MRWS SERIES

MAINTENANCE MANUAL

MURPHY-RODGERS, INC.

Manufacturers of

DUST COLLECTORS & AIR POLLUTION CONTROL EQUIPMENT

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WARNING

PIPING

ONLY PIPE AND FITTINGS FOR USE WITH DUST COLLECTION SYSTEMS SHOULD BE USED. LIGHT GAUGE OR INFERIOR DUCTING COLLAPSES UNDER PRESSURE.

CAUTION:

THE USE OF PCV (OR OTHER TYPES OF PLASTIC TUBING) SHOULD BE AVOIDED, DUE TO STATIC ELECTRICITY POTENTIAL, WHICH COULD RESULT IN SPARKS AND A HIGH RISK OF FIRE

FORWARD

With proper care and attention your Murphy-Rodgers Dust Collector will provide maximum performance and long service at minimum cost. We are sure that it will prove to be a most valued asset to your Company.

Our interest in your equipment does not end with its sale. We are interested in constantly maintaining contact with your Company. Should you have any questions or problems or wish to have your equipment up-dated, by all means contact us and we will be most pleased to have our Representative drop in and discuss these questions with you.

The purpose of this manual is to assist you in keeping your Dust Collecting Equipment in the best possible operating and mechanical condition at all times. It is our endeavor to manufacture the finest equipment available and to be able to solve your dust collecting problems.

If you have any special requirements, no matter how small or large, contact us and we will be pleased to supply the information on the equipment you require.

MODEL NUMBER _____

SERIAL NUMBER _____

USER _____

DEALER _____

DATE OF PURCHASE _____

HANDLING

Due to the fact that a large bulk and relatively thin walls are involved, more than average care should be exercised in the unloading and lifting of our dust collector units. It is easy to create unsightly dents, or cause other damage to sheet metal parts. It is exceedingly difficult to repair such damage or to restore it to its original appearance.

The factory has tried to make the handling of the units as simple as possible. Lifting lugs, drilled holes in the companion rings (can be used by removing bolt), and other aids are attached where feasible. It is important to locate and use these aids whenever the unit is unloaded, lifted, or otherwise handled.

It is strongly urged that these lifting aids be used, rather than attempting to use slings or other devices wrapped around the unit. One misplaced sling that causes the unit to slip and be damaged could result in many hours of rework, and in most cases, a very unsightly installation.

NOTE: NEVER, UNDER ANY CIRCUMSTANCES, use the **EXHAUSTER FAN SHAFT** to lift the equipment as it could cause severe damage to exhauster fan.

INTRODUCTION

The purpose of this manual is to provide operation and maintenance instructions for the MURPHY-RODGERS CARTRIDGE TYPE DUST COLLECTORS.

These instructions apply to all dust collectors utilizing reverse jet air to clean the cartridges. In general, the models of dust collectors covered by these instructions are the Models MRW, MRWJ and MRWS.

It will be necessary to go through all the instructions, and perform the operations applicable to your collector.

General Description

The Murphy-Rodgers Cartridge Type Dust Collector is a well designed, dust-tight unit which contains cartridges attached to a tube sheet. The tube sheet seals the filter section from the dirty-air plenum. The clean-air plenum section is also equipped with an exhaust opening for the cleaned air.

Cartridges

Prior to shipment, all cartridges are generally installed in the units at the Factory. Cartridges are fabricated from the filter media best suited for the temperature, moisture, and resistance characteristics of the air stream and the particles to be separated. Many types of filter media are available.

Inlet and Hopper Section

The collector is designed to accept various configurations of hoppers, or other arrangements. The material inlet delivers the dust laden air to the inlet section and deposits the heavy particles into the waste area. Then the air moves through the cartridges, where the "fines" are removed by the filter media. The hopper outlet can be adapted to rotary air locks, slide gates, or other controls.

Piping

Only pipe and fittings for use with dust collection systems should be used. Light gauge or inferior ducting will collapse under pressure.

The use of PVC (or other type of plastic tubing) should be avoided due to static electricity potential which could result in sparks and a high risk of fire.

SAFETY PROCEDURES

General

The Murphy-Rodgers Collector has been designed in such a manner as to present a minimum of safety hazards to the operator or maintenance personnel. Built-in safeguards should be provided, either from the Factory (as EXTRA equipment), or by the users own manufacture.

1. Access ladders must be caged, and platforms must have rails and kickplates.
2. Belt guards on exhauster fan assemblies must be totally enclosed.

Safety Warning on Metallic Sanding Applications

MURPHY-RODGERS Dust Collectors should be used either for aluminum or non-aluminum sanding — NEVER BOTH. NEVER USE A MURPHY-RODGERS DUST COLLECTOR FOR BOTH ALUMINUM AND SPARK-GENERATING MATERIALS.

Although these statements refer to aluminum, the user should be aware that magnesium and other materials can also be hazardous.

The user should familiarize himself with the National Fire Protection Agency Code No. 65-1975, which discusses the hazards of aluminum dust.

We repeat this warning — NEVER USE A MURPHY-RODGERS DUST COLLECTOR FOR BOTH ALUMINUM AND SPARK-GENERATING MATERIALS.

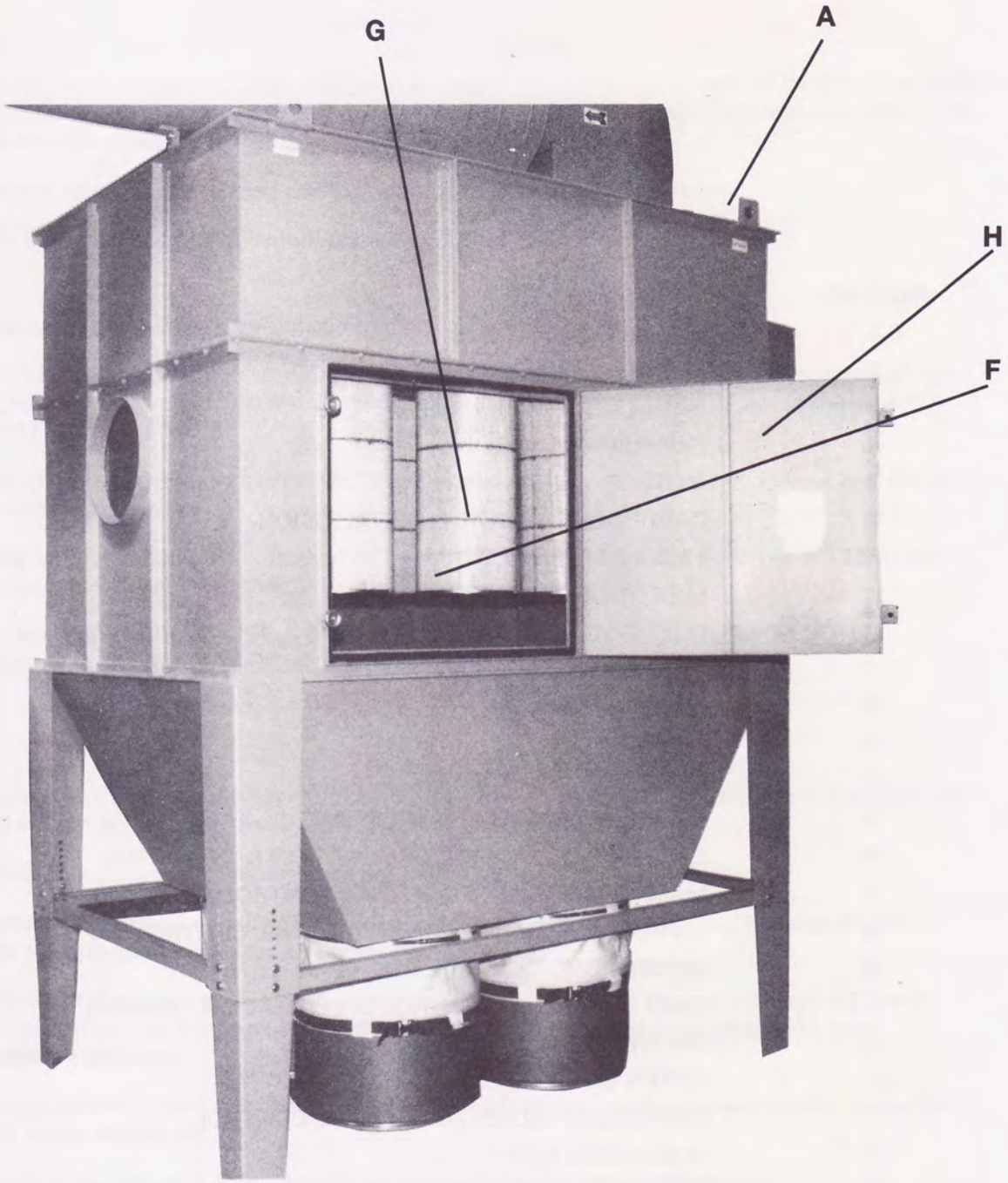
Precautions

Personnel involved with Murphy-Rodgers Collectors must be thoroughly familiar with the equipment operation, and should be alert for any unsafe conditions.

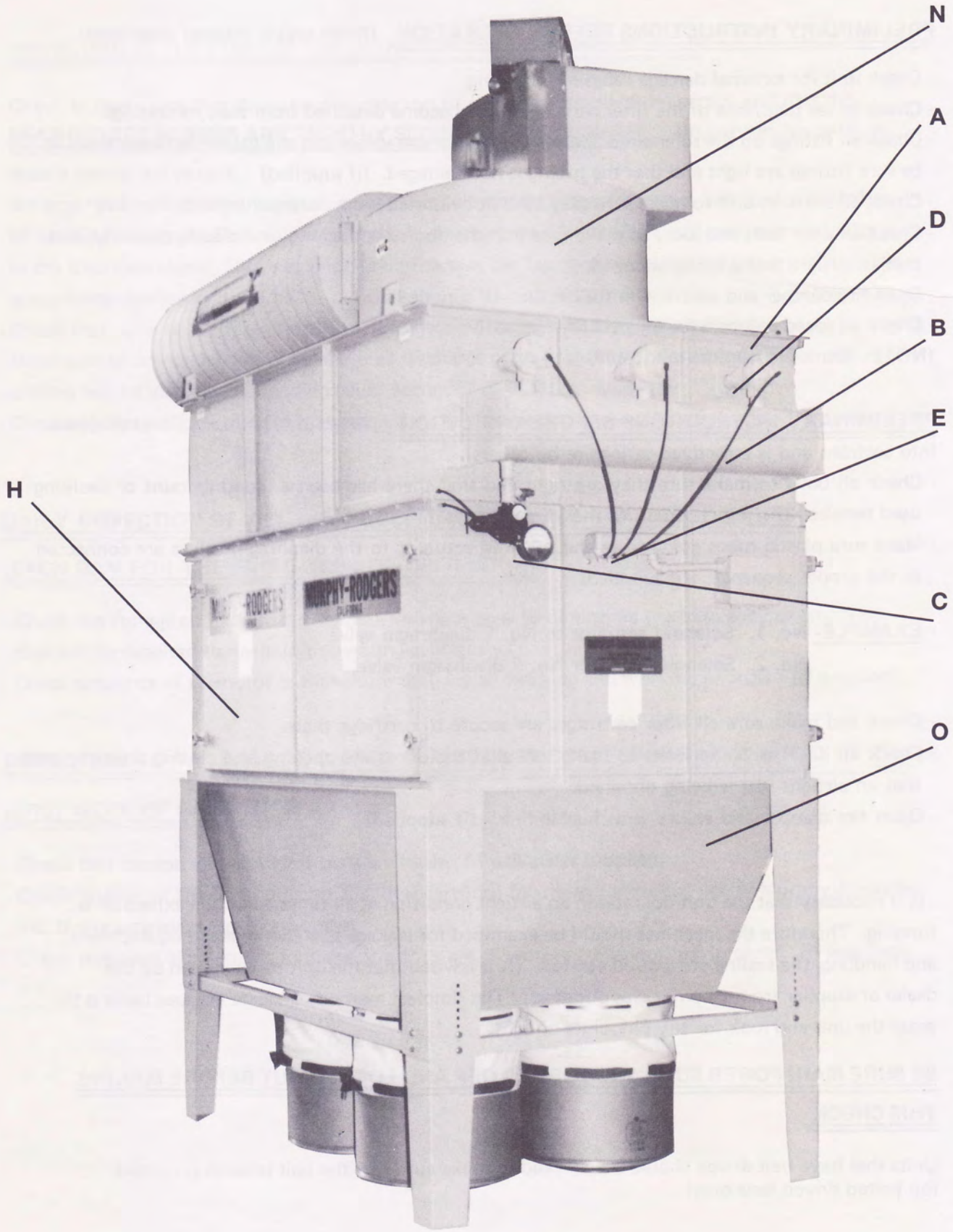
1. Only competent, authorized personnel should have access to the equipment.
2. Maintenance crews should consist of two men. Never allow personnel to work inside the unit alone. Prior to start-up, account for all personnel.
3. All areas beneath the collector should be restricted to all authorized personnel when overhead work is being performed. All personnel in the area must wear safety gear complying with accepted safety standards.
4. Objects being lifted by crane or hoist must be securely fastened, and must be handled according to accepted safety standards.
5. Before entering the collector, these additional precautions should be observed.
   A. Turn OFF all electrical circuits, including the timing controls. Lock switches in the "OFF" position and remove all fuses.
   B. Wear adequate protective gear, including a respirator if needed.
   C. Make certain that all air flow has ceased.
   D. Check the internal temperature for safe level.
   E. Keep inside the walkway area when working on bags and cages.

READ ENTIRE MANUAL
BEFORE
ASSEMBLY OR OPERATION

CONTENTS



A – LIFTING LUGS (LOCATED WHERE REQUIRED)
B – SURGE CHAMBER COMPLETE WITH 1" INLET AND PRESSURE GAUGE
C – MAGNEHELIC GAUGE
D – DIAPHRAGM VALVES (CONNECTED TO ORIFICE TUBES)
E – FACTORY INSTALLED SOLENOID VALVE ENCLOSURE (ACTUATED BY SOLID STATE TIMER)
F – QUICK REMOVAL OF CARTRIDGES. NO TOOLS REQUIRED.
G – CARTRIDGE
H – ACCESS DOOR
N – VARIOUS SIZES OF FAN/MOTOR ASSEMBLIES (TOP MOUNTED OR SIDE MOUNTED)
O – ENTRY TRANSITION TO BARREL STORAGE (OTHER TYPES AVAILABLE)


N
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MURPHY-RODGERS

PRELIMINARY INSTRUCTIONS BEFORE OPERATION (When unit is shipped assembled)

- Check unit for external damage caused in shipping.
- Check to see that none of the filter cartridges have become detached from their mountings.
- Check all fittings on the solenoid actuators and diaphragm valves and the tubing between them to be sure fittings are tight and that the tubing is not damaged. (if supplied)
- Check all bolts on unit to make sure they have not vibrated loose during shipment.
- Check all door seals and locks to make sure that the doors are opening and closing properly, and that an airtight seal is being obtained.
- Open fire damper and secure with fusible link, (if supplied).
- Check all speed reducers for oil level (if supplied).

(NOTE: Some are lifetime lubricated)

PRELIMINARY INSTRUCTIONS BEFORE OPERATION (When unit is shipped broken-down into sections and is assembled at jobsite by others).

- Check all bolts to make sure they are tight and that there has been a good amount of caulking used between the joints to ensure the joint is airtight.
- Make sure plastic tubes going from the solenoid actuator to the diaphragm valves are connected in the proper sequence. (if supplied)

- **EXAMPLE** - No. 1. Solenoid actuator to No. 1 diaphragm valve.
  No. 2. Solenoid actuator No. 2 diaphragm valve.

- Check and make sure all filter cartridges are secure to cartridge plate.
- Check all door seals and locks to make sure that the doors are opening and closing properly, and that an airtight seal is being obtained.
- Open fire damper and secure with fusible link. (if supplied)

It is necessary that the unit operates in an airtight condition at all times when the exhauster is running. Therefore the machines should be examined for leakage as sometimes during shipment and handling, the sealing compound can fail. (It is advised that the unit be examined by the dealer or supplier from whom it was obtained). The simplest method to locate obvious leaks is to enter the unit and look for any pinpoints of light.

BE SURE MAIN POWER SUPPLY IS TURNED OFF AND LOCKED OUT BEFORE MAKING THIS CHECK

Units that have belt drives should be checked to make sure that the belt tension is correct. (on belted driven fans only)

INSPECTION AT THE START OF THE OPERATION FOR ALL MRWS MODELS

- Check to make sure that the exhauster rotation (if exhauster supplied) is correct, and that the **BEARING SET SCREWS ARE TIGHTLY SECURED TO THE SHAFT**. Do not run fan until all duct is connected to unit.
- An amp reading should immediately be taken on all motors when the unit is first started and after all duct is connected. This will indicate the highest amp reading the unit will ever operate under as the filters are clean. This is a check to ensure that the fan speeds, etc. are correct and the motor is not being overloaded.
- Check that none of the filter cartridges have become loosened during shipment.
- Make sure all access doors and the material discharge gates (if supplied) are closed. If not, the suction will be lost and overloading could occur.
- Check sequence of solenoids to make sure they are all working and working in order. (if supplied)

DAILY INSPECTION OF ALL DUST COLLECTORS IN THE CARTRIDGE SERIES (EACH DAY FOR THE FIRST WEEK OF OPERATION)

- Check the storage container (if supplied) for waste level to determine the frequency of emptying that will be required to keep unit operating efficiently.
- Check sequence of solenoids to make sure they are all working and working in order. (if supplied)

INSPECTION TO TAKE PLACE ON ALL SERIES DUST COLLECTORS AT THE END OF THE FIRST WEEK OF OPERATION

- Check belt tension and correct if belts are loose. (if exhauster supplied)
- Check interior of the dust collector for filter cartridge failure and abrasion, notify Murphy-Rodgers, Inc. if any cartridges are unduly worn.
- Check sequence of solenoids to make sure they are all working and working in order. (if supplied)

INSPECTION TO TAKE PLACE AT THE END OF THE FIRST MONTH OF OPERATION

- Check belt tension and correct if belts are loose (if exhauster supplied)
- Check the interior of the dust collector for filter cartridge failure and abrasion, notify Murphy-Rodgers, Inc. if any cartridges are unduly worn.
- Check sequence of solenoids to make sure they are all working and working in order (if supplied.)
- Check all bearings (but **DO NOT** overgrease.)

SEMI-ANNUAL INSPECTION

- Check all filter cartridges for wear and ensure they are in place.
- Lubricate all electric motors, speed reducers, exhaust fans, etc., as per manufacturer's instructions (if supplied.) **DO NOT** overgrease. It should be noted that some speed reducers are lifetime lubricated.
- Remove and thoroughly clean all filter cartridges or replace, if required.

(also see page 20)

EXHAUSTER (if supplied)

1. Periodic check of anchor bolts and bearings should be made for vibration damage.
2. Fans driven by electric motors, through V-belts, the tension should be checked and properly maintained. If the belts show wear, they should be replaced.
3. Exhauster bearings should be periodically lubricated in accordance with the bearing manufacturer's standards. Care should be taken **not to over lubricate** the bearings to the extent of damaging grease retainer rings. Bearings should be removed, inspected and replaced as soon as undue shaft vibration becomes apparent.

DIRECT DRIVE FAN PACKS (if supplied)

1. Select proper sized heater elements to match amperage as stated on motor manufacturer's nameplate. **NEVER** install oversized heaters as this can cause motor failure and will nullify motor warranty.
2. On initial start-up with clean filters and a minimum of ducting on fan inlet, overload heaters may kick out. Should this occur, you must restrict the airflow on the air inlet or outlet opening sizes by installing a blast gate complete with locking device. This is usually a temporary measure until filters build up a dust cake and create the required resistance.

MOTORS

- Periodic check of motors should be made and they should be lubricated as per manufacturer's standards.

REMOVAL AND INSTALLATION PROCEDURES OF CARTRIDGE FILTERS FOR THE MURPHY-RODGERS MODEL MRWS - WITH COMPRESSED AIR CLEANING

- Compressed air cleaning of cartridge is done by means of the pulsing using a venturi assembly.

REMOVAL OF CARTRIDGES

- Remove cartridge retaining knob.
- Remove filter.

INSTALLATION OF CARTRIDGES

- Slide top of cartridge on carefully making sure not to damage sealing gasket on top of cartridge.
- Install rubber washer, steel washer, and retaining knob.

FILTER CARTRIDGES - 2 Styles Used: **open both ends**
closed one end

- Frequent checks of filter cartridge wear and deterioration should be made, worn or damaged cartridges should be replaced.
- Approximately once a year, all filter cartridges should be removed and thoroughly cleaned, and then replaced. The only sure way of determining cleaning frequency is the installation of a magnehelic gauge. A magnehelic reading, rising above a pre-determined level after normal cleaning, indicates that the filter cartridges should be removed and cleaned.

ELECTRICAL EQUIPMENT

- All electrical equipment should be maintained in accordance with instructions of the original manufacturer.

DUST COLLECTOR HOUSING

- The dust collector housing must be maintained in an air and water tight condition. Protection against corrosion is required in the form of periodic re-painting as units are painted one coat only.

COLLECTOR SUPPORTS (if supplied)

- Periodic re-painting is required as supports are painted one coat only.

DOORS

- Access doors, inspection doors and waste material discharge gate, (if supplied) must be kept closed at all times when the unit is in operation as suction will be lost if they are not. Door seals and gasket seals should be regularly checked and replaced if worn or deteriorated.

SPARE PARTS

- To avoid loss in operation time due to unexpected or accidental mechanical failure, we recommend that the Customer maintain a supply of spare parts in his own warehouse.

PLEASE NOTE: Always use Model and Serial number of unit when ordering parts. Also state name of part.

For example:

1. Filter cartridges (state open end or closed one end)
2. Fusible links for fire damper
3. V-Belts
4. Bearings (state size)
5. Companion seal
6. Cartridge retainer knobs
7. Fan Wheel (when fan is included)
8. Solenoid actuator valve kit (for continuous cleaning only)
9. Diaphragm valve kit (for continuous cleaning only)
10. Barrel Boot (with barrel storage only)
11. Fan Shaft Bearings
    Drive Belts (required only with belt drive fan)

GUARANTEE

All equipment is guaranteed as per the original manufacturer's guarantee and warranty. All parts fabricated by Murphy-Rodgers are guaranteed for workmanship for a period of one (1) year on cost of parts, NOT replacement labor. All parts fabricated by Murphy-Rodgers, Inc. are guaranteed providing all inspections have been performed as per these instructions. If on site service is required, a service charge will be applicable.

The guarantee is valid only if the invoice is paid within 30 days of due date.

MORE COMMON PROBLEMS AND THEIR CURES

PROBLEMS	CURES
1. Dust coming through the discharge of the unit.	..... Check the filter cartridges which may have become loose on the mountings. Remove and check cartridge for damage. Replace properly if no damage is found.
2. Inadequate Suction.	..... Fan is running with wrong rotation, electric wiring should be reversed, as the fan will only be approximately 50% efficient when running backwards.
	..... Exhaust fan belts loose. These should be tightened to correct tension.
	..... Exhaust fan belts loose. These should be tightened to correct tension.
	..... If access door is open, then door should be closed.
	..... Filter Cartridges are dirty. Check air supply and solenoid actuator. (if supplied)
	..... Check diaphragm valves to make sure they are working properly. (if supplied)
	..... There is an obstruction in the dust-work system leading to the unit.
	..... Hole in unit (patch).
3. NO Suction	..... Fire damper on unit, if so equipped has dropped closed. (if supplied)
	..... A fuse has blown.
	..... Broken or loose drive belts on the fan motor.
4. Unit is unduly noisy	..... Broken or damaged fan blade (if supplied)
	..... Fan is out of balance (if supplied)
	..... There are loose mounting bolts on unit.
	..... There is a loose fan blade (if supplied)
	..... There are loose guards.

NOTE:

You cannot empty storage container (55 gal. barrel) while your unit is running, unless unit is supplied with a combination screw conveyor and air lock or just an air lock at discharge of unit.

SEQUENTIAL CONTROLLER SOLID STATE (if supplied)

NOTE:

If sequential controller is not Solid State, please check accompanying wiring diagram.

FUNCTION

Controls are provided to adjust the length of time between loads being energized (Pulse Frequency) and the length of time that the load is energized (Pulse Duration).

OPERATION

The Sequential Controller provides timed sequential energization of connected loads. When power is applied to the controller, the "Power On" light emitting diode (LED) provides visual indication and load number 1 is immediately energized "output 1" LED provides visual indication of this event. The load will remain energized for the length of time, as indicated by the setting of the Pulse Duration control. Note that the calibrated dials are for approximate settings only, and if exact times are required, they must be measured.

Load number 2 will automatically be energized at some time interval after load number 1 has been de-energized. This length of time will be as indicated by the setting of the "Pulse Frequency" control. "Output" 2 LED will provide visual indication that this event is occuring. The controller will continue to sequentially energize the loads until the power is removed.

"POWER ON" light (red light one for each sequence) is found inside panel box.

MAINTENANCE

CAUTION - Remove power before performing any maintenance on controller.

The sequential controller was designed to require minimum maintenance. Operator maintenance should be limited to replacement of the input fuse and the changing of the number of sequenced steps. No attempt should be made to tamper with components mounted on the printed circuit board. If certain basic problems occur, however, the operator may be able to restore the unit to an operable condition by using the following checklist:

- Check all wiring to controller terminal block for loose or incorrect connections.
- Turn power "on" and check line voltage between neutral and hot. Line voltage must be within the range of 105 to 135, 50 - 60 Hertz.

- If "power on" indicator fails to light— turn all power "off" and check input fuse.

- Turn power "on" for each of the following visual checks:

A. If controller fails to sequence— turn power "off" and check jumper or remote contact (if used) between terminals neutral and hot.

B. If controller fails to sequence thru the desired number of steps—turn power "off" and check

the black jumper wire between arm and position number.

C. If controller fails to energize any one output, but output indicator lights for that position— turn power "off" and check both the wiring to that load and the load itself.

IMPROPER OPERATION

- **Faulty Control Circuit:** Check the electrical system by energizing the solenoid. A metallic click signifies solenoid is operating. Absence of the click indicates loss of power supply. Check for loose or blown fuses, open circuited or ground coil, broken lead wires or splice.

- **Burned Out Coil:** Check for open-circuited coil. Replace coil if necessary.

- **Low Voltage:** Check voltage across the coil leads. Voltage must be at least 85% of nameplate rating.

- **Incorrect Pressure:** Check valve pressure. Pressure to valve must be within range specified on name-plate.

- **Excessive Leakage:** Disassemble valve and clean all parts. Replace parts that are worn or damaged with a complete spare parts kit for best results. (Also see following pages for more information)

Models DNC-T2003 thru DNC-T2032

Operating Logic:

Input power is applied to the control at all times. For "On Demand" cleaning, closure of isolated control contacts (pressure switch) initiates the "Off" time. At the end of the off time the control energizes solenoid no. 1 to provide a cleaning pulse; it then transfers to the next compartment initiating the off time again. This cycle continues until the control contacts open. The control remembers the last output activated and will activate the next one in line when the control contacts reclose. For "continuous" cleaning the pressure switch terminals should be shorted together. A program wire allows for field selection of number of outputs required.

Specifications:

Time Delay:

On Time: Adjustable from 50 to 500 milliseconds
Off Time: Range A—adjustable from 1.5 to 30 seconds
Range B—adjustable from 8.5 to 180 seconds
Repeatability: ± 3% over temperature and voltage ranges

Input:

Operating Voltage: 105 to 135 volts A.C. 50/60 Hz

Output:

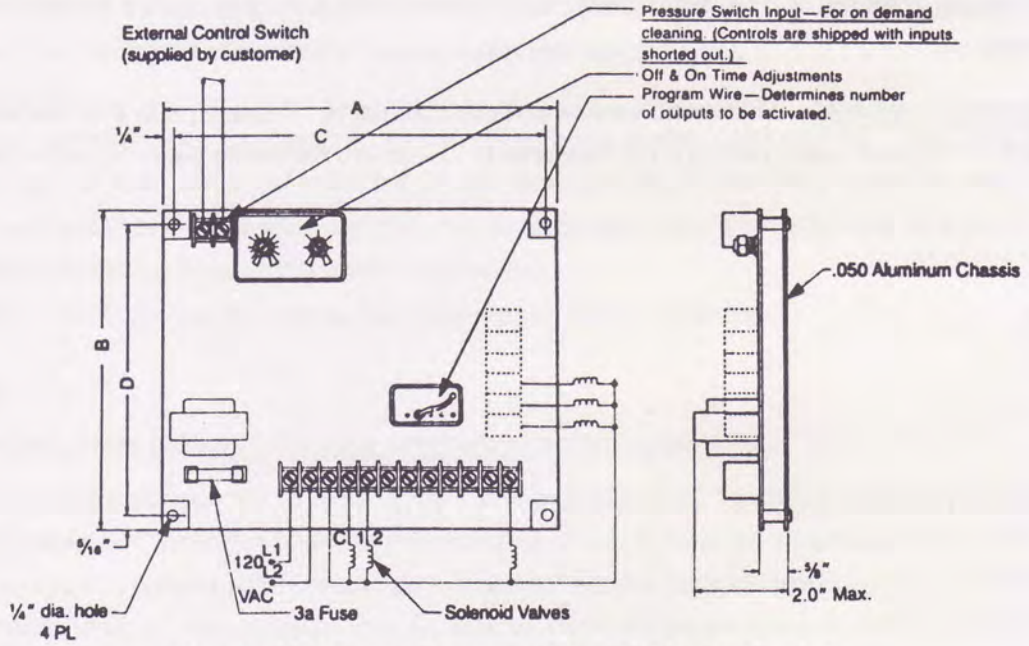
Type: Solid-state switch rated at 200 VA max. per output. Number of outputs to be activated is determined by position of program wire.

Protection:

Transient Voltage: 30 joule varistor
Short Circuit Protection: 3 amp. fuse

Environmental:

Operating Temperature: – 40° to 150°F (– 40°C to 66°C)



Size And Hook-up Diagram of Dust Collector Controls,
(Exact location of components varies from model to model)

Model	Off Time Sec.	Max. No. of Outputs	Dimensions-In. A	B	C	D	Size of NEMA 4 Enclosure Reqd	Programmable No. of Outputs
DNC-T2003-A10	1.5-30	3	6¾"	4⅞"	6¼"	4¼"	8" x 6" x 3½"	1-3
DNC-T2003-B10	8-180							
DNC-T2006-A10	1.5-30	6	8¾"	6⅞"	8¼"	6¼"	10" x 8" x 4"	2-6
DNC-T2006-B10	8-180							
DNC-T2010-A10	1.5-30	10	8¾"	6⅞"	8¼"	6¼"	10" x 8" x 4"	3-10
DNC-T2010-B10	8-180							
DNC-T2020-A10	1.5-30	20	10¾"	8⅞"	10¼"	8¼"	12" x 10" x 5"	11-20
DNC-T2020-B10	8-180							
DNC-T2032-A10	1.5-30	32	12¾"	10⅞"	12¼"	10¼"	14" x 12" x 6"	17-32
DNC-T2032-B10	8-180							

UL Recognized Component: File #E65038
CSA Certified File #LR33434

1. TIMING

1.1 ON-TIME has an adjustable range from MIN (+0%, -50%) to MAX (+10%, -0%). SEE TABLE A.

1.2 OFF-TIME has an adjustable range from MIN (+0%, -50%) to MAX (+10%, -0%). SEE TABLE A.

1.3 Timing Repeatability: ±3% over temperature and voltage ranges.

1.4 Operating Temp. Range: -40°F to 150°F (-40°C to 66°C).

1.5 Indicators: Numbered LEDS indicate activated output

1.6 Reset: Number of outputs to be activated (3 to 10), is determined by position of program wire.

2. INPUT

2.1 Operating Voltage: 105-135 VAC, 50/60 HZ.

2.2 Power Consumption: 1.1 VA, plus load.

2.3 Circuit Protection: 3 AMP fuse for short circuit, a 30 Joule Varistor for transient voltage suppression.

3. OUTPUT

3.1 Solid State Switch: 200 WATTS or VA at maximum duty cycle.

3.2 Pressure Switch Term: Provides an open circuit voltage of approx. 5 VDC and a short circuit current of approx. 25 mADC.

4. OPERATING LOGIC

4.1 The T2010 is a ten (10) output sequencer, cycle timer, with adjustable ON-TIME and OFF-TIME.

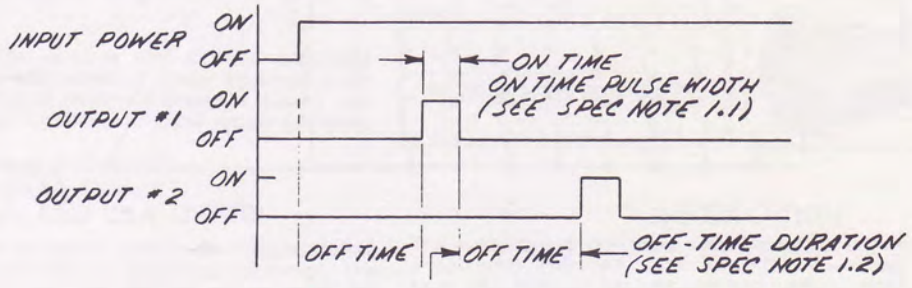
4.2 Upon voltage application to terminals L1 and L2 with pressure switch contacts closed, the OFF-TIME is initiated.

4.3 At the end of the preset OFF-TIME the control will enable output #1 for the duration of the ON-TIME.

4.4 The control will cycle in sequence thru all selected outputs until such time when the pressure switch contacts open.

4.5 If the pressure switch contacts open during the ON-TIME, the control will allow normal time out.

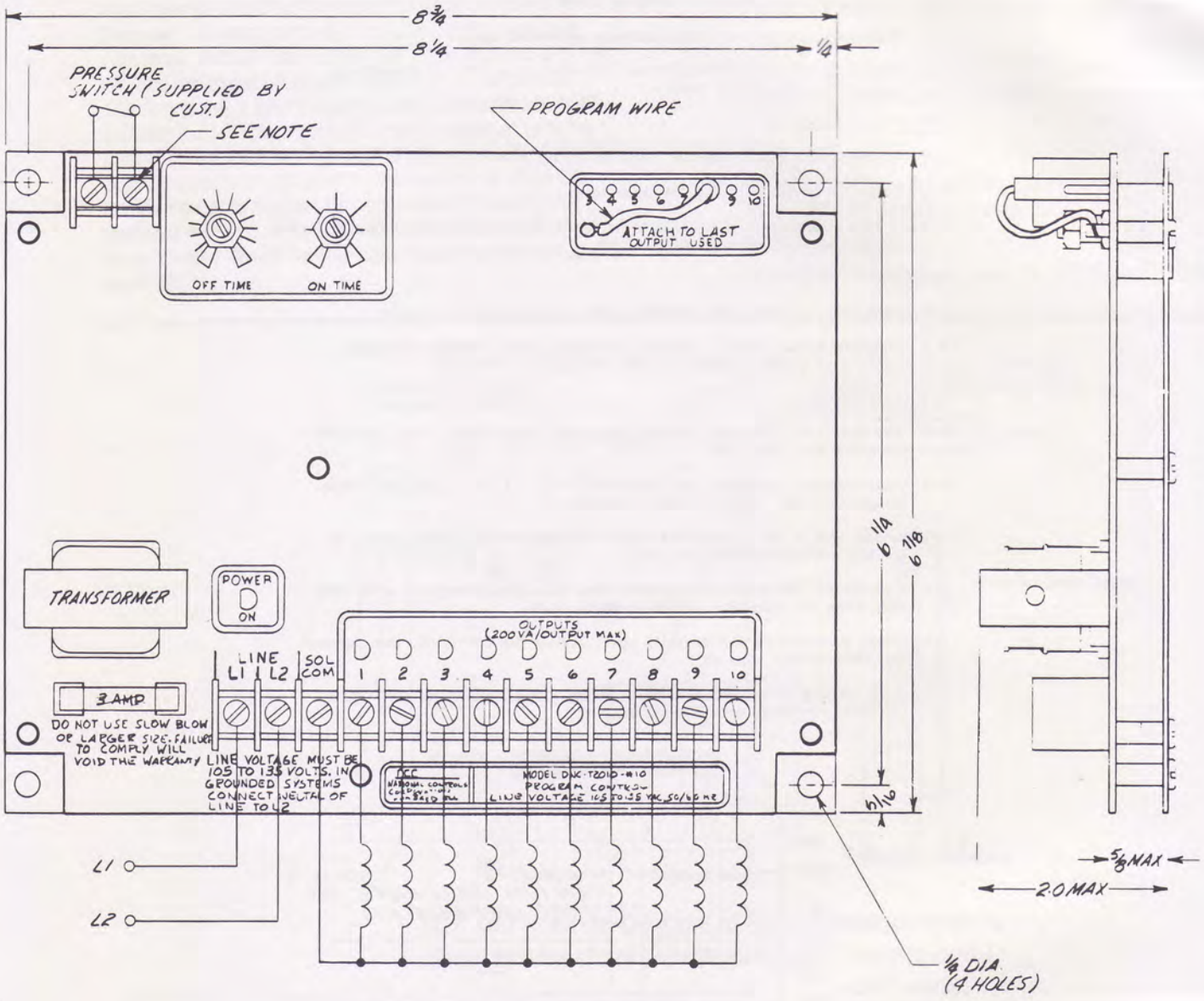
4.6 Upon closing of the contacts the control will commence its OFF-TIME ON-TIME sequence on the next output.



NOTE : Unit is shipped with jumper across pressure switch terminal block.

TABLE A

MODEL	OFF-TIME (SEC)	ON-TIME (SEC)
DNC-T2010-A10	1.5 - 30	.05 - .5
DNC-T2010-B10	8.5 - 180	.05 - .5



SYM.	REVISION	DATE	BY	CH.	SYM.	REVISION	DATE	BY	CH.

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NCC
NATIONAL CONTROLS CORPORATION
LOMBARD, ILL. 60148

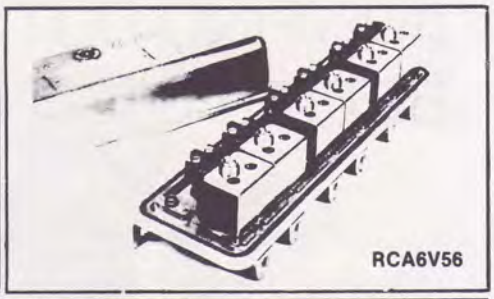
DR. Downing 11/1/82	DATE 8.2.82	CH. [illegible] 10/13/82	APP. [illegible] 11/11/82
SCALE FULL	TOLERANCES NOT SPECIFIED	DECIMAL ± .005	FRACTIONAL ± .010 ANGULAR ± 1°
PART NAME DUST COLLECTOR CONTROL SPECIFICATION		PART NO. DNC-T2010-#10	REV.

SOLENOID PILOT VALVES

These solenoid pilot valves are specifically designed for dust collector applications. Single valves for through panel mounting, valves mounted in a Nema 4 enclosure or valves mounted in an explosion proof enclosure (UL and CSA listed) are all available and tabulated below. The requirements for solenoid valves on a pulse jet dust collector common to these valves are:

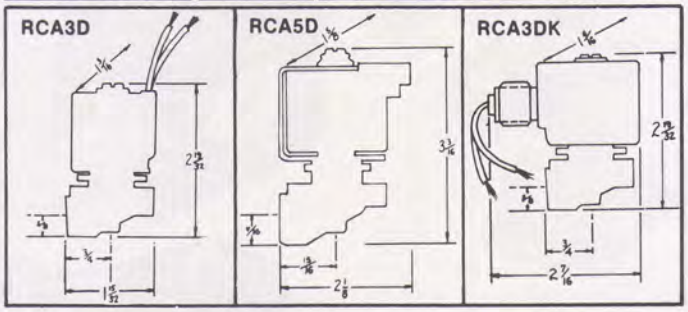
- **Only inlet connection is tapped to preclude an incorrect pipe connection.**
- **Angle configuration for superior flow characteristics.**
- **Brass enclosing tube for long service life.**
- **Screw terminals on coil eliminate terminal strip.**
- **All valves can be manually overridden.**
- **Full accessability with standard tools.**
- **Threaded collar and locking nut for through panel installation.**


RCA 3D


RCA6V56

SINGLE SOLENOID PILOT VALVES

The single solenoid pilot valves are standard with a threaded collar and locking nut to positively secure them in a through panel installation. The RCA3D has an encapsulated coil with 24 inch electrical lead wires and the RCA5D has screw terminals in the encapsulated coil for a one step electrical connection. The model RCA3DK has a one piece totally encapsulated coil/solenoid assembly including a ½" male conduit hub with 24" electrical lead wires. It is gasketed around the ferrule to achieve Nema 4 construction. The valves are standard with a brass enclosing tube chosen to work with the 430 solenoid grade stainless steel plunger because the dissimilarity of materials prevents galling and extends valve life even on dry air common to pulse jet air systems.



SPECIFICATIONS

MODEL	PIPE	ORIFICE	CV	PRESSURE	COIL	ELECTRICAL CONNECTIONS	WEIGHT
RCA3D	1/8"	1/8"	.32	110	B-P	24" leads	.75 lbs.
RCA3DK	1/8"	1/8"	.32	110	K-P	24" leads	.75 lbs.
RCA5D	1/4"	3/16"	.68	110	B-P	Screw terminals	.75 lbs.

Buna N elastomers are standard and suitable for air temperatures to 180 F.

NEMA 4 ENCLOSURES WITH UP TO 6 SOLENOID VALVES

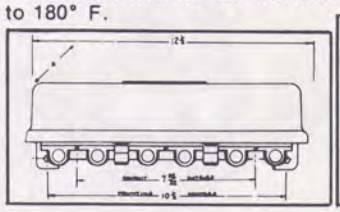
The model RCA6V56 is a Nema 4 aluminum enclosure with up to 6 integral solenoid valves. The last digit in the model number indicates the number of solenoid valves (example, RCA6V56 , indicates six solenoid valves). The enclosure has a bell type cover and all joints are sealed. The coils are encapsulated and have screw terminals for one step electrical connections. The enclosure has two, ¾" tapped conduit connections. Each solenoid valve has a ¼" FNPT inlet connection, 3/16" orifice, rated 110 PSI and exhausts to atmosphere. The enclosure is machined to accept a standard heater kit.

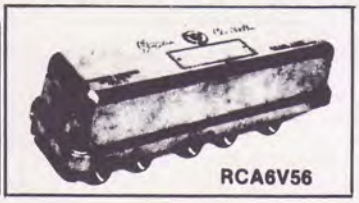
The standard construction of the valve is with a brass enclosing tube chosen to work with the 430 solenoid grade stainless steel plunger because the dissimilarity of materials prevents galling and extends valve life even on dry air common to pulse jet air systems.

SPECIFICATIONS

PIPE	ORIFICE	CV	PRESSURE	COIL
1/4"	3/16"	.68	110	B-P

Electrical characteristics — Page 4
Buna N elastomers are standard and suitable for air temperatures to 180° F.




RCA6V56

EXPLOSION PROOF — UL AND CSA LISTED

Model RCA5V3 is an aluminum enclosure with three integral solenoid pilot valves suitable for application in hazardous locations. The RCA5V5 defines a similar box with five integral valves. Both the RCA5V3 and RCA5V5 have UL and CSA listings, including locations defined as Class II, Groups E, F, and G, the most common in dust collector applications. The coils are encapsulated and have integral screw terminals eliminating the need for a terminal strip. The RCA5V3 has a ½" conduit connection and the RCA5V5 has a ¾" conduit connection. Each solenoid has a ¼" FNPT inlet connection and exhausts to atmosphere.

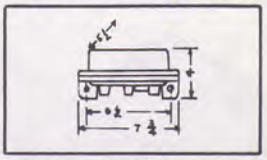
SPECIFICATIONS

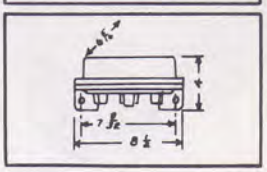
PIPE	ORIFICE	CV	PRESSURE	COIL
1/4"	3/16"	.68	110	B-P

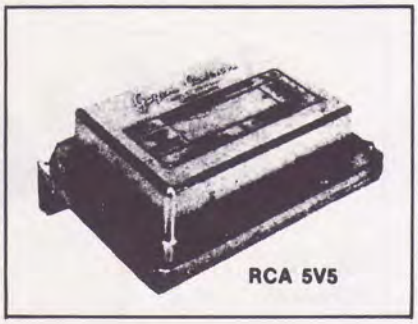
Standard construction is with Buna N elastomers suitable for air temperatures to 180° F.

INSTALLATION

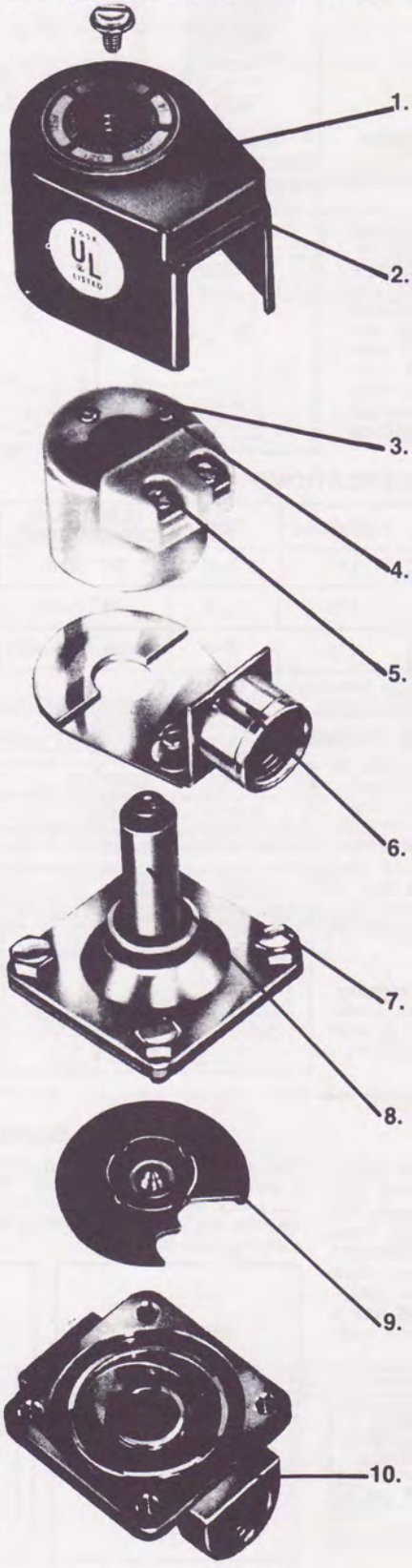
The assembly is complete with mounting lugs to secure it against a bulkhead with two bolts. The ideal mounting arrangement is to have the coils in the vertical and upright position. This position shields the outlet preventing rain or other foreign substances from settling into the valve.






RCA 5V5

MEET A **GOYEN CONTROL** AND FIND OUT WHY GOYEN MAKES BETTER SOLENOID VALVES.



1. **Junction Box**—special design for electrical connection eliminates need of separate purchase of junction or splicing box, plus the installation time.

2. **LEXAN® Resin Enclosure**—this General Electric material makes a high-impact housing for junction box that does not scratch, rust or deteriorate.

3. **Encapsulated Coil**—gives protection from mechanical and environmental damage.

4. **Coil Design**—rated for continuous duty.

5. **Molded Terminal Design**—eliminates wire twisting, wire nuts or special connections. Simply strip wires, and insert under locking terminal screws.

6. **Conduit Assembly**—eliminates the separate purchase and assembly costs of a conduit connection to the junction box.

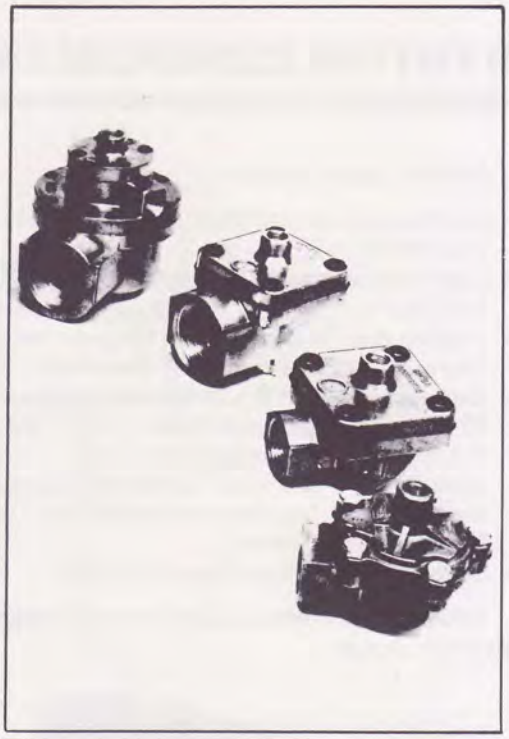
7. **Standardized Fasteners**—Eliminates the need for special tools for servicing.

8. **Forged Brass Core Tube**—Chosen to work with the 430 solenoid-grade stainless steel plunger because the dissimilarity of materials prevents galling and extends valve life, even under adverse conditions.

9. **O-Ring Diaphragm**—Unit molded diaphragm with O-Ring centers diaphragm in valve body and eliminates wicking.

10. **Forged Brass Body**—resists distortion from pipe strain and avoids porosity problems.

DIAPHRAGM VALVES for REMOTE CONTROL



DESCRIPTION

The aluminum angle body diaphragm valves are specifically designed to meet the requirements of pulse jet type dust collectors. These valves have only two moving parts, diaphragm and spring and are of an angle body configuration to deliver the maximum amount of energy to the blow pipe. For a long service life at the fast operating speeds of this application, the valves are designed to accomplish minimum diaphragm deflection yet achieve full flow. Diaphragm life is further extended by locating the bleed passage in the clamped portion of the diaphragm. A special seat is rivited to the diaphragm so that seat wear does not affect diaphragm life.

OPERATION

The valves are standard with an internal bleed that utilizes system air for operation. When the pilot connection is opened the diaphragm assumes the open position. When the pilot connection is closed the diaphragm is closed. The speed of operation is dependent on the pilot arrangement and all sizes through 2½" can achieve full opening in less than 10 milliseconds.

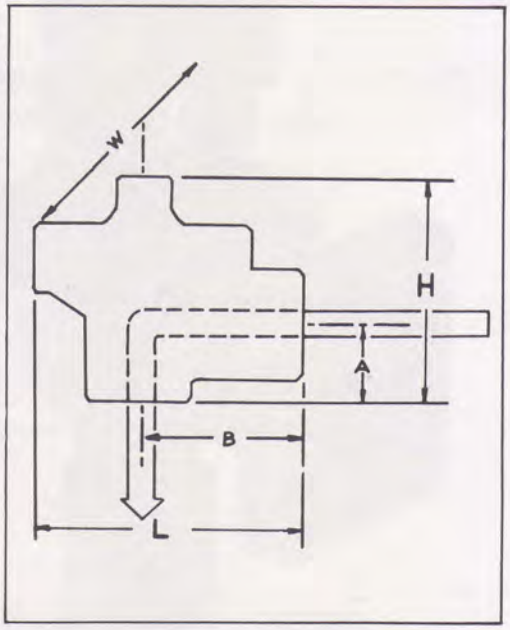
The large valves, size 40, 50 and 62 are of double diaphragm construction utilizing a pilot diaphragm to control the main diaphragm. The pilot diaphragm opens per the paragraph above which then unloads the main diaphragm through a 3/8" orifice. This double diaphragm operation provides, even in larger size valves, the fast operation necessary for dust collector applications and permits control with small pilots.

SPECIFICATIONS

MODEL ①	CV	CONNECTIONS. INLET FNPT	CONNECTIONS. OUTLET FNPT	PILOT CONNECTION FNPT	MINIMUM PILOT VALVE ORIFICE	MINIMUM② PILOT TUBE ID INCHES
RCA20	10.5	③	③	1/8"	1/8"	.125
RCA20T	10.5	3/4"	3/4"	1/8"	1/8"	.125
RCA25T	17.1	1"	1"	1/4"	3/16"	.160
RCA25TD	17.1	1"	④	1/4"	3/16"	.160
RCA25TH	17.1	1"	⑤	1/4"	3/16"	.160
RCA32T	23.0	1 1/2"	1 1/2"	1/4"	3/16"	.160
RCA40T	35.0	1 1/2"	1 1/2"	1/4"	1/8"	.125
RCA50T	62.0	2"	2	1/4"	1/8"	.125
RCA62T	78.0	2 1/2"	2 1/2"	1/4"	1/8"	.125

SBWP = 125 PSI Maximum air temperature for Buna N elastomers is 180• F.

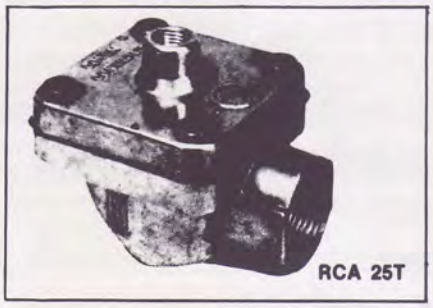
① Elastomers are Buna N—For Viton add suffix "V" to model number.
② Mechanical to electrical on time increases with tube ID. To 3' of recommended tube there is little effect on the ratio of mechanical to electrical on time.
③ 3/4" straight OD for dresser style couplings.
④ 1 5/16" straight OD for dresser style couplings.
⑤ 1 5/16" OD hose barb.

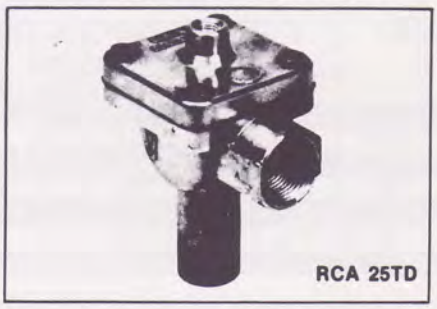


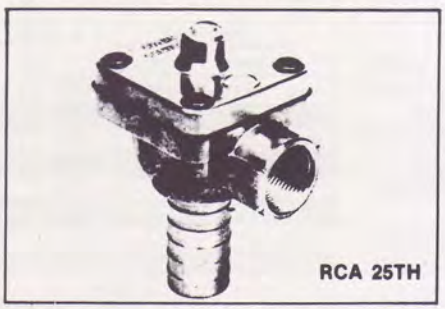
MODEL ①	DIMENSIONS A	B	L	H	W
RCA20	6 9/16	3 11/16	5 1/2	7 7/8	3 1/2
RCA20T	25/32	2 3/16	3 31/32	3 1/32	3 1/2
RCA25T	13/16	2 3/8	4.0	3.0	3 1/4
RCA25TD	3 5/16	2 3/8	4.0	5 1/2	3 1/4
RCA25TH	3 5/16	2 3/8	4.0	5 1/2	3 1/4
RCA32T	1 3/16	2 1/2	4 3/16	3 21/32	3 1/4
RCA40T	1 1/4	3 15/16	5 1/8	4 13/16	4 3/8
RCA50T	1 7/8	4 5/8	8 5/16	6 13/16	7 1/4
RCA62T	1 7/8	4 5/8	8 5/16	6 13/32	7 1/4

INSTALLATION

The diaphragm valves may be mounted in any position, but good engineering practice would position the outlet directly into the blow pipe. The connection from the diaphragm to the solenoid affects the time sequence and opening times. The recommendations of the tube size and pilot orifice are guides for achieving a rapid pressure rise in the blow pipe but, it is the total system that ultimately determines the performance of the combination. Tube lengths to 3' have little effect on response times. Specific recommendations or test summaries on tube size, length and pilot combinations can be supplied on request.


RCA 25T


RCA 25TD

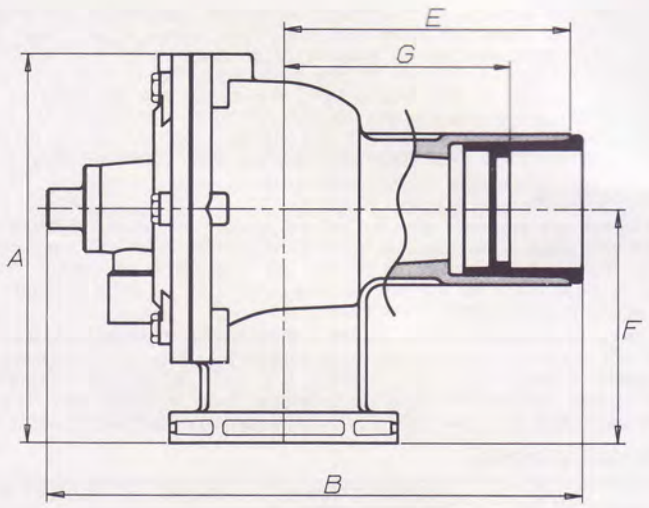

RCA 25TH

SYSTEM COMPONENTS

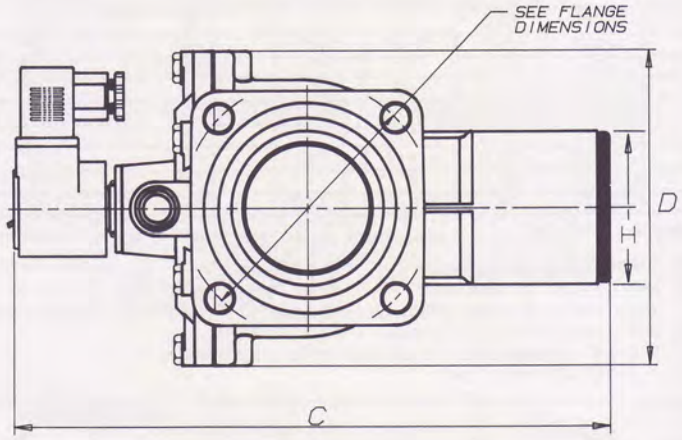
The 'FS' system consists of:

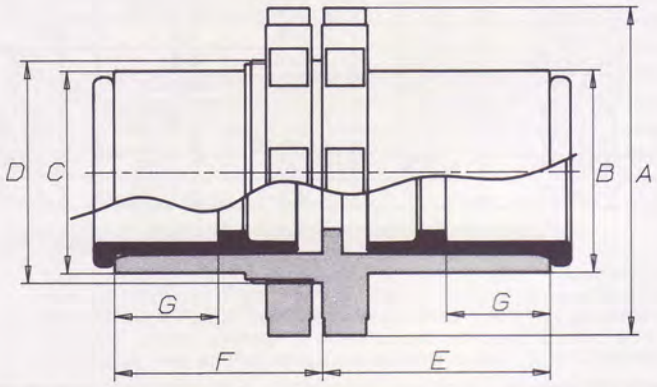
- Diaphragm valves with integral pilot CAC25FS [1''], CAC45FS [1 1/2''']
- Diaphragm valves with remote pilot RCAC25FS [1''], RCAC45FS [1-1/2''']
- Weld-on steel flanges to match flange on inlet of valve
- Baghouse wall seals to suit 'FS' valve outlet
- Baghouse wall seals to suit blowtube outside diameter
- Blowtube seals to accommodate 3/4'', 1'' and 1-1/2'' pipe
- Bulkhead fittings to accommodate 3/4'', 1'' and 1-1/2'' dia. pipes. The 3/4'' and the 1'' versions are identical except for the inner seals. The fittings are BH25SS [1'' version] and BH45SS [1-1/2'' version].
- Seals can be specified in Buna-N or Viton.

Installation alternatives using the above components are shown on page 8.



CAC25FS





Model		Pipe Size*		A	B	C	D	E	F	G		H	Flange Dimensions		
		Inlet	Outlet							Min	Max		PCD	Hole ϕ	Thickness
CAC/RCAC 25FS	mm	40	25	124	162	210	83	96	81	65	75	46	85	8.8	12.5
	ins	1-1/2	1	4.88	6.38	8.27	3.27	3.78	3.19	2.56	2.95	1.81	3.35	0.35	0.49
CAC/RCAC 45FS	mm	50	40	159	220	244	126	118	96	93	103	62	101.8	11.3	12.5
	ins	2	1-1/2	6.26	8.66	9.61	4.96	4.65	3.78	3.66	4.05	2.44	4.01	0.44	0.49
BH25SS	mm	25	25	78	48	48	54	55	50	15	25				
	ins	1	1	3.07	1.89	1.89	2.13	2.17	1.97	0.59	0.98				
BH45SS	mm	40	40	97	63	63	70	55	50	15	25				
	ins	1-1/2	1-1/2	3.82	2.48	2.48	2.76	2.17	1.97	0.59	0.98				

Recommended Bolt ϕ	
25FS	8mm or 5/16 ins.
45FS	10mm or 3/8 ins.

NOTE: ALL PIPE/BLOWTUBE SIZES REFERRED TO IN THIS CATALOGUE ARE TO ANSI B36. 10/SCHEDULE 40 SPECIFICATION

INSTALLATION ALTERNATIVES

The components of the 'FS' system have been designed to offer maximum layout flexibility.

The diagrams on this page show 3 possibilities. For convenience, each diagram features a valve with integral pilot, mounted on a round header and the header external to the baghouse. Other possibilities include:

- remote pilots
- square headers
- header mounted inside the baghouse

Fig 1 shows an installation where the header size, positioning, and wall bracing are designed so as to allow the valve outlet to pass through the baghouse wall. By keeping the hole clearance through the baghouse wall to a maximum of 3/16" [5mm] an effective seal is obtained using the flexible lip seal depicted. The positioning of this seal is on the outside of the baghouse wall when the baghouse is under negative pressure, and on the inside of the baghouse wall when the baghouse is under positive pressure. By this means, the pressure differential across the baghouse wall helps to maintain the seal. The blowtube is pushed into the valve outlet where the dynamic seal does its job. The blowtube, of course, has to be anchored at the end remote from the valve.

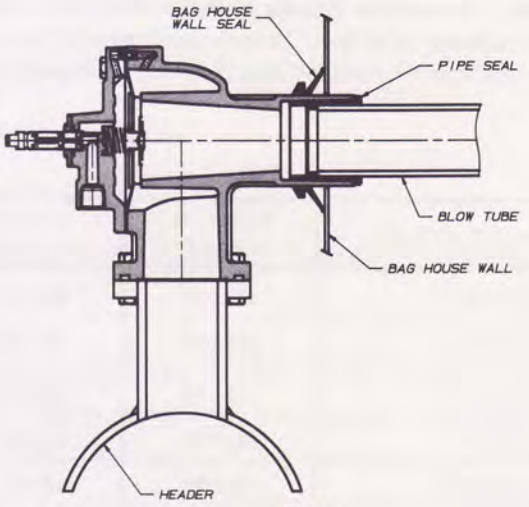


Fig 1

Fig 2 depicts a similar arrangement, but in this case, the header is further from the baghouse wall, and the blowtube passes right through the baghouse wall. The seal at the baghouse wall is similar to the seal described in previous layout, but is naturally of smaller size to suit the outside diameter of the blowtube.

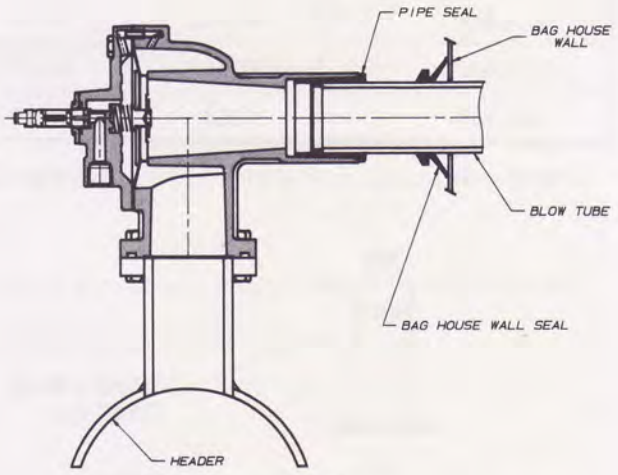


Fig 2

Fig 3 shows an alternative where the designer wants to incorporate a more normal design featuring a bulkhead connector. A typical application for such a design might be one involving higher baghouse temperatures. Once again, the seals on the connecting pipe and the blowtube are of the dynamic type mentioned in figure 1.

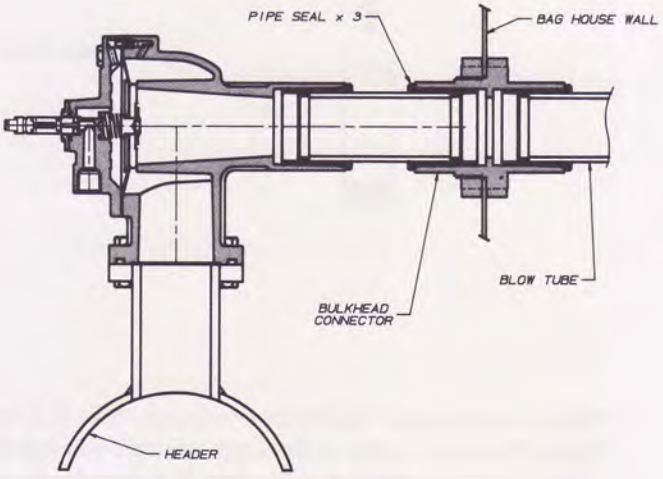


Fig 3

INSTALLATION INSTRUCTIONS.

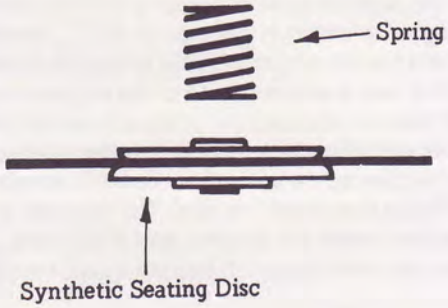
The blowtube dynamic seal should be fitted to the blowtube first, prior to the blowtube being inserted into the valve outlet or the bulkhead fitting. If total leak-free operation is required, the seal should be attached to the blowtube using Loctite™ Black Max or similar adhesive. If very small leakage during the pulsing cycle can be tolerated, the seal can be simply pushed onto the blowtube. Naturally, all sharp edges should be removed from the blowtube or connecting pipes prior to the seals being fitted. Once the seals are attached to the blowtube, the outside of the seal should be lightly lubricated with a silicone based grease. Then the blowtube can be easily inserted, preferably up to the shoulder of the seal. The seal will still perform adequately with the blowtube up to 3/8" [10mm] off full insertion. The blowtube must be securely anchored at the end remote from the valve.

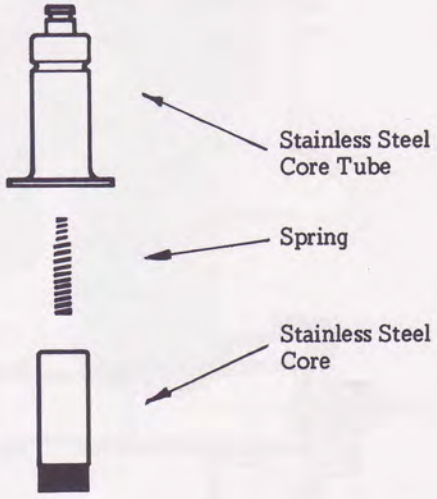
REBUILDING KITS

Although Goyen Controls pilot solenoid and diaphragm valves are designed to give long periods of service, eventually the wearing parts will require replacement. The non-wearing parts will probably last as long as the dust collector.

Diaphragm valves are usually installed very close together so that it is a difficult task to completely replace valves when service is required. Inexpensive kits are available which allow valves to be rebuilt into as new condition without removing the valve from the collector pipe line. In each diaphragm kit, a return spring is provided and this should be replaced at the same time as a new diaphragm is installed even if the old spring still appears serviceable.

VALVE MODEL	BUNA N KIT NO.	VITON KIT NO.
RCA20	M1204	M1137
RCA20T	M1204	M1137
RCA20M	M1174	M1328
RCA25T	M1183	M739
RCA25TD	M1183	M739
RCA25TH	M1183	M739
RCA32T	M1183	M739
RCA40T	M1182	M1156
RCA50T	M765	M1157





VALVE MODEL	KIT NO.
RCA3D2	M1131
RCA5D2	M1141
RCA6V56	M1141
RCA6V383	M1131
RCA3V10	M1131
RCA5V3	M735
RCA5V5	M735

When it is necessary to service a solenoid valve it is usually less costly, in terms of time, to use replacement valves which Goyen Controls supply without the solenoid coil and housing. Coils are energised for such short periods that they should never need to be replaced. The cost of a replacement valve (less coil) is little more than the cost of a rebuild kit and it has been tested for satisfactory operation.

REMOVAL & INSTALLATION PROCEDURES of CARTRIDGE FILTERS for the MURPHY-RODGERS - TYPE UNIT with MANUAL BUMP CLEANING (MRW)

REMOVAL of CARTRIDGES

- Remove knob and washer from top of cartridge filter.
- Lift cartridge up and over extended threaded rod hold down device.

INSTALLATION of CARTRIDGES

- Reverse procedure of removal, making sure not to damage sealing gasket at bottom of cartridge.

CLEANING of CARTRIDGES

- is accomplished by a slight bumping of the cartridge, using the palm of your hand. Do Not use a hard object, as it will eventually damage the cartridge. The time periods for cleaning will depend on the type of dust and dust loading.
- Periodically the cartridges should be thoroughly cleaned, using a flexible compressed air hose, making sure not to damage filter media.

WASHING of CARTRIDGES (on all cartridge style dust collectors)

- Cartridge can be washed in a warm solution of common dish washing detergent and water AFTER thoroughly cleaning with compressed air.
- Before installing cartridges, make sure they are thoroughly dry, otherwise a dust caking will occur, causing filter media blinding.

NOTE: Make sure dust being handled WILL NOT form a corrosive solution, when combined with water.

CONSTRUCTION SPECIFICATIONS FOR DUST COLLECTION SYSTEMS

GENERAL

Correct design and competent installation of sheet metal ducts and hoods are necessary for proper functioning of any dust collecting system. The following minimum specifications are recommended.

All exhaust systems should be constructed with materials recommended below, and shall be installed in a permanent and workmanship-like manner. Interior of all ducts should be smooth and free from obstructions, with joints either welded or soldered airtight or flanged with companion flanges. (Spiral duct with "tuff bond" cemented joints are acceptable, but laps must be in direction of air flow).

MATERIALS

1. For the average dust collecting system on non-corrosive or non-abrasive applications, the following metal thicknesses shall be supplied:

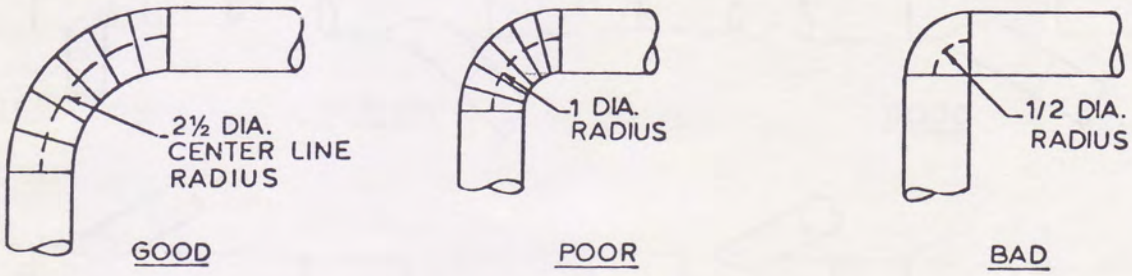
   4" to 8" diameter - 24 ga.
   9" to 18" diameter - 22 ga.
   20" to 32" diameter - 20 ga.
   34" to 48" diameter - 18 ga.

2. Elbows and angles shall be a minimum of two gauges heavier.
3. Hoods shall be a minimum of two gauges heavier than straight sectional connection branches.
4. Where flexible piping is necessary, a non-collapsible type of flexible piping shall be used, and it should be kept to a minimum.

CONSTRUCTION

1. All longitudinal seams shall be airtight.
2. Girth joints of duct shall be made with an inner lap in the direction of the air flow, and shall be kept airtight.
3. Elbows and angles shall have a center line and radius of 2½ pipe diameters whenever possible. Large radii are recommended for heavy concentrations of abrasive dust. Construct elbows six inches or less in diameter in at least five sections; over six inches in diameter, in seven sections. Prefabricated elbows of smooth construction may be used.

– ELBOW RADIUS –

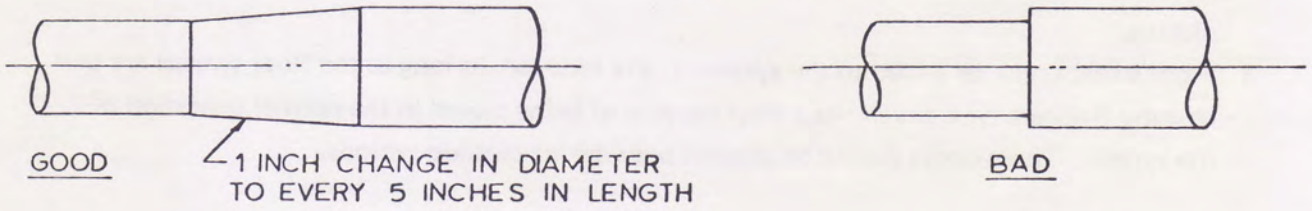


4. Hoods must be free of sharp edges or burrs, and reinforced to provide the necessary stiffness, and must be of good design.

SYSTEM DETAILS

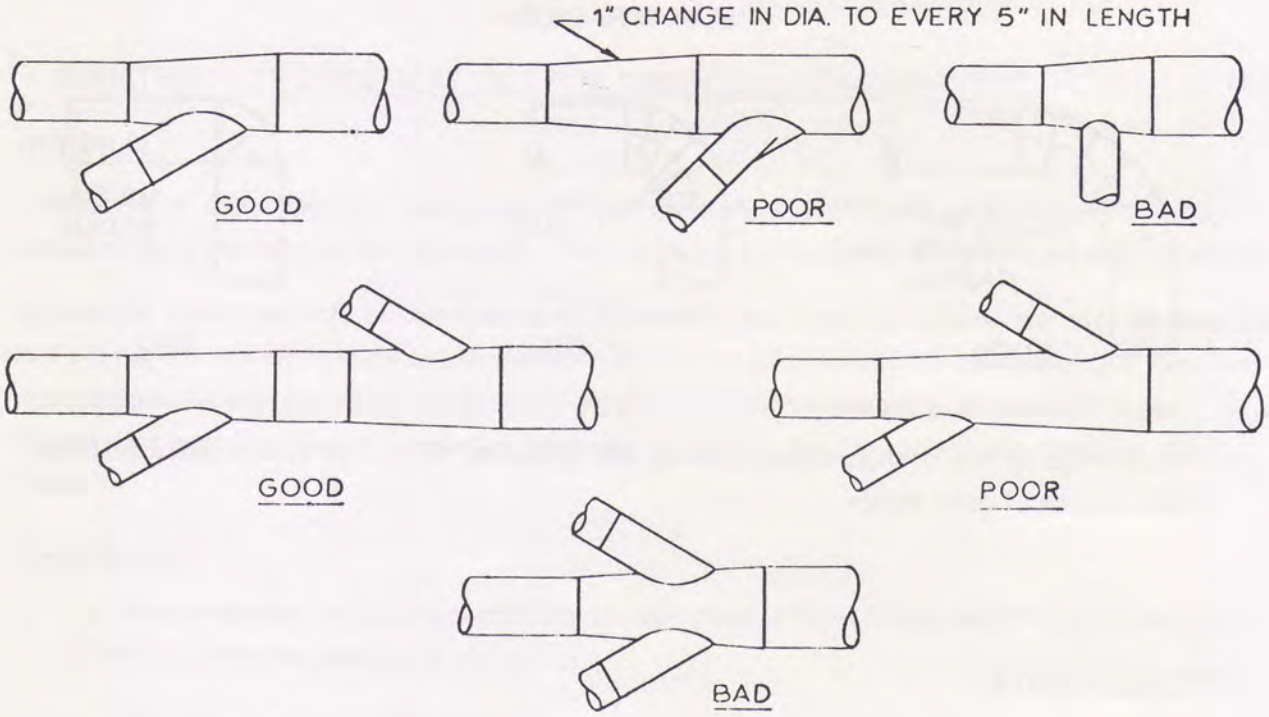
1. Transitions and mains and sub-mains to be tapered. Taper 5" long for each one inch change in diameter whenever possible, and transitions are to be straight and smooth on the bottom to prevent buildup of dust.

– TAPER DETAIL –



2. All branches shall enter the main at the large end of the transition at an angle not to exceed 45° (30° is preferred). Connect branches only to the top or sides of main, with no two branches entering diametrically opposite.

– BRANCH ENTRIES –



3. Where blast gates are used, use either full collar or half collar Murphy-Rodgers gates. Butterfly type dampers shall not be permitted.

DESIGN

1. Good hood design cannot be stressed too greatly for the performance of a dust collecting system.
2. All machines must have proper hooding and should be designed with a good smooth flow for the material access. It must be designed so that the throw of the waste material is directly into the hood and that there are no flat surfaces to deflect the flow of material away from the exhaust pickup.
3. Floor sweeps may be added to the system in any location, as long as the floor sweeps are of a Murphy-Rodgers type which has a door capable of being closed in the normal operation of the system. These doors should be opened only during cleanup periods.

DUCT SUPPORTS

1. All hangers shall be such that they can support the entire weight of the duct if for any reason it becomes full of material.
2. When building structure is not available for hanging ductwork, the contractor shall provide all necessary support steel.
3. Ducts to be sufficiently supported at maximum intervals of 12 feet for 8" diameter or smaller ducts and 20 feet maximum for larger ducts.