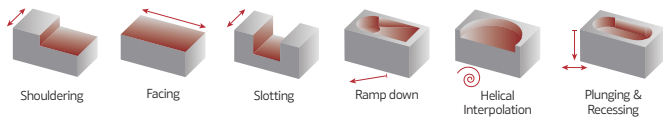
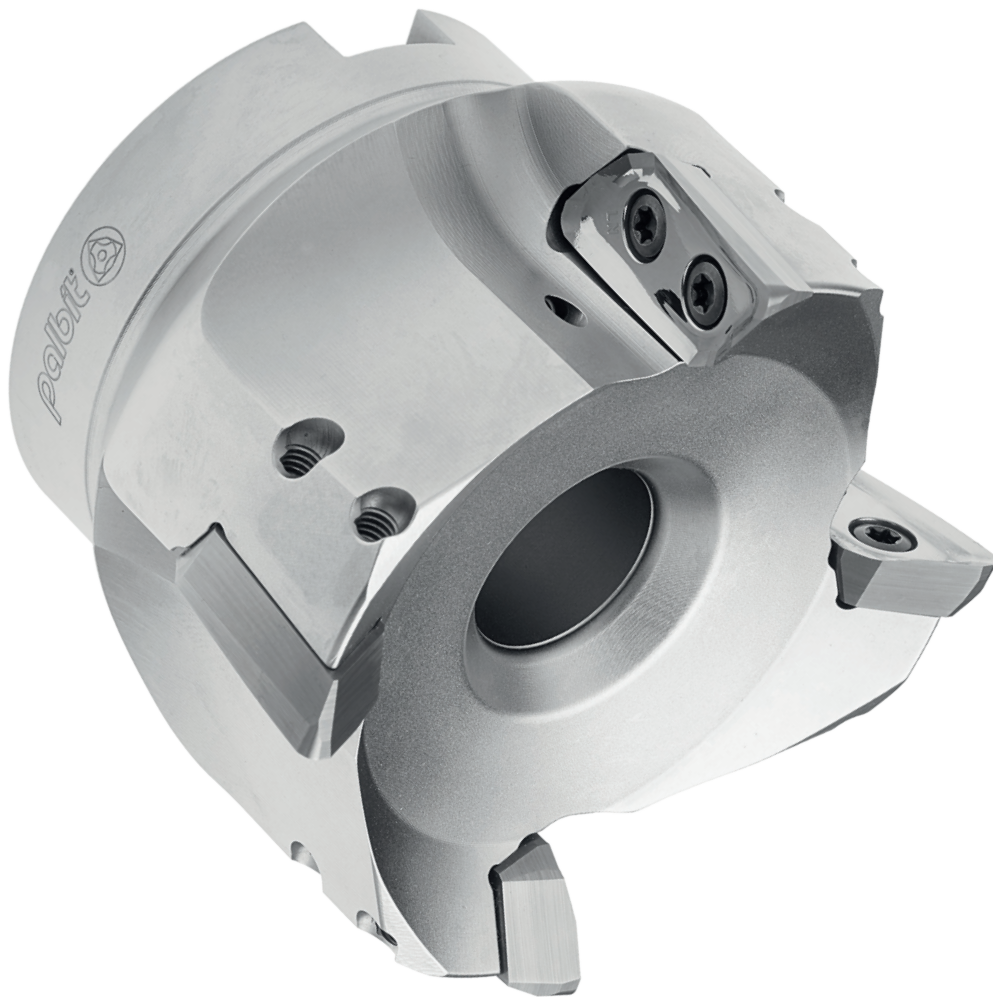


High performance milling for aluminum alloys



ALUPRO
XD90-15 | XD90-22

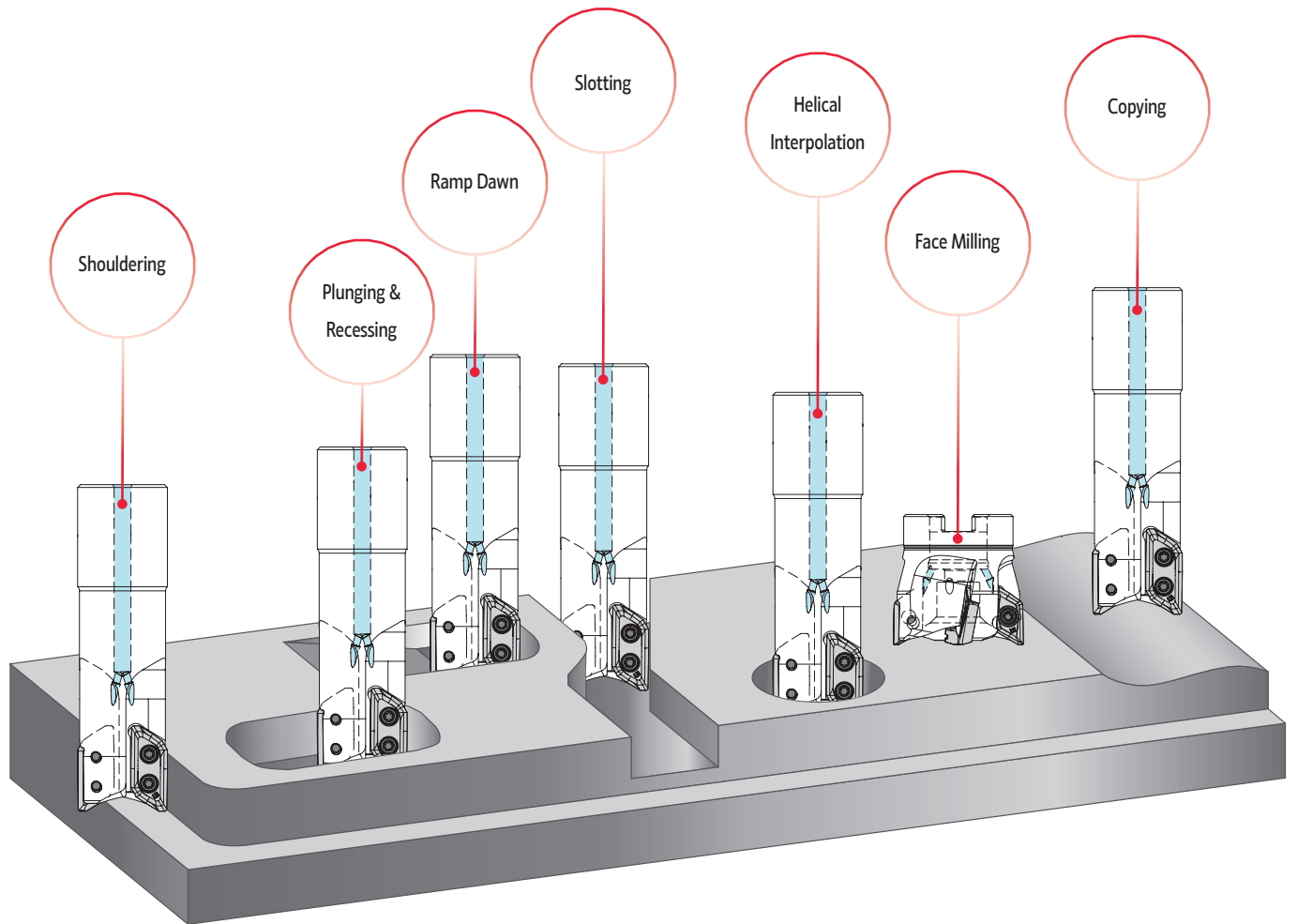


90° geometry on milling operations

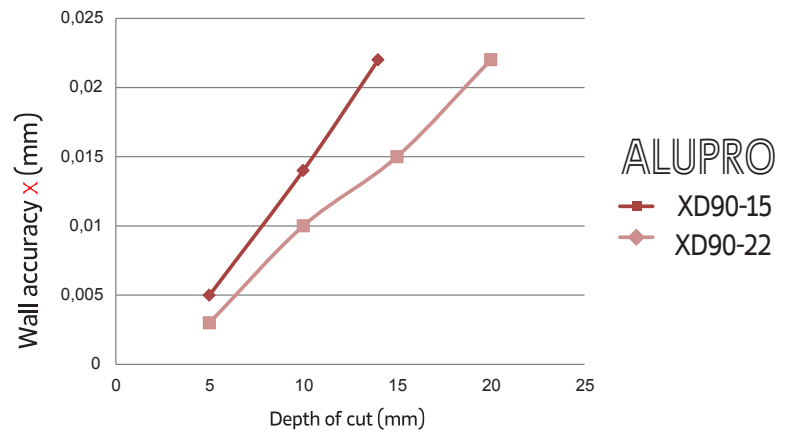
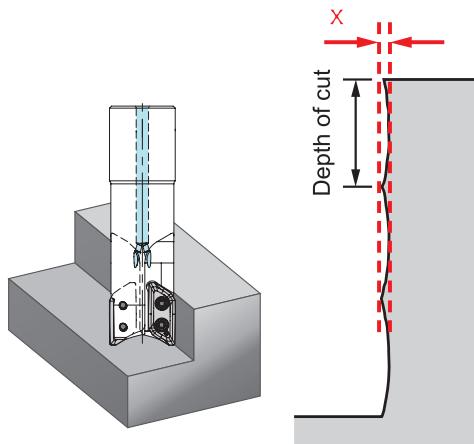
Arbor & Cylindrical

SINCE 1916

MULTIFUNCTIONAL TOOL



WALL ACCURACY



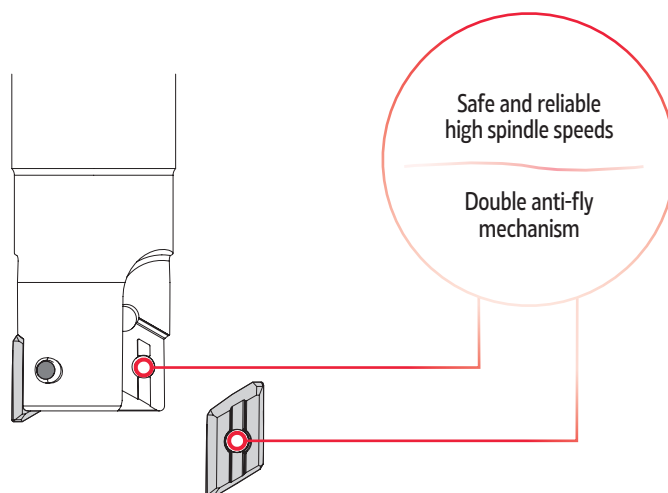
MAIN FEATURES

Cutters

Excellent multi functional milling tool for non-ferrous materials.

- High speed milling can be achieved due to double screw clamping & anti-fly system.
- High accuracy cutters to prevent vibrations at high speeds.

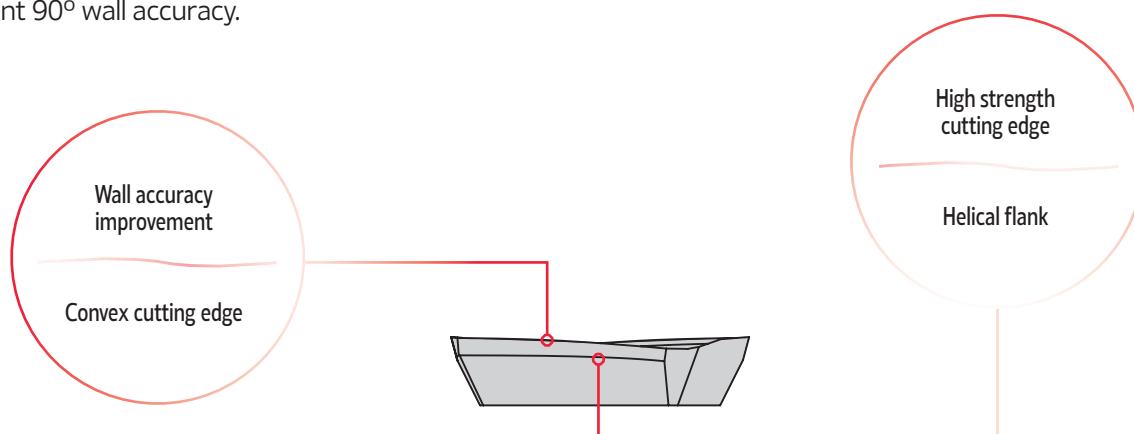
Anti-fly system



Inserts

High rake angle geometry that provides a good surface finish and low cutting forces.

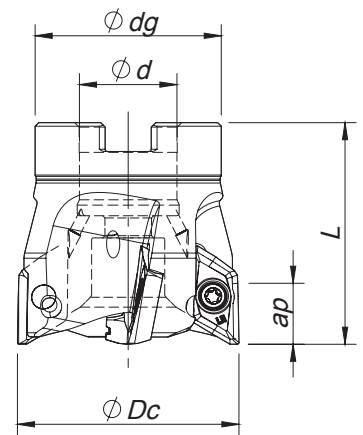
- Sharp cutting edge to produce good chip flow and reduce build up edge.
- High helical angle offers cutting edge strength.
- Excellent 90° wall accuracy.



Specifications

Geometry: 90° milling operations.

- Cutter diameters:
 - Cylindrical (C): \varnothing 0.75 till \varnothing 1.50
 - Arbor Mounting (A): \varnothing 1.50 till \varnothing 5.00
- Workpiece materials: Aluminums & Non-ferrous alloys.



Arbor Mounting

$K_r=90^\circ$ | $\gamma_p=+11^\circ$

| Order code Código | Reference Referência Referencia | | Dimensions Dimensões Dimensiones (in) | | | | | Specifications | | | Insert radius Raio da pastilha Rayo del Inserto | Stock |
|----------------------|---------------------------------------|---|---|----------|-----------|-------|------|----------------|------------|-------------|---|-------|
| | | | ϕDc | ϕd | ϕdg | L | | lbs | Arbor Type | Max ap (in) | | |
| 181104600 | XD90 D1.50-A.500/2.00-03-15 | 3 | 1.500 | 0.500 | 1.440 | 2.000 | 0.66 | A | 0.551 | 29 000 | 0.016~0.126 | |
| 181104700 | XD90 D2.00-A.750/2.00-04-15 | 4 | 2.000 | 0.750 | 1.772 | 2.000 | 0.88 | A | 0.551 | 24 000 | 0.016~0.126 | |
| 181104800 | XD90 D2.50-A.750/2.50-05-15 | 5 | 2.500 | 0.750 | 2.205 | 2.000 | 1.54 | A | 0.551 | 21 000 | 0.016~0.126 | |
| 181104900 | XD90 D3.00-A1.00/2.50-05-15 | 5 | 3.000 | 1.000 | 2.874 | 2.000 | 2.42 | A | 0.551 | 19 000 | 0.016~0.126 | |
| 181105000 | XD90 D4.00-A1.50/2.50-06-15 | 6 | 4.000 | 1.500 | 3.180 | 2.000 | 4.41 | A | 0.551 | 16 000 | 0.016~0.126 | |

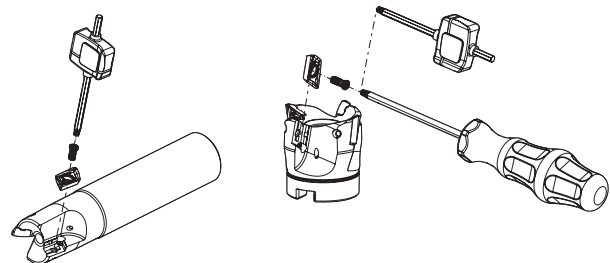
Stock item | Produto de stock | Itens de stock

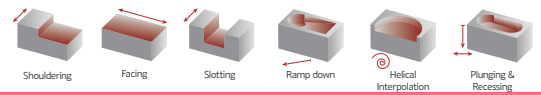
Available under request | Disponível sobre consulta | Disponible bajo consulta

Inventory maintained. To be replaced by new item. | Iten em stock. Será substituído por novo item | Iten en stock. Será reemplazado por nuevo item.

SPARE PARTS | Complementos | Complementos

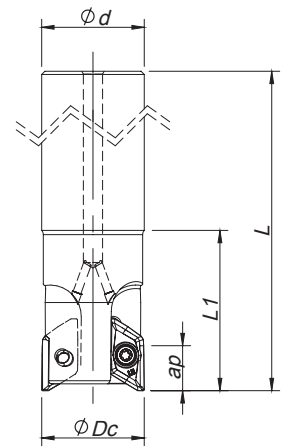
| Cutter ϕDc | Insert Screw | Key (Torx) | Torque Value |
|-----------------------|--------------|------------|--------------|
| | | | lbf/in |
| XD90-C-15 - 0.75-1.00 | P0400803 | XT15 | 26.6 |
| XD90-C-15 - 1.25-1.50 | P0400900 | XT15 | 26.6 |
| XD90-A-15 - 1.50-3.00 | P0400900 | XT15 | 26.6 |
| XD90-A-15 - 4.00 | P0400900 | PT15 | 26.6 |





Cylindrical Shank

$K_r=90^\circ$ | $\gamma_p=+6^\circ \sim +11^\circ$



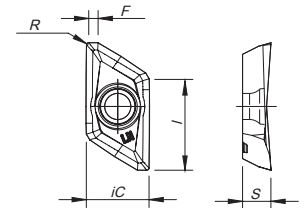
| Order code Código | Reference Referência Referencia | | Dimensions Dimensões Dimensiones (in) | | | | | Specifications | | | Insert radius Raio da pastilha Rayo del Inserto | Stock |
|----------------------|---------------------------------------|---|---|-------|-------|-------|------|----------------|-------------|---------|---|-------|
| | | | ØDc | Ød | L | L1 | | Arbor Type | Max ap (in) | rpm max | | |
| 181105100 | XD90 D0.75-C0.75/6.00-01-15 | 1 | 0.750 | 0.750 | 6.000 | 2.000 | 0.44 | A | 0.591 | 40 000 | 0.016~0.126 | |
| 181105200 | XD90 D1.00-C1.00/6.00-02-15 | 2 | 1.000 | 1.000 | 6.000 | 2.000 | 0.88 | A | 0.591 | 38 000 | 0.016~0.126 | |
| 181105300 | XD90 D1.25-C1.25/6.00-02-15 | 2 | 1.250 | 1.250 | 6.000 | 2.000 | 1.54 | A | 0.591 | 33 000 | 0.016~0.126 | |
| 181105400 | XD90 D1.50-C1.50/6.00-03-15 | 3 | 1.500 | 1.500 | 6.000 | 2.000 | 3.08 | A | 0.591 | 29 000 | 0.016~0.126 | |
| NEW 181139000 | XD90 D1.50-C1.25/8.00-03-15 | 3 | 1.500 | 1.250 | 8.000 | 2.500 | 3.08 | B | 0.591 | 40 000 | 0.157~0.197 | |

Stock item | Produto de stock | Itens de stock

Available under request | Disponível sobre consulta | Disponible bajo consulta

Inventory maintained. To be replaced by new item. | Item en stock. Será substituído por novo item | Item en stock. Será reemplazado por nuevo item.

XDGX 15M5... || Inserts | Pastilhas | Plaquetas



| Geometry code | ISO Reference | P | | | | M | | | | K | | | | N | | S | | H | | Dimensions (in) | | | | | Holder Type |
|---------------|---------------------|-----|----|----|----|-----|----|----|----|-----|----|----|----|-----|-----|-----|----|-----|-----|-----------------|-------|-------|-------|-------|-------------|
| | | PVD | | | | CVD | | | | CVD | | | | UNC | PCD | PVD | | PVD | CBN | | | | | | |
| | | P7 | G1 | G4 | P3 | R1 | G4 | P3 | G6 | L5 | L6 | G1 | P3 | G6 | 10 | D6 | P3 | G6 | P7 | D4 | | | | | |
| 1111624 | XDGX 15M504 PDFR-LN | | | | | | | | | | | | | | | | | | | 0.441 | 0.197 | 0.630 | 0.016 | 0.059 | A |
| 1111625 | XDGX 15M508 PDFR-LN | | | | | | | | | | | | | | | | | | | 0.441 | 0.197 | 0.630 | 0.031 | 0.043 | A |
| 1111626 | XDGX 15M512 PDFR-LN | | | | | | | | | | | | | | | | | | | 0.441 | 0.197 | 0.630 | 0.047 | 0.028 | A |
| 1111627 | XDGX 15M516 PDFR-LN | | | | | | | | | | | | | | | | | | | 0.441 | 0.197 | 0.630 | 0.063 | 0.016 | A |
| 1111628 | XDGX 15M520 PDFR-LN | | | | | | | | | | | | | | | | | | | 0.441 | 0.197 | 0.630 | 0.079 | 0.008 | A |
| 1112154 | XDGX 15M530 PDFR-LN | | | | | | | | | | | | | | | | | | | 0.441 | 0.197 | 0.630 | 0.126 | 0.024 | A |
| 1111629 | XDGX 15M532 PDFR-LN | | | | | | | | | | | | | | | | | | | 0.441 | 0.197 | 0.630 | 0.118 | 0.024 | A |
| 1111630 | XDGX 15M540 PDFR-LN | | | | | | | | | | | | | | | | | | | 0.441 | 0.197 | 0.630 | 0.157 | 0.020 | B |
| 1111631 | XDGX 15M550 PDFR-LN | | | | | | | | | | | | | | | | | | | 0.441 | 0.197 | 0.630 | 0.197 | 0.016 | B |

Stock item | Produto de stock | Itens de stock
First choice | Primeira opção | 1ª opção

Stock item | Produto de stock | Itens de stock

Available under request | Disponível sobre consulta
Disponível bajo consulta

Insert order code = (1) Geometry Code + (2) Grade Code

ALUPRO XD90-15

RECOMMENDED CUTTING CONDITIONS FOR SHOULDERING

| ISO | PSM | Material | HB (Brinell) | Vc (sfm) | Width of Cut ae (in) | Depth of Cut ap (in) | Feed fz(in/t) |
|-----|-----|--------------------------|--------------|-----------|----------------------|----------------------|---------------|
| | | | | PH0910 | | | |
| N | 10 | Aluminum and Non Ferrous | 30-130 | 1148-4592 | ≤ 25% ØDc | ≤0.197 | 0.014 - 0.016 |
| | | | | | | 0.197 - 0.394 | 0.012 - 0.014 |
| | | | | | | 0.394 - 0.591 | 0.010 - 0.012 |
| | | | | | < 50% ØDc | ≤0.197 | 0.014 - 0.016 |
| | | | | | | 0.197 - 0.394 | 0.012 - 0.014 |
| | | | | | | 0.394 - 0.591 | 0.010 - 0.012 |
| | | | | | ≤ 75% ØDc | ≤0.197 | 0.012 - 0.014 |
| | | | | | | 0.197 - 0.394 | 0.010 - 0.012 |
| | | | | | | 0.394 - 0.591 | 0.008 - 0.010 |

RECOMMENDED CUTTING CONDITIONS FOR SLOTTING

| ISO | PSM | Material | HB (Brinell) | Vc (sfm) | Width of Cut ae (in) | Depth of Cut ap (in) | Feed fz(in/t) |
|-----|-----|--------------------------|--------------|-----------|----------------------|----------------------|---------------|
| | | | | PH0910 | | | |
| N | 10 | Aluminum and Non Ferrous | 30-130 | 1148-4592 | 100% ØDc | ≤0.197 | 0.010 -0.014 |
| | | | | | | 0.197 - 0.394 | 0.008 - 0.012 |
| | | | | | | 0.394 - 0.591 | 0.006 - 0.010 |

(Note 1) Cutting conditions ae/Dc=70%.

(Note 2) It's possible to occur vibrations in certain cases. Please reduce depth of cut and / or reduce cutting conditions in following cases:

- When using long shank;
- When using long tool overhang with arbor type;
- When application has poor clamping rigidity or when using a low rigidity machine.

(Note 3) Use internal coolant supply

OPERATIONAL GUIDE

- The maximum allowable revolutions are shown in Table 1. Ensure that the cutter operates under the maximum allowable revolutions. The maximum allowable revolutions for safety purposes are determined in accordance with ISO 15641 (Milling Cutters for high speed machining – Safety requirements).

Table 1 - Maximum allowable revolutions:

| ØDc | Ø0.750 | Ø1.000 | Ø1.250 | Ø1.500 | Ø2.000 | Ø2.500 | Ø3.000 | Ø4.000 |
|--------------------------|--------|--------|--------|--------|--------|--------|--------|--------|
| RPM (min ⁻¹) | 40 000 | 38 000 | 33 000 | 29 000 | 24 000 | 21 000 | 19 000 | 16 000 |

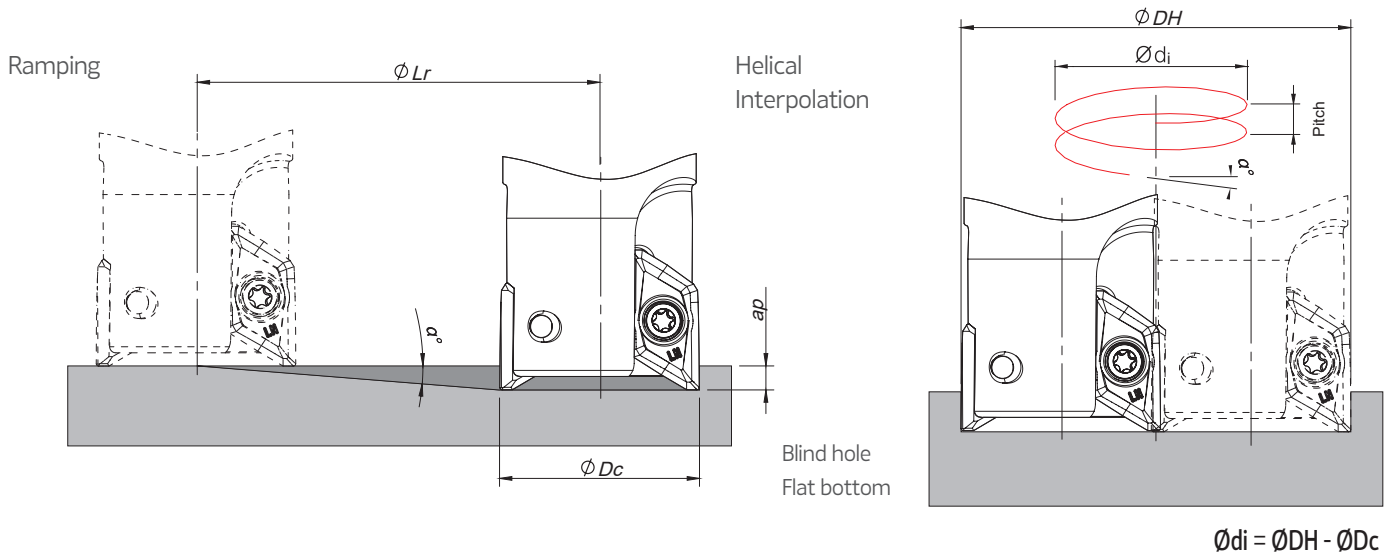
- Even when operating under the maximum allowable spindle speed, if the spindle speed is equal or higher than the values shown in Table 2, it is recommended that the balance quality (with the arbor or chuck) according ISO 1940.

Table 2 - Maximum revolutions when balancing with the arbor or chuck has not been achieved:

| ØDc | Ø0.750 | Ø1.000 | Ø1.250 | Ø1.500 | Ø2.000 | Ø2.500 | Ø3.000 | Ø4.000 |
|--------------------------|--------|--------|--------|--------|--------|--------|--------|--------|
| RPM (min ⁻¹) | 15 000 | 12 000 | 9 500 | 8 500 | 7 600 | 6 800 | 6 000 | 5 400 |

- When setting the spindle speed, take into consideration the maximum allowable revolutions of arbor or chuck.
- Use the specified set bolt when using the arbor type with internal coolant supply.

RAMPING AND HELICAL INTERPOLATION



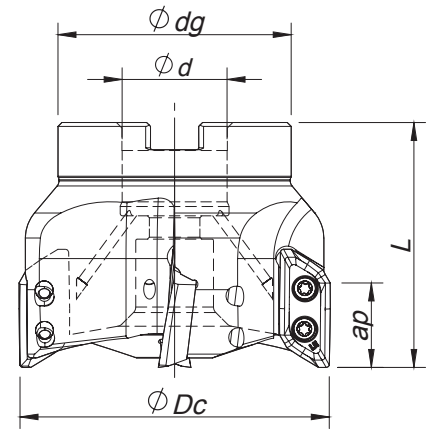
| ϕD_c | Ramping | | | Helical Interpolation | | |
|------------|-------------------------|-----------|-----------|---|-----------------|----------------|
| | | | | Diameter for Blind Hole. Flat Bottom Face (1) | | Max Pitch/Rev. |
| | Max Ramp α° | Max a_p | Min L_r | ϕD_{Hmin} | ϕD_{Hmax} | |
| 0.750 | 23 | 0.551 | 1.299 | 1.342 - | - 1.421 | 0.780 0.890 |
| 1.000 | 21 | 0.551 | 1.436 | 1.842 - | - 1.921 | 1.010 1.110 |
| 1.250 | 15 | 0.551 | 2.057 | 2.342 - | - 2.421 | 0.910 0.980 |
| 1.500 | 10 | 0.551 | 3.126 | 2.842 - | - 2.921 | 0.740 0.780 |
| 2.000 | 8 | 0.551 | 3.922 | 3.842 - | - 3.921 | 0.810 0.840 |
| 2.500 | 6 | 0.551 | 5.244 | 4.842 - | - 4.921 | 0.770 0.790 |
| 3.000 | 4 | 0.551 | 7.883 | 5.842 - | - 5.921 | 0.620 0.640 |
| 4.000 | 2.5 | 0.551 | 12.625 | 7.842 - | - 7.921 | 0.520 0.530 |

(1) using insert radius 0.031 in

Note: During helical interpolation do not exceed maximum pitch.
When using different insert radius to calculate the ϕD_{Hmin} and ϕD_{Hmax} use the below equation:
- Minimum Diameter: $\phi D_{Hmin} = 2 \times (\phi D_c - (R \text{ corner radius} + F \text{ width of edge wiper}))$
- Maximum Diameter: $\phi D_{Hmax} = 2 \times (\phi D_c - R \text{ corner radius})$



Arbor Mounting
 $K_r=90^\circ$ | $\gamma_p=+7^\circ$



| Order code Código | Reference Referência Referencia | | Dimensions Dimensões Dimensiones (in) | | | | | Specifications | | | Insert radius Raio da pastilha Rayo del Inserto | Stock | |
|----------------------|---------------------------------------|--|---|----------|-----------|-------|-------|----------------|------------|-------------|---|-------------|---------|
| | | | ϕDc | ϕd | ϕdg | L | | lbs | Arbor Type | Max ap (in) | | | rpm max |
| 181079500 | XD90 D2.00-A.750/2.00-03-22 | | 3 | 2.000 | 0.750 | 1.772 | 2.000 | 0.98 | A | 0.846 | 30 000 | 0.031~0.126 | |
| 181079600 | XD90 D2.50-A1.00/2.00-03-22 | | 3 | 2.500 | 1.000 | 2.205 | 2.000 | 1.41 | A | 0.846 | 25 000 | 0.031~0.126 | |
| 181071700 | XD90 D3.00-A1.00/2.50-04-22 | | 4 | 3.000 | 1.000 | 2.205 | 2.500 | 2.96 | A | 0.846 | 23 000 | 0.031~0.126 | |
| 181079700 | XD90 D4.00-A1.25/2.50-05-22 | | 5 | 4.000 | 1.250 | 2.874 | 2.500 | 5.43 | A | 0.846 | 19 000 | 0.031~0.126 | |
| NEW 181138600 | XD90 D4.00-A1.50/2.50-05-22 | | 5 | 4.000 | 1.500 | 3.000 | 2.500 | 5.43 | A | 0.846 | 16 000 | 0.031~0.126 | |
| 181079800 | XD90 D5.00-A1.50/2.50-06-22 | | 6 | 5.000 | 1.500 | 3.180 | 2.500 | 6.72 | A | 0.846 | 30 000 | 0.031~0.126 | |

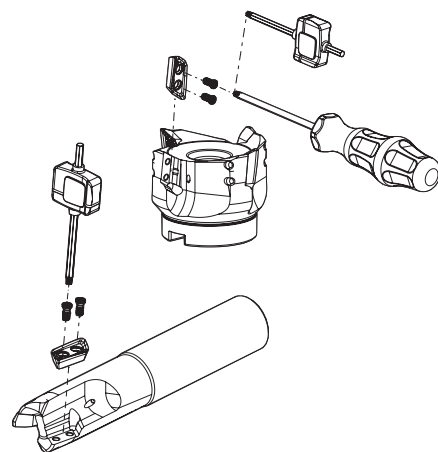
Stock item | Produto de stock | Itens de stock

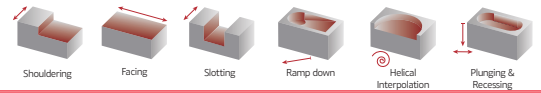
Available under request | Disponível sobre consulta | Disponible bajo consulta

Inventory maintained. To be replaced by new item. | Iten em stock. Será substituído por novo item | Iten en stock. Será reemplazado por nuevo item.

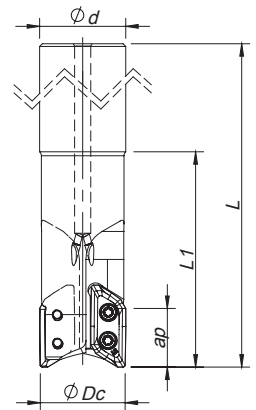
SPARE PARTS || Complementos | Complementos

| Cutter ϕDc | Insert Screw | Key (Torx) | Torque Value |
|-----------------------|--------------|------------|--------------|
| | | | |
| XD90-A-22 - 2.00-3.00 | P0401200 | XT15 | 26.6 |
| XD90-A-22 - 4.00-5.00 | P0401200 | PT15 | 26.6 |
| XD90-C-22 - 1.25-1.50 | P0401200 | XT15 | 26.6 |





Cylindrical Shank
 $K_r=90^\circ$ | $\gamma_p=+6^\circ$



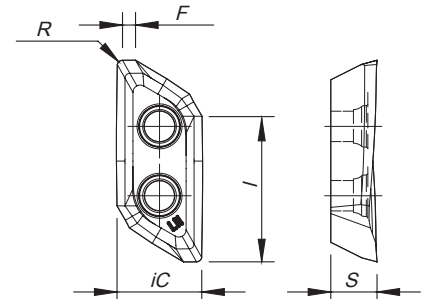
| Order code Código | Reference Referência Referencia | | Dimensions Dimensões Dimensiones (in) | | | | | Specifications | | | Insert radius Raio da pastilha Rayo del Inserto | Stock |
|----------------------|---------------------------------------|---|---|-------|-------|-------|------|----------------|------------|-------------|---|-------|
| | | | ØDc | Ød | L | L1 | | lbs | Arbor Type | Max ap (in) | | |
| 181069900 | XD90 D1.25-C1.25/6.69-02-22 | 2 | 1.250 | 1.250 | 6.693 | 3.150 | 1.67 | A | 0.846 | 41 000 | 0.031~0.126 | |
| 181079900 | XD90 D1.50-C1.50/6.69-02-22 | 2 | 1.500 | 1.500 | 6.693 | 3.150 | 1.82 | A | 0.846 | 36 000 | 0.031~0.126 | |
| NEW 181138700 | XD90 D1.50-C1.25/8.00-02-22 | 2 | 1.500 | 1.250 | 8.000 | 3.000 | 1.82 | A | 0.846 | 41 000 | 0.031~0.126 | |

Stock item | Produto de stock | Itens de stock

Available under request | Disponível sobre consulta | Disponible bajo consulta

Inventory maintained. To be replaced by new item. | Iten em stock. Será substituído por novo item | Iten en stock. Será reemplazado por nuevo item.

XDGX 22M7... | Inserts | Pastilhas | Plaquetas



| Geometry code (1) | ISO Reference | P | | | | M | | | | K | | | | N | | S | | H | | Dimensions (in) | | | | | Holder Type | |
|----------------------|---------------------|-----|----|----|----|-----|-----|----|----|-----|-----|----|----|-----|-----|-----|----|-----|-----|-----------------|-------|-------|-------|-------|-------------|---|
| | | PVD | | | | CVD | PVD | | | CVD | PVD | | | UNC | PCD | PVD | | PVD | CBN | | | | | | | |
| | | P7 | G1 | G4 | P3 | R1 | G4 | P3 | G6 | L5 | L6 | G1 | G4 | G6 | 10 | D6 | P3 | G6 | P7 | D4 | | | | | | |
| 1111618 | XDGX 22M708 PDFR-LN | | | | | | | | | | | | | | | | | | | | 0.512 | 0.276 | 0.866 | 0.031 | 0.079 | A |
| 1111619 | XDGX 22M716 PDFR-LN | | | | | | | | | | | | | | | | | | | | 0.512 | 0.276 | 0.866 | 0.063 | 0.047 | A |
| 1111620 | XDGX 22M720 PDFR-LN | | | | | | | | | | | | | | | | | | | | 0.512 | 0.276 | 0.866 | 0.079 | 0.031 | A |
| 1111621 | XDGX 22M732 PDFR-LN | | | | | | | | | | | | | | | | | | | | 0.512 | 0.276 | 0.866 | 0.126 | 0.024 | A |

Stock item | Produto de stock | Itens de stock
First choice | Primeira opção | 1ª opción

Stock item | Produto de stock | Itens de stock

Available under request | Disponível sobre consulta
Disponible bajo consulta

Insert order code = (1) Geometry Code + (2) Grade Code

RECOMMENDED CUTTING CONDITIONS FOR SHOULDERING

| ISO | PSM | Material | HB (Brinell) | Vc (sfm) | Width of Cut ae (in) | Depth of Cut ap (in) | Feed fz(in/t) |
|-----|-----|--------------------------|--------------|-----------|----------------------|----------------------|---------------|
| | | | | PH0910 | | | |
| N | 10 | Aluminum and Non Ferrous | 30-130 | 1148-4592 | ≤ 25% ØDc | ≤0.197 | 0.014-0.016 |
| | | | | | | 0.197 - 0.394 | 0.012-0.014 |
| | | | | | | 0.394 - 0.591 | 0.010-0.012 |
| | | | | | | 0.591 - 0.787 | 0.008-0.010 |
| | | | | | < 50% ØDc | ≤0.197 | 0.014-0.016 |
| | | | | | | 0.197 - 0.394 | 0.012-0.014 |
| | | | | | | 0.394 - 0.591 | 0.010-0.012 |
| | | | | | | 0.591 - 0.787 | 0.008-0.010 |
| | | | | | ≤ 75% ØDc | ≤0.197 | 0.012-0.014 |
| | | | | | | 0.197 - 0.394 | 0.010-0.012 |
| | | | | | | 0.394 - 0.591 | 0.008-0.010 |
| | | | | | | 0.591 - 0.787 | 0.006-0.008 |

RECOMMENDED CUTTING CONDITIONS FOR SLOTTING

| ISO | PSM | Material | HB (Brinell) | Vc (sfm) | Width of Cut ae (in) | Depth of Cut ap (in) | Feed fz(in/t) |
|-----|-----|--------------------------|--------------|-----------|----------------------|----------------------|---------------|
| | | | | PH0910 | | | |
| N | 10 | Aluminum and Non Ferrous | 30-130 | 1148-4592 | 100% ØDc | ≤0.197 | 0.010-0.014 |
| | | | | | | 0.197 - 0.394 | 0.008-0.012 |
| | | | | | | 0.394 - 0.591 | 0.006-0.010 |
| | | | | | | 0.591 - 0.787 | 0.004-0.008 |

(Note 1) Cutting conditions $a_e/D_c=70\%$.

(Note 2) It's possible to occur vibrations in certain cases. Please reduce depth of cut and / or reduce cutting conditions in following cases:

- When using long shank;
- When using long tool overhang with arbor type;
- When application has poor clamping rigidity or when using a low rigidity machine.

(Note 3) Use internal coolant supply.

OPERATIONAL GUIDE

- Only use the inserts and parts provided by Palbit with this tool. Use of the correct insert clamp screws is especially important to ensure overall tool safety. Do not use damaged or worn clamp screws.

- When tightening the clamp screws, follow the order in Figure 1. The recommended torque value is 30.0 lbf/in.

- The maximum allowable revolutions are shown in Table 1. Ensure that the cutter operates under the maximum allowable revolutions.

The maximum allowable revolutions for safety purposes are determined in accordance with ISO 15641 (Milling Cutters for high speed machining–Safety requirements).

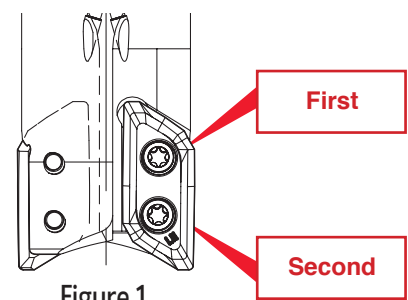


Figure 1

Table 1 - Maximum allowable revolutions:

| ØDc | Ø1.250 | Ø1.500 | Ø2.000 | Ø2.500 | Ø3.000 | Ø4.000 | Ø5.000 |
|--------------------------|--------|--------|--------|--------|--------|--------|--------|
| RPM (min ⁻¹) | 41 000 | 36 000 | 30 000 | 25 000 | 23 000 | 19 000 | 16 000 |

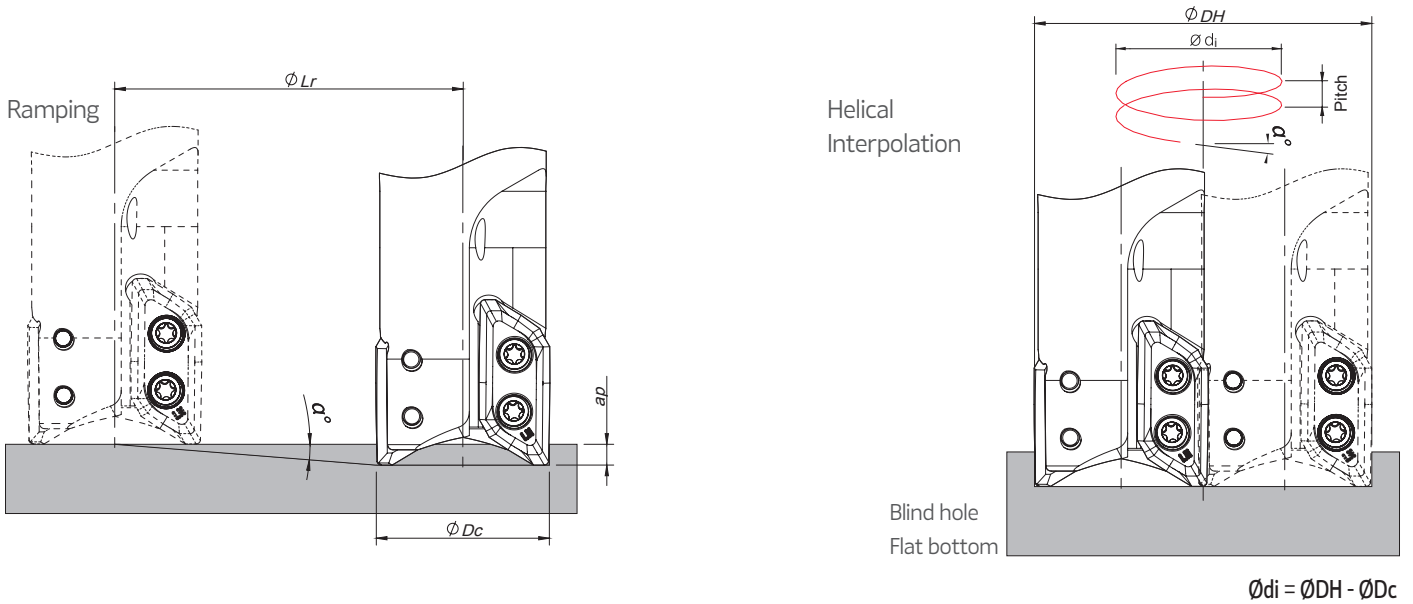
- Even when operating under the maximum allowable spindle speed, if the spindle speed is equal or higher than the values shown in Table 2, it is recommended that the balance quality (with the arbor or chuck) according ISO 1940.

Table 2 - Maximum revolutions when balancing with the arbor or chuck has not been achieved:

| ØDc | Ø1.250 | Ø1.500 | Ø2.000 | Ø2.500 | Ø3.000 | Ø4.000 | Ø5.000 |
|--------------------------|--------|--------|--------|--------|--------|--------|--------|
| RPM (min ⁻¹) | 9 500 | 7 600 | 6 000 | 4 800 | 3 800 | 3 000 | 2 400 |

- When setting the spindle speed, take into consideration the maximum allowable revolutions of arbor or chuck.
- Use the specified set bolt when using the arbor type with internal coolant supply.

RAMPING AND HELICAL INTERPOLATION



$$\phi_{di} = \phi_{DH} - \phi_{Dc}$$

| ϕ_{Dc} | Ramping | | | Helical Interpolation | | |
|-------------|--------------------|-----------|--------|---|----------------|----------------|
| | | | | Diameter for Blind Hole. Flat Bottom Face (1) | | Max Pitch/Rev. |
| | Max Ramp a° | Max a_p | Min Lr | ϕ_{DHmin} | ϕ_{DHmax} | |
| 1.250 | 19.0 | 0.827 | 2.401 | 2.303 | - | 1.130 |
| | | | | - | 2.421 | 1.260 |
| 1.500 | 13.0 | 0.827 | 3.581 | 2.803 | - | 0.940 |
| | | | | - | 2.921 | 1.030 |
| 2.000 | 9.0 | 0.827 | 5.220 | 3.803 | - | 0.890 |
| | | | | - | 3.921 | 0.950 |
| 2.500 | 7.0 | 0.827 | 6.734 | 4.803 | - | 0.880 |
| | | | | - | 4.921 | 0.930 |
| 3.000 | 5.0 | 0.827 | 9.450 | 5.803 | - | 0.770 |
| | | | | - | 5.921 | 0.800 |
| 4.000 | 4.0 | 0.827 | 11.824 | 7.803 | - | 0.830 |
| | | | | - | 7.921 | 0.860 |
| 5.000 | 3.0 | 0.827 | 15.776 | 9.803 | - | 0.790 |
| | | | | - | 9.921 | 0.810 |

(1) using insert radius 0.031 in

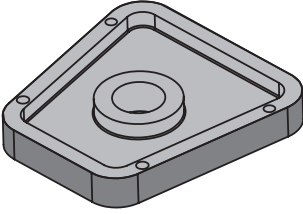
Note: During helical interpolation do not exceed maximum pitch.

When using different insert radius to calculate the ϕ_{DHmin} and ϕ_{DHmax} use the below equation:

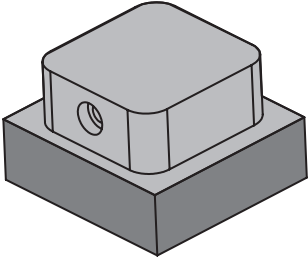
- Minimum Diameter: $\phi_{DHmin} = 2 \times (\phi_{Dc} - (R \text{ corner radius} + F \text{ width of edge wiper}))$

- Maximum Diameter: $\phi_{DHmax} = 2 \times (\phi_{Dc} - R \text{ corner radius})$

Improved productivity and Tool Life / Shortened Machining Time

| | | | |
|--|--|--|--|
| ALUPRO XD90-15 | | G-AlSi5Mg (3.2341) | |
| <p>Plunging & Recessing</p> <p>Dc = 1.00 in 2 flutes Vc = 2952 sfm (n = 11275 min⁻¹) fz = 0.0078 in/t (Vf = 225.2 in/min) ap x ae = 0.315 x 0.787 in Wet XDGX 15M508 PDFR-LN (PH0910)</p> | |  | |
| XD90-15 | | <div style="background-color: red; color: white; padding: 5px; display: inline-block;">9 workpieces done</div> | |
| Competitor A | | <div style="background-color: gray; color: white; padding: 5px; display: inline-block;">4 workpieces done</div> | |
| <p>[Competitor A]</p> <p>Dc = 1.00 in 2 flutes Vc = 2460 sfm (n = 9397 min⁻¹) fz = 0.0078 in/t (Vf = 225.2 in/min) ap x ae = 0.197 x 0.590 in</p> | | <p>[User Comments]</p> <p><i>"Compared with conventional products, tool rigidity is high, obtaining an excellent surface finish as well as cutting performance."</i></p> | |

+44%
Productivity

| | | | |
|--|--|--|--|
| ALUPRO XD90-22 | | G-AlSi5Mg (3.2341) | |
| <p>Shouldering</p> <p>Dc = 1.25 2 flutes Vc = 3280 sfm (n = 10022 min⁻¹) fz = 0.0078 in/t (Vf = 225.2 in/min) ap x ae = 0.590 x 0.315 in Wet XDGX 22M708 PDFR-LN (PH0910)</p> | |  | |

[User Comments]

"With this solution we achieved excellent results in wall accuracy. The accuracy of under 0.000394 in"