Bell & Gossett
a xylem brand

TECHNICAL BROCHURE
D-155D

ALLEN BRADLEY POWERFLEX 400

PULSE WIDTH MODULATION (PWM) VARIABLE FREQUENCY DRIVE

AC ADJUSTABLE FREQUENCY DRIVES (AFD)

POWERSAV®

VARIABLE SPEED PUMPING SYSTEMS

STANDARD FEATURES

- NEMA 1 Enclosure
- Input Disconnect Switch
- Electronic Motor Overload Protection
- Input Fuses
- Hand/Off/Auto Switch
- Diagnostic Display
- Current, Voltage, Frequency, Power Display
- Many Programmable Features
- UL/CUL Approved
- RS-485 Communications: Modbus RTU

CURRENT RATINGS

208 VAC

HP	AMPS
5	16.8
7.5	24.0
10	30.8
15	46.2
20	60.0
25	75.0
30	88.0
40	114.0
50	143.0

460 VAC

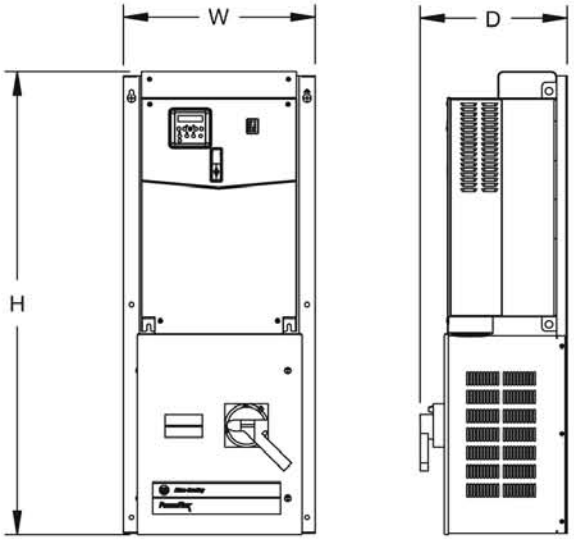
HP	AMPS
5	7.6
7.5	11.0
10	14.0
15	21.0
20	27.0
25	34.0
30	40.0
40	52.0
50	65.0
60	77.0
75	96.0
100	124.0

AFD SPECIFICATIONS

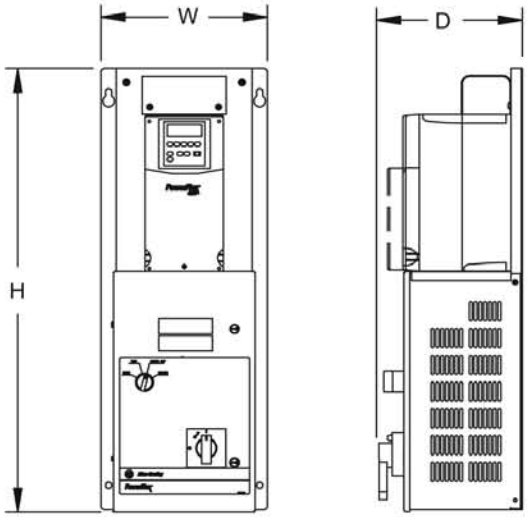
Input Voltage	• 208 and 460 VAC
Voltage Tolerance	• +/–10%
Frequency	• 48-63 Hz
Ambient Operating Temperature	• –10 to 40°C
Storage Temperature	• –40 to 85°C
Ambient Humidity	• 95% non-condensing
Altitude	• To 3300 feet above sea level, without derating
Displacement Power Factor	• 0.95
Typical Efficiency	• 97% at full load
Carrier Frequency	• 2-10 kHz, through 30 HP (208V) and 40 HP (460V) • 2-8 kHz, 40-50 HP (208V) and 50-100 HP (460V)
Service Factor	• 1.0
Overload Current Capacity	• 110% for 1 minute
Logic Control Ride Through	• > = 0.5 seconds, 2 seconds typical
Over Voltage Protection	• Standard
Under Voltage Protection	• Standard
Output Short Circuit Protection	• Standard
Motor Overload Protection	• Electronic Thermal overloads included with bypass option
Input Fuses	• Standard
Phase to Phase Fault Protection	• Standard
Ground Fault Protection	• Standard
Display	• 2 Line, 16 Character, Backlit LED – Voltage, Current, Frequency, Power – Fault Identification
Agency Approval	• UL508C and CAN/CSA C2.2 • NFPA 70 - US National Electrical Code • IEC 146 • NEMA ICS 3.1
Warranty	• 30 mos. from ship date or 24 mos. from start-up, whichever occurs first.

Drive with Disconnect						
Voltage	**HP**	**DWG #**	**H**	**W**	**D**	**Weight**
208	5-10	1	28.8	10.9	9.4	35
208	15-20	1	42.6	12.9	11.1	70
208	25-30	1	43.0	18.0	13.8	100
208	40	1	43.0	18.0	13.8	150
208	50	3	50.0	35.0	14.0	200
460	5-20	1	28.8	10.9	9.4	35
460	25-40	1	42.6	12.9	11.1	70
460	50-100	1	43.0	18.0	13.8	150

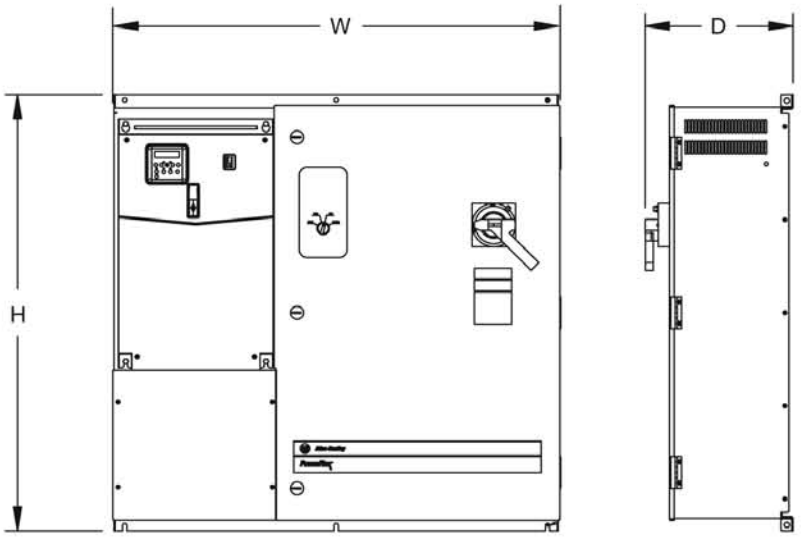
Drive with Manual Bypass and Disconnect						
Voltage	**HP**	**DWG #**	**H**	**W**	**D**	**Weight**
460	5-20	2	28.8	10.9	10.1	40
460	25-40	2	42.6	12.9	11.2	90
460	50-100	3	41.0	41.8	13.9	250



DWG #1



DWG #2



DWG #3

A. Adjustable Frequency Drive

1. The variable torque AC drive shall consist of a microprocessor controlled, pulse width modulated type adjustable frequency controller capable of providing a standard three phase AC induction motor with variable frequency and voltage.
2. The adjustable frequency drive shall convert 208/460 volts, +/- 10%, three phase, 60Hz utility power to an adjustable frequency output for speed control from 30 to 100% of base speed.
3. The enclosure shall be NEMA 1 ventilated for installation as a wall mounted or free standing unit, depending on amp rating. Drive shall be equipped with an input disconnect switch and ground fault protection. A hand-off-automatic switch and speed potentiometer shall be mounted on the front of the enclosure.
4. The adjustable frequency drive, including all factory installed options, shall have UL and CSA approval.
5. The adjustable frequency drive will protect itself against all phase to phase and phase to ground faults, removal of load, single phasing, motor stall, power outages, and overvoltage/undervoltage conditions.
6. The adjustable frequency drive shall provide the following protection. Protection is defined as normal shut down with no component damage.
    a. AC input overvoltage/undervoltage detection and trip
    b. Drive overcurrent detection and trip
    c. Overcurrent stall
    d. Overvoltage stall
    e. Ground fault
    f. Up to 6000 volts peak per IEEE C62.41-1991
    g. Overtemperature detection and trip
7. The following customer modifiable adjustments shall be provided:
    a. Current Limit
    b. Min/Max Speed
    c. Volt/Hertz Ratio
    d. Accel Time
    e. Decel Time
    f. Soft Start/Stop
    g. Skip Frequencies
    h. Carrier Frequency
8. The AFD shall be suitable for elevations to 3300 feet above sea level without derating. Maximum operating ambient temperature shall not be less than 45 degrees Celcius. AFD shall be suitable for operation in environments up to 95% non-condensing humidity.
9. All AFDs shall be warranted for a period of 30 months from the date of shipment or 24 months from the date of start-up whichever occurs first.

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