

AXIOM PV CONTROLLER/DRIVE & SW44 ACTUATOR



PV30

Integrated PLC performs real-time scans on a separate thread and communicates through software rather than physical wiring. Windows®-based software utilizes a point and click sequential program and PLC ladder logic editor, allowing programming without learning code.



SW44

Designed for the most exacting applications, the SW44 is a field-proven electric cylinder that is built to last. Properly applied, the SW44 will deliver millions of maintenance-free cycles.



SW44 Actuator

OVERVIEW

SW44

OVERVIEW

DIMENSIONS

ORDERING

FEATURES, ADVANTAGES, BENEFITS

FEATURE	ADVANTAGE	BENEFIT
Millions of cycles	Long Life	Lower Operating Cost
Zero Maintenance	No System Down Time	Higher Productivity
Actuator/Motor/Feedback Integrated in One Unit	Compact Envelope	Application Flexibility
8 Pole Hollow Core Motor	Short Body Length	Application Flexibility
High Force & High Speed	with Controlled Motion	Hydraulic Replacement
Controlled Motion Profile	Fast Move to Position with Reduced Impact Speed	Fast Cycle Time with Less Parts Stress
Ball Screw or Roller Screw	Lower Cost Higher Force	Application Flexibility
Manual Override	In 2 Locations	Use in Power Loss

SPECIFICATIONS

FEATURES	SW SERIES	
Operating Force	ROLLER SCREW Up to 2500 lbf [11.1 kN]	BALL SCREW Up to 1000 lbf [4.4 kN]
Peak Force*	4400 lbf [19.6 kN]	
Continuous Force**	1850 lbf [8.2 kN]	
Peak Speed (at 2000 lbf)	13 in/sec [330.2mm/sec]	
Feedback Device	Quantum Quadrature Encoder - Others Available on Request, Contact Factory	
Weight (with 6" stroke)	31 lbs [14.1 kg]	

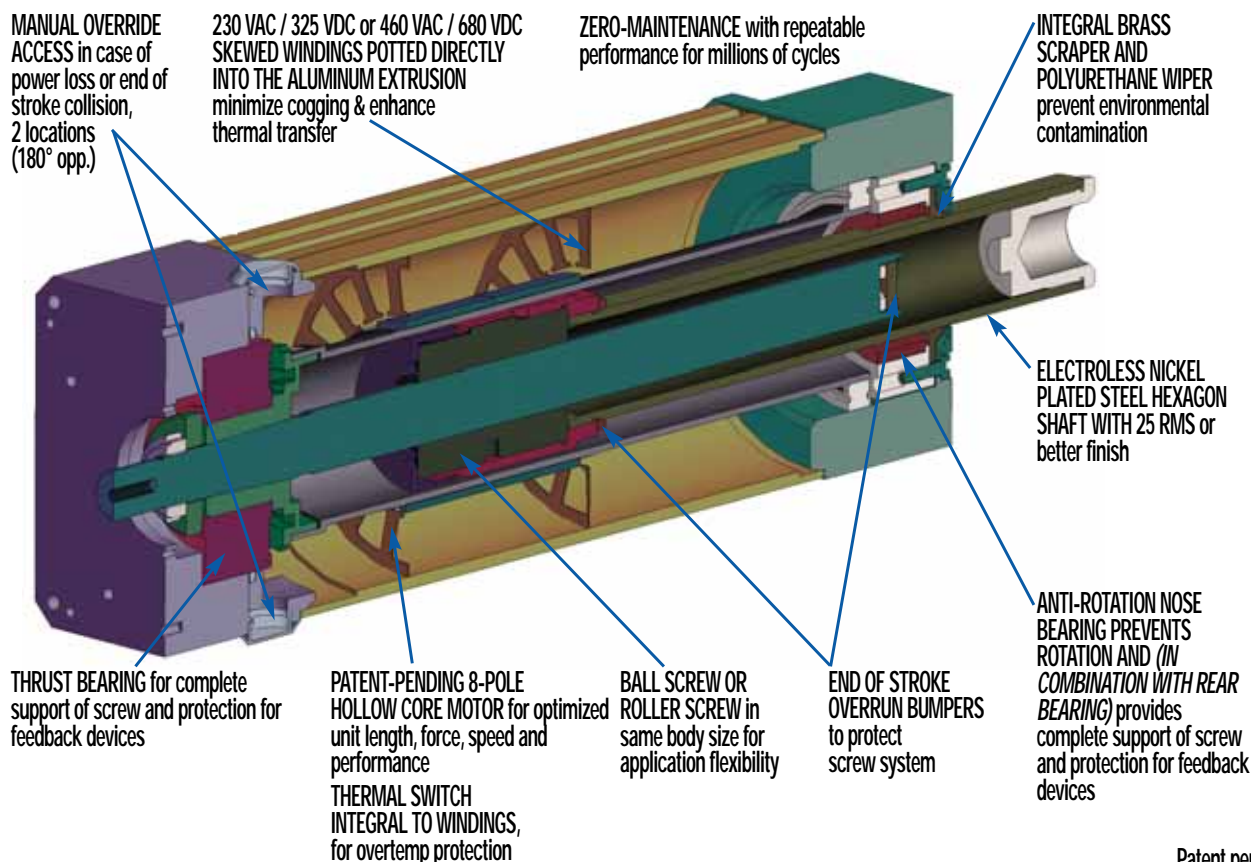
*Peak Force is a result of the limit of the drive

**Continuous Force is achieved with actuator surface temp. less than 155° F (69° C)

DRIVE CONSIDERATIONS

All servo actuators are tested with the Tolomatic AxiomPlus™ drive/controller before leaving the factory and are validated to meet performance specifications. Actual performance may be affected by the choice of the motor drive.

SW FEATURES



Patent pending

SW44 Actuator

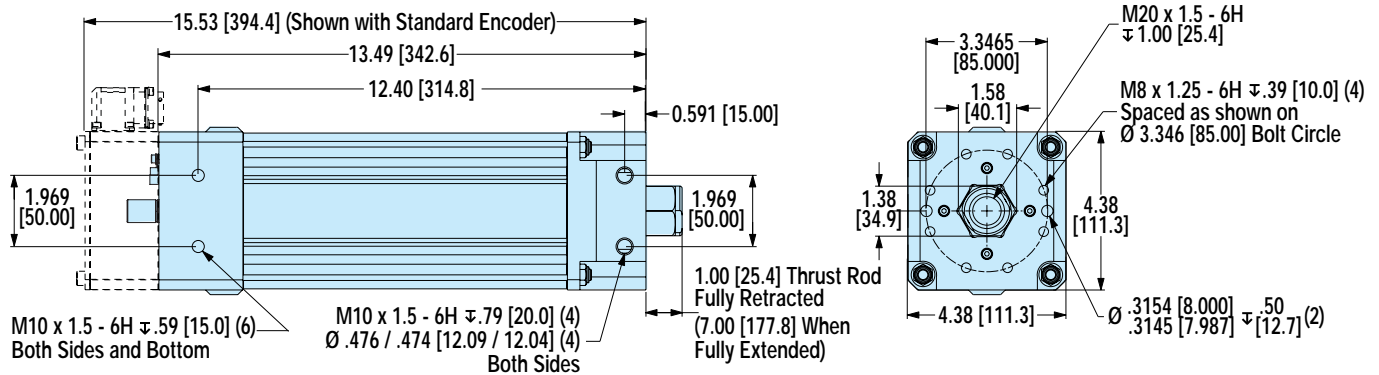


DIMENSIONS (SHOWN WITH FEEDBACK DEVICE)

3D SOLID MODELS AVAILABLE – CONTACT TOLOMATIC

NOTE: Base actuator shown with feedback device. Dimensions are for reference only.
Contact Tolomatic for solid models

Dimensions in inches
[Dimensions in millimeters]



ORDERING

IM SW44 RN2005 SK06 FBTCA LV3 MNTSA PV30 CR6

ACTUATOR TYPE

IM Integral Motor

MODEL & SIZE

SW44 4.4" Face Width

NUT/SCREW

RN2005 Roller Nut/Screw, 20mm Dia./5mm lead

BN2505 Ball Nut/Screw, 25mm Dia./5mm lead

STROKE LENGTH

SK06 6" Stroke Length (only stroke available)

FEEDBACK DEVICE

FB Feedback Device, then enter desired feedback device:

TCA Standard 5000 line with commutation track

Call factory for additional feedback devices.

VOLTAGE

LV3 230 VAC / 325 VDC HV3 460 VAC / 680 VDC

MOUNTING

MNTSA Mounting Standard

CONTROLLER/DRIVE

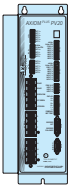
PV30 Axiom® Plus Controller/Drive

CABLE

CR6 6-meter encoder cable, power cable

CR15 15-meter encoder cable, power cable

CC RS232 communication cable



Axiom PV30

FEATURES

AXIOM
PV30

FEATURES

SPECIFI-
CATIONS

DIMENSIONS

PLC /
SEQUENTIAL
PROGRAM
EDITORS
ORDERING



PV30

PLC:

- Real-time scan supervisory function continuous from power-up
- Typical scan time of 2-4 milliseconds
- Ladder logic allows 175 rungs, 4 lines deep, 5 input operations, and an output coil
- Operations include: normally-open, normally-closed, logical invert, one-shot, output coil, latch, unlatch, timers and counters
- 64 character rung descriptor downloaded and uploaded with program
- Internal bit-flags for information transfer between controller and PLC

MOTION CONTROLLER:

- 1.5 axis (gearing to auxiliary axis)
- Commands include: absolute, incremental and velocity moves, branch to labels, subroutine calls, repeat loops, time delays, wait on conditions/inputs, output/flag control and parameter value changes including torque limit, following error, position band, follower gear ratio, maximum velocity, analog position and analog velocity
- Event triggering based on intermediate positions
- Motion pause and resume
- Comment lines and labels down-loaded and uploaded with program

DRIVE:

- PV series drives use space vector commutation providing better bus voltage utilization than traditional sine drives for improved speed/torque curves
- Flux vector current control provides accurate high bandwidth control of torque producing current for better efficiency and more torque over the full speed range than with traditional sine drives
- Drives Tolomatic SW44 and MRV series brushless servo motors or can be configured for customer supplied brushless servo motors
- Autophasing eliminates the need for Hall sensors in motors

GENERAL:

- Modbus RTU and ASCII interface
- Pluggable screw terminal connectors eliminate the need for special connectors and secondary breakout terminal strips
- Short circuit, over current and over voltage protection prevents drive damage
- 25W or 50W internal regeneration
- 14 bit analog input
- External regeneration connections
- CW/CCW travel limit inputs
- Fault, enabled, and in-position outputs
- 3A brake relay
- 3 second peak ratings

Axiom PV30

SPECIFICATIONS



SPECIFICATIONS		Axiom® PV30 Drive
Weight		12.5 lbs (5.66 kg)
Power	Peak Output Current:	30 Amps
	Continuous Output Current:	15 Amps
	Continuous Output Power:	4.2 kW
Input Voltage:		95 Vac -250 Vac 1Ø; 95 Vac - 250 Vac 3Ø (voltage range is switch selectable)
Input Frequency:		47Hz - 63Hz
User Programming		
Language/Programming Environment:		Tol-O-Motion™ windows-based software with point and click sequential program and PLC ladder logic editors
Firmware Field Upgradeable:		YES
User Program Storage Capacity:		500 lines of graphic-based, high-level sequential motion and control instructions with unlimited subroutine calls.
PLC	Connection/Capabilities:	Internal PLC with typical real-time scan of 2-4 msec, 10-12 msec for programs of maximum capacity; 15 inputs
Interface	Interfaces supported:	Modbus RTU ASCII

SPECIFICATIONS		Axiom® PV30 Drive
Inputs/Outputs		
General-Purpose Digital Inputs:		15 optically isolated 5-25 Vdc
Inputs/Outputs:		Sinking/sourcing selectable
Analog Input:		1 14 bit ±10V Differential
General-Purpose Digital Outputs:		8 optically isolated, 5-25 Vdc, 20 mA max.
Communications:		Serial: RS-232, 19,200 baud rate
Motor Feedback		
Input Modes:		Incremental with index
Maximum Input Frequency:		4 MHz (post-quadrature)
Commutation Startup:		Auto-phase - no Hall sensors required
Connectors		
Auxiliary Feedback, I/O, Analog I/O:		Wire trap screw terminals
Motor Feedback:		Wire trap screw terminals
Serial Port:		9-pin D-sub
Main AC, Motor Power and DC Bus:		Screw terminal block
Approvals:		UL, CUL, CE
Environmental		
Storage Temperature:		-40°C to 70°C (-40°F to 158°F)
Operating Temperature:		0°C to 50°C (32°F to 126°F)
Humidity:		5% to 95% noncondensing

**AXIOM
PV30**

FEATURES

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**PLC /
SEQUENTIAL
PROGRAM
EDITORS**

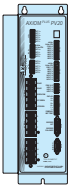
ORDERING

APPLICATIONS FOR SW44 AND PV30

The combination of the SW44 linear actuator and PV30 motor drive/controller/PLC creates a high performance package for many demanding applications. The zero maintenance and durability of the SW44 combined with the ease of use of the PV30 makes an excellent automation package.

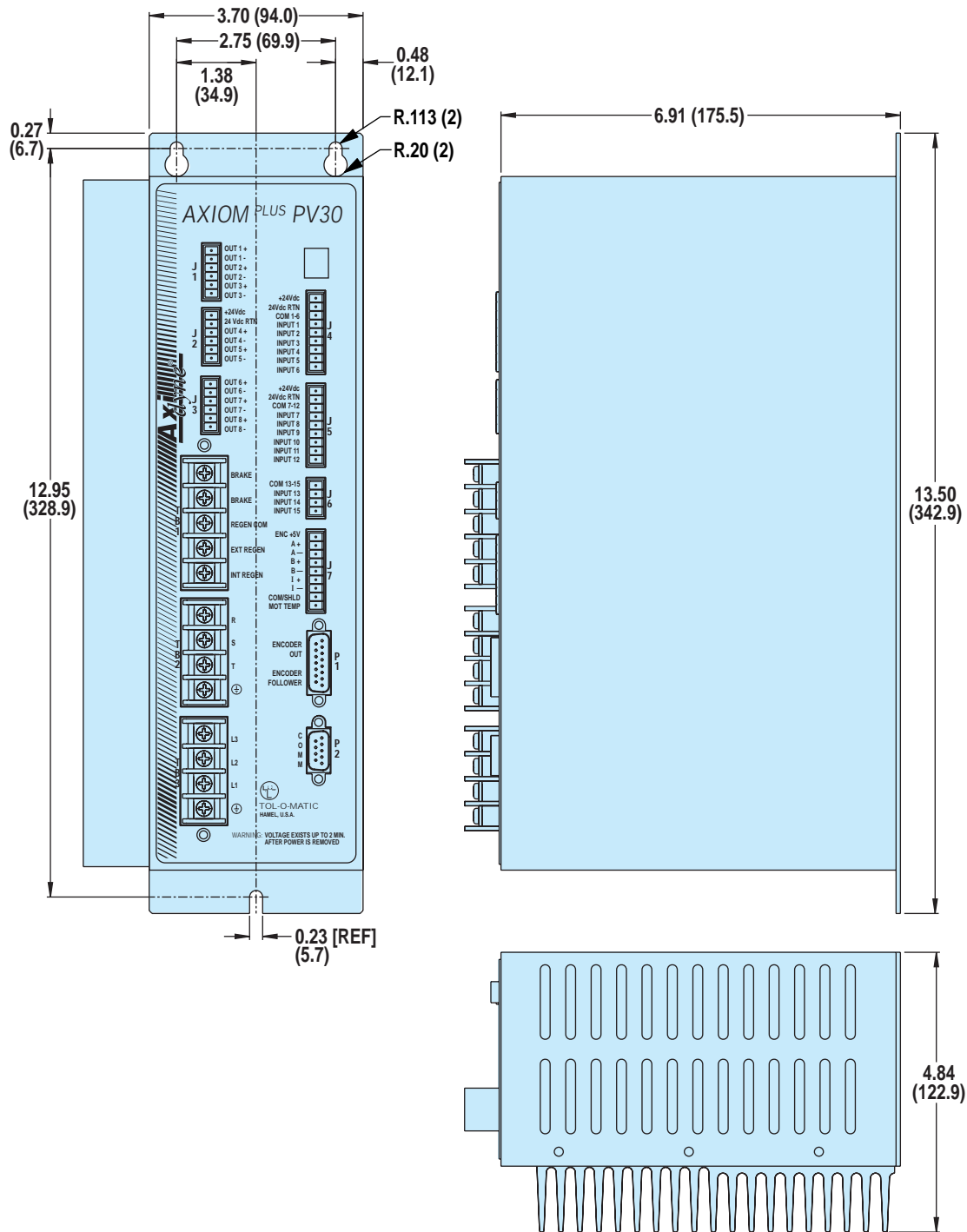
Typical applications:

- Hydraulic cylinder replacement
- Stamping / pressing / embossing
- Precision valve control
- Volumetric pumps / filling
- Part clamping
- Packaging machinery
- Medical equipment
- Automation and assembly



Axiom PV30

DIMENSIONS



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Axiom PV30

PLC / SEQUENTIAL PROGRAM EDITORS



AXIOM PV PLC SEQUENTIAL EDITOR

A configuration option for motor selection and related parameters is included, along with a tuning and diagnostic mode. Help menus and control loop description information can be accessed from the main menu.

The Axiom PV also includes a point and click sequential program and PLC ladder logic editor. Instructions include incremental and absolute motion commands, branching (conditional and unconditional), subroutine calls, repeat loops, I/O control, time delays, etc. Use the PLC editor to

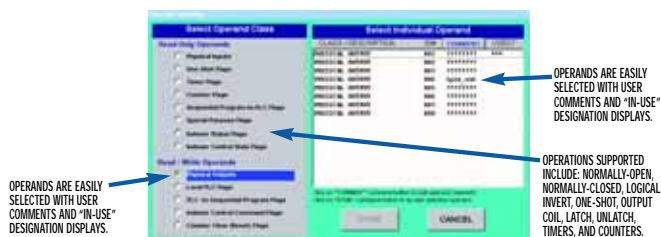
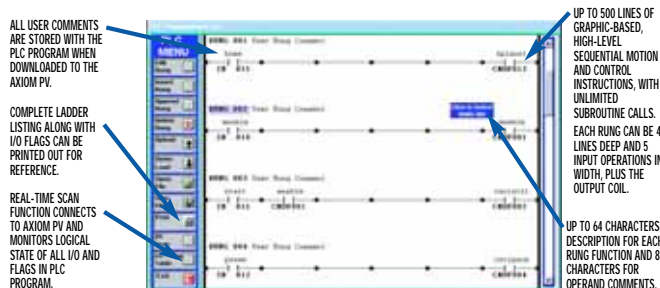
enter and edit PLC programs, which run using an independent scan. The PLC program accesses all 15 inputs and 8 outputs of the Axiom PV, including general purpose and dedicated internal flags.

Both of these editors utilize easy icon/text driven selections, making the creation of motion profiles a snap (no code memorization required).

AXIOM PV PLC EDITOR

The PLC Editor main menu allows user access to all editing functions along with a 175 rung ladder display. Rungs can be inserted at any point in the program and are easily edited by simply double-clicking with the mouse and selecting the

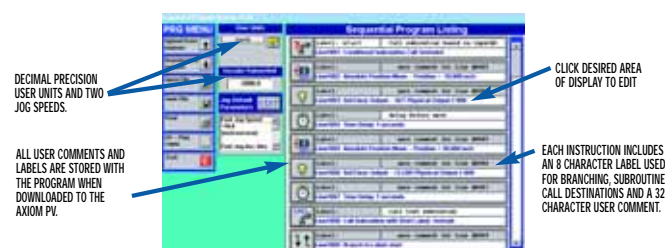
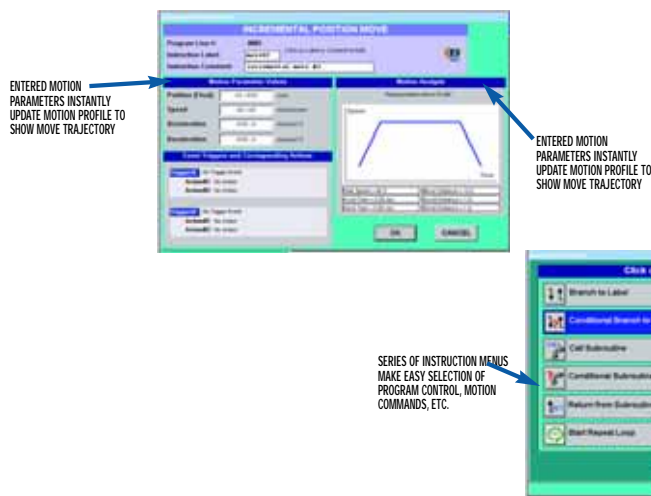
desired functions from subsequent menus. The PLC program's real-time scan is continuous upon power-up and ranges from 2-4 milliseconds for a typical application, with 10-12 milliseconds for a maximum-length program.



AXIOM PV PLC SEQUENTIAL EDITOR

The Sequential Editor main menu provides easy access to all essential program and display functions. Using a series of menus, the program guides the user through instruction selection. The Incremental Position Move window allows two separate trigger moves to be defined based on incremental position reached, physical input

transition or flag from the PLC. Two actions can be commanded for each trigger event including torque limit or velocity change, output control or flag passing to PLC. This functionality allows an almost limitless combination of functions associated with a single move, while the PLC facilitates real-time control.



AXIOM PV30

FEATURES SPECIFICATIONS DIMENSIONS

PLC / SEQUENTIAL PROGRAM EDITORS

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Axiom PV30

ORDERING




*AXIOM PV CONTROLLER / DRIVE

Config. Code	Includes	Part #
PV30	Controller/Drive (order cables below)	3604-0010




*Includes user manual and software CD-ROM

Cables

SW44 TO AXIOM PV DRIVE/CONTROLLER

SW44			TO:				AXIOM PV30		
									
						CR6 OR CR15			
Config Code	Replacement Part Number	Included with Drive	Type	Description	Cable Length	Motor Size	CONNECTORS Motor	ATAxiom DV/PV Axiom DV/PV	Size
CR6	2750-1251	Optional	Power		6m	SW44	MS	Screw terminal	30
CR15	2750-1252	Optional	Power		15m	SW44	MS	Screw terminal	30
CR6	2750-1249	Optional	Encoder		6m	SW44	MS	Screw terminal	All
CR15	2750-1250	Optional	Encoder		15m	SW44	MS	Screw terminal	All

CONTROLLER TO IBM COMPATIBLE PC

AXIOM PV30				TO:			PC		
									
				CRZ					
Config Code	Replacement Part Number	Included with SSC	Type	Description	Cable Length	Drive	CONNECTORS AT Axiom PV	PC PC	Size
CRZ	3600-1172	Optional	Comm		2m	AxiomPV	DB9	DB9	All

3604-4156_01



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