Creative solutions for every application

• Outdoor Power Equipment of All Kinds
• ZTRs
• Recreational Equipment
• Rotary Mowers
• Tillers
• Snow Blowers
• Commercial Garden Equipment
• Consumer Garden Equipment
• Garden Tractors
• ATVs
• Motorized Wheel Barrows

Rugged, dependable, flexible in design, environmentally friendly, unlimited mounting options, custom designed and built for a perfect fit in every application.

Applications:
Throttle Controls
Ground Drive Engagement
Speed Controls
Choke Controls
MZR - Blade Engagement Controls
Blade Brake Clutch Controls (BBC)
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### Metal Lever and Bracket with Rivet Construction
- Panel mount control at horizontal flange with screw type fasteners or handlebar mount
- Negative or Positive Action type
- Material finish, knob color and shape, cover plate instructions
- Travel and detent locations to fit the applications
- Environmental considerations, such as wipers and seals

#### Metal Controls with Plastic Cases
- Some metal controls can be housed in plastic cases to enhance aesthetics
- Plastic cases can be mounted more readily in panels and still have handlebar mounting options
- Control instructions can be placed on the cases

#### All Plastic Controls
- Controls with plastic lever and cases are usually more cost effective especially when the design snaps together
- Most designs can be interchanged between negative and positive action
- More susceptible to damage than metal controls and limited to relatively low innerwire loads

### Dimensioning and Tolerances

<table>
<thead>
<tr>
<th>Control Length &quot;L&quot;</th>
<th>Tolerance</th>
</tr>
</thead>
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<td>±.50</td>
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A **Positive Action Lever Control** moves the lever and innerwire in the same direction because the innerwire is attached to the lever above the pivot point.

A **Negative Action Lever Control** moves the lever and innerwire in opposite directions because the innerwire is attached to the lever below the pivot point.
General Design Information

Solid Innerwire Selection Factors/Design Practices

Efficient, economical transmission of linear motion is provided by push-pull conduit and innerwire assemblies. They transmit motion between two fixed points or between points which are changing their relative position. These controls can be routed up, down, over obstacles, even around corners, without intermediate links or pulleys.

Typical applications range from throttle and choke controls for outdoor power equipment to automotive vent and hood controls.

Unlike tension cables, these controls can transmit motion in both the “push” and “pull” directions. However to fully utilize this capability, these controls must be properly integrated into the complete design of the product.

The following describes the various types of Controls, discusses their advantages and limitations and the design practices necessary to obtain efficient motion transfer.

Input or Output Form

Basically, all push-pull controls, transmit motion by linear displacement of a solid innerwire relative to fixed, flexible conduit (Figure 1).

Construction

Minimum bend radii necessary to prevent the innerwire from taking a permanent set are proportional to innerwire diameter. Therefore, the load capacity advantage of the larger innerwire is counter balanced. In many installations, by the difficulties of providing adequate bend radii.

Load Capacities

Force transmitting capacity is proportional to the diameter of the innerwire, the size of the conduit and the innerwire extension. Maximum recommended push loads are usually about 50 percent of the maximum recommended pull loads.

Service Life

Even through the innerwire is continuously flexed during operation, the loads in a properly selected innerwire are low enough that the fatigue failure is not normally a problem.

Bend Radii

Bends in the conduit must be of sufficient radii to permit the innerwire to flow smoothly without acquiring a permanent set. Minimum recommended radii may vary from 5 to 9 inches, depending upon innerwire diameter and construction.

Bends with radii smaller than the recommended minimum values will produce excessive friction and reduce service life. As a rule of thumb, figure minimum bend radius by multiplying innerwire diameter by 100.

Example: For .062 diameter innerwire, multiply .062 by 100 to obtain a 6 inch bend radius.

Normally, load capacity decreases as the travel range increases.

The innerwire provides angular motion by simple deflection of the exposed portion of the innerwire. This deflection should normally be limited to 5 degrees either side of the normal straight position.
Lost Motion

The difference between input and output movement, Figure 1, is often the most troublesome factor in control applications. However, if minimum lost motion is an essential performance requirement, it can be provided by proper application techniques.

Lost motion can result both from innerwire deflection and backlash. The clearance necessary between innerwire and conduit permits lost motion.

1. **Deflection** - Deflection loss results from “snaking” of the innerwire under compression loads. Snaking depends primarily upon the amount and uniformity of clearance between the innerwire and the conduit. A minimum uniform clearance permits the minimum snaking of column-action buckling of the innerwire when it is under compression loads.

2. **Backlash** (or lost motion) - is caused by clearance between the core diameter and the inside diameter of the conduit. It is present in both the push and pull modes of operation. Backlash is directly proportional to the total degrees of bend in the installed routing and the clearance between the O.D. of the core and the I.D. of the conduit.

**Friction**

Even if an innerwire appears to be perfectly straight, there will be a nominal friction loss. Control specifications usually include the necessary data to determine friction loss as a function of the total curvature of the conduit.

![Diagram of installed position, compression load, tension load, backlash, R1, R2](image)

**Figure 1**

R1 = Centerline of core in tension (Working Load)
R2 = Centerline of core in compression (Working Load)

Design Procedure

1. Determine
   a. Maximum load in each direction required at output end.
   b. Permissible lost motion.
   c. Travel required.
   d. Range of operating temperatures.
   e. Other unfavorable conditions such as dust, dirt, moisture, chemical corrosion, etc.
2. Use as few bends as possible and keep bend-radii as large as possible.
3. Provide positive location points for each end of the conduit. Total length of the conduit assembly can now be estimated.
4. Determine the proposed installation, duplicating and relative location of the input and output ends, the load required at the output end, as well as the proposed routing and clamping arrangement.
5. Exact innerwire length can be determined now. It should be just enough to provide adequate length when all the manufacturing tolerances of the machine components are combined to produce the maximum overall length. Excess innerwire length necessitates extra bends, which add to the lost motion and friction load.

Operating Environment

To obtain satisfactory service life, the operating environment must be considered. For example, dust, moisture, heat, chemical corrosion and mechanical damage can lead to premature control failure.

Dust and moisture damage can be controlled by using a lined and or covered conduit. For excessively dusty conditions, a wiper seal may be required.

Chemical corrosion and heat damage are usually controlled by the choice of materials.

Plastic covered conduit is often used to provide the maximum corrosion protection.

Mechanical damage may occur during regular use of the equipment or during overhaul or repair. The conduit should be routed so that it is protected by the basic machine structure, or if this is not practical, additional mechanical protection should be provided in areas of likely damage.
**Negative Action Controls**

### 12-1331 (R.S.T. or L.S.T. Mount)

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<td>I 1.58 .58</td>
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<td></td>
</tr>
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</table>

### 12-1341 (L.S.T. Mount)

**Non-Detented**

- Specify ±.06 Fully Extended
- Specify XX.00±.25
- Specify PVC or 3/16 Bowden Conduit
- Use 1/4-20 Fastener
- 7/8 Dia Tube

### 12-1343 (R.S.T. Mount)

**Non-Detented**

- Specify ±.06 Fully Extended
- Specify XX.00±.25
- Specify PVC or 3/16 Bowden Conduit
- Use 1/4-20 Fastener
- 7/8 Dia Tube

### NOTES:

1. Specify control length in whole inch increments for PVC conduit.
2. Material options available (galvanized or stainless steel).
3. With conduit fitting, specify control length in whole inch increments +.20 as shown (i.e. 24.20) for PVC conduit.
Negative Action Controls

12-1258 (L.S.T.) Shown/12-1259 (R.S.T.) Opposite

Materials: Lever 13 Ga. (.090)
Bracket 14 Ga. (.075)
Finish: Plated for Corrosion Protection
* Material Options Available (Galv. or S.S.)

Finish:
- Black Polyurethane for Corrosion Protection

12-3100 (R.S.T.) Shown/12-3200 (L.S.T.) Opposite

Finish: Black Polyurethane for Corrosion Protection
* Material Options Available (Galv. or S.S.)

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</table>
### Negative Action Controls

**12-3020 (LST or RSS) Shown, 12-3040 (RST or LSS) Opposite (3/4" Dia Handlebar or Panel Mount)**

**12-3060 (LST or RSS) Shown, 12-3080 (RST or LSS) Opposite (7/8" Dia Handlebar or Panel Mount)**

**Materials:** Lever 13 Ga. (.090)  
Bracket 14 Ga. (.075)

**Finish:** Plated for Corrosion Protection  
* Material Options Available (Galv. or S.S.)

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Config. Type</th>
<th>&quot;T&quot;</th>
<th>&quot;A&quot;</th>
<th>&quot;B&quot;</th>
<th>&quot;C&quot;</th>
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</table>

**12-0620 (LST or RSS) Shown, 12-0640 (RST or LSS) Opposite (3/4" Dia Handlebar or Panel Mount)**

**12-0660 (LST or RSS) Shown, 12-0680 (RST or LSS) Opposite (7/8" Dia Handlebar or Panel Mount)**

**Materials:** Lever 3/8 Dia.  
Bracket 14 Ga. (.075)

**Finish:** Plated for Corrosion Protection  
* Material Options Available (Galv. or S.S.)

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Type</th>
<th>&quot;T&quot;</th>
<th>&quot;A&quot;</th>
<th>&quot;B&quot;</th>
<th>&quot;C&quot;</th>
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<td>12-0680</td>
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</table>
### 25-0560* Brand Options for 12-3020, 12-3040, 12-3060, 12-3080, 12-0620, 12-0640, 12-0660, 12-0680 Controls

* Insert Dash No.
** Branded Border

---

### 12-7609 (L.S.S.) Panel Mount Control

**Shown with 8° Detent Location**

**Materials:**
- Lever 13 Ga. (.090)
- Bracket 14 Ga. (.074)

**Finish:** Plated for Corrosion Protection

**Standard Mounting Holes**

**Material Options Available (Galv. or S.S.)**

**All extension measurements made with lever in detent position.**

**Varies depending on lever rotation. Dims based on 2 1/2" slot length.**

---

### 12-7608 (R.S.S.) Panel Mount Control

**Shown with 26° Detent Location**

---

**NOTE:** Overall control travel is a function of panel slot length not to exceed 3.00 long.

---

**Panel Cutout Detail**

**Knob Options** (See Page 17)

**Specify *** ±.06**

---

**Conduit Ftg. (Opt.) **

- 3/16 Dia Conduit **
- .062 Dia Innerwire **

**Specify *** ±.06**

---

**Conduit Ftg. (Opt.) **

- 3/16 Dia Conduit **
- .062 Dia Innerwire **

---

**Wiper (Opt.)**

- (.06 Strip)
- Specify "L"
12-0720 (L.S.S.) Panel Mount Control

Materials: 3/8 Dia Lever
Bracket 13 Ga. (.090)
Finish: Plated for Corrosion Protection

* Material Options Available (Galv. or S.S.)
** Lever may be bent at 45 degrees (Specify)
Total Travel 1.62"
12-3300 (R.S.T.) Shown/12-3400 (L.S.T.) Opposite

Single Bolt Mount

Materials: Lever 13 Ga. (.090)  
Bracket 14 Ga. (.075)

Finish: Plated for Corrosion Protection  
* Material Options Available (Galv. or S.S.)

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<tr>
<th>Part No.</th>
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</table>

12-1200 Panel Mount Controls (Available L.S.T. Only)

Materials: Lever 16 Ga. (.060)  
Bracket 14 Ga. (.075)

Finish: Plated for Corrosion Protection  
Travel: 1.75 In  
* Material Options Available (Galv. or S.S.)

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<th>Config.</th>
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<td>24-4677</td>
<td>Z-Bend Rivet</td>
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<td>24-4701</td>
<td>Swivel Rivet</td>
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</table>

12-1210 (L.S.T.) Shown/12-1211 (R.S.T.) Opposite

Materials: Lever 13 Ga. (.090)  
Bracket 14 Ga. (.075)

Finish: Plated for Corrosion Protection  
Travel: 1.75 In  
* Material Options Available (Galv. or S.S.)

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Config.</th>
<th>Innerwire Attach</th>
<th>Construction Type</th>
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<td>Swivel Screw</td>
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<td>24-5300</td>
<td>Z-Bend Rivet</td>
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12-1230 (L.S.T.) Shown/12-1231 (R.S.T.) Opposite

Materials: Lever 13 Ga. (.090)  
Bracket 14 Ga. (.075)

Finish: Plated for Corrosion Protection  
Travel: 1.75 In  
* Material Options Available (Galv. or S.S.)

<table>
<thead>
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<th>Part No.</th>
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Positive Action Controls

12-1332 (L.S.T. or R.S.T. Mount)

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</tbody>
</table>

NOTES:

- Specify control length in whole inch increments for PVC conduit.
- Material options available. (Galv. or S.S.)
- With conduit fitting, specify control length in whole inch increments +.20 as shown (i.e. 24.20) for PVC conduit.
- Specify PVC or 3/16 Bowden Conduit
- 23-3184-15 Optional
- 2.10 THROTTLE START THROTTLE STOP
- 17-0120-01 17-0120-04 17-0120-10
- STANDARD BRANDS
- Additional Artwork on Page 17

12-1342 (L.S.T. Mount)

- Specify ±.06 Fully Extended
- 0.62 Dia Innerwire
- Specify PVC or 3/16 Bowden Conduit
- 23-3184-15 Optional
- Use 1/4-20 Fastener
- 7/8 Dia Tube
- Molded in Graphics Provided
- Additional Artwork on Page 17

12-1344 (R.S.T. Mount)

- Specify ±.06 Fully Extended
- 0.62 Dia Innerwire
- Specify PVC or 3/16 Bowden Conduit
- 23-3184-15 Optional
- Use 1/4-20 Fastener
### Positive Action Controls

**12-1242 Panel Mount Control**

**Materials:** Lever 13 Ga. (.090)
Bracket 16 Ga. (.060)

**Finish:** Plated for Corrosion Protection

**Case:** Black Plastic

*Material Options Available (Galv. or S.S.)*

---

#### Config. Type T A B C
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<td>.75</td>
<td>.47</td>
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<tr>
<td>24-5011</td>
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<td>1.75</td>
<td>.50</td>
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<tr>
<td>24-5089</td>
<td>I</td>
<td>1.00</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

---

#### 25-1241* Brand Options for 12-1242 Controls

* Insert Dash No.
12-1248 Panel or Handle Mount

Materials: Lever 13 Ga. (.090)
Bracket 16 Ga. (.060)
Finish: Plated for Corrosion Protection
Case: Black Plastic
* Material Options Available (Galv. or S.S.)

<table>
<thead>
<tr>
<th>Config.</th>
<th>Type</th>
<th>&quot;T&quot;</th>
<th>&quot;A&quot;</th>
<th>&quot;B&quot;</th>
<th>&quot;C&quot;</th>
<th>Detent Position</th>
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<tbody>
<tr>
<td>24-1252</td>
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<td>1.16</td>
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<tr>
<td>24-1254</td>
<td>I</td>
<td>1.16</td>
<td>-</td>
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<td>None</td>
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<tr>
<td>24-1255</td>
<td>I</td>
<td>1.33</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>None</td>
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<tr>
<td>24-1249</td>
<td>II</td>
<td>1.15</td>
<td>.32</td>
<td>.83</td>
<td>-</td>
<td>2 &amp; 3</td>
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<tr>
<td>24-1248</td>
<td>III</td>
<td>1.50</td>
<td>.81</td>
<td>.38</td>
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<td>3</td>
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<tr>
<td>24-4964</td>
<td>II</td>
<td>1.28</td>
<td>.97</td>
<td>-</td>
<td>-</td>
<td>2</td>
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</tbody>
</table>

Panel Cut-Out Shown Below

Knob Options (See Page 17)

Panel Cut-Out Detail

25-1248 -* Brand Options for 12-1248 Controls
* Insert Dash No.
**Positive Action Controls**

12-1250-* Single Bolt Tube Mount (L.S.T. or R.S.T.)
Metal Lever Against Plastic Case Detents
Tube Size: 3/4" or 7/8"

**Materials:** Lever 13 Ga. (.093)
**Finish:** Plated for Corrosion Protection
* Insert Dash No.
** Material Options Available (Galv. or S.S.)

<table>
<thead>
<tr>
<th>Dash No.</th>
<th>Type</th>
<th>&quot;T&quot;</th>
<th>(&quot;A&quot;)</th>
<th>&quot;B&quot;</th>
<th>&quot;C&quot;</th>
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<tbody>
<tr>
<td>-18***</td>
<td>II</td>
<td>.88</td>
<td>.31</td>
<td>.37</td>
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<tr>
<td>-19</td>
<td>II</td>
<td>1.31</td>
<td>.31</td>
<td>1.00</td>
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<tr>
<td>-23</td>
<td>I</td>
<td>1.18</td>
<td>-</td>
<td>-</td>
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</tr>
<tr>
<td>-24***</td>
<td>II</td>
<td>1.18</td>
<td>.81</td>
<td>.37</td>
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<tr>
<td>-78</td>
<td>I</td>
<td>1.37</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
</tbody>
</table>

***With Eyelet at Mounting Hole

12-1265-* Single Bolt Tube Mount (L.S.T. or R.S.T.)
Metal Lever Against Metal Spring Steel Detent
Tube Size: 3/4" or 7/8"

**Materials:** Lever 13 Ga. (.093)
**Finish:** Plated for Corrosion Protection
* Insert Dash No.
** Material Options Available (Galv. or S.S.)

<table>
<thead>
<tr>
<th>Dash No.</th>
<th>Type</th>
<th>&quot;T&quot;</th>
<th>(&quot;A&quot;)</th>
<th>&quot;B&quot;</th>
<th>&quot;C&quot;</th>
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</thead>
<tbody>
<tr>
<td>-01</td>
<td>II</td>
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<td>.43</td>
<td>.95</td>
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<tr>
<td>-11</td>
<td>III</td>
<td>1.53</td>
<td>.41</td>
<td>.75</td>
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<tr>
<td>-13</td>
<td>II</td>
<td>1.31</td>
<td>.40</td>
<td>.91</td>
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<td>-14</td>
<td>I</td>
<td>1.32</td>
<td>-</td>
<td>-</td>
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</tr>
</tbody>
</table>
Positive Action Controls

25-0583.* Brand Options for 12-1250 & 12-1265 Controls

* Insert Dash No.

Artwork for 12-1331, 12-1332, 12-1341, 12-1342, 12-1343 & 12-1344
All graphics are white except where noted

NO CHOKE

STOP & CHOKE

SPEED CONTROL

CHOKE

Knob Options

Color Options Available

DISC
BALL
PADDLE
TEE
HEAVY DUTY KNOBS
Positive Action Controls

12-2021 (L.S.S.) Shown/12-2020 (R.S.S.) Opposite
Panel Mount Control

Materials: Lever 13 Ga. (.090)
Bracket 14 Ga. (.074)
Finish: Plated for Corrosion Protection
* Standard Mounting Holes
** Material Options Available (Galv.or S.S.)
*** .06 In Less Travel When Conduit Ftg. & Wiper Is Used

Table 1

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Type</th>
<th>Hole Pattern</th>
<th>&quot;A&quot;</th>
<th>&quot;B&quot;</th>
<th>&quot;C&quot;</th>
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</thead>
<tbody>
<tr>
<td>12-2021 L.S.S.</td>
<td>II</td>
<td>Std. Slot</td>
<td>.26</td>
<td>.37</td>
<td>-</td>
</tr>
<tr>
<td>12-2021 L.S.S.</td>
<td>II</td>
<td>Std. Slot</td>
<td>.26</td>
<td>.37</td>
<td>-</td>
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<tr>
<td>12-2021 L.S.S.</td>
<td>I</td>
<td>Std. Slot</td>
<td>-</td>
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<tr>
<td>12-2020 R.S.S.</td>
<td>II</td>
<td>Std. Slot</td>
<td>.26</td>
<td>.37</td>
<td>-</td>
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<tr>
<td>12-2020 R.S.S.</td>
<td>II</td>
<td>Std. Slot</td>
<td>.26</td>
<td>.37</td>
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<td>12-2020 R.S.S.</td>
<td>I</td>
<td>Std. Slot</td>
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</table>

PANEL CUTOUT DETAIL

See Table 1 for Options

To Suit

3.15

2.03

.65

2.87

To Suit

12-2036 (L.S.S.) Shown/12-2046 (R.S.S.) Opposite
Panel Mount Control

Materials: Lever 13 Ga. (.090)
Bracket 14 Ga. (.074)
Finish: Plated for Corrosion Protection
* Standard Mounting Holes
** Material Options Available (Galv.or S.S.)

Table 1

<table>
<thead>
<tr>
<th>Opt. Hole Dia</th>
<th>.218</th>
<th>.144</th>
<th>.136</th>
<th>.281</th>
<th>.203</th>
<th>.281</th>
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<tbody>
<tr>
<td>1.75&quot; Hole Centers</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>1.87</td>
<td></td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td>.218&quot;</td>
<td>.144</td>
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<td></td>
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<td></td>
</tr>
<tr>
<td>.136</td>
<td>.281</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>.203</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>.281</td>
<td>-</td>
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</table>

Part No. | Type | Hole Pattern | "A" | "B" | "C" |
<table>
<thead>
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<th></th>
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<th></th>
<th></th>
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<td>Std. Slot</td>
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<td>.37</td>
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<tr>
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<td>II</td>
<td>Std. Slot</td>
<td>.26</td>
<td>.37</td>
<td>-</td>
</tr>
<tr>
<td>12-2036 L.S.S.</td>
<td>I</td>
<td>Std. Slot</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>12-2046 R.S.S.</td>
<td>II</td>
<td>Std. Slot</td>
<td>.26</td>
<td>.37</td>
<td>-</td>
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<tr>
<td>12-2046 R.S.S.</td>
<td>II</td>
<td>Std. Slot</td>
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<td>.37</td>
<td>-</td>
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<tr>
<td>12-2046 R.S.S.</td>
<td>I</td>
<td>Std. Slot</td>
<td>-</td>
<td>-</td>
<td>-</td>
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</tbody>
</table>

1.63 Travel

1.38 Travel
12-0321 (L.S.S.) Shown/12-0322 (R.S.S.) Opposite
Panel Mount Control

Materials: 3/8 Dia Lever
Bracket 14 Ga. (.074)

Finish: Plated for Corrosion Protection
* Standard Mounting Holes
** Material Options Available (Galv. or S.S.)
*** .06 In Less Travel When Conduit Ftg. & Wiper Is Used

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Type</th>
<th>&quot;A&quot;</th>
<th>&quot;B&quot;</th>
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</thead>
<tbody>
<tr>
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<td>I</td>
<td>1.56</td>
<td>1.06</td>
</tr>
<tr>
<td>12-0321 L.S.S.</td>
<td>II</td>
<td>1.56</td>
<td>.37</td>
</tr>
<tr>
<td>12-0322 R.S.S.</td>
<td>I</td>
<td>1.56</td>
<td>-</td>
</tr>
<tr>
<td>12-0322 R.S.S.</td>
<td>II</td>
<td>1.56</td>
<td>.37</td>
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<tr>
<td>12-0322 R.S.S.</td>
<td>III</td>
<td>1.56</td>
<td>1.10</td>
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</tbody>
</table>

PANEL CUTOUT DETAIL
See Table 1

See Table 1 for Options

12-0336 (L.S.S.) Shown/12-0346 (R.S.S.) Opposite
Panel Mount Control

Materials: 3/8 Dia Lever
Bracket 14 Ga. (.074)

Finish: Plated for Corrosion Protection
* Standard Mounting Holes
** Material Options Available (Galv. or S.S.)
*** .06 In Less Travel When Conduit Ftg. & Wiper Is Used

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Type</th>
<th>Hole Pattern</th>
<th>1.63 Travel</th>
<th>1.38 Travel</th>
</tr>
</thead>
<tbody>
<tr>
<td>12-0336 L.S.S.</td>
<td>II</td>
<td>Sd. Slot</td>
<td>.26</td>
<td>.37</td>
</tr>
<tr>
<td>12-0336 L.S.S.</td>
<td>II</td>
<td>1.87 x .144</td>
<td>1.13</td>
<td>50</td>
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<tr>
<td>12-0336 L.S.S.</td>
<td>II</td>
<td>2.00 x .281</td>
<td>.26</td>
<td>.37</td>
</tr>
<tr>
<td>12-0346 R.S.S.</td>
<td>I</td>
<td>Sd. Slot</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>12-0346 R.S.S.</td>
<td>III</td>
<td>Sd. Slot</td>
<td>-</td>
<td>87</td>
</tr>
<tr>
<td>12-0346 R.S.S.</td>
<td>II</td>
<td>2.00 x .281</td>
<td>.26</td>
<td>.37</td>
</tr>
<tr>
<td>12-0346 R.S.S.</td>
<td>I</td>
<td>Sd. Slot</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>12-0346 R.S.S.</td>
<td>III</td>
<td>Sd. Slot</td>
<td>-</td>
<td>87</td>
</tr>
</tbody>
</table>
**Positive Action Commercial Controls**

**12-0336 (L.S.S.) Panel Mount Control**

**Materials:** Lever 3/8 Dia Lever
Bracket 13 Ga (.090)

**Finish:** Plated for Corrosion Protection

* Material Options Available (Galv. or S.S.)
** Lever may be bent at 45° (Specify)

Total Travel 1.62”

Knob Options
(See Page 17)

3/8-24 Detent

**12-3046 (R.S.S.) Panel Mount Control (Removeable Conduit/Innerwire Feature)**

**Materials:** Lever 3/8 Dia Lever
Bracket 13 Ga (.090)

**Finish:** Plated for Corrosion Protection

* Material Options Available (Galv. or S.S.)
** Lever may be bent at 45° (Specify)

Conduit Fitting Snaps Into Bracket. Can Be Removed

Knob Options
(See Page 17)
**Heavy Duty Positive Action Friction Commercial Control**

**12-4001/12-4002 Panel Mount Control**

L.H. Version Shown: 12-4001 Series  
R.H. Version (Hidden): 12-4002 Series  

Materials: Lever 3/8 dia.  
Bracket 12 Ga. (.10)

Finish: Plated for Corrosion Protection  
Force @ Base of Knob: 10 lbs. (Force options available)

### Hole Pattern Options

(See Below)

### Knob Options

(3/8-16)  
(3.96)

Wiper (Opt.)

Conduit Ftg.

### Panel Cutout

3/16 Dia Conduit

.062 Dia Innerwire

Specify "L"

### Innerwire Travel Table

<table>
<thead>
<tr>
<th>Innerwire Travel</th>
<th>Angle A°</th>
<th>Head Assy</th>
<th>Lever</th>
<th>L.H. Bkt.</th>
<th>R.H. Bkt.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.75</td>
<td>82°</td>
<td>24-4001-01 (L.H.) / 24-4002-01 (R.H.)</td>
<td>27-4000-02 (Long)</td>
<td>28-4000-01</td>
<td>28-4000-02</td>
</tr>
<tr>
<td>1.62</td>
<td>82°</td>
<td>24-4001-02 (L.H.) / 24-4002-02 (R.H.)</td>
<td>27-4000-01 (Short)</td>
<td>28-4000-01</td>
<td>28-4000-02</td>
</tr>
<tr>
<td>1.32</td>
<td>61°</td>
<td>24-4001-03 (L.H.) / 24-4002-03 (R.H.)</td>
<td>27-4000-02 (Long)</td>
<td>28-4000-08</td>
<td>28-4000-09</td>
</tr>
<tr>
<td>1.25</td>
<td>61°</td>
<td>24-4001-04 (L.H.) / 24-4002-04 (R.H.)</td>
<td>27-4000-01 (Short)</td>
<td>28-4000-08</td>
<td>28-4000-09</td>
</tr>
<tr>
<td>.97</td>
<td>44°</td>
<td>24-4001-05 (L.H.) / 24-4002-05 (R.H.)</td>
<td>27-4000-02 (Long)</td>
<td>28-4000-13</td>
<td>28-4000-14</td>
</tr>
<tr>
<td>.91</td>
<td>44°</td>
<td>24-4001-06 (L.H.) / 24-4002-06 (R.H.)</td>
<td>27-4000-01 (Short)</td>
<td>28-4000-13</td>
<td>28-4000-14</td>
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</table>

### HOLE PATTERN OPTIONS

<table>
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<th>&quot;B&quot;</th>
<th>(2.18 Dia)</th>
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</thead>
<tbody>
<tr>
<td>1.75</td>
<td>(&quot;B&quot;)</td>
</tr>
<tr>
<td>1.87</td>
<td>(&quot;B&quot;)</td>
</tr>
<tr>
<td>* 2.00</td>
<td>(&quot;B&quot;)</td>
</tr>
</tbody>
</table>

* Standard Mounting Holes
### Heavy Duty Negative Action Friction Commercial Control

**12-4003/12-4004 Panel Mount Control**

**L.H. Version Shown: 12-4003 Series**
**R.H. Version (Hidden): 12-4004 Series**

**Materials:** Lever 3/8 dia. 
Bracket 12 Ga. (.10)

**Finish:** Plated for Corrosion Protection

**Force @ Base of Knob:** 10 lbs. (Force options available)

---

#### Innerwire Travel

<table>
<thead>
<tr>
<th>Innerwire Travel</th>
<th>Angle A°</th>
<th>Head Assy</th>
<th>Lever</th>
<th>R.H. Bkt.</th>
<th>L.H. Bkt.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.75</td>
<td>82°</td>
<td>24-4003-01 (L.H.) / 24-4004-01 (R.H.)</td>
<td>27-4000-06 (Long)</td>
<td>28-4000-01</td>
<td>28-4000-02</td>
</tr>
<tr>
<td>1.62</td>
<td>82°</td>
<td>24-4003-02 (L.H.) / 24-4004-02 (R.H.)</td>
<td>27-4000-05 (Short)</td>
<td>28-4000-01</td>
<td>28-4000-02</td>
</tr>
<tr>
<td>1.32</td>
<td>61°</td>
<td>24-4003-03 (L.H.) / 24-4004-03 (R.H.)</td>
<td>27-4000-06 (Long)</td>
<td>28-4000-08</td>
<td>28-4000-09</td>
</tr>
<tr>
<td>1.25</td>
<td>61°</td>
<td>24-4003-04 (L.H.) / 24-4004-04 (R.H.)</td>
<td>27-4000-05 (Short)</td>
<td>28-4000-08</td>
<td>28-4000-09</td>
</tr>
<tr>
<td>.97</td>
<td>44°</td>
<td>24-4003-05 (L.H.) / 24-4004-05 (R.H.)</td>
<td>27-4000-06 (Long)</td>
<td>28-4000-13</td>
<td>28-4000-14</td>
</tr>
<tr>
<td>.91</td>
<td>44°</td>
<td>24-4003-06 (L.H.) / 24-4004-06 (R.H.)</td>
<td>27-4000-05 (Short)</td>
<td>28-4000-13</td>
<td>28-4000-14</td>
</tr>
</tbody>
</table>

---

#### Hole Pattern Options

**HP1** *(.218 Dia)* 
**HP2** *(.265 Dia)* 
**HP3** *(.218 Dia)*

* Standard Mounting Holes
12-4005/12-4006 Panel Mount Control

L.H. Version Shown: 12-4005 Series
R.H. Version (Hidden): 12-4006 Series

Materials: Lever 3/8 dia.
Bracket 12 Ga. (.10)

Finish: Plated for Corrosion Protection
Force @ Base of Knob: 10 lbs. (Force options available)

<table>
<thead>
<tr>
<th>Innerwire Travel</th>
<th>Angle A°</th>
<th>Head Assy</th>
<th>Lever</th>
<th>L.H. Bkt.</th>
<th>R.H. Bkt.</th>
<th>Detent at Fully Extended</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.75</td>
<td>82°</td>
<td>24-4005-01 (L.H.) / 24-4006-01 (R.H.)</td>
<td>27-4000-04 (Long)</td>
<td>28-4000-03</td>
<td>28-4000-04</td>
<td>41°</td>
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<tr>
<td>1.62</td>
<td>82°</td>
<td>24-4005-02 (L.H.) / 24-4006-02 (R.H.)</td>
<td>27-4000-03 (Short)</td>
<td>28-4000-03</td>
<td>28-4000-04</td>
<td>41°</td>
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<tr>
<td>1.32</td>
<td>61°</td>
<td>24-4005-03 (L.H.) / 24-4006-03 (R.H.)</td>
<td>27-4000-04 (Long)</td>
<td>28-4000-10</td>
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<tr>
<td>1.25</td>
<td>61°</td>
<td>24-4005-04 (L.H.) / 24-4006-04 (R.H.)</td>
<td>27-4000-03 (Short)</td>
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<td>28-4000-11</td>
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<tr>
<td>1.17</td>
<td>44°</td>
<td>24-4005-05 (L.H.) / 24-4006-05 (R.H.)</td>
<td>27-4000-04 (Long)</td>
<td>28-4000-15</td>
<td>28-4000-16</td>
<td>22°</td>
</tr>
<tr>
<td>1.13</td>
<td>44°</td>
<td>24-4005-06 (L.H.) / 24-4006-06 (R.H.)</td>
<td>27-4000-03 (Short)</td>
<td>28-4000-15</td>
<td>28-4000-16</td>
<td>22°</td>
</tr>
</tbody>
</table>

**Hole Pattern Options**

* Standard Mounting Holes

**Panel Cutout**

* Standard Mounting Holes

**Knob Options**

* To Suit
### Heavy Duty Negative Action Detent Commercial Control

**12-4007/12-4008 Panel Mount Control**

L.H. Version Shown: 12-4007 Series  
R.H. Version (Hidden): 12-4008 Series  

**Materials:** Lever 3/8 dia.  
Bracket 12 Ga. (.10)  

**Finish:** Plated for Corrosion Protection  
Force @ Base of Knob: 10 lbs. (Force options available)

**Hole Pattern Options**

<table>
<thead>
<tr>
<th>Innerwire Travel</th>
<th>Angle A°</th>
<th>Head Assy</th>
<th>Lever</th>
<th>R.H. Bkt.</th>
<th>L.H. Bkt.</th>
<th>Detent at Fully Extended</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.75</td>
<td>82°</td>
<td>24-4007-01 (L.H.) / 24-4008-01 (R.H.)</td>
<td>27-4000-08 (Long)</td>
<td>28-4000-03</td>
<td>28-4000-04</td>
<td>41°</td>
</tr>
<tr>
<td>1.62</td>
<td>82°</td>
<td>24-4007-02 (L.H.) / 24-4008-02 (R.H.)</td>
<td>27-4000-07 (Short)</td>
<td>28-4000-03</td>
<td>28-4000-04</td>
<td>41°</td>
</tr>
<tr>
<td>1.32</td>
<td>61°</td>
<td>24-4007-03 (L.H.) / 24-4008-03 (R.H.)</td>
<td>27-4000-08 (Long)</td>
<td>28-4000-10</td>
<td>28-4000-11</td>
<td>30.5°</td>
</tr>
<tr>
<td>1.25</td>
<td>61°</td>
<td>24-4007-04 (L.H.) / 24-4008-04 (R.H.)</td>
<td>27-4000-07 (Short)</td>
<td>28-4000-10</td>
<td>28-4000-11</td>
<td>30.5°</td>
</tr>
<tr>
<td>.97</td>
<td>44°</td>
<td>24-4007-05 (L.H.) / 24-4008-05 (R.H.)</td>
<td>27-4000-08 (Long)</td>
<td>28-4000-15</td>
<td>28-4000-16</td>
<td>22°</td>
</tr>
<tr>
<td>.91</td>
<td>44°</td>
<td>24-4007-06 (L.H.) / 24-4008-06 (R.H.)</td>
<td>27-4000-07 (Short)</td>
<td>28-4000-15</td>
<td>28-4000-16</td>
<td>22°</td>
</tr>
</tbody>
</table>

**Hole Pattern Options**

- **“B”**
  - 1.75
  - 1.87
  - * 2.00

* Standard Mounting Holes

---

**Knob Options**

17-0500-01

**Panel Cutout**

To Suit
Heavy Duty Commercial Control Detent Options

12-4005/12-4006 Panel Mount Control

**POSITIVE ACTION**

L.H. Version: 12-4005 Series
R.H. Version: 12-4006 Series

- L.H. Bracket 28-4000-03
- R.H. Bracket 28-4000-04

- (41°)

- Detent

- Travel 1.62 Short
- Travel 1.75 Long

- L.H. Bracket 28-4000-05
- R.H. Bracket 28-4000-06

- (20°)

- Detent

- Travel 1.62 Short
- Travel 1.75 Long

- Detent 1.25 Short
- Detent 1.38 Long

- L.H. Bracket 28-4000-10
- R.H. Bracket 28-4000-11

- (30.5°)

- Detent

- Travel 1.25 Short
- Travel 1.32 Long

- L.H. Bracket 28-4000-15
- R.H. Bracket 28-4000-16

- (22°)

- Detent

- Travel .91 Short
- Travel .97 Long

12-4007/12-4008 Panel Mount Control

**NEGATIVE ACTION**

L.H. Version: 12-4007 Series
R.H. Version: 12-4008 Series

- L.H. Bracket 28-4000-04
- R.H. Bracket 28-4000-03

- (41°)

- Detent

- Travel 1.62 Short
- Travel 1.75 Long

- L.H. Bracket 28-4000-06
- R.H. Bracket 28-4000-05

- (20°)

- Detent

- Travel 1.62 Short
- Travel 1.75 Long

- Detent 1.25 Short
- Detent 1.38 Long

- L.H. Bracket 28-4000-10
- R.H. Bracket 28-4000-11

- (30.5°)

- Detent

- Travel 1.25 Short
- Travel 1.32 Long

- L.H. Bracket 28-4000-15
- R.H. Bracket 28-4000-16

- (22°)

- Detent

- Travel .91 Short
- Travel .97 Long
Handlebar Mounted Conduit Fitting

* Material Options Available (Galv. or S.S.)

NOTE: For detailed description of conduit and fitting options see Light Duty Tension Cable Controls Catalog.

Throttle Mated Fitting for 12-1250 Throttle Control (see page 16)

* Material Options Available (Galv. or S.S.)

NOTE: For detailed description of conduit and fitting options see Light Duty Tension Cable Controls Catalog.

Throttle Mated Fitting for 12-1340 Throttle Control (see page 7)

* Material Options Available (Galv. or S.S.)

** One or Two Positions Possible

NOTE: For detailed description of conduit and fitting options see Light Duty Tension Cable Controls Catalog.
**Blade Brake Clutch (BBC) Controls**

**12-1293 Radial Control**

* Material Options Available (Galv. or S.S.)
** Lever Locks in Neutral Position until Bail Is Engaged

**12-1294 Radial Control**

* Material Options Available (Galv. or S.S.)
** Lever Locks in Neutral Position until Bail Is Engaged

### NOTES:
1. Min. Travel: .25 In; Max Travel: 1.50 In
   Min. Load: 5 Lbs; Max Load: 50 Lbs
2. For detailed description of conduit and fitting options see Light Duty Tension Cable Controls Catalog.

### Installation Data

**Control May Be Mounted on Left or Right Side**

- **Bail Pivot**
- **L.H.**
- **R.H.**
- .25 Dia x 2.25 Long Fastener

**SPECIFY**

- Cable: Galv. or S.S.
- Conduit: “18 Wire” or “Lined Bowden”
- Conduit Routing: Approximate Routing in Degrees
- Load: Requirement at Extension End
- Travel: Requirement at Extension End
- Conduit & Cable Assembly Is Shipped Separate from Control Head Unless Otherwise Stated
Blade Brake Clutch (BBC) Controls

12-1301 7/8 Dia Handlebar with .85 Travel
12-1302 7/8 Dia Handlebar with 2.00 Travel
12-1303 1.00 Dia Handlebar with .85 Travel
12-1304 1.00 Dia Handlebar with 2.00 Travel

- Material Options Available (Galvanized or S.S.)
- This control features a floating lever design where lever is not locked in either neutral or engaged position

**NOTE:**
Control can be mounted on the RH side of the handlebar and on LST only.

---

CUSTOMER TO SPECIFY

- Conduit Length
- Core Extension Length
- Conduit End Connection
- Core End Connection
- Type of Blade Brake Clutch

NOTES:

1. The spring provided to operate the Warner Electric BBC should be deflected .16" (4mm) minimum in the clutched position at positive stop.

2. Spring Data
   - Free Length: 2.00
   - Rate: 145 Lbs per Inch
   - Initial Tension: 16 Lbs

3. For detailed description of conduit and fitting options, see Light Duty Tension Cable Controls Catalog.
12-1362 Series Control

This 12-1362 Ground Drive Control is designed for easy installation on a 7/8 dia handlebar with one #10 fastener. The control mounts on the right hand side of handlebar and L.S.T. and allows the manufacturer to provide a single bail system that controls both MZR and Ground Drive applications.

Rotation of the operator control bail to the engaged position releases the engine brake and allows engine start. Activation of the ground drive system requires only a push of the lever. A slight release of the bail will disengage the drive and allow the engine to continue running.

CUSTOMER TO SPECIFY
- Conduit Length
- Core Extension Length
- Conduit Type, High Temp or Standard HDPE
- Core Type, Galv. or S.S. Cable
- Core End Fitting
- Conduit End Fitting

NOTES:
1. Min. travel: .25.
3. Control mounts on 7/8 Dia Handlebar.
5. Control lever rotates 80° to engage.
6. Control bail rotates 55° to engage.
7. Max load: 50 Lbs.
8. For detailed description of conduit and fitting options, see Light Duty Tension Cable Controls Catalog.
12-1291 Radial Control
(5° Bail Angle)
* Material Options Available (Galv. or S.S.)

NOTES:
1. Min. Travel: .25 Max Travel: 1.50
   Min. Load: 5 Lbs Max Load: 50 Lbs
2. For detailed description of conduit and fitting options see Light Duty Tension Cable Controls Catalog.

12-1292 Radial Control
(0° Bail Angle)
* Material Options Available (Galv. or S.S.)

NOTES:
1. Min. Travel: .25 Max Travel: 1.50
   Min. Load: 5 Lbs Max Load: 50 Lbs
2. For detailed description of conduit and fitting options see Light Duty Tension Cable Controls Catalog.

Installation Data

Control May Be Mounted on Left or Right Side

- Bail Pivot
- L.H.
- R.H.
- 25 Dia x 2.25 Long Fastener

SPECIFY
- Cable: Galv or S.S.
- Conduit: "18 Wire" Or "Lined Bowden"
- Conduit Routing: Approximate Routing in Degrees
- Load: Requirement at Extension End
- Travel: Requirement at Extension End
- Conduit & Cable Assembly Are Shipped Separate Unless Otherwise Stated
Multifunction Lever Control

12-1352 Dual Control

This Dual Lever control is designed for easy installation on a 7/8 dia handlebar with one 6mm fastener. Each independent lever can be used to control many applications requiring up to 1.56 (39.6mm) core travel such as engine throttle or transmission shift. Cable for tension, or innerwire for push-pull applications, can be specified. Each lever in the dual control may be specified as positive or negative action operation (see page 4). Lever detents or non-detented friction systems can be provided by the use of metal detent plates protected within the tough plastic control body.

Please contact your Wescon application engineer for your special applications.

A Drive cable and/or MZR cable control may be installed by the customer between the handlebar and body of the control head.

NOTE: For detailed description of conduit and fitting options see Light Duty Tension Cable Controls Catalog.

32-3309 -* Brand Options for 12-1352 & 12-1353 Controls

* Insert Dash No.
**Muntifunction Lever Controls**

**12-1353 Single Lever Control**

This Single Lever control is designed for easy installation on a 7/8 dia handlebar with one 6mm fastener. The lever can be used to control many applications requiring up to 1.56 (39.6 mm) core travel such as engine throttle or transmission shift. Cable for tension, or innerwire for push-pull applications can be specified. This control may be specified as positive or negative action operation (see page 4). Lever detents or non-detented friction systems can be provided by the use of a metal detent plate that is protected within the tough plastic control body.

Please contact your Wescon application engineer for your special applications.

A Drive cable and/or MZR cable control may be installed by the customer between the handlebar and body of the control head.

In-line adjustments are available for the external drive control.

---

**NOTE:** For detailed description of conduit and fitting options see Light Duty Tension Cable Controls Catalog.
### 22-2152-* Conduit Clip

*Insert Dash No.

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Conduit Size</th>
<th>Mounting Hole</th>
<th>“A”</th>
<th>“B”</th>
<th>Finish</th>
</tr>
</thead>
<tbody>
<tr>
<td>-01</td>
<td>3/16 Cov. or 7/32 Bare</td>
<td>.200 Dia Hole</td>
<td>.44</td>
<td>.25</td>
<td>Bright</td>
</tr>
<tr>
<td>-05</td>
<td>3/16 Cov. or 7/32 Bare</td>
<td>.263 Dia Hole</td>
<td>.56</td>
<td>.25</td>
<td>Bright</td>
</tr>
<tr>
<td>-07</td>
<td>3/16 Cov. or 7/32 Bare</td>
<td>.227 Dia Hole</td>
<td>.50</td>
<td>.25</td>
<td>Bright</td>
</tr>
<tr>
<td>-24</td>
<td>3/16 Cov. or 7/32 Bare</td>
<td>No Hole</td>
<td>.56</td>
<td>.25</td>
<td>Bright</td>
</tr>
<tr>
<td>-31</td>
<td>3/16 Cov. or 7/32 Bare</td>
<td>.27 x .39 Slot</td>
<td>.37</td>
<td>.32</td>
<td>Yellow</td>
</tr>
<tr>
<td>-38</td>
<td>3/16 Cov. or 7/32 Bare</td>
<td>.263 Dia Hole</td>
<td>.56</td>
<td>.25</td>
<td>Black</td>
</tr>
<tr>
<td>-39</td>
<td>3/16 Cov. or 7/32 Bare</td>
<td>.27 x .39 Slot</td>
<td>.37</td>
<td>.32</td>
<td>Black</td>
</tr>
<tr>
<td>-42</td>
<td>3/16 Bare</td>
<td>.263 Dia Hole</td>
<td>.56</td>
<td>.25</td>
<td>Bright</td>
</tr>
</tbody>
</table>

### 22-2152-* Conduit Clip - Anti-Rotational

*Insert Dash No.

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Conduit Size</th>
<th>Mounting Hole</th>
<th>“A”</th>
<th>“B”</th>
<th>“C”</th>
<th>“D”</th>
<th>Finish</th>
</tr>
</thead>
<tbody>
<tr>
<td>-15</td>
<td>3/16 Cov. or 7/32 Bare</td>
<td>.21 x .34 Slot</td>
<td>.41</td>
<td>.34</td>
<td>.25</td>
<td>.15</td>
<td>Bright</td>
</tr>
<tr>
<td>-18</td>
<td>3/16 Cov. or 7/32 Bare</td>
<td>.21 x .34 Slot</td>
<td>.41</td>
<td>.34</td>
<td>.25</td>
<td>.15</td>
<td>Yellow</td>
</tr>
<tr>
<td>-40</td>
<td>7/32 Cov. or 1/4 Bare</td>
<td>.19 x .26 Slot</td>
<td>.43</td>
<td>.357</td>
<td>.19</td>
<td>.205</td>
<td>Yellow</td>
</tr>
<tr>
<td>-41</td>
<td>.312 Covered</td>
<td>.26 Dia Hole</td>
<td>.53</td>
<td>.33</td>
<td>.25</td>
<td>.18</td>
<td>Yellow</td>
</tr>
</tbody>
</table>

### 22-2152-* Loose String-On Clip

*Insert Dash No.

Usage: 3/16 Dia Covered, 7/32 Bare Conduit & 6 Wire

Finish: Black

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Mounting Hole</th>
<th>“A”</th>
</tr>
</thead>
<tbody>
<tr>
<td>-03</td>
<td>.218 Dia Hole</td>
<td>.62</td>
</tr>
<tr>
<td>-43</td>
<td>.27 x .27 Slot</td>
<td>.78</td>
</tr>
</tbody>
</table>

### 22-2115-* Conduit Clip

*Insert Dash No.

<table>
<thead>
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<th>Part No.</th>
<th>Conduit Size</th>
<th>“A”</th>
<th>Finish</th>
</tr>
</thead>
<tbody>
<tr>
<td>-00</td>
<td>3/16 Bare</td>
<td>.22</td>
<td>Yellow</td>
</tr>
<tr>
<td>-02</td>
<td>7/32 Bare</td>
<td>.28</td>
<td>Clear</td>
</tr>
<tr>
<td>-03</td>
<td>1/4 Bare</td>
<td>.28</td>
<td>Clear</td>
</tr>
<tr>
<td>-04</td>
<td>3/16 Bare</td>
<td>.28</td>
<td>Clear</td>
</tr>
<tr>
<td>-05</td>
<td>7/32 Bare</td>
<td>.22</td>
<td>Clear</td>
</tr>
<tr>
<td>-11</td>
<td>7/32 Bare or 3/16 Covered</td>
<td>.28</td>
<td>Clear</td>
</tr>
<tr>
<td>-12</td>
<td>3/16 Bare</td>
<td>.28</td>
<td>Clear</td>
</tr>
</tbody>
</table>

### 22-0183-00 Dual Conduit Clamp

Material: Steel
Finish: Zinc Plate
Usage: 3/16 or 7/32 Dia Conduit

### 22-2054-00 Single Conduit Clamp

Material: Steel
Finish: Zinc Cobalt
Usage: 3/16 or 7/32 Dia Conduit
### 23-3210-* Cable Seal

* Insert Dash No.

<table>
<thead>
<tr>
<th>Dash No.</th>
<th>Cable Size</th>
<th>&quot;A&quot;</th>
<th>Color</th>
</tr>
</thead>
<tbody>
<tr>
<td>-00</td>
<td>3/64 &amp; 1/16</td>
<td>.056</td>
<td>Black</td>
</tr>
<tr>
<td>-02</td>
<td>3/32</td>
<td>.084</td>
<td>Black</td>
</tr>
<tr>
<td>-03</td>
<td>5/64</td>
<td>.076</td>
<td>Black</td>
</tr>
<tr>
<td>-04</td>
<td>3/32 &amp; 1/16</td>
<td>.056</td>
<td>Grey</td>
</tr>
</tbody>
</table>

### 23-3107-01 Grommet
For .062 Dia Solid Wire, 7/32 Dia Covered or 1/4 Dia Bare Conduit

### 23-3109-01 Grommet
For .062 Dia Cable w/21-1060-18 Fitting

### 80-3112* Boot

* Insert Dash No.

<table>
<thead>
<tr>
<th>Dash No.</th>
<th>&quot;A&quot;</th>
<th>&quot;B&quot;</th>
<th>&quot;C&quot;</th>
<th>Color</th>
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<tbody>
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<td>.375</td>
<td>5/8</td>
<td>5/32</td>
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</tr>
<tr>
<td>-01</td>
<td>.281</td>
<td>1/2</td>
<td>3/32</td>
<td>Red</td>
</tr>
<tr>
<td>-02</td>
<td>.343</td>
<td>1/2</td>
<td>3/32</td>
<td>Black</td>
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<td>-03</td>
<td>.281</td>
<td>1/2</td>
<td>1/16</td>
<td>Black</td>
</tr>
<tr>
<td>-04</td>
<td>.343</td>
<td>1/2</td>
<td>.200</td>
<td>Black</td>
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<tr>
<td>-05</td>
<td>.375</td>
<td>3/8</td>
<td>.155</td>
<td>Red</td>
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### 23-3243-* Seal

* Insert Dash No.

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<tbody>
<tr>
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<td>.076</td>
<td>Grey</td>
</tr>
<tr>
<td>-02</td>
<td>.056</td>
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<tr>
<td>-03</td>
<td>.092</td>
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</table>

### 23-3041-00
For 3/16 Bare Conduit
Used in Temperatures Up to 300° F Applications

### 23-3040-* Grommet

* Insert Dash No.

<table>
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<th>Conduit</th>
<th>Color</th>
</tr>
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<td>3/16 Cov. or 7/32 Bare</td>
<td>Black</td>
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<tr>
<td>-01-04</td>
<td>.187 Bare</td>
<td>Grey</td>
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</table>
**Innerwire End Bends**

**“Z” Bend**
Standard Bend Configuration - Will be furnished unless otherwise specified.

<table>
<thead>
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<th>“X”</th>
<th>“Y”</th>
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</thead>
<tbody>
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<td>00-0122</td>
<td>.125</td>
<td>.125</td>
</tr>
<tr>
<td>00-0125</td>
<td>.125</td>
<td>.313</td>
</tr>
<tr>
<td>00-0126</td>
<td>.125</td>
<td>.375</td>
</tr>
<tr>
<td>00-0127</td>
<td>.125</td>
<td>.437</td>
</tr>
<tr>
<td>00-0128</td>
<td>.125</td>
<td>.500</td>
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<tr>
<td>00-0129</td>
<td>.156</td>
<td>.125</td>
</tr>
<tr>
<td>00-0131</td>
<td>.156</td>
<td>.250</td>
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<tr>
<td>00-0132</td>
<td>.156</td>
<td>.313</td>
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<td>00-0133</td>
<td>.156</td>
<td>.375</td>
</tr>
<tr>
<td>00-0134</td>
<td>.156</td>
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</table>

<table>
<thead>
<tr>
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<th>“Y”</th>
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<td>.500</td>
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<td>.125</td>
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<td>00-0138</td>
<td>.188</td>
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<td>.313</td>
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<td>.500</td>
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<td>00-0144</td>
<td>.219</td>
<td>.188</td>
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<td>00-0145</td>
<td>.219</td>
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<td>.437</td>
</tr>
<tr>
<td>00-0149</td>
<td>.219</td>
<td>.500</td>
</tr>
<tr>
<td>00-0150</td>
<td>.250</td>
<td>.375</td>
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</table>

**“L” Bend**

<table>
<thead>
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<th>“X”</th>
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<tbody>
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<td>00-0303</td>
<td>.250</td>
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**Centered Loop**

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* Per ASTM A-313
** Straighten in Coil