ALLEN AIR VALVE-IN-HEAD® CYLINDERS are unique, compact self-contained units combining Cylinder and Valve into one complete module. The base of the 4-way built-in valve is an integral part of the cylinder rear head, providing faster response and flow.

These units are space, time and cost savers in most applications. Only one air connection is required. The built-in speed control screws enable fine adjustment of the extending and retracting stroke speeds independently. Consequently, pipe connections are reduced, reliability is increased and maintenance and installation costs are lowered.

The basic design features and materials are the same as found on the standard Allenair Cylinders and Valves on Pages 9 and 67.

**Standard Stroke Lengths:** Half-inch increments up to 3-1/2” and whole-inch increments from 4” through 20”. Special strokes available from 1/8” to 130”.

ALLEN AIR “TIME-A-VALVE”
See page 80. A solid state Electronic Timer, integral with Allenair Solenoid Operators.
DOUBLE ACTING: 1-1/8” - 5” BORES

**TYPE AV**
All Type “AV” Cylinders, with the exception of the 4” bore are constructed using “O”-Ring Seals. The 4” bore uses “O”- Ring Rod Seals and “U”-Cup Piston Seals. Coupled with one of a wide variety of 4-way valves, these all purpose units are used for most pneumatic applications. Optional Double Rod Packing is recommended for heavy-duty applications.

**Pressure Rating:**
- 20 P.S.I. Minimum
- 150 P.S.I. Maximum

---

**TYPE CV**
Type “CV” Cylinders are constructed using low friction “U”- Cup Seals. A heavy-duty wear strip (bearing) on the piston minimizes friction and piston cup wear, and on side load conditions prevents metal-to-metal contact. Coupled with one of a wide variety of 4-way valves, these units are primarily used on low friction applications and where low minimum breakaway is required.

**Pressure Rating:**
- 10 P.S.I. Minimum
- 150 P.S.I. Maximum

---

**TYPE EV**
Type “EV” Cylinders are constructed using Block-Vee Seals and include a heavy-duty wear strip on the piston and double rod seals in the front head. Coupled with one of a wide variety of 4-way Valves, these Cylinders are recommended for heavy-duty applications and where side load conditions are present.

**Pressure Rating:**
- 20 P.S.I. Minimum
- 150 P.S.I. Maximum

---

**TYPE EVT**
Type “EVT” Cylinders feature two Cylinders in tandem having two pistons mounted on one common rod (as Type “ET” on Page 11). Block-Vee Seals are used and include a wear strip on both pistons and double rod seals in the front head. The rear Cylinder has the advantages of an air operated Valve-in-Head® Cylinder, yet hydraulic control can be obtained by filling the front Cylinder with oil and piping its ports in series using a flow control valve.

**Pressure Rating:**
- 20 P.S.I. Minimum
- 150 P.S.I. Maximum

---

**BASIC CONSTRUCTION (VALVES)**
The valve portion of the Valve-in-Head® Cylinder is a corrosion resistant slider type 4-way 2-position valves. The valve base is hard coated aluminum, lapped slider wear, positive seal and millions of trouble-free cycles.

A durable delrin spool rapidly pilots the high-tensile manganese bronze slider across the enlarged internal ports changing direction of flow. The built-in side tubing provides air passage to the front end of the Cylinder.

Valves are available as Solenoid, Pressure Pilot, Bleed Pilot, or Manual Models.

FOR DIMENSIONS AND MOUNTS SEE PAGES 40 - 44
SINGLE SOLENOID

MODEL SVS
These models incorporate a 4-way Single Solenoid Pilot Valve, air return. A maintained electrical contact is required to move the rods its full stroke. Breaking the electrical contact returns the rod to its original position.

Models can be supplied with the rod normally retracted (electrical contact will extend rod) or normally extended (electrical contact will retract rod).

The standard solenoid operator, is the AAS Splice box housing.

Voltages: 12, 24, 120 & 240/60 AC and 6, 12 & 24VDC are standard.

* 5” BORE AVAILABLE-Consult Factory for Details.

SINGLE SOLENOID

MODEL SVEVA
These models incorporate a 4-way Single Solenoid Double Bleed Pilot Valve. A momentary (NOT continuous) electrical contact is required to move the rod its full stroke. A Bleeder Valve, such as the Allenair BV100 or BV-1/8 (to be ordered separately), must be connected to the spool cap opposite the solenoid. Depressing this Bleeder Valve momentarily will return the rod to its original position.

Models can be supplied with the rod normally retracted (electrical contact will extend rod) or normally extended (electrical contact will retract rod). The standard solenoid operator, as shown is the AAS splice box housing.

Voltages: 12, 24, 120 & 240/60 AC and 6, 12 & 24VDC are standard.

* 5” BORE AVAILABLE-Consult Factory for Details.

FOR DIMENSIONS AND MOUNTS SEE PAGES 40 - 44

AVAILABLE IN TYPES “AV”, “CV”, “EV” & “EVT”
DOUBLE ACTING: 1-1/8" - 5" BORES

SINGLE SOLENOID

MODEL VER AUTOMATIC RETURN
Models incorporate a 4-way Single Solenoid Double Bleed Pilot Valve. A momentary (NOT continuous) electrical contact is required to move the rod its full stroke. Upon reaching its FULL stroke, the rod will automatically return to its original position.

Models can be supplied with the rod normally retracted (electrical contact will extend rod) or normally extended (electrical contact will retract rod). The standard solenoid operator is the AAS splice box housing.

Due to internal construction and application requirements, there can be a loss of approximately 1/8" to 1/4" of stroke.

Voltages: 12, 24, 120 & 240/60 and 6, 12 & 24VDC are standard.

* 5" BORE AVAILABLE-Consult Factory for Details.

DOUBLE SOLENOID

MODEL SDS
Models incorporate a 4-way Double Solenoid Pressure Pilot Valve. A momentary or maintained electrical contact applied to one solenoid will move the rod its full stroke. The rod will remain there under pressure until the other solenoid is energized, which will cause the rod to return to its original position. If a maintained contact is employed, the first solenoid must be de-energized before the other is energized. The standard solenoid operator is the AAS splice box housing.

Voltages: 12, 24, 120 & 240/60 AC and 6, 12 & 24VDC are standard.

* 5" BORE AVAILABLE-Consult Factory for Details.

FOR DIMENSIONS AND MOUNTS 
SEE PAGES 40 - 44
SINGLE PILOT

MODEL APSR
Models incorporate a 4-way Single Pressure Pilot Valve. A continuous pilot pressure applied to “IN” side of valve will move rod its full stroke. When the pilot pressure is released, the rod will return to its original position. Pilot pressure is normally supplied through an optional 3-way N.C. Valve.

Models can be supplied with the rod normally retracted (pilot pressure to extend rod) or normally extended (pilot pressure to retract rod). The pilot pressure must be at least 75% of the operating pressure.

Bore Sizes Available: 1-1/8”, 1-1/2”, 2”, 2-1/2”, 3”, 4” & *5”.

* 5” BORE AVAILABLE-Consult Factory for Details.

MODEL APSRE
ROD NORMALLY EXTENDED

SINGLE PILOT

MODEL VARR AUTOMATIC RETURN
Models incorporate a 4-way Double Bleed Pilot Valve. A momentary (NOT continuous) actuation of Bleeder Valve is required to move the rod its full stroke. Upon reaching its FULL stroke, the rod will automatically return to its original position.

Models can be supplied with the rod normally retracted (manual bleed to extend rod) or normally extended (manual bleed to retract rod). Due to internal construction and application requirements, there can be a loss of approximately 1/8” to 1/4” of stroke.

Bleeder Valve Model BV100 is supplied on these models.

Bore Sizes Available: 1-1/2”, 2”, 2-1/2”, 3” & 4”.

MODEL VARE
ROD NORMALLY EXTENDED
DOUBLE PILOT

MODEL AP
This model incorporates a 4-way Double Pressure Pilot Valve. A momentary or maintained pilot pressure applied to one side of the valve will move the rod its full stroke. The rod will remain in that position under pressure until a pilot pressure is applied to the other side, which will cause the rod to return to its original position. If a maintained pilot pressure is applied, it must be released before the other pilot pressure is applied. Pilot pressure must be at least 25% of the operating pressure.


* 5" BORE AVAILABLE-Consult Factory for Details.

DOUBLE PILOT

MODEL SVA
This model incorporates a 4-way Double Bleed Pilot Valve. A Bleeder Valve, such as the Allenair BV100 or BV-1/8 (to be ordered separately) must be connected to each spool cap. Depressing one Bleeder Valve momentarily will move the rod its full stroke. Depressing the other Bleeder Valve momentarily will return the rod to its original position.


* 5" BORE AVAILABLE-Consult Factory for Details.

MANUALLY OPERATED

The following 3 models incorporate a 4-way Manual Valve.


* 5" BORE AVAILABLE-Consult Factory for Details.

MODEL VH:
This model requires manual operation of the lever to both extend and retract the rod.

MODEL VHSRR:
This model is lever operated to extend the normally retracted rod. The valve is equipped with a built-in air return which automatically retracts the rod when lever is released.

MODEL VHSRE:
This model is lever operated to retract the normally extended rod. The valve is equipped with a built-in air return which automatically extends the rod when lever is released.

NOTE:
The Lever Assembly is fully adjustable in both the vertical and horizontal planes.
AUTOMATIC RECIPROCATING

MODEL VCR This model incorporates a 4-way Double Bleed Pilot Valve. By means of Built-in Bleeder Valves and internal Cam Bosses, this unit will automatically reciprocate as soon as air pressure is applied. Because of this, it is recommended that a shut-off valve be mounted in the inlet line. Due to internal construction and application requirements, there can be a loss of approximately 1/4" to 1/2" of stroke. Minimum stroke available is 1/2".

Bore Sizes Available: 1-1/2", 2", 2-1/2", 3" & 4".

STANDARD OPTIONS (CYLINDERS)
(AVAILABLE AT EXTRA COST)

CUSHIONS LAST 1/2 INCH OF STROKE IS EFFECTIVELY CUSHIONED. FULL REVERSE FLOW PROVIDED. CYLINDER LENGTH NOT AFFECTED.

SPECIFY
FC (FRONT CUSHION)
RC (REAR CUSHION)
BC (CUSHION BOTH ENDS)

NOTES:
1) Dim. B cushion screw shown fully closed.
2) Non-Standard Cushion Adjusting Screw locations available at slight additional cost.

AVAILABILITY AND TYPES

<table>
<thead>
<tr>
<th>BORE SIZES</th>
<th>1 1/8&quot;</th>
<th>1 1/8&quot;-OS</th>
<th>1 1/2&quot;</th>
<th>1 1/2&quot;-OS</th>
<th>2&quot;</th>
<th>2&quot;-OS</th>
<th>2 1/2&quot;</th>
<th>2 1/2&quot;-OS</th>
<th>3&quot; thru 4&quot;-OS</th>
</tr>
</thead>
<tbody>
<tr>
<td>FRONT CUSHION (ALL TYPES)</td>
<td>FX</td>
<td>NA</td>
<td>ADJ</td>
<td>FX</td>
<td>ADJ</td>
<td>FX</td>
<td>ADJ</td>
<td>ADJ</td>
<td>ADJ</td>
</tr>
<tr>
<td>REAR CUSHION (ALL TYPES)</td>
<td>FX</td>
<td>FX</td>
<td>ADJ</td>
<td>FX</td>
<td>ADJ</td>
<td>ADJ</td>
<td>ADJ</td>
<td>ADJ</td>
<td>ADJ</td>
</tr>
</tbody>
</table>

ADJ = ADJUSTABLE CUSHION AVAILABLE
FX = FIXED CUSHION ONLY AVAILABLE
NA = NO CUSHION AVAILABLE

NOTES: 1) Fixed Cushions are INTERNALLY constructed.
2) When required Cushions are installed on rear section of Type "EVT" Cylinders.

OVERSIZED RODS
SPECIFY OS

<table>
<thead>
<tr>
<th>BORE SIZES</th>
<th>1-1/8&quot;</th>
<th>1-1/2&quot;</th>
<th>2&quot;</th>
<th>2-1/2&quot;</th>
<th>3&quot;</th>
<th>4&quot;</th>
</tr>
</thead>
<tbody>
<tr>
<td>ROD DIA.</td>
<td>1/2&quot;</td>
<td>5/8&quot;</td>
<td>3/4&quot;</td>
<td>1&quot;</td>
<td>1&quot;</td>
<td>1-1/4&quot;</td>
</tr>
</tbody>
</table>

ROD WIPER
SPECIFY WR Rod Wiper removes dust, dirt and chips from the piston rod on the retracting stroke.

HIGH TEMPERATURE SEALS (CYLINDER & VALVE)
SPECIFY HTP Seals are a fluorcarbon compound (viton) and have an operating temperature range of +10°F to +350°F. They will function at temperatures up to +400°F with reduced life but not recommended. On solenoid operated units the core plunger is also supplied with viton seats.
### NO TANG

**SPECIFY NT**

These cylinders are available without the Tang section (covered by dimension “E”) at no extra charge. Suggested when Nose or Trunnion Mounting.

### DOUBLE ROD PACKINGS

**SPECIFY DRP**

For all Type "AV" cylinders, a second set of rod seals is available for heavy-duty applications. Note: Not available on 1-1/8" bore size.

### STAINLESS STEEL RETAINING RINGS

**SPECIFY Q**

Recommended for extremely damp or corrosive environments.

### STANDARD OPTIONS (VALVES) (AVAILABLE AT EXTRA COST)

**MANUAL OVER-RIDE LEVER**

**SPECIFY OR**

Non-locking manual over-ride levers are available on solenoid operated units. They are particularly useful for set-up or electrical failure.

### SOLENOID OPERATORS

- **AAC** CONDUIT HOUSING, UL & CSA Listed.
- **AAD** DIN-type HOUSING with a male connector configuration of DIN 43650/ISO 4400. See page 75 for female connectors.
- **AAG** GROMMET HOUSING, UL & CSA Listed.
- **AAS** SPLICE BOX HOUSING (STANDARD), UL & CSA Listed.
- **AAX** EXPLOSION PROOF, UL Listed covering Class I Groups C & D (NEMA 7) and Class II Groups E, F & G (NEMA 9).
- **AAY** SPADE TERMINALS, UL & CSA Listed.
- **JIC** NEMA 4/IP-56
- **AAN6** NEMA 6

### SPECIAL VOLTAGES

A wide range of non-standard voltages are available. Specify voltage required.

### PIPED EXHAUST ADAPTERS

**SPECIFY PE** Adapters are available which screw into the solenoid plunger housing, enabling the solenoid exhaust to be piped from the actuator.
MATERIALS
Special seal compounds are available for a wide range of fluid media and environments. Tubes, Front Heads, Pistons and Rods can be supplied plated, hard coated or in other materials.

Please consult the factory for these special requirements, stating quantity required.

MODIFICATIONS
Listed below are some of the many modifications Allenair makes daily.

RODS:

SPECIAL

Non-Standard Rod Extensions......... ("H" Dim.).........Length Required
Non-Standard Rod Threads............... ("CC" Dim.)...... Size Required
Non-Standard Rod Thread Length..... ("J" Dim.).........Length Required
Female Threads on Rod.............................Size & Depth Required
No Threads on Rod......................................No Threads
Complete Special Rod End Configuration........ Print from Customer Required
Non-Standard Wrench Flats..................Location and Size
Special Rod Material.............................Material Required

FRONT HEAD:

Non-Standard Cushion Adj. Screw Location & Extra Ports} Print from Customer required showing full details.

REAR HEAD:

Non-Standard Cushion Adj. Screw Location & Extra Ports} Print from Customer required showing full details.
Non-Standard Swivel Hole in Tang................. ("Z" Dim.).....Size Required
Tang 90° from Standard............................90° Tang

SPECIAL DESIGNS

Many times Allenair is able to change the standard configuration of our Cylinders to meet Customer’s special requirements. A print from the Customer is needed so we can evaluate and properly quote on such specials.

PLEASE CONSULT FACTORY ON THE ABOVE SPECIALS STATING QUANTITIES REQUIRED.

ORDERING PROCEDURE

<table>
<thead>
<tr>
<th>TYPE</th>
<th>BORE SIZE</th>
<th>STROKE</th>
<th>CYLINDER OPTIONS</th>
<th>MODEL</th>
<th>VALVE OPTIONS</th>
<th>VOLTAGE</th>
<th>CUSTOMER SPECIAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>SEE PAGE 32</td>
<td>SPECIFY</td>
<td>SPECIFY</td>
<td>SEE PAGES 37, 38, 39, 49, 50, 51 &amp; 52</td>
<td>SEE PAGES 33, 34, 35, 36 &amp; 37</td>
<td>SEE PAGE 38</td>
<td>WHEN REQ’D</td>
<td></td>
</tr>
</tbody>
</table>

EXAMPLE: EV 3 X 8 BC IB OS RG SDS AAX OR 120/60 CS

List all Cylinder and Valve Options alphabetically

CODE LETTERS

BC.........................Cushions Both Ends
IB.......................AB Accessory Pin Installed in Both Ends
OS.......................Oversized Rod
RG.....................Outboard Rod Guide Installed
AAX..................Explosion Proof Solenoid Operator
OR.....................Manual Over-Ride Leaver
CS..................Special per Customers Specifications
### VALVE-IN-HEAD®
### DIMENSIONS

**DOUBLE ACTING: 1-1/8" - 5" BORES**

**FOR MODELS:**
AP, APSRE, APSRR, SVA, VARE, VARR & VCR

- On 1-1/2" Bore Models VCR, VARE & VERE
- This Bleeder Valve is Located in Line with Inlet Port

---

**AA N.P.T SINGLE AIR INLET**

**FOR VCR, VARE AND VERE ONLY**

**A + STROKE**

**FOR VCR, VARR AND VERR ONLY**

**Piston Fully Retracted**

**"T" N.P.T. COMMON EXH. PORT**

**STANDARD WRENCH FLATS**

---

<table>
<thead>
<tr>
<th>CYL BORE SIZE</th>
<th>A</th>
<th>D</th>
<th>OS (Front Only)</th>
<th>M</th>
<th>O</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- **DOUBLE ACTING**
- **1-1/8" - 5" BORES**

---

<table>
<thead>
<tr>
<th>CYL BORE SIZE</th>
<th>V</th>
<th>Z</th>
<th>AA</th>
<th>STD</th>
<th>OS (Front Only)</th>
<th>CC</th>
<th>ROD DIA.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- **DOUBLE ACTING**
- **1-1/8" - 5" BORES**

---

**STANDARD WRENCH FLATS**

- **ROD DIA.**
- **W**
- **X**
- **Y**

---

*On Oversize Models, H=1-3/8" & J=1-1/4"

**7/8 On Type "CV" only.

***1"-14 Rear and 3/4-16 Front on types "AV & "EV"

1"-14 Rear and 7/8-14 Front on types "CV"

- Add 1/16" to the "C" dimension for "BU" option.

- Omit dimensions E, F, and N when laying out Cylinder with tang section omitted.

- Dimension "A" on "4" Bore No Tang is 8"

---

*Image of a page from a technical document featuring diagrams and specifications for valve-in-head dimensions.*

---

**Dimensions Table**

- **A**
- **D**
- **OS (Front Only)**
- **M**
- **O**

---

**Diagram**

- Double Acting Cylinder Diagram
- Dimensions Marked with Letters (A, B, C, D, E, F, H, J, K, L)
- Reference Plane "A/B/C" for Different Sections

---

**Standard Wrench Flats**

- **ROD DIA.**
- **W**
- **X**
- **Y**

---

**Images**

- Diagram showing double acting cylinder with dimensions
- Close-up of valve-in-head components

---

**Text**

- Double Acting Cylinder Specifications
- Bore Dimensions: 1-1/8" - 5"
- MODELS Supported: AP, APSRE, APSRR, SVA, VARE, VARR & VCR
- Dimensions Table with A, D, OS, M, O Columns
- Standard Wrench Flats Specification

---

**Important Notes**

- **On Oversize Models, H=1-3/8" & J=1-1/4"**
- **7/8 On Type "CV" only.**
- **1"-14 Rear and 3/4-16 Front on types "AV & "EV**
- **1"-14 Rear and 7/8-14 Front on types "CV**
- Add 1/16" to the "C" dimension for "BU" option.
- Omit dimensions E, F, and N when laying out Cylinder with tang section omitted.
- Dimension "A" on "4" Bore No Tang is 8"
To complete drawings of above models, simply match reference planes "A" and "B" with those on the top view of the master drawing on page 40.

For AAS, AAX and JIC housing dimensions see below and for AAG dimensions see Right side.

To complete drawings of above models, simply match reference planes "A" and "B" with those on the top view of the master drawing on page 40.

For AAC, AAG and AAX housing dimensions see above and for JIC dimensions look to the left.

For AAC housing dimensions see left side of page.
**Valve-In-Head® Dimensions**

**For Models: VH, VHSRE & VHSRR**

1. **Reference Plane "B"**
2. **Total Actuating Motion Angle 16°, 23° (4" Bore Only)**
3. **Reference Plane "A"**
4. **Reference Plane "B"**

**Notes:**
1. For model VHSRR the handle assembly is located on the left side.
2. The handle has a 180° adjustment and may be rotated to any position about reference plane "B".
3. For all models when used with 4" & 5" bore cylinders, dimension "A" & "M" are 9/16 less than those illustrated on page 40.

**For Type EVT**

To complete drawings of tandem unit, simply match reference planes "A" and "C" with those on the top view of the master drawing on page 40.

---

**Cyl. Bore**

<table>
<thead>
<tr>
<th>Cyl. Bore Size</th>
<th>H</th>
<th>Std</th>
<th>OS</th>
<th>U</th>
<th>EE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-1/2&quot;</td>
<td>2-1/16</td>
<td>13-13/16</td>
<td>13-13/16</td>
<td>3-5/8</td>
<td>3/4</td>
</tr>
<tr>
<td>2&quot;</td>
<td>2-1/16</td>
<td>13-13/16</td>
<td>13-13/16</td>
<td>3-5/8</td>
<td>3/4</td>
</tr>
<tr>
<td>2-1/2&quot;</td>
<td>1-11/16</td>
<td>14-15/16</td>
<td>14-15/16</td>
<td>3-7/8</td>
<td>1-1/8</td>
</tr>
<tr>
<td>3&quot;</td>
<td>1-11/16</td>
<td>14-15/16</td>
<td>14-15/16</td>
<td>3-7/8</td>
<td>1-1/8</td>
</tr>
<tr>
<td>4&quot;</td>
<td>2-1/4</td>
<td>13-1/2</td>
<td>14-1/4</td>
<td>4-7/8</td>
<td>1-1/8</td>
</tr>
</tbody>
</table>
DOUBLE ACTING: 1-1/8" - 5" BORES

VALVE-IN-HEAD® MOUNTS

<table>
<thead>
<tr>
<th>CYL. BORE SIZES</th>
<th>FOOT MOUNT</th>
<th>FLANGE MOUNT</th>
<th>ROD CLEVIS, NUT &amp; PIN</th>
<th>ROD NUT ONLY</th>
<th>SWIVEL BRACKET &amp; PIN</th>
<th>TRUNNION (BU OPTION)</th>
<th>MOUNTING NUTS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>STD OS</td>
<td>STD OS</td>
<td>STD OS</td>
<td>STD OS</td>
<td>STD OS</td>
<td>STD OS</td>
<td>STD (Front Only)</td>
</tr>
</tbody>
</table>

- Type "CV" Standard Cylinders use OS Mount or Mounting Nut for front.
- *For Front Head Only. Rear takes A-214.

MOUNTING NUTS

Mounting Nuts are supplied only with Flange or Foot Mounts and are included in the price of those Mounts. However, they may be purchased as a separate item.

<table>
<thead>
<tr>
<th>PART No.</th>
<th>A</th>
<th>B</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>A-114</td>
<td>3/4-16</td>
<td>1-1/16</td>
<td>3/8</td>
</tr>
<tr>
<td>A-114-OS</td>
<td>7/8-14</td>
<td>1-1/4</td>
<td>25/64</td>
</tr>
<tr>
<td>A-214</td>
<td>1-1/16</td>
<td>1-1/2</td>
<td>1/2</td>
</tr>
<tr>
<td>A-314</td>
<td>1-3/8-12</td>
<td>1-3/4</td>
<td>5/8</td>
</tr>
<tr>
<td>A-314-OS</td>
<td>1-1/2-12</td>
<td>1-13/16</td>
<td>5/8</td>
</tr>
<tr>
<td>A-414</td>
<td>1-3/4-12</td>
<td>2-1/4</td>
<td>3/4</td>
</tr>
<tr>
<td>A-414-OS</td>
<td>2-1/4-12</td>
<td>3&quot;</td>
<td>1&quot;</td>
</tr>
</tbody>
</table>

FOOT MOUNT

MOUNTING BRACKET DIMENSIONS

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>DIM.</td>
<td>STD OS</td>
<td>STD OS</td>
<td>STD OS</td>
<td>STD OS</td>
<td>STD OS</td>
</tr>
<tr>
<td>A</td>
<td>11/16</td>
<td>11/16</td>
<td>1-1/8</td>
<td>1-1/8</td>
<td>1-1/8</td>
</tr>
<tr>
<td>B</td>
<td>7/8</td>
<td>7/8</td>
<td>7/8</td>
<td>7/8</td>
<td>7/8</td>
</tr>
<tr>
<td>C</td>
<td>1-3/8</td>
<td>1-3/8</td>
<td>1-9/32</td>
<td>1-9/32</td>
<td>1-9/32</td>
</tr>
<tr>
<td>D</td>
<td>3/16</td>
<td>3/16</td>
<td>1/4</td>
<td>1/4</td>
<td>1/4</td>
</tr>
<tr>
<td>F</td>
<td>1-11/16</td>
<td>1-11/16</td>
<td>1-5/8</td>
<td>1-5/8</td>
<td>1-5/8</td>
</tr>
<tr>
<td>G</td>
<td>2-1/2</td>
<td>2-1/2</td>
<td>2-1/2</td>
<td>2-1/2</td>
<td>2-1/2</td>
</tr>
<tr>
<td>S</td>
<td>1-9/32</td>
<td>1-9/32</td>
<td>1-3/4</td>
<td>1-3/4</td>
<td>1-3/4</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>PART NUMBERS</th>
<th>A-129</th>
<th>A-229</th>
<th>A-329</th>
<th>A-429</th>
</tr>
</thead>
<tbody>
<tr>
<td>DIM.</td>
<td>STD OS</td>
<td>STD OS</td>
<td>STD OS</td>
<td>STD OS</td>
</tr>
<tr>
<td>A</td>
<td>9/32</td>
<td>9/32</td>
<td>11/32</td>
<td>11/32</td>
</tr>
<tr>
<td>B</td>
<td>9/32</td>
<td>9/32</td>
<td>9/32</td>
<td>9/32</td>
</tr>
<tr>
<td>C</td>
<td>2-1/2</td>
<td>2-1/2</td>
<td>2-1/2</td>
<td>2-1/2</td>
</tr>
<tr>
<td>D</td>
<td>5/8</td>
<td>5/8</td>
<td>7/8</td>
<td>7/8</td>
</tr>
<tr>
<td>E</td>
<td>2-1/2</td>
<td>2-1/2</td>
<td>3-1/4</td>
<td>3-1/4</td>
</tr>
<tr>
<td>O</td>
<td>34</td>
<td>34</td>
<td>1-1/8</td>
<td>1-1/8</td>
</tr>
</tbody>
</table>

Front Flange Mounting NT Option suggested
Rear Flange Mounting J2 Option suggested provides Tang flush with flange mounting surface.
**VALVE-IN-HEAD® MOUNTS**

**ROD CLEVIS, NUT & PIN**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>STD</td>
<td>OS</td>
<td>STD</td>
<td>OS</td>
<td>STD</td>
</tr>
<tr>
<td>1-3/4</td>
<td>2-1/4</td>
<td>2-1/4</td>
<td>2-1/4</td>
<td>2-1/4</td>
<td>2-3/8</td>
</tr>
<tr>
<td>CC</td>
<td>3/8-16</td>
<td>1/2-13</td>
<td>1/2-13</td>
<td>5/8-11</td>
<td>5/8-11</td>
</tr>
<tr>
<td>D</td>
<td>5/16</td>
<td>3/8</td>
<td>3/8</td>
<td>3/8</td>
<td>1/2</td>
</tr>
<tr>
<td>E</td>
<td>3/4</td>
<td>13/16</td>
<td>13/16</td>
<td>13/16</td>
<td>13/16</td>
</tr>
<tr>
<td>F</td>
<td>1/4</td>
<td>5/16</td>
<td>5/16</td>
<td>5/16</td>
<td>7/16</td>
</tr>
<tr>
<td>G</td>
<td>3/4</td>
<td>1&quot;</td>
<td>1&quot;</td>
<td>1&quot;</td>
<td>1&quot;</td>
</tr>
<tr>
<td>H</td>
<td>7/32</td>
<td>5/16</td>
<td>5/16</td>
<td>3/8</td>
<td>27/64</td>
</tr>
</tbody>
</table>

*Order A-445

**SWIVEL BRACKET**

<table>
<thead>
<tr>
<th>DIM.</th>
<th>A-139</th>
<th>A-239</th>
<th>A-339</th>
<th>A-439</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>1-3/4</td>
<td>2-1/4</td>
<td>3&quot;</td>
<td>3-3/4</td>
</tr>
<tr>
<td>B</td>
<td>2-1/4</td>
<td>3&quot;</td>
<td>4&quot;</td>
<td>5&quot;</td>
</tr>
<tr>
<td>C</td>
<td>1/4</td>
<td>5/16</td>
<td>5/16</td>
<td>1/2</td>
</tr>
<tr>
<td>D</td>
<td>9/32</td>
<td>9/32</td>
<td>13/32</td>
<td>15/32</td>
</tr>
<tr>
<td>G</td>
<td>3/8</td>
<td>1/2</td>
<td>5/8</td>
<td>3/4</td>
</tr>
<tr>
<td>S</td>
<td>1-9/32</td>
<td>1-3/4</td>
<td>2-3/8</td>
<td>3-3/16</td>
</tr>
<tr>
<td>Z</td>
<td>1/4</td>
<td>5/16</td>
<td>7/16</td>
<td>1/2</td>
</tr>
</tbody>
</table>

**TRUNNION MOUNT**

BU OPTION REQUIRED
NT OPTION SUGGESTED

<table>
<thead>
<tr>
<th>DIM.</th>
<th>T-1</th>
<th>T-1.5</th>
<th>T-2</th>
<th>T-2.5</th>
<th>T-3</th>
<th>T-4</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>3-1/2</td>
<td>4&quot;</td>
<td>4&quot;</td>
<td>5-1/2</td>
<td>5-3/4</td>
<td>7&quot;</td>
</tr>
<tr>
<td>B</td>
<td>2-1/4</td>
<td>3&quot;</td>
<td>3&quot;</td>
<td>4&quot;</td>
<td>4-1/4</td>
<td>5-1/2</td>
</tr>
<tr>
<td>C</td>
<td>1-3/8</td>
<td>1-3/4</td>
<td>2-1/4</td>
<td>2-3/4</td>
<td>3-1/4</td>
<td>4-3/8</td>
</tr>
<tr>
<td>D</td>
<td>3/8</td>
<td>1/2</td>
<td>1/2</td>
<td>3/4</td>
<td>3/4</td>
<td>3/4</td>
</tr>
<tr>
<td>E</td>
<td>3/4</td>
<td>1-1/4</td>
<td>1-1/4</td>
<td>1-1/2</td>
<td>1-1/2</td>
<td>1-1/2</td>
</tr>
<tr>
<td>F</td>
<td>7/8</td>
<td>1-1/8</td>
<td>1-3/8</td>
<td>1-7/8</td>
<td>2-1/8</td>
<td>2-11/16</td>
</tr>
<tr>
<td>G</td>
<td>2&quot;</td>
<td>2-5/8</td>
<td>3-3/16</td>
<td>4&quot;</td>
<td>4-1/2</td>
<td>5-3/4</td>
</tr>
</tbody>
</table>

**BLOCK MOUNT**

BU OPTION REQUIRED
NT OPTION SUGGESTED

<table>
<thead>
<tr>
<th>DIM.</th>
<th>BM-7/8</th>
<th>BM-1 1/8</th>
<th>BM-1 1/2</th>
<th>BM-2</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>1-1/2</td>
<td>1-3/4</td>
<td>2-1/4</td>
<td>3&quot;</td>
</tr>
<tr>
<td>B</td>
<td>1&quot;</td>
<td>1&quot;</td>
<td>1-1/4</td>
<td>1-1/4</td>
</tr>
<tr>
<td>C</td>
<td>1-1/8</td>
<td>1-3/8</td>
<td>1-3/4</td>
<td>2-1/4</td>
</tr>
<tr>
<td>D</td>
<td>9/32</td>
<td>9/32</td>
<td>9/32</td>
<td>11/32</td>
</tr>
<tr>
<td>E</td>
<td>1-5/8</td>
<td>1-7/8</td>
<td>2-3/8</td>
<td>3&quot;</td>
</tr>
<tr>
<td>F</td>
<td>2-1/4</td>
<td>2-1/2</td>
<td>3&quot;</td>
<td>3-3/4</td>
</tr>
<tr>
<td>S</td>
<td>3/4</td>
<td>7/8</td>
<td>1-1/8</td>
<td>1-3/8</td>
</tr>
</tbody>
</table>
Cylinders are available with 1-1/8" bore only. They are Single Acting Cylinders controlled by a 3-way Single Solenoid Valve mounted to the rear head of the units. The standard solenoid operator (as shown) is the AAS splice box housing. A general purpose conduit housing (AAC) is also available. Most common AC & DC voltages are available. 12, 24, 120 & 240/60 and 6, 12 & 24/DC are standard. The basic construction is the same as our 1-1/8" bore Type "A" Cylinders.

**TYPE AVSA**

A continuous electrical contact is required to fully extend the rod, which will remain extended until the electrical contact is broken. An external force is required to return the rod to its original position. A 1/8” N.P.T. port is provided in the front head to permit the return of the rod by means of a separate air supply when required. This port can also be used to install a Flow Control Valve to control forward speed.

Standard stroke lengths are whole inch increments from 1” through 20” and 1/2", 1-1/2", 2-1/2" and 3-1/2”. Special strokes available from 1/8” to 80” maximum.

**TYPE AVSR**

ROD NORMALLY RETRACTED

A continuous electrical contact is required to fully extend the rod, which will remain extended until the electrical contact is broken. An internal spring will return the rod to its fully retracted position.

**SPRING FORCE:** 17 LBS. AT REST, 40 LBS. FULL STROKE.

Standard stroke lengths are whole inch increments from 1” through 10” and 1/2", 1-1/2", 2-1/2" & 3-1/2” Special strokes available from 1/4” to 10” maximum.

**TYPE AVSRR**

ROD NORMALLY EXTENDED

A continuous electrical contact is required to fully retract the rod, which will remain retracted until the electrical contact is broken. An internal spring will return the rod to its fully extended position.

**SPRING FORCE:** 17 LBS. AT REST, 40 LBS. FULL STROKE.

Standard stroke lengths are whole inch increments from 1” through 10” and 1/2", 1-1/2", 2-1/2” and 3-1/2”. Special strokes available from 1/4” to 10” maximum.

**NOTE:** On above types the normal actuation may be reversed by using the optional PE adaptor as the air inlet.

**OPTIONS**

For available options, please see Pages 37, 38, and 39. Cushions not available on these cylinders.

**ORDERING PROCEDURE**

<table>
<thead>
<tr>
<th>TYPE</th>
<th>BORE</th>
<th>STROKE</th>
<th>CYLINDER OPTIONS</th>
<th>VALVE OPTIONS</th>
<th>VOLTAGE</th>
<th>CUSTOMER SPECIAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>SEE ABOVE</td>
<td>1-1/8&quot; ONLY</td>
<td>SPECIFY</td>
<td>SEE PAGES 37, 38</td>
<td>SEE PAGE 38</td>
<td>SPECIFY</td>
<td>WHEN REQ'D</td>
</tr>
</tbody>
</table>

**EXAMPLE:** AVSR 1-1/8 X 4 OS RG AAS OR 120/60 CS

**CODE LETTERS**

<table>
<thead>
<tr>
<th>CODE</th>
<th>DESIGNATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>OS...</td>
<td>Oversized Rod</td>
</tr>
<tr>
<td>RG...</td>
<td>Outboard Rod Guide Installed</td>
</tr>
<tr>
<td>AAS..</td>
<td>Standard Splice Box Housing</td>
</tr>
<tr>
<td>OR...</td>
<td>Manual Over-Ride Leaver</td>
</tr>
</tbody>
</table>

**NOTE:** List all Cylinder and Valve Options alphabetically.

45
SINGLE-ACTING® VALVE-IN-HEAD
DIMENSIONS

NOTE: MOUNTING NUT IS SUPPLIED

<table>
<thead>
<tr>
<th></th>
<th>H</th>
<th>J</th>
<th>W</th>
<th>X</th>
<th>Y</th>
<th>BB</th>
<th>CC</th>
</tr>
</thead>
<tbody>
<tr>
<td>STANDARD</td>
<td>1</td>
<td>7/8</td>
<td>5/16</td>
<td>15/16</td>
<td>5/16</td>
<td>3/4-16</td>
<td>3/8-16</td>
</tr>
<tr>
<td>OVERSIZE</td>
<td>1-3/8</td>
<td>1-1/4</td>
<td>7/16</td>
<td>1-3/8</td>
<td>5/16</td>
<td>7/8-14</td>
<td>1/2-13</td>
</tr>
</tbody>
</table>

MOUNTING BRACKET PART NUMBERS

<table>
<thead>
<tr>
<th></th>
<th>FOOT MOUNT</th>
<th>FLANGE MOUNT</th>
<th>ROD CLEVIS NUT &amp; PIN</th>
<th>ROD NUT</th>
<th>TRU NNION MOUNT</th>
<th>BLOCK MOUNT</th>
<th>MOUNTING NUT</th>
</tr>
</thead>
</table>

* BU OPTION REQUIRED

FOR MOUNTING BRACKET DIMENSION SEE PAGES 20 & 21
Most common AC & DC Voltages are available. 12, 24, 120 & 240/60 and 6, 12 & 24VDC are standard. Maximum operating pressure - 150 P.S.I.

A continuous electrical contact is required to fully extend the rod, which will remain extended until the electrical contact is broken, at which time the spring will return the rod to its fully retracted position. This action can be reversed by using the optional PE adapter as the air inlet.

**TYPE AVSM - 1/2"**

Standard stroke lengths in 1/2" increments to 4".

**Spring Force:**

- 20 oz. retracted.
- 40 oz. extended.

**OPTIONS**

**SPECIFY HTP FOR HIGH TEMPERATURE CYLINDER SEALS**

These seals are a fluorocarbon compound (viton) and have an operating temperature range of 10°F to 350°F. They will function at temperatures up to 400°F with reduced life.

**SPECIFY OR FOR MANUAL OVER-RIDE LEVER**

Non-locking manual over-ride lever is available. It is particularly useful for set-up or when an electrical failure occurs.

**SPECIFY IL AFTER VOLTAGE FOR INDICATOR LIGHT**

Light indicates when solenoid is energized.

**ACCESSORIES**

**SPECIFY AE FOR ADJUSTABLE EXHAUST**

The exhaust screw threads into the solenoid plunger housing, enabling speed adjustment of retracting stroke. (Cannot be used with piped exhaust or silencer.)

**SPECIFY PE FOR PIPED EXHAUST**

Adapters are available which screw into the solenoid plunger housing, enabling the exhaust to be piped from the unit. (Cannot be used with adjustable exhaust or silencer.)

**SPECIFY EA-27 FOR SINTERED SILENCER**

Silencers are available which screw into the solenoid plunger housing reducing exhaust noise to an acceptable level. (Cannot be used with adjustable exhaust or piped exhaust.)

**TYPE AVSM - 3/4"**

Standard stroke lengths in 1" increments to 4".

**Spring Force:**

- 2 lbs. retracted.
- 7 lbs. extended.

**TYPES AVSM- 1-1/8" AVSMS- 1-1/8"**

Standard stroke lengths in 1" increments to 4".

**Spring Force:**

<table>
<thead>
<tr>
<th>AVSM</th>
<th>AVSMS</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>6 - 1/2 lbs. retracted</td>
</tr>
<tr>
<td>6</td>
<td>13 lbs. extended</td>
</tr>
</tbody>
</table>

**SPECIFY HTP FOR HIGH TEMPERATURE CYLINDER SEALS**

These seals are a fluorocarbon compound (viton) and have an operating temperature range of 10°F to 350°F. They will function at temperatures up to 400°F with reduced life.

**SPECIFY OR FOR MANUAL OVER-RIDE LEVER**

Non-locking manual over-ride lever is available. It is particularly useful for set-up or when an electrical failure occurs.

**SPECIFY IL AFTER VOLTAGE FOR INDICATOR LIGHT**

Light indicates when solenoid is energized.
SMALL BORE SINGLE-ACTING VALVE-IN-HEAD CYLINDERS

ORDERING PROCEDURE

<table>
<thead>
<tr>
<th>TYPE</th>
<th>BORE</th>
<th>STROKE</th>
<th>OPTIONS (list alphabetically)</th>
<th>VOLTAGE</th>
</tr>
</thead>
</table>

EXAMPLE: AVSM 3/4 X 4 - AE - OR - 24/VDC

ORDER MOUNTS SEPARATELY - SHOWN BELOW

DIMENSIONS

<table>
<thead>
<tr>
<th>CYL. BORE SIZES</th>
<th>A STROKE</th>
<th>C</th>
<th>BB</th>
<th>CC</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/2&quot;</td>
<td>2-3/16</td>
<td>3-1/4</td>
<td>4-5/16</td>
<td>5-3/8</td>
</tr>
<tr>
<td>3/4&quot;</td>
<td>-</td>
<td>2-3/4</td>
<td>-</td>
<td>4-7/16</td>
</tr>
<tr>
<td>1-1/8&quot;</td>
<td>-</td>
<td>2-15/16</td>
<td>-</td>
<td>4-3/4</td>
</tr>
</tbody>
</table>

MOUNTING BRACKETS

<table>
<thead>
<tr>
<th>CYLINDER BORE SIZES</th>
<th>FOOT MOUNTS</th>
<th>FLANGE MOUNT</th>
<th>ROD CLEVIS, NUT &amp; PIN</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/2&quot;</td>
<td>AVSM-532</td>
<td>AVSM-529</td>
<td>AVSM-545</td>
</tr>
<tr>
<td>3/4&quot;</td>
<td>AVSM-532-R</td>
<td>AVSM-732</td>
<td>AVSM-545</td>
</tr>
<tr>
<td>1-1/8&quot;</td>
<td>AVSM-132</td>
<td>AVSM-132-R</td>
<td>AVSM-145</td>
</tr>
</tbody>
</table>

NOTES: FRONT NOSE MOUNTING NUT PROVIDED WITH HEAD CYLINDER

FOOT MOUNT

FLANGE MOUNT

ROD CLEVIS, NUT & PIN

FOOT MOUNT FLANGE MOUNT ROD CLEVIS, NUT & PIN

PART NUMBERS

<table>
<thead>
<tr>
<th>PART NOS.</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>O</th>
<th>S</th>
</tr>
</thead>
<tbody>
<tr>
<td>AVSM-532</td>
<td>5/8</td>
<td>9/16</td>
<td>1&quot;</td>
<td>1/8</td>
<td>17/64</td>
<td>1-1/2</td>
<td>1-7/8</td>
<td>3/4</td>
<td>15/16</td>
</tr>
<tr>
<td>AVSM-532-R</td>
<td>25/32</td>
<td>9/16</td>
<td>1&quot;</td>
<td>3/32</td>
<td>17/64</td>
<td>1-1/2</td>
<td>1-7/8</td>
<td>1-19/64</td>
<td>15/16</td>
</tr>
<tr>
<td>AVSM-532</td>
<td>7/16</td>
<td>7/16</td>
<td>3/4</td>
<td>1/8</td>
<td>13/64</td>
<td>1-1/4</td>
<td>1-5/8</td>
<td>12</td>
<td>3/4</td>
</tr>
<tr>
<td>AVSM-532-R</td>
<td>19/32</td>
<td>7/16</td>
<td>3/4</td>
<td>3/32</td>
<td>13/64</td>
<td>1-1/4</td>
<td>1-5/8</td>
<td>43/64</td>
<td>3/4</td>
</tr>
<tr>
<td>AVSM-732-R</td>
<td>19/32</td>
<td>7/16</td>
<td>3/4</td>
<td>3/32</td>
<td>13/64</td>
<td>1-1/4</td>
<td>1-5/8</td>
<td>56/64</td>
<td>3/4</td>
</tr>
</tbody>
</table>

PART NUMBERS

<table>
<thead>
<tr>
<th>PART NOS.</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>O</th>
<th>H</th>
</tr>
</thead>
<tbody>
<tr>
<td>AVSM-529</td>
<td>1/8</td>
<td>13/64</td>
<td>2-1/4</td>
<td>33/64</td>
<td>2-5/8</td>
<td>1&quot;</td>
<td>1/2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>AVSM-129</td>
<td>1/8</td>
<td>17/64</td>
<td>3&quot;</td>
<td>33/64</td>
<td>3-3/8</td>
<td>1-3/8</td>
<td>3/4</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

PART NUMBERS

<table>
<thead>
<tr>
<th>PART NOS.</th>
<th>A</th>
<th>B</th>
<th>CC</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>H</th>
</tr>
</thead>
<tbody>
<tr>
<td>AVSM-545</td>
<td>1-1/8</td>
<td>7/8</td>
<td>1/4-28</td>
<td>1/4</td>
<td>5/8</td>
<td>1/4</td>
<td>1/2</td>
<td>3/32</td>
</tr>
<tr>
<td>AVSM-145</td>
<td>1-1/8</td>
<td>7/8</td>
<td>5/16-24</td>
<td>1/4</td>
<td>5/8</td>
<td>1/4</td>
<td>1/2</td>
<td>3/16</td>
</tr>
</tbody>
</table>

NOTE: * Foot Mounts will be sold only in pairs. (Front & Rear). Rear Foot Mount slips over tube, ('C' Dia.).