Installation, Operation, and Maintenance Manual

Balston® Compressed Air and Gas In-Line Filters

These instructions must be thoroughly read and understood before installing and operating this product. If you have any questions or concerns, please call the Technical Services Department at 800-343-4048, 8AM to 5PM Eastern Time (North America only) or e-mail at balstontechsupport@parker.com. For other locations, please contact your local representative.

General

When properly installed on a compressed air or gas line, Balston in-line filters effectively remove oil, water, and particulate contamination from a gas supply. The quantity of oil and water and the size of the particulate contamination removed from a gas supply is dependent upon the grade of Balston filter cartridge installed in a Balston filter housing.

⚠ **Warning: Do not expose filter assemblies with plastic or nylon components to solvents, alcohols, or glycols. Exposure to these materials could cause failure of the housing. Use only non-detergent mineral base oils with housings containing polycarbonate components. Use of any other types of oils could lead to dangerous failure of the product.**

⚠ **To avoid personal injury and/or property damage resulting from over pressurizing the housing, Parker recommends that the customer install a pressure relieving device set to 125% of the maximum pressure rating of the housing.**

Filter Housing Installation

Filter housings are pressure vessels and all system connections and accessory outlets must be leak-tight. It is good practice to apply pipe sealant to the male threads before connecting the pipe to the filter ports. For all stainless steel filters, a non-galling thread lubricant must be used on the threads of the filter bowl. Any lubricant used must be compatible with the filtered media. The use of lubricant facilitates disassembly at a later time, if necessary.

For most applications, the flow direction through the filter cartridge should be from the inside-to-outside. Some Balston filters have a flow arrow indicating the flow direction from inside-to-outside through the cartridge. Other Balston filters have numbered ports. Using Port 2 as the inlet and Port 1 as the outlet will provide inside-outside flow through the filter cartridge. Using Port 1 as the inlet and Port 2 as the outlet will provide outside-inside flow through the filter cartridge.

For coalescing applications, the flow of compressed gas through the filter cartridge should be from inside-to-outside. Suspended liquids will be coalesced throughout the cartridge and will drain from the outside of the cartridge into the bowl of the filter assembly. Accumulated liquids may be drained from the filter bowl by automatic or manual drains. For more details on coalescing filtration and liquid drains, request Bulletin FNS-C.

For slip stream or bypass sampling applications, the flow through the filter housing should be from Port 1 to Port 2 (outside-to-inside). For more details on slip stream or bypass sampling applications, request information on Balston Sample Filters (Bulletin FNS-C).

For liquid filtration using a Grade X, Q or H cartridge, the flow direction through the cartridge within the housing should be outside-to-inside (Port 1 to Port 2). In these applications, a support core should be installed to support the cartridge and maintain its structural integrity. See the Replacement Parts drawing for the support core designed to fit your particular housing.

For installations where the compressed gas is sourced from an overhead line, the gas should be piped from the top of the header to the filter. In this way, excessive moisture and dirt are not gravity-fed to the filter. For installations in which long runs of piping carry filtered gas from the filter to the point of use, filters should be located as close to the point of use as possible to trap condensation and particulate which may have been picked up in the pipe.

CELL: ASSY

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Mounting bracket kits are available for most Balston filters. Some Balston filter assemblies may be pipe mounted if the size and weight of the housing and piping permit it. All fittings must be leak tight before applying gas pressure to the filter.

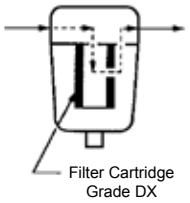
To avoid personal injury and/or property damage, factory installed bowl guards must remain on the filter assembly while in service.

Do not install 2000 Series, 914 Series, K Series or 15/80 Series filter housings in corrosive environments.

The Installation Schematic below shows typical installations for common applications in compressed air, gas, and sampling systems.

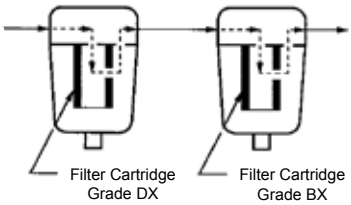
Compressed Air System

General Purpose or Pre-filtration



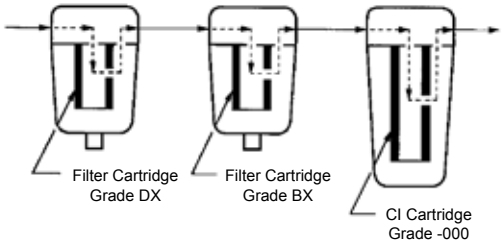
- Flow direction: inside-to-outside through the filter cartridge
- 93% particle and mist removal

Instrument Air or Other Critical Applications



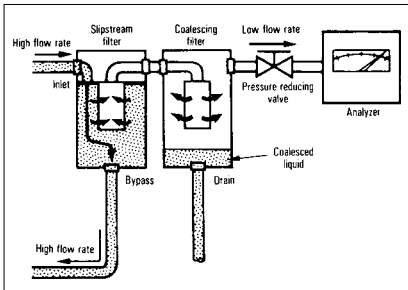
- Flow direction: inside-to-outside through the filter cartridge
- 99.99% particle and mist removal

Removal of Compressor Oil Vapor

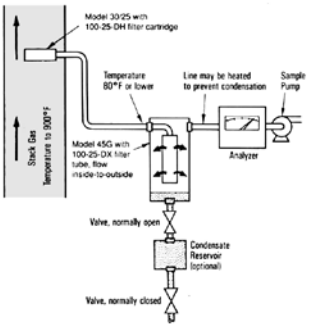


- Flow direction: inside-to-outside through each stage.
- 99.99% particle and mist removal
- Removal of trace compressor oil vapors

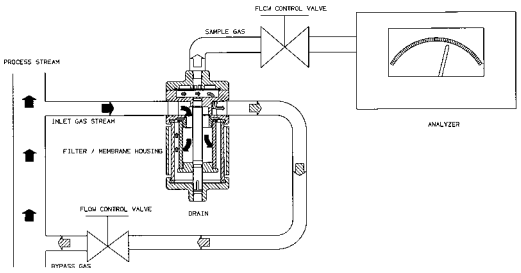
Analyzer / Sampling System



Slipstream Filtration Plus Coalescing Filtration



Stack gas sample lines usually require a high temperature solids filter at the sample point and a condensate separator immediately upstream from the analyzer



Typical location of a Balston A39/12 Series Membrane Filter in an analyzer application. For the membrane to operate correctly, there must be a bypass flow.

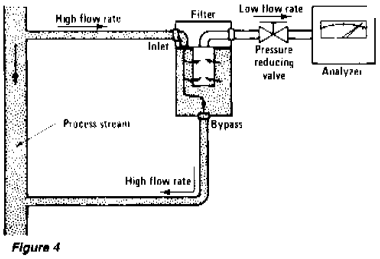
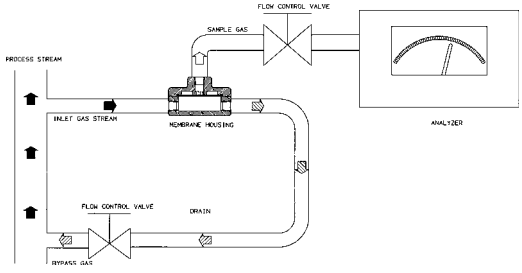


Figure 4

Slipstream or Bypass Filtration



Typical location of a Balston 39 Series Membrane Filter in an analyzer application. For the membrane to operate correctly, there must be a bypass flow.

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Operation and Maintenance

All installation and maintenance activities should be performed by suitable personnel using reasonable care. Turn off the compressed gas supply and depressurize the filter housing prior to performing routine maintenance.

Filter Cartridge Installation

Most Balston filter housings are ordered separately from Balston filter cartridges; however, some Balston compressed air filter assemblies are shipped from the factory with the filter cartridge installed. Adsorbent filter assemblies are shipped from the factory with the adsorbent filter packaged separately from the filter housing. The adsorbent cartridge must be installed into the housing prior to installing the housing on the compressed air line. This packaging procedure extends the life of the cartridge by preventing exposure to the atmosphere prior to initial use.
(Note: When using a CI-Type cartridge with a 15/80S6 housing, element retainer P/N 27900 must be substituted for the standard element retainer.)

An adhesive-backed label indicating the grade of the filter cartridge is packed inside each box of filter cartridges. This label should be affixed to the filter housing when the first filter cartridge is installed. Using the cartridge grade label will help ensure that the correct filter cartridge is used when maintenance is performed on the housing. The date that the replacement cartridge is installed may be recorded, with a marking pen or grease pencil, on the filter housing label to provide a ready reference for scheduling routine maintenance.

Balston Microfibre® filter cartridges are sealed in place by compression against a flat surface. Gaskets are not required between the filter cartridge and the filter housing. The filter cartridge is centered by guides on the housing which fit the inside diameter of the cartridge at each end. In most Balston housing designs, the filter cartridge is sealed by tightening a threaded element retainer on a tie rod. Do not use excessive force or tools on the element retainer. The filter cartridge is securely sealed by tightening the element retainer 1-1/2 to 2 turns after it first contacts the filter cartridge. (Note: In high flow, multi-cartridge housings, it may be necessary to tighten the element retainer 3 to 4 turns after contact with the filter cartridge.)

Always replace the filter bowl guard, when applicable, after servicing the Balston filter. Torque glass bowl filter assemblies to 5-7 ft/lbs.

Filter Cartridge Life

The efficiency of the Balston Microfibre filter cartridge is relatively unaffected by liquids entrained in the compressed air or gas stream. The life of the filter cartridge is determined by the increase in flow resistance caused by solids trapped within the depth of the filter cartridge. The change in pressure through the filter cartridge should be monitored while the filter is in use. The filter cartridge should be changed every 12 months. (Note: The Balston Microfibre filter cartridge cannot be cleaned by back-flushing because the solids are trapped within the depth of the cartridge, not on the surface.)

Changing filter cartridges more frequently will translate into direct energy savings and reduced operating costs. Annual electricity costs to operate a typical 100 HP compressor can be as high as $50,000. Pressure drop in the system adds to this expense. A system operating at 100 psig that is experiencing a 2 psig pressure drop through a filter, requires an additional 1% in operating energy costs or approximately $500.00+ per year.

Failure of the filter cartridge resulting from a high pressure drop or excessive solids loading may cause damage to the filter housing and/or any downstream equipment.

In many applications, the pressure drop through the filter assembly may be measured using two pressure gauges, one directly upstream from the filter assembly, and one directly downstream from the filter assembly. In compressed air filtration, however, the pressure drop through the filter assembly is difficult to measure in this way because of inaccuracies in the pressure gauges and rapid fluctuations in system pressure. For monitoring pressure drop through a compressed air filter assembly, use a differential pressure indicator. Please refer to Bulletin FNS-C for more details on the Balston Differential Pressure Indicators.

Ordering Replacement Filter Cartridges

Some Balston filter assemblies have filter cartridges installed when shipped from the factory. If filter cartridges are being ordered separately, either as replacements for an existing assembly or as an original for a new installation, specify both the size and grade of the filter cartridge. Filter cartridges for compressed air and gas filter assemblies are available in boxes of 3 (except X-Grade), 5, or 10. The size of the filter is designated by a three-digit number followed by a two digit number (e.g,100-12, 150-19, 200-80). The retention efficiency of the filter is designated by a series of letters or numbers following the size designation (e.g., 100-12-DQ, 150-19-BX, 200-80-BH).

To ensure consistent product performance and reliability use only genuine Balston replacement parts and filter cartridges.

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Ordering Filter Assembly Replacement Parts

An assembly drawing and a replacement parts list are included with each filter housing. When ordering replacement parts, order by part number and description, as detailed on the replacement parts drawing shipped with the filter. Inspect all seals when changing filter cartridges and replace as needed. Lubricate all replacement seals prior to installation. Use a lubricant which is compatible with the gas being filtered.

Accessories

Automatic Float Drains

If the filter housing is equipped with an automatic float drain, the drain is installed at the factory.

Float drains are available on select assemblies with DX or BX cartridges. They are not available for assemblies with grade CI adsorbent cartridges, grade SA sterile air cartridges, or with the smaller volume housings.

If the filter housing is not equipped with a drain, several different drain assemblies are available which may be integrated into the housing. See Bulletin FNS-C or contact your local stocking representative for details.

Drain Plugs

Some Balston Compressed Air Filter Assemblies are shipped with drain plugs for installation in the field. When installing the drain plug, wrap it with PTFE tape and install using 10 ft-lbs. of torque.

Differential Pressure Indicators (DPI)

Several Balston Compressed Air Filter Assemblies are shipped with Differential Pressure Indicators (DPIs) installed. The DPI monitors the pressure drop across the filter, and may be used to measure pressure drop across other components in the compressed air system. Differential Pressure Indicators may also be purchased as accessories for other Balston filter assemblies. Two different models of DPIs are available: 41-071 and C02-2377. More information on these products may be found in Bulletin FNS-C.

Connect the indicator to the HIGH (upstream) and LOW (downstream) sides of the line as indicated by the marking on the indicator. Some typical installations are illustrated on the last page.

The Balston Differential Pressure Indicators give a quick visual indication of the pressure drop in the line. It is not intended to be an accurate pressure gauge.

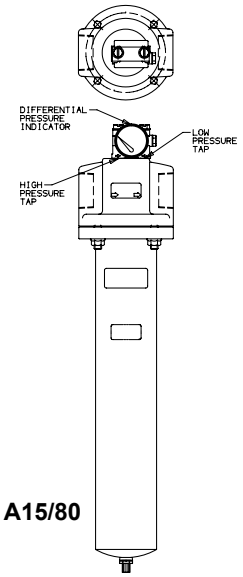
Ordering Information

Model	Ports	Maximum Pressure	Maximum Temperature
41-071	1/8" NPT	250 psig	130°F (54°C)
CO2-2377	3/8"-24 UNF (1)	300 psig	150°F (65°C)

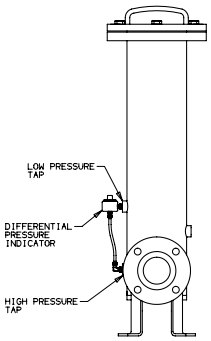
Notes:

1 If the CO2-2377 DPI is not mounted on the filter housing, a mounting block (P/N 76256) must be ordered.

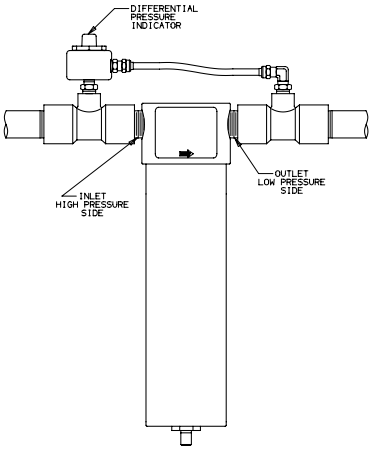
2 To ensure consistent product performance and reliability use only genuine Balston replacement parts and filter cartridges.



MODEL A15/80



K-SERIES



TYPICAL LINE MOUNTING

Parker Hannifin Corporation
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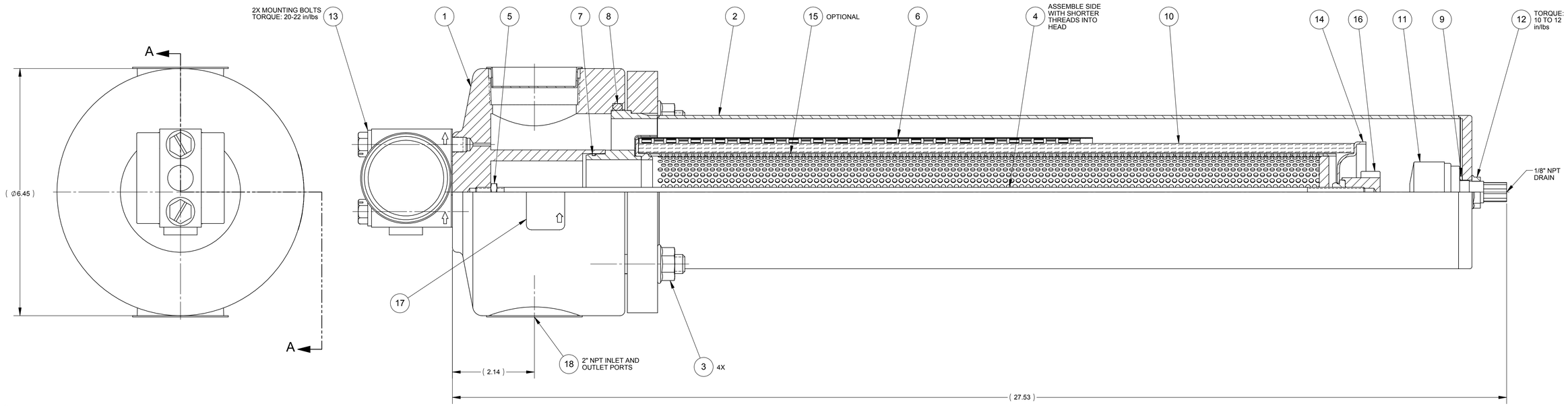
Haverhill, MA 01835-0723
Tel: 978-858-0505 Fax: 978-556-7501
www.parker.com/balston

Member of

ITEM NO.	DESCRIPTION	PART NUMBER	DWG. NO.	MATERIAL	A15/80-BX QTY.	A15/80-CX QTY.	A15/80-DX QTY.	EUA15/80-BX QTY.	EUA15/80-CX QTY.	EUA15/80-DX QTY.	
1	HEAD ASSEMBLY	15010	B-12195	ALUM./SST.	1	1	1	1	1	1	
2	BOWL ASSEMBLY	15980	B-12436	STEEL/ALUM.	1	1	1	1	1	1	
3	NUT, FLANGE 1/2-20	15151	A-12435	STEEL	4	4	4	4	4	4	
4	TIE ROD	15080	B-14022	SST.	1	1	1	1	1	1	
5	NUT, HEX 1/4-20 UNC	12707	A-11321	SST.	1	1	1	1	1	1	
6	DEMISTER ASSEMBLY	15400	B-12199	ALUM./SST.	1	1	1	1	1	1	
7	O-RING (-032)	22032-1	-------	BUNA	1	1	1	1	1	1	
8	O-RING (-347)	22148-1	-------	BUNA	1	1	1	1	1	1	- SEE NOTE 2.
9	O-RING (-209)	22974-1	-------	BUNA	1	1	1	1	1	1	
10	FILTER TUBE	BZ200-800-BXE	-------	-------	1	-	-	1	-	-	
10	FILTER TUBE	BZ200-800-CXE	-------	-------	-	1	-	-	1	-	
10	FILTER TUBE	BZ200-800-DXE	-------	-------	-	-	1	-	-	1	
11	DRAIN, AUTOMATIC	21552-2	A-11796	PLASTIC	1	1	1	1	1	1	
12	NUT	-------	A-11796	ACETAL	1	1	1	1	1	1	-INCLUDED WITH AUTO DRAIN (ITEM 11)
13	D.P.I. ASSEMBLY	C02-2376	A-19327	NYLON	1	1	1	1	1	1	
14	GROMMET/RETAINER ASSEMBLY	19939-1	A-12034	ALUM./BUNA	1	1	1	1	1	1	
15	SUPPORT CORE ASSEMBLY	SS-200-81	B-10818	SST.	1	1	1	1	1	1	-OPTIONAL
16	KNOB	19916	B-10643	ALUMINUM	1	1	1	1	1	1	
17	LABEL, PRODUCT	11138	LDSA15/80-BX	MYLAR	1	-	-	-	-	-	
17	LABEL, PRODUCT	11138	LDSA15/80-CX	MYLAR	-	1	-	-	-	-	
17	LABEL, PRODUCT	11138	LDSA15/80-DX	MYLAR	-	-	1	-	-	-	
17	LABEL, PRODUCT	A04-0073	LDSEUA15/80-BX	MYLAR	-	-	-	1	-	-	
17	LABEL, PRODUCT	A04-0073	LDSEUA15/80-CX	MYLAR	-	-	-	-	1	-	
17	LABEL, PRODUCT	A04-0073	LDSEUA15/80-DX	MYLAR	-	-	-	-	-	1	
18	PROTECTOR, THREAD 2" NPT	21206	A-11862	PLASTIC	2	2	2	2	2	2	

REVISIONS				
REV.	ECN.NO.	DESCRIPTION	NAME	DATE
W	1821	REVISED AND REDRAWN	PES	10/09



SECTION A-A
SCALE .75 : 1

NOTES:

1. ALL ASSEMBLY AND PACKAGING MUST BE PERFORMED IN ACCORDANCE WITH THE APPROPRIATE MANUFACTURING METHOD SHEET SPECIFIED FOR THIS ASSEMBLY.
2. ALL O-RINGS TO BE LUBRICATED WITH APPROVED LUBRICANT ONLY.
3. HOUSING TO BE SHIPPED WITH PLASTIC THREAD PROTECTORS (ITEM 18) INSTALLED.
4. PRESSURE RATING: 250 psig (16 barg) AT 130°F (55°C).

REPLACEMENT SEAL SETS					
SEAL SET NUMBER	MAT'L	CONSISTS OF			
		NO.	QTY	PART NO.	
22148	BUNA	7	1	22032-1	
		8	1	22148-1	
		9	1	22950-4	
		9	1	22974-1	
22146	VITON	7	1	22035-1	
		8	1	22146-1	
		9	1	22092-2	
		9	1	22975-1	
19939	ALUM./BUNA	14	1	19939-1	
19941	ALUM./VITON	14	1	19941-1	

THIRD ANGLE PROJECTION

TOLERANCES EXCEPT AS NOTED

.XX ±.015
X.Xmm ±.38mm
.XXX ±.005
XX.XXmm ±.13mm
ANGULAR ±1°
63 SURFACE ROUGHNESS OR BETTER

REMOVE ALL BURRS AND SHARP EDGES

ENG. APVD.: DATE:
CHKD BY: DATE:
DRAWN BY: PES DATE: 10/21/09
MATL: SEE PARTS LIST

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BALSTON

TITLE: FILTER ASSEMBLY
FINISH: -------
MODEL NO.: A15/80-[ ]
SCALE: 0.75:1
SHEET: 1 OF 1
P/N: SEE PARTS LIST
DWG.NO.: D-12430