

MILLLINE Shoulder milling cutter

DORECC

New Version
Featuring new
18 mm size insert

ISO dimensions

High performance economical double sided inserts
with 4 cutting edges!



LQMU11

LQMU18

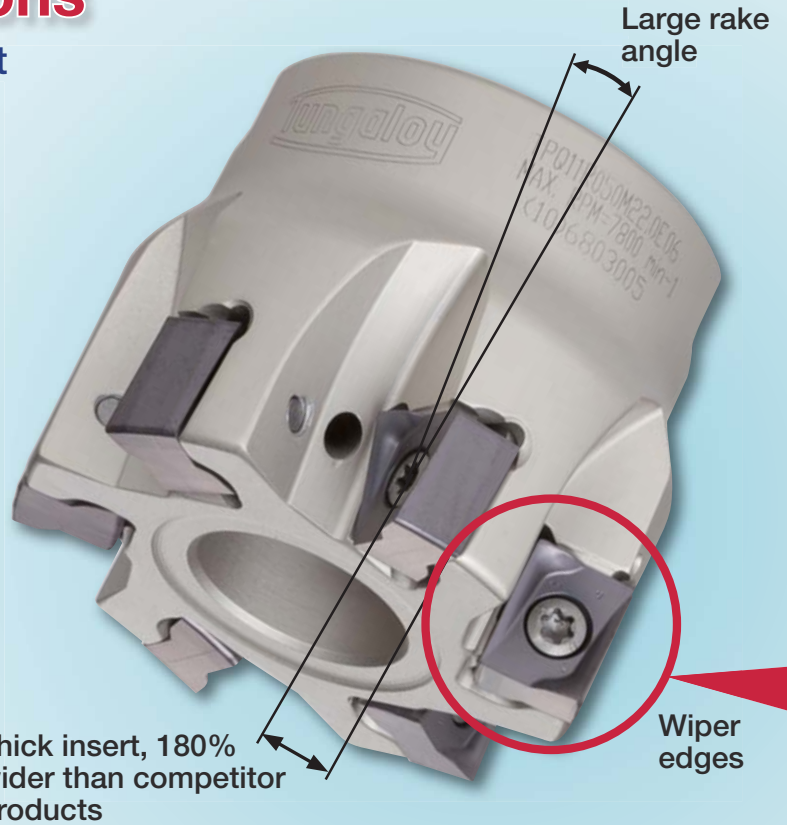
Economical insert with 4 edges to offer remarkable productivity levels!

High performance levels with a diverse range of applications

- Double sided square insert



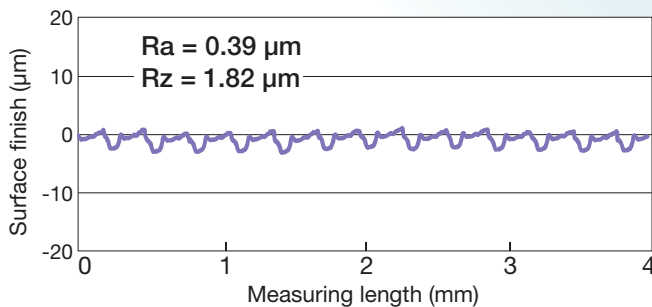
With 2 insert sizes, 3 grades and 4 corner radii options, DoRec suits most applications.



Low cutting force + Excellent surface finish

- Insert has high level of sharpness and incorporates effective wiper edges.

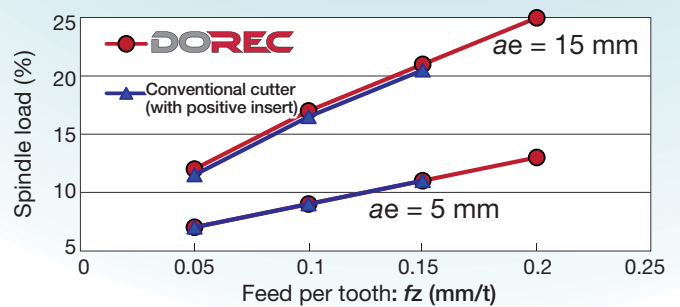
Surface finish



Cutter	: TPQ18R050M22.0E03	Cutting speed	: $V_c = 150 \text{ m/min}$
	($\phi D_c = 50, z = 3$)	Feed per tooth	: $f_z = 0.1 \text{ mm/t}$
Insert	: LQMU1808008PNER-MJ	Depth of cut	: $a_p = 10 \text{ mm}$
Grade	: AH725	Width of cut	: $a_e = 50 \text{ mm}$
Work material	: C55 (200HB)	Coolant	: Wet
		Machine	: Vertical M/C, BT50

Exceptional surface finish with economical insert!

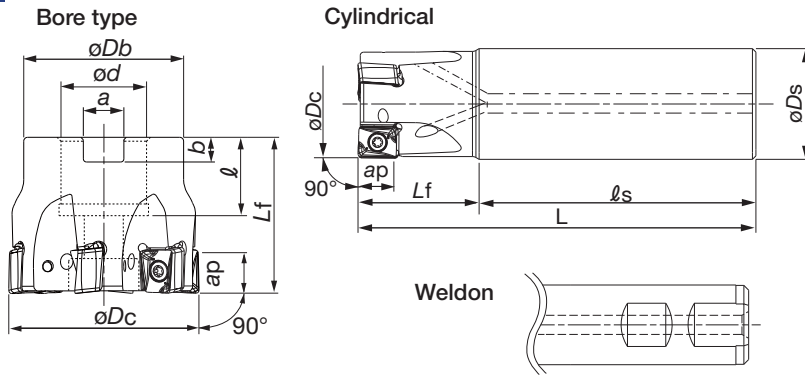
Comparison of spindle load



Cutter	: EPQ18R040M32.0W03	Cutting speed	: $V_c = 150 \text{ m/min}$
	($\phi D_c = 40, z = 3$)	Depth of cut	: $a_p = 16 \text{ mm}$
Insert	: LQMU180808PNER-MJ	Coolant	: Wet
Work material	: C55 (200HB)	Machine	: Vertical M/C, BT50

Similar load levels as a conventional tool!

Milling cutter



Replacement parts

Description		Cat. No.	
Applicable cutter	T/EPQ11..	T/EPQ18	
Clamping screw	CSTB-3.5L115	SR14-591	
Wrench	Torx bit	BLDT10/S7	BT20M
	Grip	SW6-SD	H-TB
Mono block type, substitution wrench		T-10D	T-20D

LQMU11 type: Max. ap: 9 mm
LQMU18 type: Max. ap: 16 mm

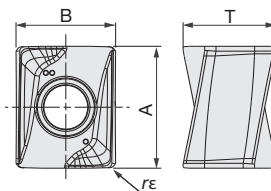
Bore type

Cat. No.	Stock	No. of Inserts	Dimensions (mm)						Weight (kg)	Air hole	Centre bolt	
			ϕDc	ϕDb	ϕd	ℓ	L_f	b				a
TPQ11R040M16.0E05	●	5	40	35	16	20	40	5.6	8.4	0.2	with	CM8x30H
TPQ11R050M22.0E06	●	6	50	41	22	20	40	6.3	10.4	0.4	with	CM10x30H
TPQ11R063M22.0E07	●	7	63	47	22	20	40	6.3	10.4	0.5	with	CM10x30H
TPQ11R080M27.0E10	●	10	80	58	27	26	50	7	12.4	1.0	with	CM12x30H
TPQ11R100M32.0E12	●	12	100	66	32	32	50	8	14.4	1.6	with	TMBA-M16H
New TPQ18R050M22.0E03	●	3	50	47	22	20	40	6.3	10.4	0.4	with	CM10x30H
New TPQ18R063M27.0E04	●	4	63	58	27	26	50	7	12.4	0.5	with	CM10x30H
New TPQ18R080M27.0E05	●	5	80	58	27	26	50	7	12.4	0.9	with	CM12x30H
New TPQ18R100M32.0E06	●	6	100	66	32	32	50	8	14.4	1.4	with	TMBA-M16H
New TPQ18R125M40.0E08	●	8	125	82	40	38	63	9	16.4	2.9	with	TMBA-M20H
New TPQ18R160M40.0E09	●	9	160	100	40	38	63	9	16.4	4.1	Without	-

Shank type

Cat. No.	Stock	No. of Inserts	Dimensions (mm)					Weight (kg)	Air hole	Shank type
			ϕDc	ϕDs	ℓs	L_f	L			
EPQ11R025M25.0-02	●	2	25	25	70	30	100	0.3	with	Cylindrical
EPQ11R032M32.0-03	●	3	32	32	80	35	115	0.7	with	
EPQ11R040M32.0-04	●	4	40	32	80	35	115	0.8	with	
EPQ11R050M32.0-05	●	5	50	32	80	40	120	0.9	with	
EPQ11R063M32.0-06	●	6	63	32	80	40	120	1.1	with	
EPQ11R080M32.0-07	●	7	80	32	80	40	120	1.4	with	
New EPQ18R040M32.0W03	●	3	40	32	75	35	110	0.7	with	
New EPQ18R050M32.0W04	●	4	50	32	75	40	115	0.9	with	

Inserts



Cat. No.	Accuracy	Honing	Grades			Dimensions (mm)				Cutter
			Coated			A	B	T	r_{ϵ}	
			AH725	AH120	AH140					
LQMU110704PNER-MJ	M	with	●	●	●	11.0	9.0	8.3	0.4	EPQ11R TPQ11R
LQMU110708PNER-MJ	M	with	●	●	●	11.0	9.0	8.3	0.8	
LQMU110716PNER-MJ	M	with	●	●	●	11.0	9.0	8.3	1.6	
New LQMU180804PNER-MJ	M	with	●	●	●	17.5	11.5	10.9	0.4	TPQ18R EPQ18R
New LQMU180808PNER-MJ	M	with	●	●	●	17.5	11.5	10.9	0.8	
New LQMU180816PNER-MJ	M	with	●	●	●	17.5	11.5	10.9	1.6	
New LQMU180824PNER-MJ	M	with	●	●	●	17.5	11.5	10.9	2.4	

● : Stocked items

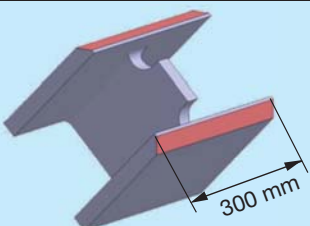
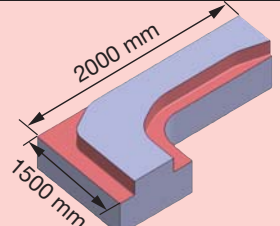
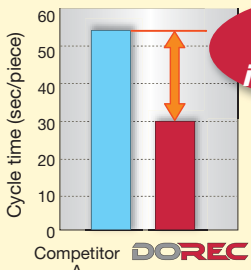
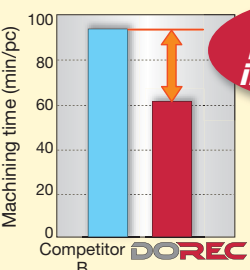
Standard cutting conditions

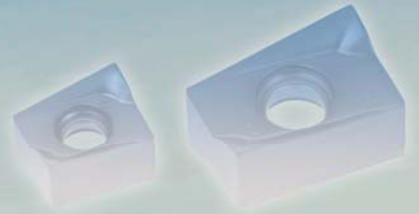
Work Materials	Hardness HB	Grades	Cutting speed Vc (m/min)	Feed per tooth fz (mm/t)
Low carbon steel (C15E etc.)	~ 200	AH725	100 - 250	0.10 - 0.25
High carbon steel (C45, C55 etc.)	200 ~ 300		100 - 230	0.10 - 0.20
Alloy steel (42CrMo4, 17Cr3 etc.)	150 ~ 300		100 - 230	
Tool steel (X155CrVMo12-1etc.)	~ 300		100 - 180	
Stainless steel (X5CrNi18-9 etc.)	-	AH140	90 - 180	0.10 - 0.25
Grey cast iron (GG25 / 250 etc.)	150 ~ 250	AH120	140 - 250	0.10 - 0.25
Ductile cast iron (GGG40 / 450-10S etc.)			110 - 200	0.10 - 0.25
Superalloys (Inconel 718, Ti-6Al-4V etc.)	-	AH725	20 - 50	0.08 - 0.20

- To remove excessive chip accumulation use an air blast.
- When cutting an interrupted surface or a casted skin, the feed per tooth (fz) should be reduced to the lower recommended value shown in the above table.

- Cutting conditions are limited by machine power, work piece rigidity and spindle output. When the cutting width, depth or overhang length is large, set Vc and fz to the lower recommended values and check the machine power and vibration.

Practical examples

Part of workpiece		Machine component	Press mould
Milling cutter		EPQ11R032M32.0-03 (ø32, z = 3)	TPQ18R080M27.0E05 (ø80, z = 5)
Insert		LQMU110708PNER-MJ	LQMU180816PNER-MJ
Grade		AH725	AH120
Work material		E275A (150HB)	GG25 / 250 (180HB)
			
Cutting conditions	Cutting speed: Vc (m/min)	200	200
	Feed per tooth: fz (mm/t)	0.2	0.2
	Depth of cut: ap (mm)	8	12
	Width of cut: ae (mm)	4	20 - 60
	Method of machining	Side milling	Shoulder milling
	Coolant	Dry	Dry
	Machine	Vertical M/C, BT40	Vertical M/C, BT50
Results		 <p>180% productivity improvement</p> <p>Vf = 671 → 1194 mm/min</p> <p>High feed rate significantly reduces machining time. Stable tool life is provided with the reduction of sudden insert fracture.</p>	 <p>130% productivity improvement</p> <p>Vf = 480 → 800 mm/min</p> <p>Due to the tough cutting edge, higher feed per tooth can be applied to reduce the machining time.</p>



Extremely tough cutting edges lead to efficient machining.

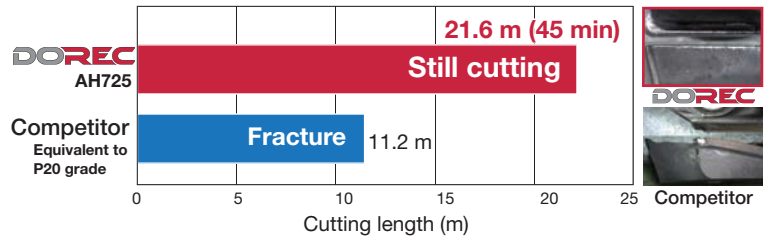


Incredible productivity!

Insert thickness: 1.8 times wider than competitor!

High fracture resistance

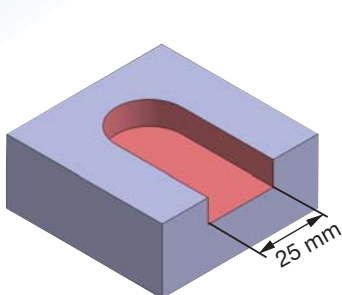
Comparison of fracture resistance



Tool diameter : $\phi Dc = 25$ mm Depth of cut : $ap = 5.0$ mm
 Corner radius : $r\epsilon = 0.4$ Width of cut : $ae = 12.5$ mm
 Work material : C55 (200HB) Coolant : Dry
 Cutting speed : $Vc = 150$ m/min No. of inserts: Only used 1 insert
 Feed per tooth : $fz = 0.25$ mm/t Machine : Vertical M/C, BT50

High feed milling improves machining efficiency.

Comparison of metal removal rate



Application: Slot milling
 Work material: C55 (200HB)
 Machine: Vertical M/C, BT50

Cutting conditions	DOREC	Competitor
Cutter	EPQ11R025M25.0-02 ($\phi Dc = 25$ mm, $z = 2$)	$\phi Dc = 25$ mm, $z = 3$
Insert	LQMU110704PNER-MJ AH725	Insert: Positive type with 2 corner P30 grade
Cutting speed: Vc (m/min)	200	150
Feed per tooth: fz (mm/t)	0.15	0.1
Depth of cut: ap (mm)	8	5
Metal removal rate: Q (cc/min)	150	70

210% MORE
PRODUCTIVITY
Milling Intelligently



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EC97J1123
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Japan site and Asian
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26/11/1997

18/10/1996

Produced from Recycled paper

Nov. 2013 (TJ)