air pour enlever le bouchon.

GERMAN

WICHTIGE INSTALLATIONSANLEITUNG FÜR REGLER

1. **LESEN SIE** diese informationsbroschüre genau durch, bevor Sie das Gerät installieren.
2. **FALLS** vom Hersteller nicht ausdrücklich anders angegeben, wurde dieses Erzeugnis ausschließlich für den Betrieb mit Druckluft konstruiert. Die Verwendung eines anderen Mediums ist daher falsch. So kann zum Beispiel die Verwendung bzw. Einspritzung von bestimmten gefährlichen Flüssigkeiten oder Gasen in der Anlage (wie etwa Alkohol oder Petroleum) das Gerät beschädigen bzw. Explosionsgefahr oder ein gefährliches Außenleck verursachen. Im Falle einer solchen Fehlanwendung erlischt die Herstellergarantie und der Erzeuger übernimmt keine Verantwortung für einen etwa sich daraus ergebenden Verlust. Der zulässige Höchstdruck beträgt 21 bar, die zulässige Höchsttempeatur 65.5°C.
3. **INSTALLIEREN SIE** zur Gewährleistung eines störungsfreien Betriesbes einen Filter vor dem Regler.
4. **MONTIEREN SIE** bei einer Kombination den Regler nach dem Filter.
5. **INSTALLIEREN SIE** den Regler in einer bequemen Position.
6. **MONTIEREN SIE** ein Manometer in einer beliebigen Manometer-Öffnung.
7. **DIE MANOMETER-ÖFFNUNGEN** können als zusätzliche geregelte Druckluft-Auslaßöffnungen verwendet werden.
8. **DRUCKREGELUNG:** Knopf/Hebel im Uhrzeigersinn: höherer Druck; Knopf/Hebel gegen Uhrzeigersinn: niedrigerer Druck.

WICHTIGE WARTUNGSANLEITUNG FÜR REGLER

1. **DRUCK** abstellen und System entlüften.
2. **ENTFERNEN,** Ventil und Sitz reinigen. Um schraubstopfen entfernen zu können, braucht Regler nicht aus der Drucklufleitung ausgebant werden.

ITALIAN

IMPORTANTI INFORMAZIONI PER L'INSTALLAZIONE DE REGOLATORI

1. **NON INSTALLARE** l'unitá prima di avere interamente letto tutte le informazioni contenute in questo fogilo.
2. **SE** non altrimenti precisato dal costruttore, questo prodotto è specificatamente costruito per essere usaro con aria compressa, e l'uso con ogni altro tipo di fluido (liquido o gas) è errato. Per esempio l'uso o l'iniezione nel sistema di certi liquidi o gas pericolosi (come alcool o gas liquido di petrolio) può essere dannoso all'apparecchio o portare a condizioni di combustione causando fughe pericolose. Nel caso di errate applicazioni, le garanzie di costruzione decadono ed il costruttore declina ogni responsabilità per qualsiasi tipo di danno. Ivalori massimi di pressione e temperatura sono 21 bar e 65.5°C.
3. **INSTALLARE** un filtro prima del regolatore per operazioni con la massima sicurezza.
4. **INSTALLARE** il regolatore dopo il filtro quando si tratta di una combinazione.
5. **INSTALLARE** il regolatore in ogni posizione conveniente.
6. **MONTARE** il manometro in uno degli appositi fori.
7. **I FORI LIBERI** possono essere usati come fori addizionali per uscita d'aria regolata.
8. **PER REGOLARE** la pressione: ruotare la manopola di regolazione in senso orario per aumentare la pressioneed in senso antiorario per ridurla.

IMPORTANTI INFORMAZIONI PER LA MANUTENZIONE DEI REGOLATORI

1. **CHIUDERE** la pressione e scaricare aria dal sistema.
2. **TOGLIERE** il tappo e pulire la valvola e la sede. Non è necessario staccare il regolatore dalla linea per togliere il tappo.

83-538-000 REV 1 08/02
Printed in the U.S.A.

WILKERSON®

83-528-000 REV 1 08/02

Dial-Air™ Regulators

MANUFACTURER'S WARRANTY

Manufacturer's products are warranted to be free from defects in material and workmanship under proper use, installation, application and maintenance in accordance with manufacturer's written recommendations and specifications for one year from the date of shipment from the factory. Manufacturer's obligation under this warranty is limited to and the sole remedy for any such defect shall be the repair or replacement (at manufacturer's option) of unaltered products returned to manufacturer and proven to have such defect, provided such defect is promptly reported to manufacturer within said one year period.

THIS IS THE ONLY AUTHORIZED MANUFACTURER'S WARRANTY AND IS IN LIEU OF ALL OTHER EXPRESS OR IMPLIED WARRANTIES OR REPRESENTATIONS, INCLUDING ANY IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS, OR OF ANY OTHER OBLIGATIONS ON THE PART OF MANUFACTURER. Warranty claims must be submitted and shall be processed in accordance with manufacturer's established warranty claim procedure. In no event will manufacturer be liable for business interruptions, loss of profits, personal injury, costs of delay or for any other special indirect, incidental or consequential losses, costs or damages.

⚠ WARNING ⚠

USE LIMITATIONS

Manufacturer's warranties are void and manufacturer assumes no responsibility for any resulting cost, loss injury or any other damages whatsoever with respect to any plastic bowl unit for which a bowl guard is standard equipment if the unit is placed in service without the bowl guard and except as otherwise specified in writing by manufacturer with respect to any manufacturer's products which are used in other than compressed air service. Specific warnings with respect to these and other use limitations appear elsewhere in this product instruction sheet.

YOU have selected a quality product, and we appreciate it... To be assured of maximum performance and satisfaction please read these instructions before installing this product.

IMPORTANT INSTALLATION INSTRUCTIONS *FOR DIAL-AIR™ REGULATORS*

1. **DO NOT** install the unit until you have read this entire product information sheet.
2. **EXCEPT** as otherwise specified by manufacturer, this product is specifically designed for compressed air service, and use with any other fluid (liquid or gas) is a misapplication. For example, use with or injection of certain hazardous liquids or gases in the system (such as alcohol or liquid petroleum gas) could be harmful to unit or result in a combustible condition or hazardous external leakage. Manufacturer's warranties are void in the event of misapplication and manufacturer assumes no responsibility for any resulting loss. Maximum pressure and temperature ratings are 300 psig (21 bar) and 150°F (65.5°C).
3. **INSTALL** upstream of and as close as possible to where regulated air is needed.
4. **INSTALL** with air flow in direction of arrow on casting.
5. **DO NOT** restrict the air flow with undersize piping or fittings, unless maximum air flow is not needed.
6. **INSTALL** regulator in any rotational position.
7. **GAUGE PORTS** may be used for installing gauge or they may be used as additional regulated air outlet ports. Plug all unused ports.
8. **PANEL MOUNTING** requires a 2 11/16" (69 mm) diameter hole, and 4 7/32" (5.5 mm) screw holes. Unit can be mounted on material up to 1 1/4" (32 mm) thick.
9. **INSTALLATION** of a 5-micron rated filter upstream of regulator is recommended.
10. **TO REGULATE AIR** turn adjustment knob clockwise to raise the regulated air pressure and counterclockwise to lower the regulated air pressure.

IMPORTANT MAINTENANCE INSTRUCTIONS FOR DIAL-AIR™ REGULATORS

1. **BEFORE SERVICING THIS UNIT, READ THIS ENTIRE PRODUCT INFORMATION SHEET AND TURN OFF AIR SUPPLY AND VENT BOTH SIDES OF REGULATOR.**

LUBRICATION OF DIAL-AIR™ REGULATORS

1. **FOR TROUBLE-FREE OPERATION**, proper lubrication of the Dial-Air™ regulator is essential.
2. **WHEN ANY** of the following symptoms occur, lubricate regulator with Magnalube-G®. (See note) If Magnalube-G® is not available, use a heavy grease such as Parker O-ring Lube, Lubriplate, or Molykote, however, these lubricants "wash out" much sooner than Magnalube-G®. **NOTE:** Never use oil as a lubricant.
   A. Excessive relief venting.
   B. Inability to attain high secondary pressure.
   C. Erratic secondary pressures.
   D. Excessive hysteresis (a retardation of desired effect: in this case because of the lack of lubrication).
3. Refer to "Figure A" for steps 1 thru 10.
   1. Remove bottom plug (1), main valve spring (2), main valve (3), pilot valve spring (4), and pilot valve (5).
   2. Clean main valve molded rubber seat (Do not lubricate).
   3. Clean and lubricate bottom plug seal, main valve seal and pilot valve seal.
   4. Reassemble unit.
   5. If problem is not remedied, lubricate remaining seals. (See steps 6 thru 10)
   6. Remove retaining ring (6) and pull bonnet assembly (7) from unit.
   7. Remove upper piston (8), upper piston cup (9), lower piston (10), needle valve (11), and needle valve spring (12).
   8. Clean and lightly lubricate inside of body.
   9. Clean and lubricate upper piston seal, upper piston cup seal, lower piston seal, needle valve seal and main valve slide seal (13).
   10. Reassemble unit. If symptoms still exist, contact manufacturer.

RECALIBRATION OF DIAL-AIR™ REGULATORS

1. **DO NOT ATTEMPT TO CALIBRATE UNIT UNTIL ALL EIGHT SEALS HAVE BEEN PROPERLY LUBRICATED.**
2. **TO RECALIBRATE Dial-Air™ REGULATOR:**
   A. **INSTALL** regulator on air line with at least 110 psig (7,5 bar) air pressure at the inlet port.
   B. **INSTALL** an air pressure gauge to one of the gauge ports. Plug remaining gauge port with plug (supplied).
   C. **REMOVE** lock button (Figure A, Item 14) from unit.
   D. **TURN** adjusting knob to 100 psi (7 bar) setting.
   E. **CHECK** the gauge for 100 psig (7 bar) reading. If gauge reads other than 100 psig (7 bar) adjust screw "A" (Fig. B) with a screwdriver while holding adjusting knob on 100 psi (7 bar) setting. If more than one-half turn of screw "A" is required to achieve 100 psig (7 bar), see "G" below.
   F. **TO CHECK CALIBRATION ADJUSTMENT:** when dial and gauge are reading the same (100 psig ± 2 psig; 7 bar ± 0,14 bar), turn adjusting knob to 20 psi (1,4 bar). Unit is calibrated when gauge reads 20 psig ± 5 psig (1,4 bar ± 0,34). (The ± 2 psig and ± 5 psig are accepted tolerances of the most commonly used gauges.)
   G. **DO NOT** adjust screw "A" more than one-half turn when calibrating unit. If unit has been properly lubricated and more than one-half turn is required to calibrate it, additional problems with unit are involved and unit should be returned to the vendor.

FRENCH

GARANTIE DU FABRICANT

Les produits du fabricant sont garantis contre toute malfaçon ou tout défaut d'exécution, lorsqu'on les emploie, les installe, les applique et les entretient en respectant les recommandations et spécifications écrites formulées par le fabricant. La garantie dure un an, à compter de la date d'expédition de l'usine. En vertu de cette garantie, l'obligation du fabricant et le seul recours contre une telle malfaçon ou un tel défaut, se limite à la réparation ou au remplacement (au gré du fabricant) des produits n'ayant subi aucune modification qui lui sont restitués, et sur lesquels on constate la malfaçon ou le défaut, sous réserve que ces derniers soit rapportés sans délai au fabricant au cours de ladite période d'un an.

IL S'AGIT DE LA SEULE GARANTIE QUE PERMET LE FABRICANT. ELLE REMPLACE TOUTE AUTRE GARANTIE OU DÉCLARATION EXPLICITE OU IMPLICITE, Y COMPRIS TOUTE GARANTIE IMPLICITE CONCERNANT LA VALEUR LOYALE ET MARCHANDE OU L'ADAPTABILITÉ À UN CERTAIN BUT, OU TOUTE AUTRE OBLIGATION DE LA PART DU FABRICANT. Les réclamations en vertu de la garantie doivent être présentées et seront traitées conformément à la procédure relative aux réclamations en vertu de la garantie établie chez le fabricant. Le fabricant ne saurait en aucun cas être tenu responsable d'une interruption des affaires, de pertes de bénéfices, de lésions physiques, des coûts découlant d'un retard, comme de toute autre perte, tout autre coût ou dommage déterminé, indirect, accessoire or consécutif.

⚠ AVERTISSEMENT ⚠

LIMITATIONS DE L'USAGE

Les garanties que présente le fabricant sont nulles et non avenues, et le fabricant décline la responsabilité relative à une perte, lésion, à un coût ou à un autre dommage quelconque en résultant, pour une unité de godet en plastique dont un protecteur de godet constitue l'équipement standard, et sauf indication contraire donnée par écrit par le fabricant en ce qui concerne des produits du fabricant servant à d'autres fins que le service d'air comprimé. Les avertissements spécifiques relatifs à ces limitations sur l'emploi, et toute autre limitation, figurent ailleurs dans cette notice.

VOUS avez choisi un produit de qualité et nous vous en remercions. Pour vous assurer d'un rendement et d'un fonctionnement parfaits, lisez ces instructions avant d'installer cet équipement.

INSTRUCTIONS IMPORTANTES CONCERNANT L'INSTALL DES RÉGULATEUR DIAL-AIR™

1. **NE PAS** installer l'appareil avant d'avoir lu dans son intégralité cette notice d'information sur le produit.
2. **SAUF** indication contraire du fabricant, cet appareil est prévu pour l'air comprimé. Tout emploi avec d'autres fluides (liquides ou gaz) est contre-indiqué. Ainsi, l'utilisation avec certains liquides ou gaz dangereux, ou leur injection, (alcool, gaz de pétrole liquéfié) peut être dangereux pour l'appareil, ou entraîner des risques d'explosion ou des fuites dangereuses. Les garanties du fabricant sont nulles en cas de mauvaise utilisation. Le fabricant dégage sa responsabilité en cas d'accident en découlant. La pression et la température maximales sont de 300 psig (21 bars) et 150°F (65,5°C).
3. **INSTALLER** l'appareil en amont et aussi près que possible de l'endroit où l'air régulé est nécessaire.
4. **INSTALLER** l'appareil de sorte que l'air circule dans le sens indiqué par la flèche sur la fonderie.
5. **NE PAS** diminuer le débit d'air par l'emploi de tuyauterie ou de raccords de dimensions insuffisantes, sauf si l'on désire un débit minimum.
6. **INSTALLER** le régulateur dans n'importe quelle position de rotation.
7. **LES ORIFICES DE RACCORDEMENT DU MANOMÈTRE** peuvent soit servir à monter un manomètre,soit servir de sortie supplémentaire pour l'air régulé. Obturer tout orifice non utilisé.
8. **LE MONTAGE SUR PANNEAU** impose un trou de 69 mm de diamètre, plus 4 trous de 5,5 mm pour les vis. L'appareil peut être monté sur des matériaux de 32 mm d'épaisseur maximum.
9. **NOUS CONSEILLONS** d'installer un filtre de 5 microns en amont du régulateur.
10. **POUR RÉGULER L'AIR**, tourner le bouton de réglage dans le sens des aiguilles d'une montre afin

83-528-000 REV 1 08/02
Printed in U.S.A.

FIGURE "A"

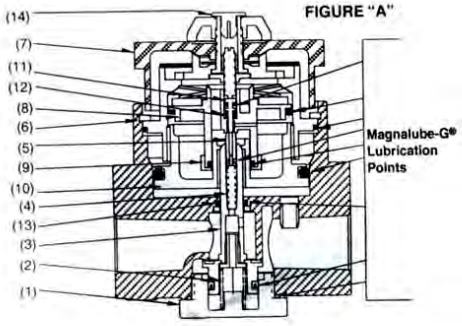
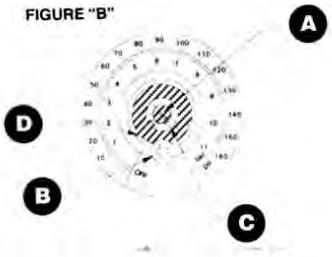


FIGURE "B"



A CALIBRATION ADJUSTMENT SCREW
VIS DE RÉGLAGE DE LA CALIBRATION
EICHUNGSEINSTELLSCHRAUBE
VITE DI REGOLAZIONE DELLA TARATURA
TORNILLO DE AJUSTE DE CALIBRACIÓN

B DIAL SCREW
VIS DU CADRAN
SKALENSCHRAUBE
VITE DEL QUADRANTE
TORNILLO DEL CUADRANTE

C ADJUSTMENT COUPLING
ASSEMBLAGE DE LA SOUPAPE
VENTILAUFBAU
ACCOPPIAMENTO DI REGOLAZIONE
CUERPO DE LA VÁLVULA

D TIP
EMBOUT
SPITZE
ESTREMITÀ
LENGÜETA

IMPORTANT NOTE: As with any new product, everyone seems to have an urge to see how it works. All Dial-Air™ regulators have been factory-calibrated. Any "tinkering" with calibration settings easily can throw the unit out of calibration. For example, removing dial screw "B" and rotating "C" in either direction so that tip "D" passes the dial screw "B" will throw unit out of calibration.

REMARQUE IMPORTANTE : D'ordinaire, on désire savoir rapidement comment marche un nouvel article. Tous les régulateurs Dial-Air™ ont été calibrés en usine. Toute modification des réglages du calibrage peut facilement décalibrer l'appareil. Ainsi, enlever la vis du cadran B et tourner de telle façon que l'embout D dépasse la vis du cadran B, risque de décalibrer l'appareil.

WICHTIGER HINWEIS: Wir raten davon ab, die Regler zu verstellen. Alle Dial-Air™-Regler wurden in der Fabrik geeicht. Jedes Verstellen der Eicheinstellungen kann die Eichung des Geräts zerstören. Dies kann zum Beispiel dann geschehen, wenn die Skalenschraube „B" entfernt und „C" in eine beliebige Richtung gedreht wird, so daß dabei die Spitze „D" die Skalenschraube „B" passiert.

NOTA IMPORTANTE: Come capita per ogni nuovo prodotto, ognuno sembra avere urgenza di conoscerne il funzionamento. Tutti i regolatori Dial-Air™ sono stati tarati in fabbrica. Ogni tentativo di riparazione sull'apparecchio può facilmente metterlo fuori taratura. Per esempio, l'unità è fuori taratura se si toglie la vite del quadrante "B", si ruota "C" in entrambe le direzioni in modo che l'estremità "D" oltrepassi il punto "B".

NOTA IMPORTANTE: Al igual que con cualquier producto nuevo, el comprador deseará saber inmediatamente cómo funciona esta unidad. Todos los reguladores de aire Dial-Air™ se calibran en fábrica. Cualquier intento de "corrección" de la calibración podría fácilmente descalibrar completamente la unidad. Por ejemplo, si quitara el tornillo del cuadrante "B" y girara "C" en cualquier dirección, de modo que "D" pasara el tornillo del cuadrante "B", la unidad se descalibraría.

WILKERSON

83-528-000 REV 1 08/02

Dial-Air™ Regulators

MANUFACTURER'S WARRANTY

Manufacturer's products are warranted to be free from defects in material and workmanship under proper use, installation, application and maintenance in accordance with manufacturer's written recommendations and specifications for one year from the date of shipment from the factory. Manufacturer's obligation under this warranty is limited to and the sole remedy for any such defect shall be the repair or replacement (at manufacturer's option) of unaltered products returned to manufacturer and proven to have such defect, provided such defect is promptly reported to manufacturer within said one year period.

THIS IS THE ONLY AUTHORIZED MANUFACTURER'S WARRANTY AND IS IN LIEU OF ALL OTHER EXPRESS OR IMPLIED WARRANTIES OR REPRESENTATIONS, INCLUDING ANY IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS, OR OF ANY OTHER OBLIGATIONS ON THE PART OF MANUFACTURER. Warranty claims must be submitted and shall be processed in accordance with manufacturer's established warranty claim procedure. In no event will manufacturer be liable for business interruptions, loss of profits, personal injury, costs of delay or for any other special, indirect, incidental or consequential losses, costs or damages.

⚠ WARNING ⚠

USE LIMITATIONS

Manufacturer's warranties are void and manufacturer assumes no responsibility for any resulting cost, loss injury or any other damages whatsoever with respect to any plastic bowl unit for which a bowl guard is standard equipment if the unit is placed in service without the bowl guard and except as otherwise specified in writing by manufacturer with respect to any manufacturer's products which are used in other than compressed air service. Specific warnings with respect to these and other use limitations appear elsewhere in this product instruction sheet.

YOU have selected a quality product, and we appreciate it... To be assured of maximum performance and satisfaction please read these instructions before installing this product.

IMPORTANT INSTALLATION INSTRUCTIONS FOR DIAL-AIR™ REGULATORS

1. **DO NOT** install the unit until you have read this entire product information sheet.
2. **EXCEPT** as otherwise specified by manufacturer, this product is specifically designed for compressed air service, and use with any other fluid (liquid or gas) is a misapplication. For example, use with or injection of certain hazardous liquids or gases in the system (such as alcohol or liquid petroleum gas) could be harmful to unit or result in a combustible condition or hazardous external leakage. Manufacturer's warranties are void in the event of misapplication and manufacturer assumes no responsibility for any resulting loss. Maximum pressure and temperature ratings are 300 psig (21 bar) and 150°F (65.5°C).
3. **INSTALL** upstream of and as close as possible to where regulated air is needed.
4. **INSTALL** with air flow in direction of arrow on casting.
5. **DO NOT** restrict the air flow with undersize piping or fittings, unless maximum air flow is not needed.
6. **INSTALL** regulator in any rotational position.
7. **GAUGE PORTS** may be used for installing gauge or they may be used as additional regulated air outlet ports. Plug all unused ports.
8. **PANEL MOUNTING** requires a 2 11/16" (69 mm) diameter hole, and 4 7/32" (5.5 mm) screw holes. Unit can be mounted on material up to 1 1/4" (32 mm) thick.
9. **INSTALLATION** of a 5-micron rated filter upstream of regulator is recommended.
10. **TO REGULATE AIR** turn adjustment knob clockwise to raise the regulated air pressure and counterclockwise to lower the regulated air pressure.

IMPORTANT MAINTENANCE INSTRUCTIONS FOR DIAL-AIR™ REGULATORS

1. **BEFORE SERVICING THIS UNIT, READ THIS ENTIRE PRODUCT INFORMATION SHEET AND TURN OFF AIR SUPPLY AND VENT BOTH SIDES OF REGULATOR.**

LUBRICATION OF DIAL-AIR™ REGULATORS

1. **FOR TROUBLE-FREE OPERATION, proper lubrication** of the Dial-Air™ regulator **is essential.**
2. **WHEN ANY** of the following symptoms occur, **lubricate regulator with Magnalube-G®.** (See note) If Magnalube-G® **is not available, use** a heavy grease such as Parker O-ring Lube, Lubriplate, or Molykote, however, these lubricants "wash out" much sooner than Magnalube-G®. **NOTE:** Never use oil as a lubricant.
   - A. Excessive relief venting.
   - B. Inability to attain high secondary pressure.
   - C. Erratic secondary pressures.
   - D. Excessive hysteresis (a retardation of desired effect: in this case because of the lack of lubrication).
3. Refer to "Figure A" for steps 1 thru 10.
   1. Remove bottom plug (1), main valve spring (2), main valve (3), pilot valve spring (4), and pilot valve (5).
   2. Clean main valve molded rubber seat (Do not lubricate).
   3. Clean and lubricate bottom plug seal, main valve seal and pilot valve seal.
   4. Reassemble unit.
   5. If problem is not remedied, lubricate remaining seals. (See steps 6 thru 10)
   6. Remove retaining ring (6) and pull bonnet assembly (7) from unit.
   7. Remove upper piston (8), upper piston cup (9), lower piston (10), needle valve (11), and needle valve spring (12).
   8. Clean and lightly lubricate inside of body.
   9. Clean and lubricate upper piston seal, upper piston cup seal, lower piston seal, needle valve seal and main valve slide seal (13).
   10. Reassemble unit. If symptoms still exist, contact manufacturer.

RECALIBRATION OF DIAL-AIR™ REGULATORS

1. **DO NOT ATTEMPT TO CALIBRATE UNIT UNTIL ALL EIGHT SEALS HAVE BEEN PROPERLY LUBRICATED.**
2. **TO RECALIBRATE Dial-Air™ REGULATOR:**
   - A. **INSTALL** regulator on air line with at least 110 psig (7,5 bar) air pressure at the inlet port.
   - B. **INSTALL** an air pressure gauge to one of the gauge ports. Plug remaining gauge port with plug (supplied).
   - C. **REMOVE** lock button (Figure A, Item 14) from unit.
   - D. **TURN** adjusting knob to 100 psi (7 bar) setting.
   - E. **CHECK** the gauge for 100 psig (7 bar) reading. If gauge reads other than 100 psig (7 bar) adjust screw "A" (Fig. B) with a screwdriver while holding adjusting knob on 100 psi (7 bar) setting. If more than one-half turn of screw "A" is required to achieve 100 psig (7 bar), see "G" below.
   - F. **TO CHECK CALIBRATION ADJUSTMENT:** when dial and gauge are reading the same (100 psig ± 2 psig; 7 bar ± 0,14 bar), turn adjusting knob to 20 psi (1,4 bar). Unit is calibrated when gauge reads 20 psig ± 5 psig (1,4 bar ± 0,34). (The ± 2 psig and ± 5 psig are accepted tolerances of the most commonly used gauges.)
   - G. **DO NOT** adjust screw "A" more than one-half turn when calibrating unit. If unit has been properly lubricated and more than one-half turn is required to calibrate it, additional problems with unit are involved and unit should be returned to the vendor.

FRENCH

GARANTIE DU FABRICANT

Les produits du fabricant sont garantis contre toute malfaçon ou tout défaut d'exécution, lorsqu'on les emploie, les installe, les applique et les entretient en respectant les recommandations et spécifications écrites formulées par le fabricant. La garantie dure un an, à compter de la date d'expédition de l'usine. En vertu de cette garantie, l'obligation du fabricant et le seul recours contre une telle malfaçon ou un tel défaut, se limite à la réparation ou au remplacement (au gré du fabricant) des produits n'ayant subi aucune modification qui lui sont restitués, et sur lesquels on constate la malfaçon ou le défaut, sous réserve que ces derniers soit rapportés sans délai au fabricant au cours de ladite période d'un an.

IL S'AGIT DE LA SEULE GARANTIE QUE PERMET LE FABRICANT. ELLE REMPLACE TOUTE AUTRE GARANTIE OU DÉCLARATION EXPLICITE OU IMPLICITE, Y COMPRIS TOUTE GARANTIE IMPLICITE CONCERNANT LA VALEUR LOYALE ET MARCHANDE OU L'ADAPTABILITÉ À UN CERTAIN BUT, OU TOUTE AUTRE OBLIGATION DE LA PART DU FABRICANT. Les réclamations en vertu de la garantie doivent être présentées et seront traitées conformément à la procédure relative aux réclamations en vertu de la garantie établie chez le fabricant. Le fabricant ne saurait en aucun cas être tenu responsable d'une interruption des affaires, de pertes de bénéfices, de lésions physiques, des coûts découlant d'un retard, comme de toute autre perte, tout autre coût ou dommage déterminé, indirect, accessoire or consécutif.

⚠ AVERTISSEMENT ⚠

LIMITATIONS DE L'USAGE

Les garanties que présente le fabricant sont nulles et non avenues, et le fabricant décline la responsabilité relative à une perte, lésion, à un coût ou à un autre dommage quelconque en résultant, pour une unité de godet en plastique dont un protecteur de godet constitue l'équipement standard, et sauf indication contraire donnée par écrit par le fabricant en ce qui concerne des produits du fabricant servant à d'autres fins que le service d'air comprimé. Les avertissements spécifiques relatifs à ces limitations sur l'emploi, et toute autre limitation, figurent ailleurs dans cette notice.

VOUS avez choisi un produit de qualité et nous vous en remercions. Pour vous assurer d'un rendement et d'un fonctionnement parfaits, lisez ces instructions avant d'installer cet équipement.

INSTRUCTIONS IMPORTANTES CONCERNANT L'INSTALL DES RÉGULATEUR DIAL-AIR™

1. **NE PAS** installer l'appareil avant d'avoir lu dans son intégralité cette notice d'information sur le produit.
2. **SAUF** indication contraire du fabricant, cet appareil est prévu pour l'air comprimé. Tout emploi avec d'autres fluides (liquides ou gaz) est contre-indiqué. Ainsi, l'utilisation avec certains liquides ou gaz dangereux, ou leur injection, (alcool, gaz de pétrole liquéfié) peut être dangereux pour l'appareil, ou entraîner des risques d'explosion ou des fuites dangereuses. Les garanties du fabricant sont nulles en cas de mauvaise utilisation. Le fabricant **dégage sa responsabilité** en cas d'accident en découlant. La pression et la température maximales sont de 300 psig (21 bars) et 150°F (65.5°C).
3. **INSTALLER** l'appareil en amont et aussi près que possible de l'endroit où l'air régulé est nécessaire.
4. **INSTALLER** l'appareil de sorte que l'air circule dans le sens indiqué par la flèche sur la fonderie.
5. **NE PAS** diminuer le débit d'air par l'emploi de tuyauterie ou de raccords de dimensions insuffisantes, sauf si l'on désire un débit minimum.
6. **INSTALLER** le régulateur dans n'importe quelle position de rotation.
7. **LES ORIFICES DE RACCORDEMENT DU MANOMÈTRE** peuvent soit servir à monter un manomètre,soit servir de sortie supplémentaire pour l'air régulé. Obturer tout orifice non utilisé.
8. **LE MONTAGE SUR PANNEAU** impose un trou de 69 mm de diamètre, plus 4 trous de 5,5 mm pour les vis. L'appareil peut être monté sur des matériaux de 32 mm d'épaisseur maximum.
9. **NOUS CONSEILLONS** d'installer un filtre de 5 microns en amont du régulateur.
10. **POUR RÉGULER L'AIR**, tourner le bouton de réglage dans le sens des aiguilles d'une montre afin

83-528-000 REV 1 08/02
Printed in U.S.A.

FIGURE "A"

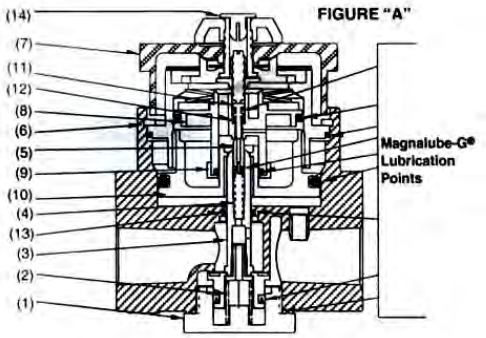
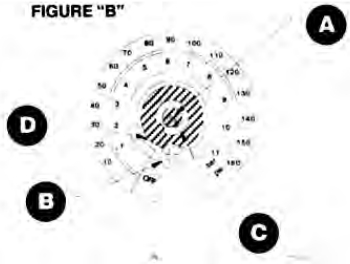


FIGURE "B"



A CALIBRATION ADJUSTMENT SCREW
VIS DE RÉGLAGE DE LA CALIBRATION
EICHUNGSEINSTELLSCHRAUBE
VITE DI REGOLAZIONE DELLA TARATURA
TORNILLO DE AJUSTE DE CALIBRACIÓN

B DIAL SCREW
VIS DU CADRAN
SKALENSCHRAUBE
VITE DEL QUADRANTE
TORNILLO DEL CUADRANTE

C ADJUSTMENT COUPLING
ASSEMBLAGE DE LA SOUPAPE
VENTILAUFBAU
ACCOPPIAMENTO DI REGOLAZIONE
CUERPO DE LA VÁLVULA

D TIP
EMBOUT
SPITZE
ESTREMITÀ
LENGÜETA

IMPORTANT NOTE: As with any new product, everyone seems to have an urge to see how it works. All Dial-Air™ regulators have been factory-calibrated. Any "tinkering" with calibration settings easily can throw the unit out of calibration. For example, removing dial screw "B" and rotating "C" in either direction so that tip "D" passes the dial screw "B" will throw unit out of calibration.

REMARQUE IMPORTANTE : D'ordinaire, on désire savoir rapidement comment marche un nouvel article. Tous les régulateurs Dial-Air™ ont été calibrés en usine. Toute modification des réglages du calibrage peut facilement décalibrer l'appareil. Ainsi, enlever la vis du cadran B et tourner de telle façon que l'embout D dépasse la vis du cadran B, risque de décalibrer l'appareil.

WICHTIGER HINWEIS: Wir raten davon ab, die Regler zu verstellen. Alle Dial-Air™-Regler wurden in der Fabrik geeicht. Jedes Verstellen der Eicheinstellungen kann die Eichung des Geräts zerstören. Dies kann zum Beispiel dann geschehen, wenn die Skalenschraube „B" entfernt und „C" in eine beliebige Richtung gedreht wird, so daß dabei die Spitze „D" die Skalenschraube „B" passiert.

NOTA IMPORTANTE: Come capita per ogni nuovo prodotto, ognuno sembra avere urgenza di conoscerne il funzionamento. Tutti i regolatori Dial-Air™ sono stati tarati in fabbrica. Ogni tentativo di riparazione sull'apparecchio può facilmente metterlo fuori taratura. Per esempio, l'unità è fuori taratura se si toglie la vite del quadrante "B", si ruota "C" in entrambe le direzioni in modo che l'estremità "D" oltrepassi il punto "B".

NOTA IMPORTANTE: Al igual que con cualquier producto nuevo, el comprador deseará saber inmediatamente cómo funciona esta unidad. Todos los reguladores de aire Dial-Air™ se calibran en fábrica. Cualquier intento de "corrección" de la calibración podría fácilmente descalibrar completamente la unidad. Por ejemplo, si quitara el tornillo del cuadrante "B" y girara "C" en cualquier dirección, de modo que "D" pasara el tornillo del cuadrante "B", la unidad se descalibraría.

Siemens Energy & Automation	INSTRUCTIONS FOR INSTALLATION, OPERATION, AND MAINTENANCE OF MOORE CONSTANT DIFFERENTIAL TYPE FLOW CONTROLLERS

WARNING: Read instructions before installing to prevent personal injury or damage to equipment.

SD63UL
Issue: 7
Date: 9/91

GENERAL INFORMATION

The Moore Constant Differential Type Flow Controller is used in conjunction with an external needle valve to provide constant volume flow rates for either liquids or gases over a continuously adjustable flow range.

When used on gases, upstream pressure must be constant to provide a constant mass flow rate (i.e., standard volume units per time unit; e.g., SCFM). Constant upstream pressure is not needed for constant volume flow rates (i.e., volume units per time unit; e.g., CFM).

With liquids, both mass and volumetric flow rates are held constant, regardless of up or downstream pressures.

MODEL DESIGNATION

6 3 B U - L

- Constant Differential Flow Controller
- Body Construction
  - B - Brass (with Neoprene Diaphragm)
  - S - Stainless Steel (with Kynar Diaphragm)
- Used with Constant Upstream Pressure
- Very Low Flow Rates

SPECIFICATIONS

Supply Pressure:

Minimum: At least 5 psi greater than the maximum downstream pressure of the needle valve-controller combination:

Maximum:

MODEL	NEEDLE VALVE CLOSED	NEEDLE VALVE OPEN
63BU	50 psig	250 psig
63BUL	50 psig	250 psig
63SU	100 psig	500 psig
63SUL	50 psig	500 psig

Ambient Temperature Limits:

Models 63BU & BUL –40°F to +180°F
Models 63SU & SUL –40°F to +250°F

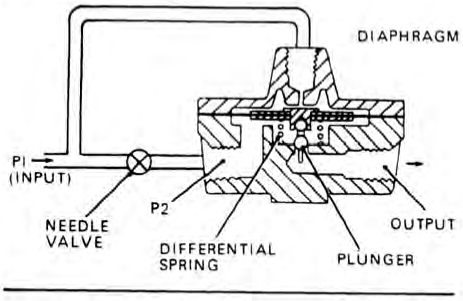
PRINCIPLE OF OPERATION

If the pressure drop across a restriction is held constant, the flow through the restriction is constant. The needle valve (a variable restriction) can be set to an opening which will produce the desired flow rate.

The pressure drop (ΔP) across the needle valve is held constant by the flow controller as follows:

1. The input pressure (P1) is applied to the needle valve and to the top of the controller's diaphragm, and forces the diaphragm and attached plunger down.
2. The Differential Spring and downstream pressure (P2) force the diaphragm and plunger up. The Differential Spring produces an upward force equal to that produced by a constant pressure (K).
3. The Controller is balanced when the force due to P1 equals the forces due to P2 and K (i.e., P1 = P2 + K). Since the pressure drop (ΔP) across the needle valve equals P1 – P2, and since P1 – P2 equals K, then the pressure drop (ΔP) must equal K; therefore flow is constant.

SCHEMATIC



INSTALLATION

Mounting dimensions and the location and size of connections are shown on the installation drawings. The controller may be mounted in any desired position. The needle valve and feedback connections should be installed as close to the controller as possible to minimize pressure drop between these points. The supply to the controller should be filtered to remove any solids.

Caution

When installing the constant up stream flow controller, be sure the external needle valve is open. (See Installation Dwg.). Failure to do this could result in applying a differential pressure across the diaphragm of the flow controller in excess of its rated limit, thus causing the diaphragm to rupture.

CAPACITY

The formulas for the calculation of maximum and minimum flow rates can be found in Table 1.

The minimum controllable flow will depend on the leakage past the valve plunger in the controller. It is, therefore, a function of the cleanliness of the valve and the pressure drop across it as well as any inherent leakage. In general, for a standard flow controller, the minimum controllable flow will be approximately 1/100 of the maximum flow.

TABLE 1 Flow Capacity Formulas

	Higher Range Models 63BD and 63SD; 63BU and 63SU	Low Flow Models 63BD-L and 63SD-L; 63BU-L and 63SU-L
GAS FLOW-CAPACITY		
Maximum or less than critical flow*	$SCCM = 4000 \sqrt{\frac{\Delta P}{SG}} \times Pd \times \frac{530}{T}$	$SCCM = 400 \sqrt{\frac{\Delta P}{SG}} \times Pd \times \frac{530}{T}$
Maximum at critical flow*	$SCCM = 2000\ Pu \sqrt{\frac{1}{SG}} \times \frac{530}{T}$	$SCCM = 200\ Pu \sqrt{\frac{1}{SG}} \times \frac{530}{T}$
Minimum controllable flow	Approximately 1/200 of maximum	$SCCM = 8\ \frac{\Delta P\ (Pu - Pd)}{Rv\ T}$
LIQUID FLOW-CAPACITY		
Maximum	$CCM = 470 \sqrt{\frac{\Delta P}{SG}}$	$CCM = 47 \sqrt{\frac{\Delta P}{SG}}$
Minimum	Approximately 1/200 of maximum	$CCM = .06\ \frac{\Delta P}{Rv}$
NEEDLE VALVE SIZING (With 3 psi drop across valve)		
For any liquid	$Kn = \frac{CCM}{6550 \sqrt{\frac{1}{SG}}}$	
For any gas	$Kn = \frac{SCCM}{49000 \sqrt{\frac{1}{SG} \times Pn \times \frac{530}{T}}}$	

*Critical flow exists when the ratio of upstream pressure (Pu) to downstream pressure (Pd) is equal to or less than approximately 0.53:

$$\left(\frac{Pd}{Pu} \leq 0.53\right)$$

The actual ratio value for air is 0.528; it should be noted that it varies slightly for other gases.

SCCM = Cubic centimeters per minute of gas at standard conditions (70° F, 14.7 psia). Note: 1 SCF = 28,317 SCC.

ΔP = psi pressure drop across the controller valve = total drop minus 3 psi.

Pu = psia pressure at inlet of controller (allow 3 psi for drop across the needle valve, if it is installed upstream).

Pd = psia pressure at outlet of controller (allow 3 psi for drop across the needle valve, if it is installed downstream).

Pn = psia pressure at outlet of needle valve.

SG = Specific gravity of the gas referred to air, or specific gravity of the liquid referred to water at 4° C.

T = Absolute temperature of the gas = degrees F + 460.

Rv = Ratio of viscosities of gas referred to air; or Ratio of viscosities of liquid at operating temperature to water at 4° C.

Kn = Flow constant of needle valve.

Rangeability and minimum controllable flow of each size depend upon the needle valve used, the specific gravity of the fluid, the operating pressures, and other factors.

The formulas permit calculation of maximum flows for both the low-flow and higher-range models. Because minimum flows occur in a laminar pattern with the low-flow models, a separate formula is furnished. Rangeability is considerably higher on gases than on liquids.

FLOW-RANGE EXAMPLES

Conditions:
15 psig (29.7 psia) at inlet of controller
10 psi drop across controller (not including 3 psi needle-valve drop)
70° F process temperature

	Max. Flow	Min. Flow
Higher-range units (Series 63)		
On air	56,000 scc/min	280 scc/min
On water	1,500 cc/min	7.5 cc/min
Low-range units (Series 63L)		
On air	5,600 scc/min	7 scc/min
On water	149 cc/min	0.6 cc/min

OPERATION

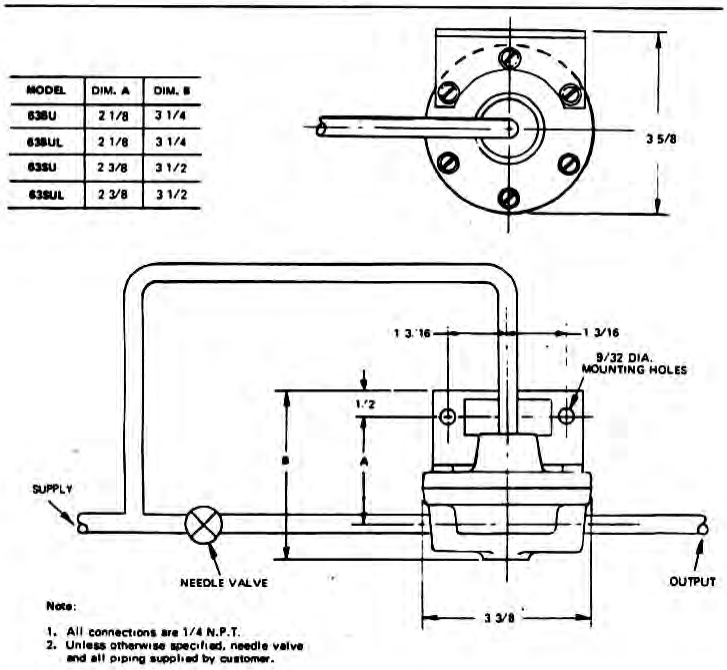
With the supply turned on, adjust the needle valve to obtain the desired flow rate. The valve may be adjusted for any flow within the capacity of the unit.

MAINTENANCE

The only maintenance normally required will be to keep the valve plunger and external needle valve clean. Any change in the rate of flow for a given needle valve setting will probably be caused by partial clogging of the needle valve.

Failure to obtain minimum flows will probably be caused by solids on the controller valve plunger. It will be necessary to disassemble the 63-U model controller in order to remove the plunger valve. Use the Parts List for the controller as an assembling aid.

MODEL	DIM. A	DIM. B
63BU	2 1/8	3 1/4
63BUL	2 1/8	3 1/4
63SU	2 3/8	3 1/2
63SUL	2 3/8	3 1/2



Installation Dwg. Model 63U Constant Flow Controller

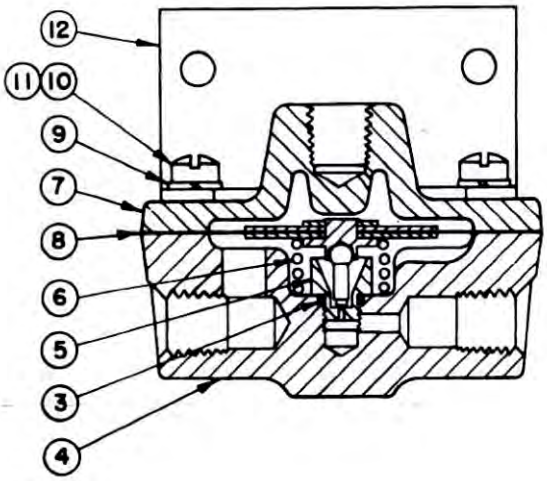
PARTS LIST

Siemens Energy & Automation

MOORE CONSTANT DIFFERENTIAL TYPE FLOW CONTROLLER FOR SMALL FLOWS — MODEL 63BU-L

Drawing No. 10746PL

MODEL 63BU-L
B/M 10746S6



Item No.	Part No.	Description	Req'd
3	2938-1	"O" Ring	1
4	10746-10	Bottom Forging	1
* 5	10917-24	Valve Seat	1
* 6	1518-5	Differential Spring	1
7	2881-9	Top Forging	1
* 8	10746-2	Diaphragm and Valve Assembly	1
9		1/4" Lockwasher	6
10	Screw	1/4-20 x 3/4" Lg. Fil. Hd.	3
11	Screw	1/4-20 x 5/8" Lg. Fil. Hd.	3
12	1145-19	Mounting Bracket	1

* Recommended On-Hand Spare Parts. Always Specify Range, Serial No., or Other Nameplate Information When Ordering Spare Parts

3/78 Supersedes Dwg. 10746-20 Dated 6/76

REF: SD63UL

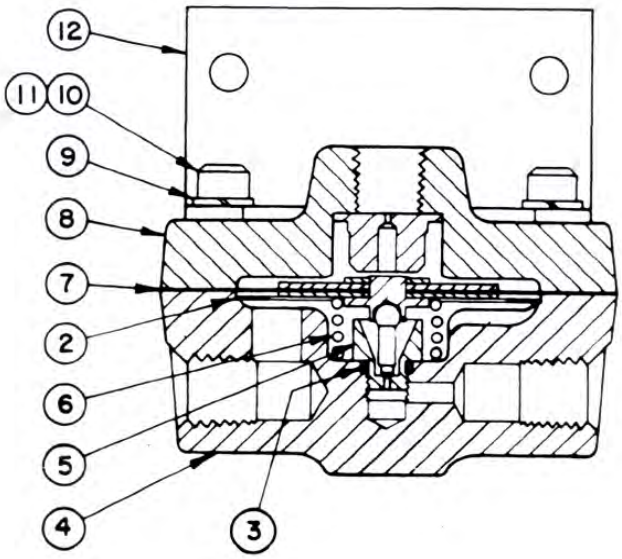
PARTS LIST

Siemens
Energy & Automation

MOORE CONSTANT DIFFERENTIAL TYPE FLOW CONTROLLER FOR SMALL FLOWS — MODEL 63SU-L

Drawing No. 12046PL

MODEL 63SU-L
B/M 12046S11



Item No.	Part No.	Description	Req'd
2	12041-23	Protecting Ring	1
3	2938-120	"O" Ring	1
4	12046-16	Bottom Forging	1
* 5	12046-8	Valve Seat	1
* 6	3131-22	Differential Spring	1
* 7	12046-9	Diaphragm and Valve Assembly	1
8	12041-42	Top Housing Assembly	1
9		1/4" Lockwasher	6
10	Screw	1/4-20 x 1-1/4" Lg. Soc. Hd.	3
11	Screw	1/4-20 x 1" Lg. Soc. Hd.	3
12	1145-19	Mounting Bracket	1

* Recommended On-Hand Spare Parts Always Specify Range, Serial No. or Other Nameplate Information When Ordering Spare Parts

3/78 Supersedes Dwg. 12046-20 Dated 6/76

REF. SD63UL

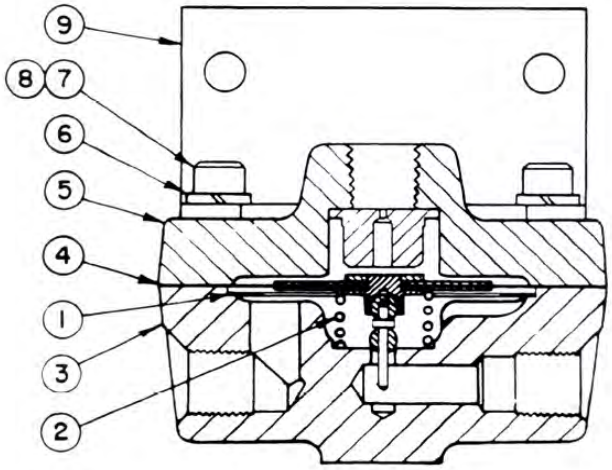
PARTS LIST

Siemens Energy & Automation

MOORE CONSTANT DIFFERENTIAL TYPE FLOW CONTROLLER (CONSTANT UPSTREAM PRESSURE)

Drawing No. 12041PL

MODEL 63SU
B/M 12041510



Item No.	Part No.	Description	Req'd
1	12041-23	Diaphragm Protecting Ring	1
*2	3131-22	Differential Spring	1
3	12041-41	Bottom Forging	1
*4	12041–33	Valve and Diaphragm Assy.	1
5	12041-42	Top Housing Assy.	1
6	Lockwasher	1/4", Steel, W.N.P.	6
7	Screw	1/4-20 x 1-1/4 Lg. Socket Hd., Steel, W.N.P.	3
8	Screw	1/4-20 x 1 Lg. Socket Hd., Steel, W.N.P.	3
9	1145-19	Mounting Bracket	1

* Recommended On-Hand Spare Parts. Always Specify Range, Serial No., or Other Nameplate Information When Ordering Spare Parts.

3/78 Supersedes Dwg. 12041-20 Dated 6/76

REF. SD63UL

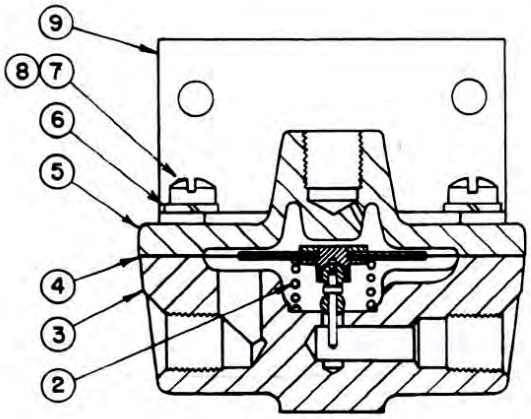
PARTS LIST

Siemens Energy & Automation

MOORE CONSTANT DIFFERENTIAL TYPE FLOW CONTROLLER (CONSTANT UPSTREAM PRESSURE)

Drawing No. 2882PL

MODEL 63BU
B/M 2882S9



Item No.	Part No.	Description	Req'd
*2	1518-5	Differential Spring	1
3	2882-18	Bottom Forging	1
*4	2882-8	Valve and Diaphragm Assy.	1
5	2881-9	Top Forging	1
6	Lockwasher	1/4" Neverslip, Steel, W.N.P.	6
7	Screw	1/4-20 x 3/4 Lg. Fil. Hd. Steel, W.N.P.	3
8	Screw	1/4-20 x 5/8 Lg. Fil. Hd. Steel, W.N.P.	3
9	1145-19	Mounting Bracket	1

* Recommended On-Hand Spare Parts. Always Specify Range, Serial No. or Other Nameplate Information When Ordering Spare Parts

3/78 Supersedes Dwg. 2882-23 Dated 6/76

REF: SD63UL

Installation & Maintenance Instructions

ASCO® TRIVPOINT® SWITCH UNITS PG–SERIES

LIMITED ADJUSTABLE DEADBAND SWITCH UNITS

OPEN–FRAME TYPE, GENERAL PURPOSE OR EXPLOSIONPROOF SWITCH ENCLOSURE Form No. P7090R1

DESCRIPTION

The PG–Series Limited Adjustable Deadband Switch Units are used with transducer units to make Tripoint Pressure Switches or Temperature Switches. These switch units are made of aluminum alloy and designed for rugged use. The switch units may be provided as open–frame type construction or with a general purpose or watertight enclosure. All wiring terminals, adjustments, and visual scales are accessible from the front of the switch.

The switch may be supplied as a complete unit, with the switch assembly unit and transducer unit completely assembled. The components may be separate units to be assembled upon installation. The switch has an adjustable set point (set point increasing) and an adjustable deadband which controls (within limits) the reset point (set point decreasing). The switch unit can be mated with a wide selection of pressure or temperature transducers to cover a broad range of pressures, fluids, or temperatures. The switch will control electrical circuits in response to changes in pressure or temperature signals.

IMPORTANT: These instructions cover the installation and use of this switch on pressure and temperature transducers. Select the paragraphs that apply to your particular installation and application. The word *signal* is used in place of pressure, or temperature changes.

INSTALLATION

Check the nameplate for the correct catalog number, pressure range, temperature range, media, and proof pressure or rated overrange temperature. Never apply incompatible fluids or exceed the pressure or temperature rating of the switch. Installation and inspection to be performed by qualified personnel.

Nameplates are located on switch (or switch cover) and on the bottom of the transducer. Check to be sure the third digit in each number is the same. If not, the unit should not be used (Refer to Figure 6).

IMPORTANT: All internal adjustments have been made at the factory. Any adjustment, alteration or repair to the interual parts of the switch other than stated herein voids all warranties. Signal setting adjustments required are made by an adjusting nut on top of the switch (for set point) and a front knob adjustment (for deadhand).

Temperature Limitations

Switch ambient temperature limits are −4°F (−20°C) to 122°F (50°C). To determine fluid temperature limitations, see Form No.P7090 for pressure transducer catalog numbers and construction materials, then refer to chart below.

TRANSDUCER CONSTRUCTION MATERIALS	RATINGS FLOID TEMPERATURE
Buna N or Neoprene	−4°F (−20°C) to 180°F (82°C)
VITON*	−4°F (−20°C) to 250°F (121°C)
316 Stainless Steel	−50°F (−45°C) to 300°F (149°C)
All Nylon	Maximum 180°F (82°C)
All Nylon For Water Service	Maximum 130°F (55°C)

For steam service, the fluid temperature with a pigtail (siphon tube or condensate loop) installed directly into the transducer will be below 180°F (82°C).

Assembly Of Switch And Transducer Units (Refer to Figure 6)

IMPORTANT: The switch unit and transducer unit may be purchased as a complete assembly or as separate units. If separate units are purchased, refer to Form No. P7090 for a complete listing of switch unit and transducer unit combinations. Form No. P7090 is provided to ensure that the proper switch unit is assembled to the proper transducer unit.

Pay careful attention to exploded view provided in Figure 6 for assembly of switch unit and transducer unit. Proceed in the following manner:

CAUTION: The third digit in the catalog number on both the switch unit and the transducer unit must be identical. If not, do not assemble to each other. If the same, proceed.

1. Remove bolts (4) from base of switch unit. On general purpose or watertight constructions, remove switch cover.
2. Remove instruction label and pressure or temperature switch range scale from the transducer unit.
3. Place transducer unit on base of switch unit and assemble. Start bolts (4) approximately two turns by hand to avoid the possibility of cross threading. After initial engagement, torque bolts (4) in a crisscross manner to 80±10 in–lbs [9,0± 1,1 Nm].
4. Remove backing paper from range scale and install on the front of the switch body over the opening for the adjusting indicator point.

Positioning

Switch may be mounted in any position.

Mounting

Refer to Figures 1, 2, and 3 for mounting.

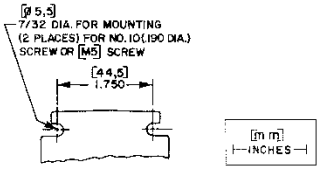


Figure 1. Open–Frame Mounting

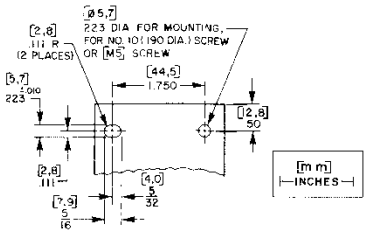


Figure 2. General Purpose Enclosure

© Automatic Switch Co. MCMXCI All Rights Reserved.

ASCO Valves Automatic Switch Co. 50–60 Hanover Road, Florham Park, New Jersey 07932

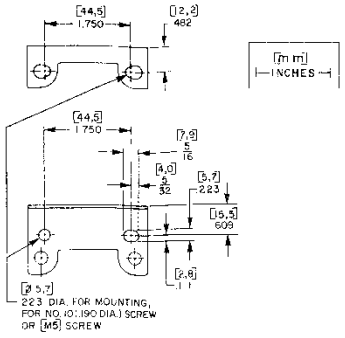


Figure 3. Optional Mounting Bracket

Piping/Tubing (Pressure Transducer)

Adequate support of piping and proper mounting of switch should be made to avoid excessive shock or vibration. To minimize the effect of vibration on a switch, mount perpendicular to vibration. Connect piping or tubing to switch at base of transducer. It is recommended that flexible tubing be used whenever possible. Apply pipe compound sparingly to male pipe threads only. If applied to female threads, the compound may enter the transducer and cause operational difficulty. Avoid pipe strain on switch by properly supporting and aligning piping. When tightening pipe, do not use switch as a lever. Use wrenching flats provided at base of transducer for tightening. Locate wrenches on transducer body or piping as close as possible to connection point.

IMPORTANT: For steam service, install a condensate loop (pigtail or steam syphon tube) directly into the pressure transducer.

CAUTION: To avoid damage to the transducer body, DO NOT OVERTIGHTEN PIPE CONNECTIONS. If TEFLON* tape, paste or similar lubricant is used, use extra care due to reduced friction.

IMPORTANT: To eliminate the effect of undesirable pressure fluctuations in the system, install a surge suppressor.

Wiring

Wiring must comply with local codes and the National Electrical Code. Use No 14 AWG cooper wire rated for 60°C minimum. The switch housing has a wire clamp and ground in screw. Switch is marked *NO* for Normally Open, *NC* for Normally Closed, and *C* for Common. The general purpose switch enclosure is provided with a 7/8″ diameter hole to accommodate 1/2″ electrical hub or connector. The watertight switch enclosure has a 1/2" conduit hub. It is recommended that a flexible conduit connection be used. If rigid conduit is used, do not use it as a means of supporting (mounting).

IMPORTANT: Electrical load must be within range stated on nameplate. Failure to stay within the electrical range of the switch rating may result in damage to or premature failure of the electrical switch.

CAUTION: Do not exert excessive screwdriver force on snap switch when making terminal connections. When connections are made, be sure there is no stress on the wire leads. Either condition may cause malfunction of switch.

*DuPont's Registered Trademark

ELECTRICAL RATINGS		
Switch Unit	Ratings for Limit Controls and Pressure Operated Switches	Ratings for Industrial Controls and Temperature Indicating and Regulating Equipment
Standard Switch Rating	5 Amps Res., 125 VAC 5 Amps Res., 250 VAC 1/8 HP 125 VAC 1/4 HP 250 VAC	15 Amps Res., 125 VAC 10 Amps Res., 250 VAC 1/8 HP 125 VAC 1/4 HP 250 VAC

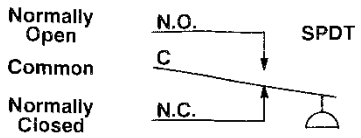


Figure 4. Schematic

INSTALLATION OF TEMPERATURE TRANSDUCERS

Direct Probe

The direct probe (local) temperature transducer is provided with 1/2″ NPT connection. When installing, do not use switch unit as a lever for tightening. Use wrenching flats provided at base of transducer for tightening.

Capillary and Bulb

The capillary and bulb (remote) temperature transducers are provided with a length of capillary and a 3/8″ diameter sensing bulb.

CAUTION: Do not bend capillary at sharp angles. For proper operation, be sure sensing bulb is completely immersed in fluid and not in contact with heating element or anything that would directly affect the temperature of the fluid being sensed.

Thermal Well (Optional Feature)

A thermal well may be used for capillary and bulb (remote) or direct probe (local) temperature transducers. The thermal well affords protection for the sensing bulb and allows removal of the sensing bulb while maintaining a pressure tight vessel. When installing sensing bulb in thermal well, be sure that it is fully inserted. Where a thermal well already exists, jam nuts may be obtained to adapt the capillary and bulb to the existing thermal well. The existing thermal well must be for a 3/8″ diameter sensing bulb.

Union Connector (Optional Feature)

A union connector will allow direct mounting of the sensing bulb in the fluid being controlled. Install union into piping connection before tightening union onto bulb. For maximum performance, the bulb should be inserted in the union connection so that the end of the sensing bulb is even with the end of the union connector nut. Do not apply excessive torque when tightening union connector nut.

Adjustment (Signal Setting) of Limited Adjustable Deadband Switch

When facing switch with the switch in the upright position, the adjusting nut on the top adjusts the signal setting (set point increasing). The knob in the front center of the switch adjusts the deadband (set point decreasing) refer to Figure 6. To make adjustments, a 1/4″ wrench or screwdriver is required. A pressure or temperature gage (within suitable range) is also required.

If electrical connection (to line of final application) of the switch is not desirable, a battery–powered test lamp or ohmmeter may be used. Pressure or temperature range scales may be used for initial signal settings. These will be accurate within 5%. Adjust switch until indicator is in the middle of the solid red line below the desired range. For exact signal settings, proceed as follows:

Adjustment (Signal Setting) of Normally Closed or Normally Open Limited Adjustable Deadband Switch

(Refer to Figure 5)

1. If the limited adjustable deadbands switch is in the line of final application when adjustment (signal setting) is made, be sure switch can be test operated without affecting other equipment.
2. On general purpose and raintight constructions, remove switch cover.
3. Turn adjusting nut at top of switch clockwise until setting indictor is fully up. Turn deadband adjusting knob on front of switch clockwise as far as possible.

   CAUTION: Adjusting nut and knob will turn easily until they hit a stop. Do not over torque. Over torquing may cause damage.
4. Follow the steps in the chart below to make signal settings.

Adjustment Procedures	NORMALLY CLOSED		NORMALLY OPEN	
	Switch Terminal	Test Lamp On-Off	Switch Terminal	Test Lamp On-Off
1. Starting with zero signal, connect test lamp to common.	NC	On (Closed Circuit)	NO	Off (Open Circuit)
2. Apply desired actuation signal. Then back off (counterclockwise) top adjusting nut until switch actuates(set point increasing).	NC	Off (Open Circuit)	NO	On (Closed Circuit)
3. Lower signal to desired reactuation signal. Then turn dead band adjusting knob counterclockwise until switch reactuates (set point decreasing).	NC	On (Closec Circuit)	NO	Off (Open Circuit)

5. Cycle between two desired signals and make minor adjustments to adjusting nut and knob as required to achieve exact set points.
6. After settings have been made, make permanent electrical connections.

Testing of Installation

If the adjustment of the switch has been made outside of the line of final application, the switch should be retested when installed in the line of final application. Follow adjustment instructions. Be sure switch can be test operated without affecting other equipment.

MAINTENANCE

⚠ **WARNING: To prevent the possibility of personal injury or property damage, turn off electrical power and depressurize switch unit before inspection or removal.**

IMPORTANT: Switch is not field repairable. The switch must be returned to the factory (Automatic Switch Company, Florham Park, New Jersey) or serviced only by an authorized factory representative. Address all service inquiries to Automatic Switch Company, 50–60 Hanover Road, Florham Park, New Jersey 07932, Valve Service Department. The only adjustments which may be performed on the switch are the adjustment of the set point and deadband and replacement of the transducer unit. Replacement of transducer should be done only if external leakage is evident.

Preventive Maintenance

- While in service, operate the switch (cycle between desired signals) at least once a month to insure proper operation. If necessary, electrical wiring and pipe connection should be made so that switch can be test operated without affecting other equipment.
- Periodic inspection of the switch, external surfaces only, should be carried out. Switch should be kept clean and free from paint, foreign matter, corrosion, icing, and freezing conditions.
- Keep the medium entering the transducer as free as possible from dirt and foreign material.

Causes of Improper Operation

Switch will not actuate or actuates and reactuates undesirable.

- **Incorrect Electrical Connection:** Check leads to switch. Be sure they are properly connected. Switch is marked *NO* for Normally Open, *NC* for Normally Closed and *C* for Common.
- **Faulty Control Circuit:** Check electrical power supply to switch. Check for loose or blown fuses, open–circuited or grounded wires, loose connections at terminal block or switch. See nameplate for electrical rating and range.
- **Incorrect Adjustment:** Check adjustment of set point and deadband for proper setting. Refer to adjustment instructions.
- **External Leakage:** Check to see that bolts (4) holding transducer to pressure switch are properly torqued to 80 ± 10 in–lbs [9,0 ± 1,1 Nm]. If bolts are tight and leakage is still evident, replace transducer. Refer to paragraph on *Assembly of Switch Unit and Transducer Unit.*
- **Excessive Vibration or Surges Causing Switch to Actuate and Reactuate:** Check for fluctuations in system and install pressure surge suppressor. Check switch mounting and be sure there is no excessive vibration.
- **Incorrect Pressure:** Check pressure in system with suitable pressure gage. Pressure must be within range specified on nameplate.
- **Incorrect Temperature:** Check temperature in system with suitable thermometer. Temperature must be within range specified on nameplate. Check location of capillary and bulb for incorrect mounting. Refer to paragraphs on *Installation of Temperature Transducers.*

If the operation of the switch cannot be corrected by the above means, the entire switch unit should be replaced or an authorized factory representative consulted.

FOR SERVICE, REPLACEMENT, OR NEW TRANSDUCER
Consult Factory, or Authorized Factory Representative or Distributors

ORDERING INFORMATION
For Limited Adjustable Deadband Switch or New Transducer When Ordering, Specify Catalog Numbers, Fluid, Pressure Range, Temperature Range, Serial Numbers, and Proof Pressure or Rated Overrange Temperature.

NAMEPLATES ARE LOCATED ON SWITCH COVER AND BOTTOM OF TRANSDUCER.

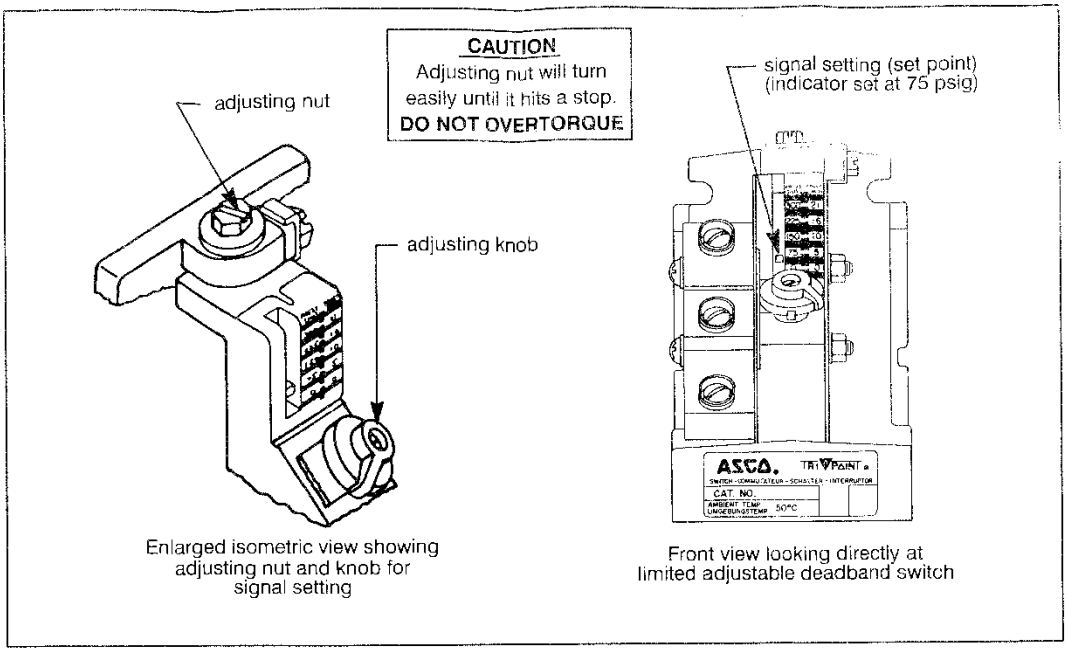


Figure 5. Adjustment (Signal Setting) of Limited Adjustable Deadband Switch.

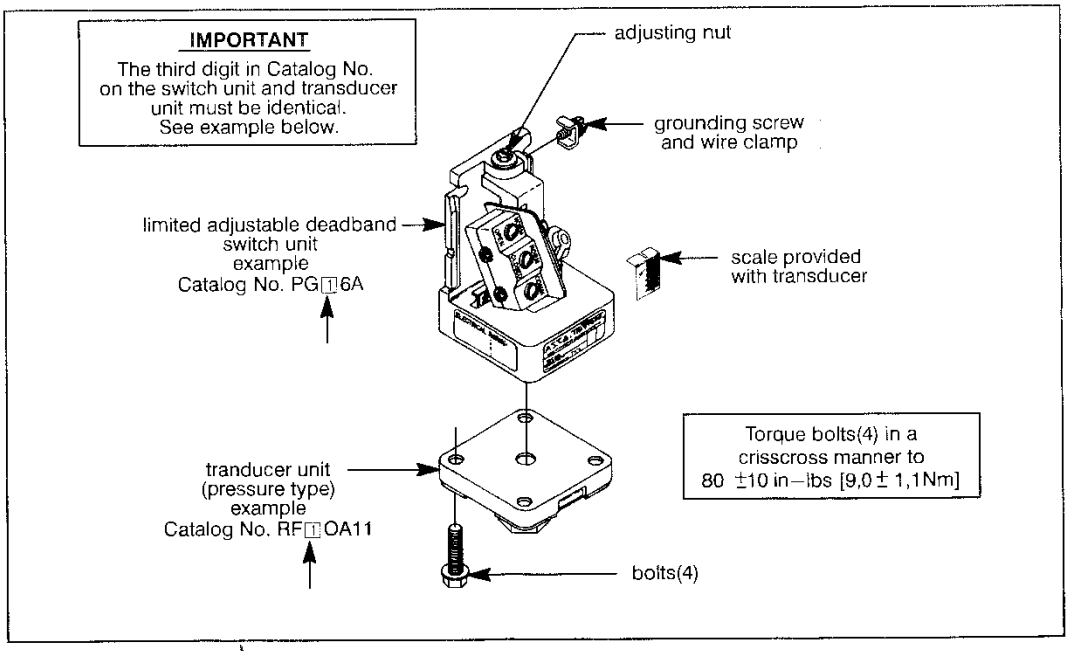


Figure 6. Open–Frame Switch Unit and Transducer Unit to be assembled.

ASCO Valves Automatic Switch Co. 50–60 Hanover Road, Florham Park, New Jersey 07932

INSTALLATION & MAINTENANCE INSTRUCTIONS

ASCO® TRIVAPOINT® Pressure Switches

SWITCH UNIT AND TRANSDUCER UNIT COMBINATIONS LIMITED ADJUSTABLE DEADBAND COMPACT LINE PRESSURE SWITCHES

OPEN-FRAME, GENERAL PURPOSE, RAINTIGHT OR WATERTIGHT SWITCH ENCLOSURES

SERIES

PG10 PG20 PG30
PG11 PG21 PG31
PG14 PG24 PG34
PG16 PG26 PG36

Form No.P7090

DESCRIPTION

This sheet lists switch unit and transducer unit combinations. Table I helps to insure that the proper switch unit is assembled to the proper transducer unit, thus providing a complete limited adjustable deadband pressure switch.

In Table I locate the switch unit catalog number being used. Then go to the right on the same line as the switch unit catalog number and find the transducer unit catalog number which may be used with this particular switch unit. IMPORTANT: The third digit in both the switch unit and transducer unit catalog numbers must be identical. For example, a Switch Unit Catalog No. PG20A can be used with Transducer Unit Catalog No. RE20A11. The mating produces a complete limited adjustable deadband pressure switch, Catalog No. PG20A/RE20A11. Note that the third digits in both catalog numbers are identical. If the third digits are not identical, it is an incorrect mate and the units should not be assembled.

NOTE: Switch units listed to the left may be used with any transducer units listed to right provided they are on the same horizontal line.

TABLE I

SWITCH UNITS				RANGE			PRESSURE TRANSDUCER UNITS				
General Purpose Enclosure	Epoxy Painted Steel Raintight Enclosure	316⑤ Stainless Steel Watertight Enclosure	Open-Frame	Adjustable Operating Range (P.S.I.G.)	Rated Overrange Pressure (P.S.I.G.)	Adjustable Deadband (P.S.I.G.)	Aluminum and Buna "N"	Nylon with Threaded Brass Insert and Buna "N"	Brass and Buna "N"	303 Stainless Steel and VITON*	All 316 Stainless Steel ④
Catalog Number	Catalog Number	Catalog Number	Catalog Number			From/To	Catalog Number	Catalog Number	Catalog Number	Catalog Number	Catalog Number
PG30A	PG31A	PG34A	PG36A	0 - 9	60	0.7 - 1.3	RD30A11	RD30A71	RD30A21②	RD30A32 ②	—
PG20A	PG21A	PG24A	PG26A	2 - 18	60	0.8 - 2.1	RD20A11	RD20A71	RD20A21②	RD20A32 ②	—
PG30A	PG31A	PG34A	PG36A	2 - 18	100	1.8 - 3.1	—	—	—	—	RE30A44
PG20A	PG21A	PG24A	PG26A	4 - 36	150	2.0 - 4.0	RE20A11	RE20A71	RE20A21②	RE20A32 ②	RE20A44
PG10A	PG11A	PG14A	PG16A	6 - 60	150	2.1 - 4.6	RE10A11	RE10A71	RE10A21②	RE10A32 ②	RE10A44
PG10A	PG11A	PG14A	PG16A	10 - 100	200 ①	4.0 - 8.0	RF10A11	RF10A71①	RF10A21②	RF10A32 ②	RF10A44
PG10A	PG11A	PG14A	PG16A	20 - 200	400 ①	8.0 - 17	RG10A11	RG10A71①	RG10A21②	RG10A32 ②	RG10A44
PG10A	PG11A	PG14A	PG16A	30 - 300	450	15 - 25	RH10A11	—	RH10A21②	RH10A32 ②	RH10A44
PG10A	PG11A	PG14A	PG16A	40 - 400	500	22 - 45	RJ10A11	—	RJ10A21②	RJ10A32 ②	RJ10A44
PG20A	PG21A	PG24A	PG26A	60 - 600	2000	35 - 75	—	—	RL20A21	RL20A42 ③	—
PG10A	PG11A	PG14A	PG16A	100 - 1000	2000	65 - 110	—	—	RL10A21	RL10A42 ③	—
PG20A	PG21A	PG24A	PG26A	160 - 1650	4500	190 - 290	—	—	RN20B21	RN20B42 ③	—
PG10A	PG11A	PG14A	PG16A	270 - 2700	4500	200 - 300	—	—	RN10B21	RN10B42 ③	—
PG10A	PG11A	PG14A	PG16A	600 - 6000	7500	300 - 500	—	—	—	RQ10B42 ③	—
PG30A	PG31A	PG34A	PG36A	0-30" Hg (VAC)	50	1.2-2.7" Hg	RV34A11	—	RV34A21	RV34A32	—
PG20A	PG21A	PG24A	PG26A	30"Hg(V)-14 psig	50	2.4-5.4" Hg	RV24A11	—	RV24A21	RV24A32	—

IMPORTANT: All units listed above are suitable for air and hydraulic oil service. For water service, all units are suitable except aluminum.

NOTES:

① Rated overrange pressure on RF10A71 is 150 psig and on RG10A71 is 300 psig.
② These transducers are acceptable for steam service if used with pigtail (condensate loop) between steam line and transducer.
③ Transducers ending in 42 have 316 stainless steel bodies, not 303 stainless steel.
④ 316 stainless steel transducer deadbands are approximately 30% greater than values shown.
⑤ To make switch enclosure Type 4 watertight, a watertight conduit hub must be installed in the 7/8" diameter hole. Use conduit hub part No.PP01 or equivalent.

Form No. P7090

Printed in U.S.A.

Automatic Switch Co. 50-60 Hanover Road, Florham Park, New Jersey 07932

© Automatic Switch Co. MCMLXXXVI. All Rights Reserved.

UNDERWRITERS LABORATORIES, INC. LISTED AND/OR RECOGNIZED COMPONENTS

ASCO® TRIVPOINT® Compact Line Pressure Switches

Form No. P7047R1

UL LISTINGS

This sheet is a listing of switch unit and transducer unit combinations that are Listed and/or Component Recognized by Underwriters Laboratories, Inc. The table below is provided to insure that the proper switch unit (section) is assembled to the proper transducer unit (section), thus providing a complete, UL Listed and/or Recognized Component pressure switch. Only completely assembled combinations are UL Listed and/or Recognized Component. See table below for UL complementary product category listing and guide card numbers.

INSTALLATION INSTRUCTIONS

To determine the proper switch and transducer combinations, first locate the switch unit catalog number in the table below. Then going to the right on the same line (as the switch unit catalog number) find the transducer unit catalog number which may be used with this particular switch unit.

IMPORTANT: The third digit in both the switch unit and transducer unit catalog numbers must be identical. For example, a switch unit Catalog No.PA31A can be used with transducer unit Catalog No.RV34A11. The mating produces a complete pressure switch Catalog No.PA31A/RV34A11.

SWITCH UNITS See Note ④						PRESSURE TRANSDUCER UNITS See Notes ①, ② & ③			
Series: PA, PB, PC & PG Followed by Numbers Below									
General Purpose Enclosure Type 1		Watertight Enclosure Types 3 & 3S	Watertight Enclosure Types 3, 3S, 4 & 6	Open-Frame (No Enclosure)	Applicable Options	Air Non-Hazardous Oil & Gas Aluminum/Buna N Construction	Air - Water Non-Hazardous Gas & Oil Polyester, Brass & Buna N Construction	Air - Water Non-Hazardous Gas, Oil & Steam Brass, Buna N & VITON* Construction	Corrosive Fluids Air - Water Non-Hazardous Gas & Oil 303 Stainless Steel & VITON* Construction
40A	41A	44A	48A	46A	Series PA, PB, PC & PG 4A with Suffix 1 Enclosure Types 4, 4X & 6 Optional Suffixes 1, 2, 3, J & K.	RD40A11	RD40A71	RD40A21	RD40A32
30A	31A	34A	38A	36A		RV34A11	—	RV34A21	RV34A32
20A	21A	24A	28A	26A		RV24A11	—	RV24A21	RV24A32
30A	31A	34A	38A	36A		RD30A11	RD30A71	RD30A32 ②	RD30A32 ②
20A	21A	24A	28A	26A		RD20A11	RD20A71	RD20A21 ②	RD20A32 ②
30A	31A	34A	38A	36A		—	—	—	—
20A	21A	24A	28A	26A		RE20A11	RE20A11	RE20A21 ②	RE20A32 ②
10A	11A	14A	18A	16A		RE10A11	RE10A71	RE10A21 ②	RE10A32 ②
10A	11A	14A	18A	16A		RF10A11	RF10A71	RF10A21 ②	RF10A32 ②
10A	11A	14A	18A	16A		RG10A11	RG10A71	RG10A21 ②	RG10A32 ②
10A	11A	14A	18A	16A		RH10A11	—	RH10A21 ②	RH10A32 ②
10A	11A	14A	18A	16A		RJ10A11	—	RJ10A21 316 St.St. & VITON*	RJ10A32 ②
20A	21A	24A	28A	26A		—	—	RL20A21	RL20A42
10A	11A	14A	18A	16A		—	—	RL10A21	RL10A42
20A	21A	24A	28A	26A		—	—	RN20B21	RN20B42
10A	11A	14A	18A	16A		—	—	RN10B21	RN10B42
10A	11A	14A	18A	16A		—	—	—	RQ10B42

NOTES:

①a All transducers used with general purpose and watertight switch units are UL Listed as Industrial Control Equipment—Enclosed, Motor Controllers —Pressure Operated, Guide NKPZ. Transducers which end in 11, 21, 32 or 42 and used with General Purpose and Watertight Switch Units are also UL Listed as Switches for Heating and Cooling Appliances, Guide MFHX.

①b All transducers used with open-frame (no enclosure) switch units are considered UL Recognized Components as Industrial Control Equipment, Motor Controllers — Pressure-Operated, Guide NKPZ2. Transducers which end in 11, 21, 32, or 42 and used with open-frame (no enclosure) switch units are also considered UL Recognized Components as Switches for Heating and Cooling Appliances, Guide MFHX2.

* DuPont's registered trademark.

②a When used for steam service, these transducers with general purpose and watertight switch units are also UL Listed as Limit Controls, Guide MBPR.

②b Transducers used with open-frame (no enclosure) switch units are considered UL Recognized Component Limit Controls, Guide MBPR2.

③ Suffix B is an applicable option.

④ Series PC10A, PC11A, PC16A, PC20A, PC21A, PC26A, PC30A, PC31A & PC36A are UL Recognized Components for use as Motor Controller — Pressure Operated (NKPZ2).

Form No.P7047R1

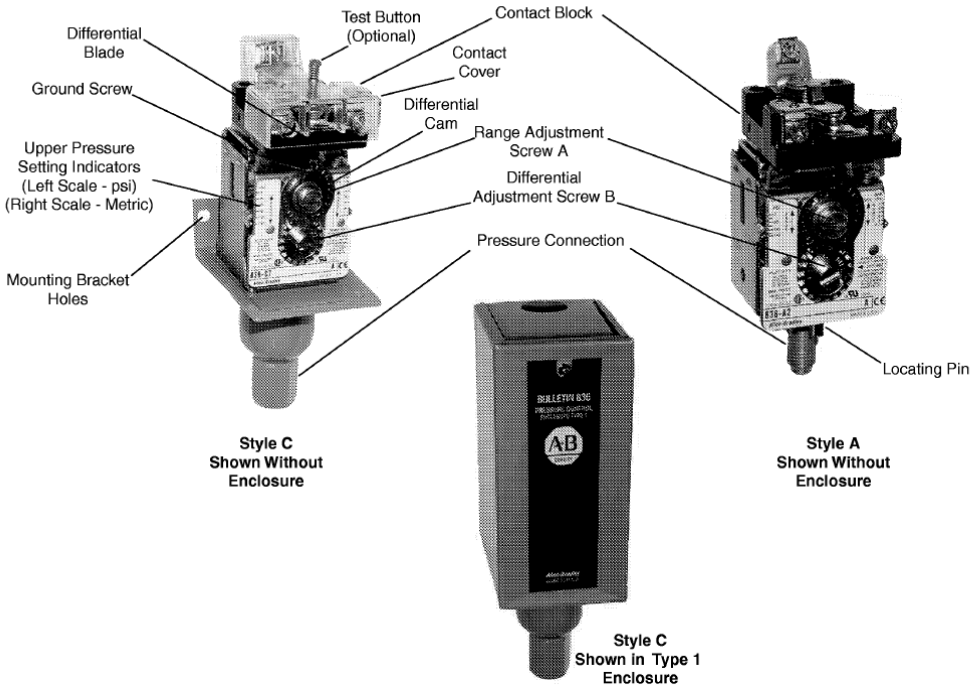
PRINTED IN MEXICO

Automatic Switch Co. 50-60 Hanover Road, Florham Park, New Jersey 07932

© Automatic Switch Co. MCMLXXXVII All Rights Reserved

BULLETIN 836
INSTRUCTIONS

Pressure Controls



Style C Shown Without Enclosure

Style A Shown Without Enclosure

Style C Shown in Type 1 Enclosure

DESCRIPTION - Bulletin 836 Pressure Controls are designed for use with air, water, oil and other noncorrosive liquids, vapors, and gasses. (Type 316 stainless steel bellows are available for more corrosive liquids or gasses in pressure ranges to 375 psi.)

Bulletin 836 Controls are available in Type 1, 4 & 13, 4X, 7 & 9, 4 &13 combination enclosures in addition to open type. The operating range pressure and differential are adjustable. Fixed differential versions are also available. Pressure ranges available from 30 in. Hg vacuum to 900 psi.

The standard contact block is single pole, double throw and can be wired to open or close on increasing or decreasing pressure.

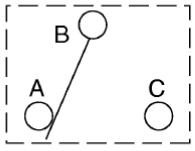
CONTACT RATINGS

Non-Inductive Ratings	Control Circuit Ratings
5 Amperes, 250 Volts	AC-125 VA 24 to 600 Volts
3 Amperes, 600 Volts	DC-57.5 VA 115 to 230 Volts

Manual reset, horsepower rated and other contact block modifications are also available on devices manufactured at the factory.

OPERATION - A low friction, straight in-line mechanism operates a snap action switch at a predetermined pressure setting. An increase in pressure causes the normally closed circuit A-B to open and normally open circuit B-C to close. This is known as the "Trip" pressure. When the pressure returns to a lower predetermined setting, the circuit A-B will close and circuit B-C will open. This is known as the "Reset" pressure. The difference between the "Trip" and "Reset" pressure is the differential.

For controls which operate in a vacuum, the following sequence occurs: 1) an increase in vacuum (lower pressure toward 30 in Hg) causes circuit A-B to close and B-C to open. This is the "Trip" setting. 2) when the pressure returns to a predetermined lower vacuum (higher pressure toward 0 psi.), circuit A-B will open and B-C will close. This is the "Reset" point. The difference between the "Trip" and "Reset" setting is the differential.



Standard Contact Arrangement For Positive Pressure

40060-217-01 (5)
Printed in U.S.A.

ADJUSTMENT - Generally, unless otherwise specified, controls shipped from the factory are set at the maximum operating range pressure and minimum differential.

The following procedure should be used to set the control to a particular requirement:

OPERATING RANGE ADJUSTMENT: Turn range adjustment Screw "A" counterclockwise to lower the upper and lower pressure settings. To increase the upper and lower settings, turn Screw "A" clockwise. The approximate upper pressure setting is shown by indicators on the outer edges of the nameplate.

DIFFERENTIAL ADJUSTMENT: When the differential blade is at the low point of the differential cam the control will function at minimum differential. To increase the differential, turn adjustment Screw "B" counterclockwise. This will decrease the lower pressure setting only. To decrease the differential, turn differential adjustment Screw "B" clockwise. This will raise the lower setting only.

Condensed instructions are supplied with open style controls and are on the inside of the cover of enclosed devices.

NOTE: The use of a pressure gauge is desirable when setting the control.

CAUTION: The range adjustment Screw "A" should not be adjusted beyond the pressure indicated on the pressure scale as this may cause the control to malfunction.

It is recommended that a periodic inspection of gauge pressure be made and the pressure control adjusted to compensate for application variables.

BELLOWS LIFE: The pressure applied to a bellows in a normal cycle of operation should not exceed the maximum rated Range Pressure. The bellows will withstand the rated Maximum Line Pressure but should not be cycled at this pressure. The control is designed to operate within published rated Range Pressure. For general applications a control used within 30% to 80% of Range Pressure will provide optimum bellows life and repeatability.

IMPORTANT: Bulletin 836 Style A pressure controls are normally supplied with a built in pulsation snubber. Bulletin 836 Style C devices are supplied with a removable snubber. The snubber can be removed for inspection, cleaning, or when using the control with high viscosity fluids. The snubber can be removed with a 1/4 inch nut wrench, or equivalent.

The pulsation snubber is designed to help reduce pressure transients. Transients can vary in amplitude, frequency, and duration and if not controlled with a snubber can reduce bellows life.

Pressure systems and lines must be maintained and kept free of foreign particles in air lines and sludge in fluid lines. A restricted or clogged pulsation snubber can cause the pressure control to become inoperative.

MOUNTING: The pressure control should be mounted securely to a firm base using two mounting screws. The mounting holes are provided either in the base of the enclosure or in a convenient mounting bracket which is provided as part of the open Style C control. Mounting brackets are available for the open type Style A control.

CAUTION: The control should not be supported by the electrical and pressure connections only. A support wrench should be used when tightening the electrical hub and pressure connections. The enclosed device or open type control using a mounting bracket is not intended to support connecting equipment. This equipment must be secured to support weight and to reduce vibration.

CAUTION: If a liquid thread sealant is used on the pressure connection, care must be taken to avoid excess sealant from getting into bellows orifice.

PILOT LIGHT OPTION - A high intensity neon glow pilot light is available for 120 volt, 60 hertz applications. A 24 volt DC LED pilot light is also available. The pilot light is factory wired across the N.C. contacts, circuit A-B and can easily be converted to the N.O. contacts, circuit B-C, on the standard contact block .

Unless a third wire is made available, the pilot light is connected across the load contacts which can be either the N.O. or N.C. contacts. The pilot light is on until the load is energized.

Current rating:
120 VAC high intensity neon glow . . . . . 4 mA
24 VDC high intensity LED . . . . . 22 mA

ATTENTION - To prevent electrical shock, disconnect from power source before installing or servicing.

CAUTION - For 24 VDC LED pilot lights, polarity must be observed. Red (+) lead of pilot light should always be connected to rear terminal (B)

To order pilot light version add X9 (120VAC), X15 (24VDC) or X18 (24VDC) to catalog number of the selected control.

REPAIRS - Due to the integral construction of the Bulletin 836 Pressure Control, only limited repairs can be made in the field. If returned to the factory for repairs, the condition of the control will be evaluated to determine economic feasibility. When practical, the control will be repaired, factory adjustments made for optimum performance and tested to specifications.

CONTACT BLOCK REPLACEMENT - To order the Bulletin 836 Contact Block replacement Kit, specify Catalog Number 836-N2.

Rockwell Automation

ADJUSTMENT - Generally, unless otherwise specified, controls shipped from the factory are set at the maximum operating range pressure and minimum differential.

The following procedure should be used to set the control to a particular requirement:

OPERATING RANGE ADJUSTMENT: Turn range adjustment Screw "A" counterclockwise to lower the upper and lower pressure settings. To increase the upper and lower settings, turn Screw "A" clockwise. The approximate upper pressure setting is shown by indicators on the outer edges of the nameplate.

DIFFERENTIAL ADJUSTMENT: When the differential blade is at the low point of the differential cam the control will function at minimum differential. To increase the differential, turn adjustment Screw "B" counterclockwise. This will decrease the lower pressure setting only. To decrease the differential, turn differential adjustment Screw "B" clockwise. This will raise the lower setting only.

Condensed instructions are supplied with open style controls and are on the inside of the cover of enclosed devices.

NOTE: The use of a pressure gauge is desirable when setting the control.

CAUTION: The range adjustment Screw "A" should not be adjusted beyond the pressure indicated on the pressure scale as this may cause the control to malfunction.

It is recommended that a periodic inspection of gauge pressure be made and the pressure control adjusted to compensate for application variables.

BELLOWS LIFE: The pressure applied to a bellows in a normal cycle of operation should not exceed the maximum rated Range Pressure. The bellows will withstand the rated Maximum Line Pressure but should not be cycled at this pressure. The control is designed to operate within published rated Range Pressure. For general applications a control used within 30% to 80% of Range Pressure will provide optimum bellows life and repeatability.

IMPORTANT: Bulletin 836 Style A pressure controls are normally supplied with a built in pulsation snubber. Bulletin 836 Style C devices are supplied with a removable snubber. The snubber can be removed for inspection, cleaning, or when using the control with high viscosity fluids. The snubber can be removed with a 1/4 inch nut wrench, or equivalent.

The pulsation snubber is designed to help reduce pressure transients. Transients can vary in amplitude, frequency, and duration and if not controlled with a snubber can reduce bellows life.

Pressure systems and lines must be maintained and kept free of foreign particles in air lines and sludge in fluid lines. A restricted or clogged pulsation snubber can cause the pressure control to become inoperative.

MOUNTING: The pressure control should be mounted securely to a firm base using two mounting screws. The mounting holes are provided either in the base of the enclosure or in a convenient mounting bracket which is provided as part of the open Style C control. Mounting brackets are available for the open type Style A control.

CAUTION: The control should not be supported by the electrical and pressure connections only. A support wrench should be used when tightening the electrical hub and pressure connections. The enclosed device or open type control using a mounting bracket is not intended to support connecting equipment. This equipment must be secured to support weight and to reduce vibration.

CAUTION: If a liquid thread sealant is used on the pressure connection, care must be taken to avoid excess sealant from getting into bellows orifice.

PILOT LIGHT OPTION - A high intensity neon glow pilot light is available for 120 volt, 60 hertz applications. A 24 volt DC LED pilot light is also available. The pilot light is factory wired across the N.C. contacts, circuit A-B and can easily be converted to the N.O. contacts, circuit B-C, on the standard contact block .

Unless a third wire is made available, the pilot light is connected across the load contacts which can be either the N.O. or N.C. contacts. The pilot light is on until the load is energized.

Current rating:
120 VAC high intensity neon glow . . . . . 4 mA
24 VDC high intensity LED . . . . . 22 mA

ATTENTION - To prevent electrical shock, disconnect from power source before installing or servicing.

CAUTION - For 24 VDC LED pilot lights, polarity must be observed. Red (+) lead of pilot light should always be connected to rear terminal (B)

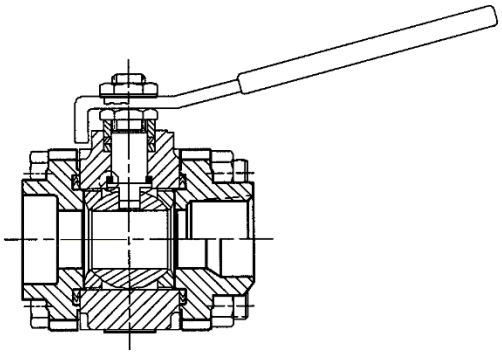
To order pilot light version add X9 (120VAC), X15 (24VDC) or X18 (24VDC) to catalog number of the selected control.

REPAIRS - Due to the integral construction of the Bulletin 836 Pressure Control, only limited repairs can be made in the field. If returned to the factory for repairs, the condition of the control will be evaluated to determine economic feasibility. When practical, the control will be repaired, factory adjustments made for optimum performance and tested to specifications.

CONTACT BLOCK REPLACEMENT - To order the Bulletin 836 Contact Block replacement Kit, specify Catalog Number 836-N2.

Rockwell Automation

JAMESBURY
NELES CONTROLS GROUP



IMO - 202
ISSUE 5/97

1/2" - 2" SERIES 4000
3 PIECE BALL VALVES

INSTALLATION, MAINTENANCE AND OPERATING INSTRUCTIONS

WARNING

FOR YOUR SAFETY, TAKE THE FOLLOWING PRECAUTIONS BEFORE REMOVING THE VALVE FROM THE LINE, OR BEFORE ANY DISASSEMBLY:

1. DURING REMOVAL AND DISASSEMBLY, WEAR ANY PROTECTIVE EQUIPMENT NORMALLY REQUIRED TO PROTECT AGAINST DISCHARGE OF TRAPPED FLUID.

2. DEPRESSURIZE THE LINE AND VALVE AS FOLLOWS:

A. PLACE THE VALVE IN THE OPEN POSITION AND DRAIN THE LINE.

B. CYCLE THE VALVE TO RELIEVE RESIDUAL PRESSURE IN THE BODY CAVITY BEFORE REMOVAL FROM THE LINE.

C. AFTER REMOVAL, AND BEFORE ANY DISASSEMBLY, CYCLE THE VALVE AGAIN SEVERAL TIMES.

3. **SEAT AND BODY RATINGS -** THE PRACTICAL AND SAFE USE OF THIS PRODUCT IS DETERMINED BY BOTH THE SEAT AND BODY RATING. READ THE NAME TAG AND CHECK BOTH RATINGS. THIS PRODUCT IS AVAILABLE WITH A VARIETY OF SEAT MATERIALS. SOME OF THE SEAT MATERIALS HAVE PRESSURE RATINGS THAT ARE **LESS THAN** THE BODY RATINGS. ALL OF THE BODY AND SEAT RATINGS ARE DEPENDENT ON **VALVE TYPE AND SIZE, SEAT MATERIAL, BOLTING MATERIAL, AND TEMPERATURE.** DO NOT EXCEED THESE RATINGS.

NOTE: OPTIONAL ROUND AND OVAL HANDLES ARE AVAILABLE FOR THESE VALVES IN PLACE OF LEVER HANDLES.

INSTALLATION

1. **Screwed End Style -** Use standard piping practices to install valves with threaded end caps. When tightening valve to pipe, apply wrench to end cap nearest the pipe being worked.

2. **Weld End Style -** All standard weld end valves must be partially disassembled prior to welding. Follow Steps 1, 2, 4 and 5 of **DISASSEMBLY**. Socket weld ends are per ANSI B16.11 and butt weld ends are per ANSI B16.25. Welding should be done using procedures and welders qualified under Section IX of the ASME Boiler and Pressure Vessel Code. **IMPORTANT: If the body seals (6) are removed for welding, DO NOT MIX THEM. When reassembling the valve, put each seal back into the groove from which it was removed.**

CAUTION: IF THE VALVE IS BEING DISASSEMBLED FOR WELDING, DO NOT CUT OR SCRATCH THE SEATS, SEALS AND SEALING SURFACES.

3. After valve is in line, or before testing, tighten stem nuts (16) 1/4 turn.

MAINTENANCE

Routine maintenance consists of tightening the lower stem nut 1/4 turn periodically to compensate for the wear caused by the stem turning against the stem seals. The upper stem nut should be tightened a corresponding amount. When tightening stem seals on actuated valves, where the valve is connected to the actuator with a no-play (clamped) coupling, loosen the coupling before tightening the stem nut. Retighten the coupling. Overhaul maintenance consists of replacing seats and seals. A standard service kit consisting of these parts may be obtained from your Neles-Jamesbury, Inc. distributor (see Table 3).

DISASSEMBLY

The Series 4000 ball valve is designed to be serviced in or out of the line. The following instructions are for in-line disassembly. (For bench disassembly, which may be more convenient, follow a similar sequence).

1. Comply fully with the instructions in the WARNING section on page one.

2. Be sure to cycle the valve. Leave in the open position. The body center section will not swing out in the closed position.

3. Remove the top stem nut (16), spring tab washer (9) and handle (15).

4. Loosen all four body bolts/tie rods (20). Remove three from the valve. Leave the remaining bolt in place with the nut backed off at least 1/4".

5. For positive alignment and ease of in-line assembly, each end cap is interlocked approximately 1/16" into the body as shown in Figure 3. To overcome this feature during in-line disassembly it is necessary to separate each cap at least 1/16" from the body. Sharply rap body and caps with a block of wood or plastic mallet to break loose body seal. Spread end caps and swing the body out of the line. If pipe does not allow simple spreading, remove the remaining body bolt and rotate center section per Figure 1. This will improve access to the end cap flange for ease of spreading. Swing the valve body (1) out from between the end caps (2). Be careful not to damage the sealing surfaces "A" (see Figure 3) at each end of the valve.

6. Turn the stem (4) so that the valve is fully closed. Remove body seals (6) and seats (5). Body seals may be tightly compressed in their grooves. Use extreme care when prying them out. Damage such as scratches to the bottom of the groove will cause leaks. If the seats are not easily removed, gently tap the ball (30) with a piece of wood or other soft material.

7. Remove the ball (3).

8. Remove the lower stem nut (16) and the compression ring (18).

9. Press the stem (4) from the top into the valve body (1) and remove it through the end of the body.

10. Carefully pry out and discard the old stem seals (7), the stem bearings (8), and the secondary seal (13), being careful not to damage the bearing surfaces.

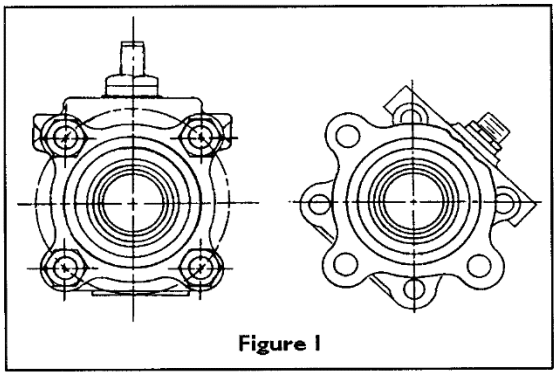


Figure 1

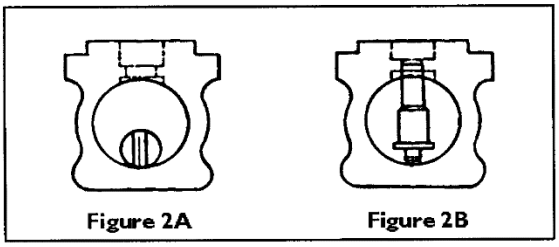


Figure 2A Figure 2B

ASSEMBLY

The following instructions are for in-line assembly. For bench assembly, which may be more convenient, follow a similar sequence by holding the valve in a vise by one end cap. Use care not to cut or scratch the seats, seals or sealing surface.

1. With the valve swung to the out-of-line position, insert from the inside of the body a stem bearing (8), a secondary seal (13), then another stem bearing (8) into the stem bore. For non Fire-Tested valves use one stem bearing (8). See Figure 3 and parts list.

2. Insert the stem (4) horizontally into the body bore (threaded end first). The blade at the ball end of the stem must be vertical (see Figure 2A and 2B). Guide the stem into the stem hole being careful not to scratch the bearings.

3. Holding the stem in place from the bottom, install two stem seals (7), a compression ring (18) from the outside and thread on one stem nut (16) until the stem starts to turn.

4. Place a wrench through the body on the bottom stem blade to hold the stem stationary. Place another wrench on the stem nut and turn the nut down until the seals are bottomed and the stem comes snugly into place, applying the torque shown in Table 2. As an alternate to using a torque wrench, tighten until snug plus an additional 1/4-1/2 turn.

5. Align the stem blade with the ball slot. Insert the ball (3), and rotate the stem (4) to the ball closed position.

6. Working at either end of the body (1), place a seat (5) into the body. Fit it snugly against the closed ball. **NOTE:** The sealing surface of the seat is toward the ball (See Figure 4).

7. Place a body seal (6) into the machined sealing groove of the end cap (2) (see Figure 3). Be certain the groove and seal are clean.

8. Repeat instructions 6 and 7 for assembly at the opposite end.

9. Turn the stem to the full ball open position.

10. Swing the entire body assembly back into the properly aligned and interlock position between the end caps, being careful not to scratch the body seals. Caps may have to be spread slightly to accept the body.

11. Close the valve.

12. Bolt the valve together with lubricated body bolts (20) and nuts (19). Tighten these bolts evenly and alternately. (See Table 1 for the torques and lubricant.)

13. Attach the handle (15), the spring tab washer (9) and secure them with the stem nut (16). (See Table 2 for torques.)

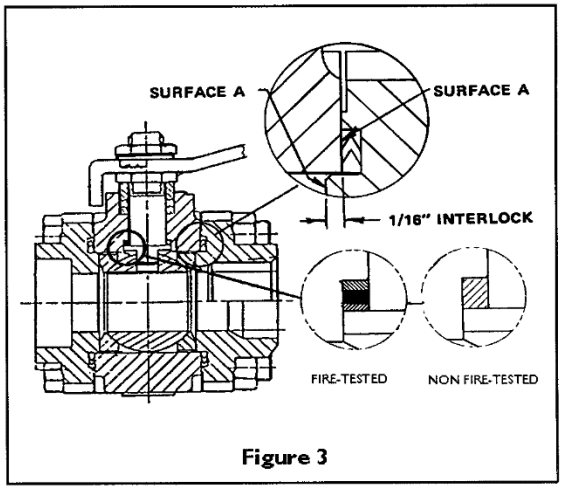


Figure 3

Table I

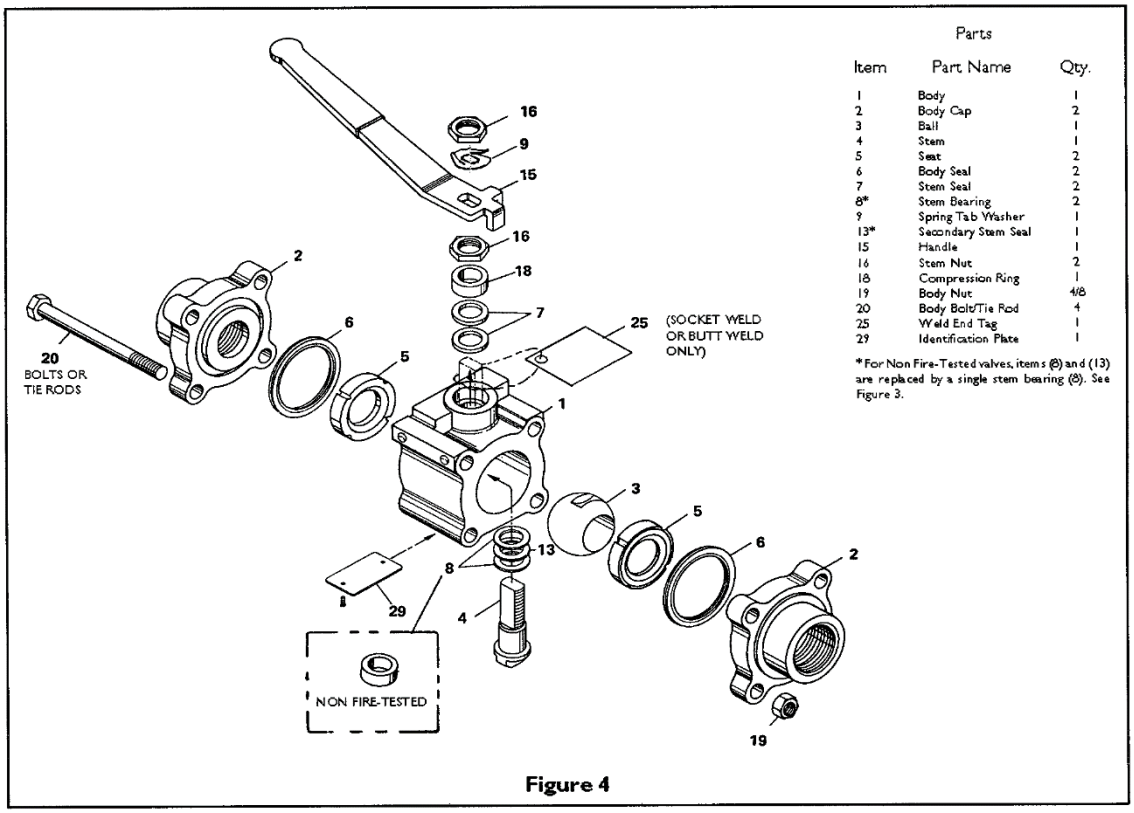
Required Fastener Torque, LB.-FT. (Except as Noted)

Fastener (Last Digit in Fig. No.)		-1	-2	-4	-5	-7	-8	-3
Valve Size-Full Port Size in ( )	Fastener Material	A193 GR.B7	A194 GR.B8	K-Monel®	A193 GR.B7M	A320 GR.L7M.	A453 GR.660	Series 300 St.Stl.
	Fastener Ident. Mark	B7	B8	K	B7M	L7M	660A OR 660B	
1/2" (1/2")		8 - 10	8 - 10	7 - 9	6 - 8	6 - 8	6- 8	48- 60 LB.-IN.
3/4"		17 - 21	16 - 20	15 - 18	14 - 17	13 - 16	14 - 17	8 - 10
1" (3/4")		31 - 38	29 -36	26 -33	25 - 31	23 - 29	25 -31	14 -18
1 1/4" (1")		35 - 43	33 -41	30 -37	28 -35	26 - 33	28 - 35	16 - 21
1 1/2" (1 1/4")		74 - 93	71 - 89	64 -80	60 - 75	57 - 71	60 - 75	35 - 44
2" (1 1/2")		84 - 105	80 - 100	72 -90	68 -85	64 -80	68 - 85	40 - 50

NOTES:

1. Lubricate threads with Never-Seez® or equivalent.
2. Fastener materials have different corrosion, thermal and strength properties and should not be mixed. The fastener identification and coding must be in agreement with the valve identification plate, item 29.
3. Torque values are for lubricated, **unplated** fasteners.

® **MONEL** is a registered trademark of Inco.



Parts

Item	Part Name	Qty.
1	Body	1
2	Body Cap	2
3	Ball	1
4	Stem	1
5	Seat	2
6	Body Seal	2
7	Stem Seal	2
8*	Stem Bearing	2
9	Spring Tab Washer	1
13*	Secondary Stem Seal	1
15	Handle	1
16	Stem Nut	2
18	Compression Ring	1
19	Body Nut	4/8
20	Body Bolt/Tie Rod	4
25	Weld End Tag	1
29	Identification Plate	1

*For Non Fire-Tested valves, items (8) and (13) are replaced by a single stem bearing (8). See Figure 3.

Figure 4

4

SERVICE KITS

NOTE: FIRE-TESTED service kits include two seats (5), two stem seals (7), two stem bearings (8), a secondary seal (13) and two 316 stainless steel/graphite body seals (6). The body seals are suitable for valves with carbon steel or 316 stainless trim.

NOTE: NON FIRE-TESTED service kits include two seats (5), one stem bearing (8) and two body seals (6). The body seals are suitable for valves with carbon steel or 316 stainless trim.

Table 2

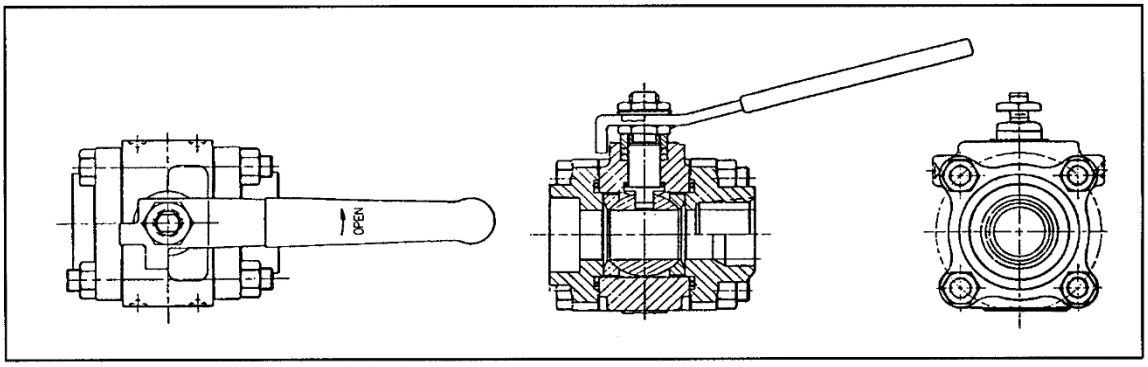
Stem Nut Torque

Valve Size - Full Port Size In ( )	LB. - IN.
1/2" - 3/4" (1/2")	50 - 60
1" - 1 1/4" (3/4" - 1")	60 - 72
1 1/2" - 2" (1 1/4" - 1 1/2")	135 - 145

Table 3

Service Kits	Valve Size - Full Port Size Shown in ( ) **FOR FIRE-TESTED VALVES**					
VALVE SIZE	1/2" (1/2")	3/4"	1" (3/4")	1 1/4" (1")	1 1/2" (1 1/4")	2" (1 1/2")
TFE SEATS	RKN-107-TT	RKN-108-TT	RKN-109-TT	RKN-110-TT	RKN-111-TT	RKN-112-TT
FILLED TFE SEATS	RKN-107-MT	RKN-108-MT	RKN-109-MT	RKN-110-MT	RKN-111-MT	RKN-112-MT
DELRIN SEATS	RKN-107-RT	RKN-108-RT	RKN-109-RT	RKN-110-RT	RKN-111-RT	RKN-112-RT
PEEK SEATS	RKN-107-LT	RKN-108-LT	RKN-109-LT	RKN-110-LT	RKN-111-LT	RKN-112-LT
METAL SEATS	RKN-107-DH	RKN-108-DH	RKN-109-DH	RKN-110-DH	RKN-111-DH	RKN-112-DH

Service Kits	Valve Size - Full Port Size Shown in ( ) **FOR NON FIRE-TESTED VALVES**					
VALVE SIZE	1/2" (1/2")	3/4"	1" (3/4")	1 1/4" (1")	1 1/2" (1 1/4")	2" (1 1/2")
TFE SEATS	RKN-137-TT	RKN-138-TT	RKN-139-TT	RKN-140-TT	RKN-141-TT	RKN-142-TT
FILLED TFE SEATS	RKN-137-MT	RKN-138-MT	RKN-139-MT	RKN-140-MT	RKN-141-MT	RKN-142-MT
UHMW POLY SEATS	RKN-137-UB	RKN-138-UB	RKN-139-UB	RKN-140-UB	RKN-141-UB	RKN-142-UB



JAMESBURY
NELES CONTROLS GROUP

Installation & Maintenance Instructions

2–WAY DIRECT–ACTING SOLENOID VALVES
NORMALLY OPEN OR NORMALLY CLOSED OPERATION
BRASS OR STAINLESS STEEL CONSTRUCTION – 1/8", 1/4", OR 3/8" NPT

SERIES
8262
8263

Form No.V5256R8

IMPORTANT: See separate solenoid installation and maintenance instructions for information on: Wiring, Solenoid Temperature, Causes of Improper Operation, and Coil or Solenoid Replacement.

DESCRIPTION

Series 8262 and 8263 valves are 2–way direct–acting general service solenoid valves. Valves bodies are of rugged brass or stainless steel. Series 8262 or 8263 valves may be provided with a general purpose or explosionproof solenoid enclosure. Series 8262 and 8263 valves with suffix "P" in the catalog number are designed for dry inert gas and non–lubricated air service.

OPERATION

Normally Open: Valve is open when solenoid is de–energized; closed when is energized.
Normally Closed: Valve is closed when solenoid is de–energized; open when energized.
IMPORTANT: No minimum operating pressure required.

Manual Operation

Manual operator allows manual operation when desired or during an electrical power outage. Depending upon basic valve construction, three types of manual operators are available:

Push Type Manual Operator

To engage push type manual operator, push stem at base of valve body upward as far as possible. Valve will now be in the same position as when the solenoid is energized. To disengage manual operator, release stem. Manual operator will return to original position.

Screw Type Manual Operator

To engage screw type manual operator, rotate stem at base of the valve body clockwise until it hits a stop. Valve will now be in the same position as when the solenoid is energized. To disengage, rotate stem counterclockwise until it hits a stop.

⚠ **CAUTION: For valve to operate electrically, manual operator stem must be fully rotated counterclockwise.**

Stem/Lever Type Manual Operator

To engage manual operator, turn stem/lever clockwise until it hits a stop. Valve will now be in the same position as when the solenoid is energized. To disengage manual operator, turn stem/lever counterclockwise until it hits a stop.

⚠ **CAUTION: For valve to operate electrically, manual operator stem/lever must be fully rotated counterclockwise.**

Flow Metering Devices

Valves with suffix "M" in catalog number are provided with a metering device for flow control. Turn stem to right to reduce flow; left to increase flow.

INSTALLATION

Check nameplate for correct catalog number, pressure, voltage, frequency, and service. Never apply incompatible fluids or exceed pressure rating of the valve. Installation and valve maintenance to be performed by qualified personnel.
Note: Inlet port will either be marked "1" or "IN". Outlet port will be marked "2" or "OUT".

Future Service Considerations.

Provision should be made for performing seat leakage, external leakage, and operational tests on the valve with a nonhazardous,noncombustible fluid after disassembly and reassembly.

Temperature Limitations

For maximum valve ambient and fluid temperatures, refer to charts below. Check catalog number, coil prefix, suffix, and watt rating on nameplate to determine the maximum temperatures.

Wattage	Catalog Number Coil Prefix	Coil Class	Max. Ambient Temp. °F	Max. Fluid Temp. °F
6, 10.5, 12.4	none, DA or S	A	77	180
6,10.5 12.4	DF, FT or SF	F	125	180
6,10.5, 12.4	HT	H	140	180
9,10.7	none, DP or SP	F	77	180
9.7	none, FT or HT	A, F or H	77	120
11.2	none, FT or HT	A, F or H	77	150
16.7	none, DP or SP	F	77	200
17.1	none, KP SP or SD	F	125	180
17.1	HB, KB SS or SV	H	140	180

Catalog Nos.8262B200 and 8262 C200 AC construction only and Catalog Nos.8262B214 and 8262 D200 AC and DC construction are limited to 140°F fluid temperature.
Valves with Suffix V or W that are designed for AC service and normally closed operation are for use with No. 2 and 4 fuel oil service. These valves have the same maximum temperatures per the above table except Suffix W valves are limited to a maximum fluid temperature of 140°F.
Listed below are valves with Suffix V in the catalog number that are acceptable for higher temperatures.

Catalog Number Coil Prefix	Max. Ambient Temp.°F	Max. Fluid Temp.°F
FT8262, HB8262 FT8263, HB8263 8262G, 8263G	125	250*
HT or HB 8262G HT or HB 8263G	140	250

*The only exception is the 8262G and 8263G series (Class F coil) at 50 Hertz rated 11.1 and 17.1 watts are limited to 210°F fluid temperature.

Positioning

This valve is designed to perform properly when mounted in any position. However, for optimum life and performance, the solenoid should be mounted vertically and upright to reduce the possibility of foreign matter accumulating in the solenoid base sub–assembly area.

© Automatic Switch Co. MCMXCIII. All Rights Reserved
Printed in Mexico

ASCO Valves Automatic Switch Co. 50–60 Hanover Road, Florham Park, New Jersey 07932

Valves with suffix "P" in the catalog number must be mounted with the solenoid vertical and upright.

Mounting
Refer to Figure 2 for mounting dimensions.

Piping
Connect piping or tubing to valve according to markings on valve body. Inlet port will either be marked "1" or "IN". Outlet port will be marked "2" or "OUT". Wipe the pipe threads clean of cutting oils. Apply pipe compound sparingly to male pipe threads only. If applied to valve threads, the compound may enter the valve and cause operational difficulty. Avoid pipe strain by properly supporting and aligning piping. When tightening the pipe, do not use valve or solenoid as a lever. Locate wrenches applied to valve body or piping as close as possible to connection point.

IMPORTANT: To protect the solenoid valve, install a strainer or filter suitable for the service involved, in the inlet side as close to the valve as possible. Clean periodically depending on service conditions. See ASCO Series 8600, 8601 and 8602 for strainers.

MAINTENANCE

⚠ WARNING: To prevent the possibility of personal injury or property damage, turn off electrical power, depressurize valve, and vent fluid to a safe area before servicing the valve.

NOTE: It is not necessary to remove the valve from the pipeline for repairs.

Cleaning
All solenoid valves should be cleaned periodically. The time between cleanings will vary depending on the medium and service conditions. In general, if the voltage to the coil is correct,sluggish valve operation, excessive noise or leakage will indicate that cleaning is required. In the extreme case, faulty valve operation will occur and the valve may fail to open or close. Clean strainer or filter when cleaning the valve.

Preventive Maintenance
- Keep the medium flowing through the valve as free from dirt and foreign material as possible.
- While in service, the valve should be operated at least once a month to insure proper opening and closing.
- Depending on the medium and service conditions, periodic inspection of internal valve parts for damage or excessive wear is recommended. Thoroughly clean all parts. If parts are worn or damaged, install a complete ASCO Rebuild Kit.

Causes of Improper Operation
- **Incorrect Pressure:** Check valve pressure. Pressure to valve must be within range specified on nameplate.
- Excessive Leakage: Disassemble valve (see Maintenance) and clean all parts. If parts are worn or damaged, install a complete ASCO Rebuild Kit.

Valve Disassembly
1. Disassemble valve using exploded views for identification of parts.
2. Remove solenoid, see separate instructions.
3. Unscrew solenoid base sub–assembly or valve bonnet with special wrench adapter supplied in ASCO Rebuild Kit. For wrench adapter only, order No. K218948. Remove core assembly, core spring, and solenoid base gasket from valve body. For normal maintenance on Series 8263 valves it is not necessary to remove valve seat. See Figure 1 for metering or manual operator constructions.
4. For normally open construction (Figure 3) remove end cap, or manual operator, (not shown) end cap gasket, disc holder spring, and disc holder assembly.
5. All parts are now accessible to clean or replace. If parts are worn or damaged, install a complete ASCO Rebuild Kit.

Valve Reassembly
1. Use exploded views for identification, orientation and placement of parts.
2. Lubricate all gaskets with DOW CORNING® 111 Compound lubricant or an equivalent high–grade silicone grease.
3. For normally open construction (Figure 3), install disc holder assembly, disc holder spring, end cap gasket and end cap or manual operator. For valves with 1/8" NPT, torque end cap or manual operator to 90 ± 10 in–lbs [10,2 ± 1,1 Nm]. For all other valves torque end cap or manual operator to 175 ± 25 in–lbs [19,8 ± 2,8 Nm].
4. For Series 8263 apply a small amount of LOCTITE® PST® pipe sealant to threads of valve seat (if removed). Follow manufacturers instructions for application of pipe sealant. Then install valve seat and torque to 75 ± 10 in–lbs [8,5 ± 1,1 Nm].
5. Replace solenoid base gasket, core assembly with core spring and solenoid base sub–assembly or plugnut/core tube sub–assembly and valve bonnet. Note: For core assemblies with internal type core springs, install wide end of core spring in core assembly first, closed end of core spring protrudes from top of core assembly.
6. For 1/8" NPT valve constructions, Torque valve bonnet to 90 ± 10 in–lbs [10,2 ± 1,1 Nm]. Torque solenoid base sub–assembly to 175 ± 25 in–lbs [19,8 ± 2,8 Nm].
7. Install solenoid, see separate solenoid instructions. Then make electrical hookup to solenoid.

⚠ WARNING: To prevent the possibility of personal injury or property damage, check valve for proper operation before returning to service. Also perform internal seat and external leakage tests with a nonhazardous, noncombustible fluid.

8. Restore line pressure and electrical power supply to valve.
9. After maintenance is completed, operate the valve a few times to be sure of proper operation. A metallic *click* signifies the solenoid is operating.

ORDERING INFORMATION FOR ASCO REBUILD KITS

Parts marked with an asterisk (*) in the exploded view are supplied in Rebuild Kits. When Ordering Rebuild Kits for ASCO valves, order the Rebuild Kit number stamped on the valve nameplate. If the number of the kit is not visible, order by indicating the number of kits required, and the Catalog Number and Serial Number of the valve(s) for which they are intended.

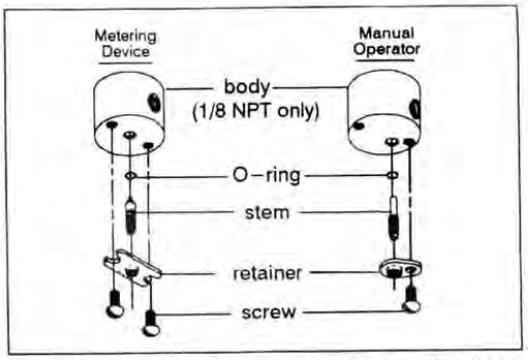
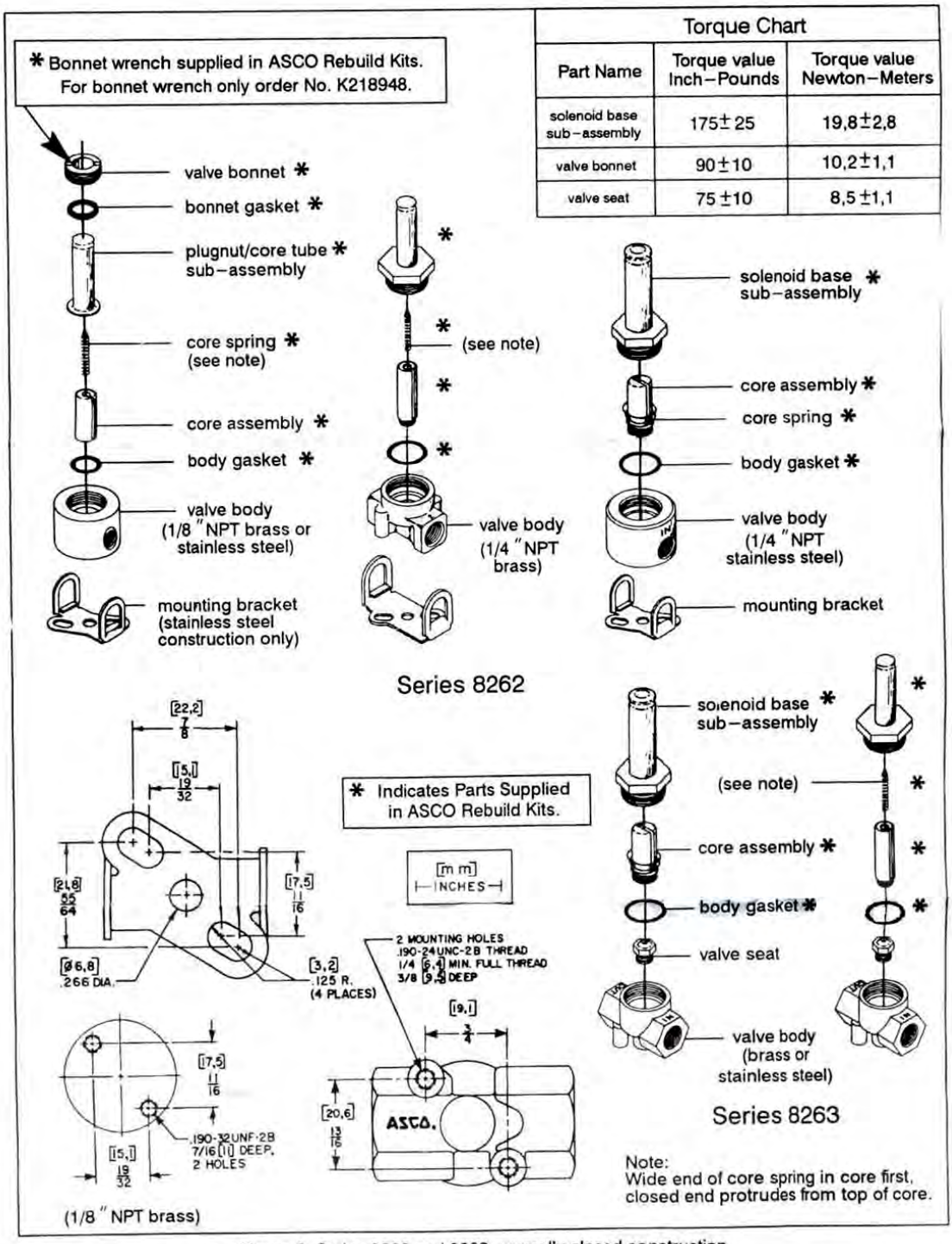


Figure 1. Metering and manual operator constructions.



Torque Chart		
Part Name	Torque value Inch–Pounds	Torque value Newton–Meters
solenoid base sub–assembly	175±25	19,8±2,8
valve bonnet	90±10	10,2±1,1
valve seat	75±10	8,5±1,1

Figure 2. Series 8262 and 8263, normally closed construction.

Form No.V5256R8 Page 3 of 4

ASCO Valves Automatic Switch Co. 50–60 Hanover Road, Florham Park, New Jersey 07932

Disassembly and Reassembly of Stem /Lever Type Manual Operator (Refer to Figure 3)

NOTE: There are two stem/lever manual operator constructions. They are identified by the location of the core spring as ***internal*** or ***external*** spring construction.

1. Unscrew solenoid base sub–assembly from manual operator body.
2. Unscrew manual operator body from valve body. Then remove body gasket and stem retainer.
3. Slip stem/spacer sub–assembly with stem gasket from manual operator body. Remove core assembly with core spring from center of manual operator body.
4. All parts are now accessible for cleaning or replacement. Lubricate gaskets per ***Valve Reassembly*** step 2.
5. Position core assembly with core spring into base of manual operator body. Then install stem/spacer sub–assembly into manual operator body to engage with core assembly.
6. Reinstall stem retainer on body and stem/spacer sub–assembly.

IMPORTANT: The spacer on the stem/spacer sub–assembly must be *inside* of the stem retainer for *internal* spring construction and *outside* the stem retainer for *external* spring construction.

7. Replace body gasket and install manual operator assembly in valve body. Torque manual operator body to 175 ± 25 in–lbs [19,8 ± 2,8 Nm].
8. Replace solenoid base gasket and solenoid base sub–assembly. Torque solenoid base sub–assembly to 175 ± 25 in–lbs [19,8 ± 2,8 Nm].
9. Check manual operator for proper operation. Turn stem clockwise and counterclockwise; stem should turn freely without binding.

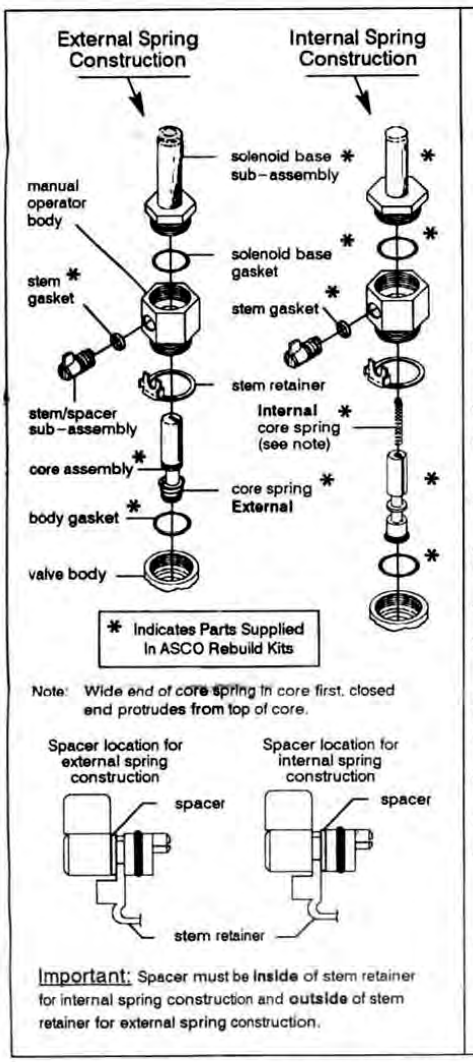


Figure 3. Stem/lever type manual operators

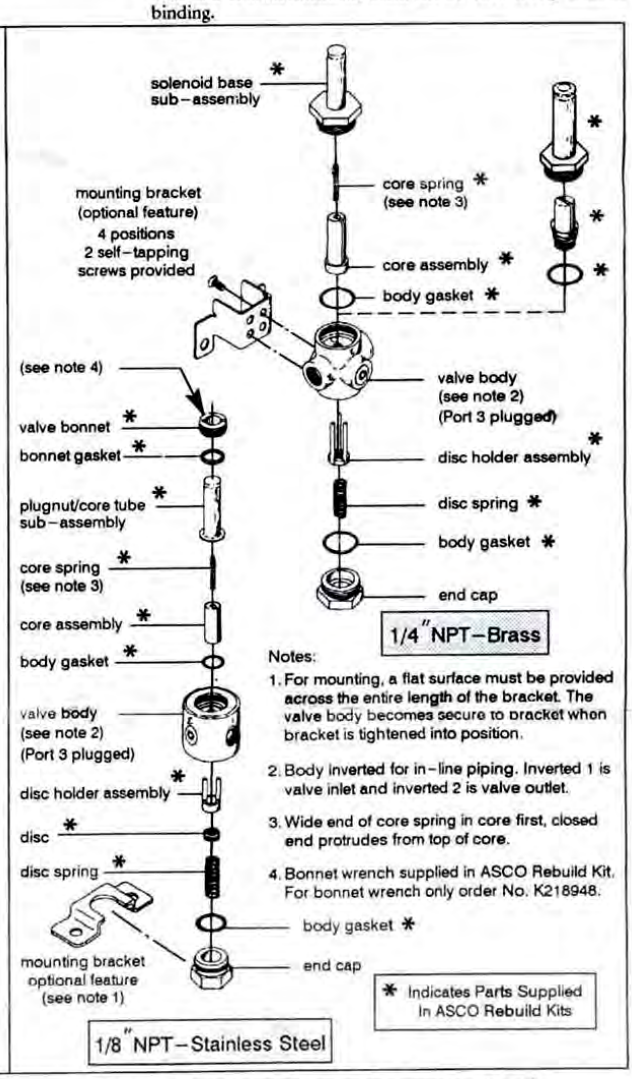


Figure 4. Series 8262, normally open construction.

Page 4 of 4

Form No.V5256R8

ASCO Valves Automatic Switch Co. 50–60 Hanover Road, Florham Park, New Jersey 07932

Installation & Maintenance Instructions

OPEN–FRAME SOLENOIDS

SERIES
U8003
US8003

Form No.V6918

NOTICE: See separate valve installation and maintenance instructions for information on: Operation, Positioning, Mounting, Piping, Strainer or Filter Requirements, Flow Controls, Cleaning, Preventive Maintenance, Causes of Improper Operation, Disassembly and Reassembly of Basic Valve.

DESCRIPTION

Series U8003 are open–frame, pull type solenoid operators. When installed just as a solenoid and not attached to an ASCO valve, the core has a 0.250–28 UNF–2B tapped hole with 0.38 minimum full thread for DC construction and 0.62 for AC construction.

Series US8003 open–frame solenoid operators are the same as Series U8003 except they are provided with spade terminal coils.

OPERATION

When the solenoid is energized, the core is drawn into the solenoid base sub–assembly.

IMPORTANT: When the solenoid is de–energized, the initial return force for the core, whether developed by spring, pressure or weight, must exert a minimum force to overcome residual magnetism created by the solenoid. Minimum return force for AC construction is 1 pound 5 ounces and 5 ounces for DC construction.

INSTALLATION

Check nameplate for correct catalog number, voltage, frequency, wattage and service.

⚠ CAUTION: To protect the solenoid valve or operator, install a strainer or filter, suitable for the service involved in the inlet side as close to the valve or operator as possible. Clean periodically depending on service conditions. See ASCO Series 8600, 8601 and 8602 for strainers.

⚠ WARNING: To prevent the possibility of electrical shock from the accessibility of live parts, install the open–frame solenoid in an enclosure.

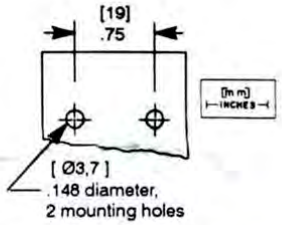
Positioning

This solenoid is designed to perform properly when mounted in any position. However, for optimum life and performance, the solenoid should be mounted vertically and upright to reduce the possibility of foreign matter accumulating in the solenoid base sub–assembly area.

If open–frame solenoid is supplied on an ASCO valve, check basic valve instructions for positioning.

Mounting

Refer to Figure 1 (below) for mounting.



⚠ CAUTION: Be sure mounting screws do not penetrate yoke far enough to damage coil.

Figure 1. Yoke mounting dimension (partial view).

Wiring

Wiring must comply with local codes and the National Electrical Code. Coils are provided with lead wires or 1/4" spade terminals. The solenoid yoke is provided with a hole for a grounding screw, see Figure 2. Grounding screw not supplied with solenoid. To facilitate wiring, the solenoid may be rotated 360° by removing the retaining cap, clip or hi–shock clip.

⚠ CAUTION: When metal retaining clip disengages, it will spring upward.

Rotate solenoid enclosure to desired position. Then replace retaining cap, clip or hi–shock clip before operating. Be sure hi–shock retaining clip seat in circular groove around side wall of solenoid base sub–assembly. Tighten retaining clip securely so that the retaining clip ends meet.

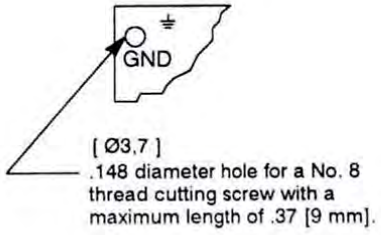


Figure 2. Hole for grounding screw (partial view).

© Automatic Switch Co. MCMXCV All Rights Reserved.

Printed in Mexico

Note: Alternating current (AC) and direct current (DC) solenoids are built differently. To convert from one to the other, it is necessary to change the complete solenoid including the core and solenoid base sub–assembly, not just the coil. Consult ASCO.

Solenoid Enclosure Assembly

Catalog Numbers U80031, U80032, US80031 and US80032 open–frame solenoids may be assembled as a complete unit. Tightening is accomplished by means of a hex flange at the base of the solenoid.

⚠ CAUTION: Care must be taken not to mar the upper core surface, when installing core or positioning solenoid.

Solenoid Temperature

Standard solenoids are supplied with coils designed for continuous duty service. When the solenoid is energized for a long period, the solenoid yoke becomes hot and can not be touched by hand only for an instant. This is a safe operating temperature. Any excessive heating will be indicated by the smoke and odor of burning coil insulation.

MAINTENANCE

⚠ WARNING: To prevent the possibility of personal injury or property damage, turn off electrical power, depressurize solenoid operator or valve, and vent fluid to a safe area before servicing.

Cleaning

All solenoid operators and valves should be cleaned periodically. The time between cleanings will vary depending on the medium and service conditions. In general, if the voltage to the coil is correct, sluggish valve operation, excessive noise or leakage will indicate that cleaning is required. In the extreme case, faulty operation will occur and the solenoid operator or valve may fail to shift. Clean strainer or filter when cleaning the operator or valve.

Preventive Maintenance

- Keep the medium flowing through the solenoid operator or valve as free from dirt and foreign material as possible.
- While in service, the solenoid operator or valve should be operated at least once a month to insure proper opening and closing.
- Depending on the medium and service conditions, periodic inspection of internal valve parts for damage or excessive wear is recommended. Thoroughly clean all parts. Replace any worn or damaged parts.

Causes of Improper Operation

- **Faulty Control Circuit:** Check the electrical system by energizing the solenoid. A metallic *click* signifies that the solenoid is operating. Absence of the *click* indicates loss of power supply. Check for loose or blown fuses, open–circuited or grounded solenoid, broken lead wires or splice connections.
- **Burned–Out Coil:** Check for open–circuited coil. Replace if necessary. Check supply voltage; it must be the same as specified on nameplate and marked on the coil. Check ambient temperature and check the core is not jammed.
- **Low Voltage:** Check voltage across the coil leads. Voltage must be at least 85% of rated voltage.

Coil Replacement/Solenoid Disassembly

1. Disassemble solenoid in an orderly fashion using exploded views for identification and placement of parts.
2. Disconnect coil lead wires from power supply and grounding wire from yoke.
3. Remove retaining cap, clip or hi–shock clip and spacer from top of solenoid.

⚠ CAUTION: When metal retaining clip disengages, it will spring upward.

4. Slip yoke containing coil, spring washer and insulating washers off the solenoid base sub–assembly. Insulating washers are omitted when a molded coil is used.
5. Remove coil, spring washer and insulating washers (if present) from yoke.

Note: For panel mount hi–shock construction (Figure 5) remove additional parts as required.

6. For additional disassembly, unscrew solenoid base sub–assembly.
7. Refer to basic valve instructions for further disassembly.

Coil Replacement/Solenoid Reassembly

1. Install solenoid base sub–assembly and torque to 175 ± 25 in–lbs [19,8 ± 2,8 Nm].
2. Reassemble open–frame solenoid following exploded views.
3. For solenoid using a hi–shock retaining clip be sure retaining clip seats in circular groove around side wall of solenoid base sub–assembly. Then tighten retaining clip securely so that the retaining clip ends meet.
4. Make electrical connections to solenoid, see *Wiring* section.

⚠ CAUTION: Solenoid must be fully reassembled because the yoke and internal parts complete the magnetic circuit. Be sure to replace insulating washer at each end of non–molded coil.

ORDERING INFORMATION

FOR SOLENOID OPERATORS OR COILS

When Ordering Solenoid Operators or Coils, specify Catalog Number, Serial Number, Voltage and Frequency. For Coils, specify number stamped on coil (if visible).

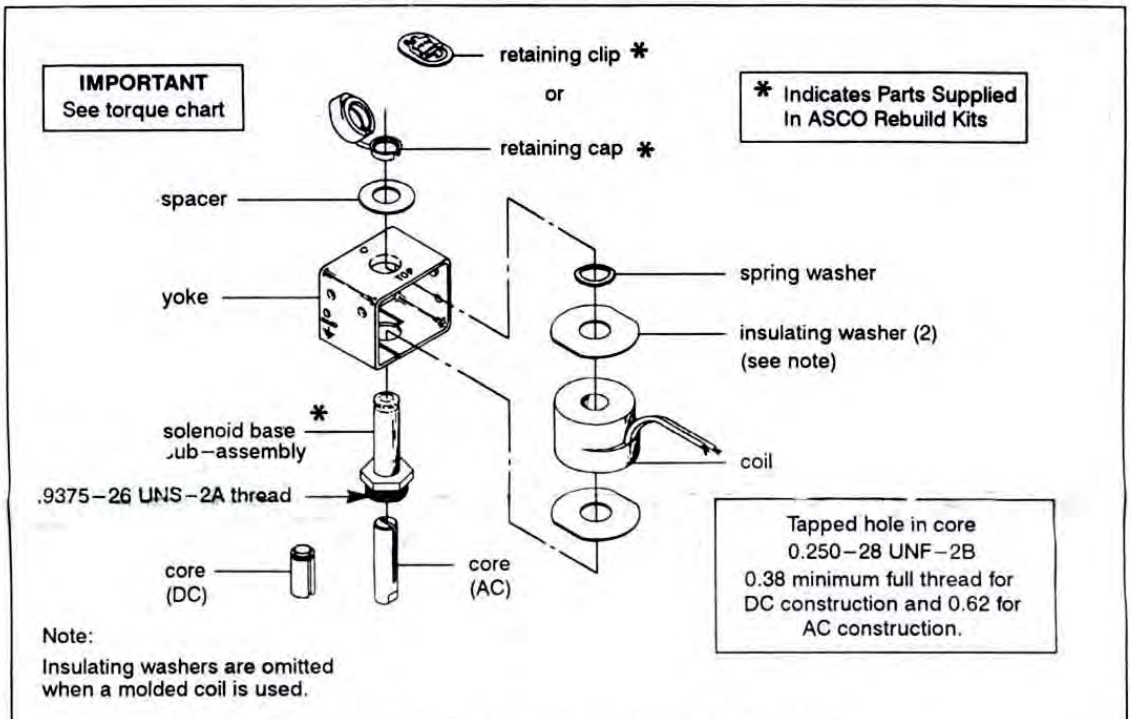


Figure 3. Series U8003 open–frame solenoid with leaded coil.

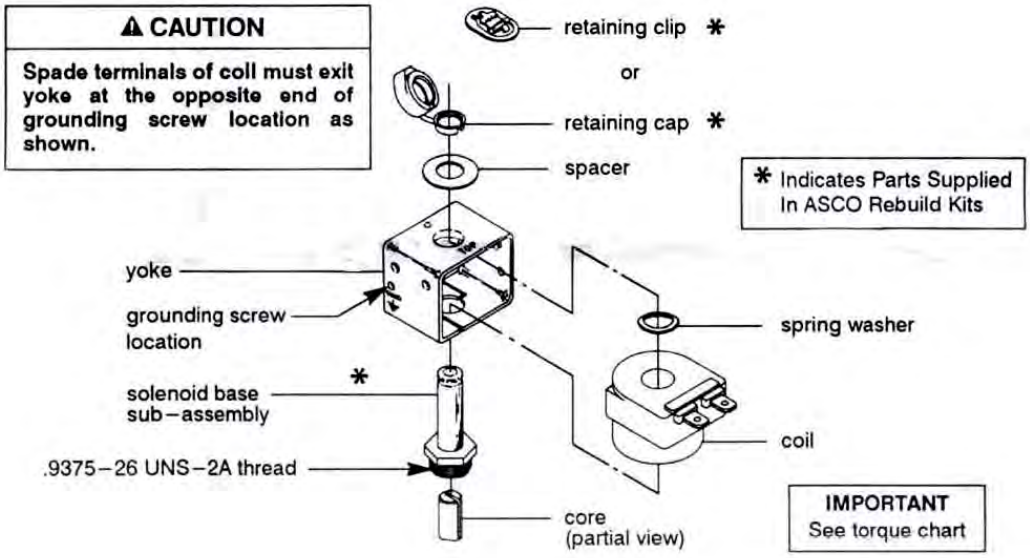


Figure 4. Series US8003 open–frame solenoid with 1/4" spade terminal coil.

ASCO Valves Automatic Switch Co. 50–60 Hanover Road, Florham Park, New Jersey 07932

Torque Chart

Part Name	Torque Value Inch–Pounds	Torque Value Newton–Meters
Solenoid base sub–assembly	175 ± 25	19,8 ± 2,8

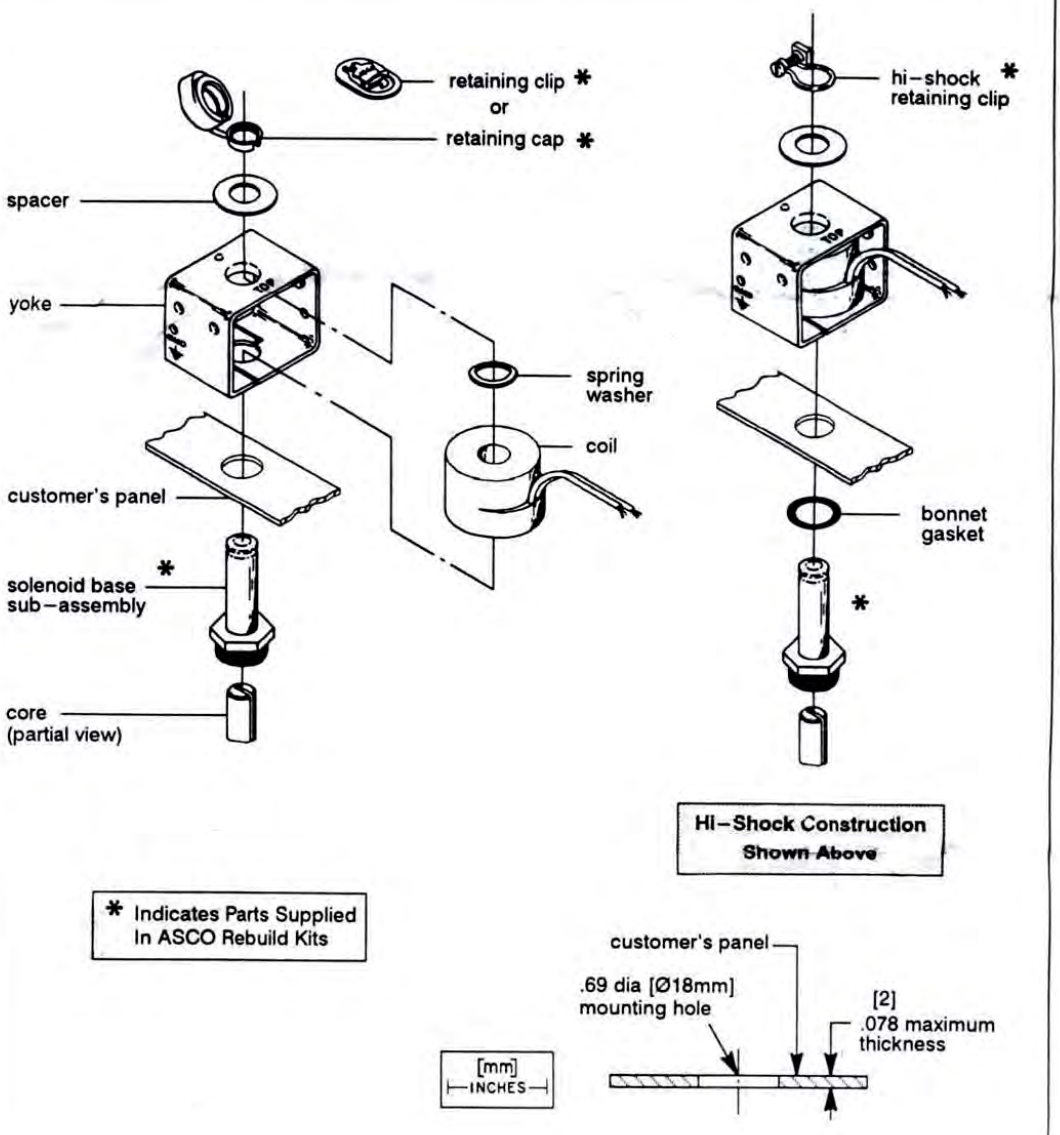


Figure 5. Series U8003 open–frame panel mount solenoid with leaded coil.

Page 4 of 4 Form No.V6918

ASCO Valves Automatic Switch Co. 50–60 Hanover Road Florham Park New Jersey 07932

INSTALLATION AND MAINTENANCE INSTRUCTIONS

2-WAY INTERNAL PILOT OPERATED SOLENOID VALVES HUNG DIAPHRAGM – 3/8, 1/2 AND 3/4 N.P.T. NORMALLY CLOSED OPERATION

BULLETINS
8210
8211

ASCO

Form No. V-5825

DESCRIPTION

Bulletin 8210's are 2-way, normally closed, internal pilot operated solenoid valves. Valve body and bonnet are of brass construction. Standard valves have a General Purpose, NEMA Type 1 Solenoid Enclosure.

Bulletin 8211's are the same as Bulletin 8210's except the solenoids are equipped with an enclosure which is designed to meet NEMA Type 4 Watertight, NEMA Type 7 (C or D) Hazardous Locations - Class I, Group C or D, and NEMA Type 9 (E, F or G) Hazardous Locations - Class II, Group E, F or G. The explosion-proof/watertight solenoid enclosure is shown on a separate sheet of Installation and Maintenance Instructions, Form No. V-5380.

Bulletin 8210 and 8211 valves with suffix 'HW' in the catalog number are specifically designed for hot water service.

Construction	Coil Class	Catalog Number Prefix	Maximum Ambient Temp. °F.	Maximum Fluid Temp. °F.
A-C Construction (Alternating Current)	A	None or DA	77	180
	F	DF or FT	122	180
	H	HT	140	180
D-C Construction (Direct Current)	A, F or H	None, FT or HT	77	150
Catalog Numbers Suffixed 'HW' A-C Construction (Alternating Current)	A	None or DA	77	210
	F	DF or FT	77	210
	H	HT	122	210

OPERATION

Normally Closed: Valve is closed when solenoid is de-energized and opens when solenoid is energized.

MANUAL OPERATOR (Optional)

Valves with suffix 'MO' in catalog number are provided with a manual operator which allows manual operation when desired or during an interruption of electrical power. To operate valve manually, push in knurled cap and rotate clockwise 180°. Disengage manual operator by rotating knurled cap counterclockwise 180° before operating electrically.

MANUAL OPERATOR LOCATION (Refer to Figure 3)

Manual operator (when shipped from factory) will be located over the valve outlet. Manual operator may be relocated at 90° increements by rotating valve bonnet. Remove bonnet screws (4) and rotate valve bonnet with solenoid to desired position. Replace bonnet screws (4) and torque in a crisscross manner to 110 ± 10 inch pounds.

If valve is installed in system and is operational, proceed in the following manner:

WARNING: Depressurize valve and turn off electrical power supply.

1. Remove retaining cap or clip and slip the entire solenoid enclosure off the solenoid base sub-assembly. CAUTION: When metal retaining clip disengages, it will spring upwards.
2. Remove bonnet screws (4) and rotate valve bonnet to desired position.
3. Replace bonnet screws (4) and torque in a crisscross manner to 110 ± 10 inch pounds.
4. Replace solenoid enclosure and retaining clip or cap.

INSTALLATION

Check nameplate for correct catalog number, pressure, voltage and service.

TEMPERATURE LIMITATIONS

For maximum valve ambient and fluid temperatures refer to chart. The temperature limitations listed are for UL applications. For non UL applications, higher ambient and fluid temperature limitations are available. Consult factory. Check catalog number on nameplate to determine maximum temperatures.

POSITIONING/MOUNTING

Valve may be mounted in any position. For mounting bracket (optional feature) dimensions, refer to Figure 1.

PIPING

Connect piping to valve according to markings on valve body. Apply pipe compound sparingly to male pipe threads only; if applied to valve threads, it may enter the valve and cause operational difficulty. Pipe strain should be avoided by proper support and alignment of piping. When tightening the pipe do not use valve as a lever. Wrenches applied to valve body or piping are to be located as close as possible to connection point. **IMPORTANT: Valves with suffix 'HW' in the catalog number have a special diaphragm material which is specifically compounded for hot water service. This material can be attacked by oil and grease. Wipe the pipe threads clean of cutting oils and use teflon tape to seal pipe joints.**

IMPORTANT: For the protection of the solenoid valve, install a strainer or filter suitable for the service involved in the inlet side as close to the valve as possible. Periodic cleaning is required depending on the service conditions. See Bulletins 8600, 8601 and 8602 for strainers.

WIRING

Wiring must comply with Local and National Electrical Codes. Housings for all solenoids are provided with connections for 1/2 inch conduit. The general purpose solenoid enclosure may be rotated to facilitate wiring by removing the retaining cap or clip. CAUTION: When metal retaining clip disengages it will spring upwards. Rotate to desired position. Replace retaining cap or clip before operating.

NOTE: Alternating Current (A-C) and Direct Current (D-C) Solenoids are built differently. To convert from one to the other, it is necessary to change the complete solenoid including the solenoid base sub-assembly and core assembly.

SOLENOID TEMPERATURE

Standard catalog valves are supplied with coils designed for continuous duty service. When the solenoid is energized for a long period, the solenoid enclosure becomes hot and can be touched with the hand for only an instant. This is a safe operating temperature. Any excessive heating will be indicated by the smoke and odor of burning coil insulation.

MAINTENANCE

WARNING: Turn off electrical power and depressurize valve before making repairs. It is not necessary to remove valve from pipe line for repairs.

ASCO Valves ASCO

Form No. V-5825 1975 Automatic Switch Co. FLORHAM PARK, NEW JERSEY 07932

© Automatic Switch Co. 1975, ALL RIGHTS RESERVED.

CLEANING

A periodic cleaning of all solenoid valves is desirable. The time between cleanings will vary, depending on media and service conditions. In general, if the voltage to the coil is correct, sluggish valve operation, excessive leakage or noise will indicate that cleaning is required.

PREVENTIVE MAINTENANCE

1. Keep the medium flowing through the valve as free from dirt and foreign material as possible.
2. While in service, operate valve at least once a month to insure proper opening and closing.
3. Periodic inspection (depending on media and service conditions) of internal valve parts for damage or excessive wear is recommended. Thoroughly clean all parts. Replace any parts that are worn or damaged.

IMPROPER OPERATION

1. **Faulty Control Circuit:** Check electrical system by energizing solenoid. A metallic click signifies the solenoid is operating. Absence of the click indicates loss of power supply. Check for loose or blown-out fuses, open circuited or grounded coil, broken lead wires or splice connections.
2. **Burned-Out Coil:** Check for open circuited coil. Replace coil if necessary.
3. **Low Voltage:** Check voltage across coil leads. Voltage must be at least 85% of nameplate rating.
4. **Incorrect Pressure:** Check valve pressure. Pressure to the valve must be within range specified on nameplate.
5. **Excessive Leakage:** Disassemble valve and clean all parts. Replace worn or damaged parts with a complete Spare Parts Kit for best results.

COIL REPLACEMENT (Refer to Figure 2)

Turn off electrical power supply and disconnect coil leads. Proceed in the following manner:

1. Remove retaining cap or clip, nameplate and cover. CAUTION: When metal retaining clip disengages, it will spring upwards.
2. Remove spring washer, insulating washer and coil. Insulating washers are omitted when a molded coil is used.
3. Reassemble in reverse order of disassembly paying careful attention to exploded view provided for identification and placement of parts.

CAUTION: Solenoid must be fully reassembled as the housing and internal parts are part of and complete the magnetic circuit. Place insulating washer at each end of coil if required.

VALVE DISASSEMBLY (Refer to Figures 2 and 3)

Depressurize valve and turn off electrical power supply. Proceed in the following manner:

1. Remove retaining cap or clip and slip the entire solenoid enclosure off the solenoid base sub-assembly. CAUTION: When metal retaining clip disengages, it will spring upwards.
2. Unscrew solenoid base sub-assembly and remove bonnet gasket.
3. Remove valve bonnet screws (4) and valve bonnet.
4. For normal maintenance, it is not necessary to disassemble the manual operator (optional feature) unless external leakage is evident. To disassemble remove stem pin, manual operator stem, stem spring and stem gasket.
5. Remove core spring, core/diaphragm sub-assembly and body gasket. CAUTION: Do not damage or distort hanger spring between core/diaphragm sub-assembly.
6. All parts are now accessible for cleaning or replacement. Replace worn or damaged parts with a complete Spare Parts Kit for best results.

VALVE REASSEMBLY

1. Reassemble in reverse order of disassembly paying careful attention to exploded views provided for identification and placement of parts.
2. Replace body gasket and core/diaphragm sub-assembly. Locate the bleed hole in core/diaphragm sub-assembly approximately 45° from the valve outlet.
3. Replace core spring with wide end in core first; closed end protrudes from top of core.
4. If removed, replace manual operator stem, stem spring, stem gasket and stem pin.
5. Replace valve bonnet and bonnet screws (4). Torque bonnet screws (4) in a crisscross manner to 110 ± 10 inch pounds.
6. Replace bonnet gasket and solenoid base sub-assembly. Put solenoid base sub-assembly to 175 ± 25 inch pounds.
7. Replace solenoid enclosure and retaining cap or clip.
8. After maintenance, operate the valve a few times to be sure of proper opening and closing.

SPARE PARTS KITS

Spare Parts Kits and Coils are available for ASCO valves.
Parts marked with an asterisk (*) are supplied in Spare Parts Kits.

ORDERING INFORMATION FOR SPARE PARTS KITS
When Ordering Spare Parts Kits or Coils Specify Valve Catalog Number, Serial Number and Voltage.

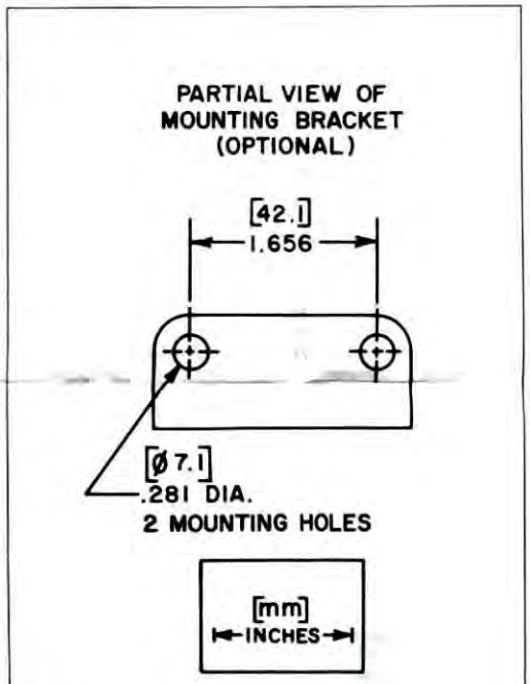
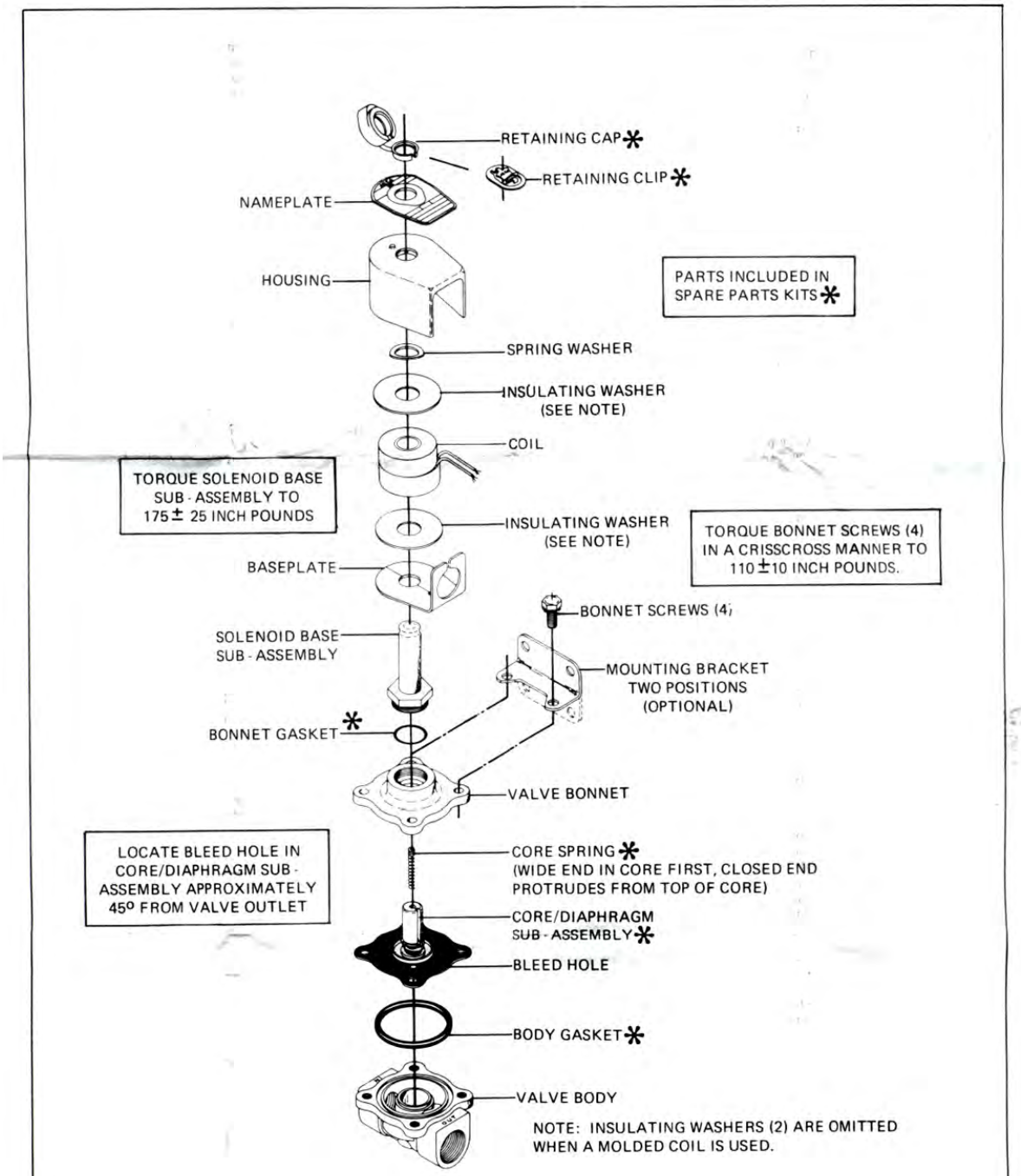


Figure 1. Dimensions For Mounting Bracket (Optional Feature)

ASCO Valves
Automatic Switch Co. FLORHAM PARK, NEW JERSEY 07932 Form No. V-5825 1975

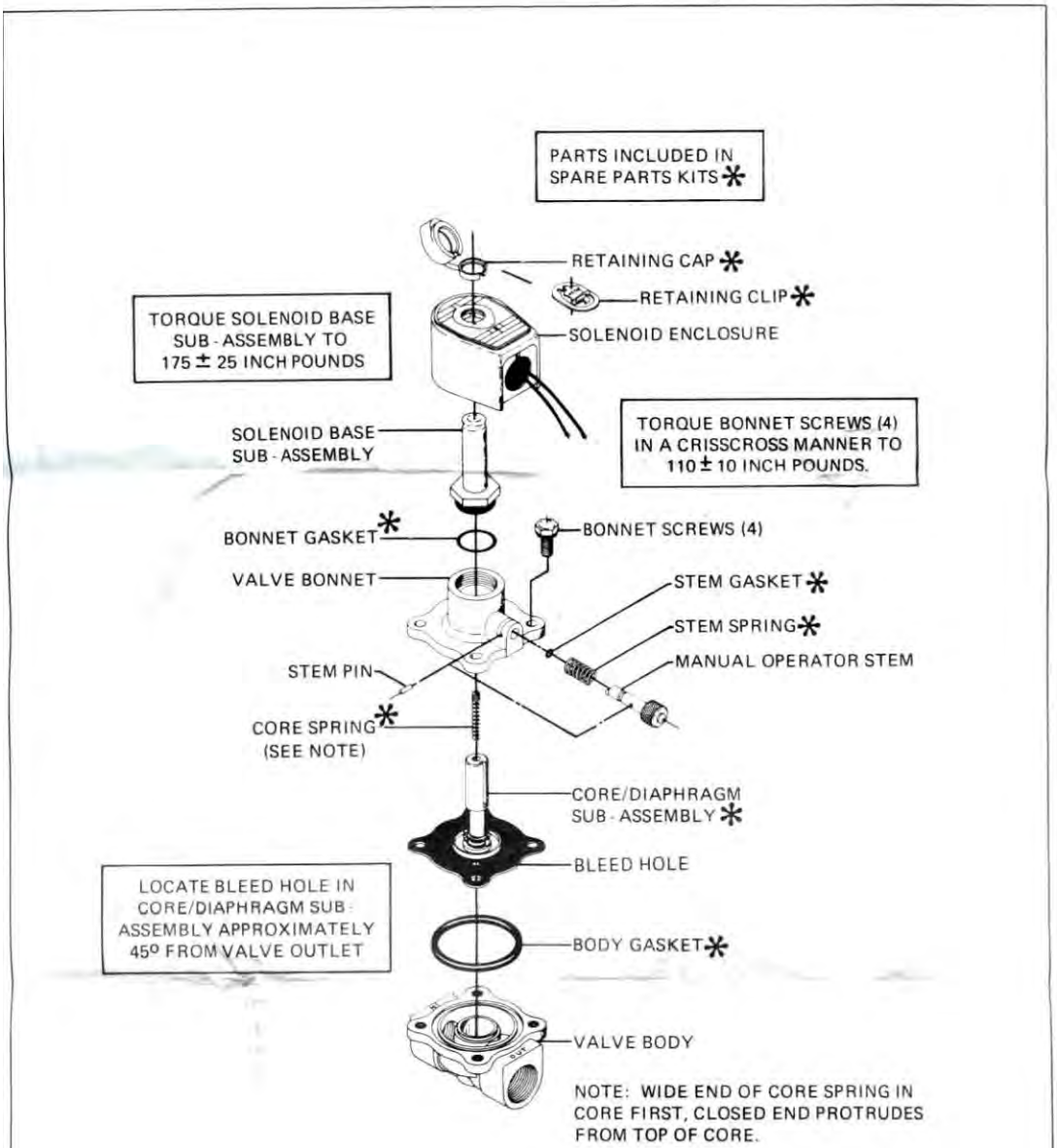
© Automatic Switch Co. 1975, ALL RIGHTS RESERVED



Bulletin 8210 — 3/8, 1/2 & 3/4 N.P.T. — A-C Construction
General purpose solenoid enclosure shown.
For explosion-proof/watertight solenoid enclosure used on Bulletin 8211, see Form No. V-5380.

Figure 2.

© Automatic Switch Co. 1978, ALL RIGHTS RESERVED.



Bulletin 8210 — Manual Operator
General purpose solenoid enclosure shown.
Figure 3. **For explosion-proof/watertight solenoid enclosure used on Bulletin 8211, see Form No. V-5380.**

ASCO Valves
Automatic Switch Co. FLORHAM PARK, NEW JERSEY 07932 Form No. V-5825 1975

© Automatic Switch Co. 1975, ALL RIGHTS RESERVED

Installation & Maintenance Instructions

2–WAY INTERNAL PILOTED–OPERATED SOLENOID VALVES
BRASS AND STAINLESS STEEL CONSTRUCTION
NORMALLY CLOSED OPERATION — 1″, 1 1/4″, & 1 1/2″ NPT

SERIES
8210
8211

Form No.V5455R4

NOTICE: See separate solenoid installation and maintenance instructions for information on: Wiring, Solenoid Temperature, Cause of Improper Operation, Coil or Solenoid Replacement.

DESCRIPTION

Series 8210 valves are 2–way normally closed internal pilot–operated solenoid valves designed for general service. Valves are made of rugged forged brass or stainless steel. Series 8210 valves are provided with a general purpose solenoid enclosure.
Series EF8210 and 8211 are the same as Series 8210 except they are provided with an explosionproof or explosionproof/watertight solenoid enclosure.

OPERATION

Normally Closed: Valve is closed when solenoid is de–energized; open when energized.

NOTE: No minimum operating pressure differential required.

Manual Operator (optional feature)

Manual operator allows manual operation when desired or during an electrical power outage. To engage manual operator (open the valve), remove operator cap and gasket base of valve. Turn manual operator stem clockwise as far as possible. Do not force operator stem. Valve will then be in the same position as when the solenoid is energized. To disengage manual operator, turn stem counterclockwise as far as possible.

⚠ CAUTION: Stem must be fully retracted counterclockwise before operating valve electrically.

Replace manual operator cap gasket and cap.

INSTALLATION

Check nameplate for correct catalog number, pressure, voltage, frequency, and service. Never apply incompatible fluids or exceed pressure rating of the valve. Installation and valve maintenance to be performed by qualified personnel.

Future Service Considerations

Provision should be made for performing seat leakage, external leakage, and operational tests on the valve with a nonhazardous, noncombustible fluid after disassembly and reassembly.

Temperature Limitations

For maximumvalve ambient and fluid temperatures, refer to chart below. Check catalog number prefix and watt rating on nameplate.

Watt Rating AC/DC	Catalog Number Prefix	Coil Class	Maximum Ambient Temp.	Maximum Fluid Temp.
15.1 & 16.1 AC	None, KF, SF or SC	F	125°F (51.7°C)	180°F (82°C)
	HT, KH, ST or SU	H	140°F (60°C)	180°F (82°C)
30.6 DC	HT	H	104°F (40°C)	77°F (25°C)

Positioning

AC Construction (Alternating Current): Valve is designed to perform properly when mounted in any position. However, for optimum life and performance, the solenoid should be mounted vertical and upright so as to reduce the possibility of foreign matter accumulating in the solenoid base sub–assembly area.

DC Construction (Direct Current): Valve must be mounted with solenoid vertical and upright.

Piping

Connect piping to valve according to markings on valve body. Apply pipe compound sparingly to male pipe threads only. If applied to valve threads, the compound may enter the valve and cause operational difficulty. Avoid pipe strain by properly supporting and aligning piping. When tightening the pipe, do not use valve or solenoid as a lever. Locate wrenches applied to valve body or piping as close as possible to connection point.

⚠ CAUTION: To protect the solenoid valve, install a strainer or filter suitable for the service involved in the inlet side as close to the valve as possible. Clean periodically depending on service conditions. See ASCO Series 8600, 8601 and 8602 for strainers.

MAINTENANCE

⚠ WARNING: To prevent the possibility of personal injury or property damage, turn off electrical power, depressurize valve, and vent fluid to a safe area before servicing the valve.

NOTE: It is not necessary to remove the valve from the pipeline for repairs.

Cleaning

All solenoid valves should be cleaned periodically. The time between cleanings will vary depending on the medium and service conditions. In general, if the voltage to the coil is correct, sluggish valve operation, excessive noise or leakage will indicate that cleaning is required. In the extreme case, faulty valve operation will occur and the valve may fail to open or close. Clean strainer or filter when cleaning the valve.

Preventive Maintenance

- Keep the medium flowing through the valve as free from dirt and foreign material as possible.
- While in service, the valve should be operated at least once a month to insure proper opening and closing.
- Depending on the medium and service conditions, periodic inspection of internal valve parts for damage or excessive wear is recommended. Thoroughly clean all parts. If parts are worn or damaged, install a complete ASCO Rebuild Kit.

Causes of Improper Operation

- **Incorrect Pressure:** Check valve pressure. Pressure to valve must be within range specified on nameplate.
- **Excessive Leakage:** Disassemble valve and clean all parts. If parts are worn or damaged, install a complete ASCO Rebuild Kit.

® Automatic Switch Co. MCMXCVIII All Rights Reserved. Printed in U.S.A.

ASCO Valves Automatic Switch Co. 50–60 Hanover Road, Florham Park, New Jersey 07932

Valve Disassembly

1. Disassemble valve in an orderly fashion using exploded views for identification and placement of parts. Refer to Figure 2 for AC construction; Figure 3 for DC construction.
2. Remove solenoid enclosure. See separate instructions.
3. Unscrew solenoid base sub–assembly. For DC construction, a special wrench is supplied in ASCO Rebuild Kit. For wrench only, Order ASCO Wrench Kit No. K168146–001.
4. Remove bonnet screws, valve bonnet,bonnet gasket, spring retainer (AC construction only) core spring, core/diaphragm sub–assembly and body gasket.
5. For valves equipped with a manual operator, remove cap, cap gasket, bonnet and bonnet gasket. Remove stem assembly with stem gasket from bonnet.
6. All parts are now accessible for cleaning or replacement. If parts are worn or damaged, install a complete ASCO Rebuild Kit.

Valve Reassembly

1. **Lubricate all gaskets** and **the disc** at the base of the **core** /diaphragm sub–assembly with DOW CORNING 111® Compound lubricant or an equivalent high–grade silicone grease.
2. Replace body gasket and core/diaphragm sub–assembly. Locate bleed hole in core/diaphragm sub–assembly directly over valve outlet. For 1 1/2″ NPT construction, locate bleed hole in core/diaphragm sub–assembly approximately 30° from valve outlet.
3. Replace core spring and spring retainer (AC construction only). Install small end of core spring in core first, wide end protruding from top of core. For DC construction, install core spring, small end down toward valve body.
4. Replace valve bonnet and bonnet screws. Hand tighten bonnet screws as far as possible.

IMPORTANT: Press firmly down on core/diaphragm sub–assembly to seat diaphragm assembly against valve seat. While holding this position, torque bonnet screws in a crisscross manner to 144 ± 15 in–lbs [16,3 ± 1,7 Nm].

5. Replace bonnet gasket and solenoid base sub–assembly. Torque solenoid base sub–assembly to 175 ± 25 in–lbs [19,8 ± 2,8 Nm]. For DC construction, the solenoid base sub–assembly must be placed inside the housing before assembling into the valve body. Before doing this, read separate lubrication instructions in ***Solenoid Installation & Maintenance Instructions.***
6. For valves provided with a manual operator, replace stem assembly and bonnet (with gaskets). Torque bonnet to 75 ± 10 in–lbs [8,5 ± 1,1 Nm]. Replace cap gasket and cap.
7. Install solenoid. See separate instructions.

⚠ WARNING: To prevent the possibility of personal injury or property damage, check valve for proper operation before returning to service. Also perform internal seat and external leakage tests with a nonhazardous, noncombustible fluid.

8. Restore line pressure and electrical power supply to valve.
9. After maintenance is completed, operate the valve a few times to be sure of proper operation. A metallic *click* signifies the solenoid is operating.

ORDERING INFORMATION

FOR ASCO REBUILD KITS

Parts marked with an asterisk (*) in the exploded view are supplied in Rebuild Kits. When Ordering Rebuild Kits for ASCO valves, order the Rebuild Kit number stamped on the valve nameplate. If the number of the kit is not visible, order by indicating the number of kits required, and the Catalog Number and Serial Number of the valve(s) for which they are intended.

Torque Chart

Part Name	Torque Value Inch–Pounds	Torque Value Newton–Meters
Manual operator bonnet	75 ± 10	8,5 ± 1,1

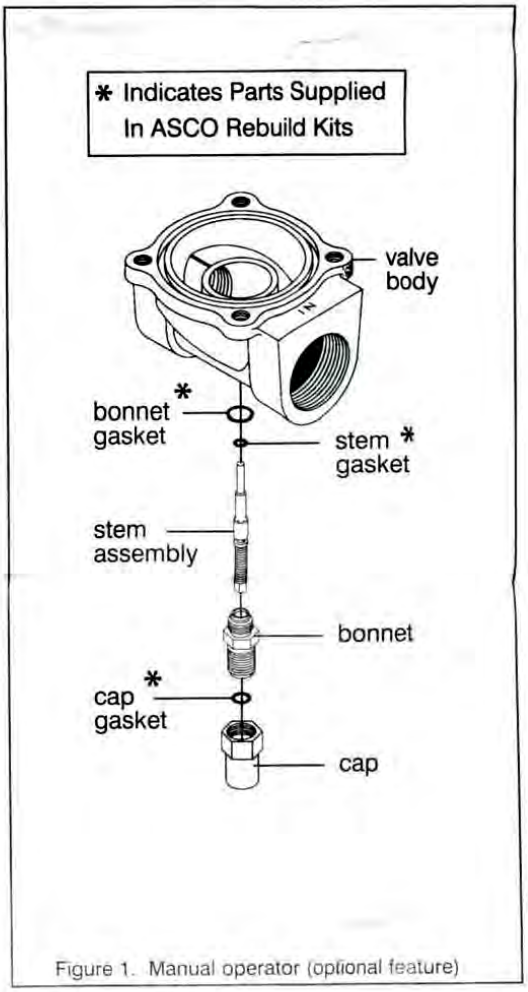


Figure 1. Manual operator (optional feature)

Torque Chart

Part Name	Torque Value Inch–Pounds	Torque Value Newton–Meters
Solenoid base sub–assembly	175 ± 25	19,8 ± 2,8
Bonnet screw	144 ± 15	16,3 ± 1,7

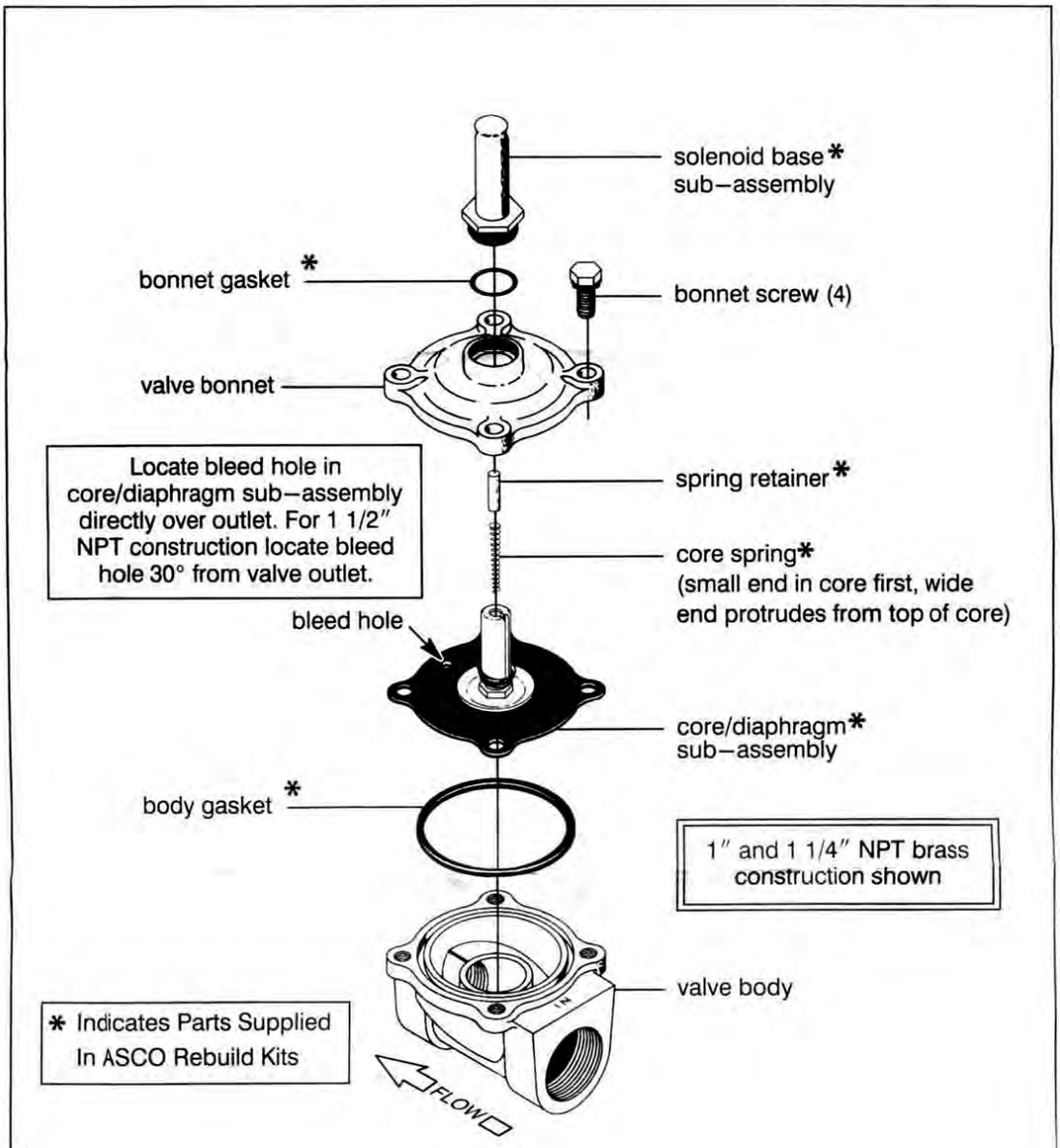


Figure 2. Series 8210 valve without solenoid (AC construction shown).

Torque Chart

Part Name	Torque Value Inch–Pounds	Torque Value Newton–Meters
Solenoid base sub–assembly	175 ± 25	19,8 ± 2,8
Bonnet screw	144 ± 15	16,3 ± 1,7

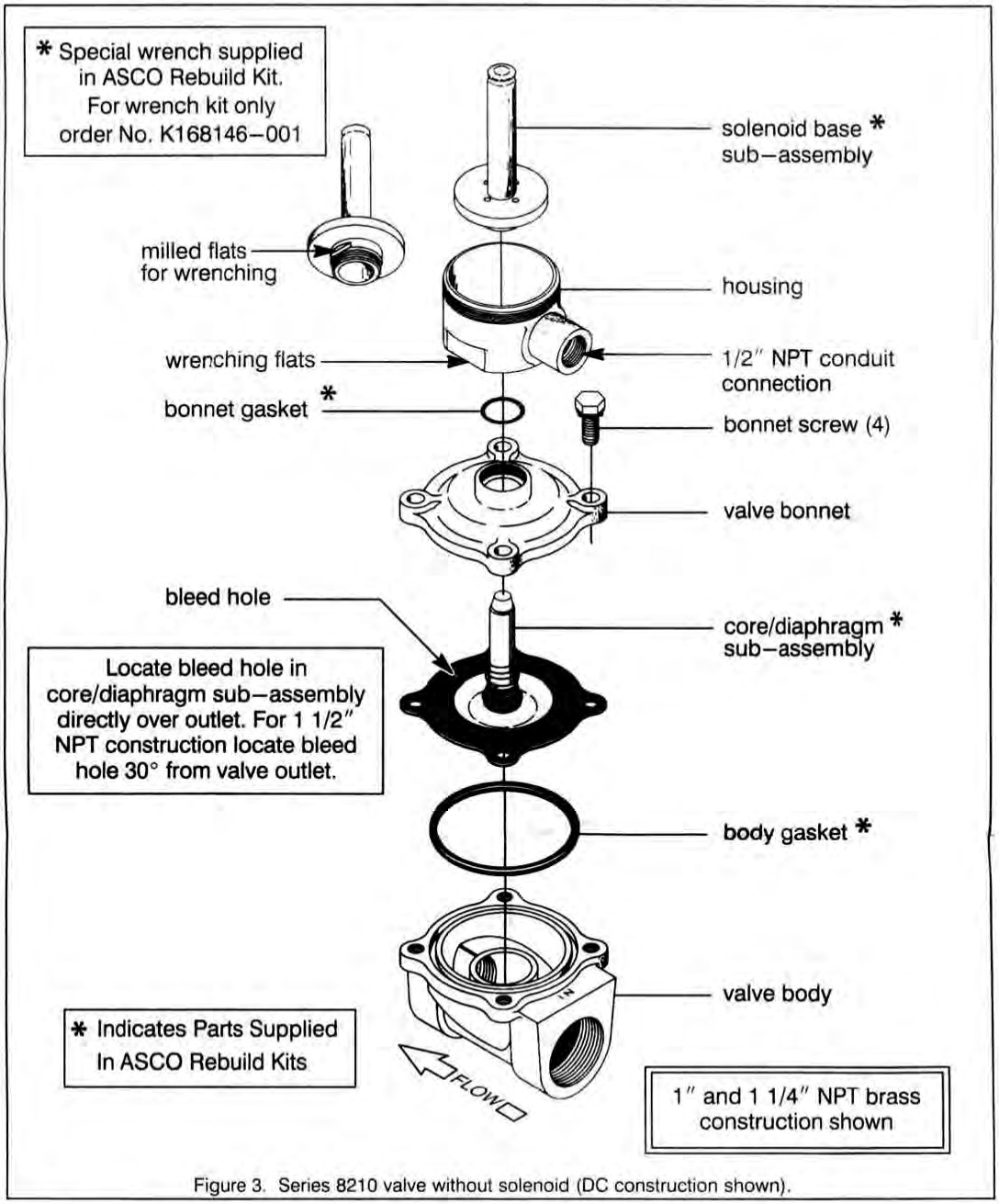


Figure 3. Series 8210 valve without solenoid (DC construction shown).

ASCO Valves Automatic Switch Co. 50–60 Hanover Road Florham Park, New Jersey 07932

Installation & Maintenance Instructions

ASCO Red-Hat II®

OPEN–FRAME, GENERAL PURPOSE, WATERTIGHT/EXPLOSIONPROOF SOLENOIDS

SERIES
8017G
8014G
Form No.V7221R1

NOTICE: See separate valve installation and maintenance instructions for information on: Operation, Positioning, Mounting, Cleaning, Preventive Maintenance, Causes of Improper Operation, Disassembly and Reassembly of basic valve.

DESCRIPTION

Series 8017G and 8014G are epoxy encapsulated solenoids. The green solenoid with lead wires and 1/2" conduit connection is designed to meet Enclosure Type 1–General Purpose, Type 2–Dripproof, Types 3 and 3S–Raintight, and Types 4 and 4X–Watertight. The black solenoid on catalog numbers prefixed "EF" is designed to meet Enclosure Types 3 and 3S–Raintight, Types 4 and 4X–Watertight, Types 6 and 6P–Submersible, Type 7 (A, B, C & D) Explosionproof Class I, Division 1 Groups A, B, C, & D and Type 9 (F & F)–Dust–Ignitionproof Class II, Division 1 Groups E & F. See ***Temperature Limitations*** section for solenoid identification and nameplate/retainer for service. When Series 8017G is installed just as a solenoid and not attached to an ASCO valve, the core has a 0.250–28 UNF–2B tapped hole, 0.38 minimum full thread.

Catalog Nos. 8017G1 and 8017G2 are pull type direct–acting solenoids, while Catalog Nos. 8014G1 and 8014G2 are push type reverse–acting solenoids.

General purpose solenoids (green) are available in open–frame construction. This construction may be supplied with 1/4" spade, screw or DIN terminals (Refer to Figure 2).

Optional Features For Type 1 – General Purpose Construction Only

- **Junction Box:** This junction box construction meets Enclosure Types 2,3,3S,4, and 4X. Only solenoids with 1/4" spade or screw terminals may have a junction box. The junction box provides a 1/2" conduit connection, grounding and spade or screw terminal connections within the junction box (See Figure 3).
- **DIN Plug Connector Kit No.K236034:** Use this kit only for solenoids with DIN terminals. The DIN plug connector kit provides a two pole with grounding contact DIN Type 43650 construction (See Figure 4).

OPERATION

Series 8017G – When the solenoid is energized, the core is drawn into the solenoid base sub–assembly. **IMPORTANT: When the solenoid is de–energized, the initial return force for the core, whether developed by spring, pressure, or weight, must exert a minimum force to overcome residual magnetism created by the solenoid. Minimum return force is 1 pound, 12 ounces.**

Series 8014G – When the solenoid is energized, the disc holder assembly seats against the orifice. **IMPORTANT: Initial return force for the disc or disc holder assembly, whether developed by spring, pressure, or weight, must exert a minimum force to overcome residual magnetism created by the solenoid. Minimum return force is 1 pound, 12 ounces. When the solenoid is de–energized , the disc holder assembly returns.**

INSTALLATION

Check nameplate for correct catalog number, service, and wattage. Check front of solenoid for voltage and frequency.

⚠ WARNING: Electrical hazard from the accessibility of live parts. To prevent the possibility of death, serious injury or property damage, install the open–frame solenoid in an enclosure.

For Black Enclosure Types 7 and 9 Only

⚠ CAUTION: To prevent fire or explosion, do not install solenoid and/or valve where ignition temperature of hazardous atmosphere is less than 180° C.

NOTE: These solenoids have an internal non–resetable thermal fuse to limit solenoid temperature in the event that extraordinary conditions occur which could cause excessive temperatures. These conditions include high input voltage, a jammed core, excessive ambient temperature or a shorted solenoid, etc. This unique feature is a standard feature only in solenoids with black explosionproof/dust–ignitionproof enclosures (Types 7 & 9).

⚠ CAUTION: To protect the solenoid valve or operator, install a strainer or filter, suitable for the service involved in the inlet side as close to the valve or operator as possible. Clean periodically depending on service conditions. See ASCO Series 8600, 8601, and 8602 for strainers.

Temperature Limitations

For maximum valve ambient temperatures, refer to chart. The temperature limitations listed, only indicate maximum application temperatures for field wiring rated at 90°C. Check catalog number prefix and watt rating on nameplate to determine maximum ambient temperature. See valve installation and maintenance instructions for maximum fluid temperature. NOTE: For steam service, refer to ***Wiring*** section, ***Junction Box*** for temperature rating of supply wires.

Temperature Limitations For Series 8017G or 8014G Solenoids for use on Valves Rated at 16.1 or 20.1 Watts

Watt Rating	Catalog Number Coil Prefix	Class of Insulation	Maximum * Ambient Temp.
16.1	None, KF, KP SD, SF, & SP,	F	125°F (54°C)
20.1	FB, KF, KP, SD, SF, & SP	F	104°F (40°C)
16.1	None, KB, KH, SS, ST & SU	H	140°F (60°C)
20.1	HB, KH, SS, ST, SU & SV	H	140°F (60°C)

* Minimum ambient temperature –40° F (–40° C).

Positioning

This solenoid is designed to perform properly when mounted in any position. However, for optimum life and performance, the solenoid should be mounted vertically and upright to reduce the possibility of foreign matter accumulating in the solenoid base sub–assembly area.

Wiring

Wiring must comply with local codes and the National Electrical Code. All solenoids supplied with lead wires are provided with a grounding wire which is green or green with yellow stripes and a 1/2" conduit connection. To facilitate wiring, the solenoid may be rotated 360°. For the watertight and explosionproof solenoid, electrical fittings must be approved for use in the approved hazardous locations.

⚠ CAUTION: Cryogenic Applications – Solenoid lead wire insulation should not be subjected to cryogenic temperatures. Adequate lead wire protection and routing must be provided.

Automatic Switch Co. MCMXCIX All Rights Reserved

Printed in U.S.A.

ASCO Valves Automatic Switch Co. 50–60 Hanover Road Florham Park, New Jersey 07932

Additional Wiring Instructions For Optional Features:

- **Open–Frame solenoid with 1/4" spade terminals.**

For solenoids supplied with screw terminal connections use #12–18 AWG stranded copper wire rated at 90°C or greater. Torque terminal block screws to 10 ± 2 in–lbs [1,0 ± 1,2 Nm]. A tapped hole is provided in the solenoid for grounding, use a #10–32 machine screw. Torque grounding screw to 15 – 20 in–lbs [1,7 – 2,3 Nm]. On solenoids with screw terminals, the socket head screw holding the terminal block to the solenoid is the grounding screw. Torque the screw to 15 – 20 in–lbs [1,7 – 2,3 Nm] with a 5/32" hex key wrench.

- **Junction Box**

The junction box is used with spade or screw terminal solenoids only and is provided with a grounding screw and a 1/2" conduit connection. Connect #12–18 AWG standard copper wire only to the screw terminals. Within the junction box use field wire that is rated 90°C or greater for connections. For steam service use 105°C rated wire up to 50 psi or use 125°C rated wire above 50 psi. After electrical hookup, replace cover gasket, cover, and screws. Tighten screws evenly in a crisscross manner.

- **DIN Plug Connector Kit No.K236034**

1. The open–frame solenoid is provided with DIN terminals to accommodate the plug connector kit.
2. Remove center screw from plug connector. Using a small screwdriver, pry terminal block from connector cover.
3. Use #12–18 AWG stranded copper wire rated at 90°C or greater for connections. Strip wire leads back approximately 1/4" for installation in socket terminals. The use of wire–end sleeves is also recommended for these socket terminals. Maximum length of wire–end sleeves to be approximately 1/4". Tinning of the ends of the lead wires is not recommended.
4. Thread wire through gland nut, gland gasket, washer and connector cover.

NOTE: Connector housing may be rotated in 90° increments from position shown for alternate positioning of cable entry.

5. Check DIN connector terminal block for electrical markings. Then make electrical hookup to terminal block according to markings on it. Snap terminal block into connector cover and install center screw.
6. Position connector gasket on solenoid and install plug connector. Torque center screw to 5 ± 1 in–lbs [0,6 ± 1,1 Nm].

Installation of Solenoid

Solenoids may be assembled as a complete unit. Tightening is accomplished by means of a hex flange at the base of the solenoid.

Solenoid Temperature

Standard solenoids are designed for continuous duty service. When the solenoid is energized for a long period, the solenoid becomes hot and can be touched by hand only for an instant. This is a safe operating temperature.

MAINTENANCE

⚠ WARNING: To prevent the possibility of death, serious injury or property damage, turn off electrical power, depressurize solenoid operator and/or valve, and vent fluid to a safe area before servicing.

Cleaning

All solenoid operators and valves should be cleaned periodically. The time between cleaning will vary depending on medium and service conditions. In general, if the voltage to the solenoid is correct, sluggish valve operation, excessive noise or leakage will indicate that cleaning is required. Clean strainer or filter when cleaning the valve.

Preventive Maintenance

- Keep the medium flowing through the solenoid operator or valve as free from dirt and foreign material as possible.
- While in service, the solenoid operator or valve should be operated at least once a month to insure proper opening and closing.
- Depending on the medium and service conditions, periodic inspection of internal valve parts for damage or excessive wear is recommended. Thoroughly clean all parts. Replace any worn or damaged parts.

Causes of Improper Operation

- **Faulty Control Circuit:** Check the electrical system by energizing the solenoid. A metallic *click* signifies that the solenoid is operating. Absence of the *click* indicates loss of power supply. Check for loose or blown fuses, open–circuited or grounded solenoid, broken lead wires or splice connections.
- **Burned–Out Solenoid:** Check for open–circuited solenoid. Replace if necessary. Check supply voltage; it must be the same as specified on nameplate/retainer and marked on the solenoid. Check ambient temperature and check that the core is not jammed.
- **Low Voltage:** Check voltage across the solenoid leads. Voltage must be at least 85% of rated voltage.

Solenoid Replacement (Refer to Figure 1)

1. Disconnect conduit, coil leads, and grounding wire.

NOTE: Any optional parts attached to the old solenoid must be reinstalled on the new solenoid. For removal or assembly of optional parts, see Figure 2, 3 or 4.

2. Snap off red cap from top of solenoid base sub–assembly.
3. Push down on solenoid. Then using a suitable screwdriver, insert blade between solenoid spacer and nameplate/retainer. Pry up slightly and push to remove.
4. Remove solenoid spacer and solenoid from solenoid base sub–assembly.
5. Reassemble in reverse order of disassembly. Use exploded views for identification and placement of parts.

Disassembly and Reassembly of Solenoids

1. Remove solenoid, see ***Solenoid Replacement***.
2. Remove spring washer from solenoid base sub–assembly.
3. Unscrew solenoid base sub–assembly from valve body. For Series 8014G solenoids a special wrench adapter for the solenoid base sub–assembly is supplied in the ASCO Rebuild Kit. For wrench adapter only, order Wrench Kit No. K218950.
4. Remove internal solenoid parts for cleaning or replacement. Use exploded views for identification and placement of parts.
5. If the solenoid is part of a valve, refer to basic valve installation and maintenance instructions for further disassembly.
6. Reassemble in reverse order of disassembly. Use exploded views for identification and placement of parts.
7. Torque solenoid base sub–assembly and adapter to 175±25 in–lbs [19,8±2,8 Nm].

ORDERING INFORMATION FOR ASCO SOLENOIDS

When Ordering Solenoids for ASCO Solenoid Operators or Valves, order the number stamped on the solenoid. Also specify voltage and frequency.

Torque Chart

Part Name	Torque Value In–lbs	Torque Value Nm
Solenoid base sub–assembly & adapter	175 ± 25	19,8 ± 2,8

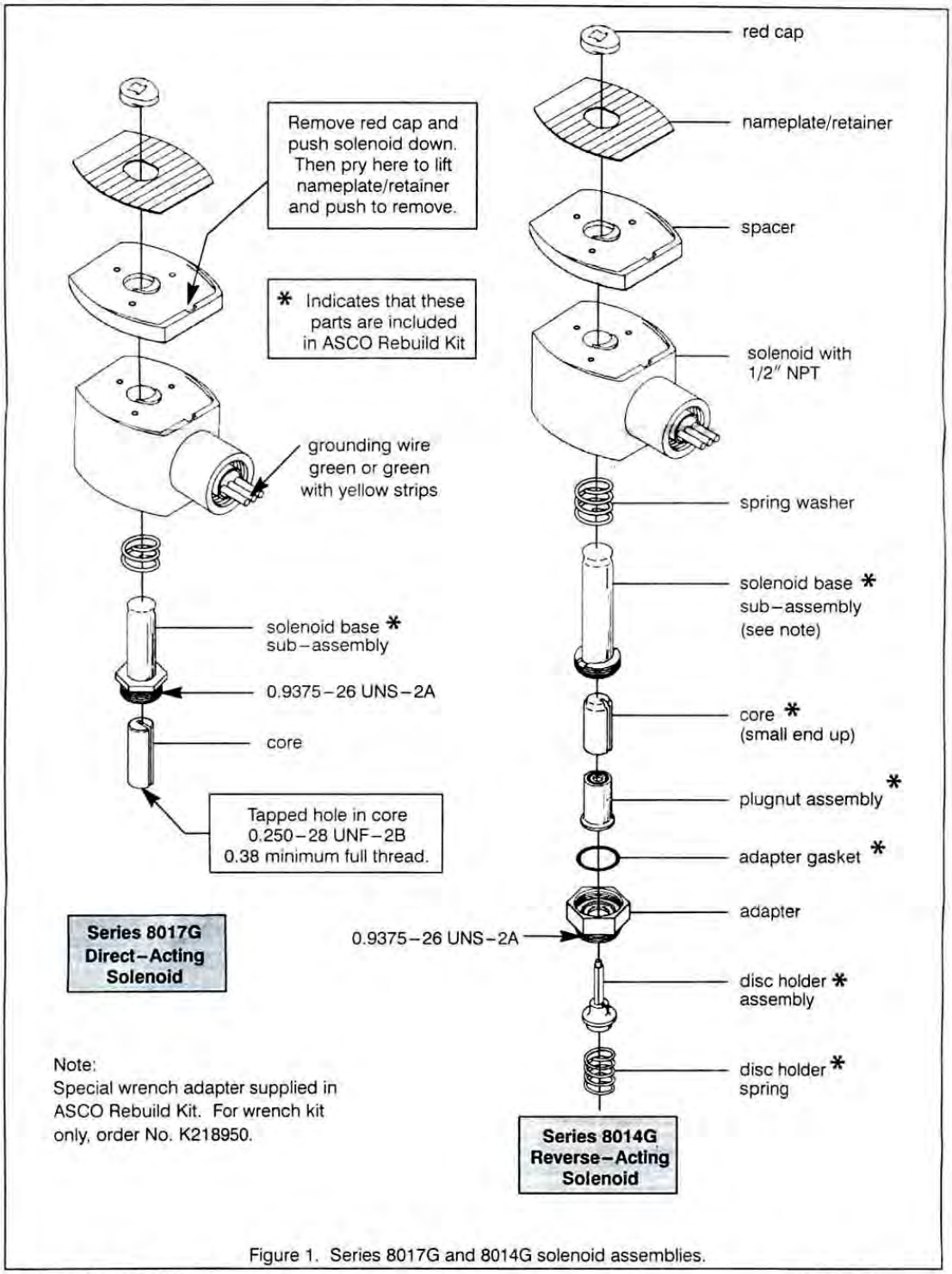


Figure 1. Series 8017G and 8014G solenoid assemblies.

Form No.V7221R1 Page 3 of 4

ASCO Valves Automatic Switch Co. 50-60 Hanover Road, Florham Park, New Jersey 07932

Torque Chart

Part Name	Torque Value in Inch–Pounds	Torque Value in Newton–Meters
terminal block screws	10 ± 2	1,1 ± 0,2
socket head screw	15 – 20	1,7 – 2,3
center screw	5 ± 1	0,6 ± 0,1

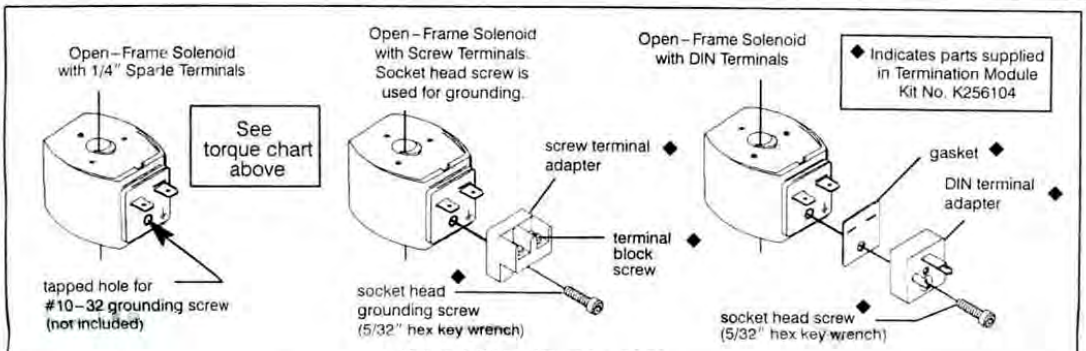


Figure 2. Open–frame solenoids

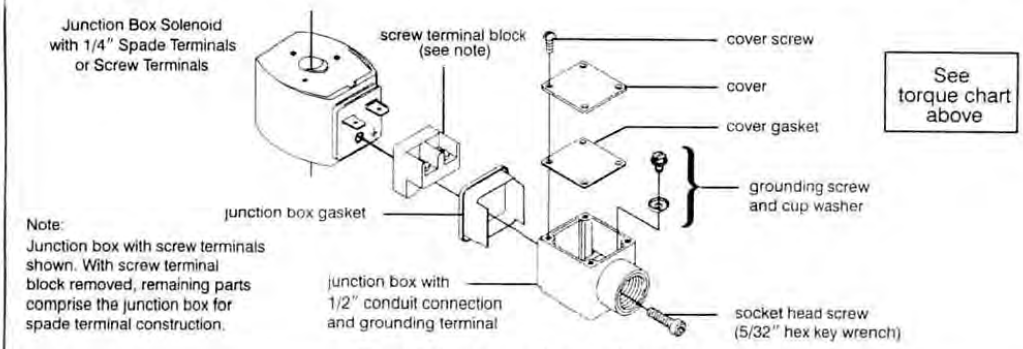


Figure 3. Junction box (optional feature)

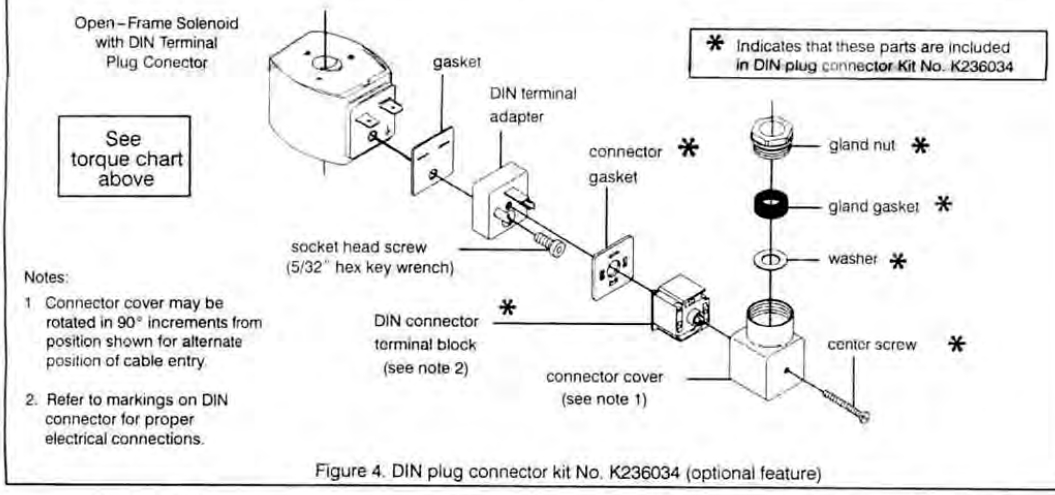


Figure 4. DIN plug connector kit No. K236034 (optional feature)

ASCO Valves Automatic Switch Co. 50–60 Hanover Road, Florham Park, New Jersey 07932

Installation & Maintenance Instructions

2–WAY AUXILIARY–OPERATED PILOT–CONTROLLED PISTON VALVES
NORMALLY CLOSED OR NORMALLY OPEN OPERATION
1/2, 3/4, 1, 1 1/4, 1 1/2, 2 OR 2 1/2 NPT
BRONZE OR STAINLESS STEEL CONSTRUCTION

SERIES 8290

Form No.V6941R2

NOTICE: See separate Installation and Maintenance Instructions for information on *Solenoid Pilot Valve* used in conjunction with Series 8290 valves.

DESCRIPTION

Series 8290 valves are 2–way auxiliary–operated, pilot– controlled piston valves designed for air, water, light oil or steam service. Valves are normally closed or normally open construction as required. Valve bodies are made of bronze or Type 316L stainless steel; elastomers are made of PTFE. Series 8290 valves are supplied with a piston type operator having a diameter of 50, 63, 90 or 125 mm depending upon customer requirements. Valves have an integral position indicator, providing visual indication of ***Open*** and ***Closed*** positions; with the exception of the 50 operator.

OPERATION

Refer to operating instructions (to follow) and the graphs ***Auxiliary Pilot Pressure vs Main Line Pressure***. Use these graphs to determine the minimum auxiliary pressure (filtered air or water) required for a given main line pressure.

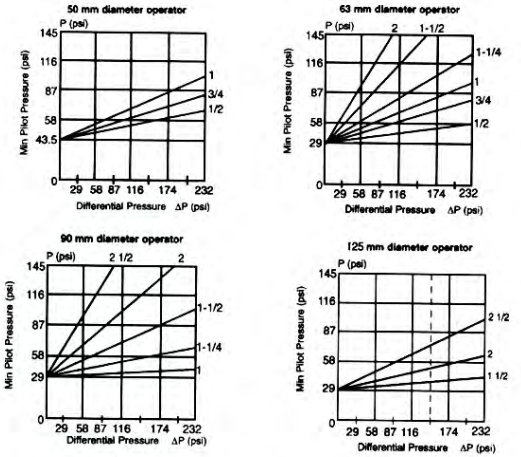
Normally Closed Operation: With auxiliary pressure removed valve is closed. With auxiliary pressure applied valve is open.

Normally Open Operation: With auxiliary pressure removed valve is open. With auxiliary pressure applied valve is closed.

IMPORTANT: Pressure is at Port 2 (entry under disc) for all liquids and gases. For rapid cycling steam valves pressure is at Port 1 (entry above disc).

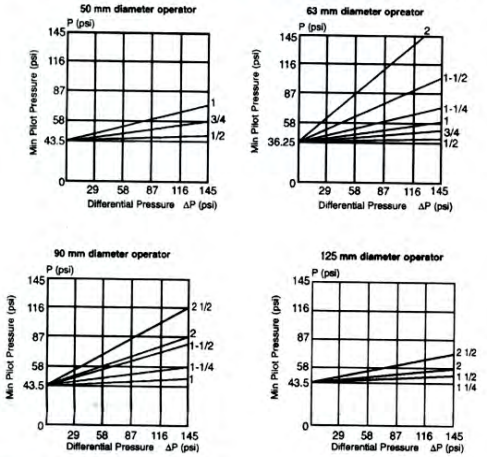
NOTICE: See corresponding product leaflets (on valves and pilot valves) for minimum and maximum pilot pressure, operating pressure differential and fluid temperature.

Normally Open Valves (entry under disc)



Normally closed – (entry under disc) Minimum pilot pressure is 58 psi; maximum 145 psi.

Normally Closed Valves – Steam Service (entry above disc)



INSTALLATION

Check nameplate for correct catalog number, pressure (main and auxiliary), temperature and service. Never apply incompatible fluids or exceed pressure rating of the valve. Installation and valve maintenance to be performed by qualified personnel.

Future Service Considerations

Provision should be made for performing seat leakage, external leakage and operational tests on the valve with a nonhazardous, noncombustible fluid after disassembly and reassembly.

Temperature Limitations – Main Valve

- Ambient Temperature Range:
  12°F (–10°C) to 140°F (60°C)
- Fluid Temperature Range:
  12°F (–10°C) to 356°F (180°C)

Positioning

This valve is designed to perform properly when mounted in any position.

Pilot Valve Installation (General)

For ease of access to solenoid pilot valve and auxiliary piping alignment, the piston operator with the pilot port connection may be rotated 360°.

Remove the plastic protective plug from the pilot port. See separate instructions and drawings covering normally closed and normally open operation. Then follow the connection procedures for the appropriate version:

Connection of the pilot valve

- to the 1/8" NPT port (for 50 or 63 mm operator), see separate instructions for pilot valves.
- to the 1/4" NPT port (for 90 or 125 mm operator), see separate instructions for pilot valves.

⚠ CAUTION: The exhaust port plug mounted by the manufacturer must never be removed.

Connect piping to valve according to markings on valve body. Pressure is at Port 2 (entry under disc) for all liquids and gases. For rapid cycling steam valves pressure is at Port 1 (entry above disc). Apply pipe compound sparingly to male pipe threads only. If applied to valve threads, the compound may enter the valve and cause operational difficulty. Avoid pipe strain by properly supporting and aligning piping. When tightening the pipe, do not use valve or piston operator head as a lever. Locate wrenches applied to valve body or piping as close as possible to connection point.

⚠ CAUTION: To protect the piston operated valve, install a strainer or filter suitable for the service involved (where practical) in the inlet side as close to the valve as possible. Clean periodically depending on service conditions. See ASCO Series 8600, 8601 and 8602 for strainers.

MAINTENANCE

⚠ WARNING: To prevent the possibility of death, serious injury or property damage, turn off electrical power, depressurize valve (main and auxiliary), and vent fluid to a safe area before servicing the valve.

NOTE: It is not necessary to remove the main valve from the pipeline for repairs. However, the piping or tubing and electrical connections must be disconnected from the solenoid pilot valve. See separate instructions.

Cleaning

All valves should be cleaned periodically. The time between cleanings will vary depending on the medium and service conditions. In general, sluggish valve operation, excessive noise or leakage will indicate that cleaning is required. In the extreme case, faulty valve operation will occur and the valve may fail to open or close. Clean strainer or filter when cleaning the valve.

Preventive Maintenance

- Keep the medium flowing through the valve as free from dirt and foreign material as possible.
- While in service, the valve should be operated at least once a month to insure proper opening and closing.
- Depending on the medium and service conditions, periodic inspection of internal valve parts for damage or excessive wear is recommended. Thoroughly clean all parts. If parts are worn or damaged, install a complete ASCO Rebuild Kit.

Causes of Improper Operation

- **Incorrect Pressure:** Check valve pressure. Pressure to valve must be within range specified on nameplate.
- **Excessive Leakage:** Disassemble valve and clean all parts. If parts are worn or damaged, install a complete ASCO Rebuild Kit.

Valve Disassembly and Reassembly

1. Disassemble valve in an orderly fashion using exploded view for identification and placement of parts.
2. Disconnect piping and wiring from solenoid pilot valve. See separate instructions.
3. Remove the piston operator and stuffing box packing with a wrench (a).
4. Unscrew the disc nut with a wrench (b).
5. Clean all accessible parts.
6. Replace parts numbers 1, 2, 3 and 4 with the corresponding parts from the ASCO Rebuild Kit.
7. Reassemble the parts and observe the indicated tightening torques.
8. Reinstall piping and make electrical connection to solenoid pilot valve. See separate instructions.

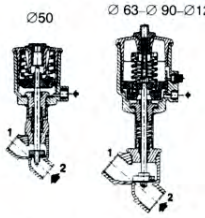
⚠ WARNING: To prevent the possibility of death, serious injury or property damage, check valve for proper operation before returning to service. Also perform internal seat and external leakage tests with a nonhazardous, noncombustible fluid.

9. Restore pressure (main and auxiliary) and electrical power supply to solenoid pilot valve.
10. After maintenance is completed, operate the valve a few times to be sure of proper operation.

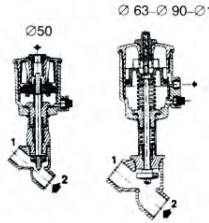
ORDERING INFORMATION FOR ASCO REBUILD KITS

When Ordering Rebuild Kits for ASCO valves, order the Rebuild Kit number stamped on the valve nameplate. If the number of the kit is not visible, order by indicating the number of kits required, and the Catalog Number and Serial Number of the valve(s) for which they are intended.

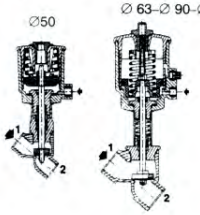
Normally Closed Pilot (entry under disc)

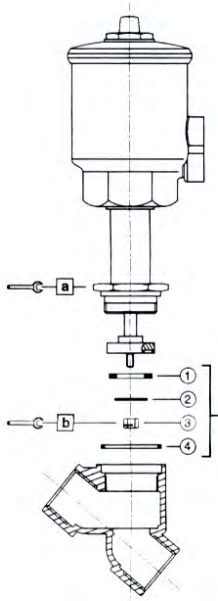


Normally Open Pilot (entry under disc)



Normally Closed Pilot (entry above disc)





	TORQUES								
	ø	(mm)	N.m a	N.m b	in.Lb a	in.Lb b	(mm) a	(mm) b
• Valves: bronze, st.st, AISI 316L	1/2	15	100	5	880	44	30*	8
	3/4	20	100	5	880	44	30*	8
	1	25	120	5	1060	44	30*	10
	1" 1/4	32	120	5	1060	44	36	10
	1" 1/2	40	150	5	1320	44	46	10
	2	50	150	5	1320	44	46	10
	2" 1/2	65	200	5	1770	44	46	10

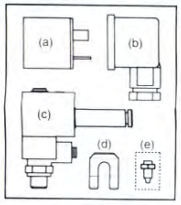
* Ø 50 bronze : a = 30

	CATALOGUE NUMBER - CODES		
	ø	(mm)	• Disc seal (1) + washer (2) + disc nut (3) + seal (4)
• Valves: bronze, st.st, AISI 316L	1/2	15	C131204
	3/4	20	C131205
	1	25	C131206
	1" 1/4	32	C131207
	1" 1/2	40	C131208
	2	50	C131209
	2" 1/2	65	C131622

Serie - Series
189 banjo

Messa in servizio - Instalación - Installatie
ELETTROVALVOLA DI COMANDO A MONTAGGIO DIRETTO
corpo filettato G1/8 e raccordo istantaneo tubo Ø 4mm est
ELECTROVALVULA DE MANDO CON IMPLANTACION DIRECTA
cuerpo roscado G1/8 y enchufe rápido para tubo Ø 4mm
DIRECT MONTEERBAAR MAGNEETVENTIEL
G1/8 poortaansluiting, insteekkoppeling Ø 4 mm ext.

3/2



IT

IMBALLAGGIO

In sacchetto di plastica:

a - Bobina
b - Connettore
c - Corpo elettrovalvola
d - Clip
e - Riduttore di scarico non montato (accessorio)

ES

SUMINISTRO

En bolsa de plástico :

a - Bobina
b - Conector
c - Cuerpo de la electroválvula
d - Clip
e - Reductor de escape sin montar (accesorio)

NL

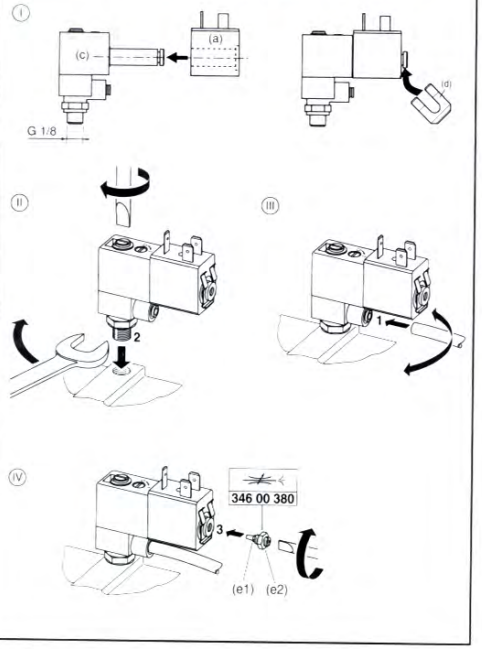
VERPAKKING

In een plastic verpakking :

a - Spoel
b - Stekker
c - Magneetventielbehuizing
d - Clip
e - Niet-gemonteerd smoorventiel (accessoire)

APPLICAZIONI
APLICACIONES
APPLICATIONS

MONTAGGIO - MONTAJE - MONTAGE



FR

APPLICATIONS

Electrovanne compacte prévue pour implantation directe sur un actionneur (vérins simple effet, vannes, etc ...). Grande flexibilité d'adaptation grâce aux possibilités d'orientation sur 360° du corps de l'électrovanne, de l'orifice d'alimentation (1), de la bobine et du connecteur.
Utilisation sur air ou gaz neutres

INSTALLATION

I - Montage de la bobine et du clips de **verrouillage**
II - **Implantation de l'électrovanne par l'orifice d'utilisation (2) à l'aide d'une clé plate de 14 ou par tournevis.**
III - Choix de l'orientation et raccordement de l'arrivée de pression sur orifice (1) par tube souple Ø4mm ext.
IV - Montage du réducteur d'échappement livré avec l'électrovanne ou fourni séparément en accessoire code 346 00 380
- Serrer dans l'orifice 3 (Ø M5) la vis (e1) du réducteur jusqu'en butée, puis dévisser pour augmenter le débit d'échappement **sans jamais dépasser 3 tours** (débit maxi obtenu à partir d'1 tour)
- Bloquer le contre-écrou (e2) avec une clé plate de 8 mm
- Mise sous pression, puis essai
- Affiner le réglage en fonction du débit **d'échappement souhaité**
- ***Le réglage du réducteur doit obligatoirement s'effectuer hors pression.***

RACCORDEMENT ELECTRIQUE

Bobine orientable sur 360°.
Le raccordement électrique s'effectue par connecteur débrochable normalisé 3 broches (2 + masse) avec CM8 (Pg 9P).
Connecteur orientable à 180°.
Connecteur avec visualisation et protection électrique intégrées ou avec câble raccordé long. 2m, sur demande, nous consulter.
Electrovanne prévue pour une mise sous tension permanente dans les limites de température ambiante maximale (60°C).
Courant alternatif 50 Hz ou 60 Hz ou courant continu.
Avant mise sous tension, vérifier la concordance de tension entre bobine et réseau d'alimentation.
Bobine proposée en pièces de rechange
Electrovanne équipée d'une commande manuelle auxiliaire à position maintenue à commande par tournevis.

GB

APPLICATIONS

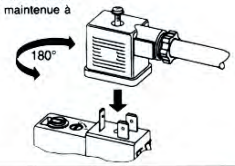
Solenoid valve of compact design for direct installation on an actuator (single-acting cylinder, valve etc.). **Mounting facilitated by 360° rotation capability of valve body, supply port (1), coil and connector.**
For use with neutral gases and air.

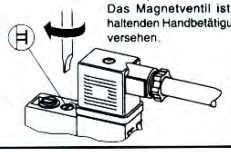
INSTALLATION

I - Fit coil and retaining clip.
II - Install solenoid valve in load port (2) with a 14mm open end wrench or screwdriver.
III - Orientate valve and connect 4mm O.D. **pressure supply hose to port (1).**
IV - Fit exhaust reducer supplied with valve or separately (code 346 00 380).
- Screw fitting (e1) into port 3 **(M5) of the** reducer until it bottoms, then unscrew it **by not more than three turns** to increase the exhaust flow (maximum flow obtained after one turn).
- Tighten locknut (e2) with an 8mm open end wrench.
- Pressurize then test.
- Adjust to obtain the required flow rate.
- **The reducer must only be adjusted when unpressurised.**

ELECTRICAL CONNECTION

Coil rotatable through 360°.
Electrical connection by standard 3-pin spade plug (two power terminals + earth) with CM8 (Pg 9P).
Connector rotatable through 180°.
Connector complete with integral display and protection system, or 2m lead on request (consult us).
Valve designed for continuous duty at upper ambient temperature limit (60°C).
Operates on DC or 50Hz or 60Hz AC.
Before energizing, check that line voltage matches coil voltage rating.
Coil available as a spare part.
Valve features a screwdriver-type locking manual operator.





DE

ANWENDUNG

Kompaktes Steuerventil zur direkten Montage auf einem pneumatischen Antrieb (einfachwirkender Zylinder, Ventil usw.). Einfache Montage, da das Ventilgehäuse, der Versorgungsanschluß (1), der Magnet und die Gerätesteckdose um 360° drehbar sind.
Zum Einsatz mit Luft oder neutralen Gasen.

MONTAGE

I - Setzen Sie den Magnet ein und befestigen Sie den Clip.
II - Schrauben Sie das Magnetventil mit dem Verbraucheranschluß (2) mit Hilfe eines Gabelschlüssels, Schlüsselweite 14, oder eines Schraubendrehers in das Anschlußgewinde des pneum. Antriebes.
III - Positionieren Sie das Ventil und schließen Sie den Druckanschluß (1) mit einem flexiblen Schlauch, 4 mm Ø außen, an.
IV - Montieren Sie entweder die beigefügte Auslaßdrossel oder die als Zubehör separat gelieferte Auslaßdrossel (Bestell-Code 346 00 380) in Anschluß (3).
- **Drehen Sie die Schraube (e1) der Auslaßdrossel bis zum Anschlag in das Gewinde (3) (Ø M5) ein und lösen Sie sie anschließend wieder mit nicht mehr als 3 Umdrehungen,** um den Entlüftungsdurchfluß zu erhöhen (der max. Durchfluß wird bereits nach 1 Umdrehung erreicht).
- **Befestigen Sie die Sicherungsmutter (e2)** mit einem Gabelschlüssel, SW 8 mm.
- Beaufschlagen Sie das Ventil mit Druck und überprüfen Sie die Funktionsweise.
- Führen Sie eine Feineinstellung durch, um den gewünschten Durchfluß zu erhalten.
Die Auslaßdrossel darf nur im drucklosen Zustand eingestellt werden.

ELEKTRISCHER ANSCHLUSS

Um 360° drehbarer Magnet :
Elektrischer Anschluß über 3 polige Gerätesteckdose (2 Leiter + Masse) mit Pg 9P (CM 8).
Um 180° umsetzbare Gerätesteckdose:
Gerätesteckdose mit Leuchtdiode und Schutzbeschaltung oder Kabel 2m lang (auf Anfrage).
Das Ventil ist für Dauerspannung bei der angegebenen maximal zulässigen Umgebungstemperatur ausgelegt (60°C).
Wechselstrom 50/60 Hz oder Gleichstrom.
Überprüfen Sie bitte vor der Inbetriebsetzung, ob die Spulen- und Versorgungsspannung übereinstimmen.
Ersatzspule lieferbar.
Das Magnetventil ist mit einer selbsthaltenden Handbetätigung mit Schlitzachse versehen.

P. max. = 10 bar

MATERIAL SAFETY DATA SHEET

Print

MAGNALUBE-G PTFE/PETROLEUM GREASE

MANUFACTURER:
SAUNDERS ENTERPRISES, INC.
11-51 44TH ROAD
LONG ISLAND CITY, N.Y. 11101

EMERGENCY HEALTH INFORMATION: (718) 729-1000
EMERGENCY SPILL INFORMATION: (718) 729-2628
OTHER PRODUCT SAFETY INFO: (718) 729-2671

COMPOSITION/INFORMATION ON INGREDIENTS	CAS NUMBER	PERCENTAGE
LUBRICATING BASE OIL SEVERELY REFINED PETROLEUM DISTILLATE ACGIH-TLV-5MG/M CUBED1OMG/M3 (MIST) ACGIH STEL	* SEE BELOW	78%
ORGANIC POLYUREA THICKENER (TSCA PROPRIETY COMPOUND EPA FILE #26847 NON-HAZARDOUS)		22%
PTFE	#9002-84-0	

*THE BASE OIL MAY BE A MIXTURIE OF ANY OF THE FOLLOWING: CAS 64741884, CAS 64741895, CAS 64741964, CAS 64741975, CAS 64742014, CAS 64742525, CAS 64742536, CAS 64742547, CAS 64742627, CAS 64742650, OR CAS 72623837.

COMPOSITION COMMENT

ALL THE COMPONENTS OF THIS MATERIAL ARE ON THE TOXIC SUBSTANCES CONTROL ACT CHEMICAL SUBSTANCES INVENTORY.

THIS PRODUCT FITS THE ACGIH DEFINITION FOR MINERAL OIL MIST. THE ACGIH TLV IS 5 MG/M3, THE OSHA PEL IS 5 MG/M3.

HAZARDS IDENTIFICATION

POTENTIAL HEALTH EFFECTS:

EYE:
NOT EXPECTED TO CAUSE PROLONGED OR SIGNIFICANT EYE IRRITATION.

SKIN:
CONTACT WITH THE SKIN IS NOT EXPECTED TO CAUSE PROLONGED OR SIGNIFICANT IRRITATION. SKIN CONTACT MAY CAUSE DRYING OR DEFATTING OF THE SKIN. NOT EXPECTED TO BE HARMFUL TO INTERNAL ORGANS IF ABSORBED TROUGH THE SKIN.

HIGH-PRESSURE EQUIPMENT INFORMATION:
ACCIDENTAL HIGH-VELOCITY INJECTION UNDER THE SKIN OF MATERIALS OF THIS TYPE MAY RESULT IN SERIOUS INJURY. SEEK MEDICAL ATTENTION AT ONCE SHOULD AN ACCIDENT LIKE THIS OCCUR. THE INITIAL WOUND AT THE INJECTION SITE MAY NOT APPEAR TO BE SERIOUS AT FIRST; BUT, IF LEFT UNTREATED, COULD RESULT IN DISFIGUREMENT OR AMPUTATION OF THE AFFECTED PART.

INGESTION:
IF SWALLOWED, THIS SUBSTANCE IS CONSIDERED PRACTICALLY NON-TOXIC TO INTERNAL ORGANS.

INHALATION:
NOT EXPECTED TO BE HARMFUL IF INHALED. CONTAINS A PETROLEUM-BASED MINERAL PROLONGED OR REPEATED INHALATION OF OIL MIST AT AIRBORNE LEVELS ABOVE THE RECOMMENDED MINERAL OIL MIST EXPOSURE LIMIT.

SIGNS AND SYMPTOMS OF EXPOSURE:
SKIN DEFATTING: MAY INCLUDE DRYING AND REDDENING OF THE SKIN.

FIRST AID MEASURES

EYE:
NO SPECIFIC FIRST AID MEASURES ARE REQUIRED BECAUSE THIS MATERIAL IS NOT EXPECTED TO CAUSE EYE IRRITATION. AS A PRECAUTION REMOVE CONTACT LENSES, IF WORN, AND FLUSH EYES WITH WATER.
SKIN:
REMOVE CONTAMINATED CLOTHING AND SHOES. USE A WATERLESS HAND CLEANER, MINERAL OIL, OR PETROLEUM JELLY TO REMOVE THE MATERIAL THEN WASH SKIN WITH SOAP AND WATER. WASH OR CLEAN CONTAMINATED CLOTHING AND SHOES BEFORE REUSE.
INGESTION:
NO SPECIFIC FIRST AID MEASURES ARE REQUIRED BECAUSE THIS MATERIAL IS NOT EXPECTED TO BE HARMFUL IF SWALLOWED. DO NOT INDUCE VOMITING. AS A PRECAUTION, GIVE THE PERSON A GLASS OF WATER OR MILK TO DRINK AND GET MEDICAL ADVICE. NEVER GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS PERSON.
INHALATION:
IF EXPOSED TO EXCESSIVE LEVELS OF MATERIAL IN THE AIR, MOVE THE EXPOSED PERSON TO FRESH AIR. GET MEDICAL ATTENTION IF COUGHING OR RESPIRATORY DISCOMFORT OCCURS.
NOTE TO PHYSICIANS:
IN AN ACCIDENT INVOLVING HIGH-PRESSURE EQUIPMENT, THIS PRODUCT MAY BE INJECTED UNDER THE SKIN. SUCH AN ACCIDENT MAY RESULT IN A SMALL SOMETIMES BLOODLESS, PUNCTURE WOUND. HOWEVER, BECAUSE OF ITS DRIVING FORCE, MATERIAL INJECTED INTO A FI NGERTIP CAN BE DEPOSITED INTO THE PALM OF THE HAND. WITHIN 24 HOURS, THERE IS USUALLY A GREAT DEAL OF SWELLING, DISCOLORATION AND INTENSE THROBBING PAIN. IMMEDIATE TREATMENT AT A SURGICAL EMERGENCY CENTER IS RECOMMENDED.

FIRE FIGHTING MEASURES

FIRE CLASSIFICATION:
CLASSIFICATION (29 CFR 1910.1200): NOT CLASSIFIED BY OSHA AS FLAMMABLE OR COMBUSTIBLE.
FLAMMABLE PROPERTIES:
FLASH POINT: (COC) >525F (>273C)
AUTOIGNITION: NDA
FLAMMABILITY LIMITS (% BY VOLUME IN AIR): LOWER. NA UPPER: NA
EXTINGUISHING MEDIA: C02, DRY CHEMICAL, FOAM AND WATER FOG.
NFPA RATINGS: HEALTH 1, FLAMMABILITY 1, REACTIVITY 0.
FIRE FIGHTING INSTRUCTIONS:
THIS MATERIAL WILL BURN ALTHOUGH IT IS NOT EASILY IGNITED.
COMBUSTION PRODUCTS:
NORMAL COMBUSTION FORMS CARBON DIOXIDE, WATER VAPOR AND MAY PRODUCE OXIDES OF SULFUR, NITROGEN AND PHOSPHORUS. COMBUSTION MAY FORM OXIDES OF CALCIUM AND H2S. INCOMPLETE COMBUSTION CAN PRODUCE CARBON MONOXIDE.

ACCIDENTAL RELEASE MEASURES

CLEAN UP SPILLS IMMEDIATELY, OBSERVING PRECAUTIONS IN EXPOSURE CONTROLS/ PERSONAL PROTECTION SECTION.

HANDLING AND STORAGE

HANDLING & STORAGE: NO SPECIAL REQUIREMENTS.

EXPOSURE CONTROLS/PERSONAL PROTECTION

GENERAL CONSIDERATIONS:
CONSIDER THE POTENTIAL HAZARDS OF THIS MATERIAL (SEE HAZARDS IDENTIFICATION) APPLICABLE EXPOSURE LIMITS, JOB ACTIVITIES, AND OTHER SUBSTANCES IN THE WORK PLACE WHEN DESIGNING ENGINEERING CONTROLS AND SELECTING PERSONAL PROTECTIVE EQUIPMENT. IF ENGINEERING CONTROLS OR WORK PRACTICES ARE NOT ADEQUATE TO PREVENT EXPOSURE TO HARMFUL LEVELS OF THIS MATERIAL, THE PERSONAL PROTECTIVE EQUIPMENT LISTED BELOW IS RECOMMENDED. THE USER SHOULD READ AND UNDERSTAND ALL INSTRUCTIONS AND LIMITATIONS SUPPLIED WITH THE EQUIPMENT SINCE PROTECTION IS USUALLY PROVIDED FOR A LIMITED TIME OR UNDER CERTAIN CIRCUMSTANCES.

ENGINEERING CONTROLS:
USE IN A WELL-VENTILATED AREA. IF USER OPERATIONS GENERATE AN OIL MIST, USE PROCESS ENCLOSURES, LOCAL EXHAUST VENTIIATION, OR OTHER ENGINEERING CONTROLS TO CONTROL AIRBORNE LEVELS BELOW THE RECOMMENDED MINERAL OIL MIST EXPOSURE LIMITS.

PERSONAL PROTECTIVE EQUIPMENT:
EYE/FACE PROTECTION:
NO SPECIAL EYE PROTECTION IS NORMALLY REQUIRED.
SKIN PROTECTION:
WEAR PROTECTIVE CLOTHING IF ENGINEERING CONTROLS OR WORK PRACTICES ARE NOT

ADEQUATE TO PREVENT SKIN CONTACT. SELECTION OF PROTECTIVE CLOTHING MAY INCLUDE GLOVES, APRON, BOOTS, AND COMPLETE FACIAL PROTECTION DEPENDING ON OPERATIONS CONDUCTED. SUGGESTED MATERIALS FOR PROTECTIVE GLOVES INCLUDE: (NITRILE) (VITON) (SILVER SHIELD).
RESPIRATORY PROTECTION:
NO RESPIRATORY PROTECTION IS NORMALLY REQUIRED. IF USER OPERATIONS GENERATE AN OIL MIST, DETERMINE IF AIRBORNE CONCENTRATIONS ARE BELOW THE RECOMMENDED MINERAL OIL MIST EXPOSURE LIMITS. IF NOT WEAR A NIOSH APPROVED RESPIRATOR THAT PROVIDES ADEQUATE PROTECTION FROM MEASURED CONCENTRATIONS OF THIS MATERIAL. USE THE FOLLOWING ELEMENTS FOR AIR-PURIFYING RESPIRATORS: PARTICULATE.

PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL DESCRIPTION:	GREEN GREASE
p/H:	NDA
VAPOR PRESSORE:	NDA
VAPOR DENSITY:	(AIR=1)
BOILING POINT:	NDA
FREEZING POINT:	NDA
MELTING POINT:	NDA
SOLUBILITY:	SOLUBLE IN HYDROCARBON SOLVENTS; INSOLUBLE IN WATER.
SPECIFIC GRAVITY:	1.02 @ 15.6C/15.5
EVAPORATION RATE	NA
VISCOSITY:	>100 SUS @ 1OOF
PRECENT VOLATILE (VOL):	NA

STABILITY AND REACTIVITY

HAZARDOUS DECOMPOSITION PRODUCTS:
NO DATA AVAILABLE.
CHEMICAL STABILITY:
STABLE.
CONDITIONS TO AVOID:
NO DATA AVAILABLE.
INCOMPATIBILITY WITH OTHER MATERIALS:
MAY REACT WITH STRONG OXIDIZING AGENTS, SUCH AS CHLORATES, PEROXIDES, ETC.
HAZARDOUS POLYMERIZATION:
POLYMERIZATION WILL NOT OCCUR.

TOXICOLOGICAL INFORMATION

EYE EFFECTS:
THE EYE IRRITATION HAZARD IS BASED ON DATA FOR A SIMILAR MATERIAL.
SKIN EFFECTS:
THE SKIN IRRITATION HAZARD IS BASED ON DATA FOR A SIMILAR MATERIAL.
ACUTE INHALATION EFFECTS:
THE ACUTE RESPIRATORY TOXICITY IS BASED ON DATA FOR A SIMILAR MATERIAL
ADDITIONAL TOXICOLOGY INORMATION:
THIS PRODUCT CONTAINS PETROLEUM BASE OILS WHICH MAY BE REFINED BY VARIOUS PROCESSES INCLUDING SEVERE SOLVENT EXTRACTION, SEVERE HYDROCRACKING, OR SEVERE HYDROTREATING. NONE OF THE OILS REQUIRES A CANCER WARNING UNDER THE OSHA HAZARD COMMUNICATION STANDARD (29 CFR 1910,1200). THESE OILS HAVE NOT BEEN LISTED IN THE NATIONAL TOXICOLOGY PROGRAM (NTP) ANNUAL REPORT NOR HAVE THEY BEEN CLASSIFIED BY THE INTERNATIONAL AGENCY FOR RESEARCH ON CANCER (IARC) AS; CARCINOGNIC TO HUMANS (GROUP 1). PROBABLY CARCINOGENIC TO HUMANS (GROUP 2A), OR POSSIBLY CARCINOGENIC TO HUMANS (GROUP 2B).

ECOLOGICAL INFORMATION

ECOTOXICITY:
NO DATA AVAILABLE.
ENVIRONMENTAL FATE:
THIS MATERIAL IS NOT EXPECTED TO BE READILY BIODEGRADABLE.

DISPOSAL CONSIDERATIONS

OIL COLLECTION SERVICES ARE AVAILABLE FOR USED OIL RECYCLING OR DISPOSAL. PLACE CONTAMINATED MATERIALS IN CONTAINERS AND DISPOSE OF IN A MANNER CONSISTENT WITH APPLICABLE REGULATIONS. CONTACT YOUR LOCAL ENVIRONMENTAL OR HEALTH AUTHORITIES FOR APPROVED DISPOSAL OR RECYCLING METHODS.

TRANSPORT INFORMATION

TRANSPORTATION INFORMATION:
THE DESCRIPTION SHOWN MAY NOT APPLY TO ALL SHIPPING SITUATIONS. CONSULT 49CFR, OR APPROPRIATE DANGEROUS GOODS REGULATIONS, FOR ADDITIONAL DESCRIPTION REQUIREMENTS (E.G. TECHNICAL NAME AND MODE-SPECIFIC OR QUANTITY-SPECIFIC SHIPPING REQUIREMENTS.

DOT SHIPPING NAME:	NONE	DOT HARZARD CLASS:	NONE
DOT IDENTIFICATION #:	NONE	DOT PACKING GROUP:	N/A
ADDITIONAL INFO:	PETROLEUM LUBRICATING GREASE - NOT HAZARDOUS BY US DOT. ADR/RID HAZARD CLASS - NOT APPLICABLE.		

REGULATORY INFORMATION

SARA 311 CATEGORIES:	1. IMMEDIATE (ACUTE) HEALTH EFFECTS:	NO
	2. DELAYED (CHRONIC) HEALTH EFFECTS:	NO
	3. FIRE HAZARDS:	NO
	4. SUDDEN RELEASE OF PRESSURE HAZARD:	NO
	5. REACTIVITY HAZARDS:	NO

FOOD CONTACT STATUS

USDA: H-2 STATUS: THIS PRODUCT IS ACCEPTABLE TO THE USDA FOR USE AS A LUBRICATE IN OFFICIAL MEAT AND POULTRY ESTABLISHMENTS PROVIDED THERE IS NO POSSIBILITY OF THE LUBRICANT OR LUBICATED PART CONTACTING EDIBLE PRODUCTS.

OTHER INFORMATION

NFPA RATINGS: HEALTH 1; FLAMMABILITY 1, REACTIVITY 0,
HMIS RATINGS: HEALTH 1, FLAMMABILITY 1, REACTIVITY 0,
(0-LEAST, 1-SLIGHT, 2-MODERATE, 3-HIGH, 4-EXTREME, PPE: - PERSONAL PROTECTION EQUIPMENT INDEX RECOMMENDATION, CHRONIC EFFECT INDICATOR). THESE VALUES ARE OBTAINED USING THE GUIDELINES OR PUBLISHED EVALUATIONS PREPARED BY THE NATIONAL FIRE PROTECTION ASSOCIATION (NFPA) OR THE NATIONAL PAINT AND COATING ASSOCIATION (FOR HMIS RATINGS).

ABBREVIATIONS THAT MAY HAVE BEEN USED IN THIS DOCUMENT.

TLV	- THRESHOLD LIMIT VALUE	TWA	- TIME WEIGHTED AVERAGE
STEL	- SHORT-TERM EXPOSURE LIMIT	TPQ	- THRESHOLD PLANNING QUANTITY
RQ	- REPORTABLE QUANTITY	PEL	- PERMISSIBLE EXPOSURE LIMIT
C	- CEILING LIMIT	CAS	- CHEMICAL ABSTRACT SERVICE NUMBER
A1-5	- APPENDIX A CATEGORIES	0	- CHANGE HAS BEEN PROPOSED
NDA	- NO DATA AVAILABLE	NA	- NOT APPLICABLE

ISSUED: JULY 15, 2008
SUPERSEDES: SEPTEMBER 01, 2005

THE ABOVE INFORMATION IS BASED ON THE DATA OF WHICH WE ARE AWARE AND IS BELIEVED TO BE CORRECT AS OF THE DATE HEREOF. SINCE THIS INFORMATION MAY BE APPLIED UNDER CONDITIONS BEYOND OUR CONTROL AND WITH WHICH WE MAY BE UNFAMILIAR AND SINCE DATA MADE AVAILABLE SUBSEQUENT TO THE DATE HEREOF MAY SUGGEST MODIFICATION OF THE

查特生物医疗（成都）有限公司
四川省成都市郫都区（原郫县）现代工业港南片区清马路48号
400-9937-990
www.airsepcpd.com
customerservice.china@chartindustries.com

MADE IN CHINA

©2016 AirSep 公司。保留所有权利。
AirSep 有权在任何时间停止其产品,或改变其产品的价格、材料、设备、质量、描述、规格和/或工艺,恕不另行通知,也不承担进一步的义务或后果。任何此处明确声明外的权利由我们保留,如适用。

A Chart Industries Company

MN011-5 Rev C