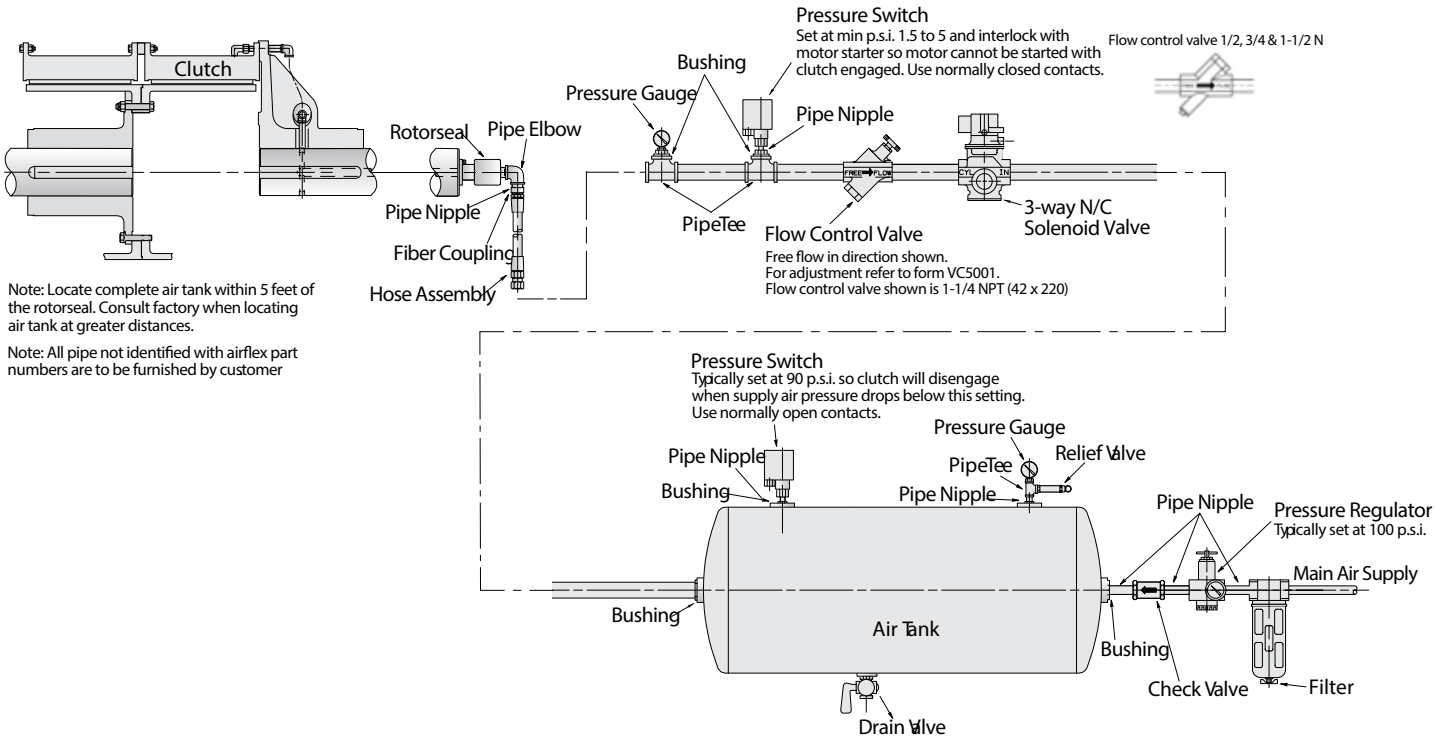
Controls and Air Tank Groups

Section J

Airflex® Standard Air Tank Group

Section J



Note: Locate complete air tank within 5 feet of the rotorseal. Consult factory when locating air tank at greater distances.

Note: All pipe not identified with airflex part numbers are to be furnished by customer

Rotorseals and Rotorseal Assemblies

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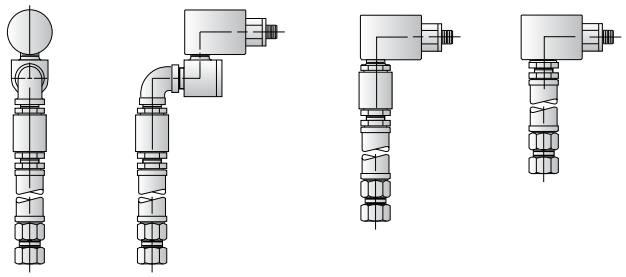
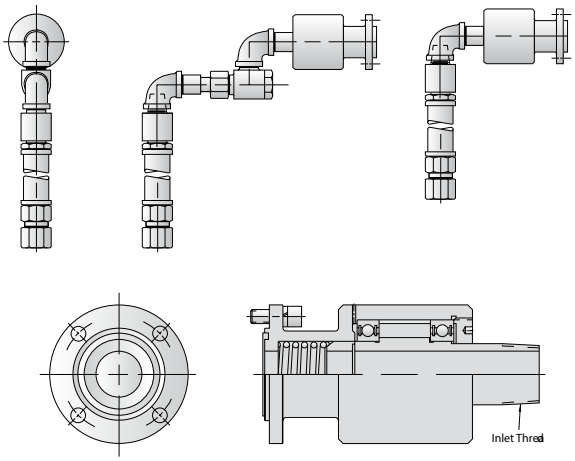
B3, C2



RH Rotorseals



	Clutch	Pipe Size	Rotorseal Group	Size
Single	11.5VC500-16VC600	½	104921	B3
	20VC600-28VC650	½	104907	C2
	33VC650-42VC650	¾	104908AA	RH
Dual	11.5VC500-20VC600	½	104907	C2
	24VC650-28VC650	¾	104908AA	RH
	33VC650-37VC650	1	104909AA	1" RH
	42VC650	1¼	104910AA	1¼RH
Single	14VC1000-20VC1000	½	104907	C2
	24VC1000-28VC1000	¾	104908AA	¾RH
	32VC1000	1	104909AA	1" RH
	38VC1200-42VC1200	1¼	104910AA	1¼RH
	46VC1200-52VC1200	1½	105519AA	1½RH
	51VC1600-66VC1600	1½	105519AA	1½RH
	76VC1600	2	107815AA	2" RH
Dual	16VC1000	¾	104908AA	¾RH
	20VC1000-24VC1000	1	104909AA	1" RH
	28VC1000-32VC1000	1¼	104910AA	1¼RH
	38VC1200	1½	105519AA	1½RH
	42VC1200-46VC1200	1½	105519AA	1½RH
	52VC1200-66VC1600	1½	105519AA	1½RH
	76VC1600	2	107815AA	2" RH
	76VC2000	2	107815AA	2" RH

*For dimensional information, see catalog pages 263, 264, 265, 266.

Rotorseals shown are for typical arrangements only.

Clutch Applications

Air Tank Groups

Section J

Airflex offers a complete line of air tank group (ATG) packaged solutions to suit complete clutch application air supply requirements. This new line of ATGs are ruggedly designed for harsh environments such as grinding mills and oilfield applications. The ATGs come with a complete air supply system including: a filter, pressure regulator, air receiver tank, solenoid valve, flow control valve, and pressure switches. Each solution is specially packaged for convenient on site assembly. Premium ATGs provide larger and more accurate gauges for pressure, and solenoid valves include a NEMA4X junction box.

Size		AirTank Group Standard	Premium
Single	11.5VC500	N/A	N/A
Narrow	14VC500	N/A	N/A
	16VC600	N/A	N/A
	20VC600	108702	108602
	24VC650	108702	108602
	28VC650	108702	108602
	33VC650	108703	108603
	37VC650	108703	108603
	42VC650	108703	108603
Dual	11.5VC500	108702	108602
Narrow	14VC500	108702	108602
	16VC600	108702	108602
	20VC600	108702	108602
	24VC650	108703	108603
	28VC650	108703	108603
	33VC650	108704	108604
	37VC650	108704	108604
	42VC650	108705	108605
Single	16VC1000	108702	108602
Wide	20VC1000	108702	108602
	24VC1000	108703	108603
	28VC1000	108703	108603
	32VC1000	108704	108604
	38VC1200	108705	108605
	42VC1200	108705	108605
	46VC1200	108706	108606
	52VC1200	108706	108606
	51VC1600	108707	108607
	60VC1600	108707	108607
	66VC1600	108707	108607
Dual	16VC1000	108703	108603
Wide	20VC1000	108704	108604
	24VC1000	108704	108604
	28VC1000	108705	108605
	32VC1000	108705	108605
	38VC1200	108706	108606
	42VC1200	108707	108607
	46VC1200	108707	108607
	52VC1200	108708	108608
	51VC1600	108708	108608
	60VC1600	108708	108608
	66VC1600	108708	108608
	76VC1600	108709	108609
	76VC2000	108709	108609

Airflex® Standard Electrical Controls for Grinding Mills

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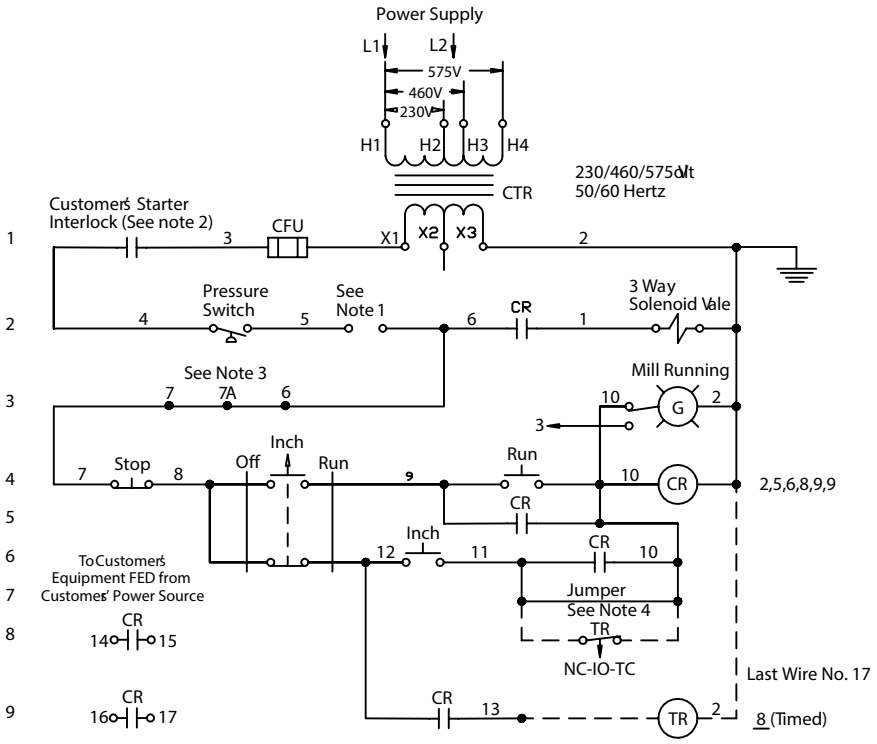
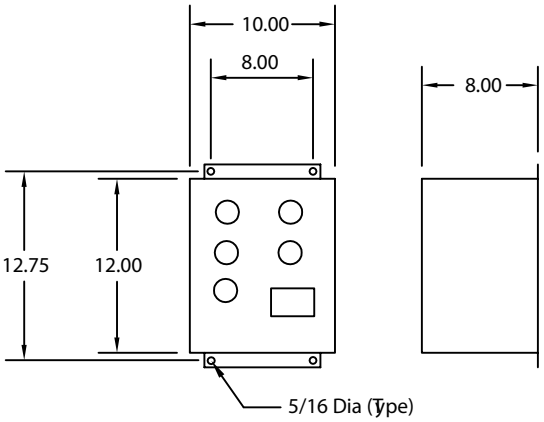


Normal mill starting procedure is to bring the motor up to operating speed and then engage the clutch to accelerate the mill. Airflex offers a simple, but very reliable system for clutch control. The system consists of two parts: the pneumatic and electrical portions.

A pressure actuated limit switch prevents the motor from starting if air pressure is applied to the clutch. It also insures that sufficient air volume and pressure is available before a start can be made. Rate of torque build-up and mill acceleration is determined by the setting of a manually adjusted flow control valve.

Interlocks in the pneumatic controls, furnished by Airflex are tied in electrically to the motor and clutch control. They regulate the electrical signal to the solenoid valve. The standard control permits starting, stopping and where applicable, inching of the mill.

Controls can be custom built to meet most operational and environmental requirements.



Enclosure for Standard Panel

Electrical Control Equipment

Bill of Mat'l	Panel No	Remark
	209811-01	Std. Panel w/PB's, Selector, Light in Door
105448	209811-02	Std. Panel w/219005-07 Operator Station
	209811-03	Timed Inching Panel w/PB's, Selector, Light in Door
105449	209811-04	Timed Inching Panel w/219005-07 Operator Station
	209811-05	Std. Panel (Similar to 209811-02 Except NEMA 4 Encl.)
	209811-15	Std. Panel w/Extra Terminal and NEMA 12 Encl.
	209811-23	Timed Panel w/219005-18 Station, NEMA 4 Encl.
	209811-24	Timed Panel (Sim. to 209811-03 Except NEMA 4)

Airflex® Slip Detection Control for Grinding Mills

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Airflex® also offers a unique clutch slip detection control which provides protection for grinding mill drive systems.

Danfoss's clutch slip detection control has been devel oped to prevent costly damage to the motor, clutch and other grinding mill drive train components. This system continuously monitors clutch performance during start-up and running operations.

Detects fast starts

- Gives a warning that a fast start has occurred. This condition (if not corrected) may eventually lead to drive train component damage.

Detects long starts

- Start is aborted if excessive slip time occurs preventing costly downtime.
- Detects clutch slippage during operation.
- The control system prevents damage by detecting slippage during normal operation and automatically disengaging the clutch.

Operation

Monitors start-ups

During a mill start, the control monitors the time required to engage the clutch and bring the mill to full RPM (clutch lock-up). If the clutch locks up too quickly, a warning light on the control enclosure will illuminate alerting the operator.

If the clutch does not lock up (full mill RPM not achieved) within a predetermined time factor, the control will abort the start (disengage the clutch). A warning light will also il - luminate to indicate the clutch was automatically disengaged because of excessive slippage.

Another start cannot be at - tempted until the control is physically reset at the mill. This prevents successive start attempts from a remote control room when there is a potential problem.

Monitors during mill operation

While running, the RPM of the input and output shaft are continually compared. If for some reason the clutch begins to slip, the control will sense the difference in RPM and disengage the clutch, again illuminating a warning light and requiring the control to be physically reset.

For further information, please consult the factory.

Hydraulic Inching Drives for Grinding Mills

Air Tank Group Selection

Section J

Portable – single point lift system

Extends clutch life – reduces maintenance costs Simple

controls and connections – faster maintenance

Danfoss's expertise in Hydraulic Drives has enabled customer specific solutions to be realized in many industries. The latest of these innovations is the introduction of Hydraulic Inching Drives for Grinding Mills for the mining industry. Hydraulic Inching Drives allow easy maintenance of Grinding Mills and are available in a variety of configurations and sizes.

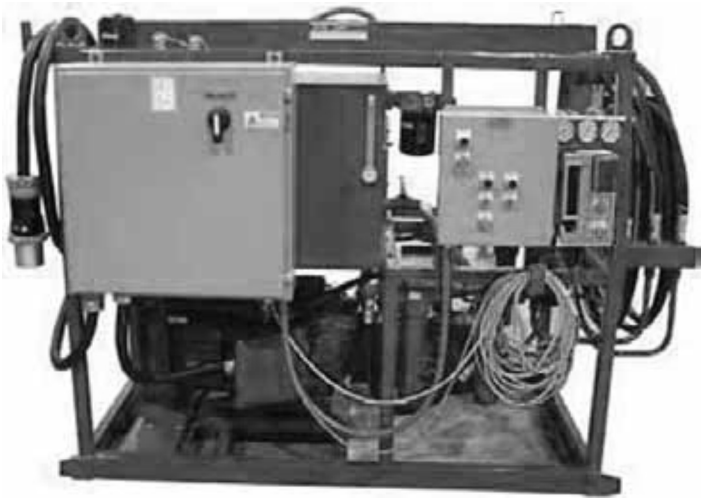
The modular design of these units provides best in class flex - ibility of operation during maintenance activities. These sys - tems are designed to meet or exceed all applicable standards, including ISO, JIC and NFPA.

Hydraulic Power Unitfor Inching Drive

Section J

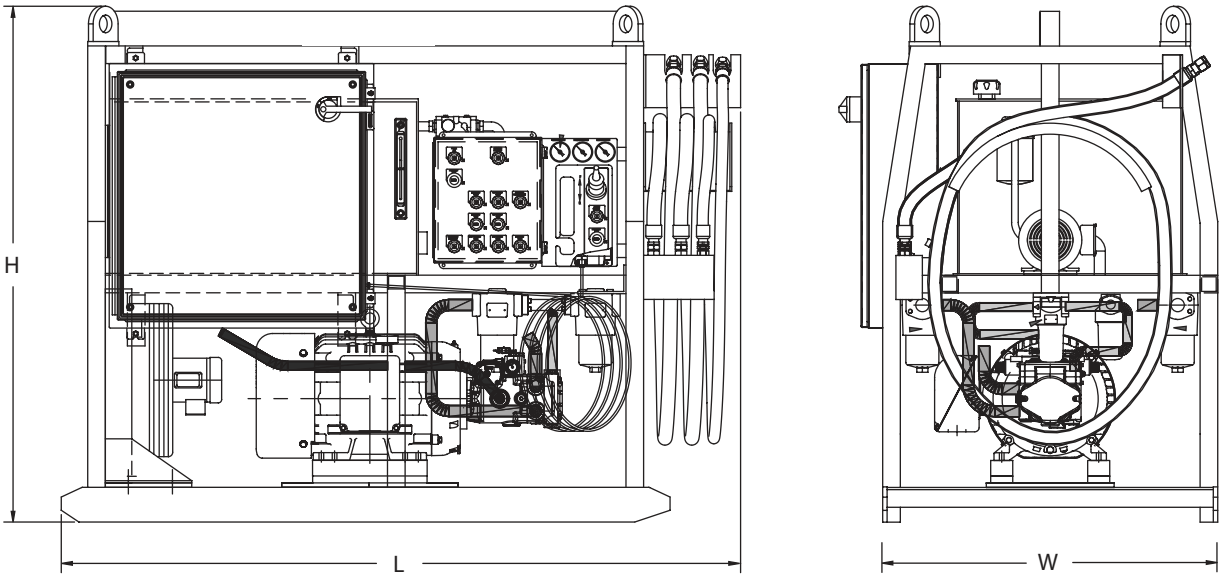
Providing power to the Drive System, the Hydraulic Power Unit has an Danfoss Hydrostatic Transmission Pump close cou - pled to the electric motor. The reservoir is sealed and filled only by an on-board pump with filter. The electric drive motor is available in 50Hz or 60Hz with a large range of voltages. Low leak, quick disconnects on the hoses provide means to cleanly connect the Drive System, and are assembled to eliminate the possibility of incorrect rotation. The operator control station allows the qualified technician to accurately drive the mill to the optimal position enabling maintenance. The electrical power supply cable stows on the skid while not in use and the optional control station pendant gives precise control where you need it.

Providing power to the Drive System, the Hydraulic Power Unit has an Danfoss Hydrostatic Transmission Pump close coupled to the electric motor.



Dimensional Data
Hydraulic Power Unit

Dimensions in mm (in)



Electr ical Mo tor Po we r

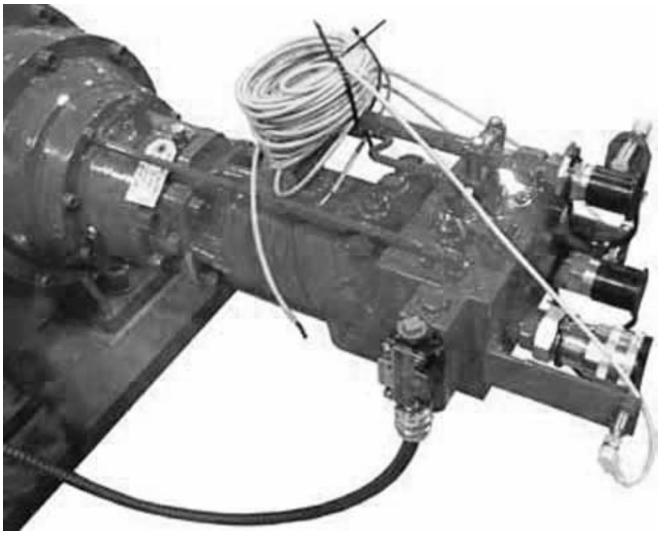
	25 hp	75 hp	150 hp	300 hp
Tank Volume in Gallons	60	60	100	200
Approximate "L"	1,880 (74)	2,311 (91)	2,616 (103)	3,429 (135)
Approximate "H"	1,448 (57)	1,701 (67)	2,184 (86)	2,692 (106)
Approximate "W"	990.6 (39)	1,067 (42)	1,346 (53)	1,524 (60)

Drive System

Section J

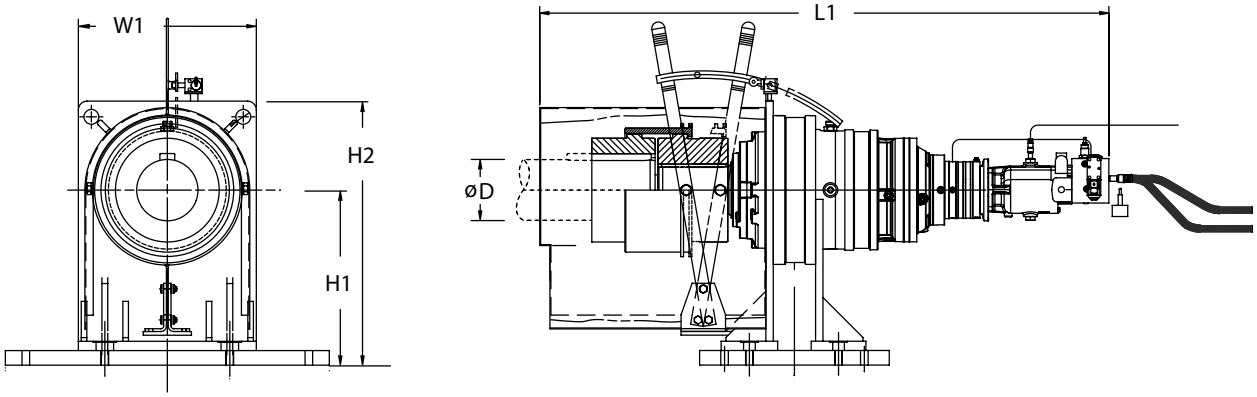
The Industrial planetary style torque multiplier with hydraulic motor drive input turns the pinion shaft at the required speed. Automatic torque overload protection is standard and can be adjusted as needed from the operator control station. The automatic brake can be manually set or released as desired for flexible operation. The foot mounting arrangement can be customized to any situation. Coupling engagement is manual lever operated, and additional drive couplings as well as base plates can be installed on other mills.

Automatic torque overload protection is standard and can be adjusted as needed from the operator control station.



Dimensional Data
Drive System

Dimensions in mm (in)



Gear Box/Drive Table

Drive Base	Dimensions Stage	Power hp	Torque ft-lb	Speed rpm	Approximate D	L1	H1	H2	W1
SL300		9.0	22,861	2.00	120 (4.72)	1,277 (50.30)	267 (10.51)	534 (21.02)	534 (21.02)
SL400		20.0	49,526	2.00	130 (5.12)	1,307 (51.48)	267 (10.51)	534 (21.02)	534 (21.02)
SL600		25.0	82,544	1.60	160 (6.30)	1,412 (55.61)	306 (12.05)	612 (24.10)	612 (24.10)
SL850		45.0	114,972	2.00	170 (6.69)	1,554 (61.19)	339 (13.35)	678 (26.70)	678 (26.70)
SL1200		55.0	172,752	1.70	200 (7.87)	1,699 (66.91)	381 (15.00)	762 (30.00)	762 (30.00)
SL1800		90.0	229,944	2.00	210 (8.27)	1,820 (71.68)	426 (16.77)	852 (33.54)	852 (33.54)
SL2500		127.0	333,502	2.00	240 (9.45)	2,048 (80.67)	485 (19.13)	972 (38.26)	972 (38.26)
SL3500		130.0	477,576	2.00	280 (11.02)	2,210 (87.05)	531 (20.91)	1,062 (41.82)	1,062 (41.82)
SL5000		250.0	651,262	2.00	340 (13.39)	2,533 (99.75)	588 (23.15)	1,176 (46.30)	1,176 (46.30)
SL7500		300.0	787,800	2.00	400 (15.75)	3,248 (127.90)	696 (27.40)	1,392 (54.80)	1,392 (54.80)

Features and Benefits for Inching Drive

Section J

- Torque range up to 785,000 lb.ft (1,070,000 Nm)
- Speeds up to 2 rpm
- Maximum torque limiting built into the hydraulic pump
- Precision Electric Joystick controller ensures accurate positioning and saves time
- Automatic brake optimizes performance
- Inching while main motor is being serviced
- Frozen charge detection
- Highly efficient maintenance solution
- Comprehensive instruments including pressure, temperature, and optional mill position (position feedback devise required) monitor key functions providing the operator complete control
- Sealed reservoir ensures long service life
- Standard filtered reservoir fill system with suction wand
- Power supply cable with receptacle makes startup quick
- Mechanical and electrical interlocks
- Standard shiftable coupling sleeve and mating hub easy to engage/disengage
- Additional coupling hubs and base-plates to share drive with other mills
- Reliable and cost effective maintenance solution.

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