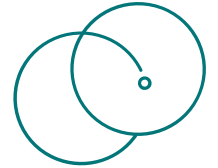




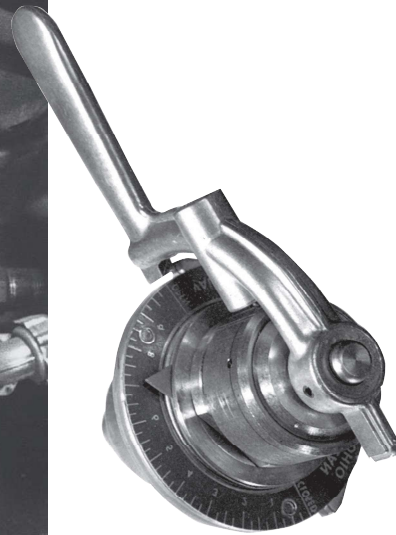
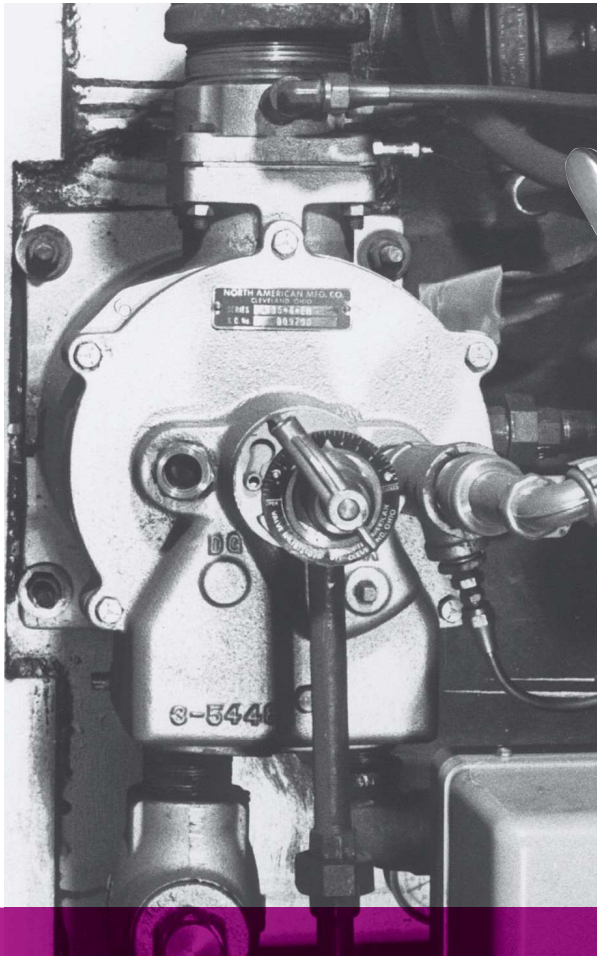
fives



PROCESS  
TECHNOLOGIES

ENERGY | COMBUSTION

## North American Sensitrol™ Oil Valves



1813 Sensitrol Valve  
on a Dual-Fuel™ burner.

## 1813 Oil Valves

- Valve is used for setting ratio when burner is on oil; it is shut off when burning gas.
- Used for manual or motorized control of oil flow

# Product Overview | 1813 Oil Valves

**1813 Sensitrol Oil Valves** are precision built valves for manual or motorized control of oil flow to industrial burners.

**1813 Sensitrols** are manual valves used as limiting orifices in setting oil/air ratio. An additional shutoff valve in the line which permits shutting off the burner without disturbing the Sensitrol's ratio setting position is recommended.

These valves have an adjustable detent mechanism that provides memory for desired valve operating position. A spring-loaded steel ball fits into a hollow in an adjustable collar, whose position is secured by a setscrew.

The handle can be pushed past the detent position easily to open the valve wide temporarily for light-off or clean-out.

**1813- -K Manual Sensitrols** have cutdown handles to lessen chances of accidental changes in valve setting.

**1813M Motorized Sensitrols**, for automatic control of oil flow, are available with brackets and linkage for most standard control motors. Although these valves have ten dial positions, linkage geometry limits valve travel to seven positions (e.g., 0-7, 2-9, or 3-10).

## CONSTRUCTION

1813-02 Valves have forged brass bodies, Viton U-cup, and precision ground, hardened stainless steel port seats. A V-port in the upper, rotating disc exposes varying areas of a circular port in the lower seat. The triangular opening is highly resistant to clogging or fouling.

1813-01 and 1813M-01 Valves have cast brass bodies and precision ground, conical seats that form a clog-resistant triangular opening.

## CAPACITY

1813 Valves flow capacities at the No. 10 indicator position are listed in the chart below.

**Sensitrol Valve Capacities at #10 Indicator Position  
10 psi Pressure Drop**

	Valve Size Designation					
	-02-0	-02-A	-02-B	-02-C	-02-D	-01
<b>gph #2 Oil (40 SSU) at 10 psi ΔP</b>	3	8	17	33	55	140
<b>C<sub>v</sub> Rating</b>	0.030	0.078	0.17	0.32	0.52	1.32
<b>Dial Color</b>	Black	Red	Blue	Green	Brown	White

Flow at #10 (wide open) position is about twice the #7 position capacity. Shutoff occurs between positions #1 and #2 (see Figure 1).

To size Sensitrol for best control, determine oil flow rate required and available pressure drop. Using square root flow law, correct flow to 10 psi pressure drop. From Table above, select the valve with a capacity, at #7 position, closest to the corrected flow.

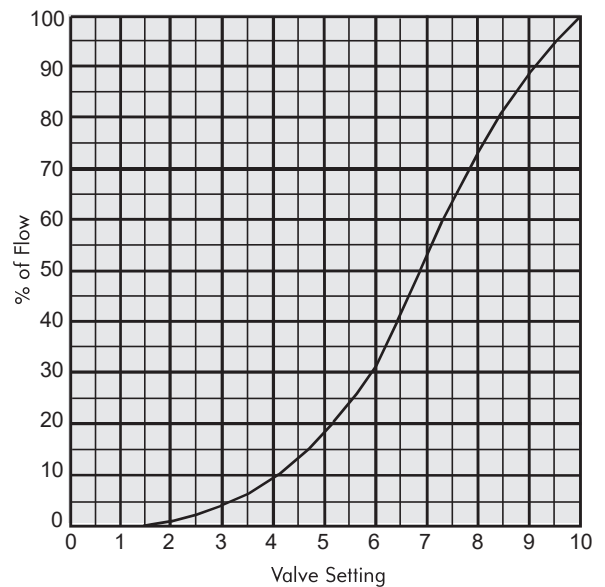
*Example:*

Select valve for 25 gph at 30 psi pressure drop (high fire).

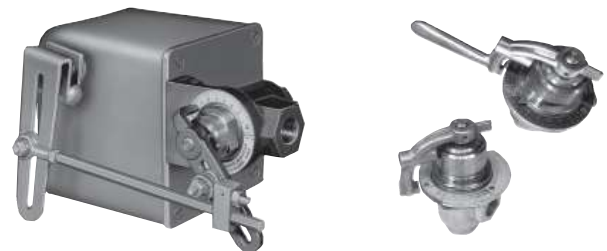
$$25 \text{ gph at } 30 \text{ psi} = 25 \times \sqrt{\frac{10}{30}} = 14.4 \text{ gph at } 10 \text{ psi.}$$

1813-02-B (17 gph at 10 psi) is closest size.

Capacities are listed for 40 SSU #2 oil. They are somewhat less for higher viscosity oils but well within suitable ranges for oil burners (varying less than 10% from figures shown).



**Figure 1.** Typical oil flow vs. valve handle position at constant pressure drop. This generalized curve will not predict exact flow rates so do not use chart to set burner ratios.

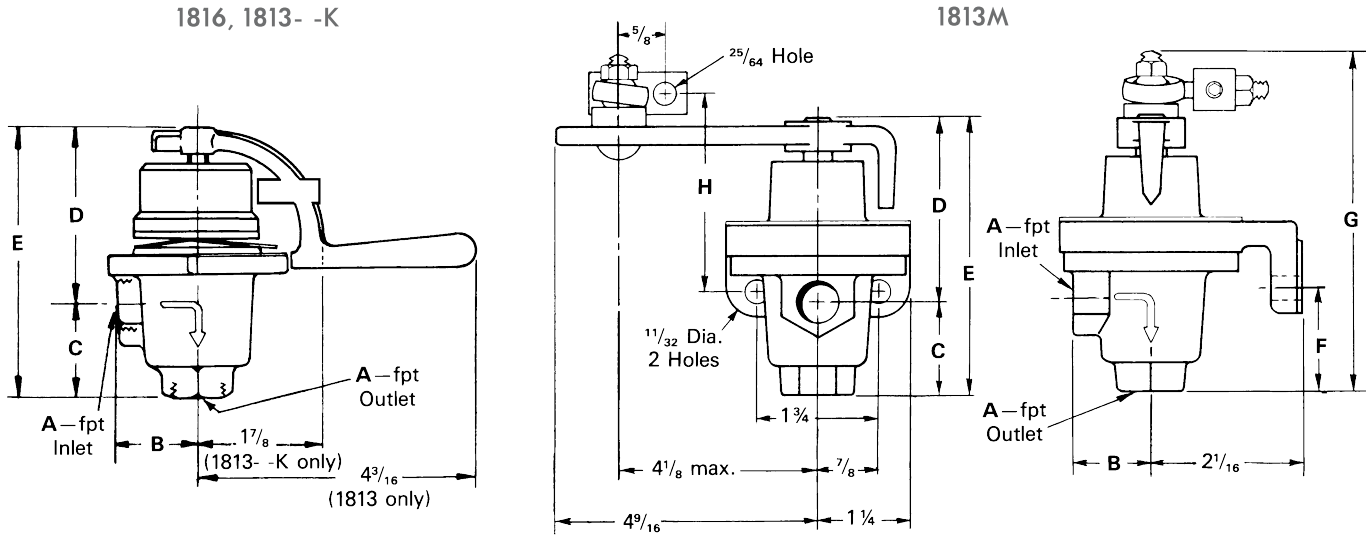


**Figure 2.** 1813M Motorized Sensitrol™ (left) with optional motor; 1813 Sensitrol (top right); 1813- -K Sensitrol (bottom right) with cutdown handle.

**Maximum inlet pressure is 250 psi for 1813-02; 100 psi for 1813-01. Maximum temperature is 300°F for all sizes.**

# Dimensions | 1813 Oil Valves

## DIMENSIONS inches



DIMENSIONS SHOWN ARE SUBJECT TO CHANGE. PLEASE OBTAIN CERTIFIED PRINTS FROM FIVES NORTH AMERICAN COMBUSTION, INC. IF SPACE LIMITATIONS OR OTHER CONSIDERATIONS MAKE EXACT DIMENSION(S) CRITICAL.

Valve Designation	dimensions in inches								Weight lb
	A	B	C	D	E	F	G	H	
1813-02, 1813-02-K } 0 & A thru D	3/8*	1 1/8	1 5/16	2 9/16	3 7/8	—	—	2 9/16	1 1/2
1813M-02	3/8	1 1/8	1 5/16	2 9/16	3 7/8	1 9/16	4 3/4	2 9/16	2 3/4
1813-01	1/2	1 5/8	1 7/8	3 1/16	4 11/16	—	—	2 7/8	3 1/4
1813M-01	1/2	1 5/8	1 7/8	3 1/16	4 11/16	2 1/16	5 3/8	2 7/8	3 3/4

\* Includes 1/4" bushings (fittings) that can be installed on the valve.

To order, specify: 1813-(code for pipe size)-(capacity letter where applicable) (K for cutdown handle, if applicable).

Examples: 1813-02-B Sensitrol Oil Valve  
1813-02-BK Sensitrol Oil Valve

To order 1813M (Motorized) Sensitrol Valves use a similar scheme and either specify B and L, or add an X to 3rd term to indicate without B and L.

Examples: 1813M-02-B Valve with B & L for 1612-E  
1813M-02-BX Valve w/o B & L

**WARNING:** Situations dangerous to personnel and property may exist with the operation and maintenance of any combustion equipment. The presence of fuels, oxidants, hot and cold combustion products, hot surfaces, electrical power in control and ignition circuits, etc., are inherent with any combustion application. Components in combustion systems may exceed 160°F (71°C) surface temperatures and present hot surface contact hazard. Fives North American Combustion, Inc. suggests the use of combustion systems that are in compliance with all Safety Codes, Standards, Regulations and Directives; and care in operation.

### CONTACT

fna.sales@fivesgroup.com  
T +1 800 626 3477 - F +1 216 373 4237

Fives North American Combustion, Inc.  
4455 East 71st Street - Cleveland, OH 44105 - USA  
www.fivesgroup.com



fives  
Industry can do it

## North American Shutoff Valves



Threaded



Flanged



Stainless Steel  
Threaded



## Series 1821B Shutoff Valves

- Provides reliable, trouble-free service on clean gas
- Constructed of heavy duty materials
- Used for steam, water, oil or gas