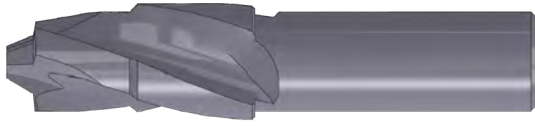
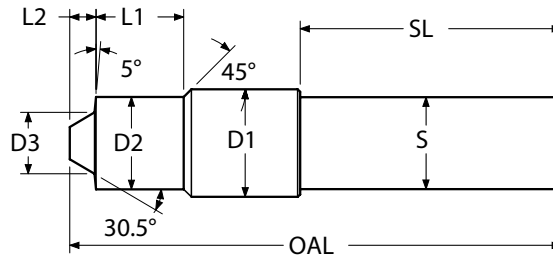


# AUTOCLAVE PORT TOOLS

## SOLID CARBIDE AND CARBIDE-TIPPED



- Designed to produce ports per Parker Autoclave Standard
- Precision ground for maximum concentricity
- Polished flute face for optimum performance
- AlTiN+ coating for improved tool life



### MEDIUM PRESSURE

| D1             | D2    | D3    | L1    | L2    | S     | SL   | OAL  | FLUTES | FLUTE TYPE | TUBE | THREAD     | CONNECTION TYPE          | ORDER #        | EDP #  |
|----------------|-------|-------|-------|-------|-------|------|------|--------|------------|------|------------|--------------------------|----------------|--------|
|                |       |       |       |       |       |      |      |        |            |      |            |                          | AlTiN+         | AlTiN+ |
| Solid Carbide  |       |       |       |       |       |      |      |        |            |      |            |                          |                |        |
| 0.500          | 0.390 | 0.188 | 0.471 | 0.101 | 0.500 | 2.13 | 3.50 | 3      | Helical    | 1/4  | 7/16-20    | SF250CX                  | PT-SF0250CX-A  | 405006 |
| 0.625          | 0.511 | 0.310 | 0.599 | 0.134 | 0.500 | 2.13 | 3.50 | 3      | Helical    | 3/8  | 9/16-18    | SF375CX                  | PT-SF0375CX-A  | 405008 |
| 0.875          | 0.752 | 0.500 | 0.715 | 0.213 | 0.750 | 2.13 | 4.00 | 3      | Helical    | 9/16 | 13/16-16   | SF562CX10<br>SF562CX20   | PT-SF0562CX-A  | 405010 |
| Carbide-Tipped |       |       |       |       |       |      |      |        |            |      |            |                          |                |        |
| 1.090          | 0.966 | 0.625 | 0.899 | 0.216 | 0.750 | 2.25 | 4.50 | 3      | Straight   | 3/4  | 3/4-14 NPS | SF750CX10<br>SF750CX20   | PT-SF0750CX-A  | 405012 |
| 1.438          | 1.297 | 0.875 | 1.266 | 0.418 | 0.750 | 2.25 | 4.75 | 3      | Straight   | 1    | 1-3/8-12   | SF1000CX10<br>SF1000CX20 | *PT-SF1000CX-A | 405014 |

### HIGH PRESSURE

| D1             | D2    | D3    | L1    | L2    | S     | SL   | OAL  | FLUTES | FLUTE TYPE | TUBE | THREAD   | CONNECTION TYPE                 | ORDER #      | EDP #  |
|----------------|-------|-------|-------|-------|-------|------|------|--------|------------|------|----------|---------------------------------|--------------|--------|
|                |       |       |       |       |       |      |      |        |            |      |          |                                 | AlTiN+       | AlTiN+ |
| Solid Carbide  |       |       |       |       |       |      |      |        |            |      |          |                                 |              |        |
| 0.625          | 0.511 | 0.170 | 0.405 | 0.096 | 0.500 | 2.13 | 3.50 | 3      | Helical    | 1/4  | 9/16-18  | F250C                           | PT-F0250C-A  | 405016 |
| 0.750          | 0.574 | 0.250 | 1.032 | 0.167 | 0.500 | 2.13 | 4.00 | 3      | Helical    | 5/16 | 5/8-18   | F312C150                        | PT-F0312C-A  | 405018 |
| 0.875          | 0.691 | 0.260 | 0.586 | 0.150 | 0.750 | 2.13 | 4.00 | 3      | Helical    | 3/8  | 3/4-16   | F375C                           | PT-F0375C-A  | 405020 |
| Carbide-Tipped |       |       |       |       |       |      |      |        |            |      |          |                                 |              |        |
| 1.220          | 1.047 | 0.380 | 0.704 | 0.212 | 0.750 | 2.25 | 4.50 | 2      | Straight   | 9/16 | 1-1/8-12 | F562C<br>F562C40<br>F562C40-312 | PT-F0562C-A  | 405022 |
| 1.438          | 1.297 | 0.875 | 1.266 | 0.418 | 0.750 | 2.25 | 4.75 | 3      | Straight   | 1    | 1-3/8-12 | F1000C43                        | *PT-F1000C-A | 405024 |

\* PT-SF1000CX-A and PT-F1000C-A are interchangeable tools.

# PORT & CAVITY TECHNICAL INFORMATION

| MATERIAL                                  | HB/Rc  | SPEED (SFM) |          | CUTTING CONDITIONS    |                            |
|-------------------------------------------|--------|-------------|----------|-----------------------|----------------------------|
|                                           |        | UNCOATED    | ALTiN+   | INFEED PER FLUTE REAM | INFEED PER FLUTE SPOT FACE |
| CAST IRON                                 | 130 HB | 75-210      | 200-450  | .001-.0025            | .0008-.0020                |
| CARBON STEEL                              | 18 Rc  | 125-190     | 190-400  | .001-.0030            | .001-.0020                 |
| ALLOY STEEL                               | 20 Rc  | 70-135      | 130-350  | .001-.0030            | .0008-.0020                |
| TOOL STEEL                                | 25 Rc  | 75-100      | 100-220  | .001-.0025            | .0005-.0020                |
| 300 STAINLESS STEEL                       | 150 HB | 90-100      | 100-230  | .001-.0020            | .0007-.0015                |
| 400 STAINLESS STEEL                       | 195 HB | 90-135      | 135-300  | .001-.0020            | .0005-.0015                |
| HIGH TEMP ALLOY<br>(NICKEL & COBALT BASE) | 20 Rc  | 30-125      | 100-150  | .0008-.0015           | .0005-.0010                |
| TITANIUM                                  | 25 Rc  | 50-100      | 100-140  | .001-.0020            | .0005-.0010                |
| HEAT TREATED ALLOYS<br>(38-45Rc)          | 40 Rc  | 50-75       | 75-130   | .0008-.0015           | .0005-.0010                |
| ALUMINUM                                  | 100 HB | 850-1000    | 800-1500 | .002-.0040            | .0010-.0030                |
| BRASS, ZINC                               | 80 HB  | 750-950     | 800-1200 | .002-.0040            | .0010-.0030                |

SFM = Surface Feet per Minute  
RPM = SFM x 3.82 divided by tool diameter

Starting parameters only. Setup and machine rigidity may affect performance.

| PROBLEM          | CAUSE              | SOLUTION                                                                                               |
|------------------|--------------------|--------------------------------------------------------------------------------------------------------|
| RAPID FLANK WEAR | CUTTING CONDITIONS | Check for excessive speed and feed - see chart.                                                        |
|                  | TOOL               | Select a coated tool.                                                                                  |
|                  | PROGRAM            | Remove dwell from program at end of cut.                                                               |
| BUILT-UP EDGE    | TOOL               | Select a coated tool. The coating will resist built-up edges.                                          |
|                  | HEAT               | Use coolant through port tool.<br>If coolant is not available, use shop air and a coated tool.         |
| SURFACE TORN     | TOOL               | Use a coated tool. On most carbon steels, an uncoated tool will not produce an acceptable finish.      |
| CHATTER          | TOOL               | Hone cutting edge of spot face. Use Coated Tool.<br>Increase chip load.                                |
| LIGHT CHATTER    | PROGRAM            | Increase speed by 15-20%. A faster speed reduces forces.<br>A dwell typically will not remove chatter. |
| POOR TOOL LIFE   | AMOUNT OF STOCK    | Rough port to 0.97 inch of finish size.                                                                |
|                  | PART               | Make sure prior operation did not work harden the material.                                            |

## SAMPLE PROGRAM FOR MAXIMUM PRODUCTIVITY

N51 (Sample Port Tool Program: MS33649-4RA (ALTiN+) cutting Carbon Steel

**T51 M06**

**S2916 M03**

**G00 G90 G54 X0. Y0.**

**G43 H51 Z0.1 M08**

**G01 Z-0.6 F23.3**

**S1290 M03**

**G04 P1.**

**G01 Z-.73 F10.3**

**G00 Z5. M09**

**Select Tool**

**SFM = 300 ; RPM = 300 x 3.82 / Reamer Diameter**

**RPM = 300 X 3.82 / 0.393**

**RPM = 2916**

**Feed Rate = RPM x 0.002 x 4 (Number of Flutes)**

**RPM = 300 x 3.82 / 0.888 (Spot Face Diameter)**

**Dwell to slow down spindle**

**Feed rate = RPM x 0.002 x 4 (Number of Flutes)**