



CAMCORP
A MEMBER OF THE SCHEUCH GROUP

INSTALLATION, OPERATION, & MAINTENANCE MANUAL

BULK BAG UNLOADER

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SECTION 1

OPERATING PRINCIPLE

The CAMCORP Bulk Bag Unloader is custom designed to meet your product handling requirements.

The Bulk Bag Unloader consists of a rigid upper and lower frame with a custom designed pan on vibration isolators for the bulk bag to rest in. The unit also includes a containment hopper where the bulk bag is untied.

Fork Truck Style

Either a fork truck or a 2-ton electric hoist can load the super sack. The fork truck style is equipped with a fork carriage that is set on the super sack and allows the operator to hook the bag loops to the carriage on the floor, the unit then can be lifted a top the bulk bag frame.

Hoist Style

The Hoist style is equipped with a spreader bar which is attached to the hoist hook, the spreader bar can be lowered down allowing the super sack loops to be attached the bar. The bulk bag is then lifted back into place using the hoist hand controls. The hoist style can be purchased with a power lift assembly and a motorized power trolley.

The bag is lowered down into the frame and set upon the pan,

which is supported by four isolation pads. The pan has a 12" diameter hole cut out allowing the discharge spout of the bag to be pulled through and placed below into the containment hopper.

Once the bag is set in place and the spout is released into the containment hopper, the operator can open the door on the containment hopper and begin untying the bag. The containment hopper has a 12" iris valve mounted on top which will allow the operator to pinch the bag and stop the flow of material while the bag is untied. The containment hopper can be equipped for tying into an existing dust control system or an integral dust collection system can be provided as an option. The CAMCORP BBU-4000 can also be equipped with bottom bag punchers, and an electric vibrator for hard to move products.



SECTION 2

BAG DISCHARGE PROCEDURE

1. Open the door on the containment hopper so the operator can have access to the discharge spout.
2. Pull the discharge spout completely into the containment hopper and straighten out.
3. You are now ready to untie the discharge spout tie string allowing the product to flow.
THE IRIS VALVE SHOULD BE CLOSED SO THE OPERATOR CAN UNTIE THE BAG AND CLOSE THE DOOR IN A DUST FREE ATMOSPHERE
4. If your unit is supplied with a dust collection system the unit can be turned on allowing the operator to untie the bag without the Iris Valve closed.
5. If the bulk bag has a liner an optional hook must be purchased to hook the liner string to which holds the liner in place. If the liner is not held up the liner can fall into the containment hopper and damage conveying equipment.

SECTION 3

BULK BAG UNLOADER

OPTIONS

Fork Truck Operation

1. Place fork lifting carriage on fork truck.
2. Attach bag loops to the lifting hooks.
3. Lift bag and suspend over the unloading frame.
4. Open the Iris Valve under the dished head.
5. It is recommended to untie the outer spout allowing the inner spout to be released, when the bag is placed in the frame this will make feeding the spout through the Iris valve easier.
6. Place the fork lifting carriage on the upper frame until the bag is centered properly inside the frame.
7. Lower the bag down into the frame until the bottom of the bag makes contact with the dished head. The bag should not slump too much and adjustment may need to be made for proper fit up.
8. Lower the forks slightly and back-up the fork truck, the unit is ready for operation.
9. REPEAT ABOVE STEPS TO REMOVE EMPTY BAG

SECTION 3

BULK BAG UNLOADER

OPTIONS

Hoist Operated

Each CAMORP unit is supplied with a bag lift bar, which allows the operator to attach the bag loops to the hoist for lifting.

1. Lower the spreader bar above the bulk bag allowing the operator to hook the bag loops to the spreader bar.
2. With the hoist hand controls slowly lift bulk bag until it is centered in the upper frame or completely above the dished head assembly. If the bag has an outer spout untie this spout and release the inner spout. This will allow the spout to be guided through the Iris Valve and into the containment hopper.
3. POWER TROLLEY ONLY
Use the hand controls and move the bulk bag into the upper frame
POWER LIFT ONLY
The bulk bag will need to be manually pushed inside the frame
4. Once the bulk bag is in place lower the bulk bag down until the bag makes contact with the dished head.

ATTACHED TO THESE INSTRUCTIONS ARE BASIC OPERATION PROCEDURES FOR THE POWER LIFT AND POWER TROLLEY. IF MORE INFORMATION IS NEEDED EACH UNIT HAS A COMPLETE HOIST AND TROLLEY OPERATION AND MAINTENANCE MANUAL ATTACHED TO THEM DURING SHIPMENT.

SECTION 3

BULK BAG UNLOADER

OPTIONS

Electric Vibrator Model SPV 4.5

The CAMCORP electric vibrator is designed to help promote flow of product out of the bulk bag by vibrating the pan the bag rests in with a high frequency vibration.

Every Bulk Bag Unloader is equipped with four vibration isolators, which allow the entire pan to be vibrated. The vibrator is pre-mounted on the pan and is wired back to the control panel, the Vibrator is a 460VOLT/3 PHASE/60 HERTZ unit operated by an AC Controller. Optional voltages can be supplied.

IT IS NOT RECOMMENDED TO OPERATE THE UNIT BELOW 20 HERTZ DUE TO WEAR ON THE VIBRATOR MOTOR. Each vibrator has a centrifugal force adjustment, which is factory set at 80% of maximum force. These weights control the force and frequency of vibration on the pan but can be adjusted allowing a more efficient discharge. PLEASE SEE ATTACHED ADJUSTMENT INSTRUCTIONS.

POWER REQUIREMENTS: 460V/3PH/60 (options available)
FULL LOAD AMPS: 1.0

SECTION 3

BULK BAG UNLOADER

OPTIONS

Bottom Bag Massagers Operating Instructions

The CAMCORP bottom bag massagers are designed to help promote flow of product out of the bulk bag by “massaging” the bag with cushioned air cylinders.

The Bulk Bag Unloader is equipped with (2) 4.5” bore air cylinders designed to operate at once. Each air cylinder is mounted to a welded bracket and is attached to the isolated pan; the air cylinders will extend to “massage” the bag allowing product flow.

CAMCORP supplies a loose Solenoid Valve that operates the air cylinder. This is field installed, wired, and will need to be controlled by a PLC. The solenoid assembly requires 80-90 clean dry compressed air to properly operate the cylinders. If all cylinders are operating at the same time total air consumption will be 3 SCFM.

The air flow to each cylinder also can be adjusted by the flow control valves mounted at each cylinder port. Each flow control can restrict air or allow maximum air to the cylinder allowing for a slower or faster stroke. A regular screw driver is all that is needed for adjustment. The flow control will allow a smoother stroke from the air cylinder eliminating the “quick burst” or slamming of the cylinder head into the bag.

AIR REQUIREMENTS: 80-90 psi (filter regulator is included)

AIR CONSUMPTION: 3 SCFM

POWER REQUIREMENT: 120VAC



SECTION 3

BULK BAG UNLOADER

OPTIONS

Ordering Spare Parts

Serial Number Plate

Important information contained on these is needed by CAMCORP when calling for parts or service.



QR Code - Ordering Spare Parts

CAMCORP makes ordering replacement parts easier and faster with QR code stickers. All you need is a mobile device and you've got instant access to your equipment's common spare parts and part numbers in one location.



Here's how it works:

1. Locate the QR sticker on your dust collection or pneumatic conveying equipment.
2. Open your QR code reader app on your mobile device. You can download an app by searching "QR code reader" in the Google Play (Android) or App Store (Apple).
3. Hold your phone over the QR code and your spare parts list will appear complete with part numbers and CAMCORP Parts contact information.

Don't have a QR sticker on your equipment? Contact the CAMCORP Parts Department to request your sticker today.

QR Code - Download Equipment Manual

Access to an electronic copy of this manual can be found by scanning the QR code sticker on your CAMCORP equipment. Simply follow the same instructions as Ordering Spare Parts.



SECTION 3

BULK BAG UNLOADER

OPTIONS

Iris Flow Valve

Operation

UB-IP and UB-IP2 Iris Flow Valves are operated by rotating the control ring and handle through a 180 degree arc to adjust the size of the valve opening from open to closed.

To move from an open to a closed position or intermediate position, simply spin the IP Handle (8) counter-clockwise 1-2 turns to relieve the grip of the IP Washer (7) for the Upper Flange (1). Next move the control ring with IP Handle Assembly (5, 7, 8) clockwise. Once the fully closed or desired intermediate position has been reached, spin the IP Handle (8) clockwise to clamp the IP Locking Washer (7) against the Upper Flange (1) thus locking the valve in position.

To move from a closed to an open or intermediate position, spin the IP Handle (8) counter-clockwise 1-2 turns to relieve the grip of the IP Washer (7) from the Upper Flange (1). Next move the control ring with IP Handle assembly (5, 7, 8) counter-clockwise. Once the fully open or desired intermediate position has been reached, spin the IP Handle (8) clockwise to clamp the IP Locking Washer (7) against the Upper Flange (1) thus locking the valve in position.

Maintenance

UB-IP and UB-IP2 Iris Flow Valves require minimal maintenance. Inspect the sleeve regularly for signs of excessive wear or stretching. If the sleeve is worn, replace the sleeve, following the sleeve replacement procedure below. Clean the components of the iris valve prior to installing a new sleeve. If the sleeve is loose, when fully closed, follow the sleeve adjustment procedures below.

Check the operation of the Iris Valve under load conditions to be sure the flow is smooth and easy. If the Iris Valve binds and operation is difficult, correct the cause before serious damage

occurs.

Sleeve Replacement

Removing the sleeve

Refer to the parts illustration diagram.

1. Remove the Iris Valve from its service installation and adjust the sleeve to the fully open position.
2. Remove the Inlet Clamp Ring (3).
3. Remove the screws in the Upper Flange (1). Depress the Sleeve Ring and pull it through the Upper Flange (1).
4. Remove the Clamp Ring (4) from the control ring assembly (5). Compress the Sleeve Ring and pull it through the Clamp Ring (4).

Installing the new sleeve

1. Take the new sleeve and set one end in the milled groove of Control Ring Assembly (5). Hold the Sleeve and gently pull on the middle of the Sleeve and get the entire excess sleeve out of the groove. Compress the Sleeve Ring on the other side of the sleeve and pull through the Clamp Ring (4). Install the Clamp Ring (4).
2. Compress the Sleeve Ring opposite of the Control Ring Assembly (5) and pull it through the Upper Flange with the ledge in the Upper Flange (1) facing down. Adjust the Sleeve to the fully open position.
3. Rotate the Control Ring Assembly to the fully open position. Next, position the Sleeve so that it is also fully open, then rotate the Sleeve counter-clockwise a 1/4 turn and place the Sleeve Ring in the Groove of the Upper Flange (1).
4. Hold the Sleeve and gently pull on the middle of the Sleeve and remove the entire excess sleeve out of the groove. Install the Inlet Clamp Ring (3).

SECTION 3

BULK BAG UNLOADER

OPTIONS

Iris Flow Valve

5. Line up the holes on the Upper Flange (1), the Spacer Ship (6) and the Lower Flange (2). Install the Screws through the Upper Flange (1).

Before replacing the flow valve in its operating location, check the valve while it is closed to be sure that it closes tightly. Force should not be required to close the valve. If adjustments are necessary, refer to the sleeve adjustment instructions below.

Sleeve Adjustment

1. If the valve opening does not close tightly, loosen the Inlet Clamp Ring Screws (3) and twist the sleeve as required to adjust.

CAUTION: to tighten the sleeve of an Iris Valve, the sleeve must be twisted in a counter-clockwise direction (to the left). Rotate in a clockwise direction (to the right) to loosen the Sleeve.

NOTE: Do not twist the sleeve too tightly. The sleeve should only be tight enough to close completely.

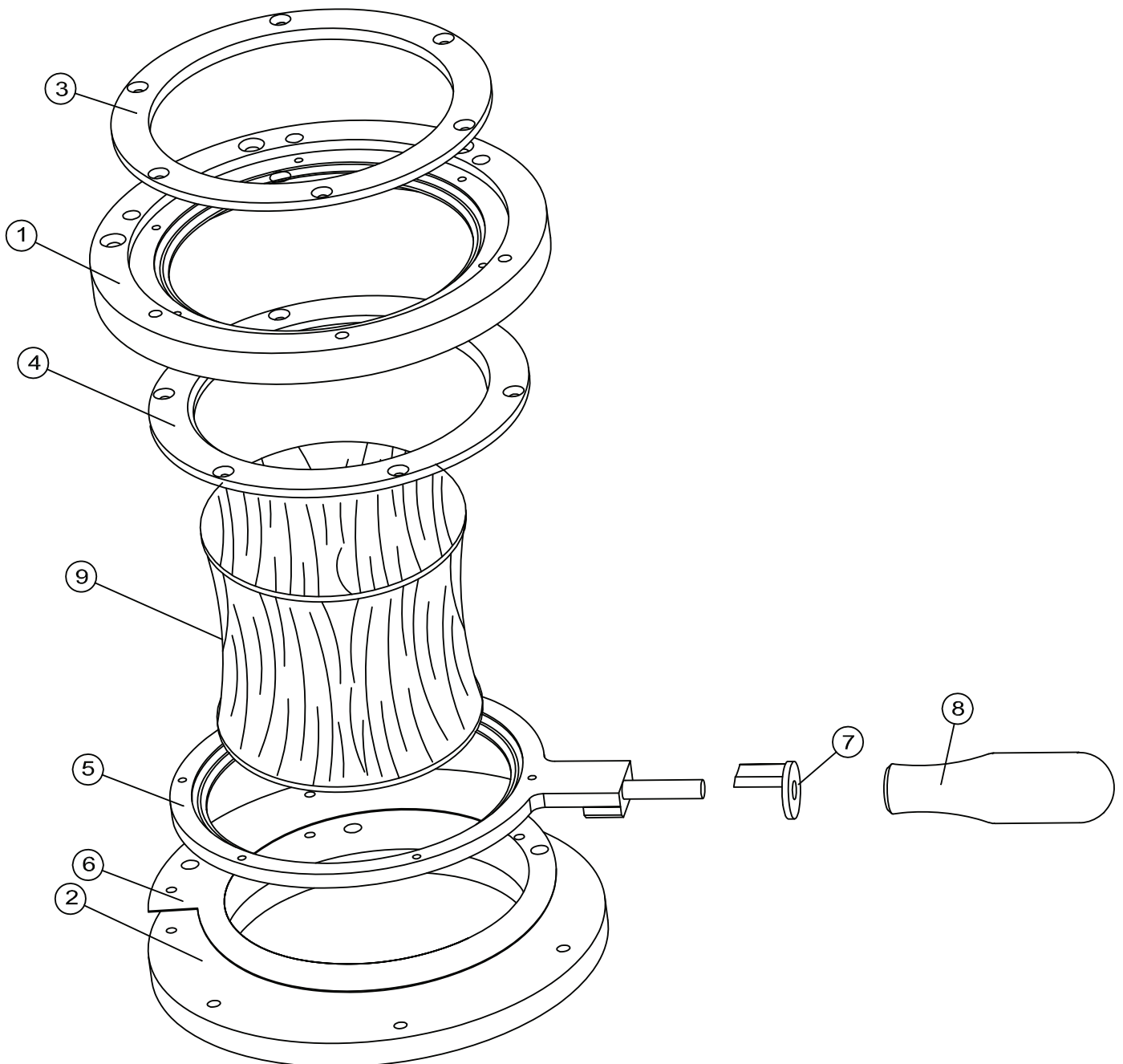
2. Hold the Sleeve Ring while pulling gently on the middle of the Sleeve and get the entire excess sleeve out of the groove. Tighten the Inlet Clamp Ring (3).
3. Test the actuation and reapply steps for undesirable results.

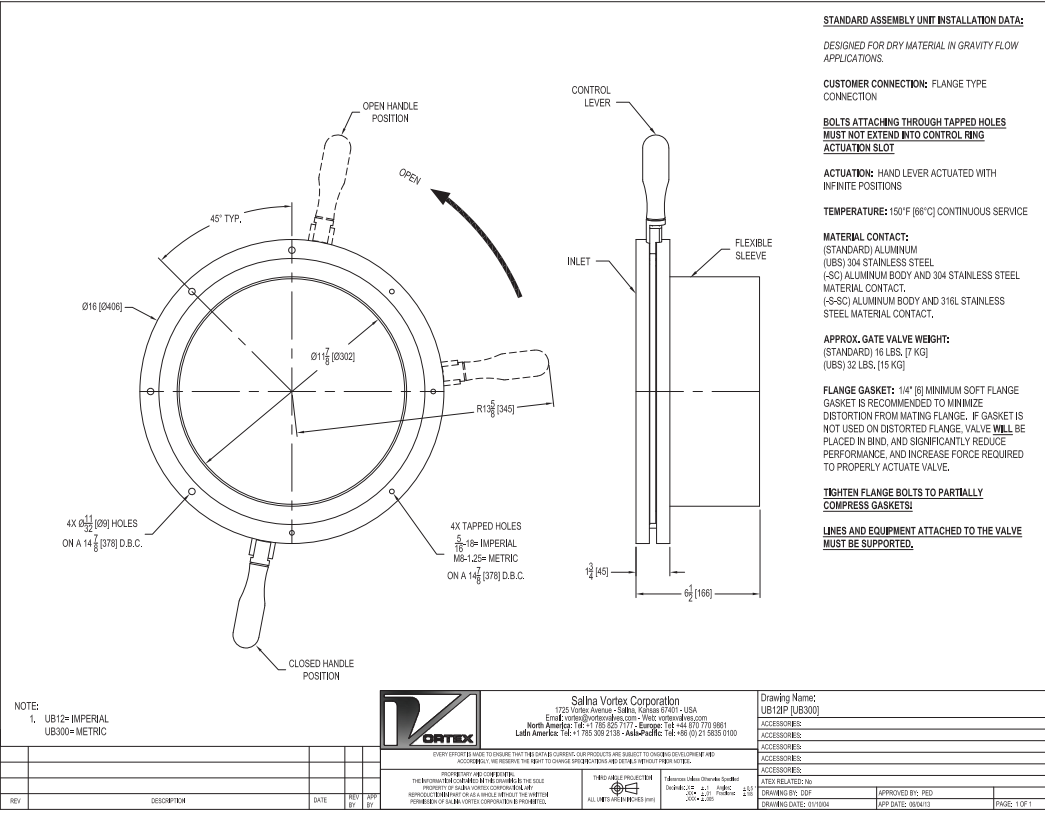
ASSEMBLY:
PARTS LIST

MODEL: UB(SIZE)IP INFINITE POSITION IRIS VALVE

ITEM NO.	DESCRIPTION	QUANTITY	ITEM NO.	DESCRIPTION	QUANTITY
UB(SIZE)IP - 00	BASIC GATE ASSEMBLY				
01	UPPER FLANGE	1	09	SLEEVE	1 **
02	LOWER FLANGE	1	10	-	0
03	INLET CLAMP RING	1	11	-	0
04	CLAMP RING	1	12	-	0
05	CONTROL RING ASSEMBLY	1	13	-	0
06	SHIM SPACER	1	14	-	0
07	IP LOCKING WASHER	1 **	15	-	0
08	IP HANDLE	1	16	-	0

** INDICATES PARTS THAT MAY REQUIRE REPLACEMENT DUE TO WEAR OR INADVERTENT DAMAGE.





STANDARD ASSEMBLY UNIT INSTALLATION DATA:

DESIGNED FOR DRY MATERIAL IN GRAVITY FLOW APPLICATIONS.

CUSTOMER CONNECTION: FLANGE TYPE CONNECTION

BOLTS ATTACHING THROUGH TAPPED HOLES MUST NOT EXTEND INTO CONTROL RING ACTUATION SLOT

ACTUATION: HAND LEVER ACTUATED WITH INFINITE POSITIONS

TEMPERATURE: 150°F [66°C] CONTINUOUS SERVICE

MATERIAL CONTACT:
 (STANDARD) ALUMINUM
 (US) 304 STAINLESS STEEL
 (-SC) ALUMINUM BODY AND 304 STAINLESS STEEL MATERIAL CONTACT.
 (-S-SC) ALUMINUM BODY AND 316L STAINLESS STEEL MATERIAL CONTACT.

APPROX. GATE VALVE WEIGHT:
 (STANDARD) 18 LBS. [7 KG]
 (US) 32 LBS. [15 KG]

FLANGE GASKET: 1/4" [6] MINIMUM SOFT FLANGE GASKET IS RECOMMENDED TO MINIMIZE DISTORTION FROM MATING FLANGE. IF GASKET IS NOT USED ON DISTORTED FLANGE, VALVE WILL BE PLACED IN BIND, AND SIGNIFICANTLY REDUCE PERFORMANCE, AND INCREASE FORCE REQUIRED TO PROPERLY ACTUATE VALVE.

TIGHTEN FLANGE BOLTS TO PARTIALLY COMPRESS GASKETS.

LINE AND EQUIPMENT ATTACHED TO THE VALVE MUST BE SUPPORTED.

NOTE:
 1. UB12= IMPERIAL
 UB300= METRIC



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Drawing Name:
 UB12/P (UB300)

ACCESSORIES:

ACCESSORIES:

EVERY EFFORT WILL BE MADE TO ENSURE THAT THE DRAWING CORRECTLY REPRESENTS OUR PRODUCTS AND SERVICES TO OUR CUSTOMERS AND SUPPLIERS.

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 USA

DESIGNED BY: JLF
 DRAWING DATE: 01/10/04

APPROVED BY: PED
 APP DATE: 08/04/03

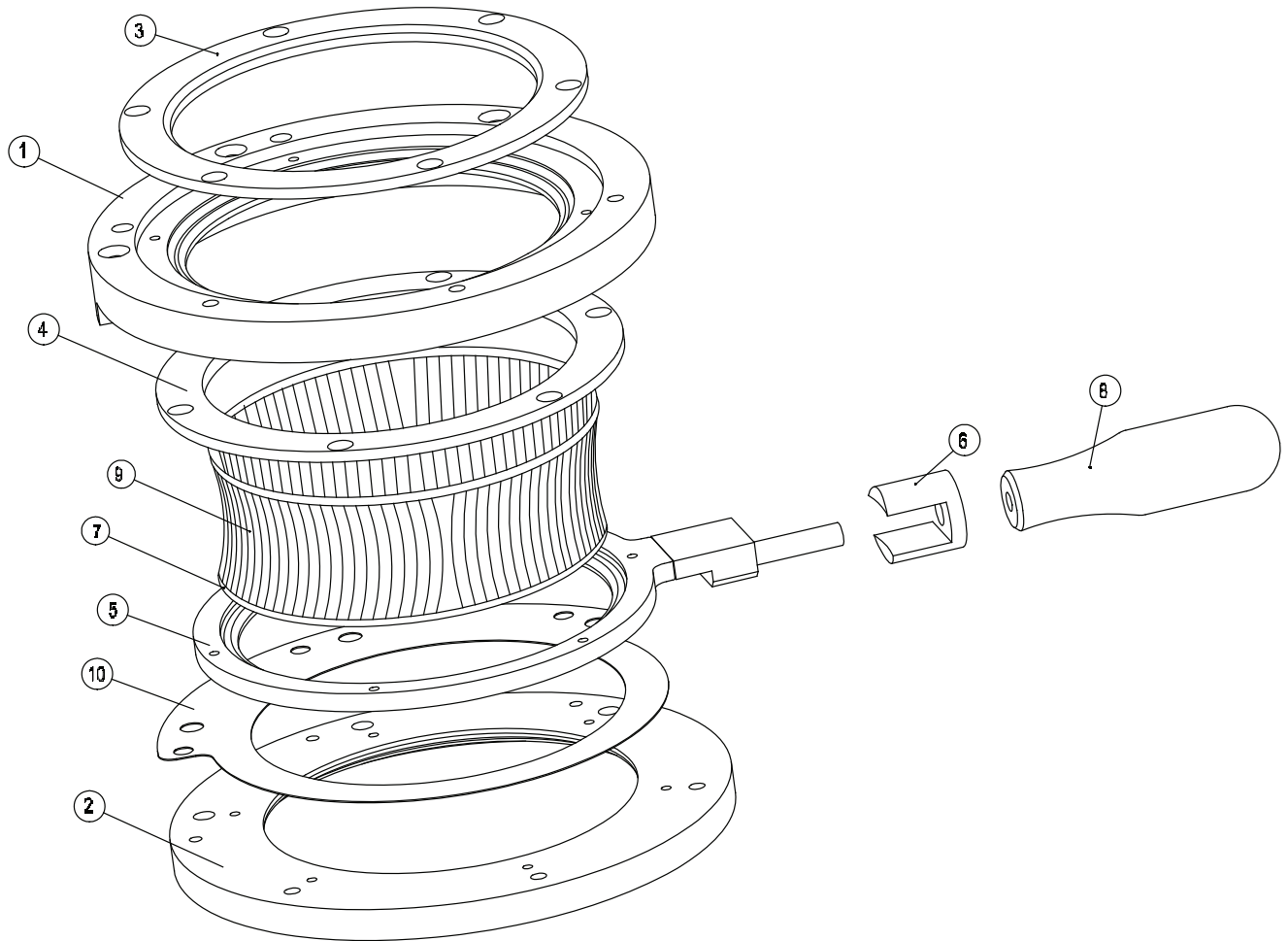
REV	DESCRIPTION	DATE	REV BY	APP BY

APP DATE: 08/04/03
 PAGE: 1 OF 1

INFINITE POSITION IRIS VALVE

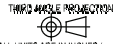
<u>ITEM</u>	<u>ITEM ID</u>	<u>DESCRIPTION</u>	<u>QUANTITY</u>
01	UB12-IP-01	UPPER FLANGE	1
02	UB12-QL-02	LOWER FLANGE	1
03	UB12-QL-03	INLET CLAMP RING	1
04	UB12-QL-04V1	CONTROL RING CLAMP	1 **
05	UB12-IP-05V1	CONTROL RING ASSEMBLY	1
06	UB00-IP-06	IP LOCKING WASHER	1
07	UB12-QL-07	SLEEVE RING	2 **
08	UB00-IP-08	IP HANDLE	1
09	UB12-QL-UR-09	SLEEVE	1
10	UB12-QL-10	SHIM SPACER	1 **

** INDICATES PARTS THAT MAY REQUIRE REPLACEMENT DUE TO WEAR OR INADVERTENT DAMAGE.



REV	DESCRIPTION	DATE	REV BY	APP BY
-	**	-	-	-

	Salina Vortex Corporation 1725 Vortex Avenue - Salina, Kansas 67401 - USA Email: vortex@vortexvalves.com - Web: vortexvalves.com North America: Tel: +1 785 825 7177 - Europe: Tel: +44 870 770 9861 Latin America: Tel: +1 785 308 2138 - Asia-Pacific: Tel: +86 (0) 21 6835 0100
	Drawing Name: UB12IP-UR

EVERY EFFORT IS MADE TO ENSURE THAT THIS DATA IS CURRENT. OUR PRODUCTS ARE SUBJECT TO ONGOING DEVELOPMENT AND ACCORDINGLY WE RESERVE THE RIGHT TO CHANGE SPECIFICATIONS AND DETAILS WITHOUT PRIOR NOTICE.	THROAT HOLE PROJECTION  ALL UNITS ARE IN INCHES (MM)	Tolerances Unless Otherwise Specified: Decimals: X = ± 1 Angles: ± 0.1° Fractions: XXX = ± 0.01 Fractions: 1/16
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ACCESSORIES: ACCESSORIES: ACCESSORIES: ACCESSORIES:	ATEX RELATED No DRAWING BY: JRA DRAWING DATE: 12-01-14	APPROVED BY: JAH APP DATE: 01-02-15	PAGE: 1 OF 1
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SECTION 3

BULK BAG UNLOADER

OPTIONS

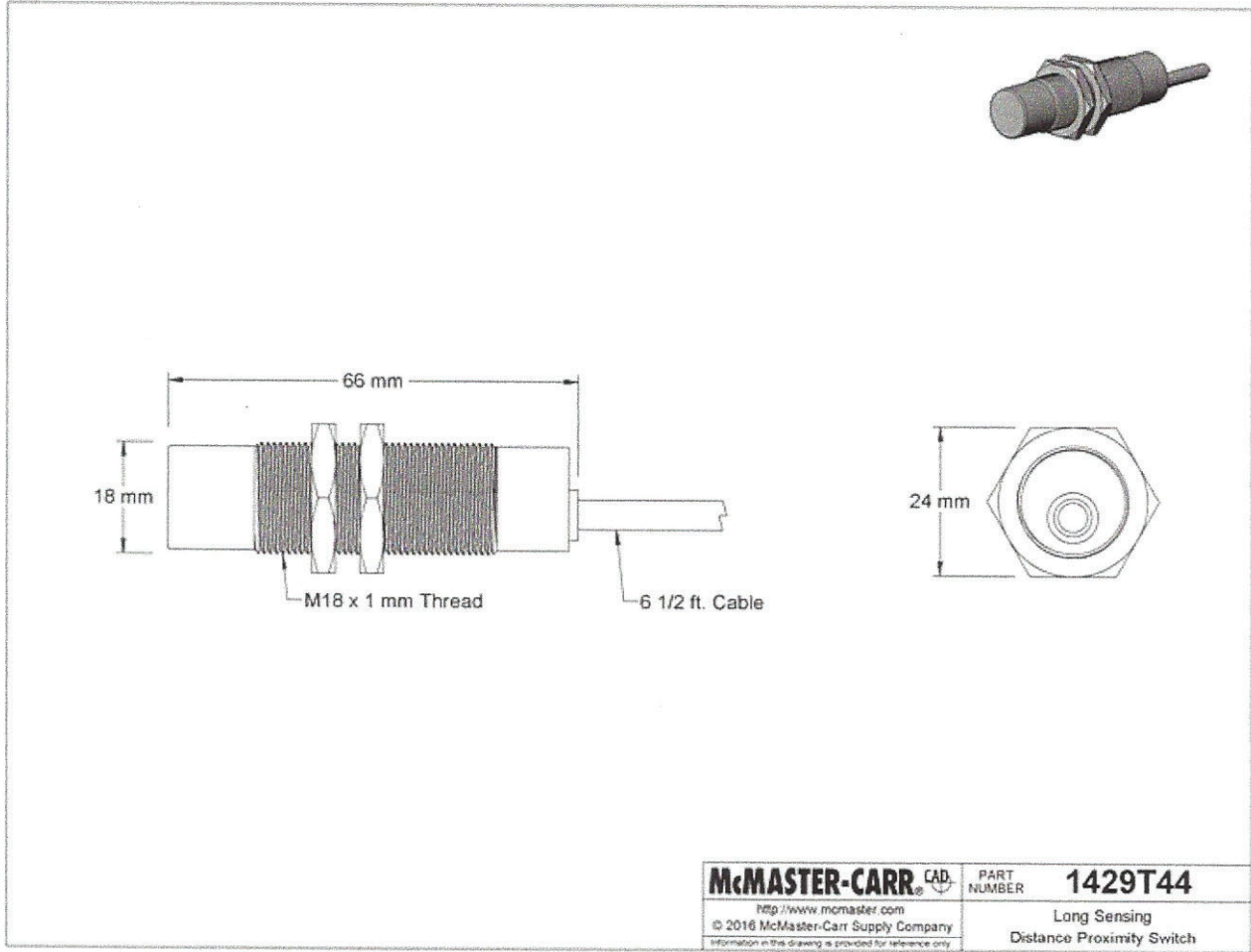
Long Distance Metallic-Object Proximity Switch

Switch Type	Non-contact
Sensor Type	Inductive
Switch Starting Position	1 Off (normally open)
Diameter	18 mm
Maximum Sensing Distance	18 mm
Mounting Style	Projecting
Input Voltage	20V AC-132V AC
Current Output	200mA
Electrical Connection Type	Hardwire
Wire Connection Type	Wire Leads
Number of Wire Leads	2
Length	66 mm
Housing Material	Stainless Steel
Face Material	Plastic
Mounting Thread Size	M18
Mounting Thread Pitch	1 mm
Mounting Thread Type	Metric
Wire Lead Gauge	22
Wire Lead Color	Blue, Brown
Cable Lead Length	6-1/2 ft.
Cable OD	0.22"
Cable Color	Black
Cable Outer Insulation Material	PVC Plastic
Temperature Range	-40° to 155°F
Environment	Corrosive, Oily, Washdown, High-Temperature Washdown, Temporary Submersion
Environmental Rating	NEMA 6P, NEMA 13, IP69K
Specifications Met	UL Listed, C-UL Listed, CE Marked
Manufacturer Equivalent Number	E59-M18C118C02-A1

Since objects from farther away than with other proximity switches that have the same diameter. Also known as inductive proximity switches, they remotely sense metallic objects even if they're obscured by water, oil, dirt, or a surface finish. Sensing distance is based on the type of material being sensed. The distance listed is for mild steel. All are rated NEMA 6P, 13, and IP69K for protection from corrosion, oil/coolant spraying, and high-pressure, high-temperature washdowns.





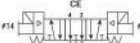

Project switches, also known as non-embeddable or unshielded switches, must be mounted with the area around the sensor face free of metal. They have a longer sensing distance than flush switches with the same diameter.


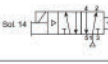




Also available: If you don't see the switch you need, please select 6693T999 and specify manufacturer and manufacturer part number.




The information in this 3-D model is provided for reference only.

5599-2, Plug-in, Size 1 (H1)


Symbol	Type	Cv	Operator	Voltage	Pilot	Non-locking	Locking
 Sol 14	4-way, 2-position, spring return	1.5	Single solenoid	24 VDC	Internal	H1EVXBG0B9D	H1EVXBH0B9D
					External	H1EVXXG0B9D	H1EVXXH0B9D
 Sol 14	4-way, 2-position, air return	1.5	Single solenoid	24 VDC	Internal	H11VXBG0B9D	H11VXBH0B9D
					External	H11VXXG0B9D	H11VXXH0B9D
 Sol 14	4-way, 2-position	1.5	Double solenoid	24 VDC	Internal	H12VXBG0B9D	H12VXBH0B9D
					External	H12VXXG0B9D	H12VXXH0B9D
 #14	4-way, 3-position, all ports blocked	1.2	Double solenoid	24 VDC	Internal	H15VXBG0B9D	H15VXBH0B9D
					External	H15VXXG0B9D	H15VXXH0B9D
 #14	4-way, 3-position, center exhaust	1.2	Double solenoid	24 VDC	Internal	H16VXBG0B9D	H16VXBH0B9D
					External	H16VXXG0B9D	H16VXXH0B9D
 #14	4-way, 3-position, pressure center	1.2	Double solenoid	24 VDC	Internal	H17VXBG0B9D	H17VXBH0B9D
					External	H17VXXG0B9D	H17VXXH0B9D

Symbol	Type	Cv	Operator	Voltage	Pilot	Non-locking	Locking
 Sol 14	4-way, 2-position, spring return	1.5	Single solenoid	120 VAC	Internal	H1EVXBG023D	H1EVXBH023D
					External	H1EVXXG023D	H1EVXXH023D
 Sol 14	4-way, 2-position, air return	1.5	Single solenoid	120 VAC	Internal	H11VXBG023D	H11VXBH023D
					External	H11VXXG023D	H11VXXH023D
 Sol 14	4-way, 2-position	1.5	Double solenoid	120 VAC	Internal	H12VXBG023D	H12VXBH023D
					External	H12VXXG023D	H12VXXH023D
 #14	4-way, 3-position, all ports blocked	1.2	Double solenoid	120 VAC	Internal	H15VXBG023D	H15VXBH023D
					External	H15VXXG023D	H15VXXH023D
 #14	4-way, 3-position, center exhaust	1.2	Double solenoid	120 VAC	Internal	H16VXBG023D	H16VXBH023D
					External	H16VXXG023D	H16VXXH023D
 #14	4-way, 3-position, pressure center	1.2	Double solenoid	120 VAC	Internal	H17VXBG023D	H17VXBH023D
					External	H17VXXG023D	H17VXXH023D

5599-2, Plug-in Single Subbase, Size 1 (H1)

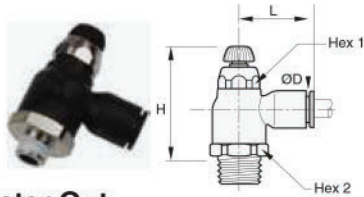
Side ported	Enclosure / Lead length	Solenoid addresses	3/8" NPT	3/8" BSPP
	Terminal strip in base	Double solenoid - 2 address	PS401115CDP	PS401116CDP
	6" flying leads	Double solenoid - 2 addresses	PS401115ADP	PS401116ADP
	4-pin, M12 micro connector in base, SAE / Ford wiring	Double solenoid - 2 addresses	PS4011158FDP	PS4011168FDP

5599-2, Plug-in Manifold Bases, Size 1 (H1)

Bottom / End	Enclosure / Lead length	Solenoid addresses	3/8" NPT	3/8" BSPP
	Circuit board	Single solenoid - 1 address	PS401165JCP	PS401166JCP
	Circuit board	Double solenoid - 2 addresses	PS401165MCP	PS401166MCP
	Terminal strip in base	Double solenoid - 2 address	PS401165CCP	PS401166CCP
	6" flying leads	Double solenoid - 2 addresses	PS401165ACP	PS401166ACP
	4-pin, M12 micro connector in base, SAE / Ford wiring	Double solenoid - 2 addresses	PS4011658FCP	PS4011668FCP

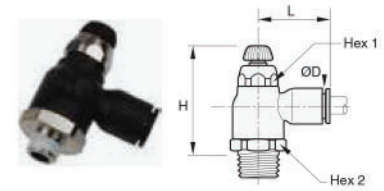
End Ported	Enclosure / Lead length	Solenoid addresses	3/8" NPT	3/8" BSPP
	Circuit board	Single solenoid - 1 address	PS401155JCP	PS401156JCP
	Circuit board	Double solenoid - 2 addresses	PS401155MCP	PS401156MCP
	Terminal strip in base	Double solenoid - 2 address	PS401155CCP	PS401156CCP
	6" flying leads	Double solenoid - 2 addresses	PS401155ACP	PS401156ACP

 Most popular.



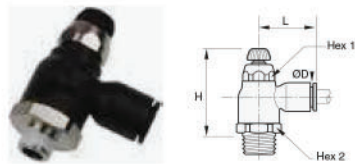
FCC731 Compact Meter Out

PART NO.	TUBE SIZE (IN)	NPT	HEX 1	HEX 2	H OPEN	H CLOSED	L
FCC731-5/32-2	5/32	1/8	0.63	0.39	1.67	1.44	0.85
FCC731-5/32-4	5/32	1/4	0.63	0.39	1.67	1.44	0.85
FCC731-4-2	1/4	1/8	0.63	0.39	1.67	1.44	0.85
FCC731-4-4	1/4	1/4	0.63	0.39	1.67	1.44	0.85
FCC731-6-4	3/8	1/4	0.91	0.67	2.03	1.71	1.22
FCC731-6-6	3/8	3/8	0.91	0.67	2.03	1.71	1.22
FCC731-6-8	3/8	1/2	.67	.91	2.03	1.71	1.22



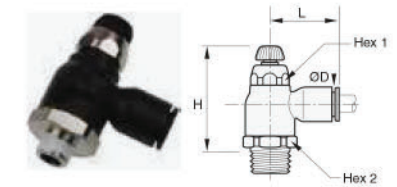
FCCI731 Compact Meter In Flow Control

PART NO.	TUBE SIZE (IN)	NPT	HEX 1	HEX 2	H OPEN	H CLOSED	L
FCCI731-5/32-2	5/32	1/8	0.63	0.39	1.67	1.44	0.85
FCCI731-5/32-4	5/32	1/4	0.63	0.39	1.67	1.44	0.85
FCCI731-4-2	1/4	1/8	0.63	0.39	1.67	1.44	0.85
FCCI731-4-4	1/4	1/4	0.63	0.39	1.67	1.44	0.85



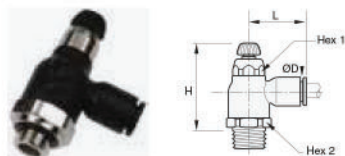
FCC731 Compact Meter Out - BSPT

PART NO.	TUBE SIZE (MM)	BSPT	HEX 1	HEX 2	H CLOSED	H OPEN	L
FCC731-6M-2R	6	1/8	16	10	36.5	42.5	22.0
FCC731-8M-2R	8	1/8	19	14	40.0	45.0	27.0
FCC731-8M-4R	8	1/4	19	14	40.0	45.0	27.0
FCC731-10M-4R	10	1/4	23	17	43.5	51.5	31.5
FCC731-10M-6R	10	3/8	23	17	43.5	51.5	31.5
FCC731-10M-8R	10	1/2	23	17	43.5	51.5	31.5
FCC731-12M-4R	12	1/4	23	17	43.5	51.5	35.0
FCC731-12M-6R	12	3/8	23	17	43.5	51.5	35.0
FCC731-12M-8R	12	1/2	23	17	43.5	51.5	35.0



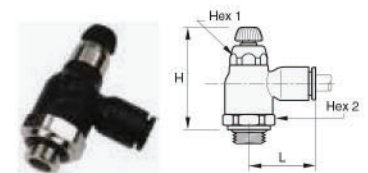
FCCI731 Compact Meter In Flow Control - BSPT

PART NO.	TUBE SIZE (MM)	BSPT	HEX 1	HEX 2	H CLOSED	H OPEN	L
FCCI731-10M-4R	10	1/4	23	17	43.5	51.5	31.5
FCCI731-10M-6R	10	3/8	23	17	43.5	51.5	31.5
FCCI731-10M-8R	10	1/2	23	17	43.5	51.5	31.5
FCCI731-12M-4R	12	1/4	23	17	43.5	51.5	35.0
FCCI731-12M-6R	12	3/8	23	17	43.5	51.5	35.0
FCCI731-12M-8R	12	1/2	23	17	43.5	51.5	35.0



FCC731 Compact Meter Out - BSPP

PART NO.	TUBE SIZE (MM)	BSPP	HEX 1	HEX 2	H CLOSED	H OPEN	L
FCC731-4M-2G	4	1/8	10	16	38.0	44.0	22.0
FCC731-6M-2G	6	1/8	10	16	38.0	44.0	22.0
FCC731-6M-4G	6	1/4	10	16	36.5	42.5	22.0
FCC731-8M-2G	8	1/8	14	19	41.5	48.0	28.0
FCC731-8M-4G	8	1/4	14	19	41.5	48.0	28.0
FCC731-8M-6G	8	3/8	14	19	41.5	48.0	28.0
FCC731-10M-4G	10	1/4	17	23	45.5	53.5	31.5
FCC731-10M-6G	10	3/8	17	23	45.5	54.0	31.5
FCC731-12M-6G	12	3/8	17	23	45.5	54.0	35.0
FCC731-12M-8G	12	1/2	17	24	45.5	54.0	35.0

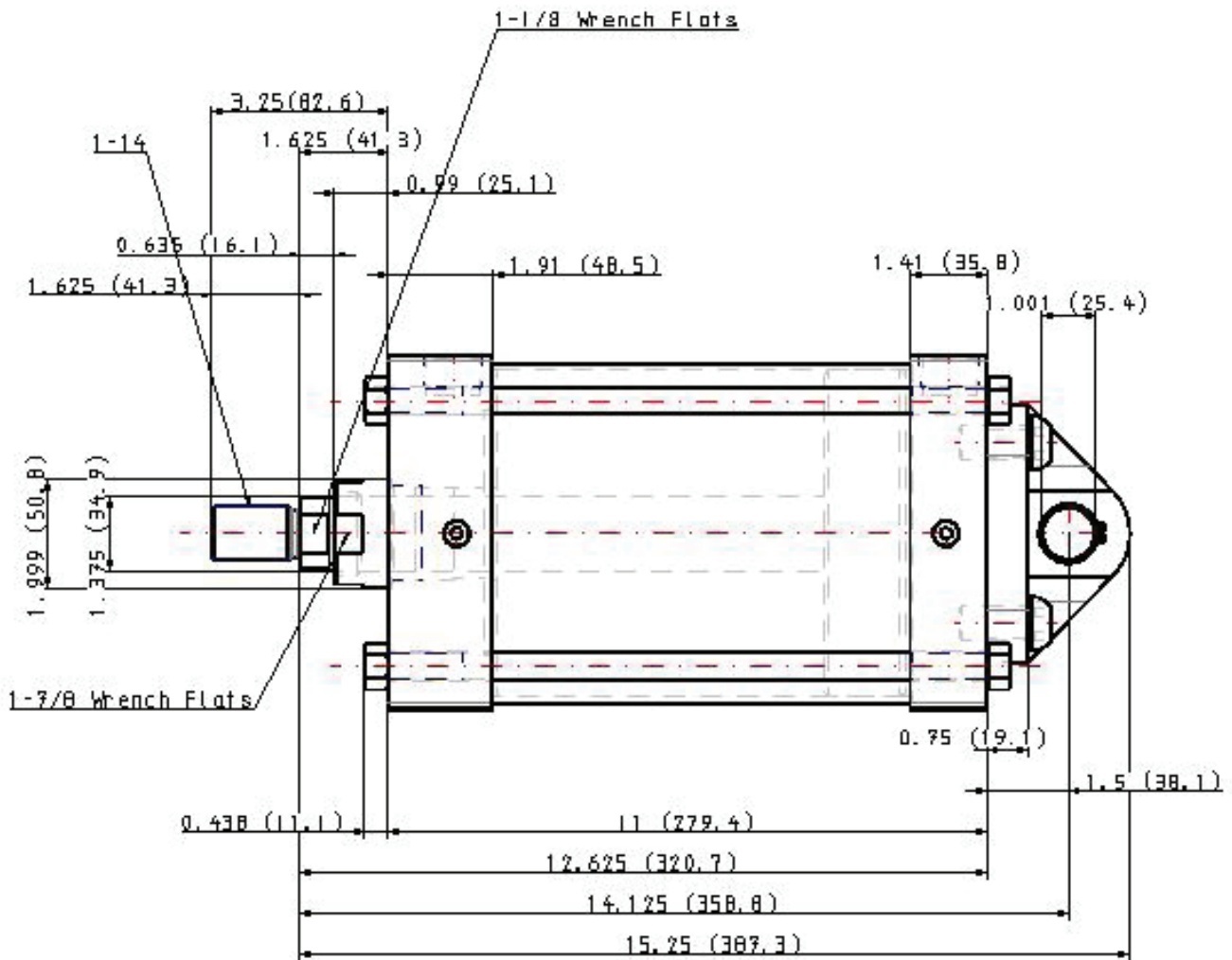


FCCI731 Compact Meter In Flow Control - BSPP

PART NO.	TUBE SIZE (MM)	BSPP	HEX 1	HEX 2	H CLOSED	H OPEN	L
FCCI731-4M-2G	4	1/8	10	16	38.0	44.0	22.0
FCCI731-6M-2G	6	1/8	10	16	38.0	44.0	22.0
FCCI731-6M-4G	6	1/4	10	16	36.5	42.5	22.0
FCCI731-8M-2G	8	1/8	14	19	41.5	48.0	28.0
FCCI731-8M-4G	8	1/4	14	19	41.5	48.0	28.0
FCCI731-8M-6G	8	3/8	14	19	41.5	48.0	28.0
FCCI731-10M-4G	10	1/4	17	23	45.5	53.5	31.5
FCCI731-10M-6G	10	3/8	17	23	45.5	54.0	31.5
FCCI731-12M-8G	12	1/2	17	24	45.5	54.0	35.0

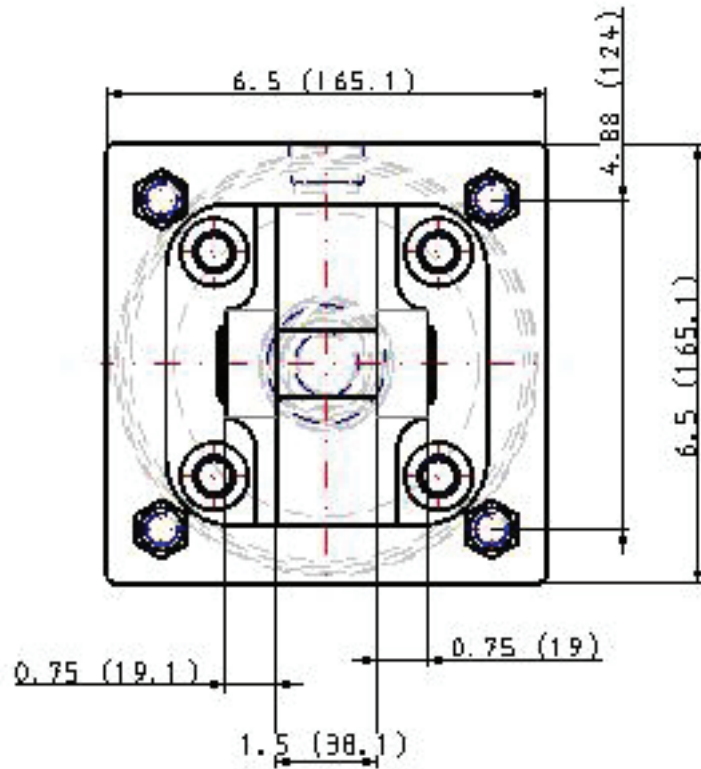
SECTION 3 BULK BAG UNLOADER OPTIONS

Solenoid



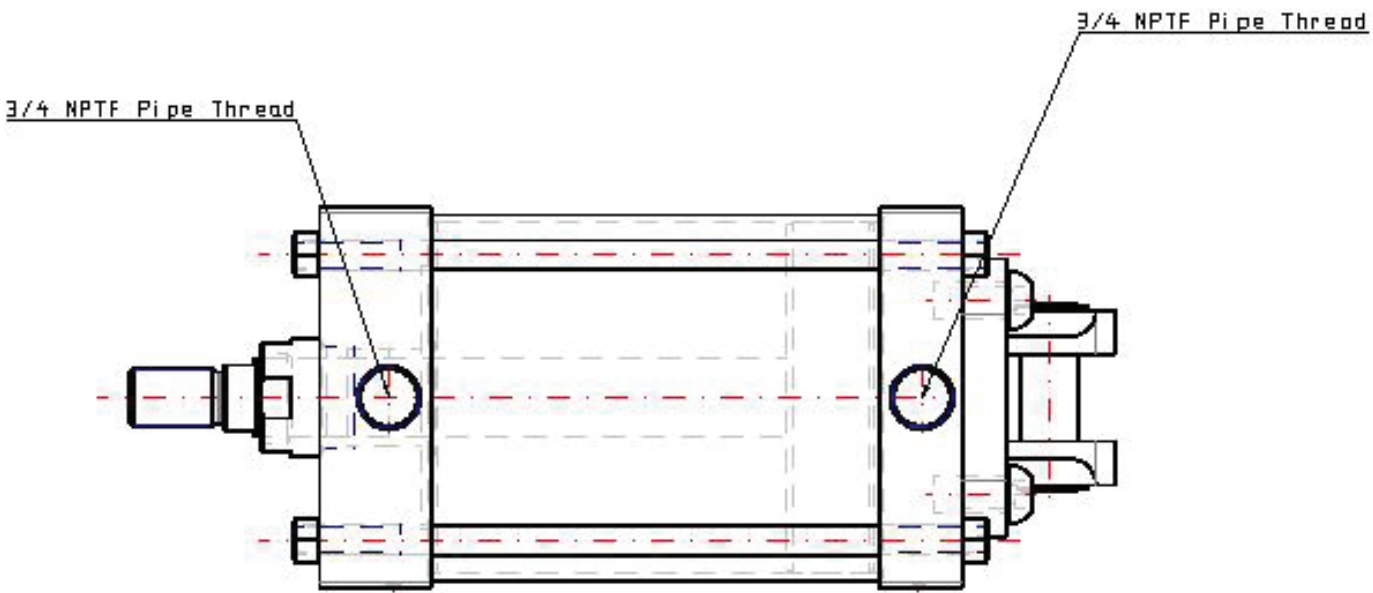
SECTION 3 BULK BAG UNLOADER OPTIONS

Solenoid

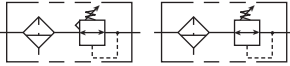


SECTION 3 BULK BAG UNLOADER OPTIONS

Solenoid

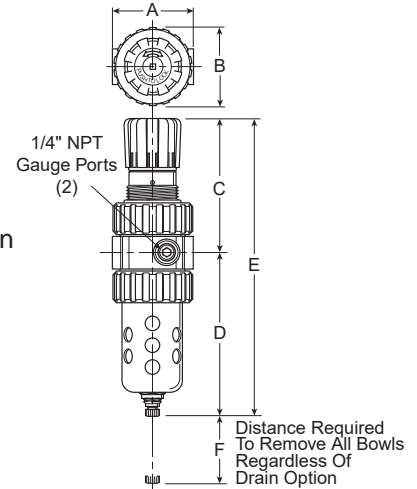


06E Filter / Regulator – Compact



Features

- Space saving package offers both filter and regulator features for optimal performance.
- Excellent water removal efficiency.
- Rolling diaphragm for extended life.
- Quick response, and accurate pressure regulation regardless of changing flow or inlet pressure.
- Two high flow 1/4" gauge ports can be used as additional outlets.
- Shown with recommended metal bowl guard.
- High Flow: 1/4" – 46 SCFM§
 3/8" – 55 SCFM§
 1/2" – 61 SCFM§



Port Size	NPT	
	Twist Drain	Automatic Float Drain
Poly Bowl† / Metal Guard		
1/4"	06E12A13A*	06E16A13A*
3/8"	06E22A13A*	06E26A13A*
1/2"	06E32A13A*	06E36A13A*
Metal Bowl / Sight Gauge		
1/4"	06E14A13A*	06E18A13A*
3/8"	06E24A13A*	06E28A13A*
1/2"	06E34A13A*	06E38A13A*

06E Filter / Regulator Dimensions			
A	B	C	D
2.81 (71)	2.74 (70)	4.69 (119)	5.69 (145)
D†	E	E†	F
5.74 (146)	10.38 (264)	10.43 (265)	2.25 (57)

Inches (mm)
 † With Twist Drain or Auto Pulse Drain

Standard part numbers shown bold. For other models refer to ordering information below.

‡ For polycarbonate bowl see Caution on page A2.

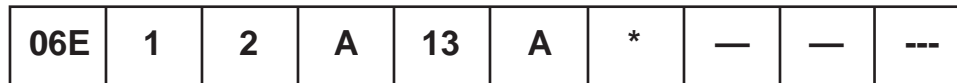
§ SCFM = Standard cubic feet per minute at 100 PSIG inlet, 90 PSIG no flow secondary setting and 10 PSIG pressure drop.

NOTE: 2.00 Dia. (50.8 mm) hole required for panel mounting. Max. panel thickness 1/4".

⚠ WARNING

Product rupture can cause serious injury.
Do not connect regulator to bottled gas.
Do not exceed maximum primary pressure rating.

Ordering Information



Port Size
1 1/4 Inch
2 3/8 Inch
3 1/2 Inch

Elements
A 40 Micron
B 5 Micron
Z Adsorber

Relief
A Relieving
L Non-Relieving

Port Type
Blank NPT
1* BSPP
2 BSPT

* 1/4 & 3/8 inch meet ISO 1179-1 Standard.

Preset
Blank None
XXX* Preset Pressure

* Available Preset Range, 10 to 90 PSIG in 5 PSIG increments. For higher pressures, contact factory.
 (Example: 065 = 65 PSIG)

Bowl Options	
<u>Polycarbonate Bowl</u>	<u>Metal Bowl</u>
1 Twist Drain	3 Twist Drain
2 Metal Bowl Guard / Twist Drain	4 Sight Gauge / Twist Drain
5 Auto Float Drain	7 Auto Float Drain
6 Metal Bowl Guard / Auto Float Drain	8 Sight Gauge / Auto Float Drain

Pressure Range	
<u>Without Gauge</u>	<u>With Gauge</u>
11 60 PSIG	16 60 PSIG
13 125 PSIG	18 125 PSIG
15§ 250 PSIG	21§ 250 PSIG

§ If 250 PSIG spring range is used, use metal bowl.

Engineering Level
* Will be Entered at Factory

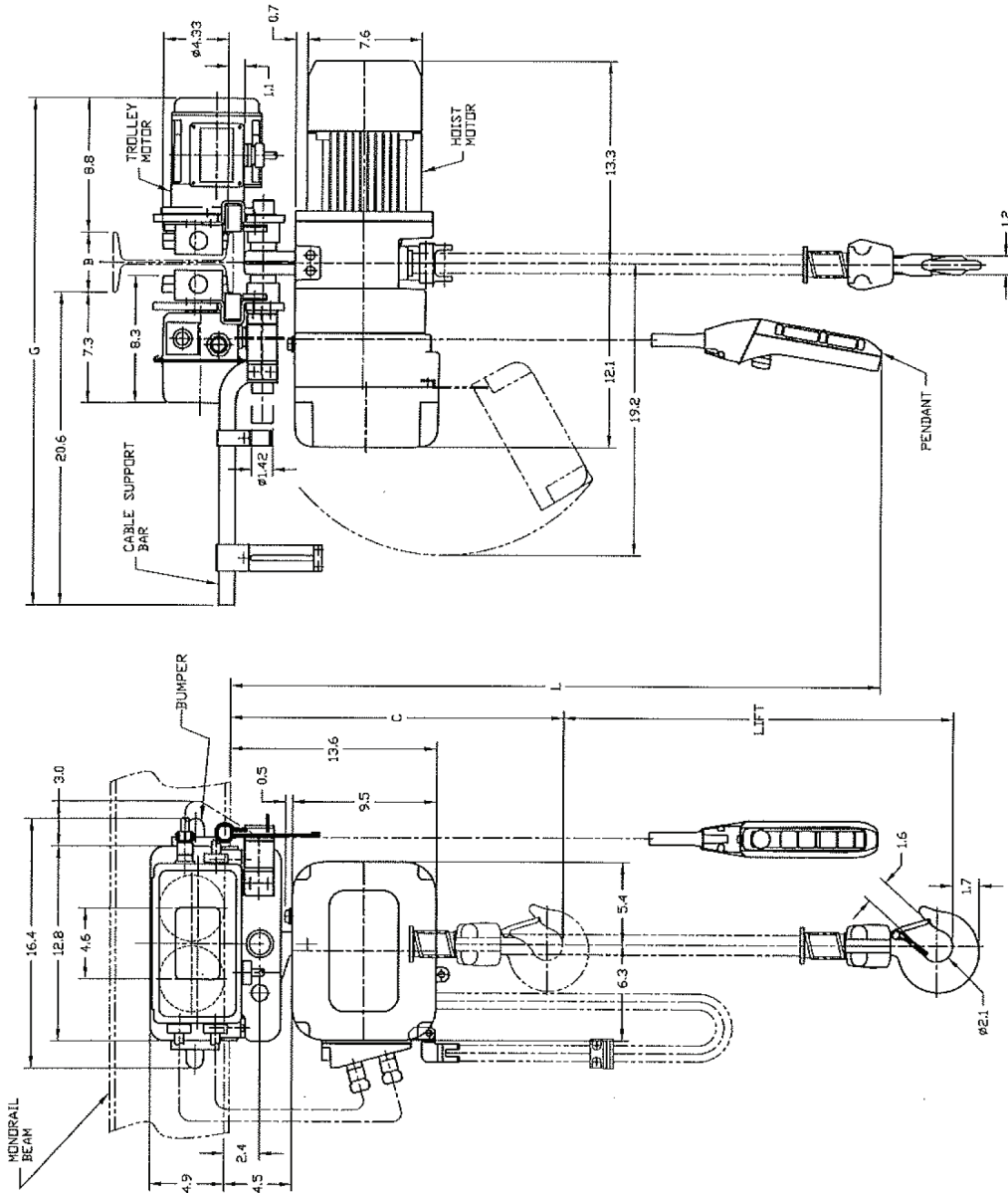
Options	
Blank	No Options
L†	Preset
	Non-Adjustable
P†	Preset Adjustable

† Inlet Pressure is 100 PSIG. For other pressures, contact factory.

Spring Type by Preset / Limited Pressure:

- For Preset / Limited Pressure 10 to 25 use 30 PSI Spring
- For Preset / Limited Pressure 26 to 50 use 60 PSI Spring
- For Preset / Limited Pressure 51 to 90 use 125 PSI Spring

BOLD ITEMS ARE MOST POPULAR.



SPECIFICATIONS		
PARAMETER	STANDARD	AS-CONFIGURED
LIFT (FT)	10	STD.
POWER SUPPLY CORD LENGTH (FT)	30	STD.
PENDANT DROP, L (FT)	7.2	STD.
NET WEIGHT (LBS.)	249	STD.
CAPACITY (G.S. TONS)	2	STD.
MINIMUM HEADROOM, C (INS.)	212.4	STD.
SUPPLY POWER (VOLTS-PHASE-HZ)	E08-230/460-3-60	STD.
CLASSIFICATION	ASME HST-1M	STD.
	FEM 9511	STD.
SHORT TIME RATING (MINUTES)	60	STD.
	(CED, MAX. STARTS/HR.)	2.4
HOIST MOTOR	60, 360	STD.
	OUTPUT (HP)	2.4
RATED CURRENT (AMPS)	12.0 @ 208-230V.	STD.
	6.0 @ 460V.	STD.
SHORT TIME RATING (MINUTES)	40	STD.
	OUTPUT (HP)	0.54
TROLLEY MOTOR	3 P @ 208-230V.	STD.
	OUTPUT (HP)	1.5 @ 460V.
LIFTING SPEED (FT/MINUTE)	14	STD.
TRAVELING SPEED (FT/MINUTE)	40	STD.
LOAD CHAIN SIZE (DIN) X FALLS	10.2 X 1	STD.
MAXIMUM TROLLEY WIDTH, G (INS.)	32.59 TO 35.38	STD.
FLANGE WIDTH, B (INS.)	3.23 TO 6.02	STD.
MINIMUM ALLOWABLE RADIUS FOR CURVE (INS.)	31.5	STD.

CERTIFIED
 BY: _____
 DATE: _____

NO.	REVISION DESCRIPTION	DRAWN BY	DATE	CHECKED BY	DATE
NER2M020L-L					
TOLERANCES (EXCEPT AS NOTED)		DRAWING NO: 67051			
DECIMAL: X.XX = .01 +/- X.XX = .05		SCALE: SEE NOTE 1		REV. NO. 0	
FRACTIONAL: +/- 1/32"		DRAWN BY: MDR	DATE: 03/13/08	CHKD BY: JPB	
ANGULAR: +/- 1°					

NOTES:
 1.) CAD COMPUTER FILE - SCALE 1:1
 HARD COPY - SCALED TO FIT PAPER SIZE.
 2.) DRAWING SUBJECT TO CHANGE WITHOUT NOTICE.

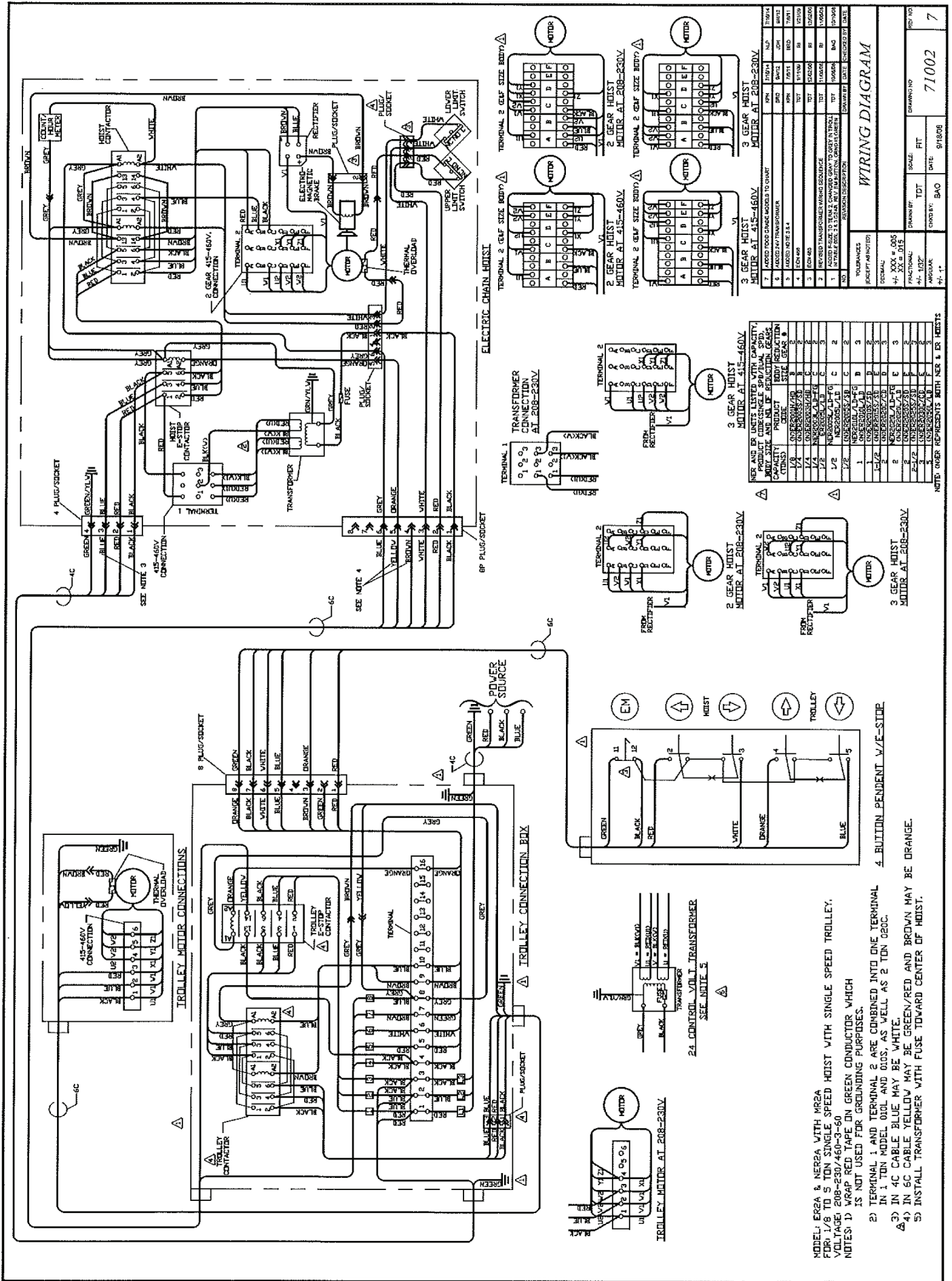


TABLE 1: HOIST MOTOR CONNECTIONS

Terminal	Color	Connection
1	Green	145-160V
2	Black	415-460V
3	White	208-230V
4	Blue	208-230V
5	Orange	208-230V
6	Brown	208-230V
7	Grey	208-230V
8	Yellow	208-230V

TABLE 2: MOTOR CONNECTIONS

Terminal	Color	Connection
1	Green	145-160V
2	Black	415-460V
3	White	208-230V
4	Blue	208-230V
5	Orange	208-230V
6	Brown	208-230V
7	Grey	208-230V
8	Yellow	208-230V

TABLE 3: HOIST MOTOR CONNECTIONS

Terminal	Color	Connection
1	Green	145-160V
2	Black	415-460V
3	White	208-230V
4	Blue	208-230V
5	Orange	208-230V
6	Brown	208-230V
7	Grey	208-230V
8	Yellow	208-230V

TABLE 4: MOTOR CONNECTIONS

Terminal	Color	Connection
1	Green	145-160V
2	Black	415-460V
3	White	208-230V
4	Blue	208-230V
5	Orange	208-230V
6	Brown	208-230V
7	Grey	208-230V
8	Yellow	208-230V

TABLE 5: MOTOR CONNECTIONS

Terminal	Color	Connection
1	Green	145-160V
2	Black	415-460V
3	White	208-230V
4	Blue	208-230V
5	Orange	208-230V
6	Brown	208-230V
7	Grey	208-230V
8	Yellow	208-230V

TABLE 6: MOTOR CONNECTIONS

Terminal	Color	Connection
1	Green	145-160V
2	Black	415-460V
3	White	208-230V
4	Blue	208-230V
5	Orange	208-230V
6	Brown	208-230V
7	Grey	208-230V
8	Yellow	208-230V

WIRING DIAGRAM

TABLE 7: HOIST MOTOR CONNECTIONS

Terminal	Color	Connection
1	Green	145-160V
2	Black	415-460V
3	White	208-230V
4	Blue	208-230V
5	Orange	208-230V
6	Brown	208-230V
7	Grey	208-230V
8	Yellow	208-230V

TABLE 8: MOTOR CONNECTIONS

Terminal	Color	Connection
1	Green	145-160V
2	Black	415-460V
3	White	208-230V
4	Blue	208-230V
5	Orange	208-230V
6	Brown	208-230V
7	Grey	208-230V
8	Yellow	208-230V

TABLE 9: MOTOR CONNECTIONS

Terminal	Color	Connection
1	Green	145-160V
2	Black	415-460V
3	White	208-230V
4	Blue	208-230V
5	Orange	208-230V
6	Brown	208-230V
7	Grey	208-230V
8	Yellow	208-230V

TABLE 10: MOTOR CONNECTIONS

Terminal	Color	Connection
1	Green	145-160V
2	Black	415-460V
3	White	208-230V
4	Blue	208-230V
5	Orange	208-230V
6	Brown	208-230V
7	Grey	208-230V
8	Yellow	208-230V

TABLE 11: MOTOR CONNECTIONS

Terminal	Color	Connection
1	Green	145-160V
2	Black	415-460V
3	White	208-230V
4	Blue	208-230V
5	Orange	208-230V
6	Brown	208-230V
7	Grey	208-230V
8	Yellow	208-230V

TABLE 12: MOTOR CONNECTIONS

Terminal	Color	Connection
1	Green	145-160V
2	Black	415-460V
3	White	208-230V
4	Blue	208-230V
5	Orange	208-230V
6	Brown	208-230V
7	Grey	208-230V
8	Yellow	208-230V

TABLE 13: MOTOR CONNECTIONS

Terminal	Color	Connection
1	Green	145-160V
2	Black	415-460V
3	White	208-230V
4	Blue	208-230V
5	Orange	208-230V
6	Brown	208-230V
7	Grey	208-230V
8	Yellow	208-230V

TABLE 14: MOTOR CONNECTIONS

Terminal	Color	Connection
1	Green	145-160V
2	Black	415-460V
3	White	208-230V
4	Blue	208-230V
5	Orange	208-230V
6	Brown	208-230V
7	Grey	208-230V
8	Yellow	208-230V

TABLE 15: MOTOR CONNECTIONS

Terminal	Color	Connection
1	Green	145-160V
2	Black	415-460V
3	White	208-230V
4	Blue	208-230V
5	Orange	208-230V
6	Brown	208-230V
7	Grey	208-230V
8	Yellow	208-230V

TABLE 16: MOTOR CONNECTIONS

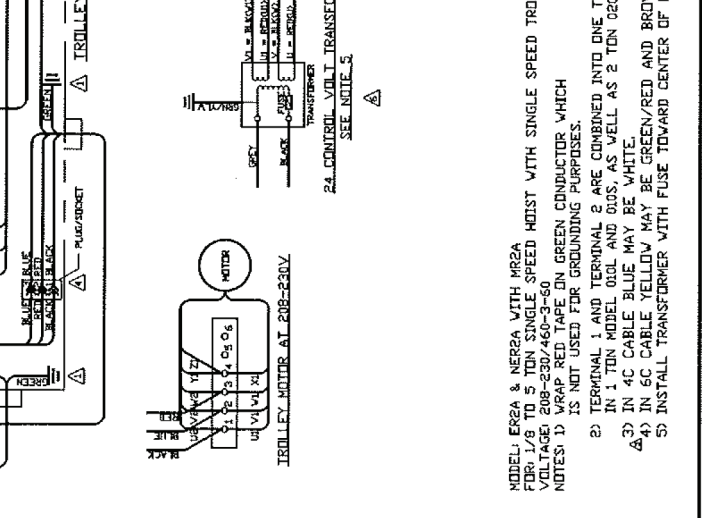
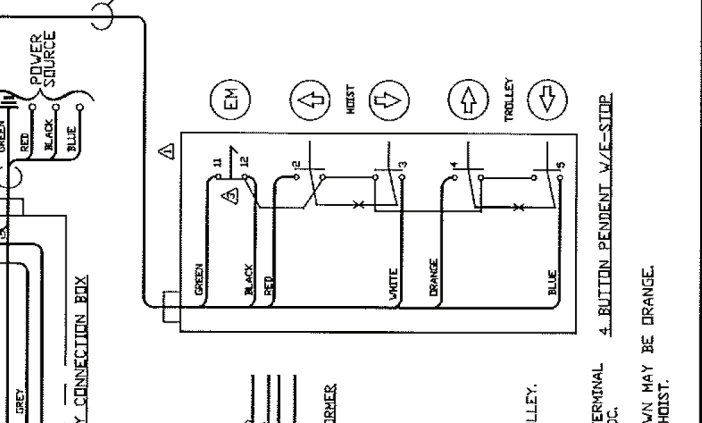
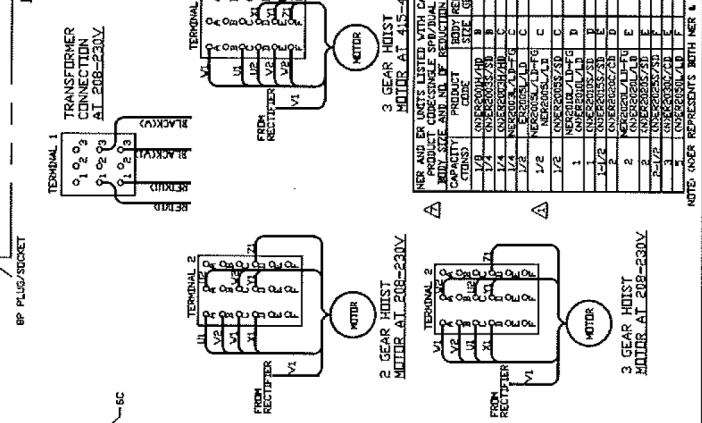
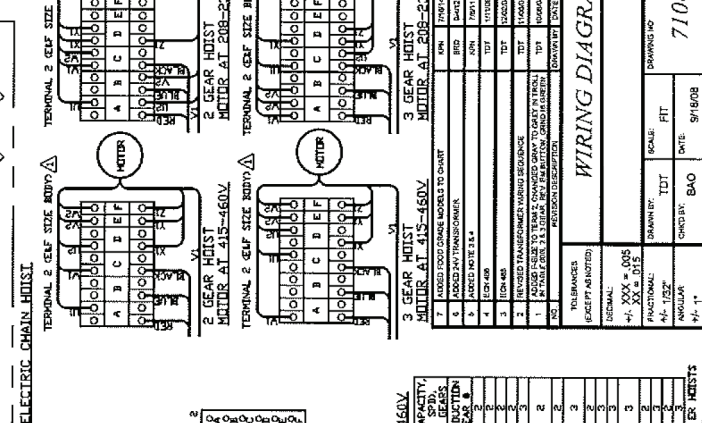
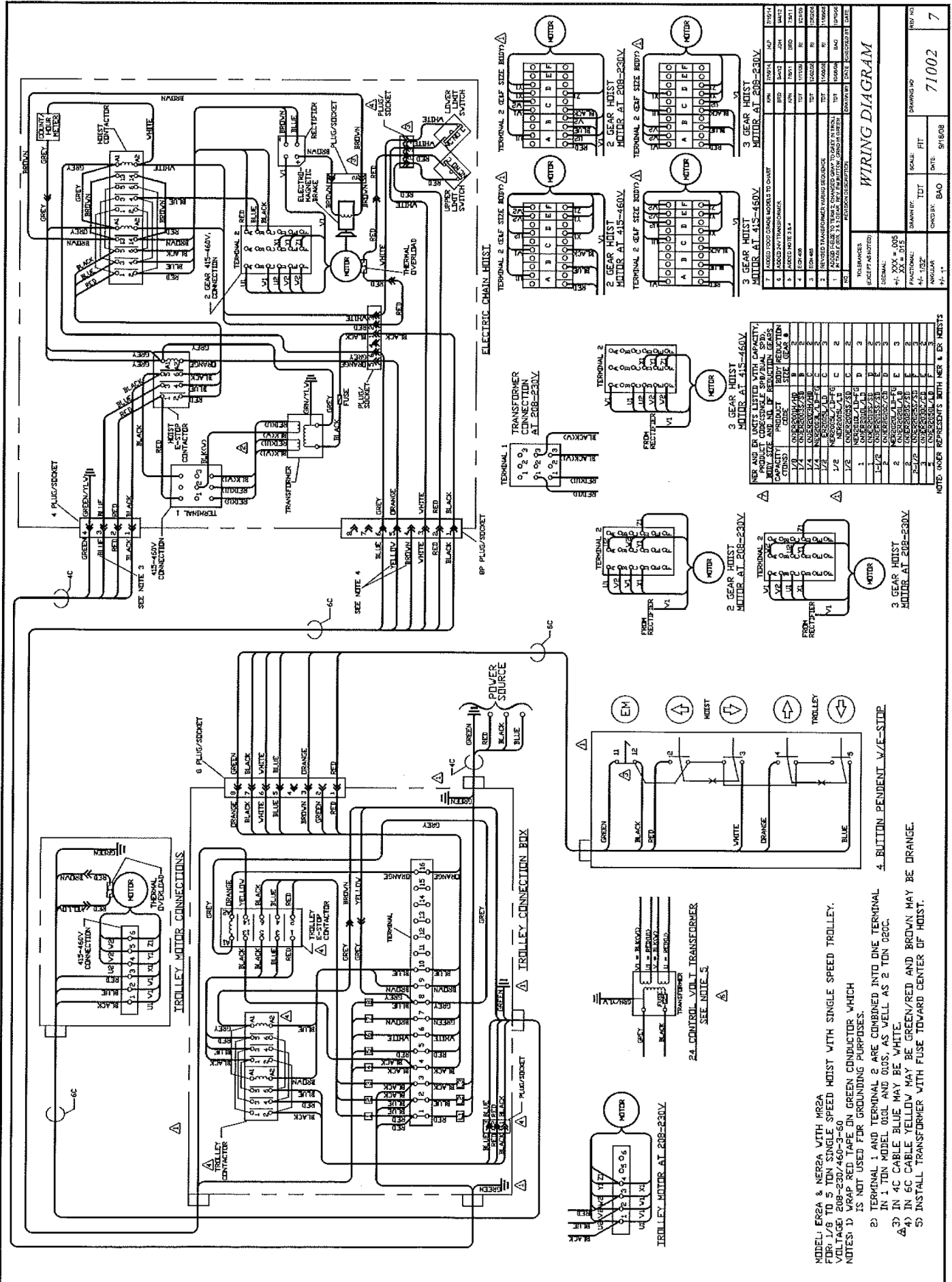
Terminal	Color	Connection
1	Green	145-160V
2	Black	415-460V
3	White	208-230V
4	Blue	208-230V
5	Orange	208-230V
6	Brown	208-230V
7	Grey	208-230V
8	Yellow	208-230V

TABLE 17: MOTOR CONNECTIONS

Terminal	Color	Connection
1	Green	145-160V
2	Black	415-460V
3	White	208-230V
4	Blue	208-230V
5	Orange	208-230V
6	Brown	208-230V
7	Grey	208-230V
8	Yellow	208-230V

TABLE 18: MOTOR CONNECTIONS

Terminal	Color	Connection
1	Green	145-160V
2	Black	415-460V
3	White	208-230V
4	Blue	208-230V
5	Orange	208-230V
6	Brown	208-230V
7	Grey	208-230V
8	Yellow	208-230V



MODEL	TYPE	HP	FR	FR	FR
1	1/2	1/2	1/2	1/2	1/2
2	1/2	1/2	1/2	1/2	1/2
3	1/2	1/2	1/2	1/2	1/2
4	1/2	1/2	1/2	1/2	1/2
5	1/2	1/2	1/2	1/2	1/2
6	1/2	1/2	1/2	1/2	1/2
7	1/2	1/2	1/2	1/2	1/2
8	1/2	1/2	1/2	1/2	1/2
9	1/2	1/2	1/2	1/2	1/2
10	1/2	1/2	1/2	1/2	1/2
11	1/2	1/2	1/2	1/2	1/2
12	1/2	1/2	1/2	1/2	1/2
13	1/2	1/2	1/2	1/2	1/2
14	1/2	1/2	1/2	1/2	1/2
15	1/2	1/2	1/2	1/2	1/2
16	1/2	1/2	1/2	1/2	1/2
17	1/2	1/2	1/2	1/2	1/2
18	1/2	1/2	1/2	1/2	1/2
19	1/2	1/2	1/2	1/2	1/2
20	1/2	1/2	1/2	1/2	1/2
21	1/2	1/2	1/2	1/2	1/2
22	1/2	1/2	1/2	1/2	1/2
23	1/2	1/2	1/2	1/2	1/2
24	1/2	1/2	1/2	1/2	1/2
25	1/2	1/2	1/2	1/2	1/2
26	1/2	1/2	1/2	1/2	1/2
27	1/2	1/2	1/2	1/2	1/2
28	1/2	1/2	1/2	1/2	1/2
29	1/2	1/2	1/2	1/2	1/2
30	1/2	1/2	1/2	1/2	1/2

WIRING DIAGRAM

71002

DATE: 1/11/51

BY: J. E. ...

CHECKED BY: ...

APPROVED BY: ...

SCALE: ...

DRAWING NO: ...

REV: ...

DESCRIPTION: ...

NOTES: ...

2) TERMINAL 1 AND TERMINAL 2 ARE COMBINED INTO ONE TERMINAL IN 1 TON MODEL 00L AND 00S, AS WELL AS 2 TON 00C.

3) IN 4C CABLE BLUE MAY BE WHITE.

4) IN 6C CABLE YELLOW MAY BE GREEN/RED AND BROWN MAY BE ORANGE.

5) INSTALL TRANSFORMER WITH FUSE TOWARD CENTER OF HOIST.

SECTION 3

BULK BAG UNLOADER

OPTIONS

Rotary Electric Vibrators

Installation, Operating and Maintenance Instructions



IMPORTANT:

The dependable performance and safe operation of the RE and RES rotary electric vibrator requires that this manual be read entirely before attempting installation. The recommended method of installation must be strictly adhered to.

SECTION 3 BULK BAG UNLOADER OPTIONS

Rotary Electric Vibrators

CONSTRUCTION

The following tables, one through five, are grouped by the frequency of the vibrators. Each table provides the maximum force, amp draw, and diagram reference number for each vibrator within the group.

There are seven basic construction configurations, which are detailed on pages 4 and 5. Locate your model from the tables below and note which diagram depicts the construction.

TABLE 1 - Single Phase (3600 RPM)

MODEL	MAX FORCE		CONSTRUCTION DIAGRAM REF.
	(lbs.)	AMP DRAW	
RES 0.1-2	30	0.39	Fig. 1
RES 0.5-2	110	0.53	Fig. 1
RES 1-2	220	1.2	Fig. 1
RES 2-2	440	1.9	Fig. 1
RES 3.5-2	770	2.9	Fig. 1
RES 6-2	1,320	5.3	Fig. 1

TABLE 2 - Three Phase (3600 RPM)

MODEL	MAX FORCE		AMP DRAW		CONSTRUCTION DIAGRAM REF.
	(lbs.)	230v.	460v.		
RE 0.5-2	110	0.33	0.15	Fig. 1	
RE 1-2	220	0.41	0.25	Fig. 1	
RE 2-2	440	0.62	0.35	Fig. 1	
RE 3.5-2	770	1.1	0.6	Fig. 1	
RE 6-2	1,320	1.6	0.9	Fig. 1	
RE 10-2	2,200	2.7	1.4	Fig. 2	
RE 16-2	3,520	4.0	2.0	Fig. 5	
RE 23-2	5,060	5.6	2.9	Fig. 5	
RE 30-2	6,600	7.0	3.6	Fig. 5	
RE 40-2	8,800	9.8	4.9	Fig. 5	

WARNING - for mounting motor on an angle or vertically:

- Models with Snap Rings:** Note "BOTTOM SIDE" as per label on motor. If motor is not positioned correctly, the adjustable weight may fall and cause injury or damage.
- Models without Snap Rings:** BEWARE when adjusting bottom weight as it may fall when loosened and cause injury or damage.

TABLE 3 - Three Phase (1800 RPM)

MODEL	MAX FORCE		AMP DRAW		CONSTRUCTION DIAGRAM REF.
	(lbs.)	230v.	460v.		
RE 1.5-4	330	0.50	0.33	Fig. 3	
RE 3-4	660	0.80	0.52	Fig. 3	
RE 6-4	1,320	1.2	0.70	Fig. 3	
RE 9-4	1,980	1.7	0.99	Fig. 3	
RE 12-4	2,640	2.5	1.4	Fig. 3	
RE 17-4	3,740	3.0	1.6	Fig. 6	
RE 24-4	5,280	3.8	2.0	Fig. 6	
RE 34-4	7,480	5.0	2.6	Fig. 6	
RE 52-4	11,440	7.7	4.0	Fig. 7	
RE 75-4	16,500	12.3	6.2	Fig. 7	
RE 84-4	18,480	18.2	9.4	Fig. 7	
RE 110-4	24,200	25	13	Fig. 7	

TABLE 4 - Three Phase (1200 RPM)

MODEL	MAX FORCE		AMP DRAW		CONSTRUCTION DIAGRAM REF.
	(lbs.)	230v.	460v.		
RE 3-6	660	1.1	0.65	Fig. 3	
RE 5-6	1,100	1.9	1.3	Fig. 3	
RE 9-6	1,980	2.7	1.6	Fig. 3	
RE 13-6	2,860	3.7	2.1	Fig. 3	
RE 18-6	3,960	4.8	2.7	Fig. 4	
RE 24-6	5,280	6.1	3.3	Fig. 4	
RE 34-6	7,480	7.9	4.2	Fig. 6	
RE 45-6	9,900	10.8	5.7	Fig. 7	
RE 60-6	13,200	13.4	7.4	Fig. 7	
RE 80-6	17,600	18.5	10	Fig. 7	
RE 110-6	24,200	27	15	Fig. 7	
RE 140-6	30,800	31	17	Fig. 7	
RE 165-6	36,300	37	20	Fig. 7	
RE 185-6	40,700	44	22	Fig. 7	

TABLE 5 - Three Phase (900 RPM)

MODEL	MAX FORCE		AMP DRAW		CONSTRUCTION DIAGRAM REF.
	(lbs.)	230v.	460v.		
RE 5-8	1,100	2.4	1.5	Fig. 3	
RE 7.3-8	1,606	3.3	2.0	Fig. 3	
RE 10-8	2,200	4.3	2.5	Fig. 3	
RE 20-8	4,400	7.5	4.4	Fig. 3	
RE 35-8	7,710	9.5	5.5	Fig. 6	
RE 60-8	13,200	14.6	8.6	Fig. 7	
RE 100-8	22,000	25	15	Fig. 7	
RE 125-8	27,500	31	18	Fig. 7	
RE 150-8	33,000	37	22	Fig. 7	
RE 185-8	40,700	43	26	Fig. 7	

SECTION 3 BULK BAG UNLOADER OPTIONS

Rotary Electric Vibrators

CONSTRUCTION

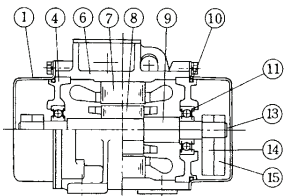


Figure 1

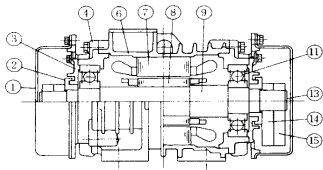


Figure 2

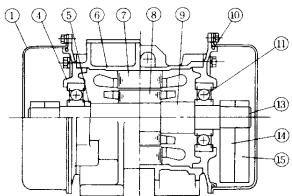


Figure 3

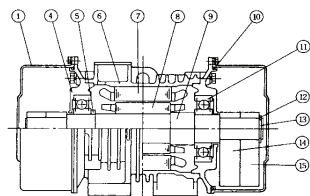


Figure 4

N0.	PART NAME
1	Weight Cover
2	Dust Collar
3	Bearing Cover
4	Bracket
5	Collar
6	Frame
7	Stator Core
8	Rotor Core
9	Shaft
10	Seal Ring
11	Ball Bearing
12	Snap Ring
13	Scale Plate
14	Fixed Wt
15	Adjustable Wt

DIAGRAMS

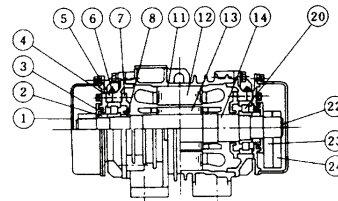


Figure 5

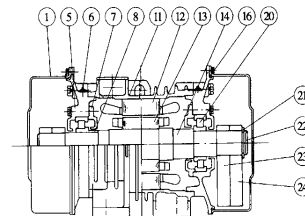


Figure 6

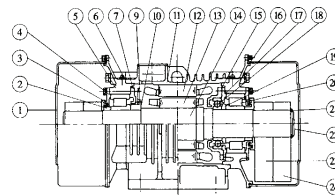


Figure 7

N0.	PART NAME
1	Weight Cover
2	Dust Collar
3	Dust Cover
4	Bearing Cover
5	Bracket
6	Grease Nipple
7	Bearing Cover
8	Collar
9	Grease Stopper
10	Sleeve
11	Frame
12	Stator Core
13	Rotor Core
14	Shaft
15	Housing
16	Seal Ring
17	Thrust Collar
18	Ball Bearing
19	Distance Collar
20	Roller Bearing
21	Snap Ring
22	Scale Plate
23	Fixed Wt
24	Adjustable Wt

SECTION 3

BULK BAG UNLOADER

OPTIONS

Rotary Electric Vibrators

MOUNTING

Regardless of the application or installation, care **must** be taken to insure that the structure to which the vibrator is being mounted is sufficiently rigid enough to withstand the vibration being

generated. Improper care in mounting the vibrator can result in either the cracking of the structure and/or the unit pulling excessive amperage.

VIBRATORY EQUIPMENT

When the model "RE & RES" style units are being used as vibratory drive on equipment such as feeders, conveyors, screeners,

tables, etc., it is assumed that the design of the equipment has taken into consideration the stresses being created.

HOPPERS, BINS and CHUTES

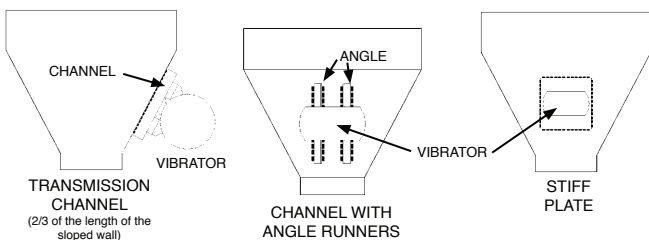
For hopper, bin and chute applications, the "RE & RES" style units have been designed to bolt directly onto a length of either structural channel or a stiff plate. The channel or plate is, in turn, stitch welded to the hopper wall or underside of the chute. Usually, a

conical hopper or bin will provide sufficient rigidity, so additional reinforcement will not be necessary. In such cases, CVC recommends the use of our "EB" channel (or suitable replacement) to be used as the mounting bracket.

UNDER NO CIRCUMSTANCES CAN A ROTARY ELECTRIC VIBRATOR BE BOLTED DIRECTLY TO A BIN OR HOPPER WALL.

If there is any question at all as to the hopper or bin being structurally sound enough to withstand the vibration, CVC recommends

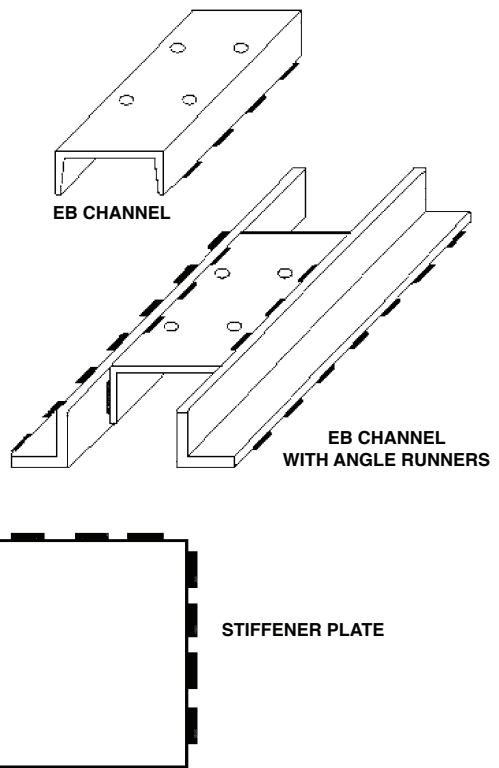
adding additional reinforcement. Some suggested methods of reinforcement are:



WELDING

Regardless of the type of mounting bracket being used (channel, channel with angle runners, plate, etc.) **NEVER CONTINUOUSLY WELD** it to the hopper wall. A stitch weld should be used every one to two inches, skipping an equal distance between welds.

NEVER weld the ends or corners of the bracket, as cracking of the hopper wall could result. Keep all ends and corners of the bracket free for a distance of one inch. Typical welding patterns are shown below.



SECTION 3

BULK BAG UNLOADER

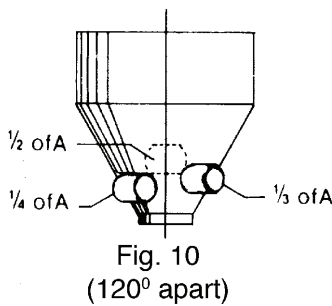
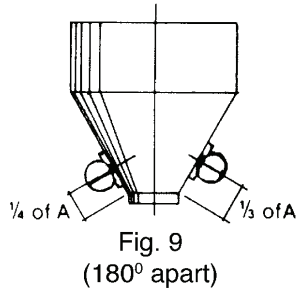
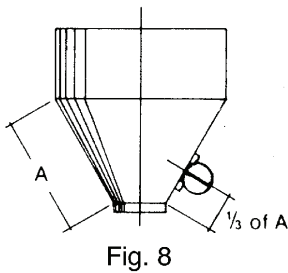
OPTIONS

Rotary Electric Vibrators

LOCATION

Most bin or hopper applications will require only one RE & RES rotary electric vibrator. CVC recommends mounting the single drive as indicated in Figure 8; locating the unit at a point on the sloped wall section that is 1/3 the height of the wall.

Applications involved with particularly stubborn material hoppers larger than 100 ton capacity may require two or more vibrators. The recommended mounting is shown in Figures 9 and 10. Normally, not more than three vibrators would ever be required on a hopper or bin.

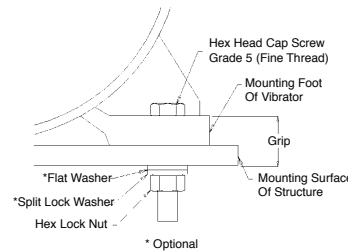


ATTACHMENT

The unit should be attached to the bracket so the terminal box is facing downward, toward the ground. The shaft of the motor should be horizontal, and the direction of rotation of the motor should be in the same direction as the flow of material (see diagram). After the unit is wired, should the direction of rotation be opposite of the flow of the material, simply reverse the polarity of the motor. Bolt the vibrator to the mounting basket

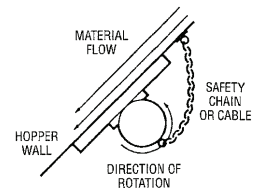
using only the fasteners provided with the unit. **Note bolt and washer arrangement in sketch below.** If the length of the mounting channel makes it difficult or impossible to get a wrench underneath it to tighten the nut and bolt, CVC recommends running the bolts through the underside of the channel and tack weld the heads prior to welding the channel to the hopper wall.

SINCE THE LOOSENING OF EVEN ONE FASTENER COULD RESULT IN DAMAGE TO THE UNIT, OR AN ACCIDENT, THE FASTENERS MUST BE RE-TIGHTENED AFTER ONE HOUR OF OPERATION. RE-FASTENING SHOULD BE PERFORMED AT LEAST ONCE A WEEK UNTIL NO LOOSE BOLTS ARE FOUND.



VIBRATOR MOUNTING ARRANGEMENT

ALL MODELS OF "RE & RES" VIBRATORS ARE PROVIDED WITH SUITABLE HOOK-UP FOR A SAFETY CABLE OR CHAIN. IN THE INTEREST OF SAFE OPERATION, IT IS IMPERATIVE THAT A SAFETY CHAIN OR CABLE BE ATTACHED TO THE UNIT AND SECURELY ATTACHED AT A LOCATION ABOVE THE VIBRATOR .



SECTION 3

BULK BAG UNLOADER

OPTIONS

Rotary Electric Vibrators

ELECTRICAL CONNECTION

IMPORTANT
ONLY A QUALIFIED ELECTRICIAN SHOULD
BE EMPLOYED TO MAKE THE ELECTRICAL
CONNECTIONS TO THIS UNIT.

CABLE and LEADS

Never permit the cable to be sharply bent at the position near the cable outlet. Refer to Table 6 and Figure 11.

MODEL NUMBER	PERMISSABLE RADIUS @ inches	MODEL NUMBER	PERMISSABLE RADIUS (R)
RE 0.5-2 to RE 23-2	3	RE 75-4 to RE 110-4	5
RE 1.5-4 to RE 24-4	3	RE 60-6 to RE 110-6	5
RE 3-6 to RE 18-6	3	RE 60-8 to RE 100-8	5
RE 5-8 to RE 10-8	3		
RE 30-2 to RE 40-2	3 1/2	RE 140-6 to RE 185-6	7
RE 30-4 to RE 52-4	3 1/2	RE 125-8 to RE 185-8	7
RE 24-6 to RE 45-6	3 1/2		
RE 20-8 to RE 35-8	3 1/2		

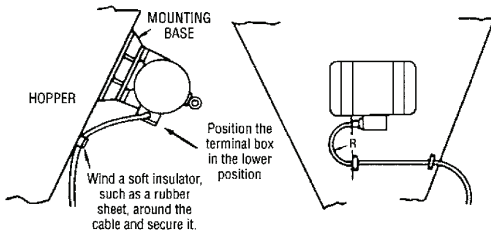


Figure 11

GROUNDING

The green lead (marked "E") of the four lead cable is the ground lead, and is connected through

the terminal box to the vibrator body. Be certain the green lead is properly grounded.

OVERLOAD PROTECTION

Under no circumstances should the vibrator be connected to a power source without going through properly sized overload protection. If the unit is operated without the proper overload

protection, all warranties are void. The Cleveland Vibrator Company recommends the use of its manual starter with overload protection, or a factory-approved equal.

CAPACITOR START MOTOR (RES Series)

Each of the Single Phase RES series units are capacitor-start motors. Model RES 0.1-2 has the capacitor factory installed within the end cover. The remainder of the series (RES 0.5-2, 1-2, 2-2, 3.5-2, and 6-2) must be used in conjunction with the capacitor

starter supplied with the motor. UNDER NO CIRCUMSTANCES SHOULD THESE UNITS BE WIRED DIRECTLY TO THE 110 VOLT POWER SOURCE.

All CVC capacitor starters are supplied in a NEMA 12/4 X box.

LOCAL ELECTRICAL CODES

When wiring the vibrator to the starter box and the starter box to the power source, be certain that

the electrician making the installation is familiar with all local codes and strictly adheres to them.

AMPERAGE DRAW

After all electrical connections are properly made, test the unit for amperage draw against the nameplate rating. The vibrator can be operated continuously when the current does not exceed the nameplate rating. If the unit is not to be run longer than one hour at a time, the vibrator may be operated at a current

which is 1.2 times the rating. Should the vibrator pull excessive current, immediately shut it down. In this case, the centrifugal force must be reduced by adjusting the adjustable eccentric weight to a setting low enough to bring the current down to the rated value.

SECTION 3

BULK BAG UNLOADER

OPTIONS

Rotary Electric Vibrators

ADJUSTMENTS & MAINTENANCE

ADJUSTMENT of CENTRIFUGAL FORCE

Prior to shipment, each vibrator is factory set at 40% of maximum force output. Should a decrease in the centrifugal force be required, a simple adjustment can be made to the eccentric weights.

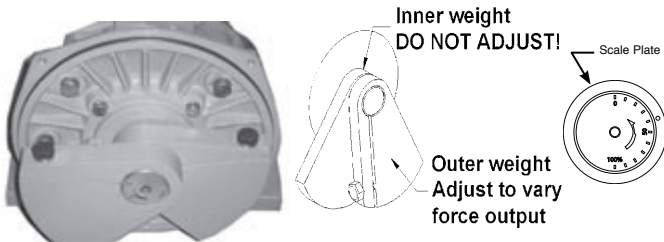
1) Disconnect all power to the unit.

2) Removing BOTH end covers on each end of the unit will expose the eccentric weights. Note that each end of the rotor shaft has a scale on it which is

graduated in terms of a percent of total maximum force. See photo.

3) Loosen ONLY the adjustable eccentric weight on each end and rotate it so that the round, indented mark on the adjustable eccentric aligns with the desired setting. Be certain that the exact same adjustment is made on both adjustable weights.

4) Re-tighten BOTH adjustable eccentric weights SECURELY and replace end covers.



NOTE:

1. Never loosen the fixed eccentric weight. The fixed eccentric weights are the "inside" weights, closest to the stator.
2. Never operate the vibrator with the adjustable eccentric weights of different settings.
3. Be certain to retighten the adjustable eccentric weights **securely** before replacing the end covers.

BEARING MAINTENANCE

The Cleveland Vibrator Company recommends the use of Shell Oil's Alvania Grease No. 3 as a bearing lubricant. Since the vibrator bearings are subjected to severe shock, the

specified grease should always be used. Should Alvania Grease No. 3 not be available, a substitute may be selected from the lithium group greases (Alvania Grease No. 2, Mobil Oil's Mobilux No. 3, or No. 2).

Refer to tables 7 through 10 for the recommended lubrication interval.

When the continuous operating time for these units employing sealed ball bearings expires, simply replace the entire

bearing. Those units employing roller bearings should be lubricated through the grease nipples provided.

BEARING REPLACEMENT

All RE and RES vibrators are factory equipped with special loose fit bearings (C3 or C4 fit). Replacing the bearings with tighter fitting bearings will put excessive

resistance on the motor and cause the unit to run at high current. If unable to obtain the proper fit bearing locally, contact Cleveland Vibrator to order the correct replacement.

LUBRICATION NOTES

1. Tables 7 through 10 indicate the amount of grease to be used at each re-greasing period. DO NOT EXCEED the recommended amount of grease, as excessive grease can cause too much resistance. Smaller amounts of grease at more frequent intervals is best.
2. Immediately after greasing, the temperature of the bearings may rise slightly. After approximately one hour of running, the temperature will return to normal.
3. Grease life and resistance can be affected by temperature. Consequently, during colder winter months, less grease can be used than during summer months.

24°F to 34°F: Use 1/4 of the maximum amount given in the tables.

44°F to 50°F: Use 1/2 of the maximum amount given in the tables.

50°F to 65°F: Use 3/4 of the maximum amount given in the tables.

SECTION 3 BULK BAG UNLOADER OPTIONS

Rotary Electric Vibrators

SAE GRADE 5 RECOMMENDED BOLT TORQUE CHART

(1)	(2)	(3)	(4)	(5)	(6) *	(7) **
¼ - 20	.0318	120	2700	2020	8	6.3
¼ - 28	.0364	120	3100	2320	10	7.2
5/16 - 18	.0524	120	4450	3340	17	13
5/16 - 24	.0580	120	4900	3700	19	14
3/8 - 16	.0775	120	6600	4950	30	23
3/8 - 24	.0878	120	7450	5600	35	25
7/16 - 14	.1063	120	9050	6780	50	35
7/16 - 20	.1187	120	10100	7570	55	40
½ - 13	.1419	120	12100	9050	75	55
½ - 20	.1599	120	13600	10200	85	
9/16 - 12	.1820	120	15500	11600	110	80
9/16 - 18	.2030	120	17300	12950	120	90
5/8 - 11	.226	120	19200	14400	150	110
5/8 - 18	.256	120	21800	16350	170	130
¾ - 10	.334	120	28400	21300	260	200
¾ - 16	.373	120	31700	23780	300	220
7/8 - 9	.462	120	39300	29450	430	320
7/8 - 14	.509	120	43300	32450	470	350
1 - 8	.606	120	51500	38600	640	480
1 - 14	.679	120	57700	43300	720	540
1-1/8 - 7	.763	105	56500	42300	790	590
1-1/8 - 12	.856	105	63300	47500	890	670
1-1/4 - 7	.969	105	71700	53800	1120	840
1-1/4 - 12	1.073	105	79400	59600	1240	930
1-1/2 - 6	1.405	105	104000	78000	1950	1460
1-1/2 - 12	1.581	105	117000	87700	2200	1640

*Use these values if you do not lubricate the bolt.
**Use these values if we supplied equipment with vibrator drive(s) attached.

<DO NOT REUSE LOCK NUTS>

- (1) Diameter & Threads per Inch
- (2) Stress Area Square Inches
- (3) Tensile Strength Minimum KSI
- (4) Proof Load in Pounds
- (5) Clamp Load Pounds
- (6) Torque, Dry, Foot Pounds
- (7) Torque, Lubricated, Foot Pounds

NOTE: TORQUE VALUES FOR 1-3/4" DIA. BOLTS ARE THE SAME AS 1-1/2" DIA. VALUES

Nominal bolt size, in inches:	To determine req'd bolt length, add to grip in inches:
1/2	11/16
5/8	7/8
3/4	1
7/8	1-7/8
1	1-1/4
1 1/8	1-1/2
1 1/4	1-5/8
1 3/8	1-3/4
1 1/2	1-7/8

Special Instructions for Cold Storage/Operation

Standard units can be stored at temperatures no lower than -40 degrees Fahrenheit (-40 degrees Celsius). Lower temperatures will require an F-insulated coil, silicon lead-cable and low-temperature grease. Please contact factory for special prices for this option.

The vibrators must be covered by a sheeting material to protect them against direct rain, water, snow, and ice or wind.

Before starting operation:

- The temperature must be 14 degrees Fahrenheit (-10 degrees Celsius) or above to begin operation. Please note that these vibrators should not be operated in temperatures above 104 degrees Fahrenheit (40 degrees Celsius).
- Measure the "insulation resistance" to make sure the value is more than 3 Mega-ohms. Using an appropriate ohmmeter, measure resistance on each of the three power leads. Touch one of the ohmmeter leads to the vibrator power cord ground (green) wire and the other to one of the three power wires, black, red or white. Go from wire to wire and measure resistance between ground and each of the three power wires. Each wire should have a resistance equal to or greater than 3 Mega-ohms. If the insulation resistance is lower than 3 Mega-ohms, the motor coil must be dried. Once it is dried, the insulation resistance should return and be checked to insure that it measures over 3 Mega-ohms.

Please note: resistance should also be checked **every 5 months** during cold storage.

- Inspect the lead-cable to make sure there is no damage. Please note the lead-cable should also be inspected every 5 months during cold storage.
- Very Important:** Remove the weight covers and manually rotate the motor-shaft about 70 to 100 times. If power is available, run the vibrator for 5 minutes with the load disconnected (eccentric weights set at 0). Please note rotation of the motor-shaft must be performed every 5 months during cold storage.

We recommend that any spare parts and/or spare vibrators are stored indoors.

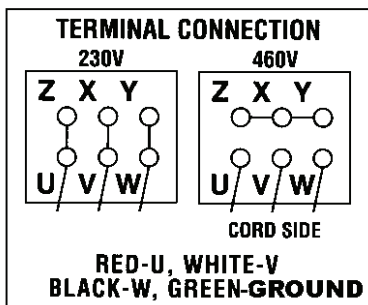
SECTION 3

BULK BAG UNLOADER

OPTIONS

Rotary Electric Vibrators

TERMINAL CONNECTION



PERIODICAL INSPECTION

Interval	Points to Check	Procedures & Criteria
Daily	Load Current	Load current measured with an ammeter should be less than the rated value.
	Bearing Noise	Check bearing noise with or without rod. Bearings should not generate intermittent or metallic noise.
Monthly	Loose Screws	Screws should be tightened to a specific torque.
	Cables	Visually inspect cables. They should not be damaged.
Annually	Insulation resistance of starter coil	Insulation resistance across terminals of a starter coil, measured with a megger, should be 5 (min.).

TROUBLESHOOTING GUIDE

Trouble	Probable Reason	Inspection Procedures	How to Correct
Vibrator won't start	Two cables of the vibrator or two phases of the coil are broken	Measure the voltage drop across the two phases	Replace the broken cables or rewind the coil
The vibrator moans and does not accelerate	Single phasing	Same as above and check cables for looseness	Same as above or securely connect the cables
	Ambient temperature is too low or there is an excessive amount of grease	Remove the weight covers and rotate the shaft 30 to 50 turns by hand	Adjust the vibrating force to 20% to 30% of the maximum value
Abnormal bearing noise	Damaged raceway surface	Check bearing noise using rod	Replace the bearing
Temperature of the vibrator body is too high	Ambient temperature is too high	Measure ambient temperature	Decrease the ambient temperature to a maximum of 140°F
	A lot of foreign matter has adhered to the vibrator	Check the condition of the foreign matter attached to the vibrator	Carry out dust prevention measures
Thermal relay is tripped	Short circuit between phases of the coils	Compare the resistance between phases of the coils	If there is a large difference in resistance between the phases of coils, replace the coils
	Loose screws	Check screws for looseness	Tighten screws
	Abnormal vibration	Ensure that the vibrator rotates in the correct direction and that the vibrator body is free of defects	Correct vibrator rotation direction or repair
	Load is too large	Measure load current	Decrease vibrating force
	Damaged bearing	Rotate the shaft by hand and check that the bearings are not damaged	Replace the bearing

SECTION 3 BULK BAG UNLOADER OPTIONS

Rotary Electric Vibrators

Table 7-3600 RPM Units

Model	Bearing No.	B ₁₀ Life (hrs)	Maintenance		
RES 0.1-2	6200ZZC3	1,400,000	No regreasing necessary. Replace bearing should it fail.		
RES 0.5-2	6201ZZC3	90,000			
RES 1-2	6202ZZC4	16,000			
RES 2-2	6303ZZC4	11,000			
RES 3.5-2	6305ZZC4	7,000			
RES 6-2	6306ZZC4	13,500			
RE 0.5-2	6201ZZC3	90,000	No regreasing necessary. Replace bearing should it fail.		
RE 1-2	6202ZZC4	16,000			
RE 2-2	6303ZZC4	11,000			
RE 3.5-2	6305ZZC4	7,200			
RE 6-2B	6306ZZC4	13,500			
RE 10-2B	6407ZZC4	9,200			
Model	Bearing No.	B ₁₀ Life (hrs)	Am't of grease per bearing (grams)	Oper. time between regreasing (hours)	Am't of grease after disassembly* (grams)
RE 16-2	NJ309EC3	21,500	10	1200	25
RE 23-2	NJ310EC3	9,200	12	1000	30
RE 30-2	NJ312EC3	10,900	15	700	40
RE 40-2	NJ313EC3	7,900	20	600	50

Table 8-1800 RPM Units

Model	Bearing No.	B ₁₀ Life (hrs)	Maintenance		
RE 1.5-4	6203ZZC4	18,500	No regreasing necessary. Replace bearing should it fail.		
RE 3-4B	6304ZZC4	22,900			
RE 6-4B	6306ZZC4	26,900			
RE 9-4B	6308ZZC4	16,400			
RE 9-4S	6309ZZC4	13,500			
RE 12-4B	6309ZZC4	13,500			
Model	Bearing No.	B ₁₀ Life (hrs)	Am't of grease per bearing (grams)	Oper. time between regreasing (hours)	Am't of grease after disassembly* (grams)
RE 17-4	NJ309EC3	35,200	10	2000	25
RE 24-4	NJ310EC3	15,800	12	1400	30
RE 34-4	NJ312EC3	14,400	15	1200	40
RE 52-4B	NJ2314C3	18,600	30	1200	65 30
RE 75-4B	NJ2316C3	13,700	40	1000	90
RE 84-4B	NJ2318C3	14,200	50	750	110
RE 110-4	NJ2320C3	for thrust	40	400	140
	6220		15	60	

*Disassembly and cleaning of the roller bearing is necessary only when either excessive amounts of grease or the improper quality has been used.

Table 9-1200 RPM Units

Model	Bearing No.	B ₁₀ Life (hrs)	Maintenance		
RE 3-6	6305ZZC4	34,000	No regreasing necessary. Replace bearing should it fail.		
RE 5-6	6306ZZC4	16,200			
RE 9-6B	6308ZZC4	24,600			
RE 13-6B	6309ZZC4	15,900			
RE 18-6B	6312ZZC4	20,700			
RE 24-6B	6314ZZC4	14,400			
Model	Bearing No.	B ₁₀ Life (hrs)	Am't of grease per bearing (grams)	Oper. time between regreasing (hours)	Am't of grease after disassembly* (grams)
RE 34-6	NJ312EC3	21,500	15	2500	40
RE 45-6B	NJ314EC3	18,000	20	2200	40
RE 60-6B	NJ2316EC3	14,200	30	1600	40
RE 80-6B	NJ2318EC3	25,200	50	1600	110
RE 110-6	NJ2320EC3	26,200	65	1500	140
	6220	for thrust	25		60
RE 140-6	NJ2322EC3	21,000	80	1300	175
	6222	for thrust	30		80
RE 165-6	NJ2324EC3	20,400	90	1100	200
	6224	for thrust	35		90
RE 185-6	NJ2326EC3	22,600	105	1000	250
	6226	for thrust	40		100

*Disassembly and cleaning of the roller bearing is necessary only when either excessive amounts of grease or the improper quality has been used.

RECEIPT and STORAGE

All "RE & RES" style motor vibrators are thoroughly tested and inspected prior to shipping to ensure all quality standards are met or surpassed. However, damage that may occur while in transit is beyond control of the Cleveland Vibrator Company. For this reason, the unit should be inspected immediately upon receipt and any

damage reported to the carrier. Should this unit not be put into immediate service, it should be stored in a dry, temperate atmosphere. Under these conditions, the unit can be safely stored for 6 months. Longer storage may require regreasing.

SECTION 3

BULK BAG UNLOADER

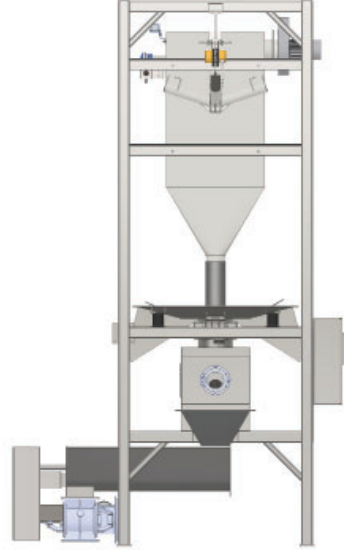
OPTIONS

Rotary Electric Vibrators

Table 10-900 RPM Units					
Model	Bearing No.	B ₁₀ Life (hrs)	Maintenance		
RE 5-8	6306ZZC4	21,600	No regreasing necessary. Replace bearing should it fail.		
RE 7.3-8	6307ZZC4	13,700			
RE 10-8B	6308ZZC4	36,800			
RE 20-8B	6312ZZC4	20,000			
Model	Bearing No.	B ₁₀ Life (hrs)	Am't of grease per bearing (grams)	Oper. time between regreasing (hours)	Am't of grease after disassembly* (grams)
RE 35-8	NJ313EC3	48,700	20	3200	50
RE 60-8	NJ316EC3	19,000	30	3000	65
	6216	for thrust	15		40
RE 100-8	NJ2320EC3	48,300	60	2800	60
	6220	for thrust	25		60
RE 125-8	NJ2322EC3	41,000	80	2700	175
	6222	for thrust	30		80
RE 150-8	NJ2324EC3	37,400	90	2600	200
	6224	for thrust	35		90
RE 185-8	NJ2326EC3	130,400	105	2500	250
	6226	for thrust	40		100

*Disassembly and cleaning of the roller bearing is necessary only when either excessive amounts of grease or the improper quality has been used.

SECTION 3 BULK BAG UNLOADER OPTIONS



SECTION 4

SAFETY

RECOMMENDATIONS

1. DO NOT WORK ON THE CONTROL PANEL UNLESS POWER TO THE PANEL IS OFF.
2. ALL OPERATORS NEED TO BE AWAY FROM THE UNLOADER STAND WHEN THE BAG IS BEING PLACED INTO THE FRAME.
3. DO NOT ATTEMPT TO GRAB THE BAG OR GUIDE THE BAG INSIDE THE FRAME WHILE IT IS HANGING OFF A FORK TRUCK OR OFF THE SPREADER BAR
4. SHUT OFF THE UNIT PRIOR TO WORKING ON ANY MOVING PARTS.
5. HOIST OPERATED UNITS ARE RATED FOR 4000LBS MAXIMUM CAPACITY, IF THE WEIGHT OF THE BAG IS MORE THAN THIS PLEASE CONSULT THE FACTORY.
6. EACH BULK BAG UNLOADER MUST BE ANCHORED TO THE FLOOR IN ACCORDANCE WITH THE ANCHOR LAYOUT ON THE DRAWINGS. THE UNLOADER CAN TIP IF NOT ANCHORED PROPERLY. CHAIN ANCHORS ARE RECOMMENDED.

Bulk Bag Unloaders can be supplied with various discharge equipment. Please work with your salesperson to create your custom design.

Various control panels are also available upon request.

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