## A.G.D. & Metric Radius

**Gauging Surface**
- Highly Polished Tungsten Carbide
- Unless Noted

### RADIUS

<table>
<thead>
<tr>
<th>Actual Size</th>
<th>A Diameter</th>
<th>B Length</th>
<th>C Radius</th>
<th>Thread</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>.187&quot;</td>
<td>.125&quot;</td>
<td>.187&quot;</td>
<td>4-48</td>
<td>301</td>
<td></td>
</tr>
<tr>
<td>.187&quot;</td>
<td>.125&quot;</td>
<td>.187&quot;</td>
<td>M2.5 x 0.45</td>
<td>321</td>
<td></td>
</tr>
<tr>
<td>.187&quot;</td>
<td>.250&quot;</td>
<td>.187&quot;</td>
<td>4-48</td>
<td>302</td>
<td></td>
</tr>
<tr>
<td>.187&quot;</td>
<td>.250&quot;</td>
<td>.187&quot;</td>
<td>M2.5 x 0.45</td>
<td>322</td>
<td></td>
</tr>
<tr>
<td>.187&quot;</td>
<td>.375&quot;</td>
<td>.187&quot;</td>
<td>4-48</td>
<td>303</td>
<td></td>
</tr>
<tr>
<td>.187&quot;</td>
<td>.500&quot;</td>
<td>.187&quot;</td>
<td>M2.5 x 0.45</td>
<td>323</td>
<td></td>
</tr>
<tr>
<td>.187&quot;</td>
<td>.750&quot;</td>
<td>.187&quot;</td>
<td>4-48</td>
<td>304</td>
<td></td>
</tr>
<tr>
<td>.187&quot;</td>
<td>1.000&quot;</td>
<td>.187&quot;</td>
<td>M2.5 x 0.45</td>
<td>324</td>
<td></td>
</tr>
<tr>
<td>.187&quot;</td>
<td>2.000&quot;</td>
<td>.187&quot;</td>
<td>4-48</td>
<td>309</td>
<td></td>
</tr>
<tr>
<td>.187&quot;</td>
<td>3.000&quot;</td>
<td>.187&quot;</td>
<td>M2.5 x 0.45</td>
<td>329</td>
<td></td>
</tr>
</tbody>
</table>

RUBY INSERT
- .187" x .125" x .187"
- 4-48
- M2.5 x 0.45

**RUBY INSERT**
- .187" x .125" x .187"
- 4-48
- M2.5 x 0.45

**RUBY INSERT**
- .187" x .250" x .187"
- 4-48
- M2.5 x 0.45

**RUBY INSERT**
- .187" x .375" x .187"
- 4-48
- M2.5 x 0.45

**RUBY INSERT**
- .187" x .500" x .187"
- 4-48
- M2.5 x 0.45

**RUBY INSERT**
- .187" x .750" x .187"
- 4-48
- M2.5 x 0.45

**RUBY INSERT**
- .187" x 1.000" x .187"
- 4-48
- M2.5 x 0.45

**RUBY INSERT**
- .187" x 2.000" x .187"
- 4-48
- M2.5 x 0.45

**RUBY INSERT**
- .187" x 3.000" x .187"
- 4-48
- M2.5 x 0.45

---

*A.G.D. & Metric Radius continued on page 22*
### A.G.D. & Metric - RADIUS

**Gauging Surface**

<table>
<thead>
<tr>
<th>Actual Size</th>
<th>A Diameter</th>
<th>B Length</th>
<th>C Radius</th>
<th>Thread</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>.187&quot;</td>
<td>4.000&quot;</td>
<td>.187&quot;</td>
<td></td>
<td>4-48</td>
<td>309-4000</td>
</tr>
<tr>
<td>.250&quot;</td>
<td>.250&quot;</td>
<td>.250&quot;</td>
<td></td>
<td>4-48</td>
<td>310</td>
</tr>
<tr>
<td>.250&quot;</td>
<td>.250&quot;</td>
<td>.250&quot;</td>
<td></td>
<td>4-48</td>
<td>330</td>
</tr>
<tr>
<td>.281&quot;</td>
<td>.140&quot;</td>
<td>.312&quot;</td>
<td></td>
<td>4-48</td>
<td>305</td>
</tr>
<tr>
<td>.375&quot;</td>
<td>.156&quot;</td>
<td>.437&quot;</td>
<td></td>
<td>4-48</td>
<td>306</td>
</tr>
<tr>
<td>.500&quot;</td>
<td>.187&quot;</td>
<td>.562&quot;</td>
<td></td>
<td>4-48</td>
<td>311</td>
</tr>
<tr>
<td>.625&quot;</td>
<td>.187&quot;</td>
<td>.813&quot;</td>
<td></td>
<td>4-48</td>
<td>316</td>
</tr>
<tr>
<td>.750&quot;</td>
<td>.218&quot;</td>
<td>1.000&quot;</td>
<td></td>
<td>4-48</td>
<td>319</td>
</tr>
<tr>
<td>1.000&quot;</td>
<td>.218&quot;</td>
<td>1.500&quot;</td>
<td></td>
<td>4-48</td>
<td>320</td>
</tr>
</tbody>
</table>

**RUBY INSERT**

**Gauging Surface**

<table>
<thead>
<tr>
<th>Actual Size</th>
<th>A Diameter</th>
<th>B Length</th>
<th>C Radius</th>
<th>Thread</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>.250&quot;</td>
<td>.250&quot;</td>
<td>.250&quot;</td>
<td></td>
<td>4-48</td>
<td>305</td>
</tr>
<tr>
<td>.281&quot;</td>
<td>.140&quot;</td>
<td>.312&quot;</td>
<td></td>
<td>4-48</td>
<td>305</td>
</tr>
<tr>
<td>.375&quot;</td>
<td>.156&quot;</td>
<td>.437&quot;</td>
<td></td>
<td>4-48</td>
<td>306</td>
</tr>
<tr>
<td>.500&quot;</td>
<td>.187&quot;</td>
<td>.562&quot;</td>
<td></td>
<td>4-48</td>
<td>311</td>
</tr>
<tr>
<td>.625&quot;</td>
<td>.187&quot;</td>
<td>.813&quot;</td>
<td></td>
<td>4-48</td>
<td>316</td>
</tr>
<tr>
<td>.750&quot;</td>
<td>.218&quot;</td>
<td>1.000&quot;</td>
<td></td>
<td>4-48</td>
<td>319</td>
</tr>
<tr>
<td>1.000&quot;</td>
<td>.218&quot;</td>
<td>1.500&quot;</td>
<td></td>
<td>4-48</td>
<td>320</td>
</tr>
</tbody>
</table>

### A.G.D. & Metric - Flat

**Gauging Surface**

<table>
<thead>
<tr>
<th>Actual Size</th>
<th>A Diameter</th>
<th>B Length</th>
<th>Thread</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>.062&quot;</td>
<td>.250&quot;</td>
<td></td>
<td>4-48</td>
<td>351</td>
</tr>
<tr>
<td>.125&quot;</td>
<td>.250&quot;</td>
<td></td>
<td>4-48</td>
<td>352</td>
</tr>
<tr>
<td>.187&quot;</td>
<td>.125&quot;</td>
<td></td>
<td>4-48</td>
<td>353</td>
</tr>
<tr>
<td>.187&quot;</td>
<td>.250&quot;</td>
<td></td>
<td>4-48</td>
<td>354</td>
</tr>
<tr>
<td>.187&quot;</td>
<td>.375&quot;</td>
<td></td>
<td>4-48</td>
<td>355</td>
</tr>
<tr>
<td>.187&quot;</td>
<td>.500&quot;</td>
<td></td>
<td>4-48</td>
<td>356</td>
</tr>
</tbody>
</table>

**Contact Surface**

Highly Polished Tungsten Carbide Unless Noted

<table>
<thead>
<tr>
<th>Actual Size</th>
<th>A Diameter</th>
<th>B Length</th>
<th>Thread</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>.062&quot;</td>
<td>.250&quot;</td>
<td></td>
<td>4-48</td>
<td>351</td>
</tr>
<tr>
<td>.125&quot;</td>
<td>.250&quot;</td>
<td></td>
<td>4-48</td>
<td>352</td>
</tr>
<tr>
<td>.187&quot;</td>
<td>.125&quot;</td>
<td></td>
<td>4-48</td>
<td>353</td>
</tr>
<tr>
<td>.187&quot;</td>
<td>.250&quot;</td>
<td></td>
<td>4-48</td>
<td>354</td>
</tr>
<tr>
<td>.187&quot;</td>
<td>.375&quot;</td>
<td></td>
<td>4-48</td>
<td>355</td>
</tr>
<tr>
<td>.187&quot;</td>
<td>.500&quot;</td>
<td></td>
<td>4-48</td>
<td>356</td>
</tr>
<tr>
<td>Actual Size</td>
<td>Diameter</td>
<td>Length</td>
<td>Thread</td>
<td>Part Number</td>
</tr>
<tr>
<td>-------------</td>
<td>----------</td>
<td>---------</td>
<td>------------</td>
<td>-------------</td>
</tr>
<tr>
<td>FLAT</td>
<td>.187&quot;</td>
<td>.750&quot;</td>
<td>4-48</td>
<td>359</td>
</tr>
<tr>
<td></td>
<td>.187&quot;</td>
<td>1.000&quot;</td>
<td>4-48</td>
<td>360</td>
</tr>
<tr>
<td></td>
<td>.187&quot;</td>
<td>2.000&quot;</td>
<td>4-48</td>
<td>360-2000</td>
</tr>
<tr>
<td></td>
<td>.187&quot;</td>
<td>3.000&quot;</td>
<td>4-48</td>
<td>360-3000</td>
</tr>
<tr>
<td></td>
<td>.187&quot;</td>
<td>4.000&quot;</td>
<td>4-48</td>
<td>360-4000</td>
</tr>
<tr>
<td></td>
<td>.250&quot;</td>
<td>.250&quot;</td>
<td>4-48</td>
<td>381</td>
</tr>
<tr>
<td></td>
<td>.281&quot;</td>
<td>.140&quot;</td>
<td>4-48</td>
<td>377</td>
</tr>
<tr>
<td></td>
<td>.375&quot;</td>
<td>.156&quot;</td>
<td>4-48</td>
<td>378</td>
</tr>
<tr>
<td></td>
<td>.500&quot;</td>
<td>.187&quot;</td>
<td>4-48</td>
<td>317</td>
</tr>
<tr>
<td></td>
<td>.625&quot;</td>
<td>.187&quot;</td>
<td>4-48</td>
<td>365</td>
</tr>
<tr>
<td></td>
<td>.750&quot;</td>
<td>.218&quot;</td>
<td>4-48</td>
<td>366</td>
</tr>
<tr>
<td></td>
<td>1.000&quot;</td>
<td>.218&quot;</td>
<td>4-48</td>
<td>367</td>
</tr>
</tbody>
</table>

Tungsten Carbide Contact Surface Unless Noted
Highly Polished Lapped Flat And Parallel With Shoulder
### A.G.D. & METRIC

<table>
<thead>
<tr>
<th>Actual Size</th>
<th>A Diameter</th>
<th>B Length</th>
<th>C Diameter</th>
<th>Thread</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>FLAT</td>
<td>.187&quot;</td>
<td>.125&quot;</td>
<td>.125&quot;</td>
<td>4-48</td>
<td>501</td>
</tr>
<tr>
<td></td>
<td>M2.5 x 0.45</td>
<td></td>
<td></td>
<td></td>
<td>511</td>
</tr>
<tr>
<td>RUBY INSERT</td>
<td>.187&quot;</td>
<td>.125&quot;</td>
<td>.125&quot;</td>
<td>4-48</td>
<td>353R</td>
</tr>
<tr>
<td></td>
<td>M2.5 x 0.45</td>
<td></td>
<td></td>
<td></td>
<td>373R</td>
</tr>
<tr>
<td>RUBY INSERT</td>
<td>.187&quot;</td>
<td>.250&quot;</td>
<td>.125&quot;</td>
<td>4-48</td>
<td>354R</td>
</tr>
<tr>
<td></td>
<td>M2.5 x 0.45</td>
<td></td>
<td></td>
<td></td>
<td>374R</td>
</tr>
<tr>
<td>RUBY INSERT</td>
<td>.250&quot;</td>
<td>.250&quot;</td>
<td>.177&quot;</td>
<td>4-48</td>
<td>361R</td>
</tr>
<tr>
<td></td>
<td>M2.5 x 0.45</td>
<td></td>
<td></td>
<td></td>
<td>381R</td>
</tr>
<tr>
<td>RUBY INSERT</td>
<td>.281&quot;</td>
<td>.140&quot;</td>
<td>.187&quot;</td>
<td>4-48</td>
<td>502</td>
</tr>
<tr>
<td></td>
<td>M2.5 x 0.45</td>
<td></td>
<td></td>
<td></td>
<td>512</td>
</tr>
<tr>
<td></td>
<td>.375&quot;</td>
<td>.156&quot;</td>
<td>.250&quot;</td>
<td>4-48</td>
<td>503</td>
</tr>
<tr>
<td></td>
<td>M2.5 x 0.45</td>
<td></td>
<td></td>
<td></td>
<td>513</td>
</tr>
<tr>
<td></td>
<td>.500&quot;</td>
<td>.187&quot;</td>
<td>.375&quot;</td>
<td>4-48</td>
<td>504</td>
</tr>
<tr>
<td></td>
<td>M2.5 x 0.45</td>
<td></td>
<td></td>
<td></td>
<td>514</td>
</tr>
<tr>
<td></td>
<td>.625&quot;</td>
<td>.187&quot;</td>
<td>.500&quot;</td>
<td>4-48</td>
<td>505</td>
</tr>
<tr>
<td></td>
<td>M2.5 x 0.45</td>
<td></td>
<td></td>
<td></td>
<td>515</td>
</tr>
<tr>
<td></td>
<td>.750&quot;</td>
<td>.218&quot;</td>
<td>.625&quot;</td>
<td>4-48</td>
<td>506</td>
</tr>
<tr>
<td></td>
<td>M2.5 x 0.45</td>
<td></td>
<td></td>
<td></td>
<td>516</td>
</tr>
<tr>
<td></td>
<td>1.000&quot;</td>
<td>.218&quot;</td>
<td>.875&quot;</td>
<td>4-48</td>
<td>507</td>
</tr>
<tr>
<td></td>
<td>M2.5 x 0.45</td>
<td></td>
<td></td>
<td></td>
<td>517</td>
</tr>
</tbody>
</table>

### ANSI Group O

<table>
<thead>
<tr>
<th>Actual Size</th>
<th>A</th>
<th>B Length</th>
<th>Thread</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Radius And Flat Gauging Surface</td>
<td>.125&quot; Radius</td>
<td>.156&quot;</td>
<td>0-80</td>
<td>541</td>
</tr>
<tr>
<td></td>
<td>1-72</td>
<td></td>
<td></td>
<td>552</td>
</tr>
<tr>
<td>Radius And Flat Gauging Surface</td>
<td>.125&quot; Radius</td>
<td>.250&quot;</td>
<td>0-80</td>
<td>542</td>
</tr>
<tr>
<td></td>
<td>1-72</td>
<td></td>
<td></td>
<td>553</td>
</tr>
<tr>
<td>Contact Surface Highly Polished Tungsten Carbide</td>
<td>Flat</td>
<td>.156&quot;</td>
<td>0-80</td>
<td>543</td>
</tr>
<tr>
<td></td>
<td>1-72</td>
<td></td>
<td></td>
<td>554</td>
</tr>
<tr>
<td>Contact Surface Highly Polished Tungsten Carbide</td>
<td>Flat</td>
<td>.250&quot;</td>
<td>0-80</td>
<td>544</td>
</tr>
<tr>
<td></td>
<td>1-72</td>
<td></td>
<td></td>
<td>555</td>
</tr>
</tbody>
</table>
### METRIC

<table>
<thead>
<tr>
<th>Actual Size</th>
<th>A</th>
<th>B</th>
<th>Thread</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Radius And Flat Gauging Surface</td>
<td>.156&quot; Diameter</td>
<td>.250&quot;</td>
<td>M2.6 x 0.45</td>
<td>601</td>
</tr>
<tr>
<td>Contact Surface Highly Polished Tungsten Carbide</td>
<td>.156&quot; Diameter</td>
<td>.500&quot;</td>
<td>M2.6 x 0.45</td>
<td>602</td>
</tr>
<tr>
<td></td>
<td>Flat</td>
<td>.250&quot;</td>
<td>M2.6 x 0.45</td>
<td>603</td>
</tr>
<tr>
<td></td>
<td>Flat</td>
<td>.500&quot;</td>
<td>M2.6 x 0.45</td>
<td>604</td>
</tr>
</tbody>
</table>

### A.G.D. & METRIC

<table>
<thead>
<tr>
<th>Actual Size</th>
<th>A Length</th>
<th>Thread</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flanged Contacts For Checking Grooves And Ledges</td>
<td>.250&quot;</td>
<td>4-48</td>
<td>340</td>
</tr>
<tr>
<td></td>
<td>.375&quot;</td>
<td>4-48</td>
<td>341</td>
</tr>
<tr>
<td></td>
<td>.500&quot;</td>
<td>4-48</td>
<td>342</td>
</tr>
</tbody>
</table>

### A.G.D. & METRIC

<table>
<thead>
<tr>
<th>Actual Size</th>
<th>A Angle</th>
<th>B</th>
<th>Thread</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conical Sharp Point Tungsten Carbide Tipped</td>
<td>90°</td>
<td>.312&quot;</td>
<td>4-48</td>
<td>561</td>
</tr>
<tr>
<td></td>
<td>60°</td>
<td>.375&quot;</td>
<td>4-48</td>
<td>562</td>
</tr>
</tbody>
</table>

### BALL POINTS FRACTIONAL SIZE

<table>
<thead>
<tr>
<th>Actual Size</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>Thread</th>
<th>T.C. Ball Part Number</th>
<th>Ruby Ball Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carbine Ball is Grade 25 AFBMA Tolerance ± .0001&quot; Sphericity .000025&quot;</td>
<td>.015&quot;</td>
<td>.250&quot;</td>
<td>.187&quot;</td>
<td>4-48</td>
<td>400-015</td>
<td>400-015R</td>
</tr>
<tr>
<td></td>
<td>.03125&quot;</td>
<td>.250&quot;</td>
<td>.187&quot;</td>
<td>4-48</td>
<td>401</td>
<td>401R</td>
</tr>
<tr>
<td></td>
<td>.04687&quot;</td>
<td>.250&quot;</td>
<td>.187&quot;</td>
<td>4-48</td>
<td>402</td>
<td>402R</td>
</tr>
<tr>
<td></td>
<td>.0625&quot;</td>
<td>.250&quot;</td>
<td>.187&quot;</td>
<td>4-48</td>
<td>403</td>
<td>403R</td>
</tr>
<tr>
<td></td>
<td>.09375&quot;</td>
<td>.250&quot;</td>
<td>.187&quot;</td>
<td>4-48</td>
<td>404</td>
<td>404R</td>
</tr>
<tr>
<td></td>
<td>.125&quot;</td>
<td>.250&quot;</td>
<td>.187&quot;</td>
<td>4-48</td>
<td>405</td>
<td>405R</td>
</tr>
<tr>
<td></td>
<td>.15625&quot;</td>
<td>.250&quot;</td>
<td>.187&quot;</td>
<td>4-48</td>
<td>406</td>
<td>406R</td>
</tr>
<tr>
<td></td>
<td>.1875&quot;</td>
<td>250&quot;</td>
<td>.187&quot;</td>
<td>4-48</td>
<td>407</td>
<td>407R</td>
</tr>
<tr>
<td>Ruby Ball is Grade 10 AFBMA Tolerance ± .0001&quot; Sphericity .000010&quot;</td>
<td>.250&quot;</td>
<td>250&quot;</td>
<td>.218&quot;</td>
<td>4-48</td>
<td>420</td>
<td>420R</td>
</tr>
</tbody>
</table>

---

A.G.D. & METRIC FRACTIONAL SIZE continued on page 26
### BALL POINTS

#### FRACTIONAL SIZE

<table>
<thead>
<tr>
<th>Actual Size</th>
<th>A Diameter</th>
<th>B Length</th>
<th>C Diameter</th>
<th>Thread</th>
<th>T.C. Ball Part Number</th>
<th>Ruby Ball Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>.28125&quot;</td>
<td>.250&quot;</td>
<td>.234&quot;</td>
<td>4-48</td>
<td>410</td>
<td>410R</td>
<td></td>
</tr>
<tr>
<td>.3125&quot;</td>
<td>.250&quot;</td>
<td>.250&quot;</td>
<td>4-48</td>
<td>411</td>
<td>411R</td>
<td></td>
</tr>
<tr>
<td>.375&quot;</td>
<td>.312&quot;</td>
<td>.250&quot;</td>
<td>4-48</td>
<td>412</td>
<td>412R</td>
<td></td>
</tr>
<tr>
<td>.437&quot;</td>
<td>.343&quot;</td>
<td>.250&quot;</td>
<td>4-48</td>
<td>413</td>
<td>N/A</td>
<td></td>
</tr>
<tr>
<td>.500&quot;</td>
<td>.375&quot;</td>
<td>.250&quot;</td>
<td>4-48</td>
<td>414</td>
<td>N/A</td>
<td></td>
</tr>
</tbody>
</table>

Carbide Ball is Grade 25 AFBMA Tolerance ± .0001" Sphericity .000025".

Ruby Ball is Grade 10 AFBMA Tolerance ± .0001" Sphericity .000010".

#### METRIC SIZE

<table>
<thead>
<tr>
<th>Actual Size</th>
<th>A Diameter</th>
<th>B Length</th>
<th>C Diameter</th>
<th>Thread</th>
<th>T.C. Ball Part Number</th>
<th>Ruby Ball Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>1mm</td>
<td>.250&quot;</td>
<td>.187&quot;</td>
<td>4-48</td>
<td>400-1</td>
<td>400-1R</td>
<td></td>
</tr>
<tr>
<td>1.5mm</td>
<td>.250&quot;</td>
<td>.187&quot;</td>
<td>4-48</td>
<td>400-1.5</td>
<td>400-1.5R</td>
<td></td>
</tr>
<tr>
<td>2mm</td>
<td>.250&quot;</td>
<td>.187&quot;</td>
<td>4-48</td>
<td>400-2</td>
<td>400-2R</td>
<td></td>
</tr>
<tr>
<td>2.5mm</td>
<td>.250&quot;</td>
<td>.187&quot;</td>
<td>4-48</td>
<td>400-2.5</td>
<td>400-2.5R</td>
<td></td>
</tr>
<tr>
<td>3mm</td>
<td>.250&quot;</td>
<td>.187&quot;</td>
<td>4-48</td>
<td>400-3</td>
<td>400-3R</td>
<td></td>
</tr>
<tr>
<td>3.5mm</td>
<td>.250&quot;</td>
<td>.187&quot;</td>
<td>4-48</td>
<td>400-3.5</td>
<td>400-3.5R</td>
<td></td>
</tr>
<tr>
<td>4mm</td>
<td>.250&quot;</td>
<td>.187&quot;</td>
<td>4-48</td>
<td>400-4</td>
<td>400-4R</td>
<td></td>
</tr>
<tr>
<td>5mm</td>
<td>.250&quot;</td>
<td>.187&quot;</td>
<td>4-48</td>
<td>400-5</td>
<td>400-5R</td>
<td></td>
</tr>
<tr>
<td>6mm</td>
<td>.250&quot;</td>
<td>.218&quot;</td>
<td>4-48</td>
<td>400-6</td>
<td>400-6R</td>
<td></td>
</tr>
<tr>
<td>7mm</td>
<td>.250&quot;</td>
<td>.234&quot;</td>
<td>4-48</td>
<td>400-7</td>
<td>400-7R</td>
<td></td>
</tr>
<tr>
<td>8mm</td>
<td>.250&quot;</td>
<td>.250&quot;</td>
<td>4-48</td>
<td>400-8</td>
<td>400-8R</td>
<td></td>
</tr>
<tr>
<td>9mm</td>
<td>.312&quot;</td>
<td>.250&quot;</td>
<td>4-48</td>
<td>400-9</td>
<td>400-9R</td>
<td></td>
</tr>
<tr>
<td>10mm</td>
<td>.312&quot;</td>
<td>.250&quot;</td>
<td>4-48</td>
<td>400-10</td>
<td>400-10R</td>
<td></td>
</tr>
<tr>
<td>11mm</td>
<td>.343&quot;</td>
<td>.250&quot;</td>
<td>4-48</td>
<td>400-11</td>
<td>N/A</td>
<td></td>
</tr>
<tr>
<td>12mm</td>
<td>.343&quot;</td>
<td>.250&quot;</td>
<td>4-48</td>
<td>400-12</td>
<td>N/A</td>
<td></td>
</tr>
</tbody>
</table>

Carbide Ball is Grade 25 AFBMA Tolerance ± .0001" Sphericity .000025".

Ruby Ball is Grade 10 AFBMA Tolerance ± .0001" Sphericity .000010".
<table>
<thead>
<tr>
<th>Actual Size</th>
<th>B Length</th>
<th>Thread</th>
<th>Ball Size</th>
<th>T.C Ball Part Number</th>
<th>Ruby Ball Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>.500&quot;</td>
<td>4-48</td>
<td>.015&quot;</td>
<td>.031&quot;</td>
<td>431-015</td>
<td>431-015R</td>
</tr>
<tr>
<td>M2.5 x 0.45</td>
<td></td>
<td>.031&quot;</td>
<td>.062&quot;</td>
<td>431-031</td>
<td>431-031R</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>431-062</td>
<td>431-062R</td>
</tr>
<tr>
<td>.625&quot;</td>
<td>4-48</td>
<td>.015&quot;</td>
<td>.031&quot;</td>
<td>434-015</td>
<td>434-015R</td>
</tr>
<tr>
<td>M2.5 x 0.45</td>
<td></td>
<td>.031&quot;</td>
<td>.062&quot;</td>
<td>434-031</td>
<td>434-031R</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>434-062</td>
<td>434-062R</td>
</tr>
<tr>
<td>.750&quot;</td>
<td>4-48</td>
<td>.015&quot;</td>
<td>.031&quot;</td>
<td>432-015</td>
<td>432-015R</td>
</tr>
<tr>
<td>M2.5 x 0.45</td>
<td></td>
<td>.031&quot;</td>
<td>.062&quot;</td>
<td>432-031</td>
<td>432-031R</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>432-062</td>
<td>432-062R</td>
</tr>
<tr>
<td>.750&quot;</td>
<td>4-48</td>
<td>.015&quot;</td>
<td></td>
<td>435</td>
<td>N/A</td>
</tr>
<tr>
<td>M2.5 x 0.45</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.000</td>
<td>4-48</td>
<td>.015&quot;</td>
<td>.031&quot;</td>
<td>433-015</td>
<td>433-015R</td>
</tr>
<tr>
<td>M2.5 x 0.45</td>
<td></td>
<td>.031&quot;</td>
<td>.062&quot;</td>
<td>433-031</td>
<td>433-031R</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>433-062</td>
<td>433-062R</td>
</tr>
<tr>
<td>1.500&quot;</td>
<td>4-48</td>
<td>.015&quot;</td>
<td>.031&quot;</td>
<td>444-015</td>
<td>444-015R</td>
</tr>
<tr>
<td>M2.5 x 0.45</td>
<td></td>
<td>.031&quot;</td>
<td>.062&quot;</td>
<td>444-031</td>
<td>444-031R</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>444-062</td>
<td>444-062R</td>
</tr>
</tbody>
</table>

**ANSI GROUP O**

<table>
<thead>
<tr>
<th>Actual Size</th>
<th>A Diameter</th>
<th>Thread</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>.0312&quot;</td>
<td>0-80</td>
<td>520</td>
<td></td>
</tr>
<tr>
<td>1-72</td>
<td>531</td>
<td></td>
<td></td>
</tr>
<tr>
<td>.0469&quot;</td>
<td>0-80</td>
<td>521</td>
<td></td>
</tr>
<tr>
<td>1-72</td>
<td>532</td>
<td></td>
<td></td>
</tr>
<tr>
<td>.0625&quot;</td>
<td>0-80</td>
<td>522</td>
<td></td>
</tr>
<tr>
<td>1-72</td>
<td>533</td>
<td></td>
<td></td>
</tr>
<tr>
<td>.0937&quot;</td>
<td>0-80</td>
<td>523</td>
<td></td>
</tr>
<tr>
<td>1-72</td>
<td>534</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### A.G.D. & METRIC

<table>
<thead>
<tr>
<th>BALL POINTS (LOW PROFILE)</th>
<th>Actual Size</th>
<th>A Diameter</th>
<th>Thread</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>.062&quot; Carbide</td>
<td>4-48</td>
<td>479</td>
</tr>
<tr>
<td></td>
<td></td>
<td>.062&quot; Ruby</td>
<td>4-48</td>
<td>480</td>
</tr>
<tr>
<td></td>
<td></td>
<td>.125&quot; Carbide</td>
<td>4-48</td>
<td>481</td>
</tr>
<tr>
<td></td>
<td></td>
<td>.125&quot; Ruby</td>
<td>4-48</td>
<td>482</td>
</tr>
</tbody>
</table>

### A.G.D.

<table>
<thead>
<tr>
<th>Radius &amp; Flat Gauging Surface</th>
<th>Actual Size</th>
<th>A Diameter</th>
<th>Thread</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contact Surface</td>
<td>.312&quot; Radius</td>
<td>8-32</td>
<td>581</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Flat</td>
<td>8-32</td>
<td>582</td>
<td></td>
</tr>
</tbody>
</table>

### A.G.D.

<table>
<thead>
<tr>
<th>BALL POINTS</th>
<th>Actual Size</th>
<th>A Diameter</th>
<th>Thread</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>.250&quot;</td>
<td>10-32</td>
<td>584</td>
<td></td>
</tr>
<tr>
<td></td>
<td>.3125&quot;</td>
<td>10-32</td>
<td>585</td>
<td></td>
</tr>
</tbody>
</table>

### METRIC

<table>
<thead>
<tr>
<th>BALL POINTS</th>
<th>Actual Size</th>
<th>A Diameter</th>
<th>Thread</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>.0312&quot;</td>
<td>M2.6 x 0.45</td>
<td>620</td>
<td></td>
</tr>
<tr>
<td></td>
<td>.0625&quot;</td>
<td>M2.6 x 0.45</td>
<td>621</td>
<td></td>
</tr>
<tr>
<td></td>
<td>.0937&quot;</td>
<td>M2.6 x 0.45</td>
<td>622</td>
<td></td>
</tr>
<tr>
<td></td>
<td>.125&quot;</td>
<td>M2.6 x 0.45</td>
<td>623</td>
<td></td>
</tr>
</tbody>
</table>

### METRIC

<table>
<thead>
<tr>
<th>BALL POINTS (LOW PROFILE)</th>
<th>Actual Size</th>
<th>A</th>
<th>Thread</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>.093 BALL &quot;A&quot;</td>
<td>Carbide</td>
<td>M2.6 x 0.45</td>
<td>640</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Ruby</td>
<td>M2.6 x 0.45</td>
<td>641</td>
</tr>
</tbody>
</table>
## A.G.D. Indicators

### Radius & Flat Gauging Surface
- **Contact Surface**: Highly Polished Tungsten Carbide

### Actual Size A
- **Diameter**: 1.0mm, 1.0mm, 1.5mm, 1.5mm, 2.0mm
- **Length**: .120", .400", .500", .780", 1.000" (radius), 1.000" (flat)

### Thread Numbers
- **5-40**, **4-40**, **4-48**

### Part Numbers
- **660**, **665**, **661**, **668**

### Flat Needles
- **Gauging Surface**: .018" (.120" .400")
- **Contact Surface**: Highly Polished Tungsten Carbide

### Actual Size A
- **Diameter**: .018", 1.0mm, 1.0mm, 1.5mm, 1.5mm, 2.0mm
- **Length**: .120", .400", .500", .780", 1.000", 1.000" (radius), 1.000" (flat)

### Thread Numbers
- **4-48**, **5-40**, **4-40**, **4-48**, **4-48**, **4-48**, **4-48**

### Part Numbers

## A.G.D. & Metric Indicators

### RADIUS NEEDLE
- **Gauging Surface**: Full Radius Highly Polished Carbide

### Actual Size
- **Diameter**: 1.0mm, 1.0mm, 1.5mm, 1.5mm, 2.0mm
- **Length**: .120", .400", .500", .780", 1.000" (radius), 1.000" (flat)

### Thread Numbers
- **4-48**, **4-48**, **4-48**, **4-48**, **4-48**

### Part Numbers

### FLAT NEEDLE
- **Gauging Surface**: Carbide Lapped Flat and Parallel

### Actual Size
- **Diameter**: .018", 1.0mm, 1.0mm, 1.5mm, 1.5mm, 2.0mm
- **Length**: .120", .400", .500", .780", 1.000", 1.000" (radius), 1.000" (flat)

### Thread Numbers
- **4-48**, **4-48**, **4-48**, **4-48**, **4-48**

### Part Numbers
<table>
<thead>
<tr>
<th>A.G.D. &amp; METRIC</th>
<th>Actual Size</th>
<th>A Diameter</th>
<th>B Length</th>
<th>C Length</th>
<th>Thread</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CONICAL SHARP POINT NEEDLE</strong>&lt;br&gt;Gauging Surface</td>
<td>1.0mm</td>
<td>.120*</td>
<td>.400*</td>
<td>4-48</td>
<td>626</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1.0mm</td>
<td>.500*</td>
<td>.780*</td>
<td>4-48</td>
<td>629</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1.5mm</td>
<td>.500*</td>
<td>.800*</td>
<td>4-48</td>
<td>526</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1.5mm</td>
<td>1.000&quot;</td>
<td>1.300&quot;</td>
<td>4-48</td>
<td>539</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2.0mm</td>
<td>1.000&quot;</td>
<td>1.300&quot;</td>
<td>4-48</td>
<td>558</td>
<td></td>
</tr>
<tr>
<td><strong>FLAT END</strong>&lt;br&gt;CHISEL Carbide Tipped</td>
<td>1.0mm</td>
<td>.120&quot;</td>
<td>.400&quot;</td>
<td>4-48</td>
<td>318</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1.0mm</td>
<td>.500&quot;</td>
<td>.780&quot;</td>
<td>M2.5 x 0.45</td>
<td>338</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1.5mm</td>
<td>.500&quot;</td>
<td>.800&quot;</td>
<td>M2.5 x 0.45</td>
<td>536</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1.5mm</td>
<td>1.000&quot;</td>
<td>1.300&quot;</td>
<td>M2.5 x 0.45</td>
<td>539</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2.0mm</td>
<td>1.000&quot;</td>
<td>1.300&quot;</td>
<td>M2.5 x 0.45</td>
<td>558</td>
<td></td>
</tr>
<tr>
<td><strong>RADIUS END</strong>&lt;br&gt;CHISEL Carbide Tipped</td>
<td>1.0mm</td>
<td>.120&quot;</td>
<td>.400&quot;</td>
<td>4-48</td>
<td>577</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1.0mm</td>
<td>.500&quot;</td>
<td>.780&quot;</td>
<td>M2.5 x 0.45</td>
<td>587</td>
<td></td>
</tr>
<tr>
<td><strong>FLAT END</strong>&lt;br&gt;BLADE Carbide Tipped</td>
<td>1.0mm</td>
<td>.120&quot;</td>
<td>.400&quot;</td>
<td>4-48</td>
<td>350</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1.0mm</td>
<td>.500&quot;</td>
<td>.780&quot;</td>
<td>M2.5 x 0.45</td>
<td>370</td>
<td></td>
</tr>
<tr>
<td><strong>RIGHT ANGLE STYLUS CENTER</strong>&lt;br&gt;For use with tips on pages 2-13</td>
<td>1.0mm</td>
<td>.120&quot;</td>
<td>.400&quot;</td>
<td>4-48</td>
<td>549</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1.0mm</td>
<td>.500&quot;</td>
<td>.780&quot;</td>
<td>M2.5 x 0.45</td>
<td>559</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1.0mm</td>
<td>1.000&quot;</td>
<td>1.300&quot;</td>
<td>M2.5 x 0.45</td>
<td>313</td>
<td></td>
</tr>
<tr>
<td><strong>ROLLER CONTACT</strong>&lt;br&gt;A.G.D. &amp; METRIC</td>
<td>1.0mm</td>
<td>.120&quot;</td>
<td>.400&quot;</td>
<td>4-48</td>
<td>670-375</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1.0mm</td>
<td>.500&quot;</td>
<td>.780&quot;</td>
<td>M2.5 x 0.45</td>
<td>671-375</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1.0mm</td>
<td>1.000&quot;</td>
<td>1.300&quot;</td>
<td>4-48</td>
<td>670-500</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1.0mm</td>
<td>.500&quot;</td>
<td>.780&quot;</td>
<td>M2.5 x 0.45</td>
<td>671-500</td>
<td></td>
</tr>
</tbody>
</table>
### EXTENSIONS

<table>
<thead>
<tr>
<th>A.G.D. &amp; METRIC</th>
<th>Actual Size</th>
<th>B Length</th>
<th>Female Thread</th>
<th>Male Thread</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>.250&quot;</td>
<td>4-48</td>
<td>M2.5 x 0.45</td>
<td>M2.5 x 0.45</td>
<td>307-E250</td>
</tr>
<tr>
<td></td>
<td>.375&quot;</td>
<td>4-48</td>
<td>M2.5 x 0.45</td>
<td>M2.5 x 0.45</td>
<td>327-E375</td>
</tr>
<tr>
<td></td>
<td>.500&quot;</td>
<td>4-48</td>
<td>M2.5 x 0.45</td>
<td>M2.5 x 0.45</td>
<td>327-E500</td>
</tr>
<tr>
<td></td>
<td>.750&quot;</td>
<td>4-48</td>
<td>M2.5 x 0.45</td>
<td>M2.5 x 0.45</td>
<td>327-E750</td>
</tr>
<tr>
<td></td>
<td>1.000&quot;</td>
<td>4-48</td>
<td>M2.5 x 0.45</td>
<td>M2.5 x 0.45</td>
<td>327-E1000</td>
</tr>
<tr>
<td></td>
<td>2.000&quot;</td>
<td>4-48</td>
<td>M2.5 x 0.45</td>
<td>M2.5 x 0.45</td>
<td>327-E2000</td>
</tr>
<tr>
<td></td>
<td>3.000&quot;</td>
<td>4-48</td>
<td>M2.5 x 0.45</td>
<td>M2.5 x 0.45</td>
<td>327-E3000</td>
</tr>
<tr>
<td></td>
<td>4.000&quot;</td>
<td>4-48</td>
<td>M2.5 x 0.45</td>
<td>M2.5 x 0.45</td>
<td>327-E4000</td>
</tr>
<tr>
<td></td>
<td>6.000&quot;</td>
<td>4-48</td>
<td>M2.5 x 0.45</td>
<td>M2.5 x 0.45</td>
<td>327-E6000</td>
</tr>
</tbody>
</table>

### ADAPTORS

<table>
<thead>
<tr>
<th>A.G.D. &amp; METRIC</th>
<th>Actual Size</th>
<th>B Length</th>
<th>Female Thread</th>
<th>Male Thread</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>.375&quot;</td>
<td>4-48</td>
<td>M2.5 x 0.45</td>
<td>M2.5 x 0.45</td>
<td>343-E375</td>
</tr>
<tr>
<td></td>
<td>.250&quot;</td>
<td>M1.4 x 0.3</td>
<td>4-48</td>
<td>M2.5 x 0.45</td>
<td>349-E250</td>
</tr>
<tr>
<td></td>
<td>.250&quot;</td>
<td>M1.7 x 0.35</td>
<td>4-48</td>
<td>M2.5 x 0.45</td>
<td>368-E250</td>
</tr>
<tr>
<td></td>
<td>.250&quot;</td>
<td>M2.0 x 0.4</td>
<td>4-48</td>
<td>M2.5 x 0.45</td>
<td>429-E250</td>
</tr>
</tbody>
</table>