9102

Technical Manual

INTRODUCTION

This publication is provided solely as a guide for individuals who have received METTLER TOLEDO Technical Training in servicing the METTLER TOLEDO product.

Information regarding METTLER TOLEDO Technical Training may be obtained by writing to:

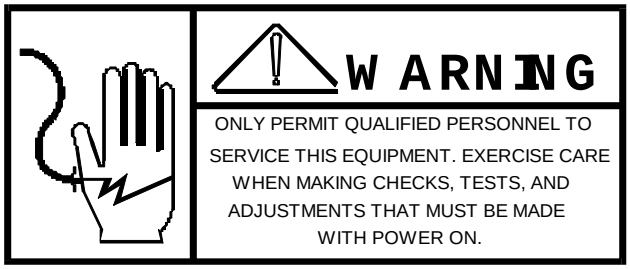
METTLER TOLEDO
Training Center
P.O. Box 1705
Columbus, Ohio 43216
(614) 438-4400

PRECAUTIONS

- **READ** this manual before operating or servicing this equipment.

- **ALWAYS REMOVE POWER** and wait at least 30 seconds **BEFORE** connecting or disconnecting any internal harnesses. Failure to observe these precautions may result in damage to, or destruction of the equipment.

- **ALWAYS** take proper precautions when handling static sensitive devices.

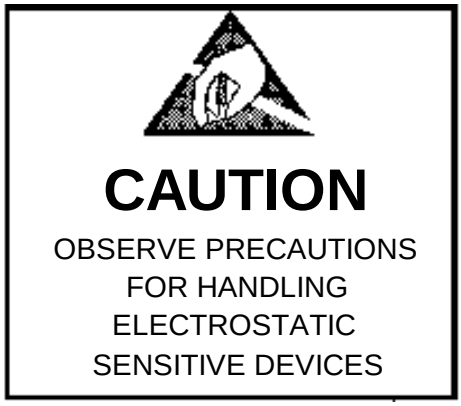


- **DO NOT** connect or disconnect a load cell scale base to the equipment with power connected or damage will result.

- **SAVE** this manual for future reference.

- **DO NOT** allow untrained personnel to operate, clean, inspect, maintain, service, or tamper with this equipment.

- **ALWAYS DISCONNECT** this equipment from the power source before servicing.



- **CALL** METTLER TOLEDO for parts, information, and service.

CONTENTS

1.0 WARNINGS AND PRECAUTIONS

1.1 INSTALLATION WARNINGS

**********NOTE THE FOLLOWING WHEN INSTALLING THIS EQUIPMENT.**********

WARNING !
ONLY PERMIT QUALIFIED PRESONNEL TO SERVICE THIS EQUIPMENT. EXERCISE CARE WHEN MAKING CHECKS, TEST AND ADJUSTMENTS THAT MUST BE MADE WITH THE POWER ON.

WARNING!
THIS MODULE AND ITS ASSOCIATED EQUIPMENT MUST BE INSTALLED, ADJUSTED, AND MAINTAINED BY QUALIFIED PERSONNEL WHO ARE FAMILIAR WITH THE CONSTRUCTION AND OPERATION OF ALL EQUIPMENT IN THE SYSTEM AND THE POTENTIAL HAZARDS INVOLVED. FAILURE TO OBSERVE THESE PRECAUTIONS COULD RESULT IN BODILY INJURY.

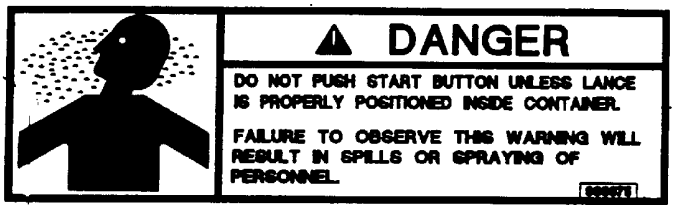
WARNING!
IF THIS DEVICE IS USED IN AN AUTOMATIC OR MANUAL FILLING CYCLE, ALL USERS MUST PROVIDE A HARD WORED EMERGENCY STOP CIRCUIT OUTSIDE THE DEVICCE CIRCUITRY. FAILURE TO OBSERVE THIS PRECATUION COULD RESULT IN BOLDILT INJURY.

This manual covers the unpacking, installation, adjustments, operation and maintenance of the Toledo Scale 9102 Manual Drumfiller. This device is to be interfaced with a Toledo Drumfiller Controller. This Controller, along with a Toledo bench scale can be used to fill drums of fluid, based on weight. No specifics to the operation or setup of the drumfiller controller are covered by this manual.

1.2 APPLICATION CAUTION

THE TOLEDO SCALE DRUMFILLER AS STANDARD PRODUCT, IS DESIGNED FOR USE IN APPLICATIONS INVOLVING INERT MATERIALS WHICH EXHIBIT MINIMAL HAZARDS TO THE OPERATOR OR IMMEDIATE AREA PERSONNEL. FOR SPECIFIC APPLICATIONS WHERE LIQUIDS, VAPORS OR DUST GENERATE HAZARD TO THE OPERATOR AS DEFINED BY OSHA, NFPA, NATIONAL ELECTRICAL CODE, STATE AND OR LOCAL CODE, SPECIFIC DESIGNED CONSIDERATIONS MUST BE IMPLEMENTED UPON ORDER ENTRY TO TOLDEO SCALE.

1.3 OPERATION PRECAUTIONS



Drums filled with fluid at an elevated temperature can create a hazard for the operator. Proper safety apparel must be worn by the operator in such instances.

2.0 UNPACKING INSTRUCTIONS

Do NOT attempt to operate the equipment until you have read this Technical Manual and have studied the mechanical and electrical diagrams. Failure to make external connections properly may result in an unsatisfactory operation, permanent damage to the vital parts of this equipment or personal injury.

Every effort has been made to assure that the Toledo Scale equipment is carefully packed. Please note that Carriers are responsible for damage in transit. If the packing case shows damage, make a notation to that effect on your express receipt or freight bill. If it is suspected or found that the shipment has been damaged, notify the transit company and the Toledo Scale Traffic Department (614-898-5036) immediately.

Included with each shipment is a packing list showing every item in the shipment. Check off each item as the equipment is unpacked and if any items appear to be missing, go through the packing material carefully before throwing it away, the missing articles may have been overlooked when the packing material was removed.

Each piece of equipment is carefully checked out and inspected at the Toledo Scale Westerville facility and then sealed before shipment. It is best to have a factory trained scale technician available at the time the equipment is unpacked.

3.0 9102 DRUMFILLER LANCE SPECIFICATIONS

3.1 SAFE ENVIRONMENT DRUMFILLER DEFINITION:

The 9102 drumfiller, factory number KC26948200A is designed for operation in a safe environment. no explosive or flammable fumes, gases, or dust will be present in the atmosphere where the drumfiller is located.

3.2 HAZARDOUS ENVIRONMENT DRUMFILLER DEFINITION:

The 9102 drumfiller, factory number KC26948200B or KC270991020 is designed for operation in NFPA classified Hazardous environments.

For KC26948200B: A special proximity switch is used and the air control valves are moved from the drumfiller stand to the inside of the drumfiller controller. This controller is considered ‘safe’ due to the Toledo Scale X-Purge System which is a part of the drumfiller controller package. A static grounding clamp which grounds the drum to the piping is also included on the hazardous area drumfiller

For KC270991020: A special proximity switch is used. Explosion proof air control valves are used to control the ball valve. These explosion proof valves are mounted to the back side of the drumfiller. The proximity switch and the air control valves are to be wired per the Toledo Scale external wiring diagram which is included with the drumfiller controller. A static grounding clamp which grounds the drum to the piping is also included on the hazardous area drumfiller.

**********ONLY DRUMFILLERS WITH FACTORY NUMBER KC26948200B AND KC270991020 CAN BE INSTALLED IN HAZARDOUS ENVIRONMENTS!**********

3.3 VOLTAGE REQUIREMENTS

120 VAC/60 Hz is required. The electric power is provided by the Toledo Scale drumfiller controller.

3.4 PLANT AIR REQUIREMENTS

80 PSI, minimum, of compressed clean dry* air is required. One CFM of air should be supplied to the 9201 drumfiller. Maximum air supply pressure into the pneumatic system is 100 PSI.
COMPRESSED AIR ONLY IS TO BE USED IN THE 9102 AIR SYSTEM!!

WARNING!!

The filter-regulator-lubricator on the 9201 drumfiller is specifically designed for compressed air service and use with any other fluid (liquid or gas) is a mis-application. Injection of certain hazardous liquids or gases into the system (such as alcohol or liquid petroleum gas) can be harmful to the unit and result in a combustible condition or a hazardous external leakage.

Maximum temperature of the compressed air into the air filter system is 120F. The air filter/regulator/lubricator (FRL) system is made from a polycarbonate plastic material. Synthetic air compressor lubricants or synthetic oils which contain phosphate esters or chlorinated hydrocarbons will damage the FRL. Do not use such lubricants with the Toledo 9102 Drumfiller. Refer to the Watts Qube 55 data sheet within this manual for further information. A 1/4" NPT female input port is provided.

Dewpoint of air supply is to be 10 degrees F below ambient temperature when expanded to the atmosphere. For further information, contact the air compressor supplier or plant air supply contractor.

3.5 AMBIENT TEMPERATURE

115 degrees F Maximum and 40 degrees F Minimum.

3.6 FLUID CARRYING PIPE

1-1/2" 310 Alloy Stainless Steel. The flow rate of fluid into the drum is controlled by a 3 position ball valve. The customer interconnects to the drumfiller via a 1-1/2" NPT male fitting. (The effective length of the drum filler piping is approximately 11 feet.) Maximum fluid pressure into the drumfiller is 125 PSI. Maximum fluid temperature into the drumfiller is 350 degrees F.

4.0 GENERAL INSTALLATION INSTRUCTIONS

Factory trained service engineers are available from Toledo Scale supervise the installation of the Drumfiller, associated equipment, controls and to calibrate the equipment, place the equipment in operation and train your operating and maintenance personnel. Top obtain these services and to assist with your service needs, contact your Toledo Scale Sales Engineer, Toledo scale Service Office or your nearest Toledo Scale Factory Authorized Distributor.

NOTE: Fast and efficient service can be provided is the following information is available at the time the arrangements for a service engineer are made.

1. location of the equipment and plant address.
2. Persons authorizing the service, along with the name and telephone number of the person out Service Technician or Start-up Engineer is to contact upon arrival at the plant site.
3. Special Specification Number (SSN) and the Toledo Order Number (TON) of the drum filling system.
4. Purchase Order Number or letter of authorization covering the services to be rendered.
5. The date service is desired. Be sure the equipment is completely installed, wired to all equipment furnished,with electrical power and pneumatic power made available to the equipment before the technician/engineer arrives. This will avoid Toledo Scale invoicing you fort unnecessary time and expenses at your plant site.

4.1 REQUIRED EQUIPMENT AND SERVICES NOT PROVIDED BY TOLEDO SCALE

This Toledo Scale equipment installation may be in conjunction with the following services and/or equipment furnished by others:

1. Suitable power supply. Refer to Utility Arrangements (Next Section)
2. Any supporting framework for the scale, etc., plus any associated material handling equipment not furnished by Toledo Scale.
3. All labor and materials for completion of the mechanical and electrical installation.
4. All interconnecting wiring between electrical components. Toledo Scale may specify a minimum gauge wire required. Refer to the System External Wiring Diagram provided with the drumfiller controller for details.

5. All electrical interlocking contacts (motor starters, etc.) and all other electrical necessities required to connect to the Toledo Scale control circuitry to insure proper system operation.
6. The electrical installation of this equipment must conform to the specifications outlines on the wiring diagram. All wiring between remote units is performed by others and must be tagged with the identification shown on this drawing. All wiring procedures must conform to the specifications outlines in the "National Electrical Code" as well as local codes.

5.0 SYSTEM INSTALLATION

5.1 SECURING THE FILLER TO THE FLOOR

Refer to the drumfiller installation drawing included in this manual for locating the mounting holed which secure the drumfiller assembly to the floor. Four (4) 1/2" diameter fasteners must be provided by the customer to bolt the drumfiller to the floor. Note the locations of the bung opening and scale location with respect to the mounting holed before drilling any holed to mount the drum filler.

5.2 ADJUSTING THE FILLER HEIGHT

Refer to the drumfiller installation drawing for adjusting the filler height. The frame is designed for use with either a 30 gallon drum or a 55 gallon drum. Four (4) bolts and two pins fix the height of the stand to the correct elevation. If your installation differs from the installation drawing, due to mounting the scale in a pit or by providing your own conveyor, the height of the stand will have to be adjusted. Use an empty drum to check the operation of the fill pipe fitting into the drum. After the proper height of the stand has been determined, two 7/32 inch diameter holed have to be drilled into the inner frame tube. Use the two existing holes in the outer frame tube as guides for the two new holes. Drive the two taper pins provided with the drum filler into these holes.

5.3 PRODUCT INPUT AND AIR INPUT

Refer to the drumfiller installation drawing for locating the lance assembly connection points for the product feed line and plant air connection to the filter-regulator-lubricator located on the back of the filler frame. The product feed line is a 1-1/2" NPT male fitting. A manual shutoff valve, provided by the customer, should be added to the product feed line of the drumfiller at installation. An emergency shutoff valve should also be added to the product feed line. The air line connection to the filter-regulator-lubricator is a 1/4" female NPT fitting.

A manual shutoff valve, provided by the customer should be added to the air line at installation.

NOTE: HAZARDOUS AREA DRUM FILLERS KC26948200B DO NOT HAVE THE AIR FILTRATION SYSTEM MOUNTED TO THE BACK OF THE FILTER. FOR HAZARDOUS EQUIPMENT, THE AIR FILTRATION SYSTEM IS MOUNTED TO THE DRUMFILLER CONTROLLER STAND. AN AIR LINE MUST BE RUN FROM THE AIR OUTPUT PORT OF THE CONTROLLER TO THE AIR INPUT PORT OF THE BALL VALVE.

CAUTION!

PRIOR TO CONNECTING A PLANT AIR LINE TO THE 9102 AIR INPUT CONNECTION, BLOW OUT THE PLANT AIR LINE TO REMOVE ANY DIRT OR FOREIGN MATTER WHICH MAY BE PRESENT IN THE AIR LINE.

5.4 DRUMFILLER CONTROLLER INTERFACE

After completing the installation of the drum filler, conduit and wiring must run between the drumfiller and the drumfiller controller. The drumfiller controller should be mounted as close as practical to the drumfiller lance, for ease of operation. The operator must be able to reach the **EMERGENCY STOP BUTTON WHILE LOWERING THE LANCE INTO THE DRUM.**

A junction box, located on the back of the drumfiller stand, contains wiring terminals for the drumfiller lance. Conduit must be run between this junction box and the drumfiller controller. This conduit and wiring must be installer per the “National Electrical Code” as well as local codes. Refer to the external wiring diagram provided with the drumfiller controller for terminal numbers and additional wiring information.

THE HAZARDOUIS AREA DRUMFILLER KV26948200B AND KC270991020 HAS A PROXIMITY SWITCHED WIRED WITH INTRINSIC SAFE WIRING. REFER TO THE EXTERNAL WIRING DIAGRAM PROVIDED WTIH THE DRUMFILLER CONTROLLER FOR ADDITIONAL WIRING INFORMATION.

6.0 INITIAL ADJUSTMENTS

The following adjustments are to be made after the unit is completely assembled and connected.

A. Calibrate the scale according to the instructions in the drumfiller controller manuals. This manual is provided in the documentation package.

B. Adjust the main air pressure gauge on the filter-regulator-lubricator to 80 PSI. If 80 PSI is not available, the cycle time to fill each drum will be increased.

NOTE: 60 PSI is the minimum air pressure on which the drumfiller will operate!. The ball valve will not open fully with less than 60 PSI of plant air!
NOTE: Factory number **91020001000** uses a single air pressure regulator on the back side of the drumfiller. This regulator is to be set at 80 PSI.

C. Adjust the slow fill regulator (the regulator above the main filter-regulator-lubricator system) to 20 PSI. Add oil to the lubricator and adjust to 2-4 drops per minute. Refer to the Service and Maintenance section of the manual for lubricant specifications.

6.1 NON-HAZARDOUS DRUMFILLER ADJUSTMENTS

6.1.1 With the product supply to the drumfiller lance turned off, check that the ball valve opens and closes properly. This is accomplished by using the manual over-ride on the air control valves. These valves are mounted on the panel on the back of the filler. The override is a button on the valve at the end of the solenoid. Push both overrides to open the ball valve full open (fast fill); release the lower override with upper maintained for a partial open ball valve (slow/dribble fill). Adjust the slow fill regulator **SLIGHTLY** if a change in slow fill opening of the ball valve is desired.

6.1.2 Never alter the location of the proximity switch!This proximity switch is located in the top of the lance frame and sense when the lance is in the fill position. Changing the location of the proximity switch can cause equipment failure, resulting in possible injury to operating personnel.

6.2 HAZARDOUS AREA DRUMFILLER ADJUSTMENT

6.2.1 Calibrate the scale according to the instructions in the drumfiller controller manual. This manual is provided in the documentation package.

6.2.2 Drumfillers built for hazardous areas have the air filter-regulator-lubricator mounted to the drumfiller controller assembly. Adjust the main air pressure gauge on the filter-regulator-lubricator to 80 PSI. IF 80 PSI is not available, the cycle time to fill each drum will be increased.

NOTE: 60 PSI is the minimum air pressure on which the drumfiller will operate!. The ball valve will not open fully with less than 60 PSI of plant air!

6.2.3 Adjust the slow fill regulator (the regulator above the main filter-regulator-lubricator system) to 20 PSI. Add oil to the lubricator and adjust to 2-4 drops per minute. Refer to the Service and Maintenance section of the manual for lubricant specifications.

6.2.4 **Never alter the location of the proximity switch**!This proximity switch is located in the top of the lance frame and sense when the lance is in the fill position. Changing the location of the proximity switch can cause equipment failure, resulting in possible injury to operating personnel.

7.0 PRODUCT SUPPLY CONNECTION

Connect the product supply to the lance assembly. A 1 1/2" male fitting at the side of the drumfiller lance is provided. A manual shutoff valve should be asses to the product supply connection line. This valve, alone with an emergency shutoff valve, are to be provided by the customer.

CAUTION!
The product supply to the lance assembly **MUST** always have an emergency shutoff **VALVE AND SWITCH** which is readily accessible to the operator! **THIS SWITCH AND VALVE OPERATE INDEPENDANTLY FROM THE 9102 DRUMFILLER BALL VALVE.** This emergency shutoff is to be wired independent of the drumfiller stop button and must control product flow into the drumfillller, ahead of the connection into the drumfiller.

8.0 FILLER OPERATION

NOTE!
All operators should be trained to understand the functions of the drumfiller controller. Refer to the drumfiller controller manual for operational information of this controller. A drumfiller operator is required to move a drum onto the scale, locate the drum under the fill pipe, lower the fill pipe into the drum, push a start button to start filling, and remove the lance pipe from the drum upon completion of the fill cycle.

The Toledo Scale 9102 drumfiller is designed as a simple operating manual drum filling system. Since this is a manual system, a trained operator is required for safe filling of drums. The following procedures should be noted before operating the Toledo Scale 9102 drumfiller:

A. Proper safety apparel, following OSHA guidelines, must be worn by operating personnel when filling the drums with the drumfiller.
B. WHEN NOT IN USE, THE LANCE FILL PIPE SHOULD ALWAYS BE RETRACTED IN THE UP POSITION. The only time that the lance should be in the down position is when a drum is on the scale and the lance fill pipe is inside of a drum.

WARNING!
IF THE LANCE FILL PIPE IS IN THE DOWN POSITION AND THE START BUTTON IS PUSHED, THE DRUMFILLER BALL VALVE WILL OPEN, STARTING THE FILL CYCLE. THE 9102 DOES NOT HAVE LOGIC TO DETERMINE IF A DRUM IS ON THE SCALE. DO NOT LOWER THE LANCE FILL PIPE TO THE DOWN POSITION WITHOUT A DRUM IN PLACE!

C. The lance fill pope must be in the drum at all times during the fill cycle. Removal of the lance fill pipe from the drum during filling will cause product spillage, resulting in possible injury to personnel.
D. If a job pushbutton is provided with the drumfiller controller, USE EXTREME CAUTION WHEN USING THE JOB FEATURE TO FILL A DRUM. The job pushbutton is a true MANUAL feature. OVERFILL OF A DRUM CAN OCCUR WHEN USING THE JOG PUSHBUTTON FEATURE resulting in possible injury to personnel. THE OPERATOR MUST MAKE SIRE THAT HE DOES NOT OVERFILL THE DRUM WHEN USING THE JOB PUSHBUTTON.
E. Upon completion of filling a drum, WAIT SEVERAL SECONDS AFTER THE BALL VALVE CLOSES BEFORE REMOVING THE LANCE FROM THE DRUM!

9.0 SERVICE AND MAINTENANCE

The 9102 Drumfiller requires little maintenance. however, at the start of each shift, the operator should check the following items:

A. Check the air lubricator to confirm that it contains adequate lubricant and check that the filter element is clean. Add lubricant or change the filter element is required. TURN OFF AIR INTO THE F-R-L BEFORE ADDING LUBRICANT OR CHANGING THE FILTER ELEMENT! Also check the drip pan and empty if required.

B. Check the fit of the handle, which lowers the lance fill pipe into the drum, and the corresponding bracket which locks the handle into the up or down position. Neither of these parts should show any wear. If wear is observed, these parts should be replaced immediately. The part number for these parts are found in the Spare Parts section of this manual.

C. IF an airleak is noticed, it should be repaired immediately. An air leak can cause faulty operation of the ball valve, resulting in slower fill times or inaccurate filling. The ball valve may not open if the air leak is quite large.

D. Product leakage from any pipe joint of the drumfiller piping should be repaired. Teflon based pipe sealant should be used when repairing any pipe join on the drumfiller..

E. If the swivel join leaks, the entire swivel can be replaced or the seals can be replaced. Part numbers for both the swivel and the seal rebuild kit are found in the Spare Parts section of this manual. A section in this manual covers instructions for replacing the seals in the swivel.

9.1 PROXIMITY SWITCH REPLACEMENT

For safe operation of the 9102 drumfiller, the proximity switch must be adjusted properly. This switch is a cylindrical device located in the front of the filler, next to the filler lance pipe. The proximity switch is a solid state device, which closes a contact by the presence, or proximity , of a metallic device. The switch is used to signal the drumfiller controller that the lance is in the down position. When the contact is closed, a red LED located on the end of the switch, is lighted.

Should the switch fail and a new unit is installed, locate the switch as close as possible to the lance pipe, when the lance pipe is in the down position. THE PROXIMITY SWITCH MUST NOT TOUCH THE LANCE PIPE WHEN THE PIPE IS DOWN. THE LED AT THE END OF THE SWITCH WILL BE LIGHTED WHEN THE CONTACT IS CLOSED, INDICATING THAT THE SWITCH IS ADJUSTED PROPERLY. A gap of approximately 3/16" is normally adequate. Use the two lock nuts, provided with the new switch, to lock the proximity switch in place.

9.2 F-R-L MAINTENANCE

The primary maintenance item is the air preparation unit mounted to the back of the filler. The satisfactory operation of the 9102 depends on clean, dry, lubricated air. Therefore, conscientious servicing of the filter-regulator-lubricator (F-R-L) is important.

Fill the lubricator prior to pressurization by pouring the oil into the bowl through the fill port.

CAUTION!
Certain compressor oils, household cleaners, chemicals, solvents, paints and fumes will attack plastic bowls if lubricated with an oil containing phosphate esters (such as fire-resistant fluids) or chlorinated hyrdo-carbons; instead use the metal bowl type.

The rate of oil delivery may be controlled by turning the lubricator oil feed adjusting screw counterclockwise for more and clockwise for less oil delivered. Adjustment is determined by the amount of air the system uses. Adjust the lubricator for 1-3 drops of lubricant per minute.

9.3 LUBRICANT SPECIFICATIONS

1. Viscosity: 5 to 10 W non-detergent
2. high Viscosity Index: over 90
3. Anti Foaming
4. High Film Strength
5. Aniline Range: 180-210
6. Compatible to Buna N rubber and Viton.

10.0 SPARE PARTS

The following spare parts are used for the 9102 drumfiller.

Parts common to all Model 9102 Fillers:

KN770622020	BALL VALVE 1-1/2" - 316 STAINLESS STEEL
KN770919020	WATTS FILTER ELEMENT
KN770900020	OPW SWIVEL
KN771158020	OPW SWIVEL DEAL KOP
KN770906020	WATTS FILTER/REGULATOR
KN770905020	WATTS HIGH PRESSURE REGULATOR
KN770641020	WATTS HIGH PRESSURE GAUGE
KN770870020	WATTS LOW PRESSSURE GAUGE
KN770907020	WATTS LUBRICATOR
KN770439020	HUMPHREY QUICK EXHAUST VALVE
KN768603020	3/8" NPT MUFFLER
KN766802020	1/8" NPT MUFFLER
KN770908020	DRIP CATCH PAN
KB269954020	LOCKING BRACKET FOR HANDLE
KB269791020	HANDLE LEVER
90087500A	WARNING LABEL

Parts common to KC26948200A & 9102001000:

KN770866020	PROXIMITY SWITCH

KA269491020	MK3 AIR CONTROL VALVE 115VAC
KN770902020	CABLE - AIR CONTROL VALVE
KN770920020	MK3 REPAIR KIT
KN770972020	MK3 SOLENOID - REPLACEMENT PART

Parts common to only KC26948200B

KN770852020	PROXIMITY SWITCH **FM APPROVED**

Parts common only to KC26948200C

KN772135020	220 VAC MK3 AIR CONTROL VALVE

Parts common to only KC270991020

KN770850020	PROXIMITY SWITCH **FM APPROVED**
KN771714020	**EXPLOSION PROOF** AIR CONTROL VALVE
KN771933020	**EXPLOSION PROOF** VALVE REPAIR KIT
KN771934020	**EXPLOSION PROOF SOLENOID**-REPLACEMENT PART