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Shallow Grooving Solutions

Precise grooving with +/- 25µ tolerance



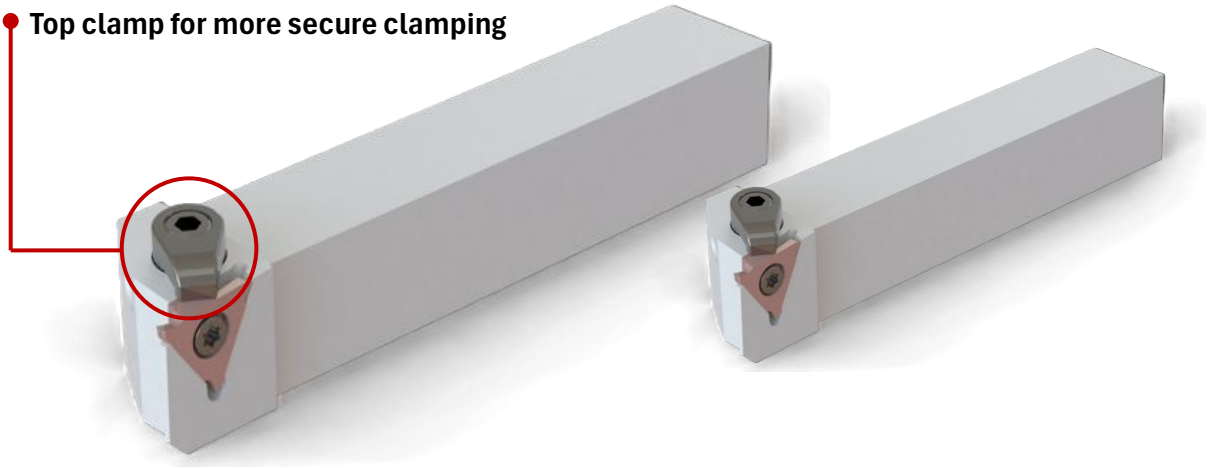
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Motherson Triangular Grooving System

Motherson Triangular Grooving System has been specially developed to produce shallow grooves with the highest accuracy and reliability.

Process security is vital, and is provided by the vertically mounted inserts (as opposed to lay down insert mounting), and is shown in the figure below:



MGT Nomenclature systems

Shallow Grooving Inserts Nomenclature

MGT	R / L	16	-	230	-	DGP4025U
Motherson Triangular Grooving Tools **(MGT)**	Hand on Insert	Edge Length		Grooving Width		Grade

Short Name	Hand
R	Right Hand
L	Left Hand

Edge Length	Insert IC
16	Ø9.525
22	Ø12.70

Value in Description	Groove Width
050	0.5
170	1.75
385	3.85

MGTL16-150-DGP4025U
MGTL22-315-DGP4025U

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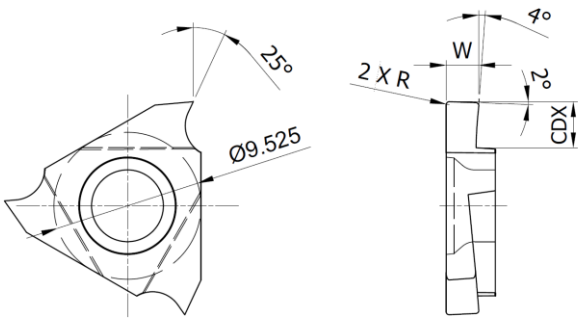
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Grade details

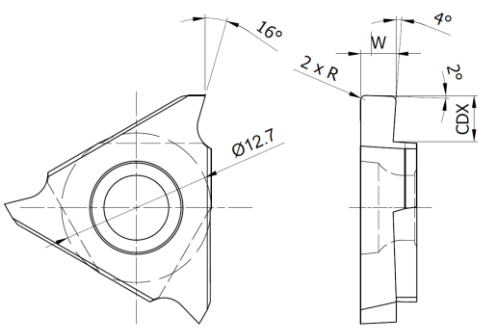
DGP4025U is an universal application grade from the **Motherson Deltacarb** grade basket, specially developed for supporting the application conditions operative during the shallow grooving applications using MGTL16/MGTL22 type inserts.

Application Areas : P20-P30, M20-M30, and S20-S30

Insert drawing



MGTR16 – Right hand



MGTR22 – Right Hand

Grade Advantage

Grade **DGP4025U** derives its properties from the specially engineered fine-grained substrate - in order to minimize the incidence of microchipping and a multilayer PVD coating for excellent wear and oxidation resistance. The coating is adhesion resistant, reducing the extent of BUE formation.

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Success Case

Shallow Grooving

Material: CK45 (Steel) – ISO P

Tool overhang: 47.00mm

Job clamping dia: Dia 100mm

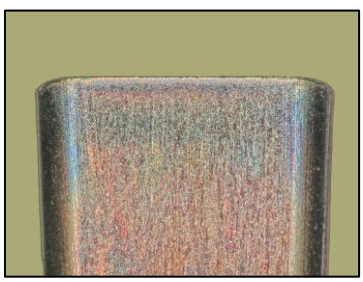
Insert: MGTL22150 DGP4025U

Tool life at par – against Top competitor

Cutting Parameters:
Vc = 150m/min **, f =** 0.08mm/rev**, Ap =** 3.0mm**, Ae =** 1.5mm**,** Wet

Wear comparison after 2.55mtr

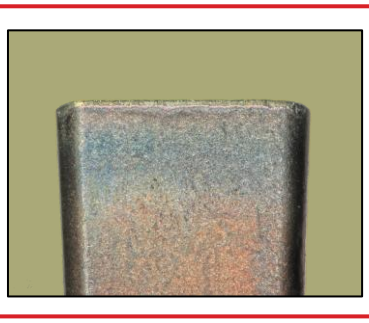
Groove made – 851
Time taken – 20.34 min.



Existing insert



Chip length – 550-600mm



MGTL22 from Motherson Deltacarb



Chip length – 600-700mm

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Recommended cutting parameters for MGTL/R16 type inserts

Insert type	Insert width	Steel		Stainless Steel		Exotic Alloy	
		f (mm/rev)	V (m/min)	f (mm/rev)	V (m/min)	f (mm/rev)	V (m/min)
MTG16	**0.33-0.50**	0.01-**0.03**-0.04	70-**125**-160	0.01-**0.03**-0.04	50-**90**-130	0.01-**0.03**-0.04	30-**40**-60
	0.55-0.95	0.02-**0.04**-0.06		0.02-**0.04**-0.06		0.02-**0.04**-0.06	
	1.0-2.5	0.03-**0.06**-0.08		0.03-**0.06**-0.08		0.03-**0.06**-0.08	

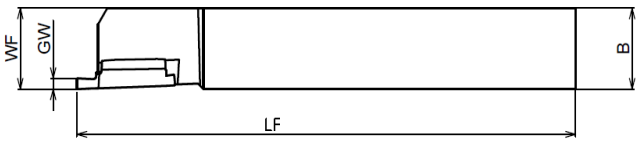
Recommended cutting parameters for MGTL/R22 type inserts

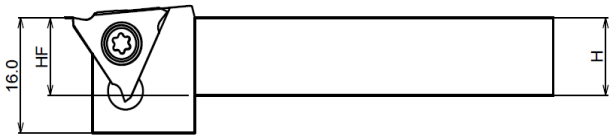
Insert type	Insert width	Steel		Stainless Steel		Exotic Alloy	
		f (mm/rev)	V (m/min)	f (mm/rev)	V (m/min)	f (mm/rev)	V (m/min)
MTG22	**0.33-1.2**	0.03-**0.05**-0.07	70-**125**-175	0.03-**0.05**-0.07	50-**100**-140	0.03-**0.05**-0.07	30-**50**-80
	1.25-2.25	0.04-**0.06**-0.08		0.04-**0.06**-0.08		0.04-**0.06**-0.08	
	2.30-3.25	0.05-**0.07**-0.09		0.05-**0.07**-0.09		0.05-**0.07**-0.09	
	3.30-4.8	0.05-**0.08**-0.1		0.05-**0.08**-0.1		0.05-**0.08**-0.1	

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Holder range: 16 size





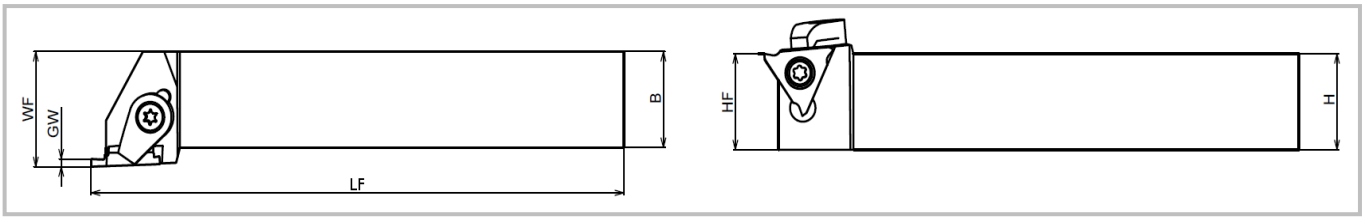
Shank Height: H | **Shank Width**: B | **Total Length**: LF | **Cutting Edge Width**: WF | **Cutting Edge Width**: WF | **Cutting Edge Height**: HF | **Groove Width**: GW | **Groove Depth**: CDX

Catalogue Description	Applicable Insert	H	B	LF	WF	HF	GW	CDX
MGTER1010T16W050	MGTR16-050	10	10	125	10	10	0.50	1.2
MGTER1010T16W185	MGTR16-075 to MGTR16-185	10	10	125	10	10	0.75 to 1.85	2.0
MGTEL1010T16W185	MGTL16-075 to MGTL16-185	10	10	125	10	10	0.75 to 1.85	2.0
MGTER1010T16W280	MGTR16-200 to MGTR16-280	10	10	125	10	10	2.00 to 2.80	2.5
MGTEL1010T16W200	MGTL16-200	10	10	125	10	10	2.00	2.5
MGTER1212T16W050	MGTR16-050	12	12	125	12	12	0.50	1.2
MGTER1212T16W185	MGTR16-075 to MGTR16-185	12	12	125	12	12	0.75 to 1.85	2.0
MGTEL1212T16W185	MGTL16-075 to MGTL16-185	12	12	125	12	12	0.75 to 1.85	2.0
MGTER1212T16W280	MGTR16-200 to MGTR16-280	12	12	125	12	12	2.00 to 2.80	2.5
MGTEL1212T16W200	MGTL16-200	12	12	125	12	12	2.00	2.5
MGTER1616T16W050	MGTR16-050	16	16	125	16	16	0.50	1.2
MGTER1616T16W185	MGTR16-075 to MGTR16-185	16	16	125	16	16	0.75 to 1.85	2.0
MGTEL1616T16W185	MGTL16-075 to MGTL16-185	16	16	125	16	16	0.75 to 1.85	2.0
MGTER1616T16W280	MGTR16-200 to MGTR16-280	16	16	125	16	16	2.00 to 2.80	2.5
MGTEL1616T16W280	MGTL16-200	16	16	125	16	16	2.00	2.5
MGTER2020T16W050	MGTR16-050	20	20	125	25	20	0.50	1.2
MGTER2020T16W185	MGTR16-075 to MGTR16-185	20	20	125	25	20	0.75 to 1.85	2.0
MGTEL2020T16W185	MGTL16-075 to MGTL16-185	20	20	125	25	20	0.75 to 1.85	2.0
MGTER2020T16W280	MGTR16-200 to MGTR16-280	20	20	125	25	20	2.00 to 2.80	2.5
MGTEL2020T16W200	MGTL16-200	20	20	125	25	20	2.00	2.5
MGTER2525T16W050	MGTR16-050	25	25	125	30	25	0.50	1.2
MGTER2525T16W185	MGTR16-075 to MGTR16-185	25	25	125	30	25	0.75 to 1.85	2.0
MGTEL2525T16W185	MGTL16-075 to MGTL16-185	25	25	125	30	25	0.75 to 1.85	2.0
MGTER2525T16W280	MGTR16-200 to MGTR16-280	25	25	125	30	25	2.00 to 2.80	2.5
MGTEL2525T16W200	MGTL16-200	25	25	125	30	25	2.00	2.5

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Holder range: 22 size



Shank Height: H | **Shank Width**: B | **Total Length**: LF | **Cutting Edge Width**: WF | **Cutting Edge Width**: WF | **Cutting Edge Height**: HF | **Groove Width**: GW | **Groove Depth**: CDX

Catalogue Description	Applicable Insert	H	B	LF	WF	HF	GW	CDX
MGTER2020T22W100	MGTR22-100HR	20	20	150	25	20	1	2
MGTEL2020T22W100	MGTL22-100HR	20	20	150	25	20	1	2
MGTER2020T22W230	MGTR22-145 to MGTR22-230	20	20	125	25	20	1.45 to 2.30	3.5
MGTER2020T22W230	MGTR22-150HR to MGTR22-200HR	20	20	125	25	20	1.45 to 2.30	3.5
MGTEL2020T22W230	MGTL22-150 to MGTL22-230	20	20	125	25	20	1.5 to 2.30	3.5
MGTEL2020T22W230	MGTL22-150HR to MGTL22-200HR	20	20	125	25	20	1.5 to 2.30	3.5
MGTER2020T22W420	MGTR22-250 to MGTR22-420	20	20	125	25	20	2.5 to 4.2	5.0
MGTEL2020T22W480	MGTL22-250 to MGTL22-480	20	20	125	25	20	2.5 to 4.8	5.0
MGTEL2020T22W480	MGTL22-300HR	20	20	125	25	20	2.5 to 4.8	5.0
MGTEL2020T22W480	MGTL22-400HR	20	20	125	25	20	2.5 to 4.8	5.0
MGTER2525T22W100	MGTR22-100HR	25	25	150	30	25	1	2
MGTEL2525T22W100	MGTL22-100HR	25	25	150	30	25	1	2
MGTER2525T22W230	MGTR22-145 to MGTR22-230	25	25	150	30	25	1.45 to 2.30	3.5
MGTEL2525T22W230	MGTL22-150 to MGTL22-230	25	25	150	30	25	1.5 to 2.30	3.5
MGTEL2525T22W230	MGTL22-150HR	25	25	150	30	25	1.5 to 2.30	3.5
MGTER2525T22W420	MGTR22-250 to MGTR22-420	25	25	150	30	25	2.5 to 4.2	5.0
MGTEL2525T22W480	MGTL22-250 to MGTL22-480	25	25	150	30	25	2.5 to 4.8	5.0
MGTEL2525T22W480	MGTL22-300HR	25	25	150	30	25	2.5 to 4.8	5.0
MGTEL2525T22W480	MGTL22-400HR	25	25	150	30	25	2.5 to 4.8	5.0

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Insert Range

Insert IC: Ø | Groove Width : W | Corner Radius : R | Effective Rake Angle : RA°

Catalogue Description	Hand	Ø	W	R	CDX.	RA°
MGTR16-050-DGP4025U	R	9.525	0.50	0.05	1.20	20°
MGTL16-075-DGP4025U	L	9.525	0.75	0.10	2.00	20°
MGTR16-075-DGP4025U	R	9.525	0.75	0.10	2.00	20°
MGTR16-095-DGP4025U	R	9.525	0.95	0.10	2.00	20°
MGTL16-100-DGP4025U	L	9.525	1.00	0.10	2.00	20°
MGTR16-100-DGP4025U	R	9.525	1.00	0.10	2.00	20°
MGTL16-110-DGP4025U	L	9.525	1.10	0.10	2.00	20°
MGTR16-110-DGP4025U	R	9.525	1.10	0.10	2.00	20°
MGTR16-135-DGP4025U	R	9.525	1.35	0.10	2.00	20°
MGTL16-150-DGP4025U	L	9.525	1.50	0.10	2.00	20°
MGTR16-150-DGP4025U	R	9.525	1.50	0.10	2.00	20°
MGTL16-165-DGP4025U	L	9.525	1.65	0.10	2.00	20°
MGTL16-185-DGP4025U	L	9.525	1.85	0.10	2.00	20°
MGTR16-185-DGP4025U	R	9.525	1.85	0.10	2.00	20°
MGTL16-200-DGP4025U	L	9.525	2.00	0.10	2.50	20°
MGTR16-200-DGP4025U	R	9.525	2.00	0.10	2.50	20°
MGTR16-220-DGP4025U	R	9.525	2.20	0.10	2.50	20°
MGTR16-280-DGP4025U	R	9.525	2.80	0.10	2.50	20°

Catalogue Description	Hand	Ø	W	R	CDX.	RA°
MGTR22-145-DGP4025U	R	12.7	1.45	0.20	3.50	10°
MGTL22-150-DGP4025U	L	12.7	1.50	0.20	3.50	10°
MGTR22-150-DGP4025U	R	12.7	1.50	0.20	3.50	10°
MGTL22-175-DGP4025U	L	12.7	1.75	0.20	3.50	10°
MGTL22-200-DGP4025U	L	12.7	2.00	0.20	3.50	10°
MGTR22-200-DGP4025U	R	12.7	2.00	0.20	3.50	10°
MGTL22-220-DGP4025U	L	12.7	2.20	0.20	3.50	10°
MGTL22-230-DGP4025U	L	12.7	2.30	0.20	3.50	10°
MGTR22-230-DGP4025U	R	12.7	2.30	0.20	3.50	10°
MGTL22-250-DGP4025U	L	12.7	2.50	0.30	5.00	10°
MGTR22-250-DGP4025U	R	12.7	2.50	0.30	5.00	10°
MGTL22-270-DGP4025U	L	12.7	2.70	0.30	5.00	10°
MGTL22-280-DGP4025U	L	12.7	2.80	0.30	5.00	10°
MGTL22-300-DGP4025U	L	12.7	3.00	0.30	5.00	10°
MGTR22-300-DGP4025U	R	12.7	3.00	0.30	5.00	10°
MGTR22-320-DGP4025U	R	12.7	3.20	0.30	5.00	10°
MGTR22-350-DGP4025U	R	12.7	3.50	0.30	5.00	10°
MGTR22-400-DGP4025U	R	12.7	4.00	0.40	5.00	10°
MGTL22-420-DGP4025U	L	12.7	4.20	0.40	5.00	10°
MGTR22-420-DGP4025U	R	12.7	4.20	0.40	5.00	10°
MGTL22-480-DGP4025U	L	12.7	4.80	0.40	5.00	10°
MGTL22-100HR-DGP4025U	L	12.7	1.00	Half Round	2.00	10°
MGTR22-100HR-DGP4025U	R	12.7	1.00	Half Round	2.00	10°
MGTL22-150HR-DGP4025U	L	12.7	1.50	Half Round	3.50	10°
MGTR22-150HR-DGP4025U	R	12.7	1.50	Half Round	3.50	10°
MGTL22-200HR-DGP4025U	L	12.7	2.00	Half Round	3.50	10°
MGTR22-200HR-DGP4025U	R	12.7	2.00	Half Round	3.50	10°
MGTL22-300HR-DGP4025U	L	12.7	3.00	Half Round	4.00	10°
MGTL22-400HR-DGP4025U	L	12.7	4.00	Half Round	5.00	10°

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