



New products

2016.2



MILLING CUTTERS AND INSERTS

4

- Economical shoulder milling tools

11

- Icon descriptions

13

- New items list



TURNING INSERTS

16

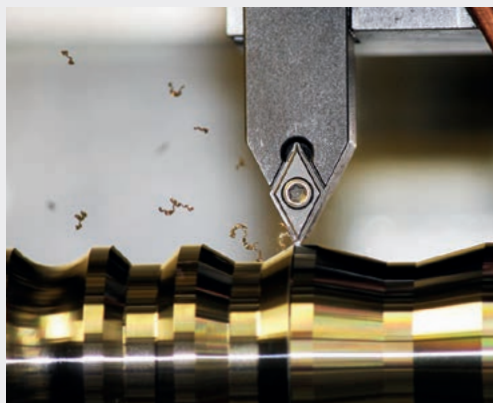
- Positive chip breakers for turning:
 - steels
 - difficult to machine materials
 - stainless steels

19

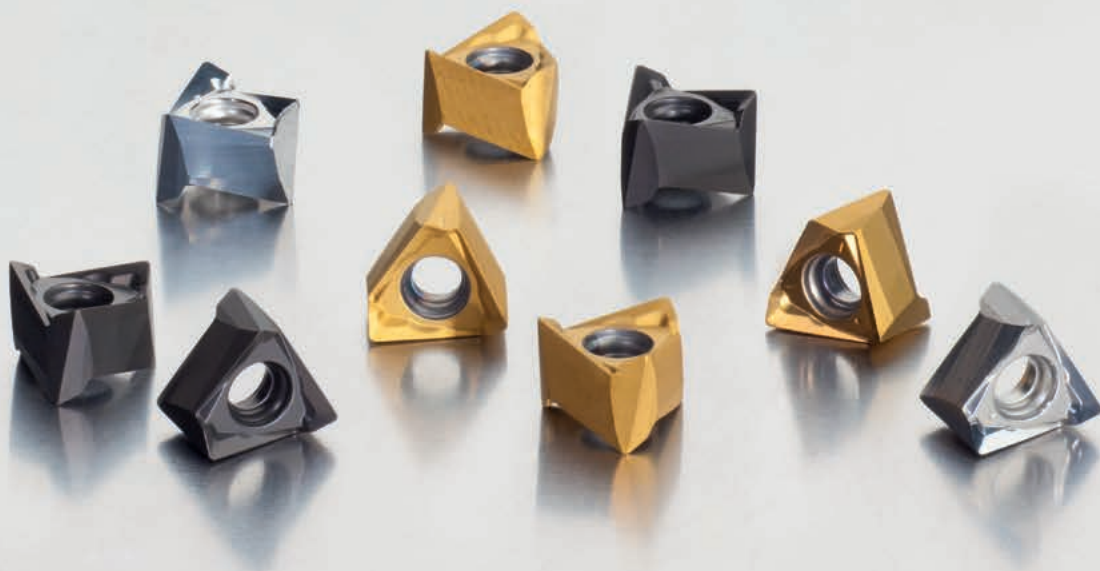
- Grade for turning stainless steels

20

- New items list



MILLING CUTTERS AND INSERTS





NEW LINE OF TOOLS FOR ECONOMICAL SHOULDER MILLING

Introducing a versatile new range of tools for 90° shoulder milling.
 Featuring 6 cutting edges, the TNGX10 inserts promote low machining costs.
 Cutters with high number of teeth, even for small diameters, can increase productivity.

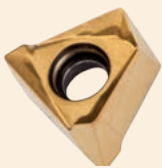
FEATURES

- Double-sided inserts
- 6 cutting edges
- 3 positive geometries for steel, stainless steel, cast iron and alloys
- Depth of cut up to 5 mm
- Wide range of cutters, including small diameters from 18 mm up to 80 mm - offering high-performance tools with up to 10 teeth
- End mills produced from heat-treated tool steel ensuring high operational reliability

BENEFITS

- **Cost savings** - more cutting edges
- **Higher productivity** – high number of teeth
- **Process security** - reduced cutting forces and quiet running
- **Versatile** - wide range of tools suitable for a variety of machined materials and applications, including: shoulder and slot milling, face milling, helical interpolation, ramping and progressive plunging

TNGX10 INSERT GEOMETRIES

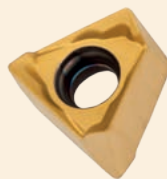


F

GEOMETRY F

First choice for low to medium carbon content steel

- High positive geometry with narrow peripheral land
- Particularly suited to light and medium machining

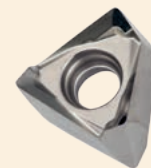


M

GEOMETRY M

Machining carbon steel, standard stainless steels and cast iron

- High positive geometry with medium T-land
- Particularly suited to light and medium machining



FA

GEOMETRY FA

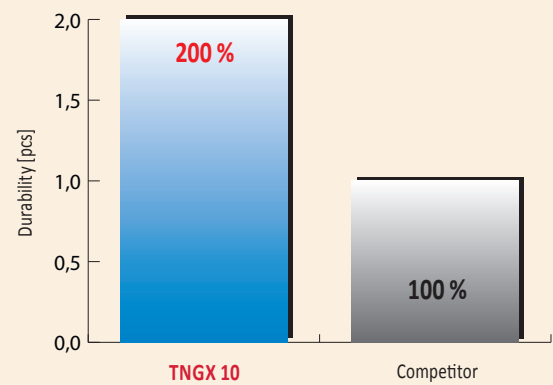
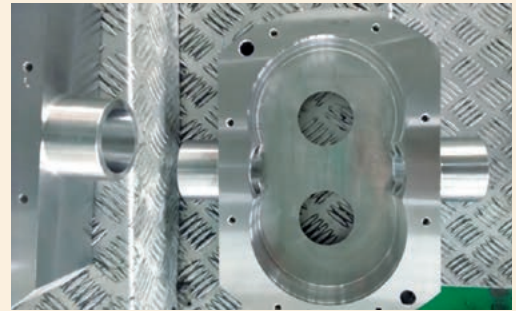
Particularly suited for non-ferrous metals

- High positive geometry with a sharp cutting edge
- Polished insert face to reduce sticking of the machined material

TNGX 10 - MACHINING EXAMPLE

Material: SUS304/316
 Material group: M3
 Workpiece: Pump parts
 Insert: **TNGX 100404SR-F: M9340**
 Coolant: Yes

			PRAMET	Competitor
Operation			Face milling	
Tool			63A09R -S90TN10-C	D=63 mm; 4 teeth
Cutting speed	v_c	m/min	120	120
Feed tooth	f_z	mm/tooth	0,12	0,26
Feed	f	mm/min	655	631
Axial depth of cut	a_p	mm	1	1
Radial depth of cut	a_e	mm	50	50
Durability	T	psc	2	1
Flank wear	VB	min	0,2	0,2
Surface roughness	R_a	μm	0,8	0,8



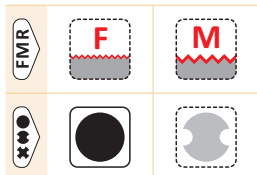
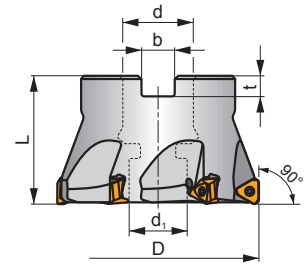
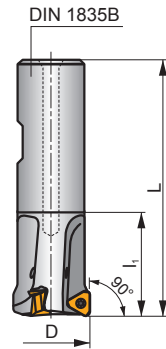
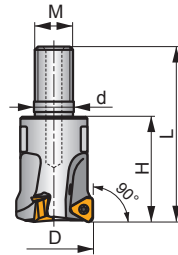
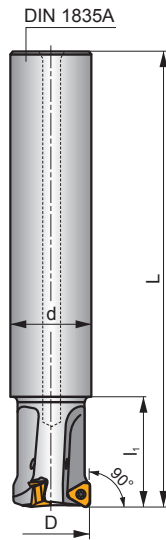
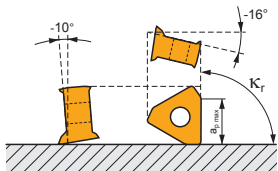
STN10

P M K N S

S



κ_r	90°
a_{pmax}	5 mm



h_n	0,03 - 0,08
h_n	0,03 - 0,06



ISO	D	L	d	d ₁	l ₁	H	M	b	t			max.		kg		
	18A2R050A20-STN10-C	18	180	20	-	50	-	-	-	2	-	29100	✓	0,4	GI292	SQ300
	20A2R029A20-STN10-C	20	150	20	-	29	-	-	-	2	-	27600	✓	0,3	GI292	SQ300
	20A3R029A20-STN10-C	20	150	20	-	29	-	-	-	3	-	27600	✓	0,3	GI292	SQ300
	22A3R050A25-STN10-C	22	180	25	-	50	-	-	-	3	-	26300	✓	0,6	GI292	SQ300
	25A3R034A25-STN10-C	25	170	25	-	34	-	-	-	3	-	24700	✓	0,6	GI292	SQ300
	25A4R034A25-STN10-C	25	170	25	-	34	-	-	-	4	✓	24700	✓	0,6	GI292	SQ300
	30A4R050A32-STN10-C	30	200	32	-	50	-	-	-	4	✓	22500	✓	1,0	GI292	SQ300
	32A4R037A32-STN10-C	32	195	32	-	37	-	-	-	4	✓	21800	✓	1,1	GI292	SQ300
	32A5R037A32-STN10-C	32	195	32	-	37	-	-	-	5	✓	21800	✓	1,1	GI292	SQ300
	35A5R080A32-STN10-C	35	200	32	-	80	-	-	-	5	✓	20800	✓	1,1	GI292	SQ300
	20A2R032B20-STN10-C	20	90	16	-	32	-	-	-	2	-	27600	✓	0,2	GI292	SQ300
	20A3R032B20-STN10-C	20	90	20	-	32	-	-	-	3	-	27600	✓	0,2	GI292	SQ300
	25A3R042B25-STN10-C	25	100	20	-	42	-	-	-	3	-	24700	✓	0,3	GI292	SQ300
	25A4R042B25-STN10-C	25	100	25	-	42	-	-	-	4	✓	24700	✓	0,3	GI292	SQ300
	32A4R042B32-STN10-C	32	110	25	-	42	-	-	-	4	✓	21800	✓	0,6	GI292	SQ300
	32A5R042B32-STN10-C	32	110	32	-	42	-	-	-	5	✓	21800	✓	0,6	GI292	SQ300
	20A2R026M10-STN10-C	20	45	10,5	-	26	M10	-	-	2	-	27600	✓	0,1	GI292	SQ300
	20A3R026M10-STN10-C	20	45	10,5	-	26	M10	-	-	3	-	27600	✓	0,1	GI292	SQ300
	25A3R033M12-STN10-C	25	55	12,5	-	33	M12	-	-	3	-	24700	✓	0,1	GI292	SQ300
	25A4R033M12-STN10-C	25	55	12,5	-	33	M12	-	-	4	✓	24700	✓	0,1	GI292	SQ300
	32A4R043M16-STN10-C	32	66	17	-	43	M16	-	-	4	✓	21800	✓	0,2	GI292	SQ300
	32A5R043M16-STN10-C	32	66	17	-	43	M16	-	-	5	✓	21800	✓	0,2	GI292	SQ300

ISO	D	L	d	d ₁	l ₁	H	M	b	t								
40A04R-S90TN10-C	40	40	16	14	-	-	-	8,4	5,6	4	✓	19500	✓	0,2	GI292	SQ302	
40A06R-S90TN10-C	40	40	16	14	-	-	-	8,4	5,6	6	✓	19500	✓	0,2	GI292	SQ302	
50A05R-S90TN10-C	50	40	22	18	-	-	-	10,4	6,3	5	✓	17400	✓	0,3	GI292	SQ303	
50A07R-S90TN10-C	50	40	22	18	-	-	-	10,4	6,3	7	✓	17400	✓	0,3	GI292	SQ303	
63A06R-S90TN10-C	63	40	22	18	-	-	-	10,4	6,3	6	✓	15500	✓	0,5	GI292	SQ303	
63A09R-S90TN10-C	63	40	22	18	-	-	-	10,4	6,3	9	✓	15500	✓	0,5	GI292	SQ303	
80A10R-S90TN10-C	80	50	27	38	-	-	-	12,4	7	10	✓	13800	✓	1,0	GI292	SQ301	AC001

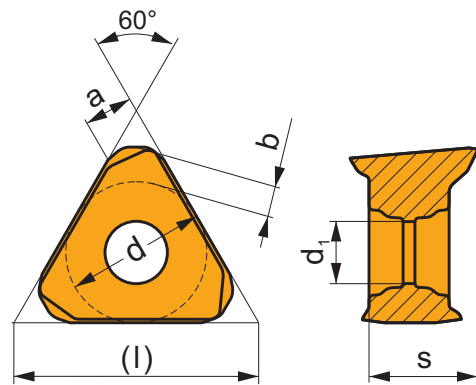
	GI292		TNGX 1004..
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	SQ300		US 52506-T07P		Flag T07P
	SQ302		US 52506-T07P		D-T07P/T09P
	SQ303		US 52506-T07P		FG-15
	SQ301		US 52506-T07P		FG-15

	AC001		KS 1230		K.FMH27
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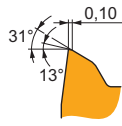
TNGX 10

	d	d ₁	l	s
1004	6,000	2,8	10,390	4,69



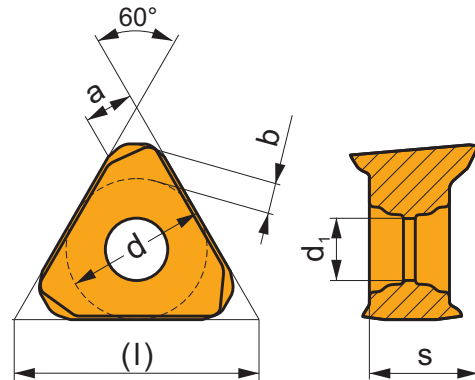
	ISO		P	M	K	N	S	H			r _e	f _{min}	f _{max}	a _{p min}	a _{p max}	
 	TNGX 100402SR-F	M8340	■	■	■	■	■	■	●	+/-	0,2	0,03	0,11	0,1	5,0	
		8230	■	■	■	■	■	■	●	-	0,2	0,03	0,11	0,1	5,0	
	TNGX 100404SR-F	M9340	■	■	■	■	■	■	■	●	---	0,4	0,03	0,11	0,1	5,0
		M8340	■	■	■	■	■	■	■	●	+/-	0,4	0,03	0,11	0,1	5,0
		8215	■	■	■	■	■	■	■	●	-	0,4	0,03	0,11	0,1	5,0
	TNGX 100408SR-F	8230	■	■	■	■	■	■	■	●	-	0,4	0,03	0,11	0,1	5,0
		M9340	■	■	■	■	■	■	■	●	---	0,8	0,03	0,11	0,1	5,0
		M8340	■	■	■	■	■	■	■	●	+/-	0,8	0,03	0,11	0,1	5,0
		8215	■	■	■	■	■	■	■	●	-	0,8	0,03	0,11	0,1	5,0
			8230	■	■	■	■	■	■	●	-	0,8	0,03	0,11	0,1	5,0

ISO		P	M	K	N	S	H	?		r_e	f_{min}	f_{max}	$a_{p min}$	$a_{p max}$
TNGX 100404SR-M	M9340	☑	■			☑		●	---	0,4	0,05	0,15	0,3	5,0
	M8340	■	■	☑		☑		●	+/-	0,4	0,05	0,15	0,3	5,0
	M8345	■	■	☑		☑		●	+/-	0,4	0,05	0,15	0,3	5,0
	8215	■	☑	☑		☑		●	-	0,4	0,05	0,15	0,3	5,0
	8230	■	■	☑		☑		●	-	0,4	0,05	0,15	0,3	5,0
TNGX 100408SR-M	M9340	☑	■			☑		●	---	0,8	0,05	0,15	0,3	5,0
	M8310	■	☑	☑		☑		●	-	0,8	0,05	0,15	0,3	5,0
	M8340	■	■	☑		☑		●	+/-	0,8	0,05	0,15	0,3	5,0
	M8345	■	■	☑		☑		●	+/-	0,8	0,05	0,15	0,3	5,0
	8215	■	☑	☑		☑		●	-	0,8	0,05	0,15	0,3	5,0
8230	■	■	☑		☑		●	-	0,8	0,05	0,15	0,3	5,0	

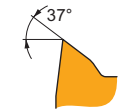


TNGX 10-FA

	d	d ₁	l	s
1004	6,000	2,8	10,390	4,69



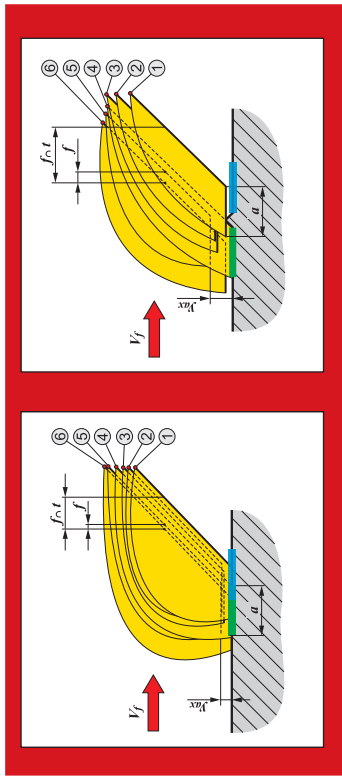
ISO		P	M	K	N	S	H	?		r_e	f_{min}	f_{max}	$a_{p min}$	$a_{p max}$
TNGX 100404FR-FA	M0315				■			●	-	0,4	0,03	0,20	0,1	4,0
	HF7				■			●	---	0,4	0,03	0,20	0,1	4,0
TNGX 100408FR-FA	M0315				■			●	-	0,8	0,03	0,20	0,1	4,0
	HF7				■			●	---	0,8	0,03	0,20	0,1	4,0













ISO		f_{min}	f_{max}	M9340	M0315	M8310	M8340	M8345	8215	8230	HF7
P	●	0,05	0,15	249	-	256	228	165	245	224	-
	●	0,05	0,11	221	-	231	200	140	214	196	-
	✘	0,05	0,08	196	-	207	172	119	182	168	-
M	●	0,05	0,12	147	-	154	137	98	147	133	56
	●	0,05	0,08	133	-	137	119	84	126	119	49
	✘	0,05	0,06	116	-	123	102	70	109	102	42
K	●	0,05	0,15	-	-	242	214	-	231	214	91
	●	0,05	0,18	-	-	221	189	-	203	186	81
	✘	0,05	0,08	-	-	196	165	-	172	161	70
N	●	0,05	0,20	-	532	-	-	-	616	564	238
	●	0,05	0,15	-	476	-	-	-	536	497	214
	✘	0,05	0,10	-	417	-	-	-	459	427	186
S	●	0,05	0,12	74	-	77	67	49	74	67	28
	●	0,05	0,08	67	-	67	60	42	63	60	25
	✘	0,05	0,06	56	-	60	49	35	53	49	21

	a _d /		0.01	0.02	0.03	0.04	0.05	0.10	0.15	0.20	0.25	0.30	0.40	0.50	0.60	0.70	0.75	0.80	0.90	1.00
				1.85	1.68	1.59	1.53	1.48	1.35	1.27	1.22	1.19	1.16	1.11	1.08	1.05	1.03	1.02	1.01	0.99
			6.38	4.52	3.69	3.20	2.87	2.05	1.69	1.48	1.33	1.23	1.09	0.75	0.94	0.90	0.89	0.88	0.88	1.00
			0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.65	0.65	0.67	0.68	0.71	0.72	0.74	0.79	1.00

(ISO)		D [mm]	F		M		FA		
			0.2	0.4	0.8	0.4	0.8	0.4	0.8
			1.533	1.338	0.924	1.335	0.921	1.331	0.928
			0.06	0.06	0.06	0.1	0.1	0	0
IMPORTANT: see note									
			f_{max} [mm]						
18A2R050A20-STN10-C		18	0.77	0.67	0.46	0.67	0.46	0.67	0.46
20A2R029A20-STN10-C		20	0.77	0.67	0.46	0.67	0.46	0.67	0.46
20A3R029A20-STN10-C		20	0.51	0.45	0.31	0.45	0.31	0.44	0.31
22A3R050A25-STN10-C		22	0.51	0.45	0.31	0.45	0.31	0.44	0.31
25A3R034A25-STN10-C		25	0.51	0.45	0.31	0.45	0.31	0.44	0.31
25A4R034A25-STN10-C		25	0.38	0.33	0.23	0.33	0.23	0.33	0.23
30A4R050A32-STN10-C		30	0.38	0.33	0.23	0.33	0.23	0.33	0.23
32A4R037A32-STN10-C		32	0.38	0.33	0.23	0.33	0.23	0.33	0.23
32A5R037A32-STN10-C		32	0.31	0.27	0.18	0.27	0.18	0.27	0.19
35A5R080A32-STN10-C		35	0.31	0.27	0.18	0.27	0.18	0.27	0.19
20A2R032B20-STN10-C		20	0.77	0.67	0.46	0.67	0.46	0.67	0.46
20A3R032B20-STN10-C		20	0.51	0.45	0.31	0.45	0.31	0.44	0.31
25A3R042B25-STN10-C		25	0.51	0.45	0.31	0.45	0.31	0.44	0.31
25A4R042B25-STN10-C		25	0.38	0.33	0.23	0.33	0.23	0.33	0.23
32A4R042B32-STN10-C		32	0.38	0.33	0.23	0.33	0.23	0.33	0.23
32A5R042B32-STN10-C		32	0.31	0.27	0.18	0.27	0.18	0.27	0.19
20A2R026M10-STN10-C		20	0.77	0.67	0.46	0.67	0.46	0.67	0.46
20A3R026M10-STN10-C		20	0.51	0.45	0.31	0.45	0.31	0.44	0.31
25A3R033M12-STN10-C		25	0.51	0.45	0.31	0.45	0.31	0.44	0.31
25A4R033M12-STN10-C		25	0.38	0.33	0.23	0.33	0.23	0.33	0.23
32A4R043M16-STN10-C		32	0.38	0.33	0.23	0.33	0.23	0.33	0.23
32A5R043M16-STN10-C		32	0.31	0.27	0.18	0.27	0.18	0.27	0.19
40A04R-S90TN10-C		40	0.38	0.33	0.23	0.33	0.23	0.33	0.23
40A06R-S90TN10-C		40	0.26	0.22	0.15	0.22	0.15	0.22	0.15
50A05R-S90TN10-C		50	0.31	0.27	0.18	0.27	0.18	0.27	0.19
50A07R-S90TN10-C		50	0.22	0.19	0.13	0.19	0.13	0.19	0.13
63A06R-S90TN10-C		63	0.26	0.22	0.15	0.22	0.15	0.22	0.15
63A09R-S90TN10-C		63	0.17	0.15	0.10	0.15	0.10	0.15	0.10
80A10R-S90TN10-C		80	0.15	0.13	0.09	0.13	0.09	0.13	0.09



Please follow recommended f_z values with respect to working conditions, machined material and insert geometry. Maximum allowed feed values are only to guide you to get the best wiper effect (presented values are theoretical).

(ISO)	 D [mm]		 a _{amax} [mm]	 a _p [mm]		C _{max}	a _γ /l	D _{min} [mm]	D _{max} [mm]	s _{max} (D _{min}) [mm]	s _{max} (D _{max}) [mm]	 a _{γmax}
				1.0	3.0							
	18A2R050A20-STN10-C	2	1.5	0.10	0.08	1.8°	3.05/100	31.0	36.0	1.2	1.2	
	20A2R029A20-STN10-C	2	1.5	0.10	0.08	1.6°	2.70/100	35.0	40.0	1.2	1.2	
	20A3R029A20-STN10-C	3	1.5	0.10	0.08	1.6°	2.70/100	35.0	40.0	1.2	1.2	
	22A3R050A25-STN10-C	2	1.5	0.10	0.08	1.2°	2.00/100	39.0	44.0	1.0	1.0	
	25A3R034A25-STN10-C	3	1.5	0.10	0.08	1.0°	1.70/100	45.0	50.0	1.0	1.0	
	25A4R034A25-STN10-C	4	1.5	0.10	0.08	1.0°	1.70/100	45.0	50.0	1.0	1.0	
	30A4R050A32-STN10-C	4	1.5	0.10	0.08	0.9°	1.45/100	55.0	60.0	1.0	1.0	
	32A4R037A32-STN10-C	4	1.5	0.10	0.08	0.8°	1.30/100	59.0	64.0	1.0	1.0	
	32A5R037A32-STN10-C	5	1.5	0.10	0.08	0.8°	1.30/100	59.0	64.0	1.0	1.0	
	35A5R080A32-STN10-C	5	1.5	0.10	0.08	0.7°	1.0/100	65.0	70.0	0.9	0.9	
	20A2R032B20-STN10-C	2	1.5	0.10	0.08	1.6°	2.70/100	35.0	40.0	1.2	1.2	
	20A3R032B20-STN10-C	3	1.5	0.10	0.08	1.6°	2.70/100	35.0	40.0	1.2	1.2	
	25A3R042B25-STN10-C	3	1.5	0.10	0.08	1.0°	2.15/100	45.0	50.0	1.0	1.0	
	25A4R042B25-STN10-C	4	1.5	0.10	0.08	1.0°	2.15/100	45.0	50.0	1.0	1.0	
	32A4R042B32-STN10-C	4	1.5	0.10	0.08	0.8°	1.30/100	59.0	64.0	1.0	1.0	
	32A5R042B32-STN10-C	5	1.5	0.10	0.08	0.8°	1.30/100	59.0	64.0	1.0	1.0	
	20A2R026M10-STN10-C	2	1.5	0.10	0.08	1.6°	2.70/100	35.0	40.0	1.2	1.2	
	20A3R026M10-STN10-C	3	1.5	0.10	0.08	1.6°	2.70/100	35.0	40.0	1.2	1.2	
	25A3R033M12-STN10-C	3	1.5	0.10	0.08	1.0°	2.15/100	45.0	50.0	1.0	1.0	
	25A4R033M12-STN10-C	4	1.5	0.10	0.08	1.0°	2.15/100	45.0	50.0	1.0	1.0	
	32A4R043M16-STN10-C	4	1.5	0.10	0.08	0.8°	1.30/100	59.0	64.0	1.0	1.0	
	32A5R043M16-STN10-C	5	1.5	0.10	0.08	0.8°	1.30/100	59.0	64.0	1.0	1.0	
	40A04R-S90TN10-C	4	1.5	0.13	0.09	0.6°	0.90/100	76.0	80.0	0.9	0.9	
	40A06R-S90TN10-C	6	1.5	0.13	0.09	0.6°	0.90/100	76.0	80.0	0.9	0.9	
	50A05R-S90TN10-C	5	1.5	0.13	0.09	0.5°	0.70/100	96.0	100.0	0.9	0.9	
	50A07R-S90TN10-C	7	1.5	0.13	0.09	0.5°	0.70/100	96.0	100.0	0.9	0.9	
	63A06R-S90TN10-C	6	1.5	0.13	0.09	0.4°	0.50/100	122.0	126.0	0.9	0.9	
	63A09R-S90TN10-C	9	1.5	0.13	0.09	0.4°	0.50/100	122.0	126.0	0.9	0.9	
	80A10R-S90TN10-C	10	1.5	0.13	0.09	0.3°	0.30/100	156.0	160.0	0.9	0.9	

ICON DESCRIPTIONS

DYNAMIC ICONS



Priority use













Possible use

Dynamic icons contain recommendation for choosing or using respective product. Each icon has two versions - with solid outline for priority use or with dashed outline for possible use. Missing icon (empty space) is used when application is not recommended or when product is not suitable for specific operation. This overview includes only icons used in this publication.

	ISO P materials		Unstable working conditions
	ISO M materials		Face milling
	ISO K materials		Helical interpolation milling
	ISO N materials		Low shoulder milling
	ISO S materials		Low slot milling
	Finishing		Plunge milling
	Medium machining		Ramping
	Stable working conditions		Progressive plunging





STATIC ICONS

Static icons are available in one version only - when visible, they indicate that product has some specific feature. This overview includes only icons used in this publication.




























	End mill cutter with cylindrical shank		Large overhang
	End mill cutter with WELDON shank		Universal wide range solution
	Modular clamping system		First choice
	Shell cutters		Rounded edge with facet
	Clamping system S		Sharp edge

HEADER ICONS

Header icons are used in table headers and identify content (typically numbers but also graphical symbols) contained in below column or next line(s). They typically display the meaning in an easy-to-understand way. This overview includes only icons used in this publication.

	Tool with cooling holes		Insert
	Weight		Accessories

ICON DESCRIPTIONS

	Spare parts		Cutting edge length
	Mean chip thickness for shell milling cutters		Cutting edge profile
	Mean chip thickness for end mill cutters		Grade
	Uneven tooth space		Influence of use of cutting fluids for machining
	Number of teeth		Working conditions
	Maximum tool revolutions [rev/min]		Ratio a_e/d
	Clamping screw		Multiplication factor for cutting speed
	Shank		Multiplication factor for feed (machining of side ways cutter)
	Handle		Multiplication factor for feed (machining of center cutters)
	Screwdriver		Chip breaker
	Screw for taper clamping		Radius of insert [mm]
	Screw		Length of Facet [mm]
	Key		Width of T-Land [mm]
			Diameter of cutter [mm]

SYMBOLS

Symbols are used to communicate some product feature typically within tables. Their meaning should be logical, but we recommend to study below symbols before first use to avoid misunderstanding. This overview includes only icons used in this publication.

- - -	Very negative effect on tool life - cooling is not recommended	■	Main application
- -	Negative effect on tool life - cooling is not recommended	▣	Secondary application
-	Slightly negative effect on tool life	□	Supplementary application
+ / -	Influence of cooling may be both positive and negative - decisive factor is specific working conditions	●	Stable working conditions
+	Slightly positive effect on tool life	◐	Unstable working conditions
++	Positive effect on tool life – cooling is recommended	⊗	Very unstable working conditions
+++	Very positive effect on tool life – cooling is recommended		

NEW ITEMS LIST

MILLING TOOLS

40A03R-SMORC12-C

50A04R-SMORC12-C

63A05R-SMORC12-C

80A05R-SMORC12-C

100A06R-SMORC12-C

63A04R-SMORC16-C

80A05R-SMORC16-C

100A06R-SMORC16-C

160C08R-SMORC16-C

80A04R-SMORC20-C

100A05R-SMORC20-C

160C07R-SMORC20-C

160C10R-S90AD16E-C

175C10R-S90AD16E-C

160C08R-S45HN09C-CF

160C12R-S45HN09C-CF

160C14R-S45HN09C-CF

200C10R-S45HN09C-CF

250C14R-S45HN09C-CF

315C16R-S45HN09C-CF

160C08R-S90LN16-C

175C08R-S90LN16-C

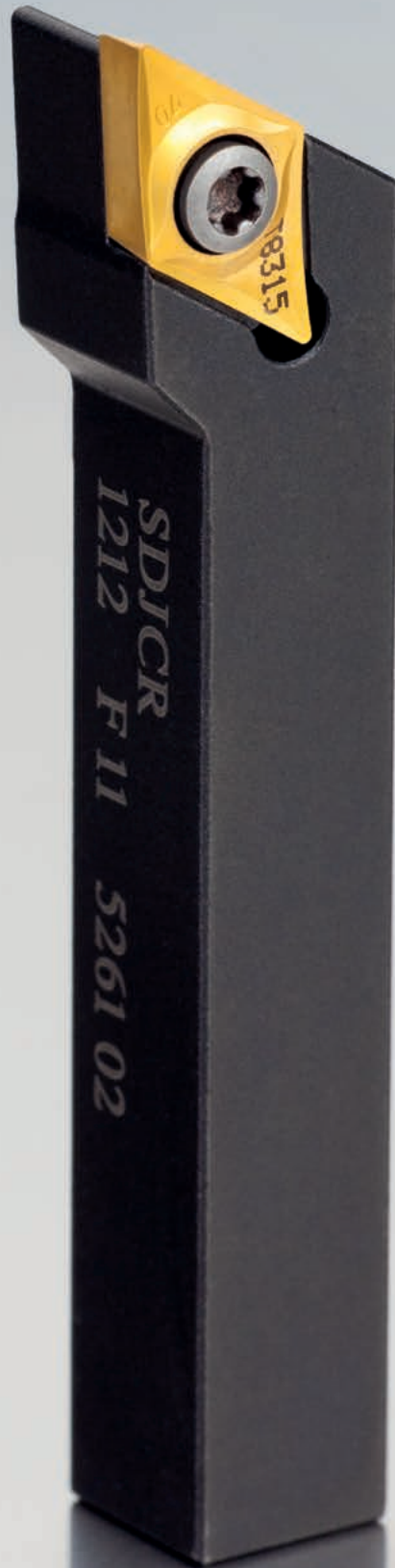
ADEX 11T312FR-FA:HF7

ADEX 11T312FR-FA:M0315

TPKN 2204PDSR:M8310

TURNING INSERTS





SDICR
1212 F11 5261 02

7/16

18315

NEW POSITIVE INSERTS FOR TURNING STEELS

A range of versatile chip breakers have been developed for fine finishing, medium and roughing of steel and cast iron.

FEATURES

- Positive geometry with low cutting resistance
- Improved cutting edge stability
- Straight cutting edge
- Supports existing FM, RM chip breakers

BENEFITS

- Very good **chip control** at low feed and depth of cut
- High quality of **surface finish**
- Increased **performance and tool life** in combination with the UPGRADE grades

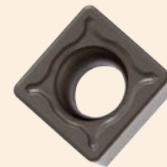


FF2

CHIP BREAKER FF2

1st choice in fine finishing applications

- Positive rake angle
- Especially for small and slender components

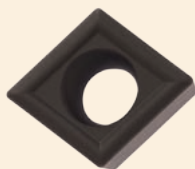


FM2

CHIP BREAKER FM2

Finishing to medium machining

- Depth of cut from 0,2 mm
- Positive geometry with a protective land
- Continuous and interrupted cut



RM3

CHIP BREAKER RM3

Roughing applications

- High resistant chip breaker
- Suitable for unfavourable machining conditions

MACHINING EXAMPLE

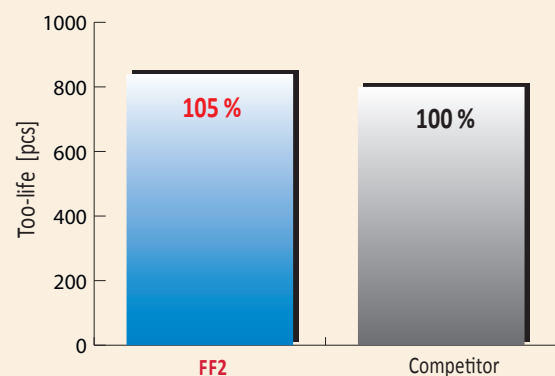
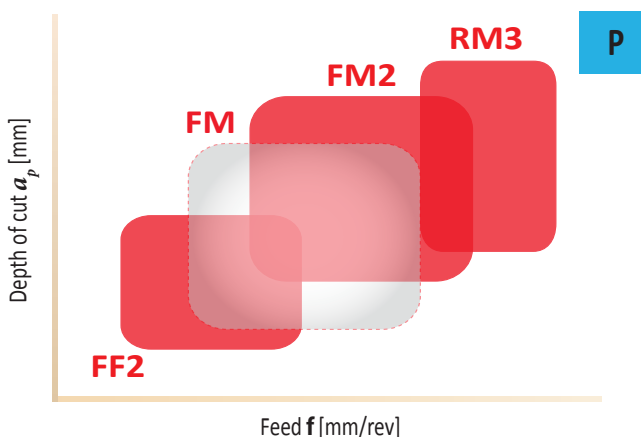
Material: 35CrMo, DIN 1.7220

Material group: P

Insert: DCMT 11T304-FF2: T9325

Cutting speed	v_c	180	m/min
Feed	f	0,08 - 0,15	mm/rev
Axial depth of cut	a_p	0,2	mm

AREA OF APPLICATION

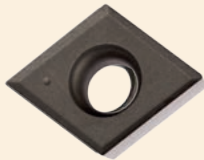


NEW POSITIVE INSERTS FOR TURNING DIFFICULT TO MACHINE MATERIALS

Our range of positive inserts has been expanded with new chip breakers for fine turning to finishing of high temperature alloys.

FEATURES

- Positive rake angle
- Peripherally ground inserts
- Sharp cutting edge with minimal edge radius
- For small and slender components



SF2

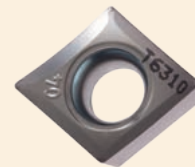
CHIP BREAKER SF2

First choice for fine turning

- Constant rake angle of 25°
- Lowest possible feeds

BENEFITS

- High **process security**
- Broad assortment of inserts covers **wide range of applications**
- Low cutting forces **prevent work hardening**
- **Excellent surface finish**



SF3

CHIP BREAKER SF3

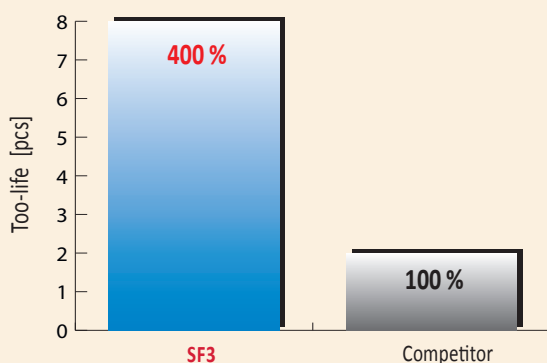
First choice for Finishing

- Extremely positive chip breaker with a rake angle of 20°
- Versatile chip breaker
- Positive inclined cutting edge prevents damaging the machined surface

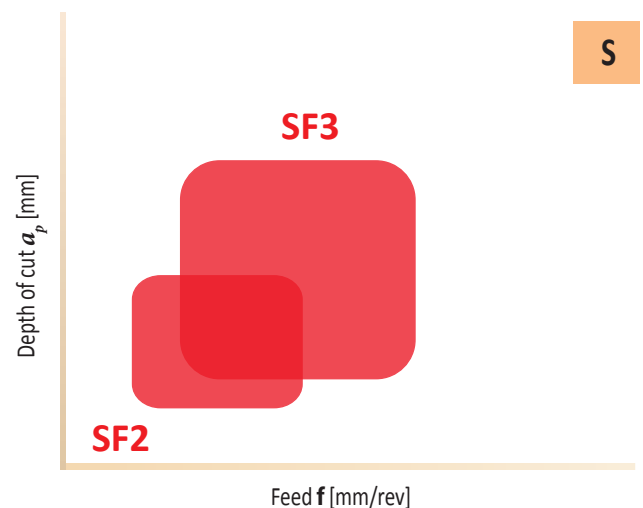
MACHINING EXAMPLE

Material: INCONEL 625
 Material group: S
 Insert: CCGT 09T304-SF3: T6310

Cutting speed	v_c	39	m/min
Feed	f	0,1	mm/rev
Depth of cut	a_p	1	mm



AREA OF APPLICATION



NEW POSITIVE INSERTS FOR TURNING STAINLESS STEEL

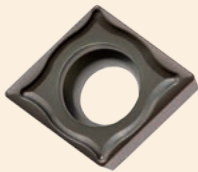
Our range of positive inserts has been expanded with new chip breakers for fine finishing to medium turning of stainless steel.

FEATURES

- Positive rake angle
- Balance shaped chip breaker

BENEFITS

- **Excellent chip control**
- Low cutting forces
- **High durability and reliability** as a result of the combination with new T7325 grade
- High productivity

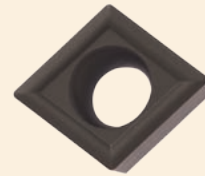


NF1

CHIP BREAKER NF1

Finishing to medium machining

- Universal chip breaker with positive rake angle
- Low cutting forces
- Peripherally ground
- Very good surface finish



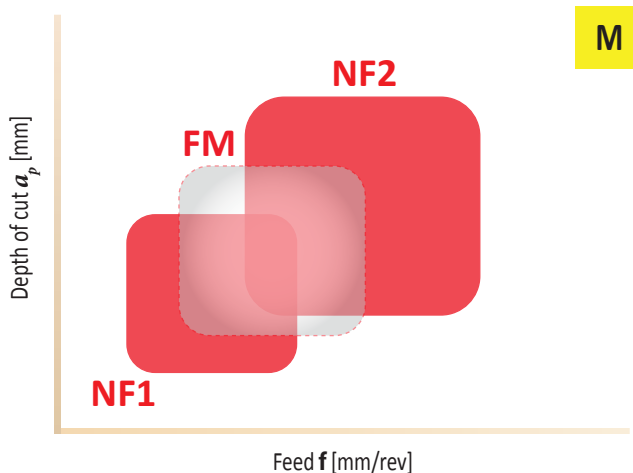
NF2

CHIP BREAKER NF2

Semi-finishing to light roughing

- Very universal chip breaker with stabilizing T-Land
- Covers a wide range of applications

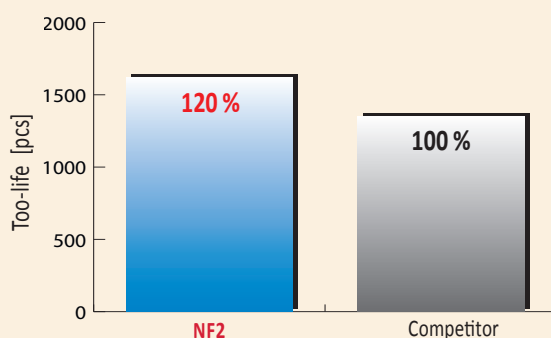
AREA OF APPLICATION



MACHINING EXAMPLE

Material: AISI 304, DIN 1.4301
 Material group: M
 Insert: CCMT 060204-NF2: T6310

Cutting speed	v_c	120	m/min
Feed	f	0,1	mm/rev
Axial depth of cut	a_p	0,2	mm



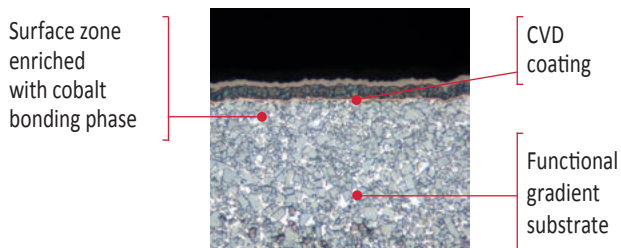
NEW GRADE FOR TURNING STAINLESS STEELS

The new T7325 is our first choice and most versatile grade for turning stainless steels. It has been developed to complement the existing T7335 grade.

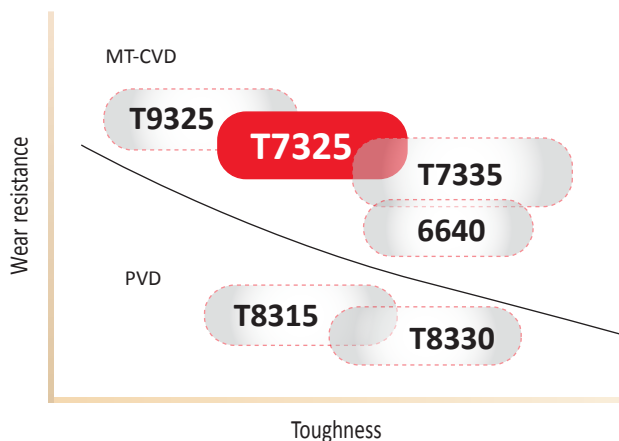
FEATURES

- Functional gradient substrate
- Special coating MT-CVD with textured alpha Al_2O_3
- High cutting edge strength
- Resistance to formation of cracks

CROSS SECTION OF THE STRUCTURE



AREA OF APPLICATION



First choice grade:

T7325 - First choice for highly productive machining, also suitable for mid unfavorable cutting conditions

T7335 - First choice for unstable cutting conditions

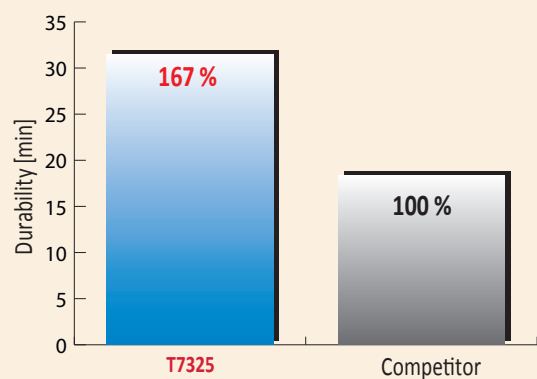
BENEFITS

- Versatility
- High **performance and tool life**
- Increased **operational reliability**
- **Reduced built-up edge**
- Suitable for interrupted cut
- Also for difficult to machine materials

MACHINING EXAMPLE USING T7325 GRADE

Workpiece: Flange
 Material: AISI 304
 Insert: WNMG080408E-NM: T7325
 Coolant: Yes

Cutting speed	v_c	180	m/min
Feed	f	0,25	mm/rev
Axial length of cut	a_p	2 - 2,5	mm



NEW ITEMS LIST

TURNING INSERTS

CCGT 060202E-SF3:H07	CCMT 060204E-FF2:T9325	CCMT 09T308E-FF2:T9325	CNMG 120404E-NF:T7325
CCGT 060202E-SF3:T6310	CCMT 060204E-FF2:T9335	CCMT 09T308E-FF2:TT010	CNMG 120404E-NM:T7325
CCGT 060202E-SF3:T8315	CCMT 060204E-FF2:TT010	CCMT 09T308E-FM:T7325	CNMG 120404E-NMR:T7325
CCGT 060204E-NF1:H07	CCMT 060204E-FM:T7325	CCMT 09T308E-FM2:T6310	CNMG 120404ER-SI:T7325
CCGT 060204E-NF1:T6310	CCMT 060204E-NF2:H07	CCMT 09T308E-FM2:T7325	CNMG 120404E-SF:T7325
CCGT 060204E-NF1:T7325	CCMT 060204E-NF2:T6310	CCMT 09T308E-FM2:T8330	CNMG 120404E-SM:T7325
CCGT 060204E-SF3:H07	CCMT 060204E-NF2:T7325	CCMT 09T308E-FM2:T9315	CNMG 120404W-NM:T7325
CCGT 060204E-SF3:T6310	CCMT 060204E-NF2:T8330	CCMT 09T308E-FM2:T9325	CNMG 120408E-FF:T7325
CCGT 060204E-SF3:T8315	CCMT 060204E-NF2:T9315	CCMT 09T308E-FM2:T9335	CNMG 120408E-FM:T7325
CCGT 060208E-NF1:H07	CCMT 060204E-NF2:T9325	CCMT 09T308E-NF2:H07	CNMG 120408EL-SI:T7325
CCGT 060208E-NF1:T6310	CCMT 060204E-NF2:T9335	CCMT 09T308E-NF2:T6310	CNMG 120408E-NF:T7325
CCGT 060208E-NF1:T7325	CCMT 060204E-UR:T7325	CCMT 09T308E-NF2:T7325	CNMG 120408E-NM:T7325
CCGT 080302E-SF3:T6310	CCMT 060204W-FM:T7325	CCMT 09T308E-NF2:T8330	CNMG 120408E-NMR:T7325
CCGT 080302E-SF3:T8315	CCMT 060208E-FM:T7325	CCMT 09T308E-NF2:T9315	CNMG 120408E-RM:T7325
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CCGT 080304E-SF3:T8315	CCMT 080302E-FF2:T8330	CCMT 09T308E-UR:T7325	CNMG 120408E-SM:T7325
CCGT 09T302E-FF2:T7325	CCMT 080304E-FF2:T7325	CCMT 09T308W-FM:T7325	CNMG 120408W-NM:T7325
CCGT 09T302E-FF2:T9325	CCMT 080304E-FF2:T8330	CCMT 120404E-FM:T7325	CNMG 120412E-FM:T7325
CCGT 09T302E-SF3:H07	CCMT 080304E-FM2:T8330	CCMT 120404E-RM3:T7325	CNMG 120412E-NF:T7325
CCGT 09T302E-SF3:T6310	CCMT 080304E-NF2:T7325	CCMT 120404E-RM3:T9315	CNMG 120412E-NM:T7325
CCGT 09T302E-SF3:T8315	CCMT 080304E-NF2:T9335	CCMT 120404E-RM3:T9325	CNMG 120412E-NMR:T7325
CCGT 09T304E-NF1:H07	CCMT 080308E-FF2:T7325	CCMT 120404E-UR:T7325	CNMG 120412E-RM:T7325
CCGT 09T304E-NF1:T6310	CCMT 080308E-FF2:T8330	CCMT 120408E-FM:T7325	CNMG 120412E-SF:T7325
CCGT 09T304E-NF1:T7325	CCMT 080308E-FF2:T9325	CCMT 120408E-FM2:T7325	CNMG 120412E-SM:T7325
CCGT 09T304E-SF3:H07	CCMT 080308E-FM2:T8330	CCMT 120408E-FM2:T8330	CNMG 120412W-NM:T7325
CCGT 09T304E-SF3:T6310	CCMT 080308E-NF2:H07	CCMT 120408E-FM2:T9325	CNMG 120416E-NMR:T7325
CCGT 09T304E-SF3:T8315	CCMT 080308E-NF2:T7325	CCMT 120408E-FM2:T9335	CNMG 120416E-RM:T7325
CCGT 09T308E-NF1:H07	CCMT 09T302E-FM:T7325	CCMT 120408E-RM3:T6310	CNMG 160608E-NM:T7325
CCGT 09T308E-NF1:T6310	CCMT 09T304E-FF2:T7325	CCMT 120408E-RM3:T7325	CNMG 160608E-NMR:T7325
CCGT 09T308E-NF1:T7325	CCMT 09T304E-FF2:T8330	CCMT 120408E-RM3:T9315	CNMG 160608E-RM:T7325
CCGT 09T308E-SF3:H07	CCMT 09T304E-FF2:T9315	CCMT 120408E-RM3:T9325	CNMG 160608E-SM:T7325
CCGT 09T308E-SF3:T6310	CCMT 09T304E-FF2:T9325	CCMT 120408E-UR:T7325	CNMG 160612E-NM:T7325
CCGT 09T308E-SF3:T8315	CCMT 09T304E-FF2:T9335	CCMT 120412E-FM:T7325	CNMG 160612E-NMR:T7325
CCGT 120408E-SF3:H07	CCMT 09T304E-FF2:TT010	CCMT 120412E-RM3:T7325	CNMG 160612E-RM:T7325
CCGT 120408E-SF3:T6310	CCMT 09T304E-FM:T7325	CCMT 120412E-RM3:T9315	CNMG 160612E-SM:T7325
CCGT 120408E-SF3:T8315	CCMT 09T304E-FM2:T6310	CCMT 120412E-RM3:T9325	CNMG 160616E-NMR:T7325
CCMT 060202E-FF2:T7325	CCMT 09T304E-FM2:T8330	CCMT 120412E-UR:T7325	CNMG 160616E-RM:T7325
CCMT 060202E-FF2:T8330	CCMT 09T304E-FM2:T9315	CCMW 060202:T6310	CNMG 190608E-NMR:T7325
CCMT 060202E-FF2:T9315	CCMT 09T304E-FM2:T9325	CCMW 060204:T6310	CNMG 190608E-RM:T7325
CCMT 060202E-FF2:T9325	CCMT 09T304E-NF2:H07	CCMW 09T304:T6310	CNMG 190612E-NM:T7325
CCMT 060202E-FF2:TT010	CCMT 09T304E-NF2:T6310	CCMW 09T308:T6310	CNMG 190612E-NMR:T7325
CCMT 060202E-FM:T7325	CCMT 09T304E-NF2:T7325	CCMW 120404:T6310	CNMG 190612E-RM:T7325
CCMT 060202E-NF2:H07	CCMT 09T304E-NF2:T8330	CCMW 120408:T6310	CNMG 190612E-SM:T7325
CCMT 060202E-NF2:T6310	CCMT 09T304E-NF2:T9315	CNMA 160612:T6310	CNMG 190616E-NMR:T7325
CCMT 060202E-NF2:T7325	CCMT 09T304E-NF2:T9325	CNMA 190612:T6310	CNMG 190616E-RM:T7325
CCMT 060202E-NF2:T8330	CCMT 09T304E-NF2:T9335	CNMG 090304E-FM:T7325	CNMG 250924E-RM:T7325
CCMT 060202E-NF2:T9325	CCMT 09T304E-UR:T7325	CNMG 090308E-FM:T7325	CNMM 120408E-NR:T7325
CCMT 060202E-UR:T7325	CCMT 09T304W-FM:T7325	CNMG 090308E-NMR:T7325	CNMM 120408E-NR2:T7325
CCMT 060204E-FF2:T7325	CCMT 09T308E-FF2:T7325	CNMG 120404E-FF:T7325	CNMM 120412E-NR:T7325
CCMT 060204E-FF2:T8330	CCMT 09T308E-FF2:T8330	CNMG 120404E-FM:T7325	CNMM 120412E-NR2:T7325
CCMT 060204E-FF2:T9315	CCMT 09T308E-FF2:T9315	CNMG 120404EL-SI:T7325	CNMM 160608E-NR2:T7325

NEW ITEMS LIST

TURNING INSERTS

CNMM 160612E-NR2:T7325	DCMT 070204E-FM2:T8330	DNMG 110404EL-SI:T7325	DNMG 150612E-NM:T7325
CNMM 160616E-NR2:T7325	DCMT 070204E-FM2:T9315	DNMG 110404E-NF:T7325	DNMG 150612E-NMR:T7325
CNMM 190612E-NR2:T7325	DCMT 070204E-FM2:T9325	DNMG 110404E-NM:T7325	DNMG 150612E-RM:T7325
CNMM 190616E-NR2:T7325	DCMT 070204E-UR:T7325	DNMG 110404E-NMR:T7325	DNMG 150612E-SF:T7325
CNMM 190624E-NR2:T7325	DCMT 070208E-FF2:T7325	DNMG 110404ER-SI:T7325	DNMG 150612E-SM:T7325
CNMM 250924E-NR2:T7325	DCMT 070208E-FF2:T8330	DNMG 110404E-SF:T7325	DNMG 150616E-RM:T7325
CPGX 060202FL-JZ:TT010	DCMT 070208E-FF2:T9315	DNMG 110404E-SM:T7325	DNMM 150408E-NR:T7325
CPGX 060202FR-JZ:TT010	DCMT 070208E-FF2:T9325	DNMG 110408E-FM:T7325	DNMM 150608E-NR:T7325
CPGX 060204FL-JR:TT010	DCMT 11T302E-FM:T7325	DNMG 110408EL-SI:T7325	DNMM 150608E-NR2:T7325
CPGX 060204FR-JR:TT010	DCMT 11T302E-UR:T7325	DNMG 110408E-NF:T7325	DNMX 150604W-NM:T7325
CPGX 080304FL-JQ:TT010	DCMT 11T304E-FF2:T7325	DNMG 110408E-NM:T7325	DNMX 150608W-NM:T7325
CPGX 080304FL-JR:TT010	DCMT 11T304E-FF2:T8330	DNMG 110408E-NMR:T7325	ECGT 060202E-SF2:H07
CPGX 080304FR-JQ:TT010	DCMT 11T304E-FF2:T9315	DNMG 110408E-RM:T7325	ECGT 060202E-SF2:T6310
CPGX 080304FR-JR:TT010	DCMT 11T304E-FF2:T9325	DNMG 110408ER-SI:T7325	ECGT 060202E-SF3:H07
CPGX 09T304FL-JQ:TT010	DCMT 11T304E-FF2:T9335	DNMG 110408E-SF:T7325	ECGT 060202E-SF3:T6310
DCGT 070202E-SF3:H07	DCMT 11T304E-FF2:TT010	DNMG 110408E-SM:T7325	ECGT 060204E-SF2:H07
DCGT 070202E-SF3:T6310	DCMT 11T304E-FM:T7325	DNMG 110412E-NMR:T7325	ECGT 060204E-SF2:T6310
DCGT 070202E-SF3:T8315	DCMT 11T304E-FM2:T6310	DNMG 110412E-RM:T7325	ECGT 080302E-SF2:H07
DCGT 070204E-SF3:H07	DCMT 11T304E-FM2:T7325	DNMG 150404E-FM:T7325	ECGT 080302E-SF2:T6310
DCGT 070204E-SF3:T6310	DCMT 11T304E-FM2:T8330	DNMG 150404EL-SI:T8330	ECGT 080304E-SF2:H07
DCGT 070204E-SF3:T8315	DCMT 11T304E-FM2:T9315	DNMG 150404E-NF:T7325	ECGT 080304E-SF2:T6310
DCGT 11T302E-FF2:T7325	DCMT 11T304E-FM2:T9325	DNMG 150404E-NMR:T7325	ECGT 080304E-SF3:H07
DCGT 11T302E-FF2:T8330	DCMT 11T304E-FM2:T9335	DNMG 150404ER-SI:T8330	ECGT 080304E-SF3:T6310
DCGT 11T302E-FF2:T9325	DCMT 11T304E-UR:T7325	DNMG 150404E-SM:T6310	ECMT 060204E-FM2:T7325
DCGT 11T302E-FF2:TT010	DCMT 11T308E-FF2:T7325	DNMG 150408E-FM:T7325	ECMT 060204E-FM2:T8330
DCGT 11T302E-SF3:H07	DCMT 11T308E-FF2:T8330	DNMG 150408EL-SI:T7325	ECMT 080304E-FM2:T7325
DCGT 11T302E-SF3:T6310	DCMT 11T308E-FF2:T9315	DNMG 150408E-NF:T7325	ECMT 080304E-FM2:T8330
DCGT 11T304E-NF1:H07	DCMT 11T308E-FF2:T9325	DNMG 150408E-NM:T8330	ECMT 080308E-FM2:T7325
DCGT 11T304E-NF1:T6310	DCMT 11T308E-FF2:TT010	DNMG 150408E-NMR:T7325	ECMT 080308E-FM2:T8330
DCGT 11T304E-NF1:T7325	DCMT 11T308E-FM:T7325	DNMG 150408ER-SI:T7325	ECMW 060204:H07
DCGT 11T304E-SF3:H07	DCMT 11T308E-FM2:T6310	DNMG 150408E-SM:T6310	ECMW 080304:H07
DCGT 11T304E-SF3:T6310	DCMT 11T308E-FM2:T7325	DNMG 150412E-RM:T7325	ECMW 080308:H07
DCGT 11T304E-SF3:T8315	DCMT 11T308E-FM2:T8330	DNMG 150604E-FF:T7325	EPGX 050202FL-JZ:TT010
DCGT 11T308E-NF1:H07	DCMT 11T308E-FM2:T9315	DNMG 150604E-FM:T7325	EPGX 050202FR-JZ:TT010
DCGT 11T308E-NF1:T6310	DCMT 11T308E-FM2:T9325	DNMG 150604EL-SI:T7325	EPMT 050202E-NF2:H07
DCGT 11T308E-NF1:T7325	DCMT 11T308E-FM2:T9335	DNMG 150604E-NF:T7325	EPMT 050202E-NF2:T7325
DCGT 11T308E-SF3:H07	DCMT 11T308E-UR:T7325	DNMG 150604E-NM:T7325	EPMT 050202E-NF2:T9335
DCGT 11T308E-SF3:T6310	DCMT 11T312E-FM:T7325	DNMG 150604E-NMR:T7325	RCMT 0602MOE-FM:T7325
DCGT 11T308E-SF3:T8315	DCMT 11T312E-FM2:T7325	DNMG 150604ER-SI:T7325	RCMT 0602MOE-UR:T6310
DCMT 070202E-FF2:T7325	DCMT 11T312E-FM2:T8330	DNMG 150604E-SF:T7325	RCMT 0602MOE-UR:T7325
DCMT 070202E-FF2:T8330	DCMT 11T312E-FM2:T9325	DNMG 150604E-SM:T7325	RCMT 0803MOE-FM:T7325
DCMT 070202E-FF2:T9325	DCMT 11T312E-UR:T7325	DNMG 150608E-FF:T7325	RCMT 0803MOE-RM3:T7325
DCMT 070202E-FF2:TT010	DCMT 150408E-FM2:T9315	DNMG 150608E-FM:T7325	RCMT 0803MOE-RM3:T9315
DCMT 070202E-FM:T7325	DCMT 150408E-FM2:T9325	DNMG 150608EL-SI:T7325	RCMT 0803MOE-UR:T6310
DCMT 070202E-UR:T7325	DCMT 150408E-FM2:T9335	DNMG 150608E-NF:T7325	RCMT 0803MOE-UR:T7325
DCMT 070204E-FF2:T7325	DCMW 070202:T6310	DNMG 150608E-NM:T7325	RCMT 10T3MOE-FM:T7325
DCMT 070204E-FF2:T8330	DCMW 070204:T6310	DNMG 150608E-NMR:T7325	RCMT 10T3MOE-UR:T6310
DCMT 070204E-FF2:T9315	DCMW 11T304:T6310	DNMG 150608E-RM:T7325	RCMT 10T3MOE-UR:T7325
DCMT 070204E-FF2:T9325	DCMW 11T308:T6310	DNMG 150608ER-SI:T7325	RCMT 1204MOE-FM:T7325
DCMT 070204E-FM:T7325	DCMX 11T304W-FM:T7325	DNMG 150608E-SF:T7325	RCMT 1204MOE-RM3:H07
DCMT 070204E-FM2:T6310	DCMX 11T308W-FM:T7325	DNMG 150608E-SM:T7325	RCMT 1204MOE-RM3:T7325
DCMT 070204E-FM2:T7325	DNMG 110404E-FM:T7325	DNMG 150612E-FM:T7325	RCMT 1204MOE-RM3:T8330

NEW ITEMS LIST

TURNING INSERTS

RCMT 1204MOE-RM3:T9315	SNMG 120408E-FM:T7325	TCGT 16T308E-SF3:T8315	TCMT 16T308E-RM3:T9325
RCMT 1204MOE-UR:T6310	SNMG 120408E-NF:T7325	TCMT 06T102E-FF2:T8330	TCMT 16T308E-RM3:T9335
RCMT 1204MOE-UR:T7325	SNMG 120408E-NM:T7325	TCMT 06T104E-FF2:T7325	TCMT 16T308E-UR:T7325
RCMT 1606MOE-RM3:T7325	SNMG 120408E-NMR:T7325	TCMT 06T104E-FF2:T8330	TCMW 16T304:T6310
RCMT 1606MOE-RM3:T8330	SNMG 120408E-RM:T7325	TCMT 090204E-FF2:T7325	TCMW 16T308:T6310
RCMT 1606MOE-RM3:T9315	SNMG 120408E-SF:T7325	TCMT 090204E-FF2:T8330	TNMG 160404E-FF:T7325
RCMT 2507MOE-RM3:H07	SNMG 120408E-SM:T7325	TCMT 110202E-FM:T7325	TNMG 160404E-FM:T7325
SCGT 09T304E-SF3:H07	SNMG 120412E-FM:T7325	TCMT 110204E-FF2:T7325	TNMG 160404EL-SI:T7325
SCGT 09T304E-SF3:T6310	SNMG 120412E-NM:T7325	TCMT 110204E-FF2:T8330	TNMG 160404E-NF:T7325
SCGT 09T304E-SF3:T8315	SNMG 120412E-NMR:T7325	TCMT 110204E-FF2:T9315	TNMG 160404E-NM:T7325
SCGT 09T308E-NF1:H07	SNMG 120412E-RM:T7325	TCMT 110204E-FF2:T9325	TNMG 160404E-NMR:T7325
SCGT 09T308E-NF1:T6310	SNMG 120412E-SF:T7325	TCMT 110204E-FF2:T9335	TNMG 160404ER-SI:T7325
SCGT 09T308E-NF1:T7325	SNMG 120412E-SM:T7325	TCMT 110204E-FM:T7325	TNMG 160404E-SF:T7325
SCGT 09T308E-SF3:T6310	SNMG 120416E-FM:T7325	TCMT 110204E-FM2:T8330	TNMG 160404E-SM:T7325
SCGT 09T308E-SF3:T8315	SNMG 120416E-NMR:T7325	TCMT 110204E-FM2:T9325	TNMG 160408E-FF:T7325
SCGT 120408E-NF1:H07	SNMG 120416E-RM:T7325	TCMT 110204E-UR:T7325	TNMG 160408E-FM:T7325
SCGT 120408E-NF1:T6310	SNMG 150612E-NMR:T7325	TCMT 110208E-FF2:T7325	TNMG 160408EL-SI:T7325
SCGT 120408E-NF1:T7325	SNMG 150612E-RM:T7325	TCMT 110208E-FF2:T8330	TNMG 160408E-NF:T7325
SCMT 09T304E-FF2:T7325	SNMG 150616E-RM:T7325	TCMT 110208E-FF2:T9315	TNMG 160408E-NM:T7325
SCMT 09T304E-FF2:T8330	SNMG 190612E-NMR:T7325	TCMT 110208E-FF2:T9325	TNMG 160408E-NMR:T7325
SCMT 09T304E-FF2:T9325	SNMG 190612E-RM:T7325	TCMT 110208E-FM:T7325	TNMG 160408E-RM:T7325
SCMT 09T304E-FM:T7325	SNMG 190612E-SM:T7325	TCMT 110208E-FM2:T8330	TNMG 160408ER-SI:T7325
SCMT 09T304E-FM2:T7325	SNMG 190616E-NMR:T7325	TCMT 110208E-FM2:T9325	TNMG 160408E-SF:T7325
SCMT 09T304E-FM2:T8330	SNMG 190616E-RM:T7325	TCMT 110208E-FM2:T9335	TNMG 160408E-SM:T7325
SCMT 09T304E-FM2:T9325	SNMG 190616E-SM:T7325	TCMT 16T304E-FF2:T7325	TNMG 160412E-FM:T7325
SCMT 09T304E-UR:T7325	SNMG 250924E-RM:T7325	TCMT 16T304E-FF2:T8330	TNMG 160412E-NMR:T7325
SCMT 09T308E-FF2:T7325	SNMM 120408E-NR:T7325	TCMT 16T304E-FF2:T9315	TNMG 160412E-RM:T7325
SCMT 09T308E-FF2:T8330	SNMM 120408E-NR2:T7325	TCMT 16T304E-FF2:T9325	TNMG 160412E-SF:T7325
SCMT 09T308E-FF2:T9325	SNMM 120412E-NR2:T7325	TCMT 16T304E-FF2:T9335	TNMG 160412E-SM:T7325
SCMT 09T308E-FM:T7325	SNMM 150612E-NR2:T7325	TCMT 16T304E-FF2:TT010	TNMG 220404E-SM:T7325
SCMT 09T308E-FM2:T7325	SNMM 150616E-NR2:T7325	TCMT 16T304E-FM:T7325	TNMG 220408E-NM:T7325
SCMT 09T308E-FM2:T8330	SNMM 190612E-NR2:T7325	TCMT 16T304E-RM3:T6310	TNMG 220408E-NMR:T7325
SCMT 09T308E-FM2:T9315	SNMM 190616E-NR2:T7325	TCMT 16T304E-RM3:T7325	TNMG 220408E-RM:T7325
SCMT 09T308E-FM2:T9325	SNMM 190624E-NR2:T7325	TCMT 16T304E-RM3:T8330	TNMG 220408E-SM:T7325
SCMT 09T308E-FM2:T9335	SNMM 250724E-NR2:T7325	TCMT 16T304E-RM3:T9315	TNMG 220412E-NM:T7325
SCMT 09T308E-UR:T7325	SNMM 250924E-NR2:T7325	TCMT 16T304E-RM3:T9325	TNMG 220412E-NMR:T7325
SCMT 120404E-FM:T7325	TCGT 06T102E-FF2:T8330	TCMT 16T304E-RM3:T9335	TNMG 220412E-RM:T7325
SCMT 120408E-FM:T7325	TCGT 06T102E-FF2:TT010	TCMT 16T304E-UR:T7325	TNMG 220412E-SM:T7325
SCMT 120408E-RM3:T6310	TCGT 090202E-FF2:TT010	TCMT 16T308E-FF2:T7325	TNMG 220416E-RM:T7325
SCMT 120408E-RM3:T7325	TCGT 110202E-SF3:T6310	TCMT 16T308E-FF2:T8330	TNMG 270612E-RM:T7325
SCMT 120408E-RM3:T8330	TCGT 110202E-SF3:T8315	TCMT 16T308E-FF2:T9315	TNMG 270616E-RM:T7325
SCMT 120408E-RM3:T9315	TCGT 110204E-NF1:H07	TCMT 16T308E-FF2:T9325	TNMG 270624E-RM:T7325
SCMT 120408E-RM3:T9325	TCGT 110204E-NF1:T6310	TCMT 16T308E-FF2:T9335	TNMM 160408E-NR2:T7325
SCMT 120408E-RM3:T9335	TCGT 110204E-NF1:T7325	TCMT 16T308E-FM:T7325	TNMM 220408E-NR2:T7325
SCMT 120408E-UR:T7325	TCGT 110204E-SF3:H07	TCMT 16T308E-FM2:T7325	TNMM 220412E-NR2:T7325
SCMT 120412E-FM:T7325	TCGT 110204E-SF3:T6310	TCMT 16T308E-FM2:T8330	TPGX 090202FL-JZ:TT010
SCMT 120412E-RM3:T7325	TCGT 110204E-SF3:T8315	TCMT 16T308E-FM2:T9325	TPGX 090202FR-JZ:TT010
SCMT 120412E-RM3:T9325	TCGT 16T304E-SF3:H07	TCMT 16T308E-FM2:T9335	TPGX 090204FL-JQ:TT010
SCMT 120412E-UR:T7325	TCGT 16T304E-SF3:T6310	TCMT 16T308E-RM3:T6310	TPGX 110204FL-JQ:TT010
SNMG 120404E-FM:T7325	TCGT 16T304E-SF3:T8315	TCMT 16T308E-RM3:T7325	TPGX 110204FR-JQ:TT010
SNMG 120404E-NF:T7325	TCGT 16T308E-SF3:H07	TCMT 16T308E-RM3:T8330	TPGX 16T304FL-JR:TT010
SNMG 120404E-SF:T7325	TCGT 16T308E-SF3:T6310	TCMT 16T308E-RM3:T9315	TPMR 110304-PF2:TT010

TPMR 160304-PF2:TT010	VCGT 130302E-NF2:T9315	VNMG 160404E-FF:T7325	WNMG 080404E-SM:T7325
VBMT 110204E-UR:T7325	VCGT 130302E-NF2:T9335	VNMG 160404E-FM:T7325	WNMG 080404W-NM:T7325
VBMT 110302E-FM:T7325	VCGT 130302E-SF2:H07	VNMG 160404E-NF:T7325	WNMG 080408E-FF:T7325
VBMT 110304E-FM:T7325	VCGT 130302E-SF2:T6310	VNMG 160404E-NM:T7325	WNMG 080408E-FM:T7325
VBMT 110308E-FM:T7325	VCGT 130302E-SF3:H07	VNMG 160404E-NMR:T7325	WNMG 080408EL-SI:T7325
VBMT 160402E-FM:T7325	VCGT 130302E-SF3:T6310	VNMG 160404E-SF:T7325	WNMG 080408E-NF:T7325
VBMT 160404E-FF2:T7325	VCGT 130302E-SF3:T8315	VNMG 160404E-SM:T7325	WNMG 080408E-NM:T7325
VBMT 160404E-FF2:T8330	VCGT 130304E-FF2:T7325	VNMG 160408E-FM:T7325	WNMG 080408E-NMR:T7325
VBMT 160404E-FF2:T9315	VCGT 130304E-FF2:T8330	VNMG 160408E-NF:T7325	WNMG 080408E-RM:T7325
VBMT 160404E-FF2:T9325	VCGT 130304E-NF2:H07	VNMG 160408E-NM:T7325	WNMG 080408ER-SI:T7325
VBMT 160404E-FF2:T9335	VCGT 130304E-NF2:T6310	VNMG 160408E-NMR:T7325	WNMG 080408E-SF:T7325
VBMT 160404E-FM:T7325	VCGT 130304E-NF2:T7325	VNMG 160408E-SM:T7325	WNMG 080408E-SM:T7325
VBMT 160404E-FM2:T6310	VCGT 130304E-NF2:T9315	VNMG 160412E-FM:T7325	WNMG 080408W-NM:T7325
VBMT 160404E-FM2:T7325	VCGT 130304E-NF2:T9335	VNMG 160412E-NMR:T7325	WNMG 080412E-FM:T7325
VBMT 160404E-FM2:T8330	VCGT 130304E-SF2:H07	VNMG 160412E-SF:T7325	WNMG 080412E-NF:T7325
VBMT 160404E-FM2:T9315	VCGT 130304E-SF2:T6310	VNMG 160412E-SM:T7325	WNMG 080412E-NM:T7325
VBMT 160404E-FM2:T9325	VCGT 130304E-SF3:H07	WCGT 020102E-FF2:T8330	WNMG 080412E-NMR:T7325
VBMT 160404E-FM2:T9335	VCGT 130304E-SF3:T6310	WCGT 020104E-FF2:T8330	WNMG 080412E-RM:T7325
VBMT 160404E-UR:T7325	VCGT 130304E-SF3:T8315	WCGX 020102FL-JZ:TT010	WNMG 080412E-SF:T7325
VBMT 160408E-FM:T7325	VCGT 130308E-FF2:T7325	WCMT 06T304E-FM:T7325	WNMG 080412E-SM:T7325
VBMT 160408E-FM2:T6310	VCGT 130308E-FF2:T9315	WCMT 06T308E-FM:T7325	WNMG 080412W-NM:T7325
VBMT 160408E-FM2:T7325	VCGT 130308E-FM2:T8330	WCMT 06T308E-UR:T7325	WNMG 080416E-RM:T7325
VBMT 160408E-FM2:T8330	VCGT 130308E-NF2:T7325	WCMT 080404E-FM:T7325	WNMM 080408E-NR:T7325
VBMT 160408E-FM2:T9315	VCGT 130308E-NF2:T9315	WCMT 080408E-FM:T7325	WNMM 080408E-NR2:T7325
VBMT 160408E-FM2:T9325	VCGT 130308E-NF2:T9335	WCMT 080412E-FM:T7325	WNMM 080412E-NR2:T7325
VBMT 160408E-FM2:T9335	VCGT 130308E-SF2:H07	WNMG 060404E-FM:T7325	
VBMT 160408E-UR:T7325	VCGT 130308E-SF2:T6310	WNMG 060404EL-SI:T7325	
VBMT 160412E-FM:T7325	VCGT 130308E-SF3:H07	WNMG 060404E-NF:T7325	
VBMT 160412E-FM2:T8330	VCGT 130308E-SF3:T6310	WNMG 060404E-NM:T7325	
VBMT 160412E-FM2:T9315	VCGT 130308E-SF3:T8315	WNMG 060404E-NMR:T7325	
VBMT 160412E-FM2:T9325	VCGT 160404E-SF3:H07	WNMG 060404ER-SI:T7325	
VBMT 160412E-UR:T7325	VCGT 160404E-SF3:T6310	WNMG 060404E-SF:T7325	
VCGT 070202E-FF2:T8315	VCGT 160404E-SF3:T8315	WNMG 060404E-SM:T7325	
VCGT 070202E-FF2:T8330	VCGT 160408E-SF3:H07	WNMG 060408E-FM:T7325	
VCGT 070202E-SF3:H07	VCGT 160408E-SF3:T6310	WNMG 060408E-NF:T7325	
VCGT 070202E-SF3:T6310	VCGT 160408E-SF3:T8315	WNMG 060408E-NM:T7325	
VCGT 070204E-FF2:T8315	VCGT 160412E-SF3:H07	WNMG 060408E-NMR:T7325	
VCGT 070204E-FF2:T8330	VCGT 160412E-SF3:T6310	WNMG 060408E-SM:T7325	
VCGT 070204E-SF3:T6310	VCGX 130300FL-FF2:T6310	WNMG 060408W-NM:T7325	
VCGT 110202E-SF3:H07	VCGX 130300FR-FF2:T6310	WNMG 060412E-NM:T7325	
VCGT 110202E-SF3:T6310	VCGX 130301FL-FF2:T6310	WNMG 060412E-RM:T7325	
VCGT 110202E-SF3:T8315	VCGX 130301FR-FF2:T6310	WNMG 060412E-SM:T7325	
VCGT 110204E-SF3:H07	VCMT 110304E-UR:T7325	WNMG 06T304E-FM:T7325	
VCGT 110204E-SF3:T6310	VCMT 110308E-UR:T7325	WNMG 06T308E-FM:T7325	
VCGT 110204E-SF3:T8315	VCMT 160404E-FM:T7325	WNMG 080404E-FF:T7325	
VCGT 130301E-SF2:H07	VCMT 160404E-UR:T7325	WNMG 080404E-FM:T7325	
VCGT 130301E-SF2:T6310	VCMT 160408E-FM:T7325	WNMG 080404EL-SI:T7325	
VCGT 130302E-FF2:T7325	VCMT 160408E-UR:T7325	WNMG 080404E-NF:T7325	
VCGT 130302E-FF2:T8330	VCMW 110302:T6310	WNMG 080404E-NM:T7325	
VCGT 130302E-FF2:T9315	VCMW 110304:T6310	WNMG 080404E-NMR:T7325	
VCGT 130302E-NF2:H07	VCMW 160404:T6310	WNMG 080404ER-SI:T7325	
VCGT 130302E-NF2:T7325	VCMW 160408:T6310	WNMG 080404E-SF:T7325	

SIMPLY RELIABLE

As a professional you can judge the quality of work by just looking at the chip. Our chip is a clean and uncomplicated shape that in itself tells a story. It is a clear and consistent signal and that's why we use it as a symbol for being **simply reliable**.

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