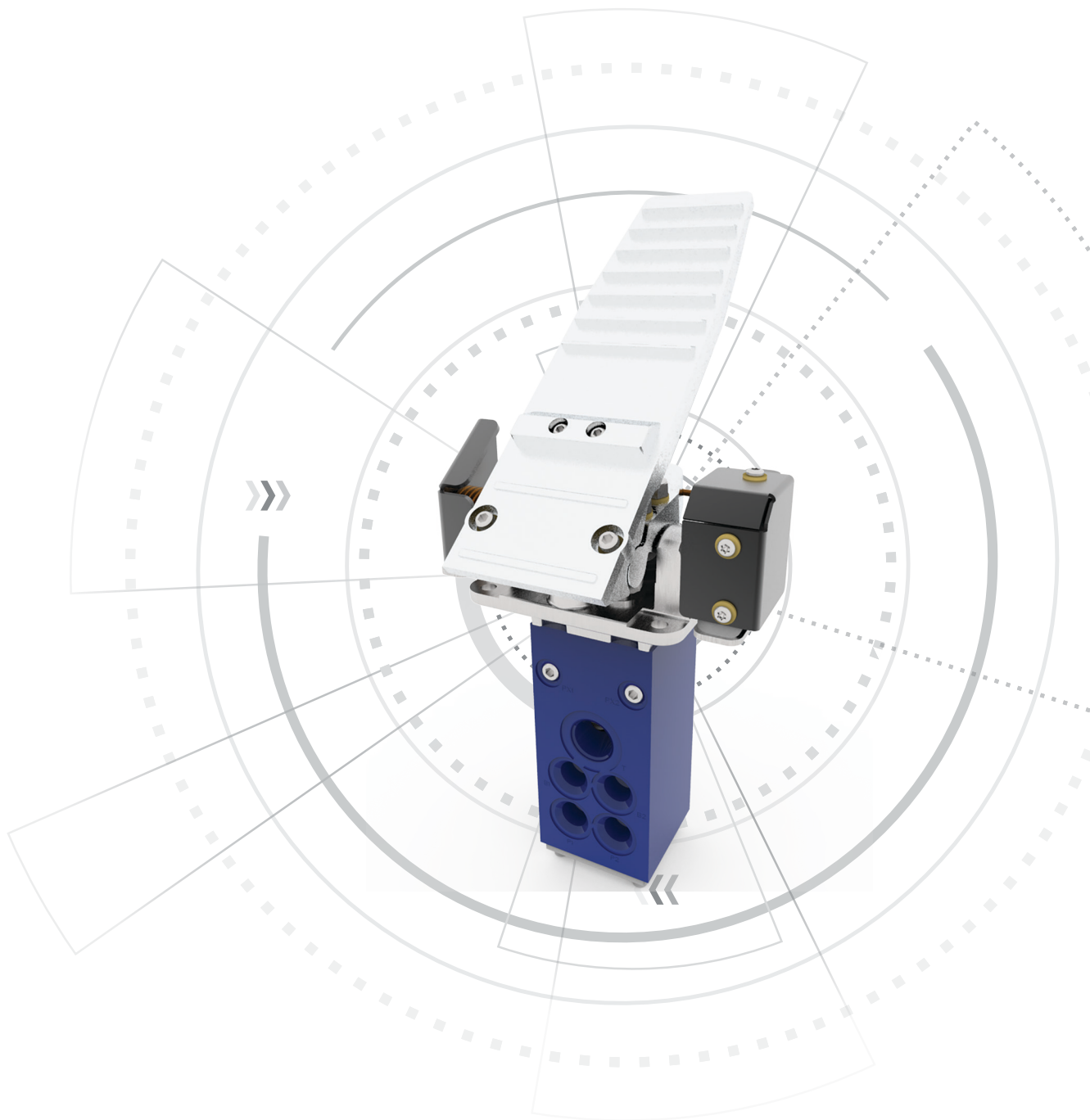




INNOVATING SOLUTIONS
FOR A WORLD IN MOTION

2100 SERIES POWER BRAKE VALVE

TECHNICAL DATA



2100 SERIES POWER BRAKE VALVE

PRODUCT OVERVIEW

FEATURES

- Spool sleeve design allows for easy serviceability and reduced maintenance costs
- Smooth modulation at all output pressures
- Valve is externally adjustable to provide precise pressure settings
- Automotive style pedal feedback
- Standard pilot apply for 2102, 2103, 2105 and 2106
- Rugged construction and thorough testing ensure superior performance and endurance for even the most severe job applications

OPTIONS

- Firewall mounted suspended pedal
- Treadle actuator with adjustable pedal angle
- Circuit staging to provide non-linear output pressure (see page 5)
- Available with or without pedal/actuator, or lever actuator with friction detent option (2101 series)
- Pedal position sensor for retarder control
- Unequal output pressure for dual circuits
- Dual pilots for separate circuit control
- Adjustable stoplight switch
- Externally adjustable differential pressure warning switch
- Pilot optional for 2101 Series

FUNCTION

The Carlisle single circuit and parallel circuit, modulating hydraulic control valves are capable of providing modulating output pressures in a range of 600-3,500 psi (41 to 241 bar). Each pedal can be independently set for output pressure to enable complete control of brake system on the vehicle. Treadle Pedal force ranges from 45 to 68 pounds (200-300 newton) for the dual valve depending upon output pressure. The treadle pedal force for the single valve ranges from 17 to 56 pounds (75-250 newton) depending upon output pressure.

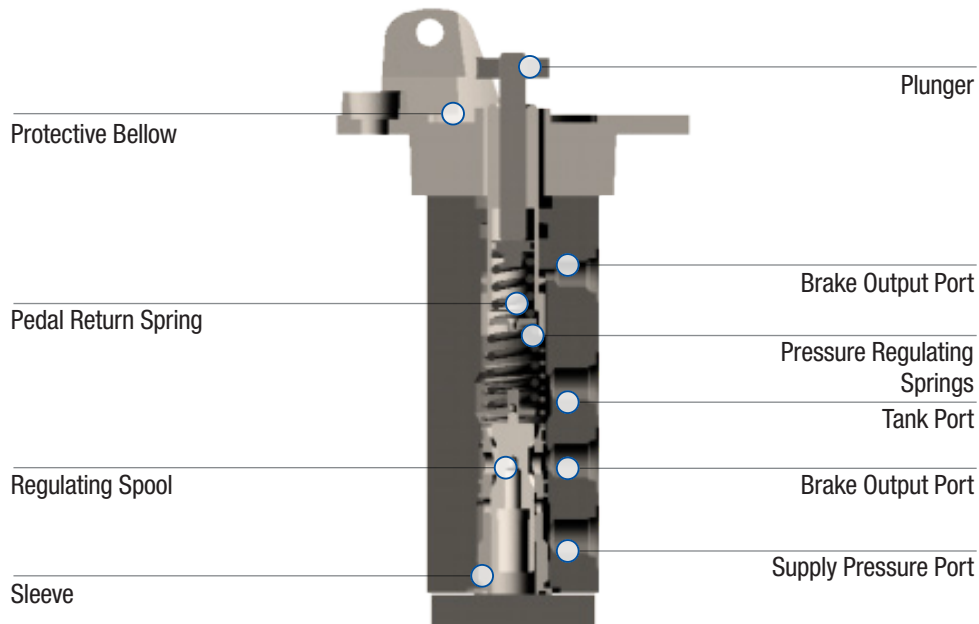
The Carlisle 2102 Series In-Line retarder/brake control valve provides electric retarder control with sensor output plus hydraulic brake modulating control in one component for easy installation and reduced system cost. Retarder control is achieved using a contactless rotary sensor. The sensor provides a dual redundant output signal, either 5 or 10 VDC, for the retarder control.

2100 SERIES POWER BRAKE VALVE

PRODUCT DRAWING & SPECIFICATIONS

PRODUCT ILLUSTRATION

Typical Section View



SPECIFICATIONS

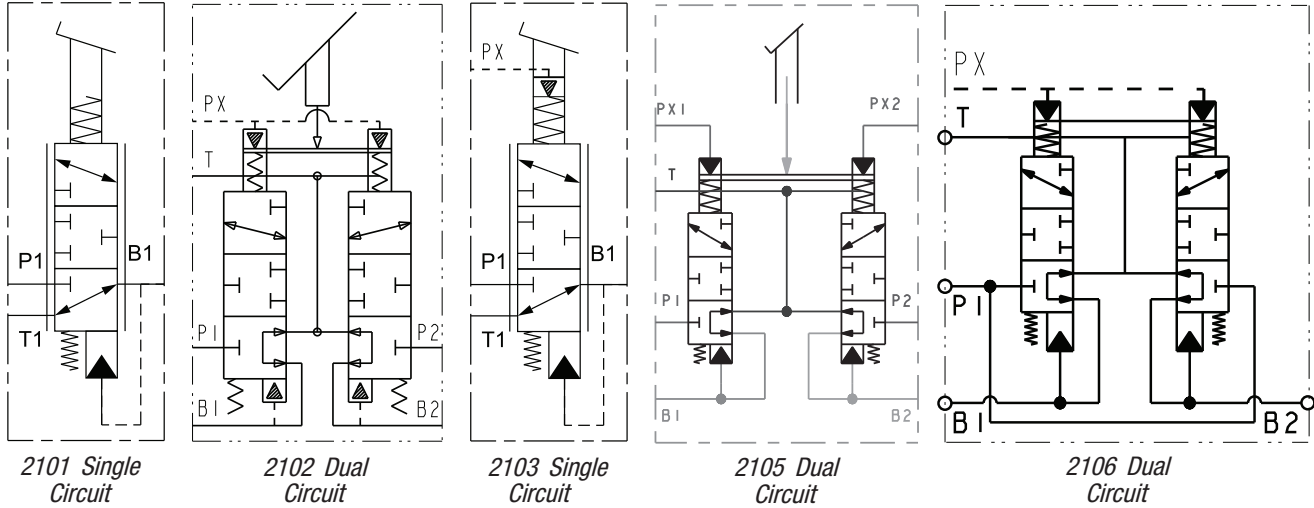
Body Material	Aluminum		
Maximum Operating Pressure	3500 PSI	241 bar	
Operating Temperature Range	-40 to 200°F	-40 to 93°C	
Max Continuous Operating Temperature	180°F (82°C) (consult Carlisle for application requiring higher temperature capacity)		
Fluid Compatibility	Mineral Based		
Weight	Single Treadle/Suspended	6.2 lbs.	2.8 kg
	Single Relay	6.8 lbs.	3.1 kg
	Dual Treadle/Suspended	10.7 lbs.	4.9 kg
	Dual Relay	9.7 lbs.	4.4 kg
Filtration	17/15/13 per ISO 4406		

2100 SERIES POWER BRAKE VALVE

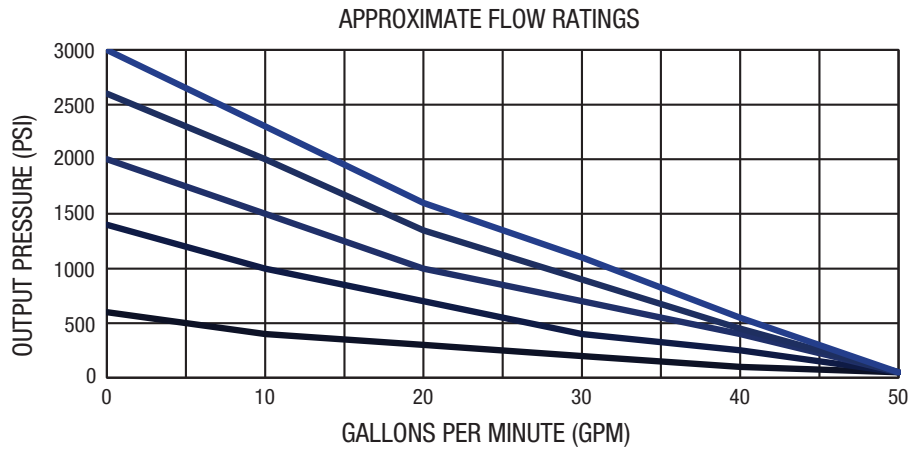
PRODUCT DRAWING & SPECIFICATIONS

HYDRAULIC CHARACTERISTICS

SCHEMATIC



PERFORMANCE DATA



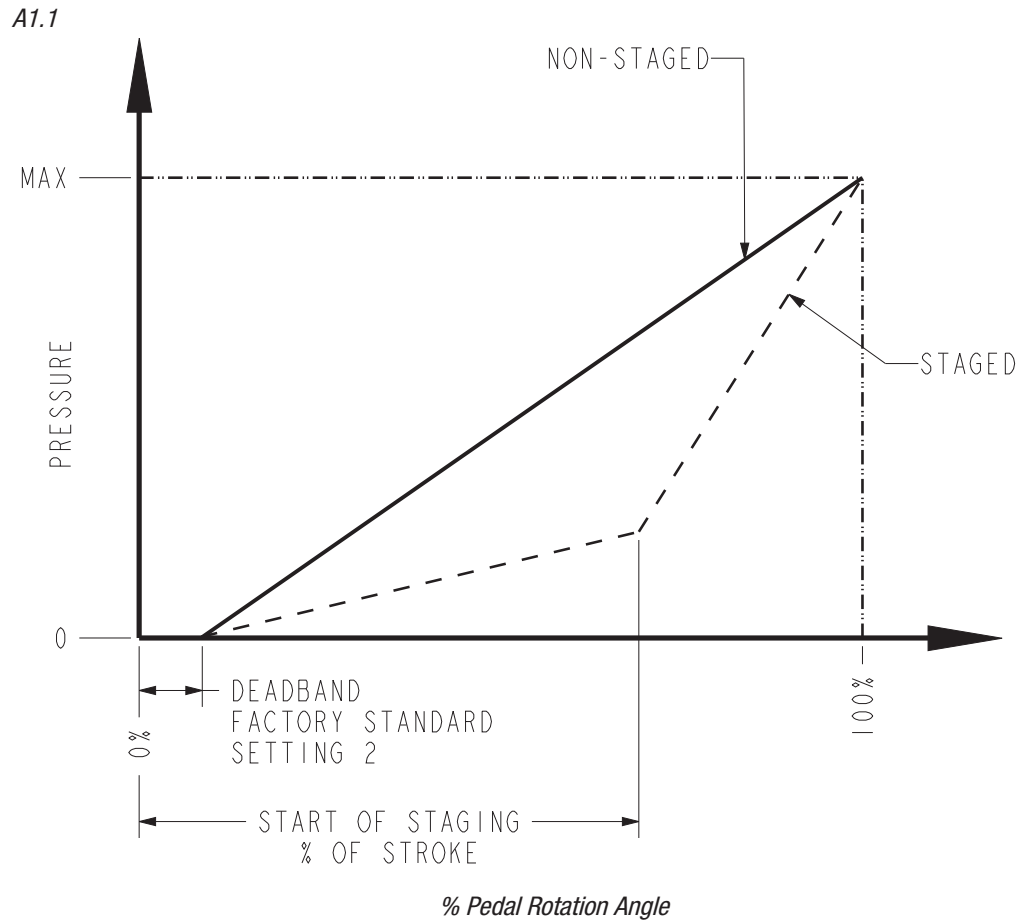
HYDRAULIC CONNECTIONS

	DUAL CIRCUIT	SINGLE CIRCUIT
Port (Description)	SAE Per ISO 11926	SAE Per ISO 11926
P* (Pressure)	SAE 8	SAE 6
T* (Tank)	SAE 12	SAE 6
Px (Pilot)	SAE 4	SAE 4
B* (Brake pressure)	SAE 8	SAE 6

2100 SERIES POWER BRAKE VALVE

PRODUCT SPECIFICATIONS

BRAKE CIRCUIT OUTPUT PRESSURE



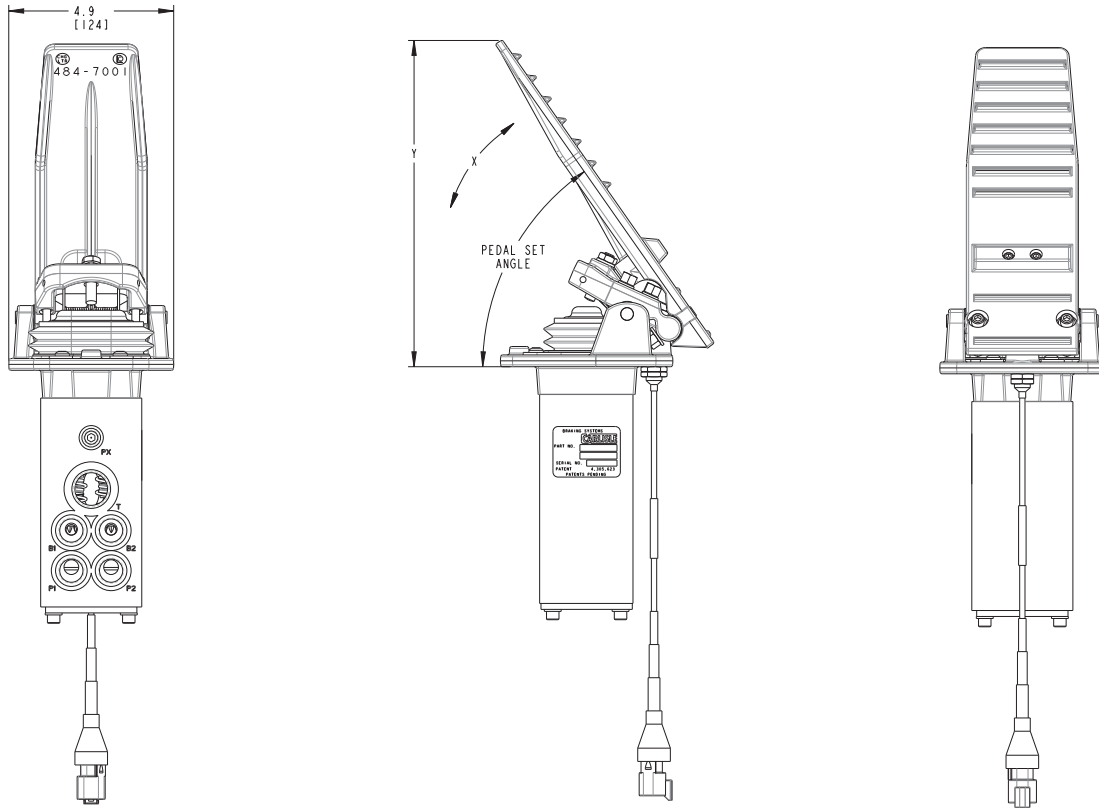
STAGING OPTION

- Staging is a dual slope pressure curve for enhanced operator control
- Staged brake pressure rise can be favourable in applications where less aggressive braking is desired in early input actuation

2100 SERIES POWER BRAKE VALVE PRODUCT DRAWINGS

DIMENSIONS

Treadle Pedal



PEDAL STYLE (Table a1.1)

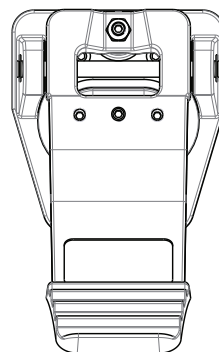
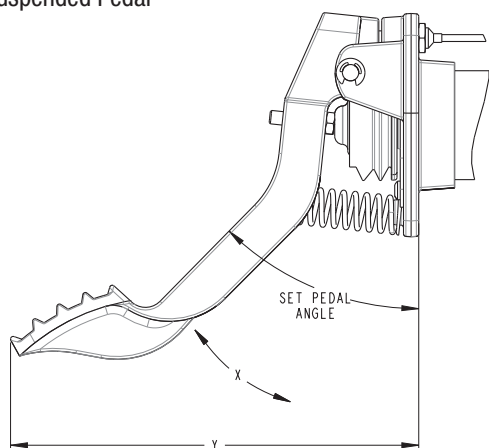
Pedal Set angle (X) degrees	Treadle (Y)		Suspended Pedal (Y)	
	Inches	mm	Inches	mm
25	6.8	172		
30	6.9	175	8.6	218
35	7.5	190	9.2	233
40	8.2	208	9.8	248
45	8.9	226		
50	9.1	231		
55	9.3	235		

2100 SERIES POWER BRAKE VALVE

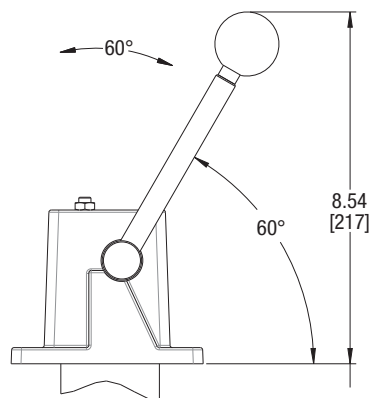
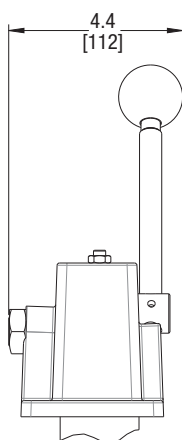
PRODUCT DRAWINGS

DIMENSIONS

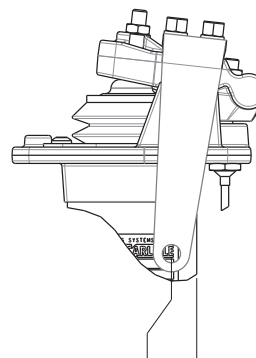
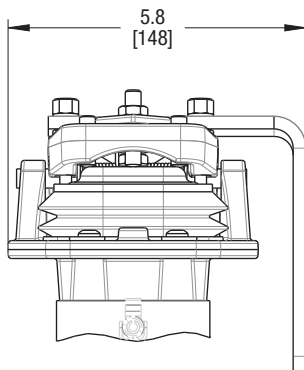
Suspended Pedal



Hand Lever



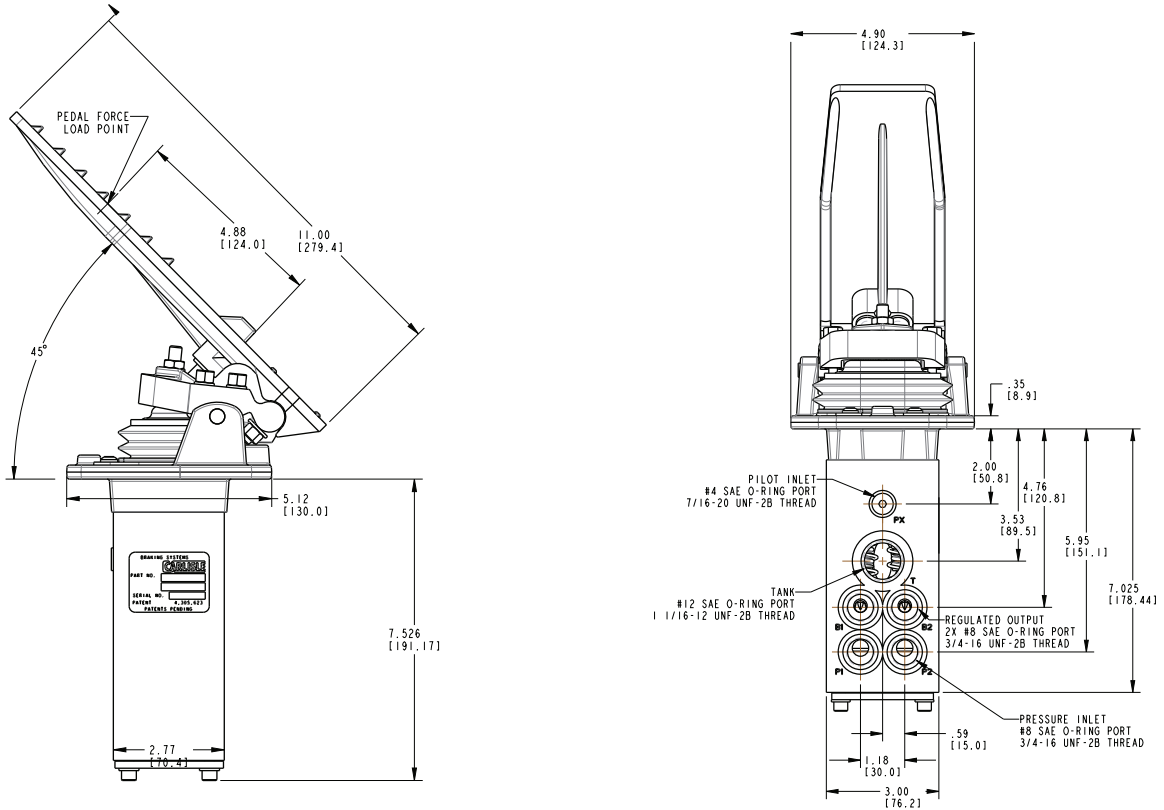
Cable Lever



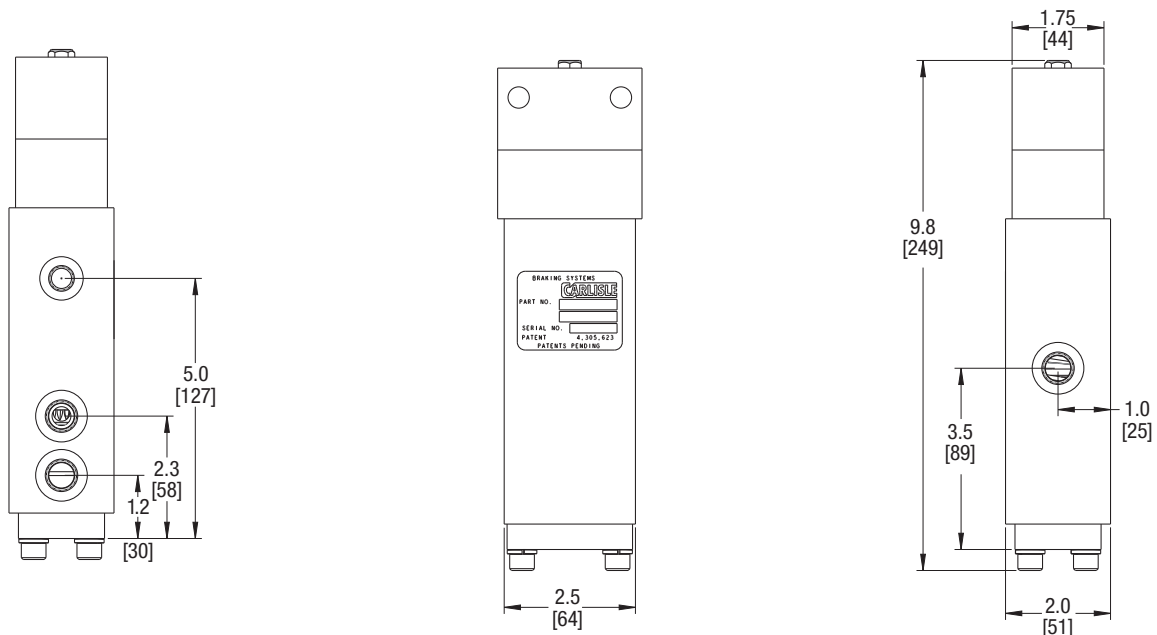
2100 SERIES POWER BRAKE VALVE PRODUCT DRAWINGS

DIMENSIONS

2102 Single Circuit Pilot Applied Relay Valve



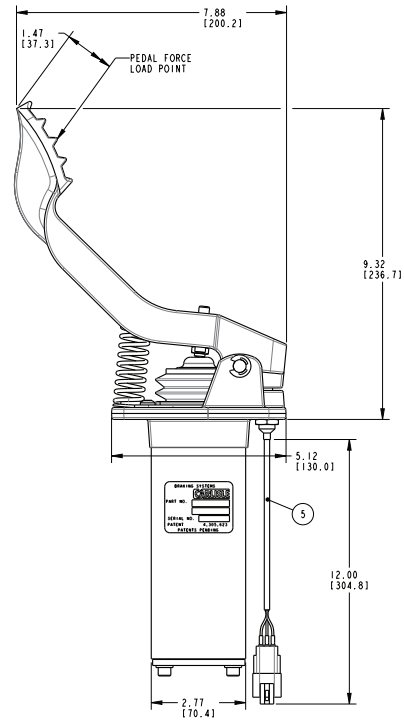
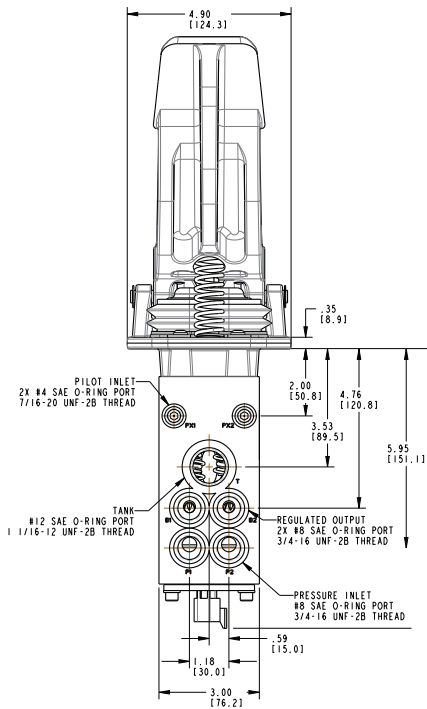
2103 Single Circuit Pilot Applied Relay Valve



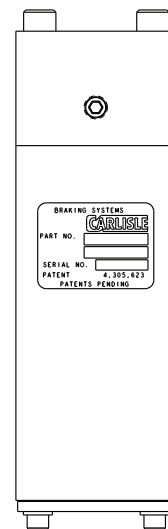
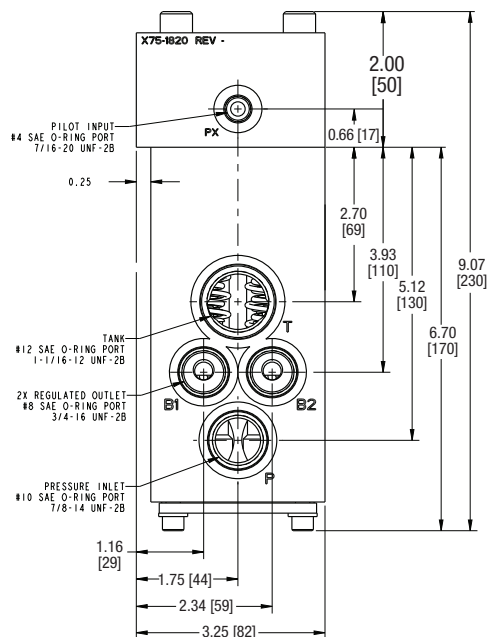
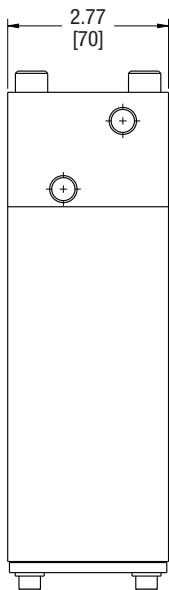
2100 SERIES POWER BRAKE VALVE PRODUCT DRAWINGS

DIMENSIONS

2105 Single Circuit Pilot Applied Relay Valve



2106 Dual Circuit - Single Pilot Relay Valve



2100 SERIES POWER BRAKE VALVE ORDER CODE

MODEL CODES

*Note: Not all listed code combinations are attainable.

21	-	-	/	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Series	Type	Port Orientation	Regulated Pressure I	Regulated Pressure II	Staging Option Pressure I	Staging Option Pressure II	Pedal Type	Pedal Angle	Pilot Actuation Option	Options									

Code	Description
01	Single
02	Dual with optional Single Pilot
03	Single with Pilot
05	Dual with Dual Pilot
06	Dual Relay Valve

Code	Description
N	None
H1	Single Hydraulic
H2	Dual Hydraulic

Code	Description
N	None
S	Suspended
T	Treadle
H	Hand Lever
C	Cable Lever
R	Relay

Code	Description
B	Conventional, Ports facing Back of Pedal
F	Ports facing Front of Pedal
N	No Pedal

Code	Description (PSI/ BAR)***
025	700/ 48
040	850/ 59
055	1000/ 69
070	1150/ 79
085	1300/ 90
100	1450/ 100
115	1600/ 110
130	1750/ 121
145	1900/ 131
160	2050/ 141
175	2200/ 151
190	2350/ 162
205	2050/ 141
220	2200/ 152
235	2350/ 162
250	2500/ 172
265	2650/ 183
280	2800/ 193
295	2950/ 203
310	3100/ 214
325	3250/ 224
340	3400/ 234
350	3500/ 241

Code	Description (PSI)****
00	No Staging
xxx	Start of Staging at xxx Pressure

Code	Description
N	None
25	25
30	30
35	35
40	40
45	45
50	50
55	55

Code	Description
N	No Switch
1	Pedal Proximity Switch**
2	Differential Pressure Switch
3	Differential Pressure Switch & Prox.
4	Rotary position
5	Rotary position, different pressure & proximity

*Actuation forces will be configured for minimal forces unless otherwise specified
 **Factory set at 2-7° start of pedal movement
 ***Consult Carlisle engineering for staging pressure
 ****Applies to treadle pedal only

ORDERING CODE EXAMPLE: 2102-B-040/160-00-00-T-45-H1-1

21	02	-	B	-	040	/	160	-	00	-	00	-	T	-	45	-	H1	-	1
<i>Series</i>	<i>Type</i>		<i>Port Orientation</i>		<i>Regulated Pressure I</i>		<i>Regulated Pressure II</i>		<i>Staging Option I</i>		<i>Staging Option II</i>		<i>Pedal Type</i>		<i>Pedal Angle</i>		<i>Pilot Actuation Option</i>		<i>Options</i>

Description: Single Brake Valve, SAE ports, ports facing back of pedal, staged pressures with first pressure limit 400psi, staging starting at 45% of stroke, treadle pedal set at 35 degrees, with pedal proximity switch



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 Version: 08/21/18/2100 Series Power Brake Valve Product Tech Data

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