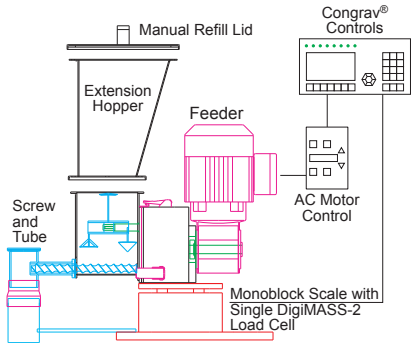
Loss-In-Weight Twin Screw Stirring Feeders

DDW-MD3-DDSR20 Model Specifications



RELATED DOCUMENTS:

3210-C00-1 – Loss-In-Weight Twin Screw Stirring Table of Contents
3210-C25-1 – Product Description
3210-C26-1 – Model Selection Guide
3210-C31-1 – Standard Options and Accessories
7200-C25-1 – Loss-In-Weight Controls

Components:

1300-C21-3 – AC Motor Controller
1300-C21-9 – Digital and Analog Scales
1300-C21-10 – Digital Load Cell (DigiMASS-2)
7200-C30-5 – ISC Controls (ISC-CM, ISC-FC)

WEIGHTS AND MEASURES

Model Number	Total Scale Capacity	Feeder Dead Weight	Max. Ingredient Capacity	Screw Trough Volume	Extension Hopper Volume	Total Volume
	Kg (lb)	Kg (lb)	Kg (lb)	liters (cu.ft.)	liters (cu.ft.)	liters (cu.ft.)
DDW-MD3-DDSR20-10	45 (99)	19 (42)	26 (57)	2.75 (0.1)	10 (0.35)	12.75 (0.45)
DDW-MD3-DDSR20-20		23 (51)	22 (49)	2.75 (0.1)	20 (0.71)	22.75 (0.8)
DDW-H31-DDSR20-30R	90 (198)	31 (66)	59 (130)	2.75 (0.1)	30 (1.1)	32.75 (1.2)
DDW-H31-DDSR20-50R		35 (77)	55 (121)	2.75 (0.1)	50 (1.8)	52.75 (1.9)

SCREW AND TUBE SIZES AND FEED RATES

Screw and Tube Designation	Max. Particle Size	Tube ID	Max. Feed Rate at Specified Screw Speed*	
	mm (inch)	mm (inch)	RPM (Hz)	cu.ft./hr (liters/hr)
Twin Concave Screws and Tube				
TC20/05-190T	0.2 (0.01)	19 (0.75)	380 (75)	0.22 (6.22)
			192 (75)	0.111 (3.14)
			66 (75)	0.0381 (1.08)
TC20/12-200T	0.3 (0.01)	20 (0.79)	380 (75)	0.994 (28.2)
			192 (75)	0.502 (14.2)
			66 (75)	0.173 (4.89)
TC20/11-223T	0.7 (0.03)	22.3 (0.88)	380 (75)	1.84 (52.2)
			192 (75)	0.93 (26.3)
			66 (75)	0.32 (9.06)
TC20/20-223T	0.7 (0.03)	22.3 (0.88)	380 (75)	3.68 (104)
			192 (75)	1.86 (52.7)
			66 (75)	0.639 (18.1)
Double Spiral Screws (Non-Intermeshing) and Tube				
SS13/10-200T	3.5 (0.14)	20 (0.79)	380 (75)	1.61 (45.6)
			192 (75)	0.814 (23)
			66 (75)	0.28 (7.92)
SS13/15-223T	4.7 (0.18)	22.3 (0.88)	380 (75)	2.65 (75.1)
			192 (75)	1.34 (37.9)
			66 (75)	0.46 (13)
Twin Spiral Screws and Tube				
TS18/13-200T	1.0 (0.04)	20 (0.79)	380 (75)	3.74 (106)
			192 (75)	1.89 (53.4)
			66 (75)	0.649 (18.4)
TS18/19-200T	1.0 (0.04)	20 (0.79)	380 (75)	6.12 (173)
			192 (75)	3.09 (87.5)
			66 (75)	1.06 (30.1)
TS18/29-200T	1.0 (0.04)	20 (0.79)	380 (75)	10 (284)
			192 (75)	5.07 (144)
			66 (75)	1.74 (49.3)

* The screw speed shown is the standard maximum Loss-In-Weight screw speed (75% of full speed). Higher maximum screw speeds are possible. The Maximum Feed Rates are theoretical values based on a screw filling efficiency of 100% at the specified screw speed. Ingredient flow characteristics determine the screw filling efficiency.

MATERIALS OF CONSTRUCTION

Scale	Mild Steel baseplate, enamel painted, Aluminum, mill finish and 304SS
Unweighed Process Connection	304SS, electropolished, with polyurethane flexible connection to Vertical Outlet
Screw Trough	304SS, 2B finish inside, mirror finish outside
Screw, Tube and Agitator	304SS, 2B finish, electropolished
Screw and Agitator Drive Shafts	304SS
Drive Shaft Seals	**Screws and Screw Trough Agitator:** Lip Seals in gearbox; **Extension Hopper Agitator (-xxR):** Viton or BunaN
Extension Hopper and Lid	304SS, 2B finish inside, mirror finish outside
Gaskets	Neoprene

MECHANICAL PROCESS CONNECTIONS

Refill (on Lid)	Pipe stub connection. See Mechanical Drawing for location and size.
Vent (on Lid)	Pipe stub connection. See Mechanical Drawing for location and size. The vent allows dusty air to escape during refill and atmospheric air to enter during feeding. Brabender offers a vent filter for pellets or non-dusty ingredients. For powders, dust collector is by others.
Outlet	Standard is vertical outlet with Unweighed Process Connection.

ENVIRONMENTAL SPECIFICATIONS

Temperature	**Ambient**	Operating: 0° to 40°C (32° to 104°F), Storage: -40° to 40°C (-40° to 104°F)
	Ingredient	Continuous: 0° to 80°C (32° to 176°F), Intermittent: -20° to 90°C (-4° to 194°F)
Humidity	**Ambient**	5% to 95% (no condensation)
	Ingredient	The ingredient flow characteristics may vary with excessive humidity. The feeder must be dry when feeding.
Pressure	**Altitude**	To 10,000 feet (3,048 m)
	Ingredient	The pressure inside the feeder should be the same as outside the feeder (see Option FC-4 below).
Vibration		The load cell has adjustable filter levels for most typical in-plant vibration.

CONTINUOUS FEED RATE ACCURACY (Batching Accuracy: ±$^{1}/_{10,000}$ Scale Capacity)

Measuring Criteria	30 consecutive samples over sample time of 10 to 120 seconds
Feed Range	15:1 screw speed range
Repeatability	± 0.2% to 1% of sample average at 2 sigma, depending on ingredient flow properties
Linearity	± 0.5% over a screw speed range of 10:1 for each screw type

Standard Options and Accessories (See Document 3210-C31-1 for Details)

Scale Options

SC-1(A/B/C)	Strain Gauge Load Cell

Extension Hoppers and Lids

XH-2(A/B)	Extension Hopper Lid
XH-4B	Extension Hopper Safety Grate
XH-5A	Extension Hopper Relief Cone
XH-7	Bag Loading Hopper with Safety Grate and Lid
XH-8	Extension Hopper Handles

Screw Trough and Agitator Options

TA-3	Double Agitator Blades

Screw and Tube Options

ST-2C	Outboard Screw Bearing
ST-5	Air Purged Seal

Optional Materials of Construction

MC-1(A/B/D)	Scale Finish Options
MC-3(A-D)	316SS Ingredient Contact Parts
MC-4(A-D)	Food Grade Construction

Motor and Drive Options

MD-2(A-L)	Screw VFD Options
MD-5(A-L)	Extension Hopper Agitator VFD Options

Flexible Connections

FC-1	Flexible Inlet Connection
FC-2	Flexible Vent Connection
FC-3	Flexible Outlet Connection
FC-4	Outlet Pressure Compensation

Refill Options

RF-1	Refill Knife Gate (NEMA 4)
RF-2	Refill Knife Gate Limit Switches
RF-3	Mounting Flanges for Knife Gate

Modifications for Hazardous Areas

XP-2	Refill Knife Gate (NEMA 7)
XP-3	Refill Knife Gate Limit Switches (CL.I, DIV.1)
XP-5(A-D)	Loss-In-Weight Feeder Suitable for Hazardous Areas

Accessories

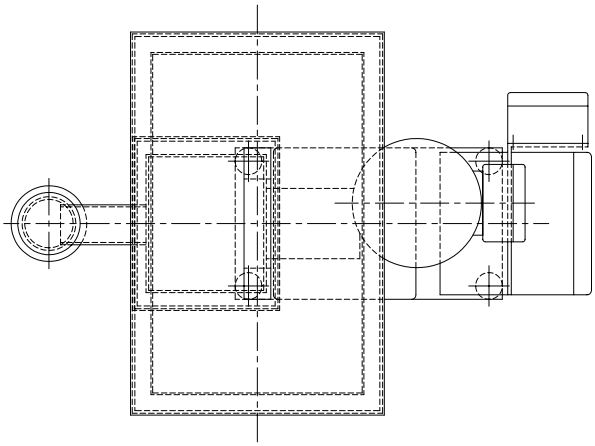
ACC-1A	Vibrator on Extension Hopper
ACC-3	Level Probe Connection
ACC-7A	Vent Dust Bag
ACC-16A	Feeder Lift Station

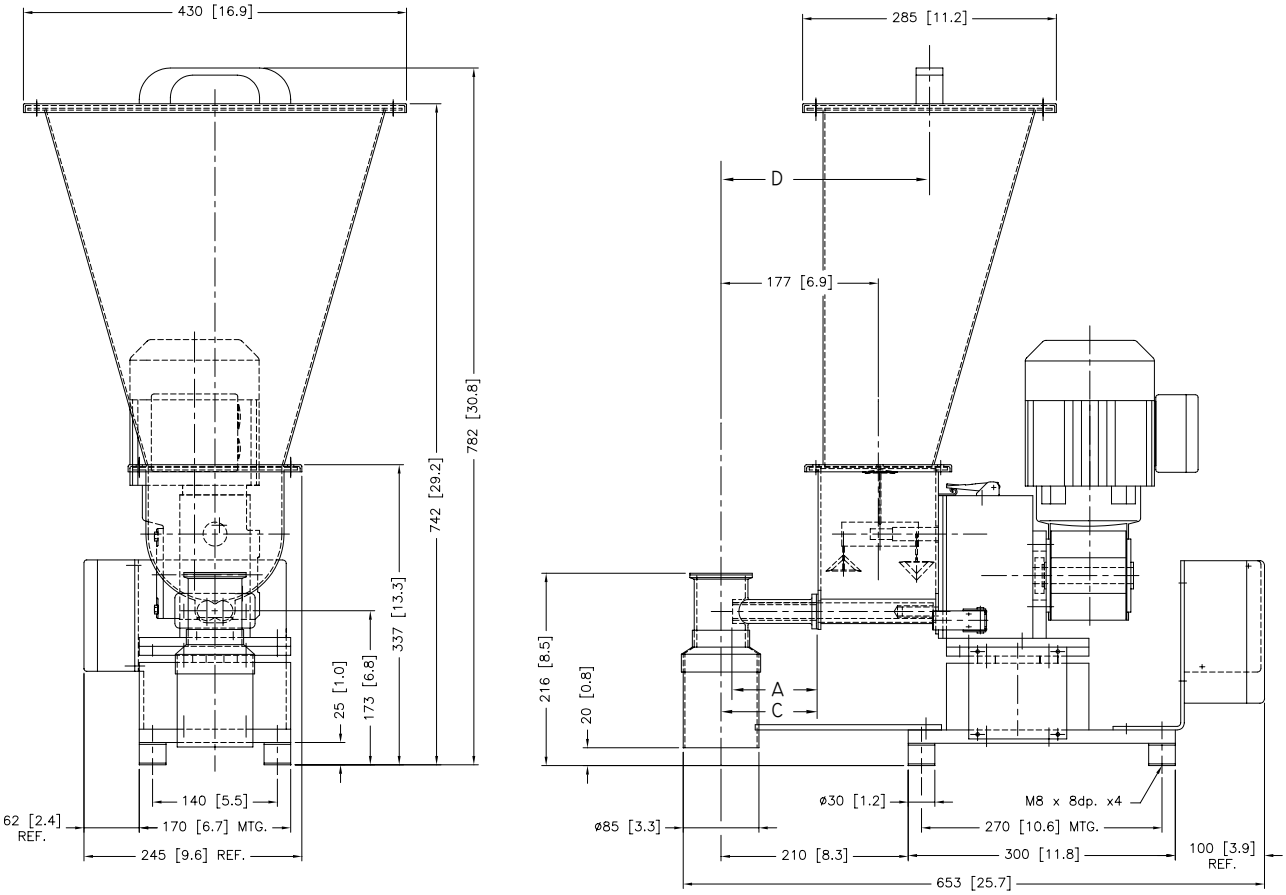
Extra Parts Ordered with Feeder

EP-2	Extra Screw
EP-3	Extra Tube
EP-4	Extra Screw Trough Agitator
EP-5	Extra Extension Hopper Agitator

Mechanical Drawing

ITEM	DESCRIPTION
1	DDW-MD3-DDSR20 Feeder
2	Screw Trough Agitator
3	Extension Hopper - 20L (0.71 cu.ft.)
5	Screw
6	Tube
7	Auto Refill Lid
8	Inlet (On Auto Refill Lid)
9	Manual Refill Lid (Optional)
10	Vent Dust Cartridge (Optional)
11	Unweighed Process Connection
12	Monoblock Scale with Single DigiMASS-2 Load Cell (MD3)
13	NEMA 4 Junction Boxes (2)





Notes:

1) All Dimensions are in Millimeters [Inches]

2) The Junction Boxes shown are for use with Congrav® S and Congrav® L/M3 controllers - other Junction Boxes are similar.

Description	'A'	'C'	'D'
Standard Tube Length	100 [3.9]	112 [4.4]	234 [9.2]

Description	'E'
Standard Inlet Diameter	100 [3.9]

Empty Feeder and Scale Weight	Kg (lb)
With 10L (0.35 cu.ft.) Extension Hopper	31 (68)
With 20L (0.71 cu.ft.) Extension Hopper	35 (77)
With 30L (1.1 cu.ft.) Extension Hopper (R)	76 (167)
With 50L (1.8 cu.ft.) Extension Hopper (R)	80 (176)

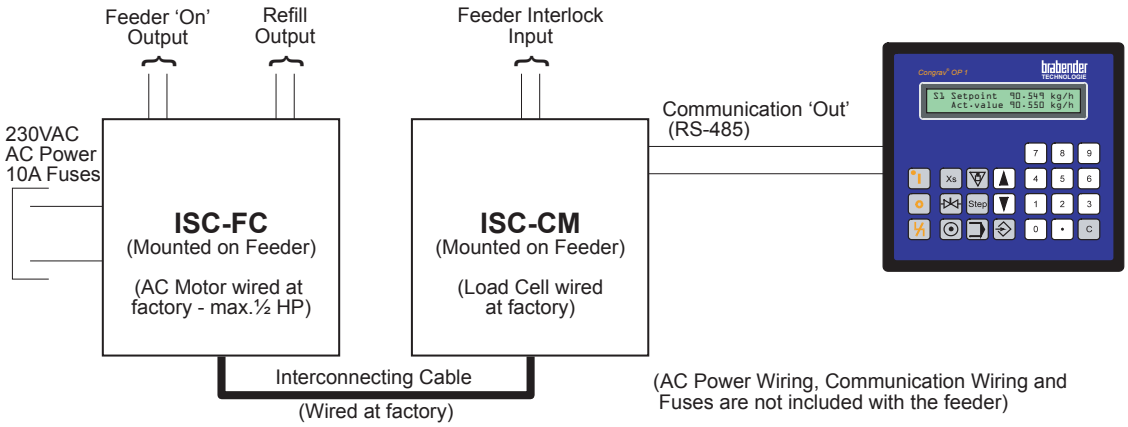
Screw Availability

1) All Tubes and standard Concave Screws are available in Standard lengths from stock

2) Whenever possible, use a stocked length screw and tube and move the inlet location to align the inlet and outlet of the feeder with the existing equipment

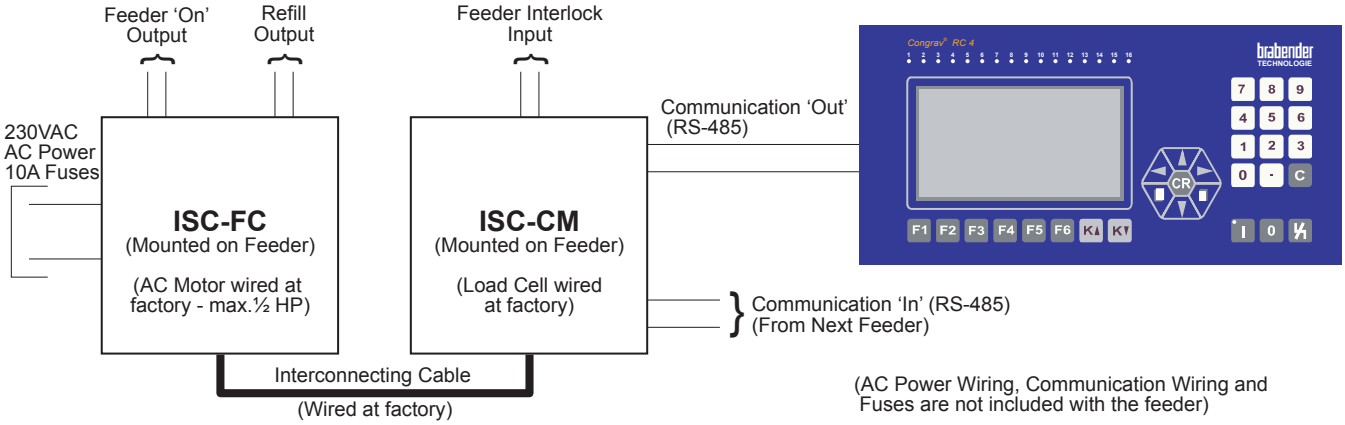
Typical Feeder Electrical Connections – ISC Controls / OP1 Display - Single Feeder

Note: Wiring to agitator motors is not shown. The Extension Hopper Agitator Motor (where applicable) requires either a VFD (variable speed) to be specified or a motor starter (fixed speed) to be provided (by others).



Typical Feeder Electrical Connections – ISC Controls / RC4 Display - Multiple Feeders

Note: Wiring to agitator motors is not shown. The Extension Hopper Agitator Motor (where applicable) requires either a VFD (variable speed) to be specified or a motor starter (fixed speed) to be provided (by others).

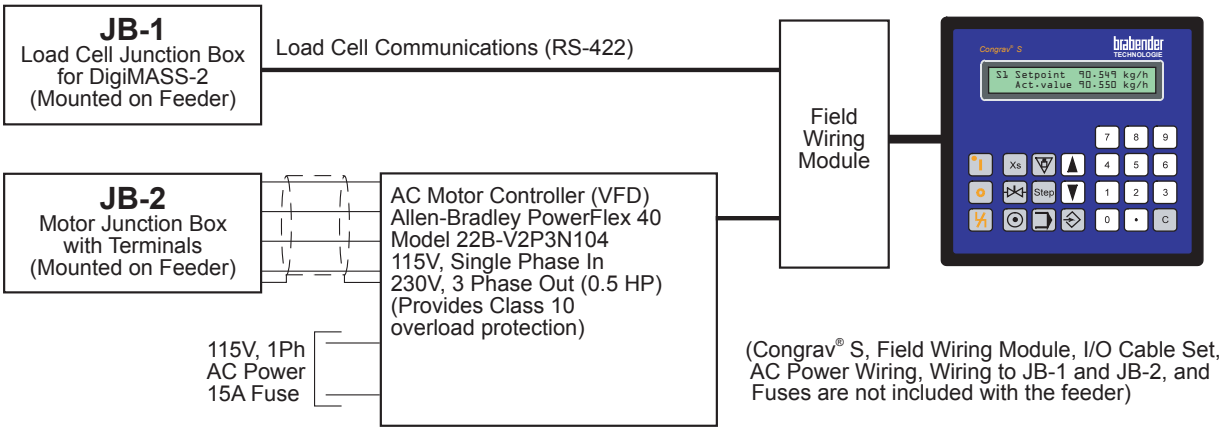


FEEDER ELECTRICAL SPECIFICATIONS - FEEDERS WITH ISC CONTROLS
(See Document 7200-C30-5 for Information on ISC Controls)

Screw/Screw Trough Agitator AC Motor Controller – ISC-FC	**Input Power:** 230 VAC, 50/60Hz, Single Phase; **Motor Output:** 230 VAC, 3 Phase; **Motor Control I/O:** RS-485 (ISC-CM); 24 VDC Out, 2 Dry Contact Outputs; **Enclosure:** IP55 (NEMA 12)
Feeder Controller – ISC-CM	**Input Power:** 24 VDC (from ISC-FC); **Load Cell Input:** RS-422 (DigiMASS-2); **Motor Control Output:** RS-485 (ISC-FC); Congrav® Communications (ISC); **Enclosure:** IP65 (NEMA 12)
Screw/Screw Trough Agitator Motor	½ HP (0.37 KW), 230/460 VAC, 3 Phase, TEFC
Extension Hopper Agitator Motor	¼ HP (0.18 KW), 230/460 VAC, 3 Phase, TEFC; 6 RPM gearbox output at 60 Hz
Load Cell	Monoblock Scale with a Single DigiMASS-2 Load Cell with Serial Communications (RS-422); **Enclosure:** IP64 (NEMA 12)

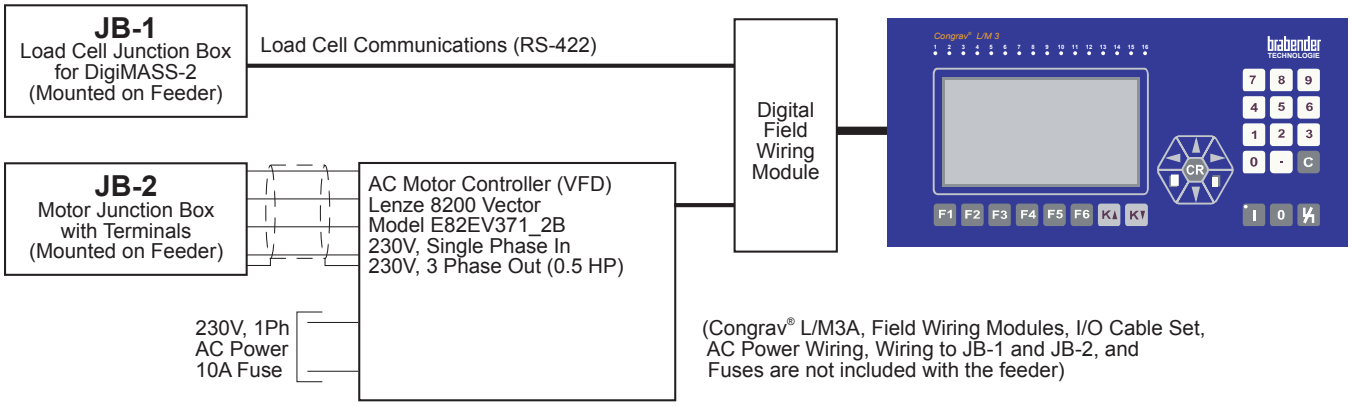
Typical Feeder Electrical Connections – Congrav® S Controls - Single Feeder

Note: Wiring to agitator motors is not shown. The Extension Hopper Agitator Motor (where applicable) requires either a VFD (variable speed) to be specified or a motor starter (fixed speed) to be provided (by others).



Typical Feeder Electrical Connections – Congrav® L/M3A Controls - Multiple Feeders

Note: Wiring to agitator motors is not shown. The Extension Hopper Agitator Motor (where applicable) requires either a VFD (variable speed) to be specified or a motor starter (fixed speed) to be provided (by others).

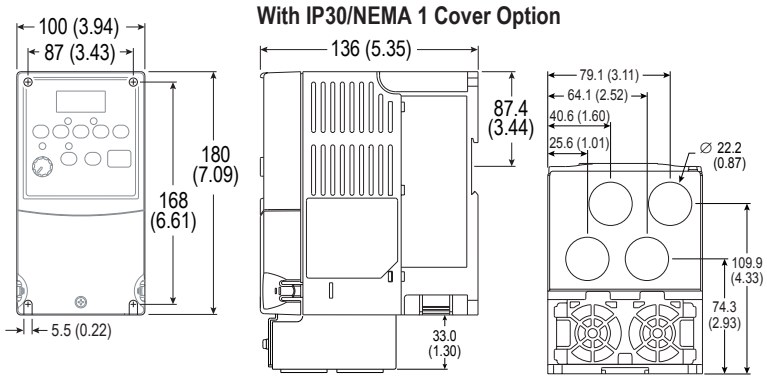


FEEDER ELECTRICAL SPECIFICATIONS - FEEDERS WITH CONGRAV® CONTROLS
(See Document 7200-C00-1 for Information on Congrav® Controls)

Screw/Screw Trough Agitator AC Motor Controller (A-B VFD) – Congrav® S	**Input Power:** 115 VAC, 50/60Hz, Single Phase; **Motor Output:** 230 VAC, 3 Phase; **Motor Control Input:** 0-10V; **Enclosure:** NEMA 1 with Keypad for Speed Control and Run/Stop
Screw/Screw Trough Agitator AC Motor Controller (Lenze VFD) – Congrav® L/M3A	**Input Power:** 230 VAC, 50/60Hz, Single Phase; **Motor Output:** 230 VAC, 3 Phase; **Motor Control Input:** RS-485; **Enclosure:** NEMA 1 with Keypad for Speed Control and Run/Stop
Screw/Screw Trough Agitator Motor	½ HP (0.37 KW), 230/460 VAC, 3 Phase, TEFC
Extension Hopper Agitator Motor	¼ HP (0.18 KW), 230/460 VAC, 3 Phase, TEFC; 6 RPM gearbox output at 60 Hz
Load Cell for Congrav® Controls	Monoblock Scale with a Single DigiMASS-2 Load Cell with Serial Communications (RS-422); **Enclosure:** IP64 (NEMA 12)
Feeder Mounted Junction Boxes for use with Congrav® Controls	1 NEMA 4 Junction Box for Motor Connections; 1 NEMA 4 Junction Box for DigiMASS-2 Load Cell Connections

Mounting Dimensions for AC Motor Controllers

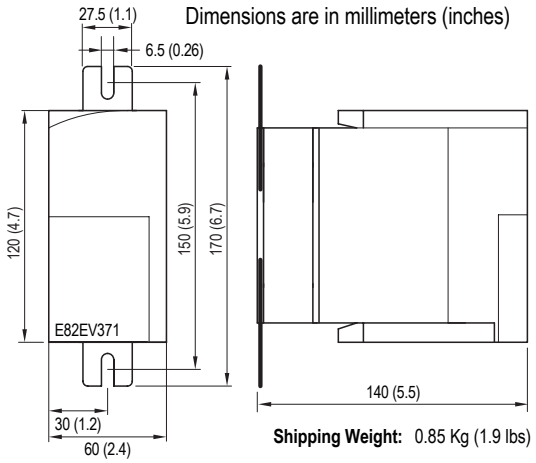
Allen-Bradley VFD (Congrav® S or User-Supplied Controls)



Dimensions are in millimeters (inches)

Shipping Weight: 2 Kg (4.9 lbs)

Lenze VFD (Congrav® L/M3A Controls)



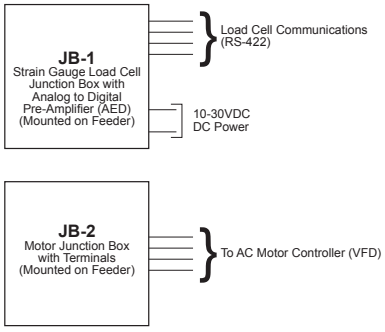
Dimensions are in millimeters (inches)

Shipping Weight: 0.85 Kg (1.9 lbs)

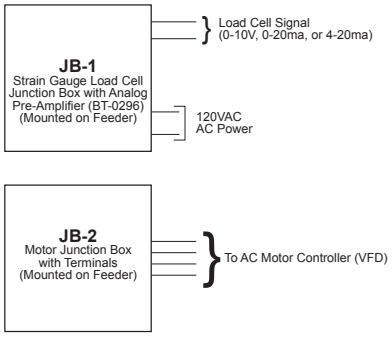
Typical Feeder Electrical Connections with Other Controls

Note: Wiring to agitator motors is not shown. The Extension Hopper Agitator Motor (where applicable) requires either a VFD (variable speed) to be specified or a motor starter (fixed speed) to be provided (by others).

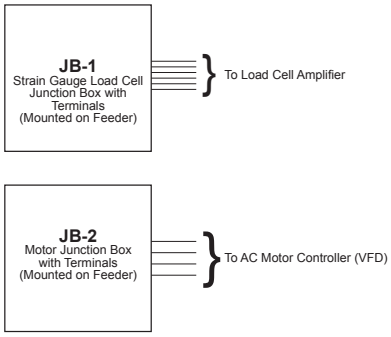
Strain Gauge Load Cell with Precision Amplifier



Strain Gauge Load Cell with Analog Amplifier



Strain Gauge Load Cell with No Amplifier



Note: The Disconnect, Fuse Holders, Fuses and wiring to the feeder are by others.

FEEDER ELECTRICAL SPECIFICATIONS - FEEDERS WITH USER-SUPPLIED CONTROLS

Screw/Screw Trough Agitator AC Motor Controller (A-B VFD)	**Input Power:** 115 VAC, 50/60Hz, Single Phase; **Motor Output:** 230 VAC, 3 Phase; **Motor Control Input:** 0-10V or 4-20ma; **Enclosure:** NEMA 1 with Keypad for Speed Control and Run/Stop
Screw/Screw Trough Agitator Motor	½ HP (0.37 KW), 230/460 VAC, 3 Phase, TEFC
Extension Hopper Agitator Motor	¼ HP (0.18 KW), 230/460 VAC, 3 Phase, TEFC; 6 RPM gearbox output at 60 Hz
Load Cell for User Controls	Monoblock Scale with a Single Analog Strain Gauge Load Cell; **Enclosure:** IP67 (NEMA 4); Amplifier / Signal Type must be specified
Feeder Mounted Junction Boxes for use with User-Supplied Controls	1 NEMA 4 Junction Box for Motor Connections; 1 NEMA 4 Junction Box for Analog Load Cell Connections

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