

GENERAL INFORMATION

An adjustable frequency drive can vary the frequency (hertz) of the input power to a blower motor. This has the effect of varying speed of the blower's impeller. Changing the speed (rpm) of the impeller affects the volume, pressure, and horsepower of the blower as governed by the rules of "Affinity." Simply stated--volume varies directly, pressure varies as the square, and horsepower varies as the cube of the impeller rpm's.

Any pressure blower fan not operating at its maximum capacity can benefit from the addition of a 2775 Adjustable Frequency AC Drive model by:

- **Reducing operating horsepower.** Combustion air blowers and fans are sized for some maximum capacity, but unless they operate at that rate, horsepower (kilowatts) is being wasted.
- **Reducing installed horsepower.** The pressure drop accompanying any in-line control valve is eliminated. Pressure drop as well as volume determine horsepower requirements.
- **Being simpler, requiring fewer components.** Control valves, control motors, connecting linkages, piping flanges, and separate motor starters are eliminated.
- **Reducing noise levels.** As flow and pressure are decreased with decreasing rpm, so decreases the noise level.
- **Improved control.** The system response is repeatable and linear with control signal input. The problems accompanying valve sizing, valve flow characteristics, and linkage hysteresis are eliminated.



The North American 2775 Adjustable Frequency AC Drive manufactured by T.B. Woods for North American is a new generation of digital AC drives. Exceptional computing power allows features not available on other drives. 2775 Adjustable AC Drives are user friendly and can be totally integrated within the combustion air system.

2775 AC drives are dual horsepower rated. Available power ranges cover 3 to 25 hp at 230 V ac, and 1 to 75 hp at 460 V ac input for constant torque applications. Variable torque ratings are available from 1 to 100 hp at 460 V ac. Consult our factory in Cleveland on constant torque applications.

Model 2775 Adjustable Frequency AC Drives provide adjustable speed control for standard three phase motors.

Models rated at 180-250 3 phase 50/60 Hz are available in 1-25 hp.

Models rated at 370-500 3 phase 50/60 Hz are available in 1-100 hp.

SPECIAL FEATURES

NEMA 4 Protection

The North American 2775 is the smallest AC drive with NEMA 4 protection with models ranging from 1 hp through 50 hp, and is manufactured in the U.S.A. Models 60 hp through 100 hp are rated NEMA 1.

Digital Programming

The North American 2775 is fully digital with over 100 parameters and hundreds of combinations. It can be preprogrammed in most cases to meet your basic application needs prior to arrival at your plant. It has factory and custom parameter reset capability, minimum and maximum frequency (0.1 to 400 Hz) and dual accelerate and decelerate ramps or coast to stop features.

Operator Terminal Strip

The North American 2775 accepts speed inputs of 0-10 V, 0-2 V, 4-20 mA all director or inverted; 0-1 kHz or 0-10 kHz pulse train. It has 3 control inputs, user programmable to one of 11 functions, and input for motor overload relay (N.C. Contacts).

Serial Link

The North American 2775 with a RS485 Serial input/output link can be used for drive configuration, remote control, and computer monitoring.

Protection Features

The North American 2775 has nineteen fault and 6 warning displays. It has instantaneous overvoltage trip ride through, and overtemperature warning and trip.

2775 Adjustable Frequency AC Drives Selection Sheet

Selecting a 2775 Adjustable Frequency AC Drive

NEW BLOWER APPLICATIONS

- Most North American blowers are supplied with TEFC motors rated at 230-460/3/60 with 1.15 **service factor**.
Exceptions - applications that require 50 hertz, open drip-proof, and explosion-proof motors. Call our factory in Cleveland for further information.
- The amperage listed on the motor nameplate is normally at 1.0 service factor. The service factor is a built in insulation protection and is listed as 1.15.
- Multiply the nameplate amperage by 1.15 to obtain the maximum amperage at which the motor is capable of operating on the same nameplate.

Use the table below to select the 2775 Adjustable Frequency AC Drive to match your blower requirements.

- Columns 1, 2, 3, and 4 offer typical data for motors supplied by North American. Select proper horsepower and voltage.
- Match step 1 with columns 5, 6, and 7 which show AC drive data.
- Moving horizontally across, if column 4 exceeds column 5, the proper drive is the next higher hp rating in column 6.
- All adjustable frequency drives require a separate fusible disconnect switch. Column 8 lists the correct switch. Enter the fusible disconnect switch as a separate line item. Reference Bulletin 2723.

RETROFIT APPLICATIONS

The following steps may be used to select an adjustable frequency AC drive for an existing motor.

- Obtain the line voltage, phase, and frequency of the motor.
- With the information obtained in step 1, the motor nameplate can be used to determine the nominal amperage, the motor service factor, and the motor horsepower.
- Multiply the nominal amperage by the motor service factor to determine the maximum amperage the motor will draw.
- Using the chart below, select the proper voltage from column 1 (step 1). Moving horizontally across the page to column 5 match the amperage rating determined in step 3. The amperage rating selected must be equal to or slightly more than that calculated value. Continuing on the same horizontal line across the page, the horsepower shown in column 6 must be equal to or more than the horsepower rating shown on the motor nameplate. Column 7 on the same horizontal line will be the properly sized 2775 Adjustable Frequency AC Drive.

#1	#2	#3	#4	#5	#6	#7	#8
Input Supply Voltage 3 Phase	Motor hp	Motor Amps ** at 1.0 SF	Motor Amps ** at 1.15 SF	Maximum Output Rating Drive VT Amps	Output HP Variable Torque	N.A. Product C = NEMA 4	Series 2723 Fusible Disconnect Switch Amperage Rating N.A. Product #
230 VAC +10% -20%	3	9.6	11.04	10.6	3	2775-WFC 20030C	2723-30
	5	15.2	17.48	16.7	5	2775-WFC 20050C	2723-30
	7.5	22	25.3	24.2	7.5	2775-WFC 20075C	2723-60
	10	28	32.2	30.8	10	2775-WFC 20100C	2723-60
	15	42	48.3	46.2	15	2775-WFC 20150C	2723-100
	20	54	62.1	59.4	20	2775-WFC 20200C	2723-100
	25	68	78.2	74.8	25	2775-WFC 20250C	2723-200
460 VAC +10% -20%	1	1.8	2.07	2.2	1	2775-WFC 40010C	2723-30
	2	3.4	3.91	4.1	2	2775-WFC 40020C	2723-30
	3	4.8	5.52	6.1	3	2775-WFC 40030C	2723-30
	5	7.6	8.74	9.9	5	2775-WFC 40050C	2723-30
	7.5	11	12.65	14.3	10	2775-WFC 40075C	2723-30
	10	14	16.10	19.8	15	2775-WFC 40100C	2723-30
	15	21	24.15	26.4	20	2775-WFC 40150C	2723-60
	20	27	31.05	33	25	2775-WFC 40200C	2723-60
	25	34	39.10	42.9	30	2775-WFC 40250C	2723-100
	30	40	46	49.5	40	2775-WFC 40300C	2723-100
	40	52	59.8	67.1	50	2775-WFC 40400C	2723-200
	50	65	74.75	82.5	60	2775-WFC 40500C	2723-200
	60	77	88.55	97.9	75	*2775-WFC 40600B	2723-200
	75	96	110.4	121	100	*2775-WFC 40750B	2723-200

*Models 2775-WFC 40600B and 2775-WFC 40750B are NEMA 1 enclosures. Chassis models are available for all North American product numbers in column 7. Call Cleveland.
**Source National Electric Code 1993.

- All adjustable frequency drives require a separate fusible disconnect switch unless one switch exists on-site. A fusible disconnect switch shown in column 8 (same horizontal line) must be included to allow the drive to be powered and it is preset prior to initiation. Order the fusible disconnect switch separately.

NOTES: For new and retrofit applications of the 2775 it is recommended that an Energy Efficient motor be selected. Energy efficient motors are those that conform to the Standards of the 1992 Energy Policy Act - effective October 1, 1997. North American can readily supply energy efficient motors.

Use of a Adjustable Frequency AC drive with an older existing standard efficiency blower motor may shorten the service life of the motor. Many standard efficient motors found in many of today's industrial plants cannot quickly dissipate the heat created by operating the motor at reduced rpm's.

Fives North American Combustion, Inc., 4455 East 71st Street, Cleveland, OH 44105 USA, Phone 216.271.6000
Fax 216.641.7852 email: fna.sales@fivesgroup.com • www.fivesgroup.com/fivesna