SYNERGY SERIES
DURBIN INDUSTRIAL VALVE

DURBIN
INDUSTRIAL VALVE
Innovation Through Flow

SYNERGY SERIES
DURBIN INDUSTRIAL VALVE

Installation and Operation Manual

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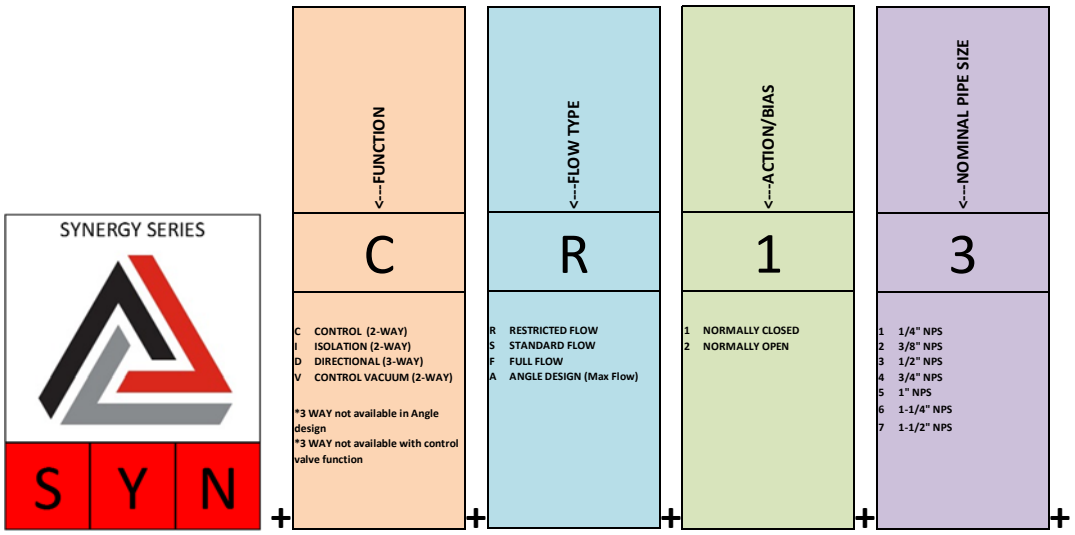
Introduction

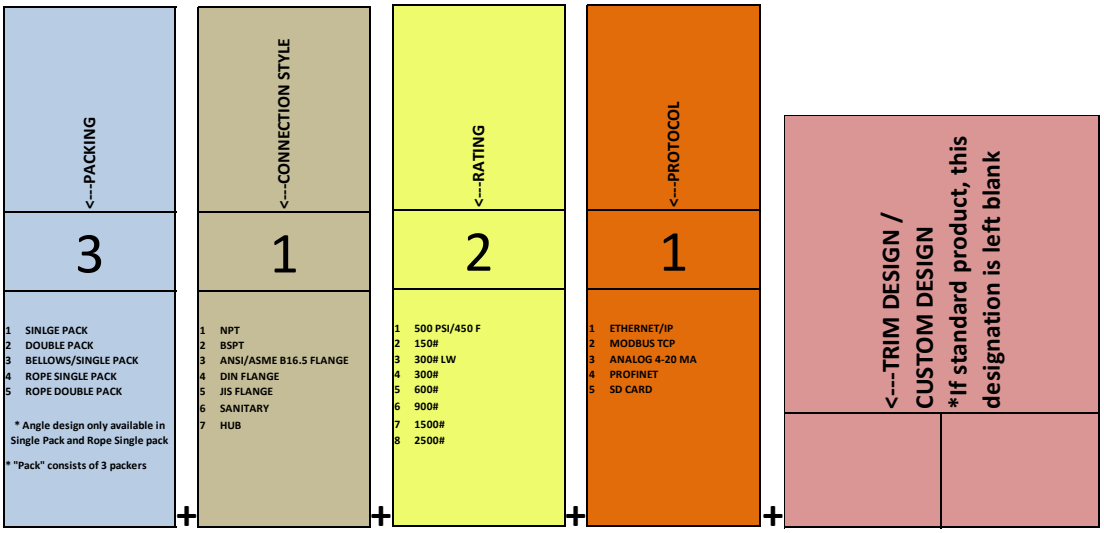
Durbin's Synergy series Valve is a next level smart valve, which reacts very quickly to the required demand for media. The following Installation and Operation manual will detail the assembly, installation, and operation of the valve.

The Valve Selection Key must be used to determine the proper valve for your application. This chart includes Function, Flow Type, Action/Bias, Nominal Pipe Sizing, Valve Packing, Connection style, Rating, and communication Protocol. The selection chart must be used in order to ensure that the proper valve is selected. It is important to select the proper function, and action of the valve to prevent unexpected media flow. Installing the improper valve can cause a hazardous condition to occur! For custom applications not listed below, contact Durbin Industrial Valve.

EXAMPLE PART NUMBER: SYN-C-R133121

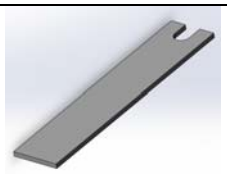
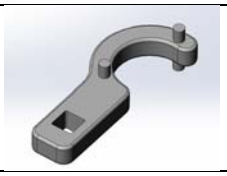
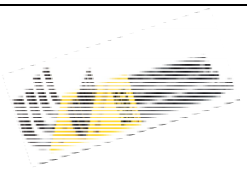
SYNERGY SERIES		<---FUNCTION	<---FLOW TYPE	<---ACTION/BIAS	<---NOMINAL PIPE SIZE	<---PACKING	<---CONNECTION STYLE	<---RATING	<---PROTOCOL
S Y N	-	C	R	1	3	3	1	2	1
		C CONTROL (2-WAY) I ISOLATION (2-WAY) D DIRECTIONAL (3-WAY) V CONTROL VACUUM (2-WAY) *3 WAY not available in Angle design *3 WAY not available with control valve function	R RESTRICTED FLOW S STANDARD FLOW F FULL FLOW A ANGLE DESIGN (Max Flow)	1 NORMALLY CLOSED 2 NORMALLY OPEN	1 1/4" NPS 2 3/8" NPS 3 1/2" NPS 4 3/4" NPS 5 1" NPS 6 1-1/4" NPS 7 1-1/2" NPS	1 SINLGE PACK 2 DOUBLE PACK 3 BELLOWS/SINGLE PACK 4 ROPE SINGLE PACK 5 ROPE DOUBLE PACK * Angle design only available in Single Pack and Rope Single pack * "Pack" consists of 3 packers	1 NPT 2 BSPT 3 ANSI/ASME B16.5 FLANGE 4 DIN FLANGE 5 JIS FLANGE 6 SANITARY 7 HUB	1 500 PSI/450 F 2 150# 3 300# LW 4 300# 5 600# 6 900# 7 1500# 8 2500#	1 ETHERNET/IP 2 MODBUS TCP 3 ANALOG 4-20 MA 4 PROFINET 5 SD CARD


SYNERGY SERIES
S Y N
<---FUNCTION
C
C CONTROL (2-WAY)
I ISOLATION (2-WAY)
D DIRECTIONAL (3-WAY)
V CONTROL VACUUM (2-WAY)
*3 WAY not available in Angle design
*3 WAY not available with control valve function
<---FLOW TYPE
R
R RESTRICTED FLOW
S STANDARD FLOW
F FULL FLOW
A ANGLE DESIGN (Max Flow)
<---ACTION/BIAS
1
1 NORMALLY CLOSED
2 NORMALLY OPEN
<---NOMINAL PIPE SIZE
3
1 1/4" NPS
2 3/8" NPS
3 1/2" NPS
4 3/4" NPS
5 1" NPS
6 1-1/4" NPS
7 1-1/2" NPS


<---PACKING
3
1 SINLGE PACK
2 DOUBLE PACK
3 BELLOWS/SINGLE PACK
4 ROPE SINGLE PACK
5 ROPE DOUBLE PACK
* Angle design only available in Single Pack and Rope Single pack
* "Pack" consists of 3 packers
<---CONNECTION STYLE
1
1 NPT
2 BSPT
3 ANSI/ASME B16.5 FLANGE
4 DIN FLANGE
5 JIS FLANGE
6 SANITARY
7 HUB
<---RATING
2
1 500 PSI/450 F
2 150#
3 300# LW
4 300#
5 600#
6 900#
7 1500#
8 2500#
<---PROTOCOL
1
1 ETHERNET/IP
2 MODBUS TCP
3 ANALOG 4-20 MA
4 PROFINET
5 SD CARD
<---TRIM DESIGN / CUSTOM DESIGN
*If standard product, this designation is left blank

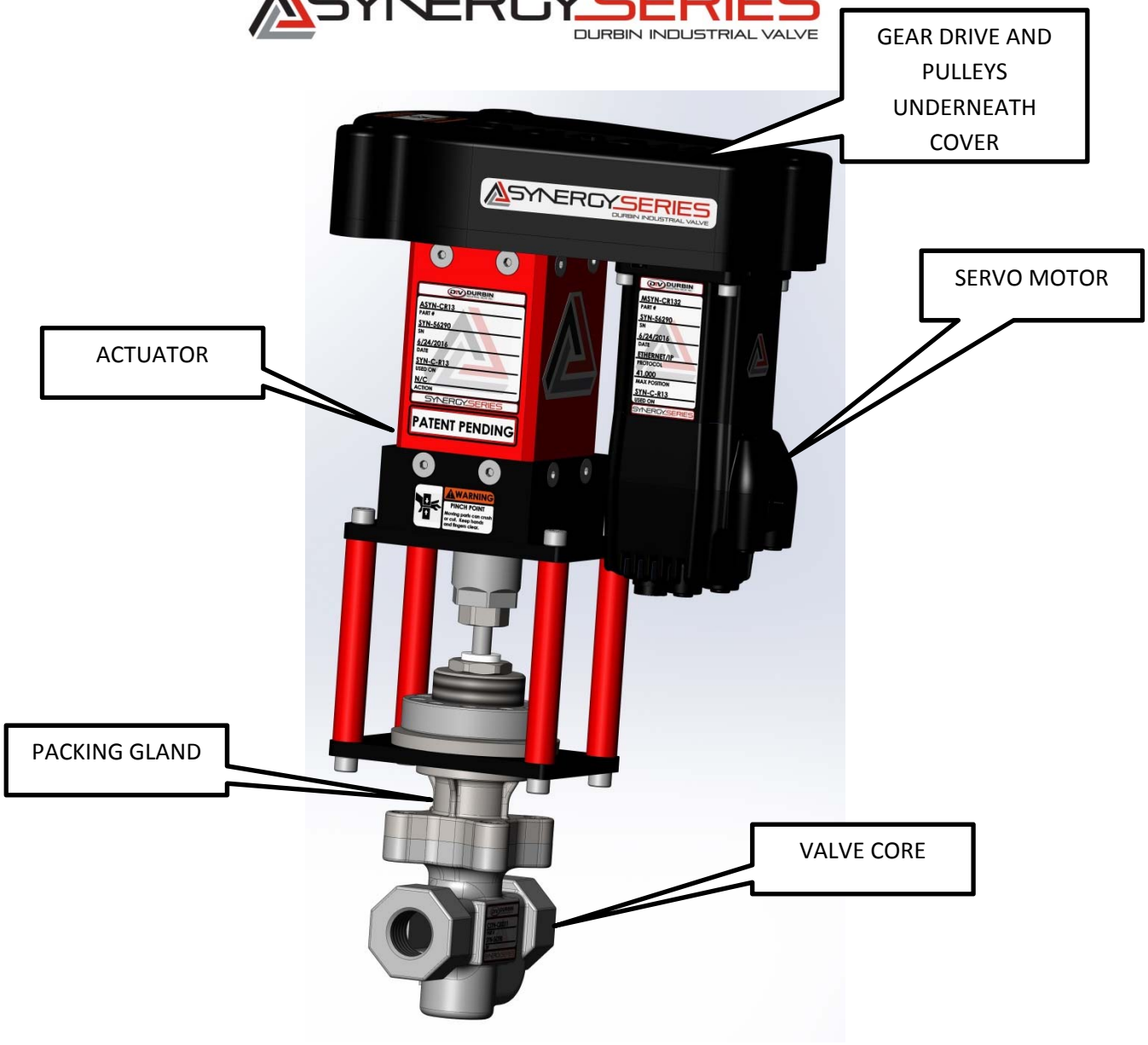
1.0 Assembling the Synergy Series Valve

1.1 Assembly tools required:

Motor spacer		**¾" open end combination wrench**	
Spanner nut wrench		**(1) Set of US customary Allen wrenches**	
1" open end Combination wrench		**½" drive torque wrench**	

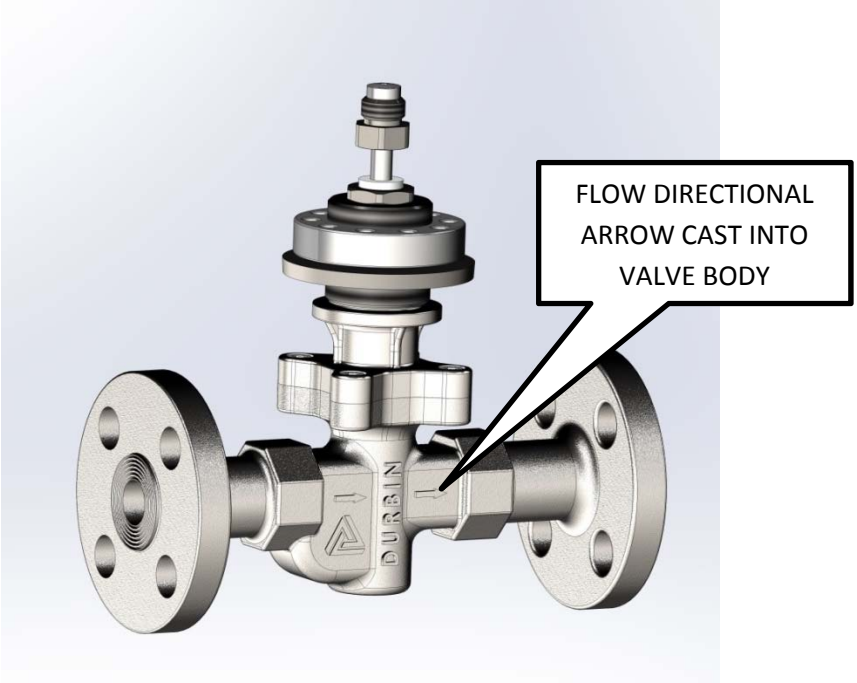
1.2 Typically, your Synergy Series Valve will be delivered fully assembled.

1.3 This section will cover the mechanical systems of the Valve and how it is assembled and operated.



1.4 If your valve requires assembly, it will be packaged in the following modules.

1.4.1 The Valve Body and Packing Gland will be one modular assembly.

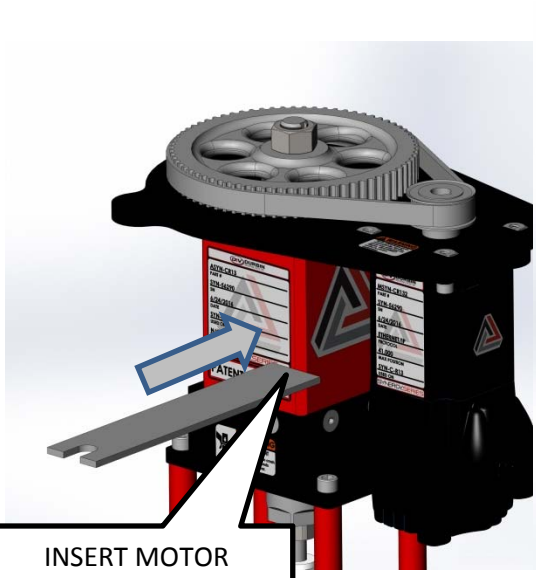


1.5 The Actuator assembly, which includes the motor, drive pulleys, and belts, will then be mated to the Valve Body and Packing Gland. (Valve core)

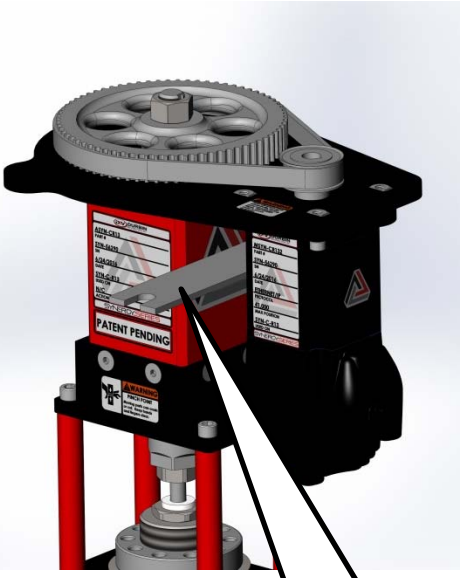
1.6 The motor may need to be assembled to the remainder of the Actuator Assembly

HAND TIGHTEN ALL (4) MOTOR MOUNTING SCREWS AND SLIDE MOTOR TOWARDS ACTUATOR TUBE.

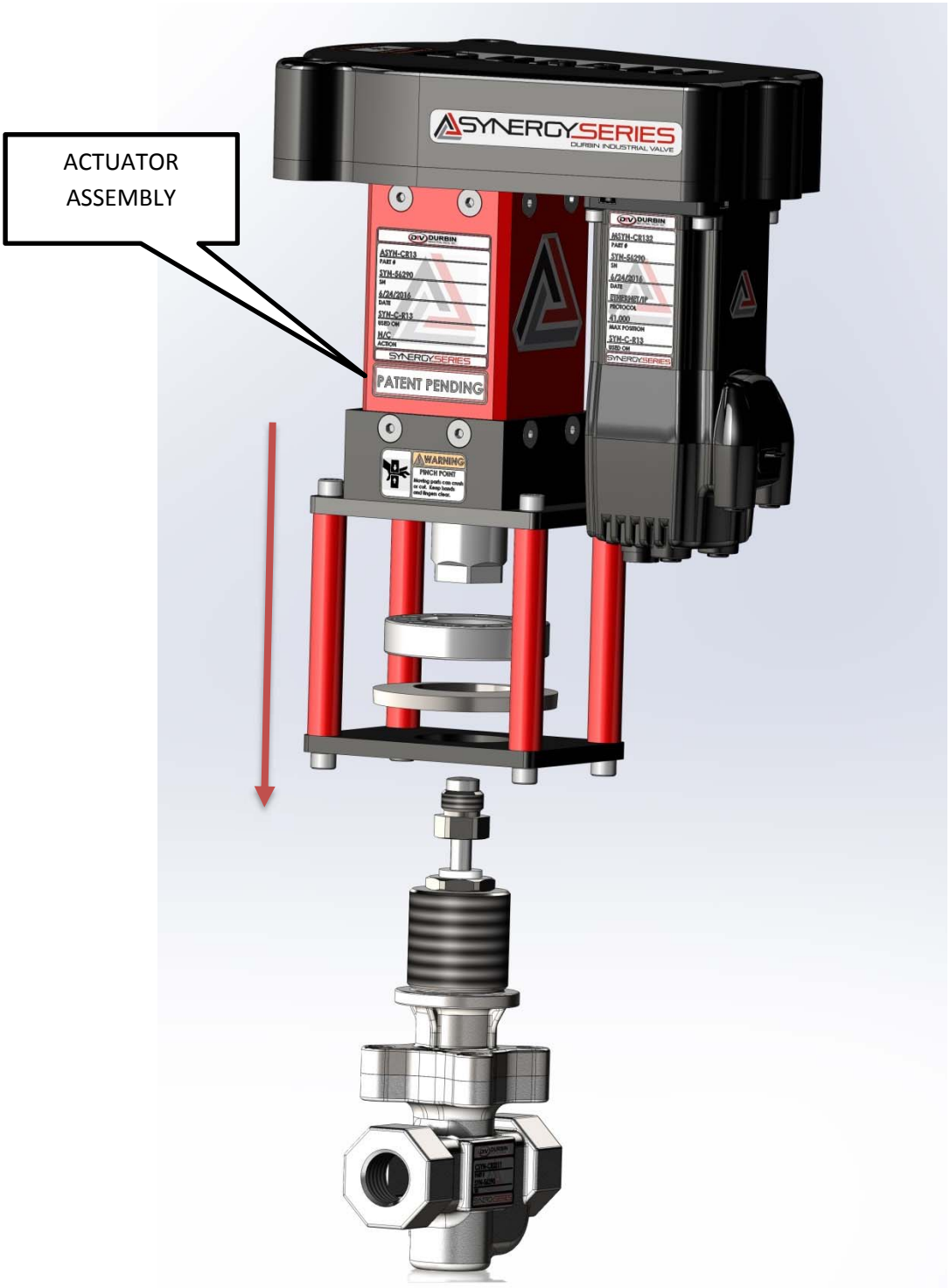
PLACE BELT ON SMALL SPROCKET AND ROTATE LARGE SPROCKET TO WORK BELT ON. DIRECTION OF ROTATION WILL DEPENDENT ON ACTUATOR BIAS.



INSERT MOTOR SPACER TOOL BETWEEN ACTUATOR TUBE AND MOTOR PRIOR TO TIGHTENING SCREWS

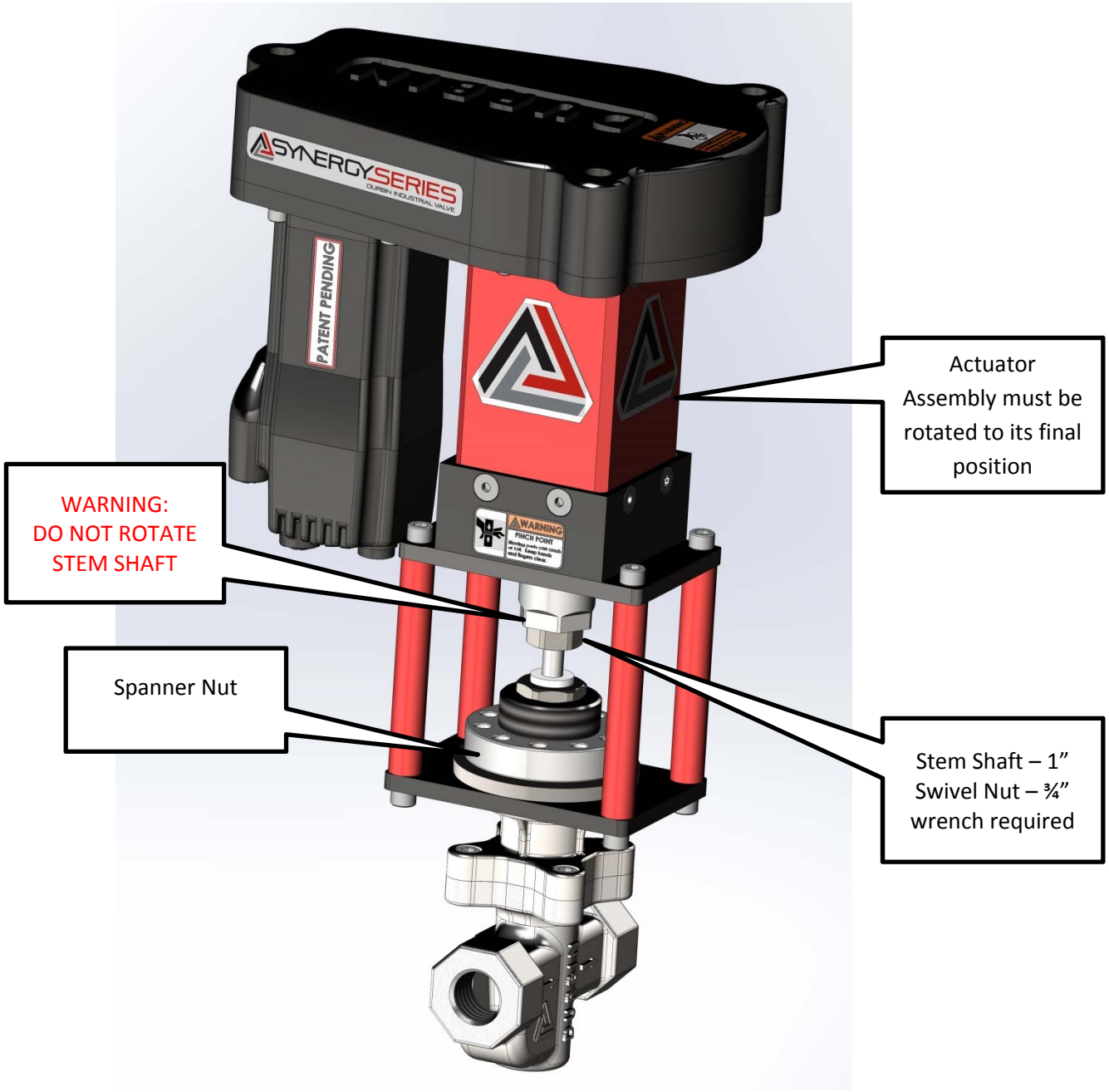


WITH SPACER TOOL IN PLACE, TIGHTEN CAP SCREWS TO 79 IN*LBS AND REMOVE SPACER


ACTUATOR
ASSEMBLY
SYNERGYSERIES
DURBIN INDUSTRIAL VALVE
PATENT PENDING
WARNING
PINCH POINT

1.7 Install spring washer and spanner nut as pictured above. Spanner nut must be on top of spring washer. Make sure that Spanner nut is started on the threads of the Valve. Do not fully tighten yet.

1.8 Tighten the swivel nut into the actuator assembly to 20 Ft-LBs using a ¾ inch wrench. Do not rotate stem shaft – use 1" wrench to hold stationary



1.9 Rotate the Actuator Assembly into proper position – make sure to account for any obstructions that it may encounter when installed on the machine.

1.10 Tighten the Spanner Nut using the supplied spanner wrench (Durbin Part no. SYN-TL-08) to 201 ft-lbs. Proper tightening will ensure that the Actuator assembly does not rotate in relation to the Valve Body and Packing Gland.

1.11 If necessary, the Spanner Nut can be tightened to its final torque after the Synergy Series Valve body has been bolted in place on the equipment that it is servicing.

2.0 Installation of Synergy Series Valves into Existing Systems

2.1 Remove Power from the system.

2.1.1 Can be disconnected at motor

2.1.2 Can be disconnected at panel power supply

2.2 Lock out and tag out the process equipment so it cannot be powered on during installation of the Synergy Series Valve.

2.3 Ensure that all media (steam, liquid, or other fluid) is evacuated from the system.

2.4 Make sure all process valves are closed on the inlet side of media to the valve.

2.5 Note the flow orientation of the existing valve.

2.6 Ensure that the Actuator Assembly is rotated to its proper position.

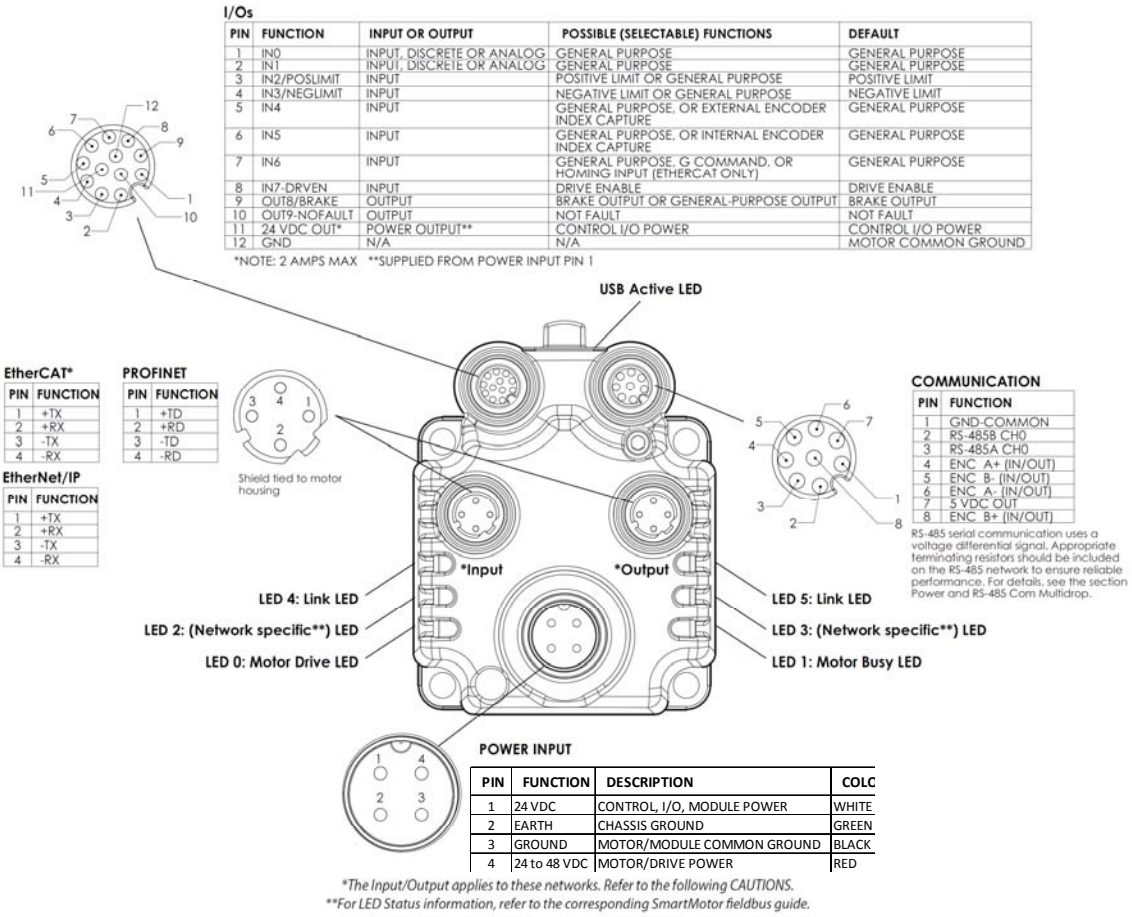
2.7 Install Valve connection to the proper industry standards for piping.

2.8 Power and communication wiring

2.8.1 Diagram below depicts location of power, Ethernet, and I/O communication wires.

Motor Connectors and Pinouts

The following figure provides an overview of the connectors and pinouts available on the Class 6 SmartMotors. Additional connector specs are shown in Class 6 M-Style Connector Pinouts on page 54.

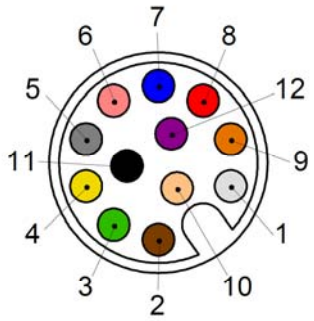


CAUTION: M-style connectors must be finger tightened only! DO NOT use a wrench or other tool. Doing so can cause overtightening of the connection, which may damage the connector and will void the warranty.

CAUTION: When daisy-chaining SmartMotors for an EtherCAT network, you must connect the Output port (right-hand port) of the upstream motor to the Input port (left-hand port) of the downstream motor. For more details, see Industrial Ethernet Cable Diagram on page 37.

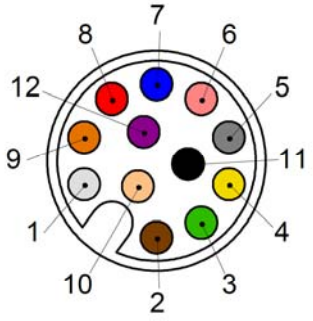
2.8.2 Diagram below depicts I/O pinout for Analog Synergy and "Enable" pinout for all Synergy Series valves.

Wiring diagram for I/O cable



Female

1. White
2. Brown
3. Green
4. Yellow
5. Grey
6. Pink
7. Blue
8. Red
9. Orange
10. Tan
11. Black
12. Violet



Male

NOTE Colors as indicated above are true for Durbin part number

SYN-W-IO-01-03-??M

User to verify pin out for any other wire make and model

Synergy:

Enable

Pin 8 (Red) =Enable signal return

Pin 11 (Black) = +24 V live for enable

*Tie Pin 8 and Pin 11 to complete enable circuit if not tying into user relay circuit

Analog

Pin 1 (White) = 4-20 mA signal +

Pin 12 (Purple) = 4-20 mA signal return

Homing

Pin 3 (Green) = Homing routine ("GOSUB(5)")

Pin 4 (Yellow) = Reseat command ("GOSUB(6)")

NOTE Performing reseat command is potentially damaging to valve seal. This command should only be issued after all other trouble shooting options have been explored and the valve continues to leak.

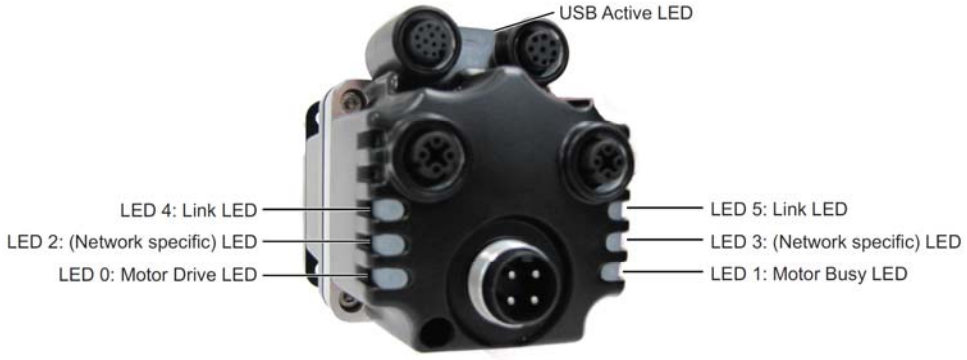
2.8.3 Motor LED Status

Understanding the Status LEDs

This section describes the functionality of the status LEDs on the Class 6 SmartMotor.

Status LEDs

The following figure and tables describe the functionality of the Status LEDs on the SmartMotor. Refer to the corresponding SmartMotor fieldbus guide for the functions of the network-specific LEDs.



Flickering = On/Off in 0.1 sec; Blinking = On/Off in 0.5 sec; Flashing = separated by 1 sec for EtherCAT LEDs and 2 sec for Fault Codes

USB Active LED

Flashing green	Active
Flashing red	Suspended
Solid red	USB power detected, no configuration

LED 0: Motor Drive LED

Off	No power
Solid green	Drive on
Blinking green	Drive off, no faults
Triple red flash	Watchdog fault
Solid red	Faulted or no drive enable input

LED 2: (Network specific) LED
Refer to the corresponding SmartMotor fieldbus guide

LED 4: Link LED
Refer to the corresponding SmartMotor fieldbus guide

LED 1: Motor Busy LED

Off	Not busy
Solid green	Drive on, trajectory in progress
Flashing # red	Flashes fault code* (see below) when Drive LED is solid red

LED 3: (Network specific) LED
Refer to the corresponding SmartMotor fieldbus guide

LED 5: Link LED
Refer to the corresponding SmartMotor fieldbus guide

LED Status on Power-up:

- With no program and the travel limit inputs are low:
  LED 0 solid red; motor is in fault state due to travel limit fault
  LED 1 off
- With no program and the travel limits are high:
  LED 0 solid red for 500 milliseconds then flashing green
  LED 1 off
- With a program that only disables travel limits:
  LED 0 red for 500 milliseconds then flashing green
  LED 1 off

LED 1 Fault Codes:

Flash	Description
1	NOT Used
2	Bus Voltage
3	Over Current
4	Excessive Temperature
5	Excessive Position
6	Velocity Limit
7	dE/Dt - First derivative of position error is excessive
8	Hardware Positive Limit Reached
9	Hardware Negative Limit Reached
10	Software Positive Travel Limit Reached
11	Software Negative Travel Limit Reached

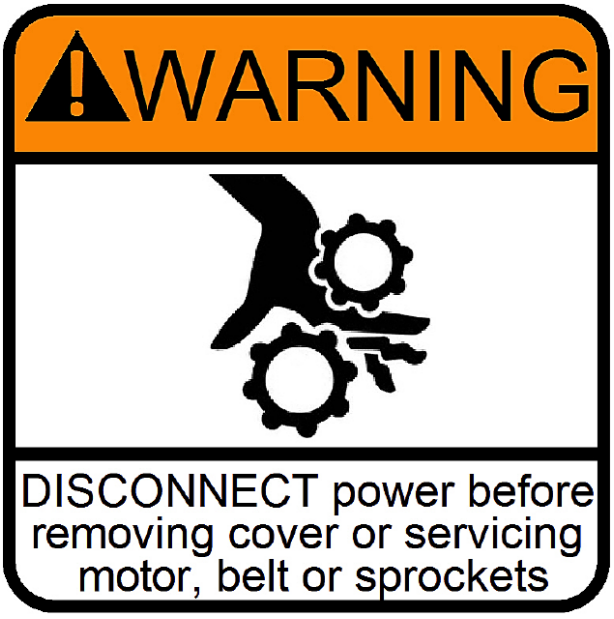
*Busy LED pauses for 2 seconds before flashing the code

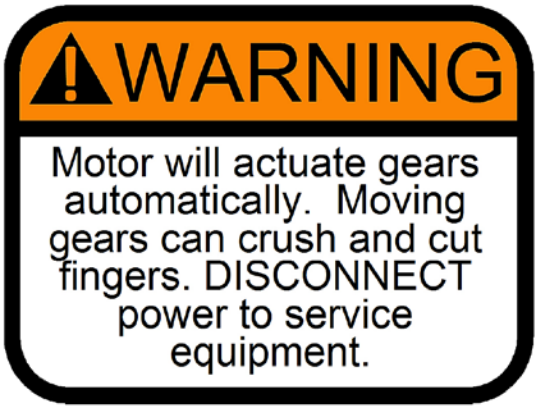
3.0 Synergy series Valve Operation

3.1 Warning – During operation there is a pinch point hazard as the valve is actuated, in the actuator center position.

3.2 During Operation or when Power is applied to the Valve, Never remove the Drive Gear Cover on the top of the Actuator Assembly!

3.3 Under the cover, there are drive pulleys, and a pulley that can rotate when electrical power is applied to the system or when the potential spring energy is released. Since the actuator assembly is also under pressure from the springs that are internal to the actuator mechanism, there is pressure on the system that can release when power is removed from the system. Never attempt to clear a jammed or inoperative actuator by rotating the sprockets. This could lead to damage to the actuator, valve, motor and could cause bodily harm.



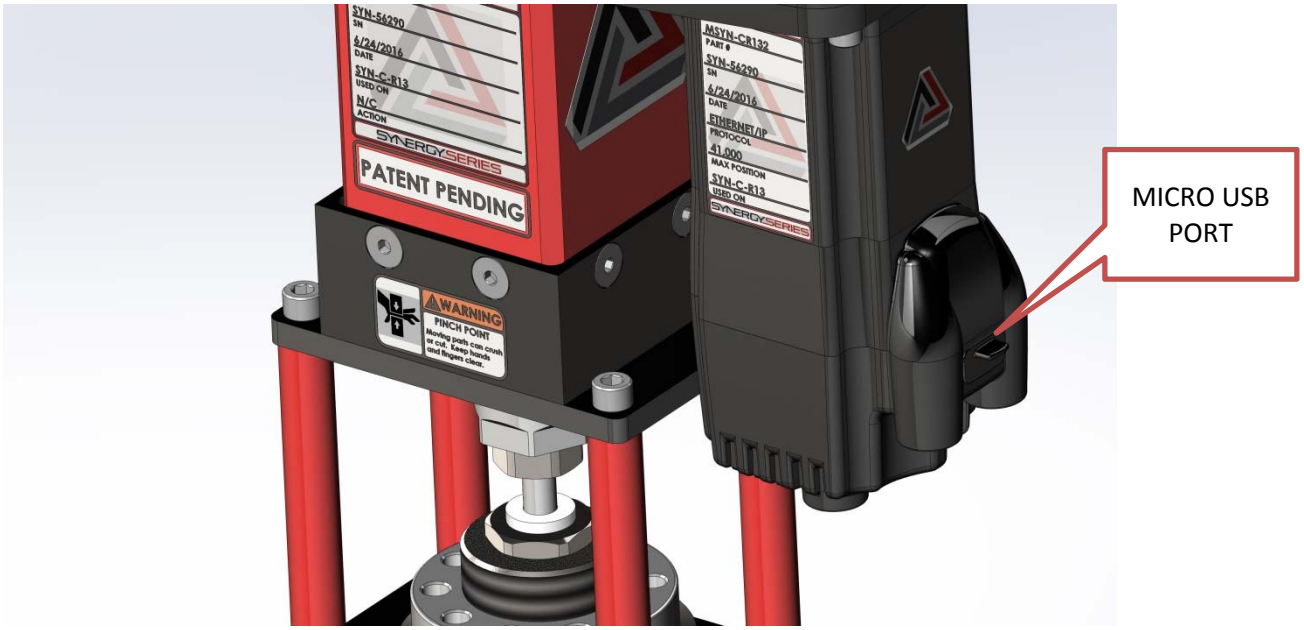


Warning! - Never remove cover when power to the system is on!

4.0 Synergy Series Valve setup and operation with your current Control System

4.1 Connecting to Durbin Synergy Series Motors:

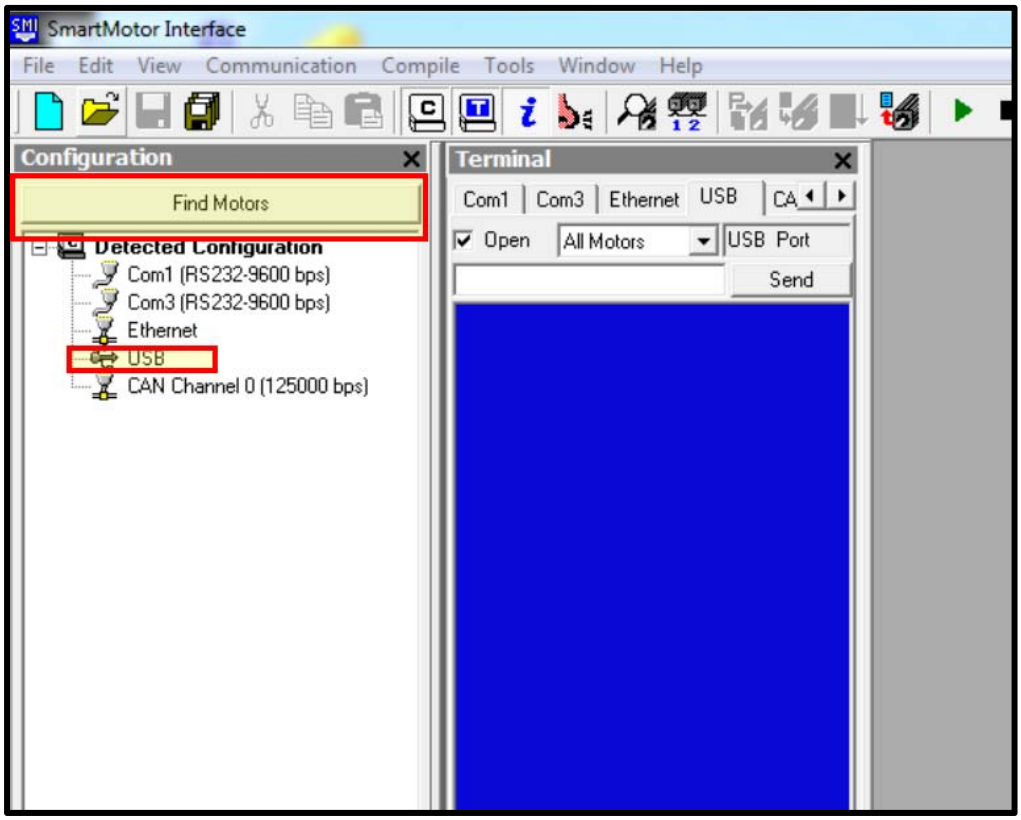
Durbin Industrial Valve offers the Synergy Series in an analog or digital configuration. If the valve is using digital/Ethernet communications, it is possible to connect to any and all of these motors using the local Ethernet connection at the panel. Alternatively, the user may connect to an individual valve by using the Micro USB port on the front of the motor.



The following screen shots will guide you through connecting to the Valve motor in either scenario.

1) Launch the SMI software from the User specific location (Startup menu, desktop, quick launch tray, etc.)

2) In the upper left corner of the application screen, you will see a tab labeled “Find Motors”



Your detected configurations may be different than shown here, depending on all devices and ports connected to the PLC or PC being used.

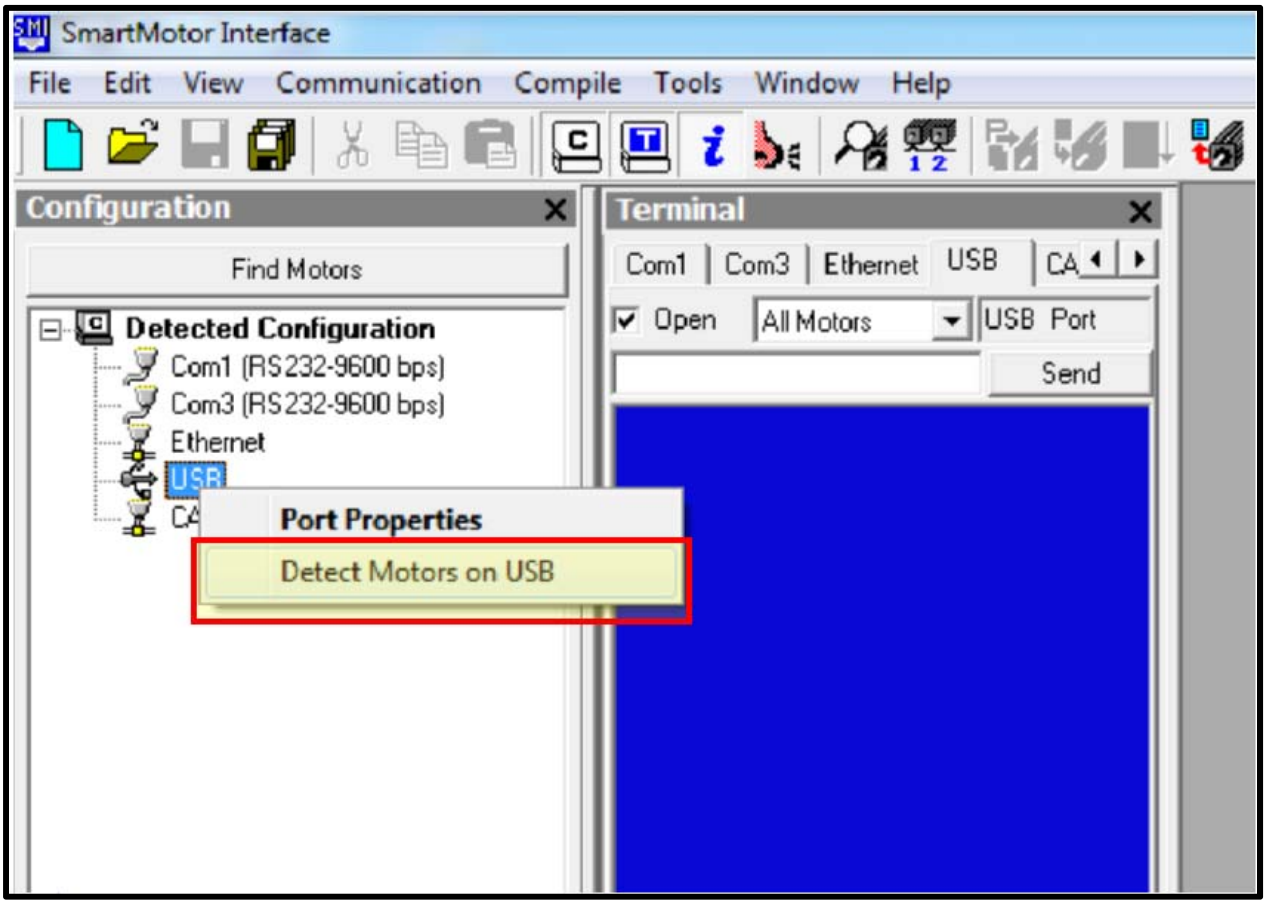
Right click on either “Ethernet” or “USB” depending on which communication method you are currently using.

For this example, I am using USB.

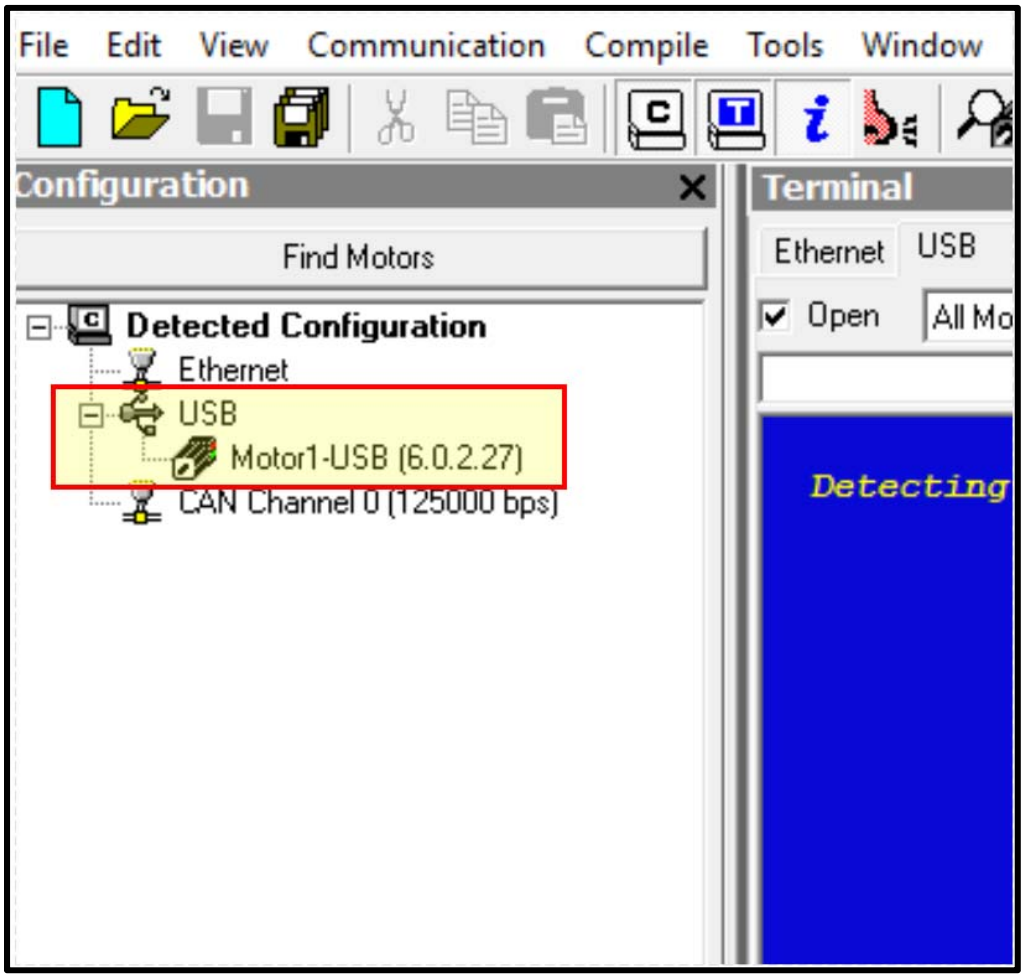
- You will see two options.

-Select “Detect Motors on USB” by Left clicking.

* (Note: Syntax will read “Detect Motors on Ethernet” if Ethernet communication was used instead of USB)



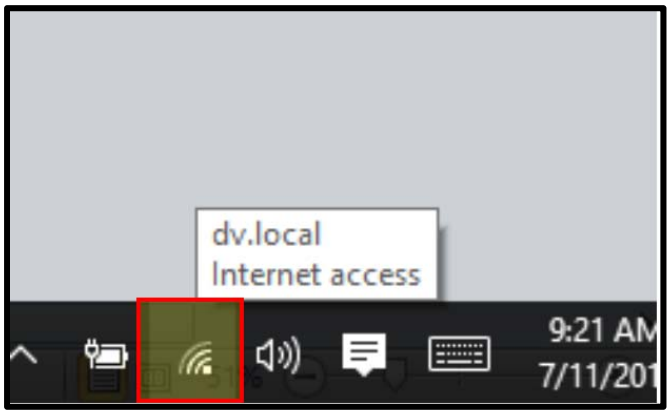
3) After SMI searches for your motors and finds one, you will see the motor listed under the corresponding connection type.

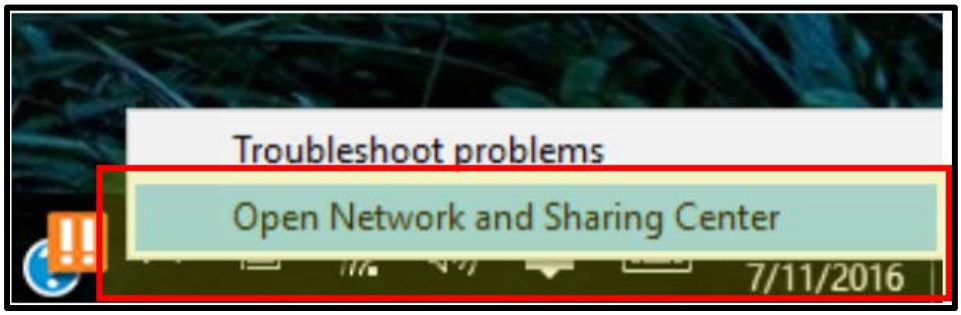


Note: Using USB type, you will only be able to communicate to one valve at a time, unless multiple USB connections are made.

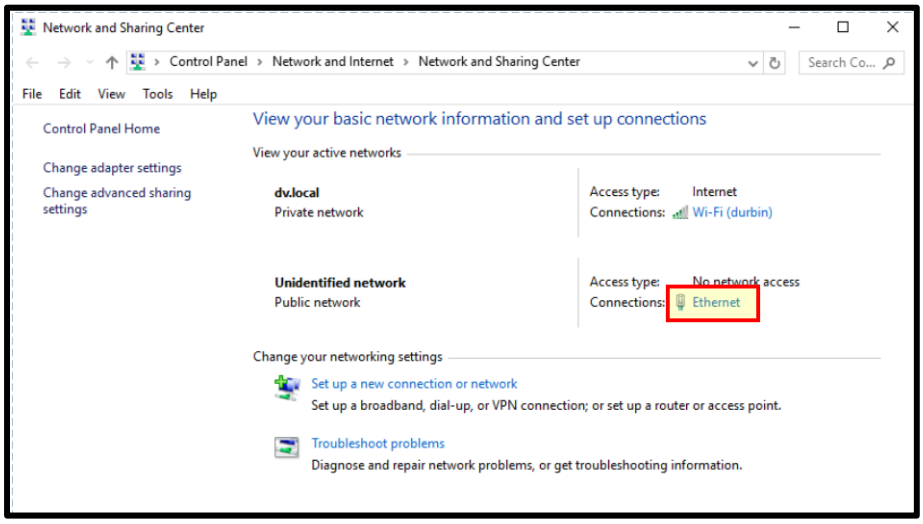
4) If using Ethernet communication, SMI will find all valves on the local network. In order for this to work correctly, You must configure your IP address of your laptop to match that of the local network of the press. Below is a brief explanation of how to configure your computer's IP address. If you need further help, please contact your local IT department.
    a. Search for "Network and Sharing Center" on your PC

i. Typically you can get here by right clicking the Ethernet icon in the lower right corner of your PC. (Either Wired or Wirless)

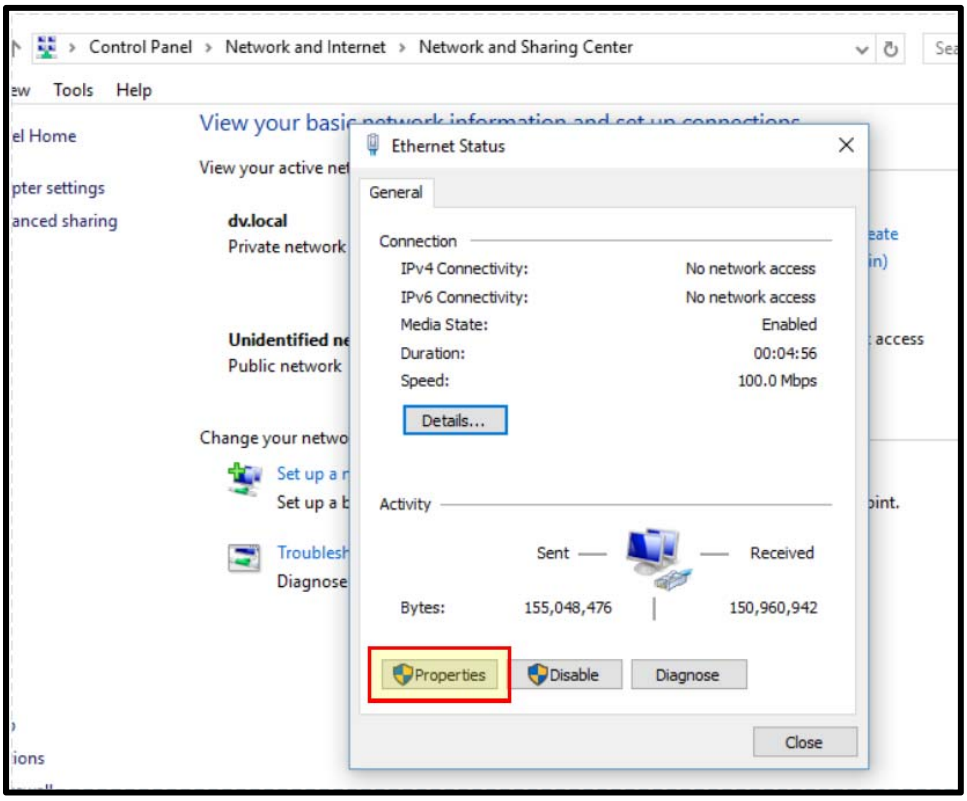




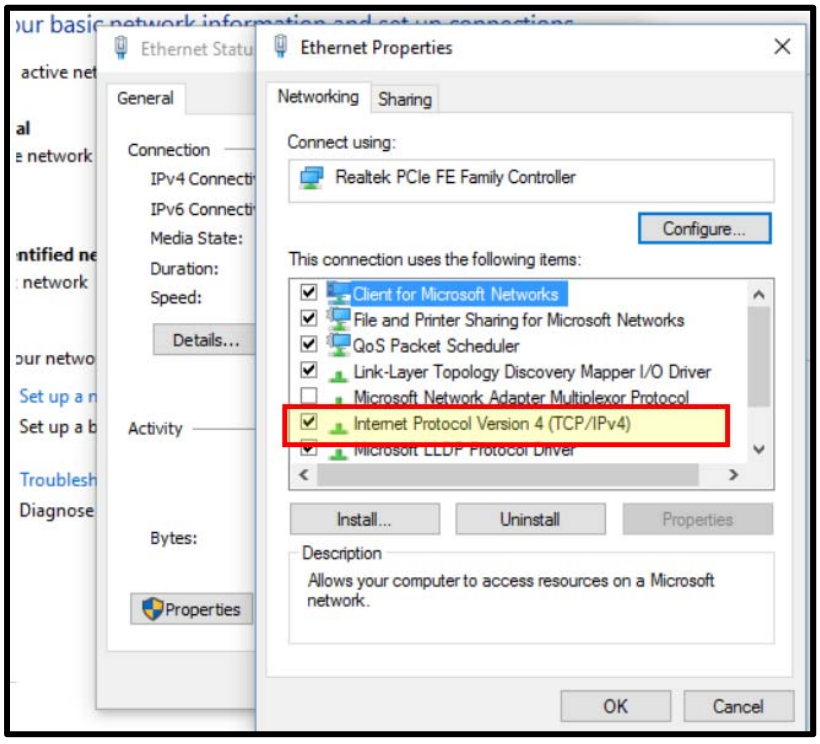
b. Alternatively, you can get here through the Control Panel, Network and Internet, Network and Sharing Center.



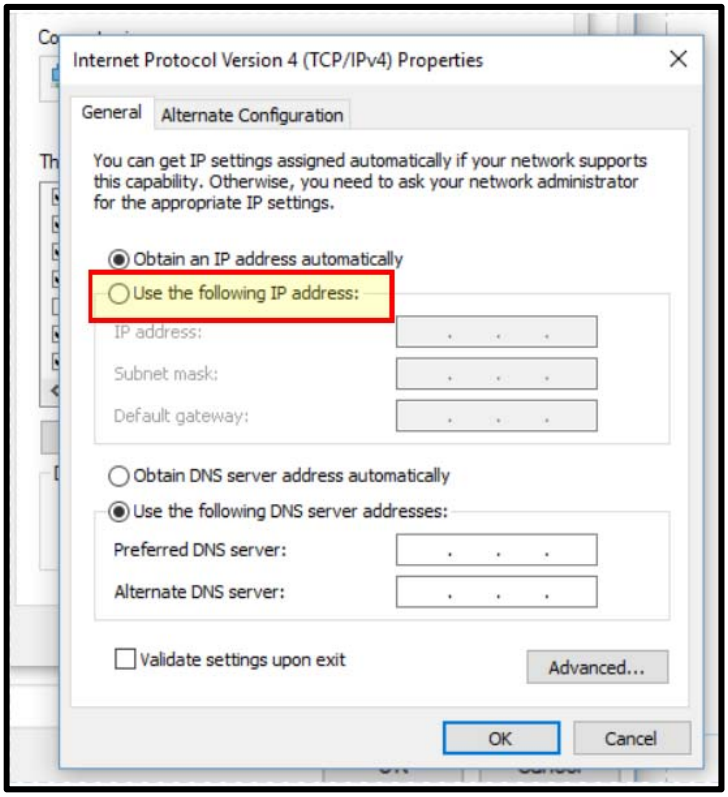
c. Left click on the Ethernet/Local connection to bring up the Status dialog box



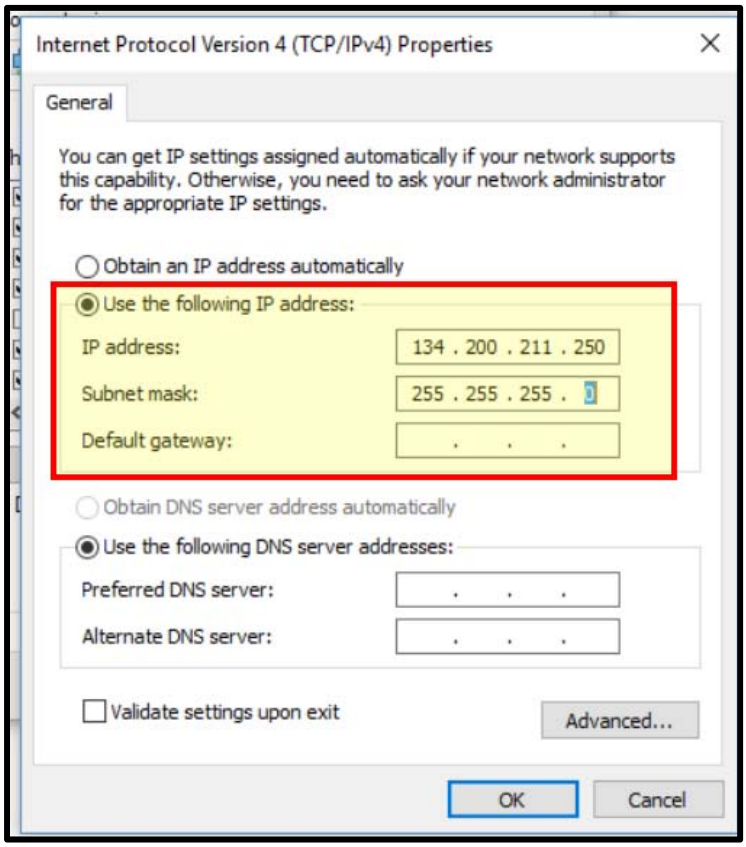
d. Left click the Properties box to bring up devices. You are going to change the Version 4 (TCP/IPv4) connection. Double click on this device.



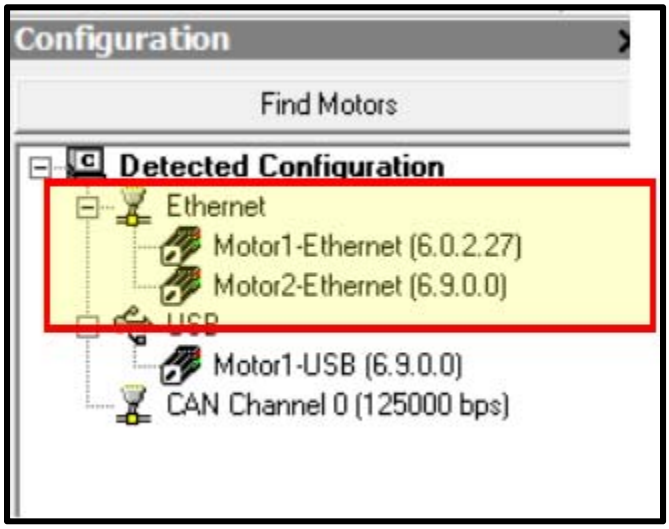
e. Switch configuration from “Obtain an IP address automatically” to “Use the following IP address”



Once this switch is made, you can set the PC’s IP address and Subnet mask to one that will work inside of the PLC’s local network. If you do not know this information, you must get it from the Electrical Engineers who know this information. Make sure that you set your last three digits high enough, as to not duplicate any of the valve’s IP addresses. Typically, this is set to 250.



With the PC now configured to talk to the PLC network, follow the instructions above in point 3 and 4 to connect to each valve on the local network. In this screen shot, only two valves were connected.

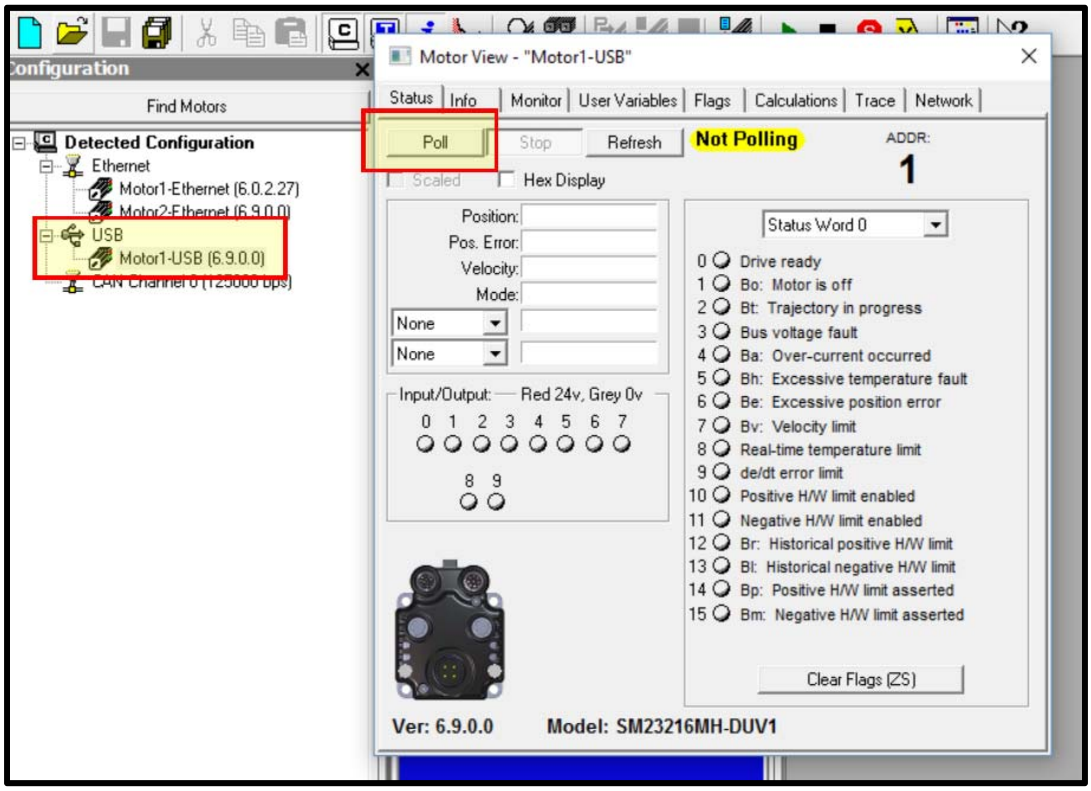


Section 2: Polling the Motor

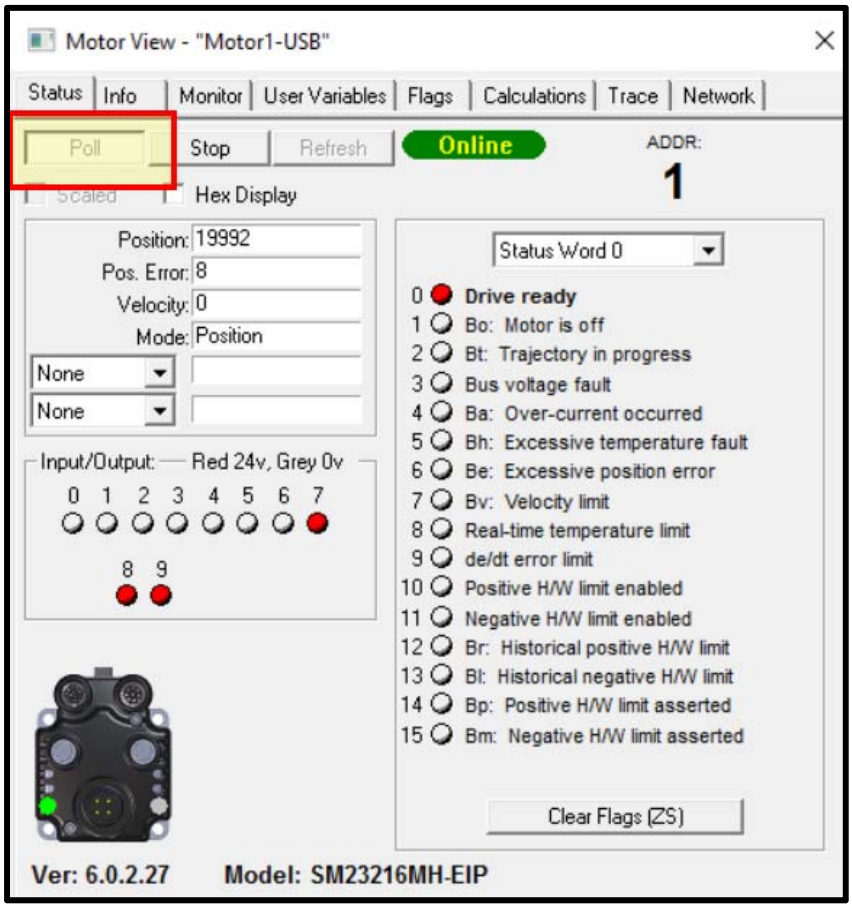
This section will discuss polling the motor to find out general information such as; Firmware revision, Motor Program, Error messages, current motion parameters, IP addresses, and motor status. The information found within these polling values can help the user trouble shoot any issues that may arise causing the valve to malfunction.

For the following example, the motor will be connected to the PC via USB connection. However, the same steps and screens will be present if this were connected via Ethernet.

1) With the valve/motor connected to the SMI software (as described in section 1), double click the motor in which you want to poll. (By Double clicking, you launch the "Motor View" window)



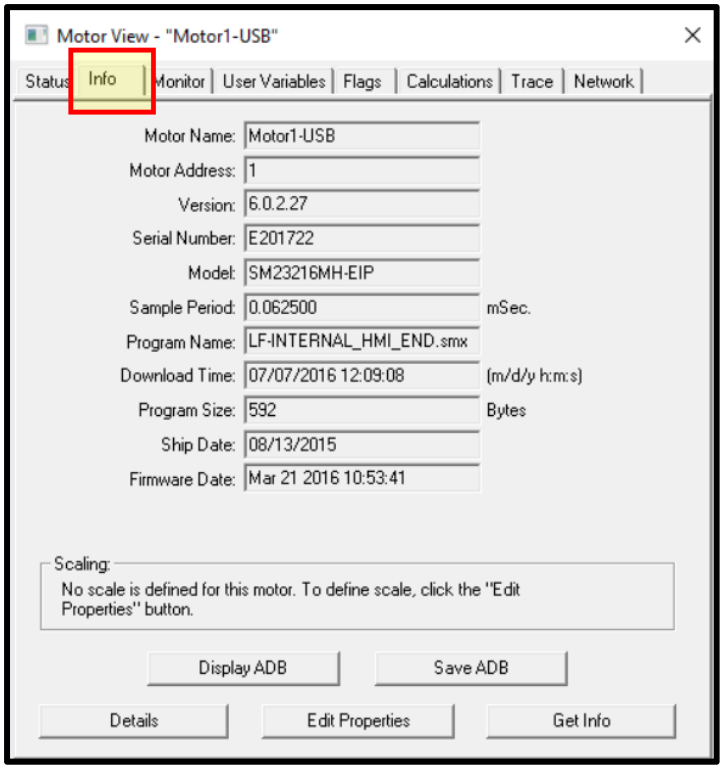
2) As seen in the image above, once connected, the motor will not automatically poll. The user must click the "Poll" button in order for the software to begin communicating to the motor through polling. This command is located on the "Status" tab in the "Motor View" window.



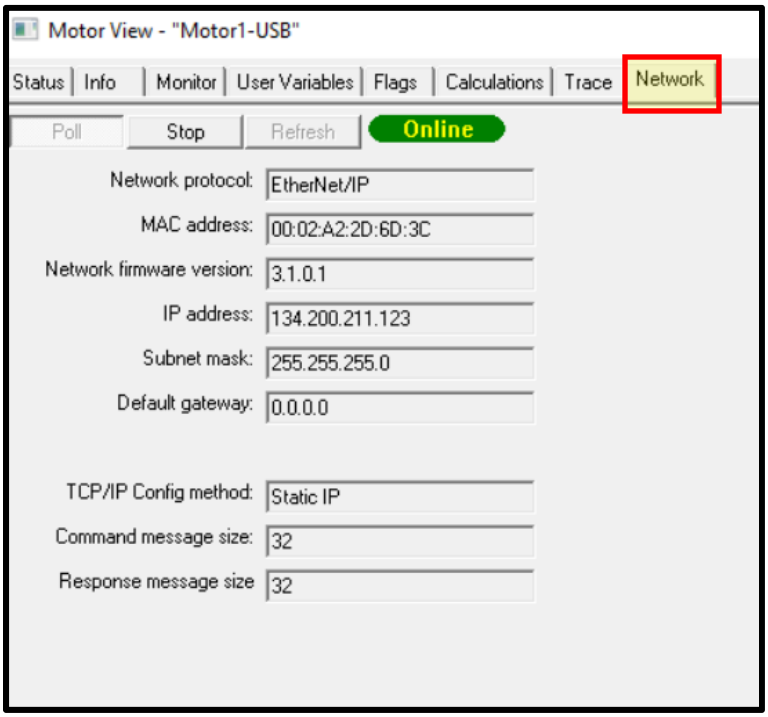
3) Once the motor is polling, a lot of information can be seen in “real time” . The normal polling screen when all systems are working correctly should look like the above image. When motion is required, the user will see many of the values changing and some of the “red” dots enabled showing motion is in progress. This is normal. Error messages or fault codes such as “Motor is off”, “Over-current”, “Excessive Postion error” or “Excessive temperature Fault” are a few. Using these values, it will make it possible to determine what issue ocurred to try to find the root cause of failure. If any error codes do surface, please contact Durbin Industrial Valve for help in determining root cause and corrective action needed.

   *(Note: The valves and motors have been tuned for the application. These error codes should not be a normal occurance. This screen and software is given to help detemine any unforseen issues that may arise over the course of time.)

4) Motor information: Durbin may request information about the motor during a techinal support call. From the “Motor View” window, click on the “Info” tab. Here you will find information about the valve/motor that may be requested.



5) Network information: From the “Motor View” window, you can also determine the IP address of the motor you are connected to. This is only important when you are dealing with multiple valves accoss the same network.



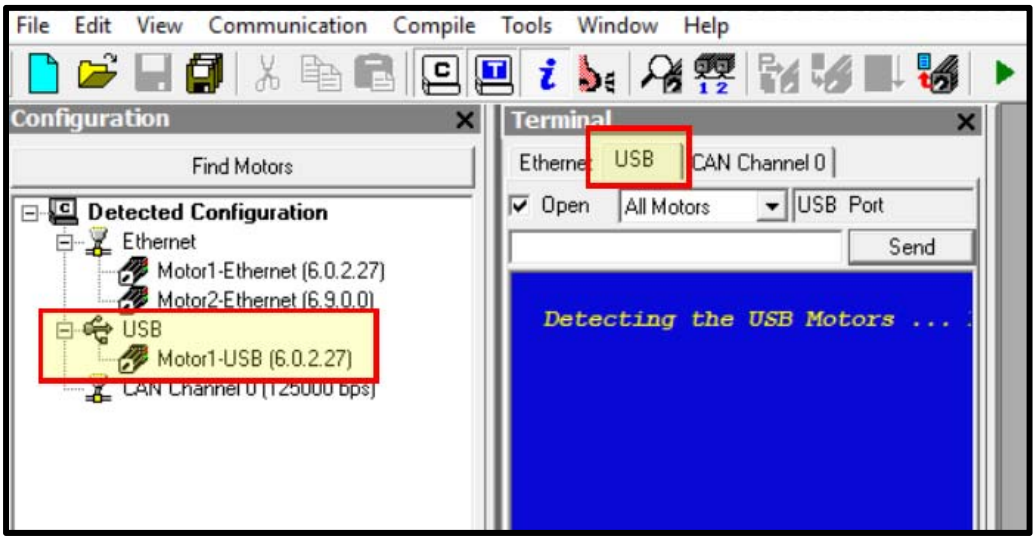
6) Monitoring: Inside this "Motor View" window, the user has the ability to monitor many polling values real time, that are not captured in the status window. For the example below, Motor Position, Target Position, and motor internal temperature have been added. Although, this can be a useful tool, later in this document another method for monitoring will be discussed that is more visual and will graph the actual polled information. (Refer to section 4)

7) The other tabs inside of the "Motor View" window can be useful, but are typically used in a programmer's mode and not for troubleshooting any issues. If there is a need to perform additional polling or testing. Please contact Durbin Industrial Valve for further assistance.

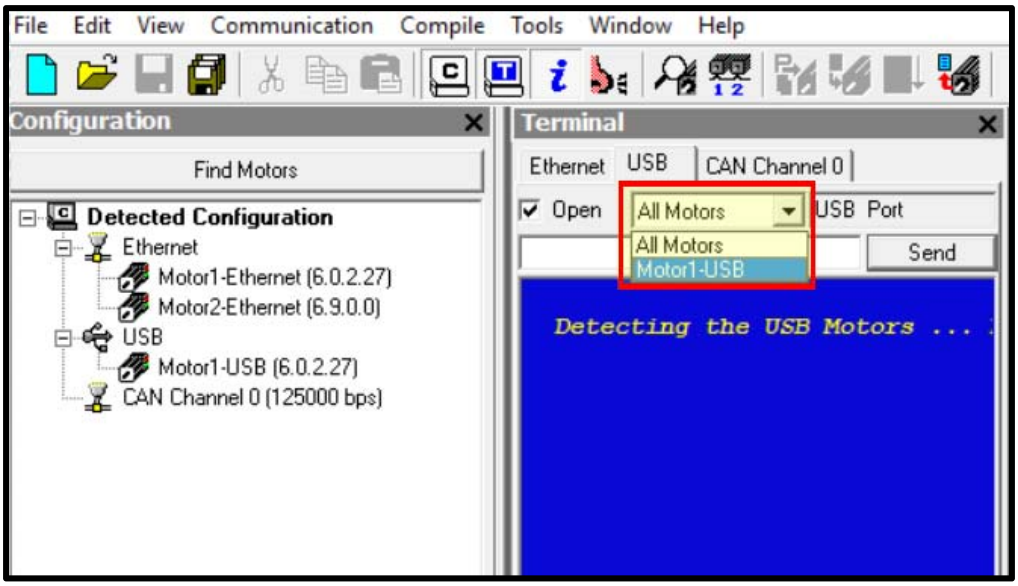
Section 3: Terminal Window

This section will discuss sending commands to the motor and retrieving information that is not available through the "Motor View" window. This section will also list many of the commands to be used during trouble shooting.

1) Terminal window: With motor connected as described in Section 1, the blue terminal window should be visible in the SMI software.



2) Be sure that the correct terminal tab is selected for the communication that you are using. (If you are using USB, then click USB tab, Ethernet uses Ethernet tab) Also, if you are connected to multiple motors, be sure you select the correct motor that you wish to communicate with.



3) List of Commands:
   a. Request Velocity Target (Motor Velocity) Syntax = RVT
   b. Request Acceleration Target (Motor Acceleration) Syntax = RAT
   c. Request Deceleration Target (Motor Deceleration) Syntax = RDT
   d. Request Actual Position (Motor's actual position) Syntax = RPA
   e. Request Target Position (Last known target position) Syntax = RPT
   f. Request Actual Temperature (Internal modual temperature in Deg C) Syntax = RTEMP
   g. Run Preloaded program (Internal program for specific Durbin Valve) Syntax = RUN

h. End program (Stops running Durbin program) Syntax = END
i. Shut off motor. (Dissables motor, but does not kill power) Syntax = OFF
j. Put motor into "Position Mode" (This will allow the user to move the valve to known positions to determine if valve motion is being prevented by foreign objects in valve, or if the actuator has become damaged. Be careful to give position moves within the allowable travel distance as specified for the given valve. This information can be found on the valve tag and is identified as "Max Postion". Syntax = MP
k. Set target velocity (Maximum RPM, value should have a magnitude no larger than 218000. For given valves, the sign convention is negative. Input value should be between -168000 and -218000) Syntax = VT=-218000
l. Set target acceleration (Maximum acceleration) This value should be no higher than 3000. For troubleshooting, it is recommended that a value of 2000 or less be used. Syntax = AT=2000
m. Set target deceleration (Maximum deceleration) This value should be no higher than 3000. For troubleshooting, it is recommended that a value of 2000 or less be used. Syntax = DT=2000
n. Send target position. (Make the valve move) As previously mentioned, make sure to use a value within the valve's known travel distance. Internal valves range = 0-41,000. ¾" DV 0-65,000, 1-1/2" DV 0-100,000 Syntax = PT=30000 G
    i. For this command, the syntax includes a "G" or "Go" command. This is what initiates the actual motion. If this "G" is excluded, no motion will occur.
    ii. Please note that after the position target, there is a space before the "G"
o. Find zero (Home the valve) This command will close the valve fully and reset the zero position. Please be aware that if foreign debris becomes lodged in the valve, and rehoming occurs, the motor may believe that the valve is closed. Therefore, the valve could be stuck open. Before commanding motor to rehome, make sure stem travel is unobstructed. Syntax = GOSUB(5)
p. Set IP address: Syntax = IPCTL(0,"134.200.211.121")
    i. After an IP address change, motor must undergo a hard reboot. Completely remove power from motor and allow electricity to disapate before reconnecting power.

q. Set Subnet Mask: Syntax = IPCTL(1,"255.255.255.0")
    i. After Subnet Mask change, motor must undergo a hard reboot. Completely remove power from motor and allow electricity to disapate before reconnecting power.
    ii. You do not need to do separate power cycles for IP address and Subnet changes. Both values can be set and one power cycle will enable both new values to go into affect.

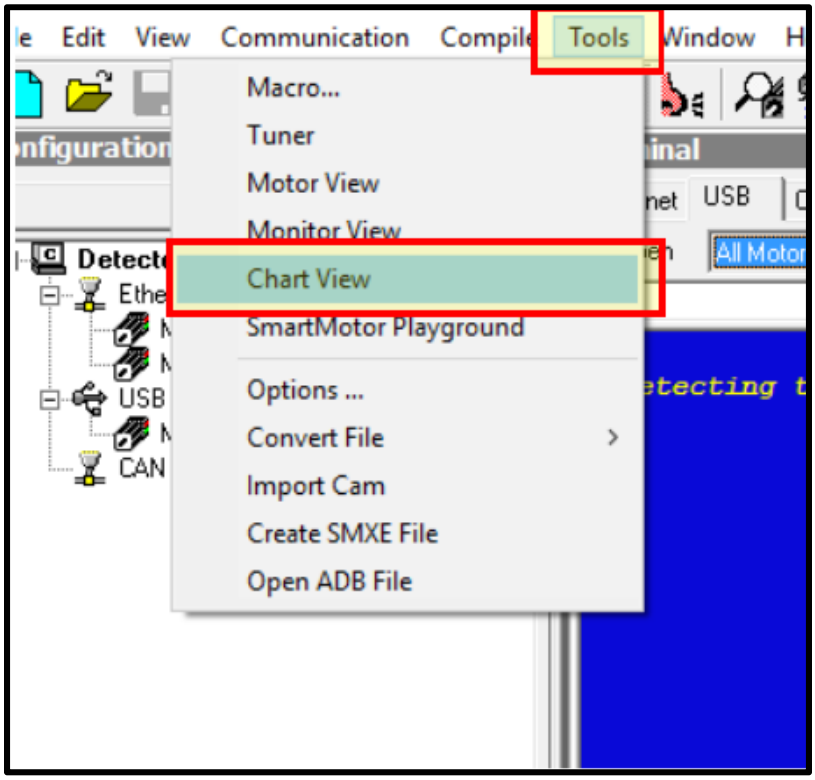
r. Request current IP address value: Syntax = RETH(15)
s. Request current Subnet Mask value: Syntax = RETH(16)
t. Clear errors: Syntax = ZS

4) If other commands are needed, Please Contact Durbin Industrial Valve for further technical support.

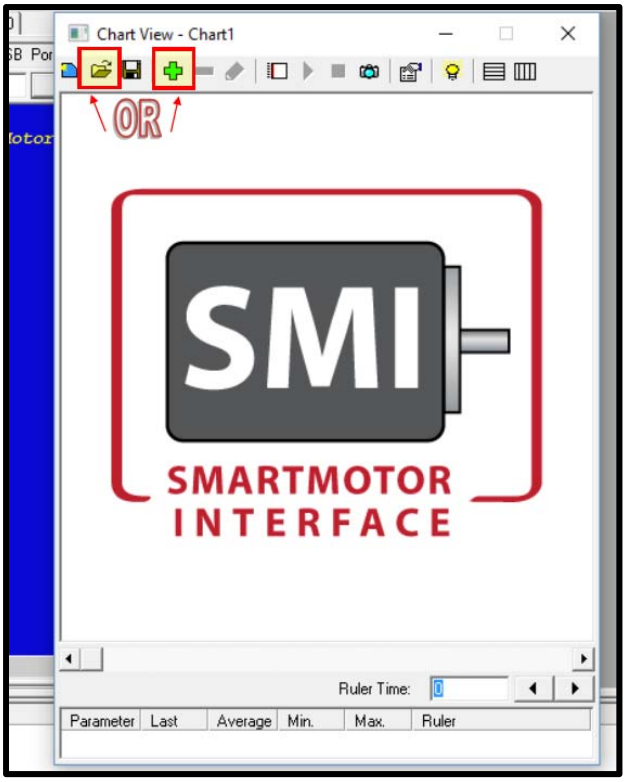
Section 4: Charting

The SMI software is a very powerful tool which can monitor many motors at the same time to determine a wide variety of information that can enable the user to diagnose not only potential valve issues, but also can determine programming issues within the PLC ladder logic. For the example below, a single motor was charted, but multiple motors can be configured to be polled using the same chart simultaneously.

1. In the main toolbar in SMI, left click “Tools”, “Chartview”

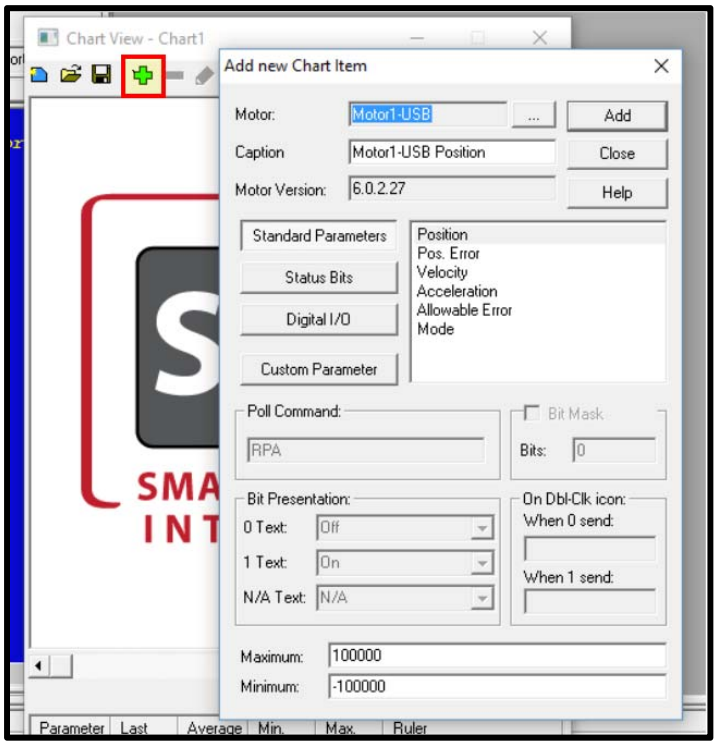


2. With “Chart View” running, you can either open up an existing file, or create a new one.



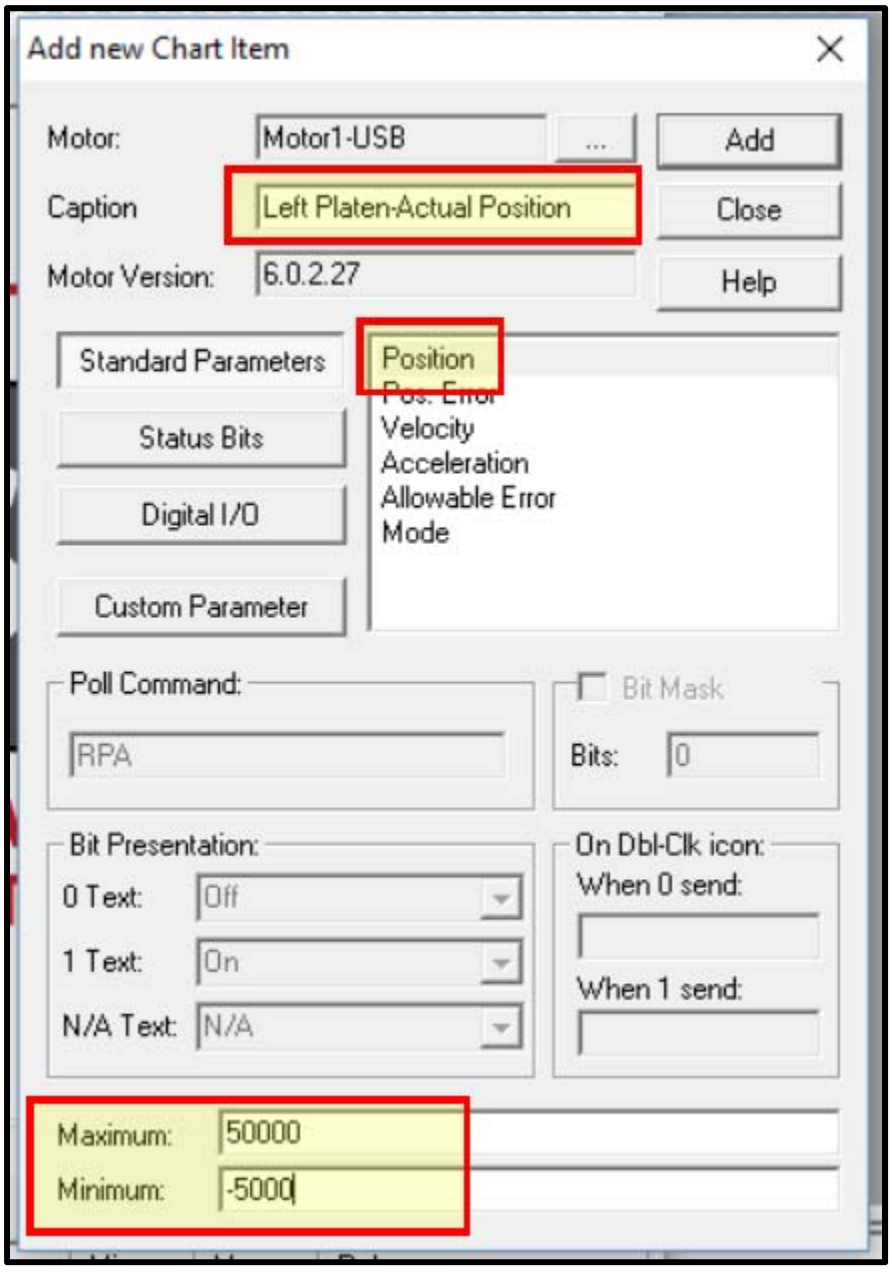
3. For this example, a new file will be created.

a. Click the green “plus” sign on the toolbar. This will bring up the “Add new Chart Item” window.



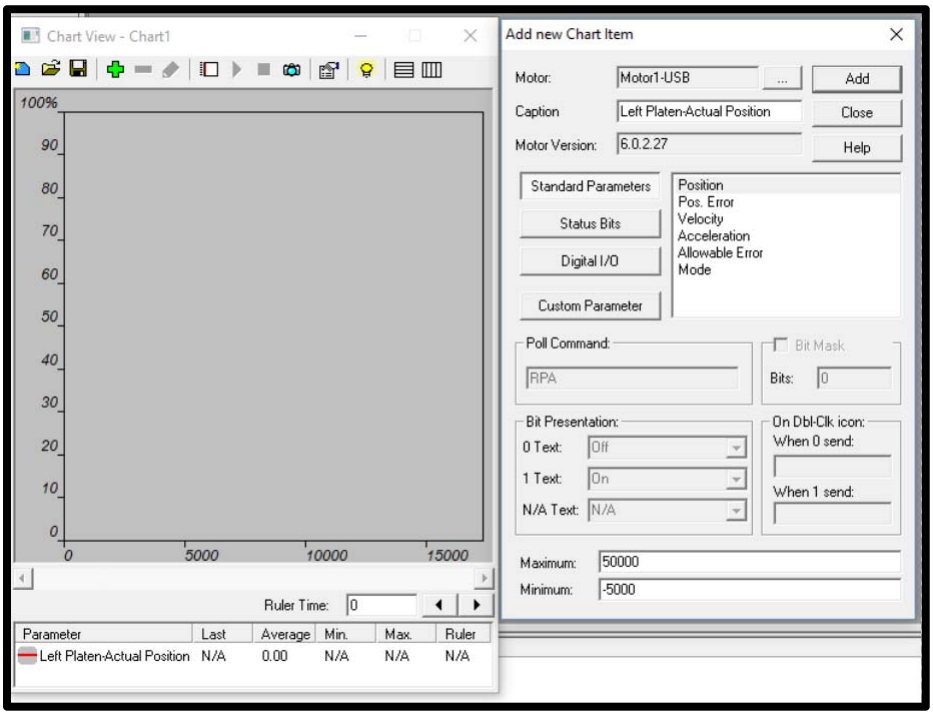
b. From this window, you can configure what values you wish to poll. You can use the preset values, or use your custom commands listed in section 3 of this document. Typically, Actual Position (Position) is used as an important value and will be used on most charts you create.

c. Make sure to change the label/caption to reflect what you are recording. For this example it is assumed to be the Left Platen valve, Actual position.

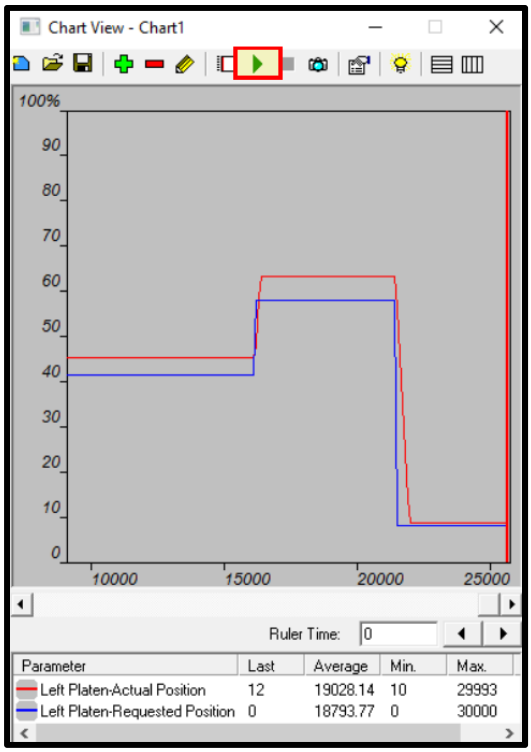


d. Note that the Maximum and Minimum values are adjusted for better resolution/scaling on the chart view screen. These values need to be adjusted accordingly depending on what you are charting, how many valves you charting, what time of valve, etc. Scaling is important so you can clearly see what you are charting.

e. After you are done making the needed changes, click the “Add” button on the open window and it will be added to the Chart View window.

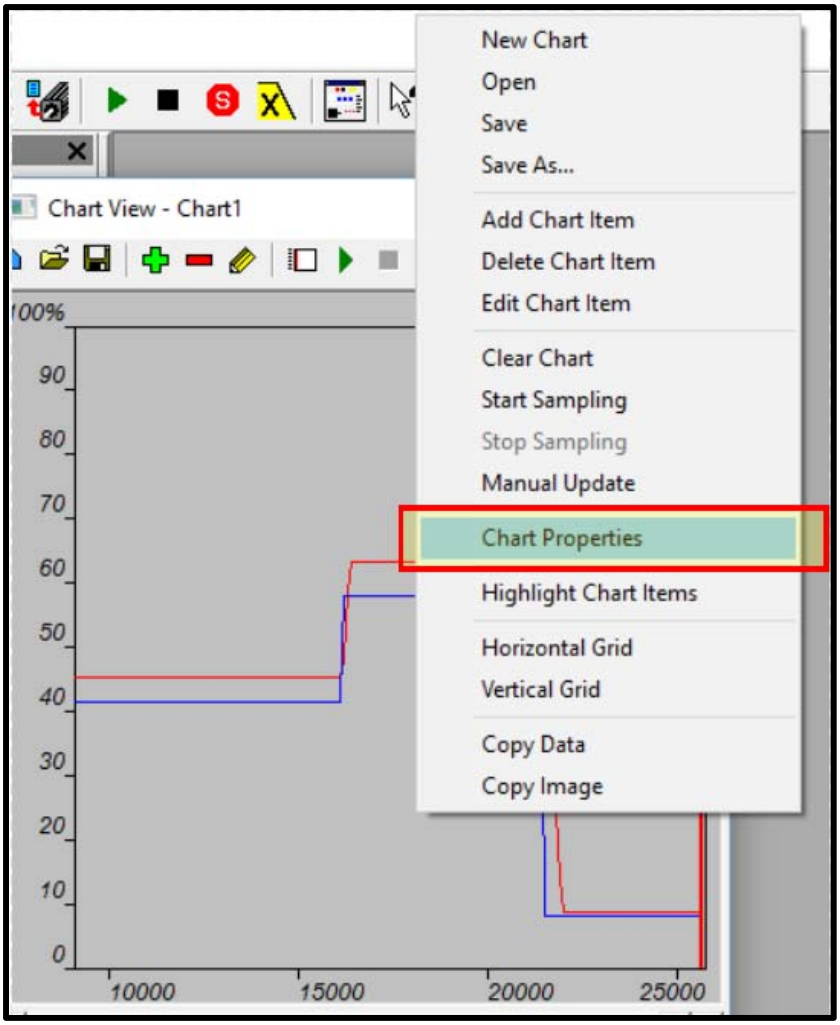


f. Continue to add chart items as needed. In this example, the second poll command is “Requested position”



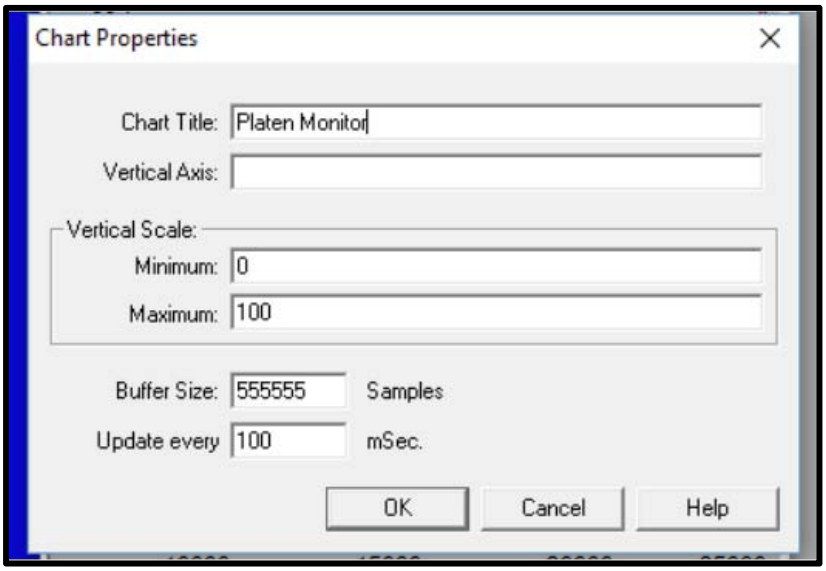
g. To begin charting, simply click the green arrow (Go button).
    i. The charted move above shows a commanded movement from zero position to 30,000 and back to zero. Make note how the lines were scaled so they did not line up on top of one another.

4. Changing charting frequency and duration:
    a. Anywhere in the grey area of the chart, right click and then click on “Chart Properties”

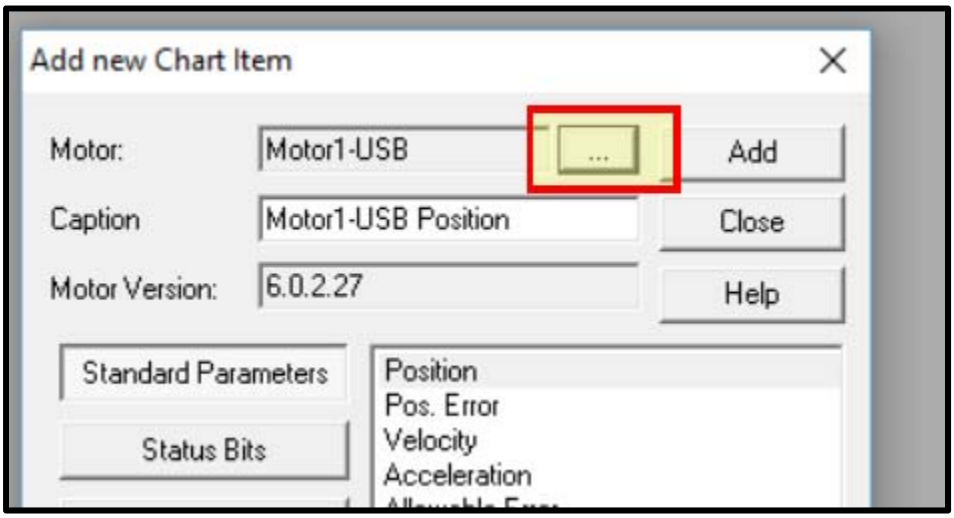


    b. Here you can label the chart and set limits to further scale the chart for your needs.

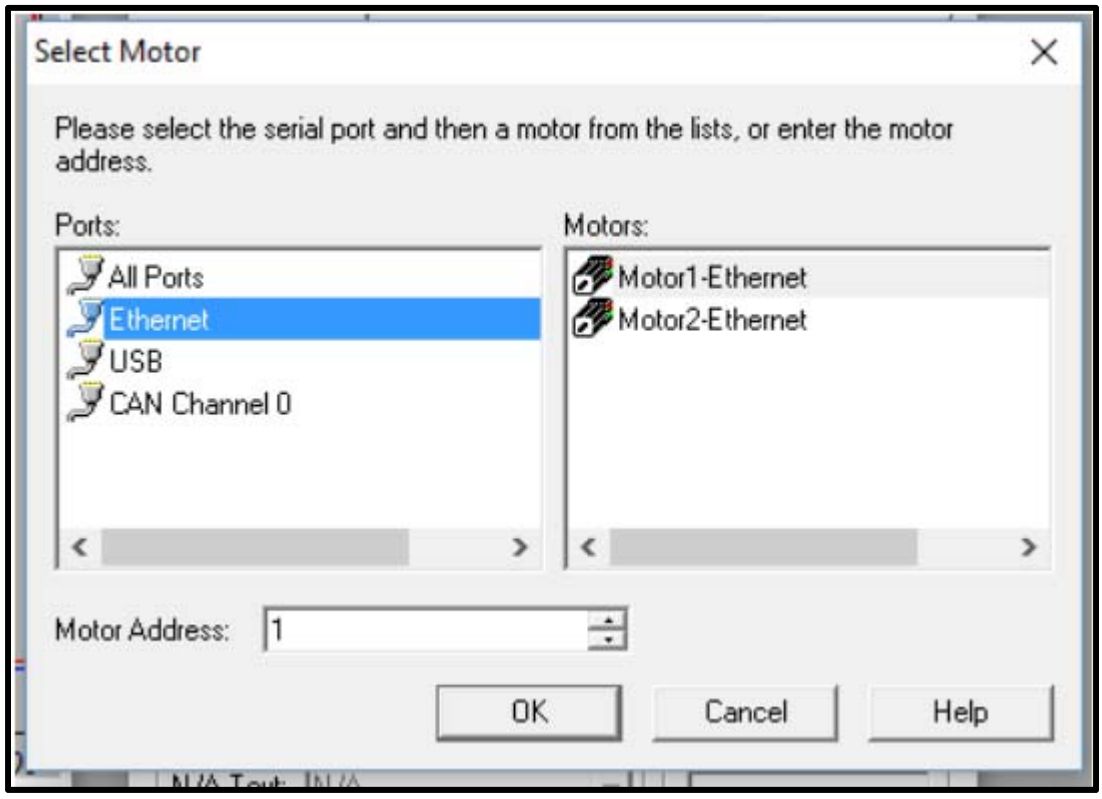
    c. More importantly, you can change the Buffer size (How many samples you want to record) and the sample rate. Simple math can determine what these numbers need to be depending on how long you want to record.



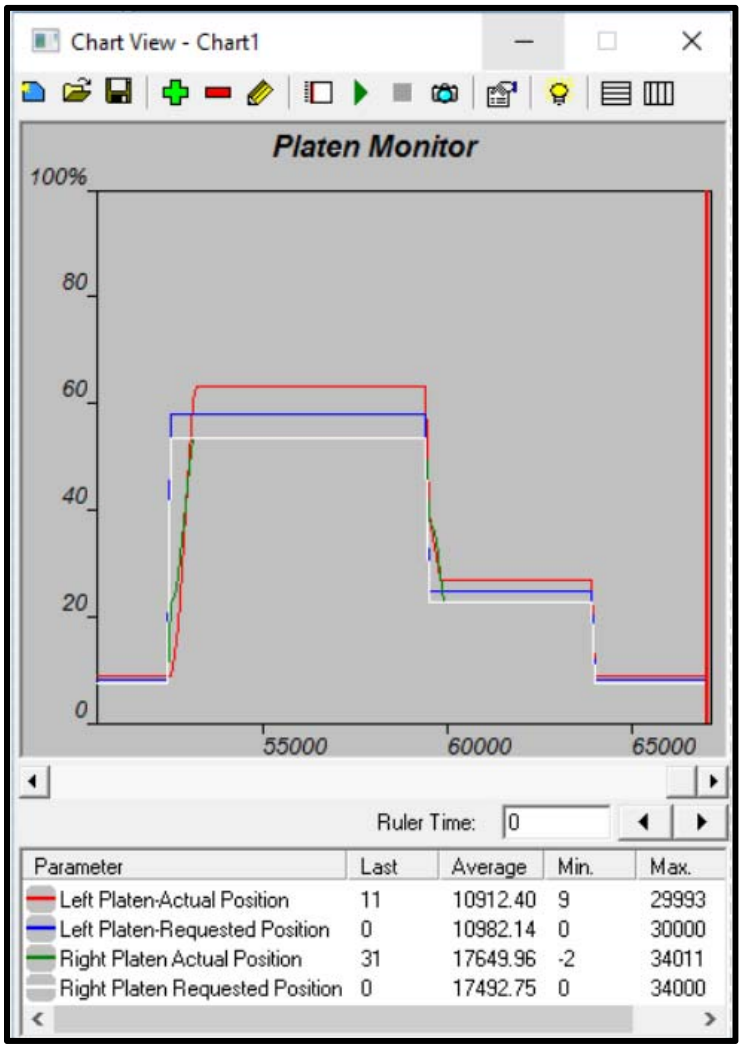
5. Monitor Multiple motors on the same chart.
    a. Typically, this would only be used with Ethernet, but if multiple USB connections were made, this can be done in USB mode as well.
    b. Follow the same steps as mentioned above, but each new chart item added will need to be mapped to the correct valve needing monitoring. On the “Add new Chart Item” window click the “search” button.



    c. Here you can see what motors are visible. Make certain that you searching in the correct port type.



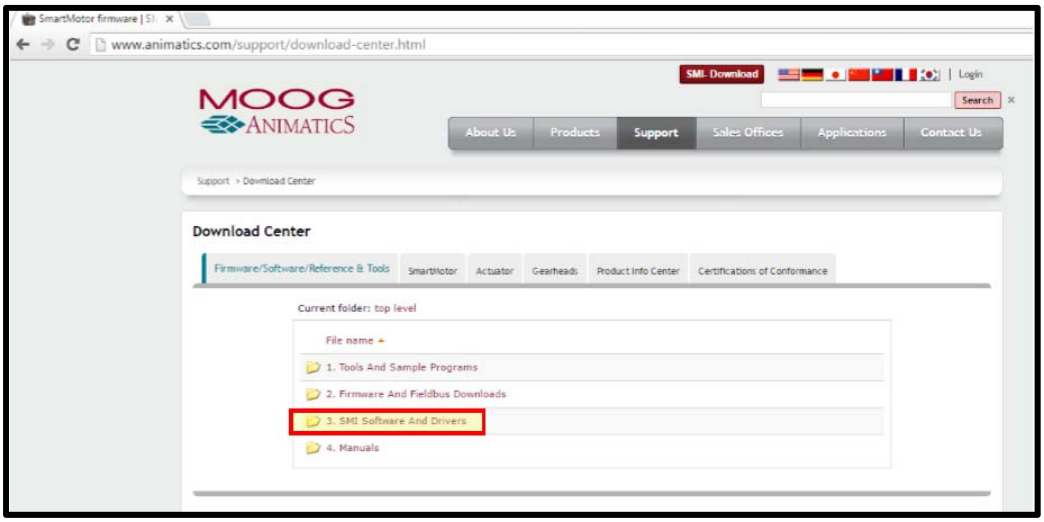
d. For this example, Left and Right Platen valves were chosen and requested position and actual position were charted through a movement of 30,000 counts. Make note of the scaling. With proper scaling, all valve movements and commands can be visible.



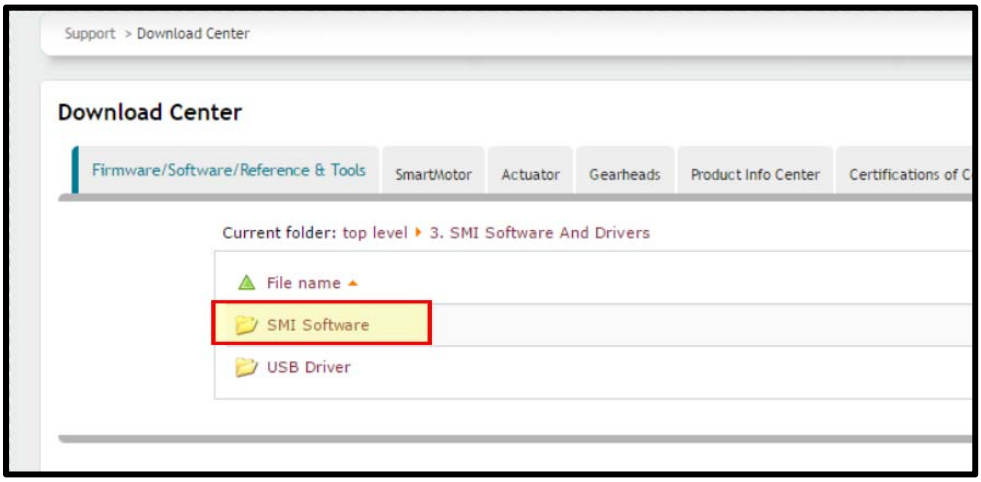
6. Once you are happy with your chart, be sure to save the file to a location of your choice for later use. Simply click on the save button on the top of the "Chart View" window.
7. If you wish to further analyze any of the data gathered during a charting session, the data gathered can be copied and pasted into an Excel document for further refining and data mining. This can be very valuable for trending and possible leak detection.
    a. Simply stop the chart recorderin by hitting the red square (Stop Button)
    b. Right click anywhere in the grey chart area and then click "Copy Data"
    c. Open Excel and paste data

Section 5: Software Download

1. Software download can be found at http://www.animatics.com/support/download-center.html
    a. Select "3. SMI Software and Drivers"



b. Select “SMI Software”



c. Select “SMI_….msi” file for download.
*(note: latest version will always be available here)

d. After download is complete, search for file in your Windows Downloads folder and install.

5.0 Repair and Maintenance of Synergy Series Valves

Valves are serviced in a Modular Manner. The valves contain the following modules which are available for replacement:

1.) Actuator
2.) Motor
3.) Core

5.1 Replacement of Actuator Assembly

5.1.1 Contact Durbin Industrial Valve for the correct Part Number for the Actuator Assemblies of your existing valve. Please have original Durbin Industrial Valve part number readily available.

5.1.2 Removal and installation of Actuator Assembly

5.1.2.1 Disconnect power

5.1.2.2 Loosen Spanner nut – use Durbin part number SYN-TL-08

5.1.2.3 Loosen and disconnect swivel nut

5.1.2.4 Remove motor mounting bolts – 5/32” HEX KEY

5.1.2.5 Remove drive belt cover – 3/16” HEX KEY

5.1.2.6 Remove drive belt

5.1.2.7 Remove motor

5.1.2.8 Reverse steps to install the Actuator Assembly

5.1.2.8.1 Torque motor bolts to 79 inch-lbs

5.1.2.8.2 Tighten Motor Drive belt by applying force to motor to ensure that drive belt is tight. Use Durbin Industrial Valve tool part number SYN-TL-04 to check tightness of belt

Actuator Assembly

5.2 Replacement of Motor

5.2.1 Disconnect Power

5.2.2 Contact Durbin Industrial Valve for the correct Part Number for the Motor of your existing valve. Please have original Durbin Industrial Valve part number readily available.

5.2.3 Remove Drive Belt Cover

5.2.4 Remove Motor bolts

5.2.5 Remove drive belt

5.2.6 Install new motor

5.2.7 Install Drive Belt ensuring that proper tension is on belt – use Durbin part number SYN-TL-04 to determine proper spacing for belt tension

5.2.8 Install Cover

MOTOR ASSEMBLY

5.3 Replacement of Core

5.3.1 Disconnect Power

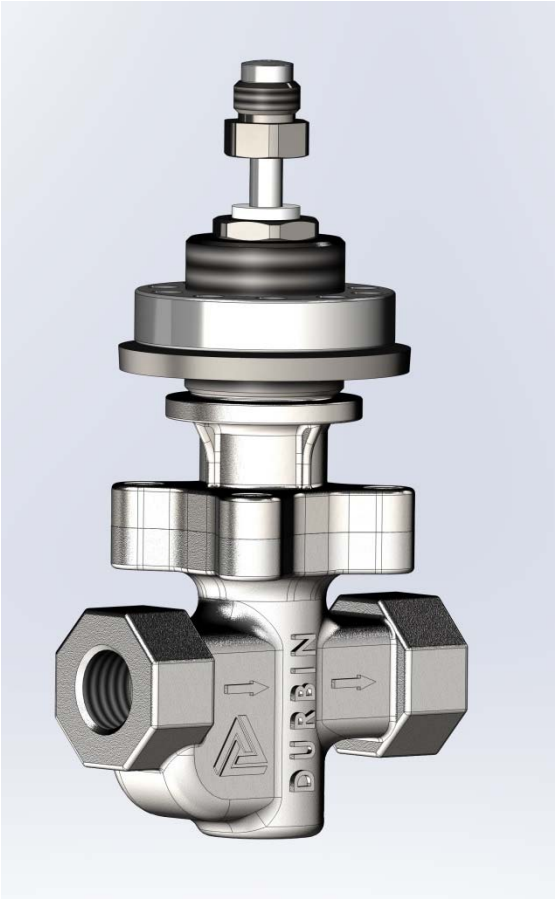
5.3.2 Contact Durbin Industrial Valve for the correct Part Number for the Core of your existing valve. Please have original Durbin Industrial Valve part number readily available.

5.3.3 Loosen and remove Spanner Nut

5.3.4 Loosen and disconnect swivel nut

5.3.5 Disconnect Core from process connections

5.3.6 Reverse instructions for installation – ensure spanner nut is proper torqued per instructions in section 1.9



CORE ASSEMBLY