

Lampiran 5. Surat Keterangan



Spesimen dengan variasi putaran *spindle* 200 rpm dan *depth of cut* 0,0203 mm



Spesimen dengan variasi putaran *spindle* 300 rpm dan *depth of cut* 0,0203 mm

Lampiran 5. Surat Keterangan



Spesimen dengan variasi putaran *spindle* 400 rpm dan *depth of cut* 0,0203 mm



Spesimen dengan variasi putaran *spindle* 500 rpm dan *depth of cut* 0,0203 mm

Lampiran 5. Surat Keterangan



Spesimen dengan variasi putaran *spindle* 600 rpm dan *depth of cut* 0,0203 mm



Spesimen dengan variasi putaran *spindle* 700 rpm dan *depth of cut* 0,0203 mm

Lampiran 5. Surat Keterangan



Spesimen dengan variasi putaran *spindle* 800 rpm dan *depth of cut* 0,0203 mm



Spesimen dengan variasi putaran *spindle* 200 rpm dan *depth of cut* 0,0407 mm

Lampiran 5. Surat Keterangan



Spesimen dengan variasi putaran *spindle* 300 rpm dan *depth of cut* 0,0407 mm



Spesimen dengan variasi putaran *spindle* 400 rpm dan *depth of cut* 0,0407 mm

Lampiran 5. Surat Keterangan



Spesimen dengan variasi putaran *spindle* 500 rpm dan *depth of cut* 0,0407 mm



Spesimen dengan variasi putaran *spindle* 600 rpm dan *depth of cut* 0,0407 mm

Lampiran 5. Surat Keterangan



Spesimen dengan variasi putaran *spindle* 700 rpm dan *depth of cut* 0,0407 mm



Spesimen dengan variasi putaran *spindle* 800 rpm dan *depth of cut* 0,0407 mm

Lampiran 5. Surat Keterangan



Spesimen dengan variasi putaran *spindle* 200 rpm dan *depth of cut* 0,0610 mm



Spesimen dengan variasi putaran *spindle* 300 rpm dan *depth of cut* 0,0610 mm

Lampiran 5. Surat Keterangan



Spesimen dengan variasi putaran *spindle* 400 rpm dan *depth of cut* 0,0610 mm



Spesimen dengan variasi putaran *spindle* 500 rpm dan *depth of cut* 0,0610 mm

Lampiran 5. Surat Keterangan



Spesimen dengan variasi putaran *spindle* 600 rpm dan *depth of cut* 0,0610 mm

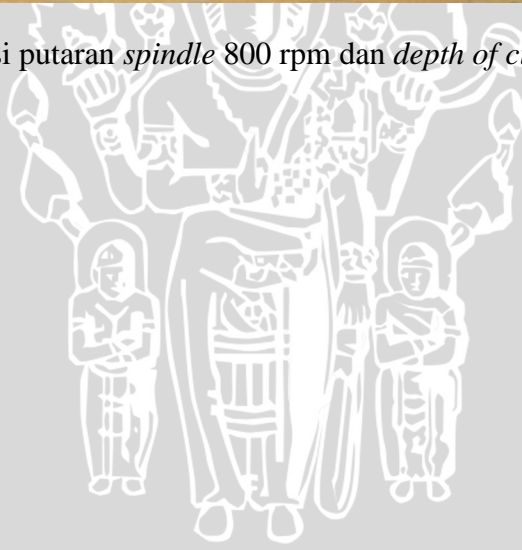


Spesimen dengan variasi putaran *spindle* 700 rpm dan *depth of cut* 0,0610 mm

Lampiran 5. Surat Keterangan



Spesimen dengan variasi putaran *spindle* 800 rpm dan *depth of cut* 0,0610 mm



THREADING

MMT G-CLASS GROUND INSERTS

EXTERNAL THREADING INSERTS

Type	Thread Tolerance	Order Number	Coated VP10MF VP15TF	Pitch		Dimensions (mm)					Total depth of cut (mm)	Geometry
				mm	thread/inch	D1	S1	Z1	Z2	Re		
Partial Profile 60°	—	MMT16ERA60	★ ★	0.5—1.5	48—16	9.525	3.44	0.8	0.9	0.05	—	
		16ERG60	★ ★	1.75—3.0	14—8	9.525	3.44	1.2	1.7	0.27	—	
		16ERAG60	★	0.5—3.0	48—8	9.525	3.44	1.2	1.7	0.08	—	
		22ERN60	★	3.5—5.0	7—5	12.7	4.64	1.7	2.5	0.53	—	
Partial Profile 55°	—	MMT16ERA55	★ ★		48—16	9.525	3.44	0.8	0.9	0.05	—	
		16ERG55	★ ★		14—8	9.525	3.44	1.2	1.7	0.21	—	
		16ERAG55	★		48—8	9.525	3.44	1.2	1.7	0.07	—	
		22ERN55	★		7—5	12.7	4.64	1.7	2.5	0.44	—	
ISO Metric 6g	—	MMT16ER050ISO	●	0.5		9.525	3.44	0.6	0.4	0.06	0.31	
		16ER075ISO	●	0.75		9.525	3.44	0.6	0.6	0.10	0.46	
		16ER100ISO	● ★	1.0		9.525	3.44	0.7	0.7	0.16	0.61	
		16ER125ISO	● ★	1.25		9.525	3.44	0.8	0.9	0.19	0.77	
		16ER150ISO	● ★	1.5		9.525	3.44	0.8	1.0	0.23	0.92	
		16ER175ISO	● ★	1.75		9.525	3.44	0.9	1.2	0.21	1.07	
		16ER200ISO	● ★	2.0		9.525	3.44	1.0	1.3	0.31	1.23	
		16ER250ISO	● ★	2.5		9.525	3.44	1.1	1.5	0.32	1.53	
		16ER300ISO	● ★	3.0		9.525	3.44	1.2	1.6	0.46	1.84	
		22ER350ISO	★	3.5		12.7	4.64	1.6	2.3	0.45	2.15	
		22ER400ISO	★	4.0		12.7	4.64	1.6	2.3	0.52	2.45	
		22ER450ISO	★	4.5		12.7	4.64	1.7	2.4	0.58	2.76	
		22ER500ISO	★	5.0		12.7	4.64	1.7	2.5	0.63	3.07	

THREADING

IDENTIFICATION

MMT 16 E R 050 ISO

Designation	Hand of Tool	Pitch	Threading Type																																																																																																																																		
<table border="1"> <tr> <th>Diameter of Inscribed Circle (mm)</th> <th>Application</th> </tr> <tr> <td>11</td> <td>E External</td> </tr> <tr> <td>16</td> <td>I Internal</td> </tr> <tr> <td>22</td> <td></td> </tr> </table>	Diameter of Inscribed Circle (mm)	Application	11	E External	16	I Internal	22		<table border="1"> <tr> <th>Hand of Tool</th> <th>Right</th> </tr> <tr> <td>R</td> <td>Right</td> </tr> </table>	Hand of Tool	Right	R	Right	<table border="1"> <tr> <th>Pitch</th> <th>050</th> <th>075</th> <th>100</th> <th>125</th> <th>150</th> <th>175</th> <th>200</th> <th>250</th> <th>300</th> <th>350</th> <th>400</th> <th>450</th> <th>500</th> </tr> <tr> <td></td> <td>0.5mm</td> <td>0.75mm</td> <td>1.0mm</td> <td>1.25mm</td> <td>1.5mm</td> <td>1.75mm</td> <td>2.0mm</td> <td>2.5mm</td> <td>3.0mm</td> <td>3.5mm</td> <td>4.0mm</td> <td>4.5mm</td> <td>5.0mm</td> </tr> <tr> <td>A</td> <td colspan="2">0.5—1.5mm or 48—16 thread/inch</td> <td colspan="2"></td> <td colspan="2"></td> <td colspan="2"></td> <td colspan="2"></td> <td colspan="2"></td> <td colspan="2"></td> </tr> <tr> <td>G</td> <td colspan="2">1.75—3.0mm or 14—8 thread/inch</td> <td colspan="2"></td> <td colspan="2"></td> <td colspan="2"></td> <td colspan="2"></td> <td colspan="2"></td> <td colspan="2"></td> </tr> <tr> <td>AG</td> <td colspan="2">0.5—3.0mm or 48—8 thread/inch</td> <td colspan="2"></td> <td colspan="2"></td> <td colspan="2"></td> <td colspan="2"></td> <td colspan="2"></td> <td colspan="2"></td> </tr> <tr> <td>N</td> <td colspan="2">3.5—5.0mm or 7—5 thread/inch</td> <td colspan="2"></td> <td colspan="2"></td> <td colspan="2"></td> <td colspan="2"></td> <td colspan="2"></td> <td colspan="2"></td> </tr> </table>	Pitch	050	075	100	125	150	175	200	250	300	350	400	450	500		0.5mm	0.75mm	1.0mm	1.25mm	1.5mm	1.75mm	2.0mm	2.5mm	3.0mm	3.5mm	4.0mm	4.5mm	5.0mm	A	0.5—1.5mm or 48—16 thread/inch														G	1.75—3.0mm or 14—8 thread/inch														AG	0.5—3.0mm or 48—8 thread/inch														N	3.5—5.0mm or 7—5 thread/inch														<table border="1"> <tr> <th>Threading Type</th> <th>60</th> <th>55</th> <th>ISO</th> <th>W</th> <th>BSPT</th> <th>UN</th> <th>RD</th> <th>TR</th> <th>ACME</th> <th>UNJ</th> <th>APBU</th> <th>APRD</th> <th>NPT</th> <th>NPTF</th> </tr> <tr> <td></td> <td>Partial Profile 60°</td> <td>Partial Profile 55°</td> <td>ISO Metric</td> <td>Whitworth for BSW, BSP</td> <td>BSPT</td> <td>American UN</td> <td>Round DIN 405</td> <td>ISO Trapezoidal 30°</td> <td>American ACME</td> <td>UNJ</td> <td>API Buttress Casing</td> <td>API Round Casing & Tubing</td> <td>NPT</td> <td>NPTF</td> </tr> </table>	Threading Type	60	55	ISO	W	BSPT	UN	RD	TR	ACME	UNJ	APBU	APRD	NPT	NPTF		Partial Profile 60°	Partial Profile 55°	ISO Metric	Whitworth for BSW, BSP	BSPT	American UN	Round DIN 405	ISO Trapezoidal 30°	American ACME	UNJ	API Buttress Casing	API Round Casing & Tubing	NPT	NPTF
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G016

● : Inventory maintained. ★ : Inventory maintained in Japan.
<5 inserts in one case>

Lampiran 5. Surat Keterangan

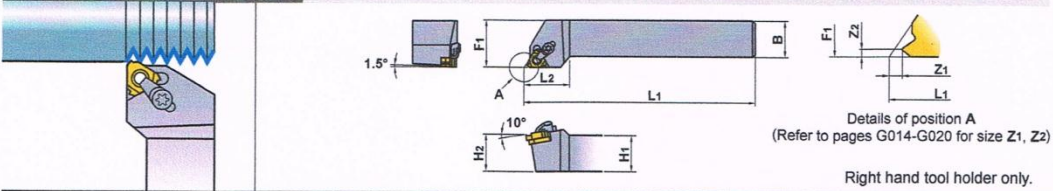
THREADING

MMTE HOLDER

- Various insert types.
- Precision class insert.
- Available with a wiper cutting edge to provide a precise thread geometry.
- Able to change lead angle by replacing the shim.

MMTE NEW

(External threading)

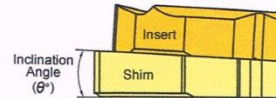


Order Number	Stock R	Insert Number	Dimensions (inch)						Tools					
			H1	B	L1	L2	H2	F1	Clamp Bridge	Clamp Screw	Stop Ring	Shim Screw	Shim *1	Wrench
MMTER-083	●	MMT16ER ○○○○○	.500	.500	4.000	1.000	.500	.625	SETK51	SETS51	CR4	HFC03008	CTE32TP15	DTKY15F DHKY20R
-103	●		.625	.625	4.000	1.000	.625	.750	SETK51	SETS51	CR4	HFC03008	CTE32TP15	DTKY15F DHKY20R
-123	●		.750	.750	5.000	1.000	.750	1.000	SETK51	SETS51	CR4	HFC03008	CTE32TP15	DTKY15F DHKY20R
-163	●		1.000	1.000	6.000	1.000	1.000	1.250	SETK51	SETS51	CR4	HFC03008	CTE32TP15	DTKY15F DHKY20R
MMTER-124	●	MMT22ER ○○○○○	.750	.750	5.000	1.250	.750	1.000	SETK61	SETS61	CR5	HFC04010	CTE43TP15	DTKY20F DHKY25R
-164	●		1.000	1.000	6.000	1.250	1.000	1.250	SETK61	SETS61	CR5	HFC04010	CTE43TP15	DTKY20F DHKY25R
-204	●		1.250	1.250	6.000	1.250	1.250	1.500	SETK61	SETS61	CR5	HFC04010	CTE43TP15	DTKY20F DHKY25R

*1 Select and use an alternate shim from list below (sold separately), dependant on the lead angle.
*2 Clamp Torque (lbf-in) : SETS51=31, SETS61=44, HFC03008=13, HCF04010=19

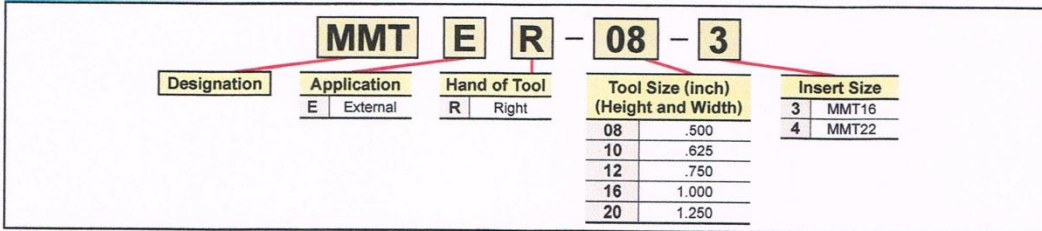
SHIM

Lead Angle (α°)	Order Number	Stock R	Inclination Angle (θ°)	Applicable Holder
-1.5°	CTE32TN15	●	-3°	MMTER ○○○3
-0.5°	N05	●	-2°	
0.5°	P05	●	-1°	
1.5°	P15	●	0°	
2.5°	P25	●	1°	
3.5°	P35	●	2°	
4.5°	P45	●	3°	



Standard shim delivered with the holder.
* See page G025 for shim selection guide lines.

IDENTIFICATION



RECOMMENDED CUTTING CONDITIONS

Work Material	Hardness	Grade	Cutting Speed (SFM)
P Mild Steel	≤ 180HB	VP10MF	490 (230-755)
		VP15TF	330 (195-460)
		VP20RT	260 (195-330)
Carbon Steel Alloy Steel	180-280HB	VP10MF	460 (260-655)
		VP15TF	330 (195-460)
		VP20RT	260 (195-330)
M Stainless Steel	≤ 200HB	VP10MF	425 (260-590)
		VP15TF	260 (130-395)
		VP20RT	195 (130-260)

Work Material	Hardness	Grade	Cutting Speed (SFM)
K Cast Iron	Tensile Strength ≤ 350MPa	VP10MF	460 (260-655)
		VP15TF	295 (195-395)
S Heat-Resistant Alloy	-	VP10MF	150 (50-230)
		VP15TF	100 (65-130)
Titanium Alloy	-	VP10MF	195 (130-260)
		VP15TF	150 (80-210)
H Hardened Steel	45-55HRC	VP10MF	165 (100-230)
		VP15TF	130 (65-195)

Lampiran 5. Surat Keterangan



Lampiran 5. Surat Keterangan



KEMENTERIAN PENDIDIKAN DAN KEBUDAYAAN
FAKULTAS TEKNIK JURUSAN MESIN UNIVERSITAS BRAWIJAYA
LABORATORIUM METROLOGI INDUSTRI
Jl. Mayjen Haryono 167 Telp. 553286 Pes. 216 Malang 65145



No. : 001/SK/DM/MI-FTUB/XII/2012

Hal. : Surat Keterangan Penelitian

SURAT KETERANGAN

Yang bertanda tangan dibawah ini:

Nama : Femiana Gapsari Madhi Fitri, ST., MT.

Jabatan : Kepala Lab. Metrologi Industri

Dengan ini menyatakan bahwa, yang tersebut dibawah ini:

Nama : Dimas Bagus Setyawan

NIM : 0710623060

Alamat : Perum Bumi Mondoroko Raya, Blok M-1 no.29, Kel. Pagentan, Kec. Singosari.

Adalah benar telah melakukan penelitian di Lab. Metrologi Industri, terhitung mulai tanggal 23 November 2012 – 27 November 2012.

Demikian surat keterangan ini dibuat dengan benar, untuk dapat dipergunakan sebagaimana mestinya.

Malang, 28 November 2012



Femiana Gapsari MF, ST., MT.
Ka. Lab. Metrologi Industri