



V6

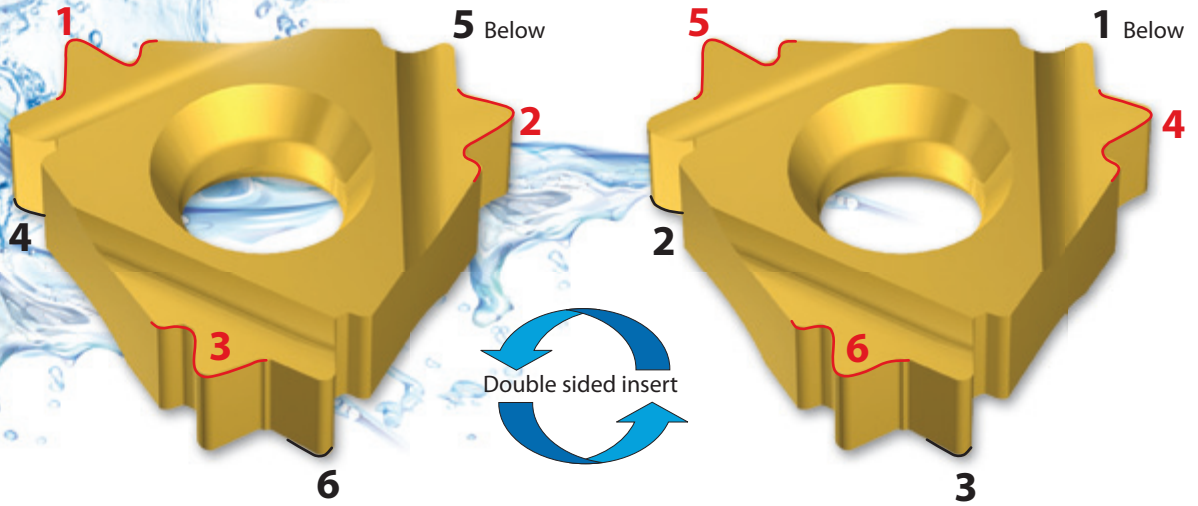
6 Cutting Corner Inserts



METRIC



A Revolutionary 6 Cutting Corner System



Patent Pending

V6 Features:

- 6 Cutting corners
- Fits standard holders
- Economical insert for lower tooling costs
- Same application on all corners
- Doubles your tool life



Every box contains a V6 anvil



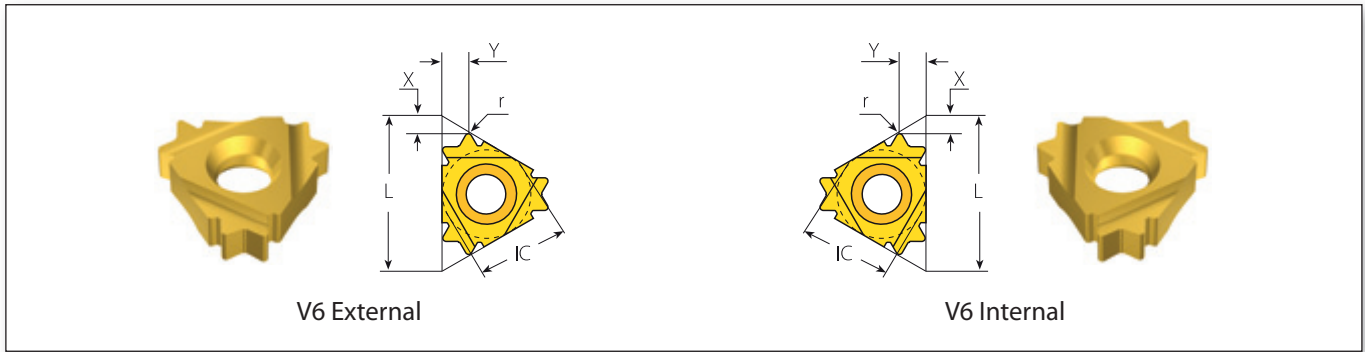
V6 Internal Anvil



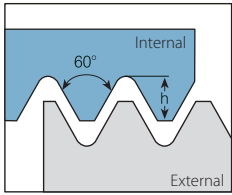
V6 External Anvil



TT GEN software and updated versions can be downloaded from www.vargus.com

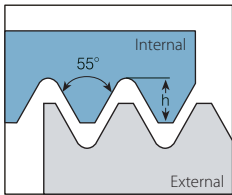


Partial 60°



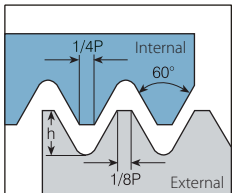
| | Insert Size | | Pitch | | Ordering Code | Dimensions mm | | | V6 Anvil | |
|-----------------|-------------|------|---------|-------|---------------|---------------|------|------|----------|-------------------------------|
| | IC | L mm | mm | tpi | RH | r | X | Y | RH | Toolholder |
| External | 3/8" V6 | 16 | 0.5-2.0 | 48-13 | 3ERS60-6C... | 0.06 | 1.92 | 3.01 | YE3-6C | AL...-3 |
| Internal | 3/8" V6 | 16 | 0.5-2.0 | 48-14 | 3IRS60-6C... | 0.03 | 1.64 | 2.64 | YI3-6C | AVR...-3 NVRC...-3 206/... |

Partial 55°



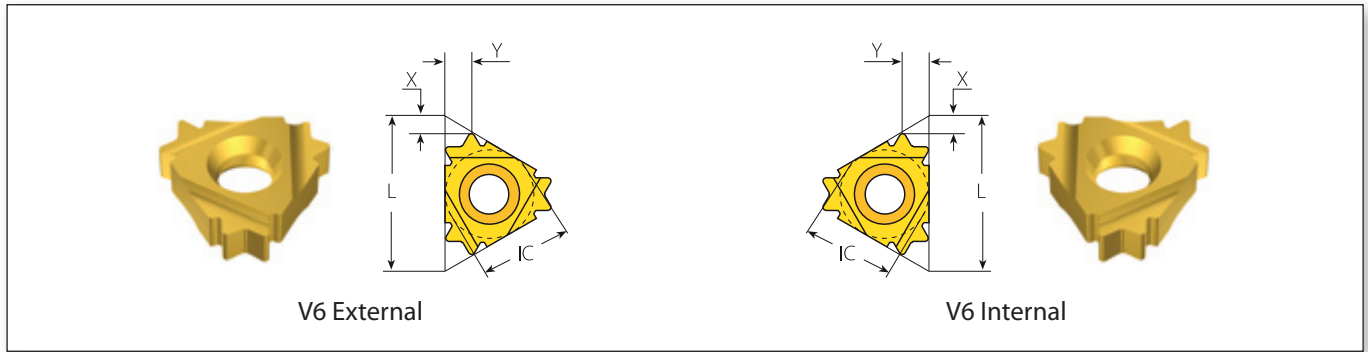
| | Insert Size | | Pitch | | Ordering Code | Dimensions mm | | | V6 Anvil | |
|-----------------|-------------|------|-------|-------|---------------|---------------|------|------|----------|-------------------------------|
| | IC | L mm | mm | tpi | RH | r | X | Y | RH | Toolholder |
| External | 3/8" V6 | 16 | - | 48-14 | 3ERS55-6C... | 0.05 | 1.83 | 2.85 | YE3-6C | AL...-3 |
| Internal | 3/8" V6 | 16 | - | 48-16 | 3IRS55-6C... | 0.05 | 1.61 | 2.58 | YI3-6C | AVR...-3 NVRC...-3 206/... |

ISO

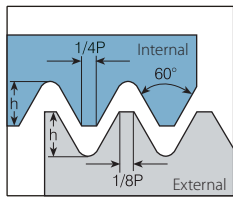


Defined by: R262 (DIN 13)
Tolerance class: 6g/6H

| | Insert Size | | Pitch | Ordering Code | Dimensions mm | | | V6 Anvil | |
|-----------------|-------------|------|-------|------------------|---------------|------|------|----------|-------------------------------|
| | IC | L mm | mm | RH | h min | X | Y | RH | Toolholder |
| External | 3/8" V6 | 16 | 0.5 | 3ER0.5ISO-6C... | 0.31 | 2.20 | 1.80 | YE3-6C | AL...-3 |
| | | | 0.75 | 3ER0.75ISO-6C... | 0.46 | 2.00 | 1.85 | | |
| | | | 0.8 | 3ER0.8ISO-6C... | 0.49 | 2.00 | 1.95 | | |
| | | | 1.0 | 3ER1.0ISO-6C... | 0.61 | 1.95 | 2.00 | | |
| | | | 1.25 | 3ER1.25ISO-6C... | 0.77 | 1.80 | 2.10 | | |
| | | | 1.5 | 3ER1.5ISO-6C... | 0.92 | 1.90 | 2.40 | | |
| | | | 1.75 | 3ER1.75ISO-6C... | 1.07 | 1.78 | 2.64 | | |
| | | | 2.0 | 3ER2.0ISO-6C... | 1.23 | 1.88 | 2.80 | | |
| Internal | 3/8" V6 | 16 | 0.5 | 3IR0.5ISO-6C... | 0.29 | 2.10 | 1.70 | YI3-6C | AVR...-3 NVRC...-3 206/... |
| | | | 0.75 | 3IR0.75ISO-6C... | 0.43 | 2.00 | 1.80 | | |
| | | | 0.8 | 3IR0.8ISO-6C... | 0.46 | 1.90 | 1.85 | | |
| | | | 1.0 | 3IR1.0ISO-6C... | 0.58 | 1.95 | 1.65 | | |
| | | | 1.25 | 3IR1.25ISO-6C... | 0.72 | 1.75 | 2.00 | | |
| | | | 1.5 | 3IR1.5ISO-6C... | 0.87 | 1.55 | 2.10 | | |
| | | | 1.75 | 3IR1.75ISO-6C... | 1.01 | 1.61 | 2.39 | | |
| | | | 2.0 | 3IR2.0ISO-6C... | 1.15 | 1.75 | 2.58 | | |



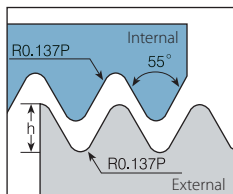
UN



Defined by: ANSI B1.1.74
Tolerance class: 2A/2B

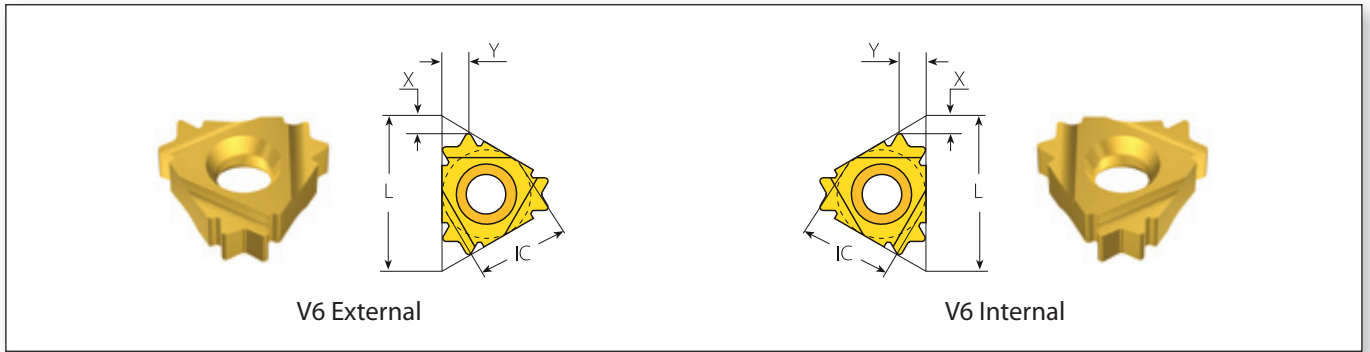
| | Insert Size | | Pitch | Ordering Code | Dimensions mm | | | V6 Anvil | |
|-----------------|-------------|------|-------|---------------|---------------|------|------|----------|-----------------------------|
| | IC | L mm | tpi | RH | h min | X | Y | RH | Toolholder |
| External | 3/8" V6 | 16 | 32 | 3ER32UN-6C... | 0.49 | 2.00 | 1.95 | YE3-6C | AL..-3 |
| | | | 28 | 3ER28UN-6C... | 0.56 | 1.95 | 2.00 | | |
| | | | 24 | 3ER24UN-6C... | 0.65 | 1.90 | 2.05 | | |
| | | | 20 | 3ER20UN-6C... | 0.78 | 1.80 | 2.15 | | |
| | | | 18 | 3ER18UN-6C... | 0.87 | 1.90 | 2.35 | | |
| | | | 16 | 3ER16UN-6C... | 0.97 | 1.80 | 2.45 | | |
| | | | 14 | 3ER14UN-6C... | 1.11 | 1.83 | 2.71 | | |
| | | | 13 | 3ER13UN-6C... | 1.20 | 1.92 | 2.86 | | |
| Internal | 3/8" V6 | 16 | 32 | 3IR32UN-6C... | 0.51 | 2.00 | 1.85 | YI3-6C | AVR..-3 NVRC..-3 206/... |
| | | | 28 | 3IR28UN-6C... | 0.52 | 1.90 | 1.90 | | |
| | | | 24 | 3IR24UN-6C... | 0.61 | 1.90 | 1.95 | | |
| | | | 20 | 3IR20UN-6C... | 0.73 | 1.80 | 2.10 | | |
| | | | 18 | 3IR18UN-6C... | 0.81 | 1.70 | 2.10 | | |
| | | | 16 | 3IR16UN-6C... | 0.92 | 1.60 | 2.20 | | |
| | | | 14 | 3IR14UN-6C... | 1.05 | 1.70 | 2.52 | | |
| | | | 13 | 3IR13UN-6C... | 1.13 | 1.79 | 2.68 | | |
| | | | 12 | 3IR12UN-6C... | 1.22 | 1.65 | 2.51 | | |

BSW

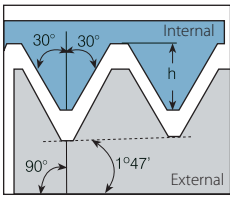


Defined by: B.S.84:1956,
DIN 259, ISO228/1:1982
Tolerance class: Medium class A

| | Insert Size | | Pitch | Ordering Code | Dimensions mm | | | V6 Anvil | |
|-----------------|-------------|------|-------|---------------|---------------|------|------|----------|-----------------------------|
| | IC | L mm | tpi | RH | h min | X | Y | RH | Toolholder |
| External | 3/8" V6 | 16 | 19 | 3ER19W-6C... | 0.86 | 1.80 | 2.25 | YE3-6C | AL..-3 |
| | | | 16 | 3ER16W-6C... | 1.02 | 1.65 | 2.39 | | |
| | | | 14 | 3ER14W-6C... | 1.16 | 1.82 | 2.69 | | |
| | | | 12 | 3ER12W-6C... | 1.36 | 1.93 | 2.96 | | |
| Internal | 3/8" V6 | 16 | 19 | 3IR19W-6C... | 0.86 | 1.70 | 2.20 | YI3-6C | AVR..-3 NVRC..-3 206/... |
| | | | 16 | 3IR16W-6C... | 1.02 | 1.63 | 2.65 | | |
| | | | 14 | 3IR14W-6C... | 1.16 | 1.81 | 2.66 | | |
| | | | 12 | 3IR12W-6C... | 1.36 | 1.67 | 2.65 | | |



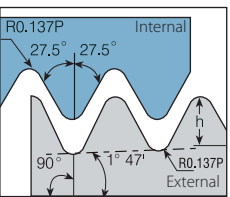
NPT



| | Insert Size | | Pitch | Ordering Code | Dimensions mm | | | V6 Anvil | |
|-----------------|-------------|------|-------|----------------|---------------|------|------|----------|-------------------------------|
| | IC | L mm | tpi | RH | h min | X | Y | RH | Toolholder |
| External | 3/8" V6 | 16 | 14 | 3ER14NPT-6C... | 1.33 | 1.93 | 2.98 | YE3-6C | AL...-3 |
| Internal | 3/8" V6 | 16 | 14 | 3IR14NPT-6C... | 1.33 | 1.91 | 2.84 | YI3-6C | AVR...-3 NVRC...-3 206/... |

Defined by: USAS B2.1:1968
Tolerance class: Standard NPT

BSPT

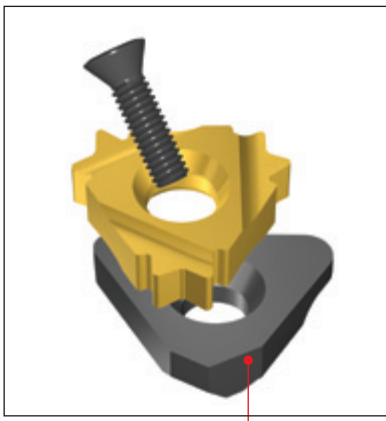


| | Insert Size | | Pitch | Ordering Code | Dimensions mm | | | V6 Anvil | |
|-----------------|-------------|------|-------|-----------------|---------------|------|------|----------|-------------------------------|
| | IC | L mm | tpi | RH | h min | X | Y | RH | Toolholder |
| External | 3/8" V6 | 16 | 19 | 3ER19BSPT-6C... | 0.86 | 1.75 | 2.25 | YE3-6C | AL...-3 |
| | | | 14 | 3ER14BSPT-6C... | 1.16 | 1.88 | 2.79 | | |
| Internal | 3/8" V6 | 16 | 19 | 3IR19BSPT-6C... | 0.86 | 1.80 | 2.30 | YI3-6C | AVR...-3 NVRC...-3 206/... |
| | | | 14 | 3IR14BSPT-6C... | 1.16 | 1.91 | 2.70 | | |

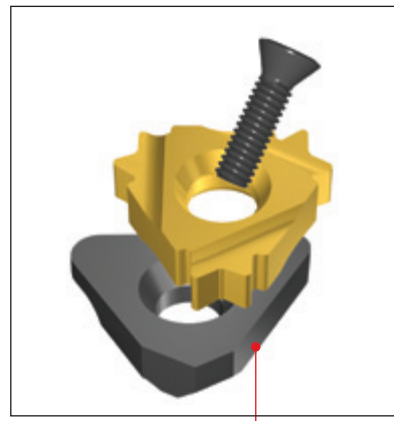
Defined by: B.S.21:1985
Tolerance class: Standard BSPT

Important!

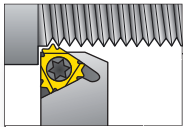
Use a V6 anvil when using a V6 insert.



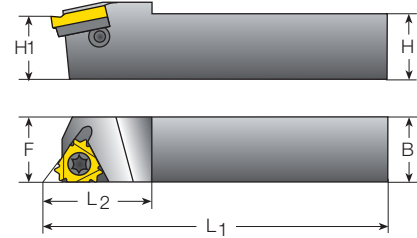
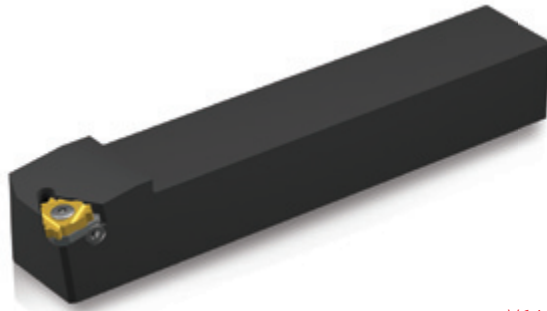
For External RH use YE3-6C anvil.



For Internal RH use YI3-6C anvil.



External Toolholders (with anvil)

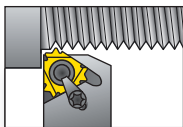


V6 inserts can be used on any External RH holder that uses an anvil.

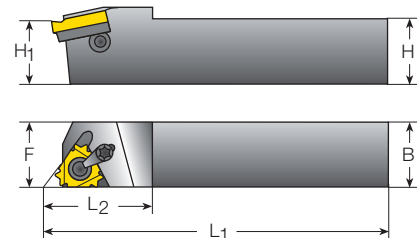
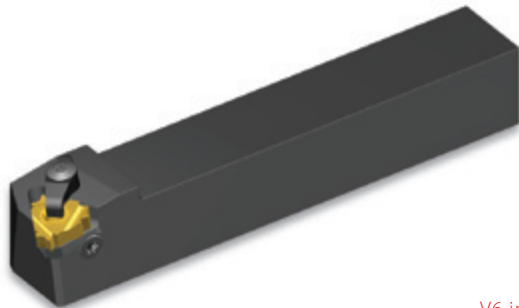
Standard

| Standard | | | | | | Spare Parts | | | |
|-------------|---------------|---------------|----|-------|------|--------------|-------------|----------|-------------|
| Insert Size | Ordering Code | Dimensions mm | | | | | | | |
| IC | | H=H1=B | F | L1 | L2 | Insert Screw | Anvil Screw | Torx Key | V6 Anvil RH |
| 3/8" | AL12-3 | 12 | 16 | 83.2 | 22 | SA3T | SY3T | K3T | Y13-6C |
| | AL16-3 | 16 | 16 | 100.0 | 20.5 | | | | |
| | AL20-3 | 20 | 20 | 128.6 | 30 | | | | |
| | AL25-3 | 25 | 25 | 153.6 | 30 | | | | |
| | AL32-3 | 32 | 32 | 173.6 | 30 | | | | |

* The holders are supplied with standard anvils. For V6, please use the V6 anvil indicated in the table above.



External Toolholders (with anvil)



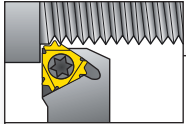
V6 inserts can be used on any External RH holder that uses an anvil.

Standard with Clamp

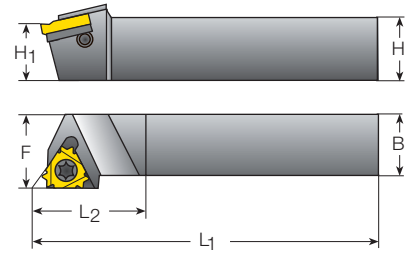
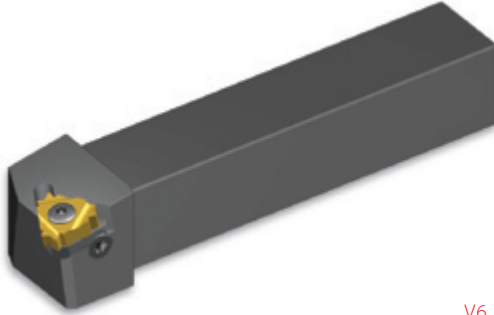
(Dual System: Screw or Clamp)

| Standard with Clamp | | | | | | Spare Parts | | | | |
|---------------------|---------------|---------------|----|-------|----|--------------|-------------|-------|----------|-------------|
| Insert Size | Ordering Code | Dimensions mm | | | | | | | | |
| IC | | H=H1=B | F | L1 | L2 | Insert Screw | Anvil Screw | Clamp | Torx Key | V6 Anvil RH |
| 3/8" | AL20-3C | 20 | 20 | 128.6 | 30 | SA3T | SY3T | C3 | K3CT | Y13-6C |
| | AL25-3C | 25 | 25 | 153.6 | 30 | | | | | |
| | AL32-3C | 32 | 32 | 173.6 | 30 | | | | | |

* The holders are supplied with standard anvils. For V6, please use the V6 anvil indicated in the table above.



External Toolholders (with anvil)



V6 inserts can be used on any External RH holder that uses an anvil.

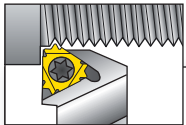
Off-Set Qualified (FQ)

| Insert Size | Ordering Code | Dimensions mm | | | |
|-------------|---------------|---------------|----|-----|----|
| IC | | H=H1=B | F | L1 | L2 |
| 3/8" | AL20-3FQ | 20 | 25 | 125 | 25 |
| | AL25-3FQ | 25 | 32 | 150 | 25 |
| | AL32-3FQ | 32 | 40 | 170 | 32 |

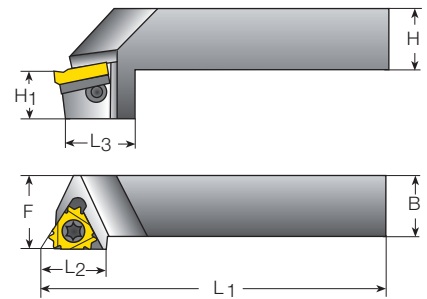
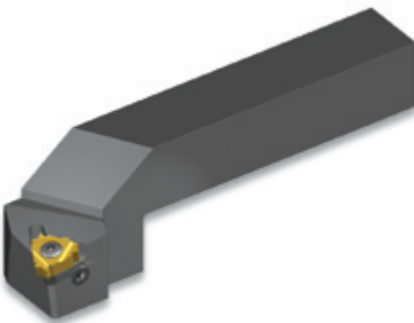
Spare Parts

| Insert Screw | Anvil Screw | Torx Key | V6 Anvil RH* |
|--------------|-------------|----------|--------------|
| SA3T | SY3T | K3T | YE3-6C |

* The holders are supplied with standard anvils. For V6, please use the V6 anvil indicated in the table above.



External Toolholders (with anvil)



V6 inserts can be used on any External RH holder that uses an anvil.

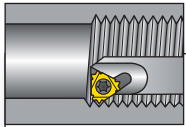
Drop Head-Qualified (CQ)

| Insert Size | Ordering Code | Dimensions mm | | | | | |
|-------------|---------------|---------------|----|-----|----|----|------|
| IC | | H=B | F | L1 | L2 | L3 | H1 |
| 3/8" | AL20-3CQ | 20 | 25 | 125 | 24 | 38 | 17.5 |
| | AL25-3CQ | 25 | 32 | 150 | 24 | 38 | 22.2 |
| | AL32-3CQ | 32 | 40 | 170 | 24 | 38 | 22.2 |

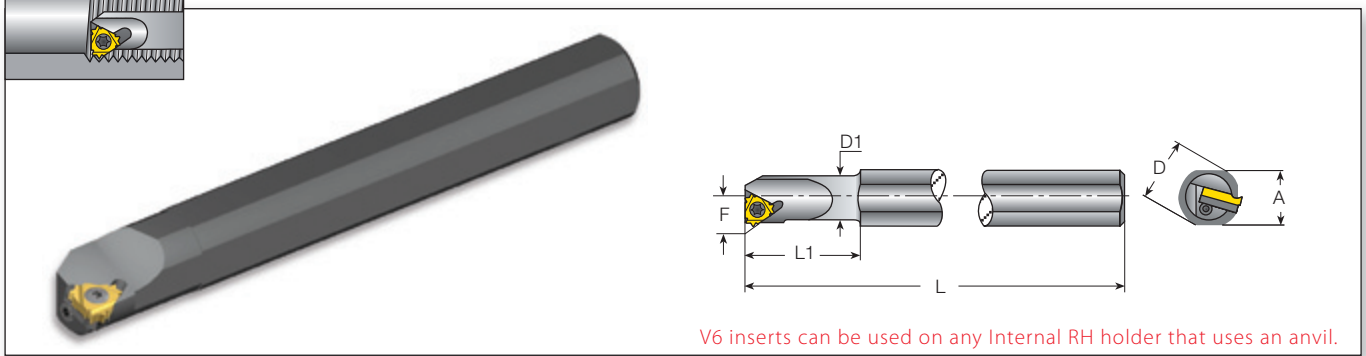
Spare Parts

| Insert Screw | Anvil Screw | Torx Key | V6 Anvil RH* |
|--------------|-------------|----------|--------------|
| SA3T | SY3T | K3T | YE3-6C |

* The holders are supplied with standard anvils. For V6, please use the V6 anvil indicated in the table above.



Internal Toolholders (with anvil)

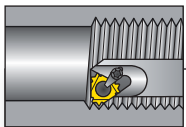


V6 inserts can be used on any Internal RH holder that uses an anvil.

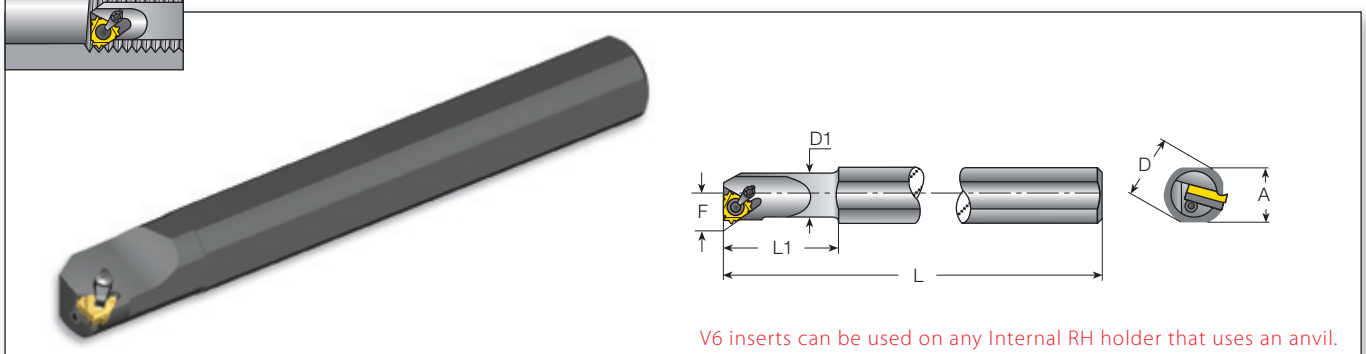
Standard

| Insert Size | Ordering Code | Dimensions mm | | | | | | Min. bore dia. | Spare Parts | | | |
|-------------|---------------|---------------|-----|----|----|------|------|----------------|-------------|--------------|-------------|----------|
| | | A | L | L1 | D | D1 | F | | mm | Insert Screw | Anvil Screw | Torx Key |
| 3/8" | AVR20-3 | 18.0 | 180 | 50 | 20 | 20.0 | 13.4 | 24 | SA3T | SY3T | K3T | Y13-6C |
| | AVR25-3 | 28.0 | 250 | 60 | 32 | 25.0 | 16.3 | 29 | | | | |
| | AVR25D-3 | 22.6 | 200 | 45 | 25 | 24.6 | 16.1 | 29 | | | | |
| | AVR32-3 | 29.0 | 250 | 60 | 32 | 32.0 | 19.6 | 36 | | | | |
| | AVR40-3 | 36.0 | 300 | 60 | 40 | 40.0 | 23.8 | 44 | | | | |

* The holders are supplied with standard anvils. For V6, please use the V6 anvil indicated in the table above.



Internal Toolholders (with anvil)



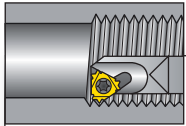
V6 inserts can be used on any Internal RH holder that uses an anvil.

Standard with Clamp

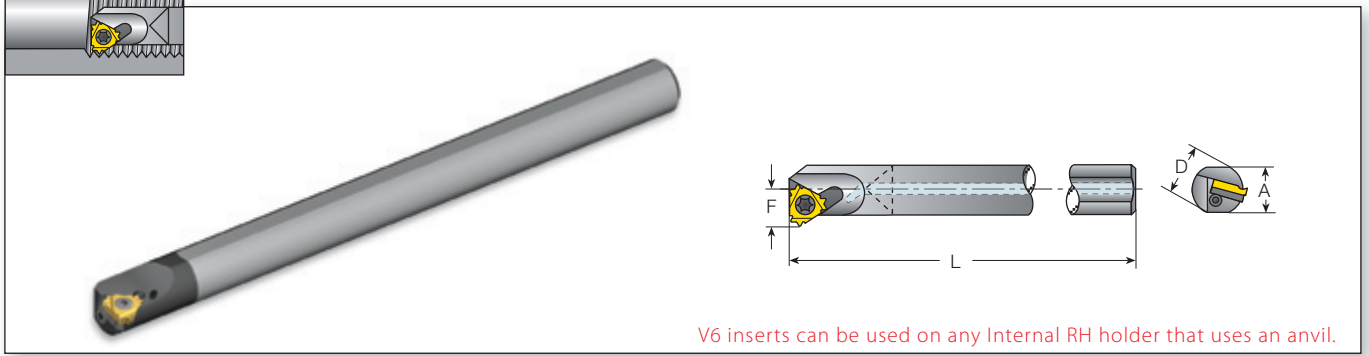
(Dual System: Screw or Clamp)

| Insert Size | Ordering Code | Dimensions mm | | | | | | Min. bore dia. | Spare Parts | | | | |
|-------------|---------------|---------------|-----|----|----|------|------|----------------|-------------|--------------|-------------|-------|----------|
| | | A | L | L1 | D | D1 | F | | mm | Insert Screw | Anvil Screw | Clamp | Torx Key |
| 3/8" | AVR20-3C | 18.0 | 180 | 50 | 20 | 20.0 | 13.4 | 24 | SA3T | SY3T | C3 | K3CT | Y13-6C |
| | AVR25-3C | 28.0 | 250 | 60 | 32 | 25.0 | 16.3 | 29 | | | | | |
| | AVR25D-3C | 22.6 | 200 | 45 | 25 | 24.6 | 16.1 | 29 | | | | | |
| | AVR32-3C | 29.0 | 250 | 60 | 32 | 32.0 | 19.6 | 36 | | | | | |
| | AVR40-3C | 36.0 | 300 | 60 | 40 | 40.0 | 23.8 | 44 | | | | | |

* The holders are supplied with standard anvils. For V6, please use the V6 anvil indicated in the table above.



Internal Toolholders (with anvil)



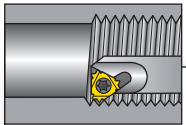
V6 inserts can be used on any Internal RH holder that uses an anvil.

Standard with Carbide Shank

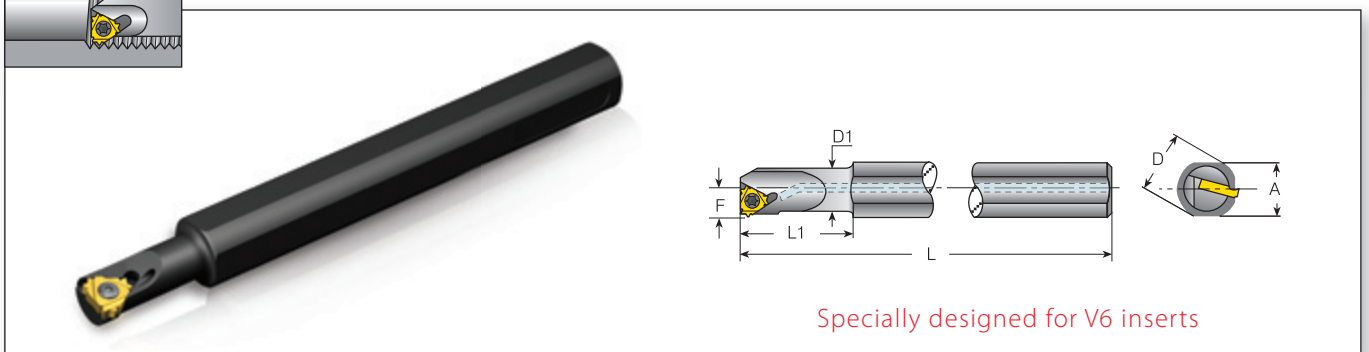
Spare Parts

| Insert Size | Ordering Code | Dimensions mm | | | | | Min. bore dia. | Spare Parts | | | |
|-------------|---------------|---------------|------|------|-----|----|----------------|-------------|----------|---------------|--|
| IC | | D | A | F | L | mm | Insert Screw | Anvil Screw | Torx Key | V6 Anvil RH * | |
| 3/8" | CAVRC20-3 | 20 | 19.5 | 13.4 | 250 | 24 | SA3T | SY3T | K3T | Y13-6C | |

* The holders are supplied with standard anvils. For V6, please use the V6 anvil indicated in the table above.



Internal Toolholders for V6 (without anvil)*



Specially designed for V6 inserts

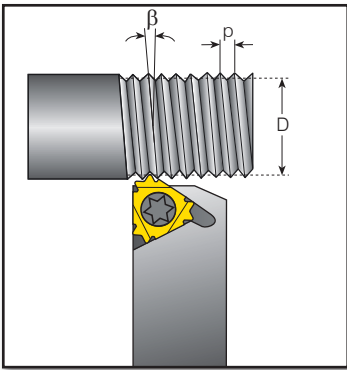
V6 Style

Spare Parts

| Insert Size | Ordering Code | Dimensions mm | | | | | | | Min. bore dia. | Spare Parts | |
|-------------|--------------------|---------------|-----|----|----|------|------|----|----------------|-------------|--|
| IC | | A | L | L1 | D | D1 | F | mm | Insert Screw | Torx Key | |
| 3/8" V6 | NVRC 13-3 206/001 | 18.0 | 180 | 32 | 20 | 12.7 | 10.3 | 17 | SN3TM | K3T | |
| | NVRC 16-3 206/002 | 18.0 | 180 | 40 | 20 | 16.0 | 11.5 | 20 | SN3T | | |
| | NVRC 16D-3 206/003 | 15.2 | 150 | 40 | 16 | 16.0 | 11.3 | 20 | | | |

* V6 inserts cannot be used on standard internal toolholders without anvil. For this purpose you must use one of these special V6 toolholders.

Calculating the Helix Angle β



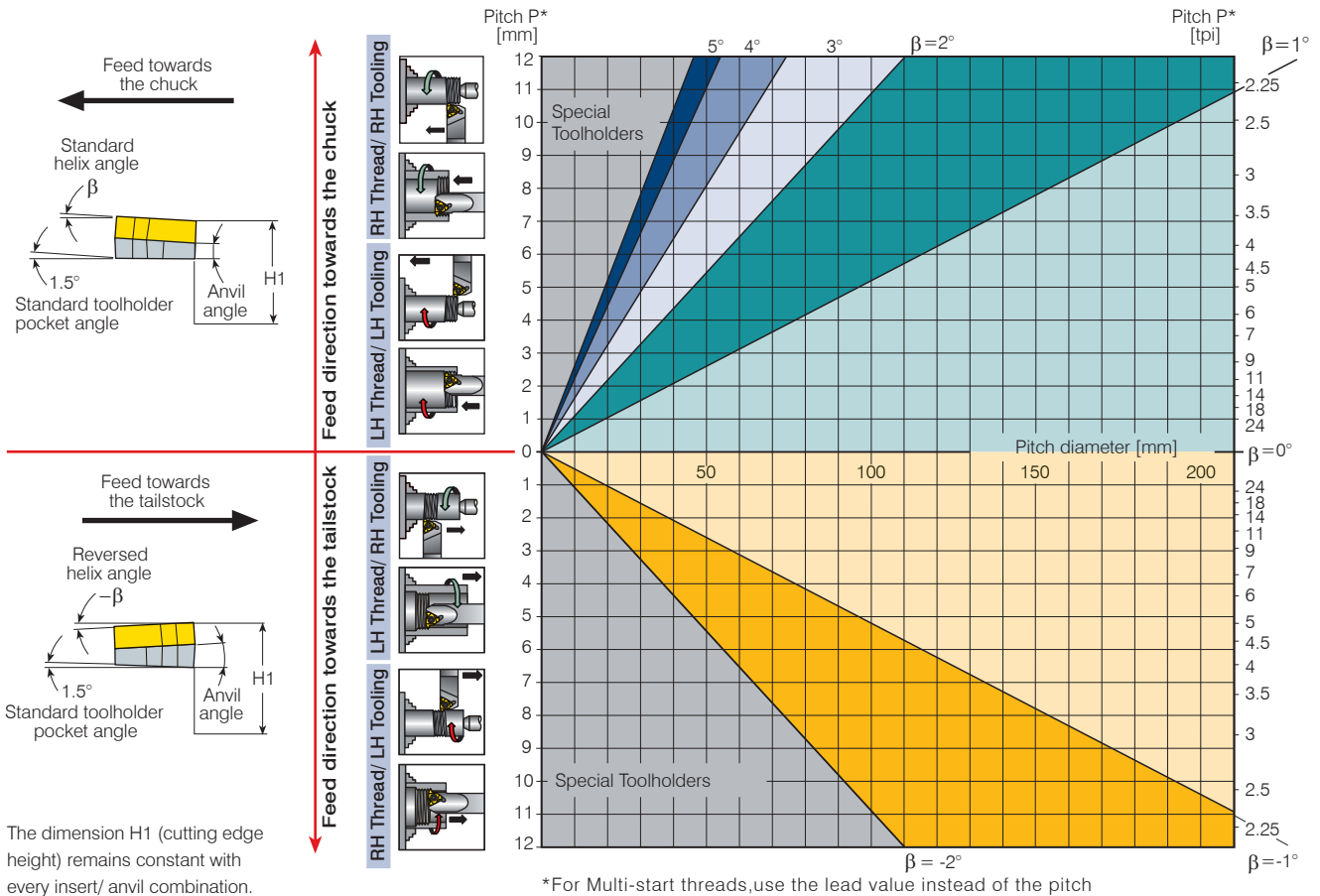
The helix angle is calculated by the following formula:

$$\beta = \arctan \frac{P \times N}{\pi \times D}$$

β - Helix angle [°]
 P - Pitch [mm]
 N - No. of starts
 D - Pitch diameter [mm]
 Lead = P x N

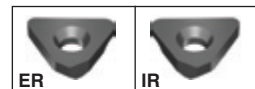
The helix angle can also be determined from the diagram below.

Helix Angle Diagram



V6 Anvil

V6 is indicated on the backside



| Resultant Helix Angle | | <div style="display: flex; justify-content: space-around;"> 4.5° 3.5° 2.5° 1.5° 0.5° 0° -0.5° -1.5° </div> | | | | | | | | | |
|-----------------------|-----|--|---------------|-----------|-----------|--------|-----------|-------------|-----------|-----------|--|
| IC | Lmm | Holder | Ordering Code | | | | | | | | |
| 3/8" V6 | 16 | ER | YE3-6C-3P | YE3-6C-2P | YE3-6C-1P | YE3-6C | YE3-6C-1N | YE3-6C-1.5N | YE3-6C-2N | YE3-6C-3N | |
| | | IR | YI3-6C-3P | YI3-6C-2P | YI3-6C-1P | YI3-6C | YI3-6C-1N | YI3-6C-1.5N | YI3-6C-2N | YI3-6C-3N | |

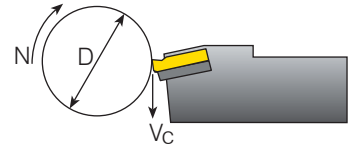
Recommended Grades and Cutting Speeds Vc [m/min]

| Material Group | Vardex No. | Material | Hardness Brinell HB | Vc[m/min] | |
|--|------------|--|------------------------------------|-----------|---------|
| | | | | Coated | VKX |
| P Steel | 1 | Unalloyed steel | Low carbon (C=0.1-0.25%) | 125 | 115-190 |
| | 2 | | Medium carbon (C=0.25-0.55%) | 150 | 100-175 |
| | 3 | | High Carbon (C=0.55-0.85%) | 170 | 90-165 |
| | 4 | Low alloy steel (alloying elements ≤5%) | Non hardened | 180 | 100-180 |
| | 5 | | Hardened | 275 | 75-140 |
| | 6 | | Hardened | 350 | 70-135 |
| | 7 | High alloy steel (alloying elements >5%) | Annealed | 200 | 80-120 |
| | 8 | | Hardened | 325 | 50-100 |
| | 9 | Cast steel | Low alloy (alloying elements <5%) | 200 | 70-130 |
| | 10 | | High alloy (alloying elements >5%) | 225 | 60-120 |
| M Stainless Steel | 11 | Stainless steel Ferritic | Non hardened | 200 | 70-130 |
| | 12 | | Hardened | 330 | 60-115 |
| | 13 | Stainless steel Austenitic | Austenitic | 180 | 90-140 |
| | 14 | | Super Austenitic | 200 | 40-110 |
| | 15 | Stainless steel Cast Ferritic | Non hardened | 200 | 90-120 |
| | 16 | | Hardened | 330 | 65-110 |
| | 17 | Stainless steel Cast austenitic | Austenitic | 200 | 85-110 |
| | 18 | | Hardened | 330 | 60-100 |
| K Cast Iron | 28 | Malleable Cast iron | Ferritic (short chips) | 130 | 60-70 |
| | 29 | | Pearlitic (long chips) | 230 | 60-145 |
| | 30 | Grey cast iron | Low tensile strength | 180 | 70-130 |
| | 31 | | High tensile strength | 260 | 60-115 |
| | 32 | Nodular SG iron | Ferritic | 160 | 125-160 |
| | 33 | | Pearlitic | 260 | 90-120 |
| N(K) Non-Ferrous Metals | 34 | Aluminium alloys Wrought | Non aging | 60 | 100-365 |
| | 35 | | Aged | 100 | 80-220 |
| | 36 | Aluminium alloys Cast | Cast | 75 | 200-400 |
| | 37 | | Cast & aged | 90 | 200-280 |
| | 38 | Aluminium alloys Cast Si 13-22% | 130 | 60-180 | |
| | 39 | Copper and Copper alloys | Brass | 90 | 80-225 |
| | 40 | | Bronze and non leaded copper | 100 | 80-255 |
| S(M) Heat Resistant Material | 19 | High temperature alloys | Annealed (Iron based) | 200 | 45-60 |
| | 20 | | Aged (Iron based) | 280 | 30-50 |
| | 21 | | Annealed (Nickel or Cobalt based) | 250 | 20-30 |
| | 22 | | Aged (Nickel or Cobalt based) | 350 | 15-25 |
| | 23 | Titanium alloys | Pure 99.5 Ti | 400Rm | 140-170 |
| 24 | α+β alloys | | 1050Rm | 50-70 | |
| H(K) Hardened Material | 25 | Extra hard steel | Hardened & tempered | 45-50HRc | 45-60 |
| | 26 | | | 51-55HRc | 40-50 |

Calculation of N [RPM]

$$N = \frac{1000 \times V_c}{\pi \times D}$$

$$V_c = \frac{N \times \pi \times D}{1000}$$



- N - Revolution Per Minute [RPM]
 V_c - Cutting Speed [m/min]
 D - Workpiece Diameter [mm]

VKX



Excellent grade for general use.

Number of Passes

| Pitch | mm | 0.50 | 0.75 | 1.00 | 1.25 | 1.50 | 1.75 | 2.00 |
|---------------|------------|------|------|------|------|------|------|------|
| | tpi | 48 | 32 | 24 | 20 | 16 | 14 | 12 |
| No. of passes | | 3-6 | 3-6 | 4-8 | 4-8 | 5-9 | 6-11 | 6-11 |



V6
6 Cutting Corners

VARDEX
Advanced Threading Solutions

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METRIC