

# FAIRCHILD 24XS SERIES M/P CONVERTERS

## TTL (+5 VDC) INPUT UNIT

### Operation and Maintenance Instructions

Table 1. Estimated Full Range Pressure Adjusting Time (seconds) 12 VDC Supply							
		Mode of Operation					
		Full Step			Half Step		
Regulator Model	Pressure Ranges			Total Pulses 0-100% Output	Max. Frequency (Hz)	Total Pulses 0-100% Output	Max. Frequency (Hz)
	psig	[BAR]	(kPa)				
10	.5-30	[.03-2]	(3-200)	7500	300	14300	550
	6-30	[0.4-2]	(40-200)	6000	300	11550	550
	3-27	[0.2-1.8]	(20-180)	5900	350	11400	600
	3-15	[0.2-1.0]	(20-100)	3000	500	6400	800
	3-9	[0.2-.6]	(20-60)	1800	600	3200	800
	9-15	[0.6-1]	(60-100)	1500	500	3200	800
16	Vacuum - 10			Outside of Specifications		13000	500
80	.5-20	[.03-1.5]	(3-150)	4500	450	8800	800
	1-60	[.07-4]	(7-400)	4500	450	8250	750
	2-100	[.15-7]	(15-700)	3900	300	6000	750
81	0-2	[ 00-.15]	(0-15)	4800	800	9600	800
	0-5	[ 00-.35]	(0-35)	6400	800	12800	800
	.5-20	[.03-1.5]	(3-150)	4500	450	8800	800
	1-60	[.07-4]	(7-400)	4500	450	8250	750
	2-100	[.15-7]	(15-700)	3900	300	6000	750

Table 2. Estimated Full Range Pressure Adjusting Time (seconds) 24 VDC Supply							
		Mode of Operation					
		Full Step			Half Step		
Regulator Model	Pressure Ranges			Total Pulses 0-100% Output	Max. Frequency (Hz)	Total Pulses 0-100% Output	Max. Frequency (Hz)
	psig	[BAR]	(kPa)				
10	.5-30	[.03-2]	(3-200)	7150	550	14400	800
	6-30	[0.4-2]	(40-200)	6050	550	12000	800
	3-27	[0.2-1.8]	(20-180)	6000	600	11200	800
	3-15	[0.2-1.0]	(20-100)	3200	800	6400	800
	3-9	[0.2-.6]	(20-60)	1600	800	3200	800
	9-15	[0.6-1]	(60-100)	1600	800	3200	800
16	Vacuum - 10			6500	500	12800	800
80	.5-20	[.03-1.5]	(3-150)	4800	800	9600	800
	1-60	[.07-4]	(7-400)	4550	650	8800	800
	2-100	[.15-7]	(15-700)	3200	800	6400	800
81	0-2	[ 00-.15]	(0-15)	4800	800	9600	800
	0-5	[ 00-.35]	(0-35)	6400	800	12800	800
	.5-20	[.03-1.5]	(3-150)	4800	800	9600	800
	1-60	[.07-4]	(7-400)	4550	650	8850	800
	2-100	[.15-7]	(15-700)	3200	800	6400	800

#### GENERAL INFORMATION

The TTL (+5) Input unit allows incremental adjustment of regulator output pressure and provides for various adjustment times for full range operation.

The TTL Input unit contains an integral Translator Board that converts clock pulses into control logic to drive the stepper motor.

## ADJUSTMENT / OPERATIONS

### Home Reference Switch Adjustment

**NOTE:** The Home Reference Switch is adjusted at the factory to provide an electrical output signal at 0 psig output pressure.

1. To change the Home Output Value turn the **Adjustment Screw** clockwise to decrease pressure or counterclockwise to increase pressure till the output signal occurs. For more information, see Figure 1. "Manual Control Circuit" below.

### Manual Control Operation

1. Use a **12V** or a **24V Power Supply** together with a **Pulse Generator** to generate step pulses. For more information, see Figure 1. "Manual Control Circuit" below.

2. Refer to Tables 1. and 2. on page 1, to select the Estimated Pulses for Pressure Range Adjustment.
3. Find the Regulator Model and the specific Pressure Range being used.
4. Select **Full** or **Half Step** operation and set the pulse generator frequency as indicated under the **Max. Frequency (HZ)** column. The **Total Pulses 0-100% Output** column shows the approximate number of pulses required to drive the Regulator over the full range of pressure.
5. Turn the Pulse Generator to the **On** or **Off** position to start or stop the stepper motor. Each pulse at the Clock input to the Translator Board results in one motor step of 1/200th of a shaft rotation of the motor.

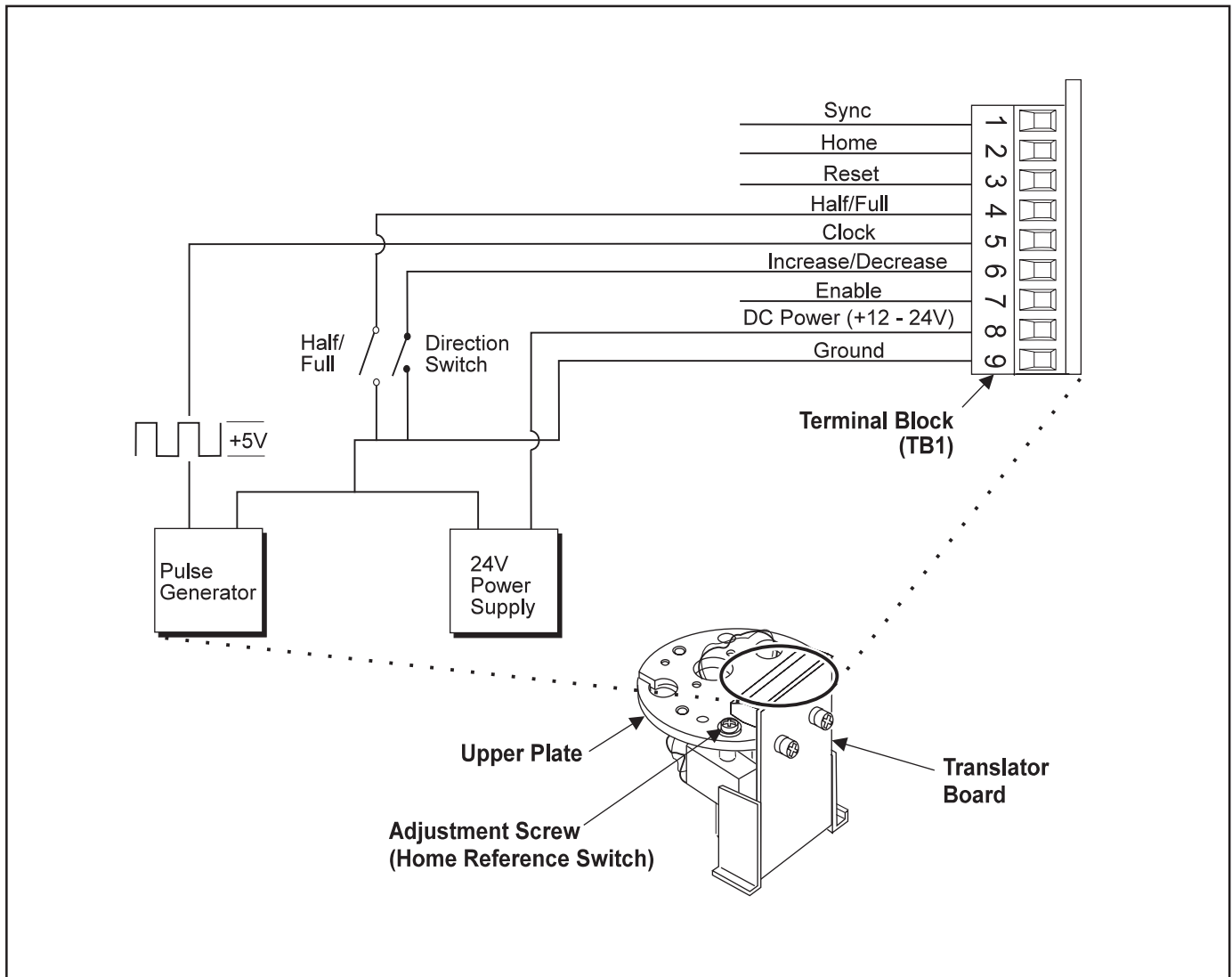


Figure 1. Manual Control Circuit.

## Adjustment / Operations (continued)

### Computer Control Operation

1. To show the timing relationships between the signals applied to the Terminal Block (TB1) when a computer is used to control the TTL Input unit, see Figure 2. "Computer Control Translator Board Timing Chart" below.

#### • Clock

1. A low input pulse on **terminal 5** advances the motor by one increment. This occurs on the rising edge of the pulse.

#### • Increase/Decrease

1. When the input to **terminal 6** is **High**, the motor decreases the regulator output pressure. When the input is **Low**, the motor increases the regulator output pressure.

#### • Half/Full

1. When the input to **terminal 4** is **Low**, the controller operates in **Full Step Mode** (200 steps per revolution of the motor shaft). When the input to **terminal 4** is **High**, the controller operates in **Half Step Mode** (400 steps per revolution of the motor shaft).

#### • Enable

1. When the input to **terminal 7** is **Low**, the Translator Circuit is disabled. Power to the stepper motor is turned off and input signals to the Translator Board have no effect on the motor drive circuits.

#### • Reset

1. When the external circuit connected to **terminal 3** is in a **Low** state, the Translator Board Controller is reset to a 0101 state.

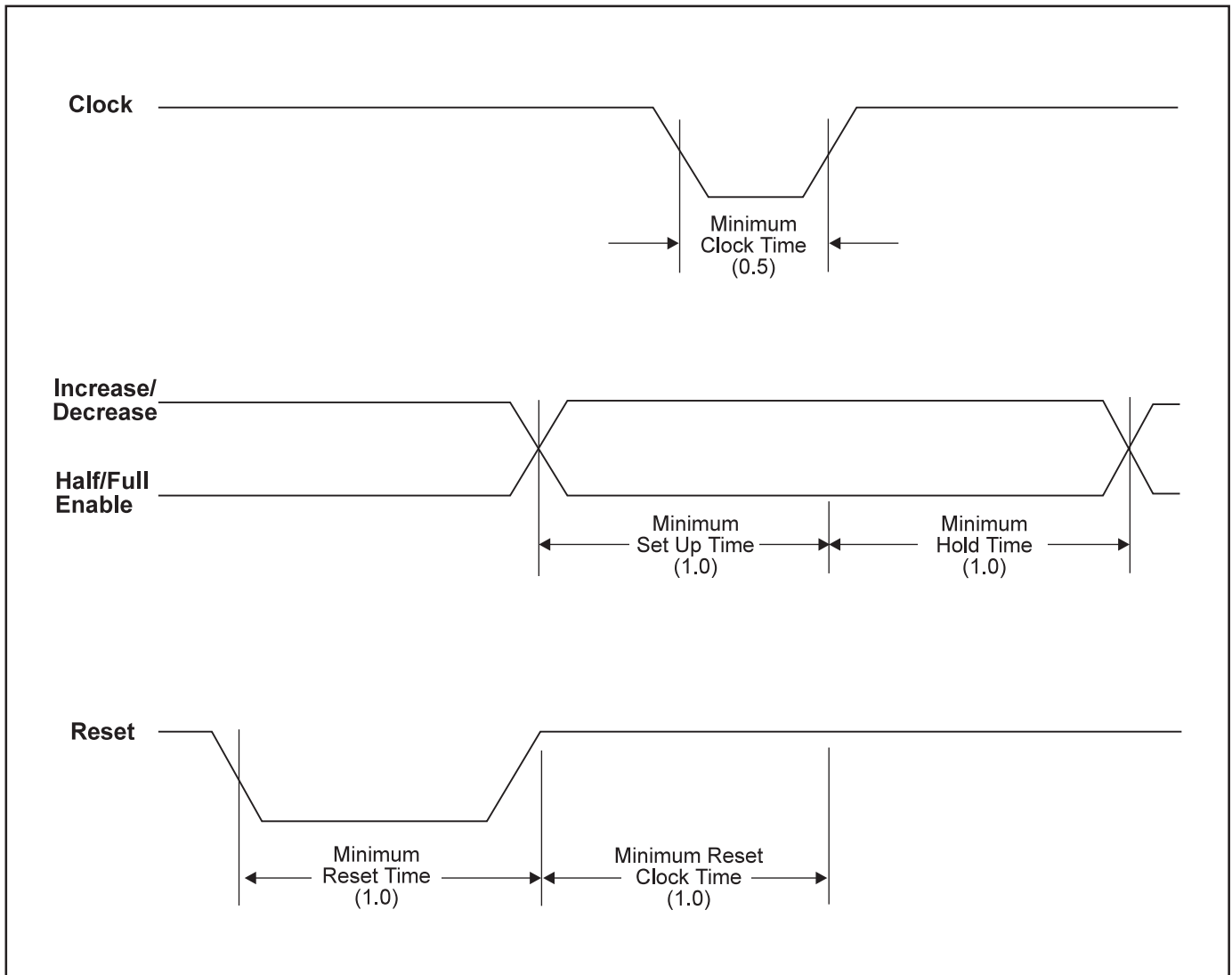


Figure 2. Computer Control Translator Board Timing Chart.

## TROUBLE-SHOOTING

Table 3. Trouble-Shooting	
Problem	Solution
Leakage	Check Body Screw tightness. Check Diaphragm.
High Bleed	Check Relief Pintle and Relief Seat for damage or contamination.
Difficult to adjust	Check Adjusting Screw and Ball lubrication.

## MAINTENANCE

Table 4. For replacement of all elastomers and internal filters install the following Service Kits:	
Model	Service Kits
Model 10	19495-1
Model 16	19494-1
Model 80	15704-1, -2, -3
Model 81	15705-1, -2

**WARNING: Do Not attempt to repair circuit boards.  
Unauthorized repair will void warranty.**



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