



DEEPHOLE

DRILLING GRADES

HOLEMAKING PRODUCTS

Insert Range:

- LPHT 06
- TPHT 07, 08, 09, 10, 11, 12, 13, 14
- ZPHT 06
- NPMT 06, 07, 08, 10, 13
- NPHT 06, 08, 09, 11, 13
- NPMX 08
- TPMX 1403, 1704, 2405, 2807

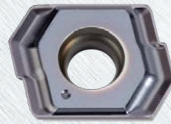
Chip Breakers:

- G - General Purpose
- B - Heat Resistant Alloys
- BG - Long Chipping Material
- DT - Positive Geometry
- DT-P - Positive Geometry

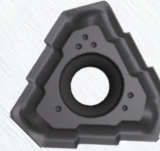
Grades:

- IN6542
CVD Toughness
- IN2004
PVD High Temp Alloys
- IN2005
PVD General Purpose
- IN2055
PVD General Purpose
- IN05S
Uncoated Aluminum Applications

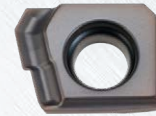
LPHT



TPHT



ZPHT



DEEPTRIO

NPMT, NPHT

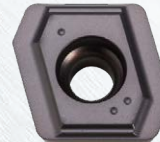


G

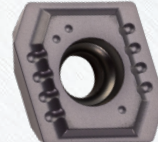


B

NPMX



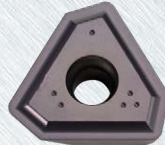
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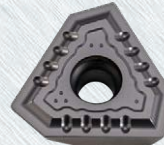
BG

BTA DRILLS

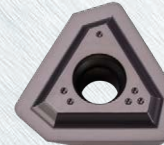
TPMX



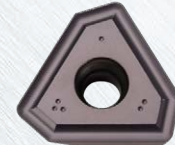
G



B



BG



DT

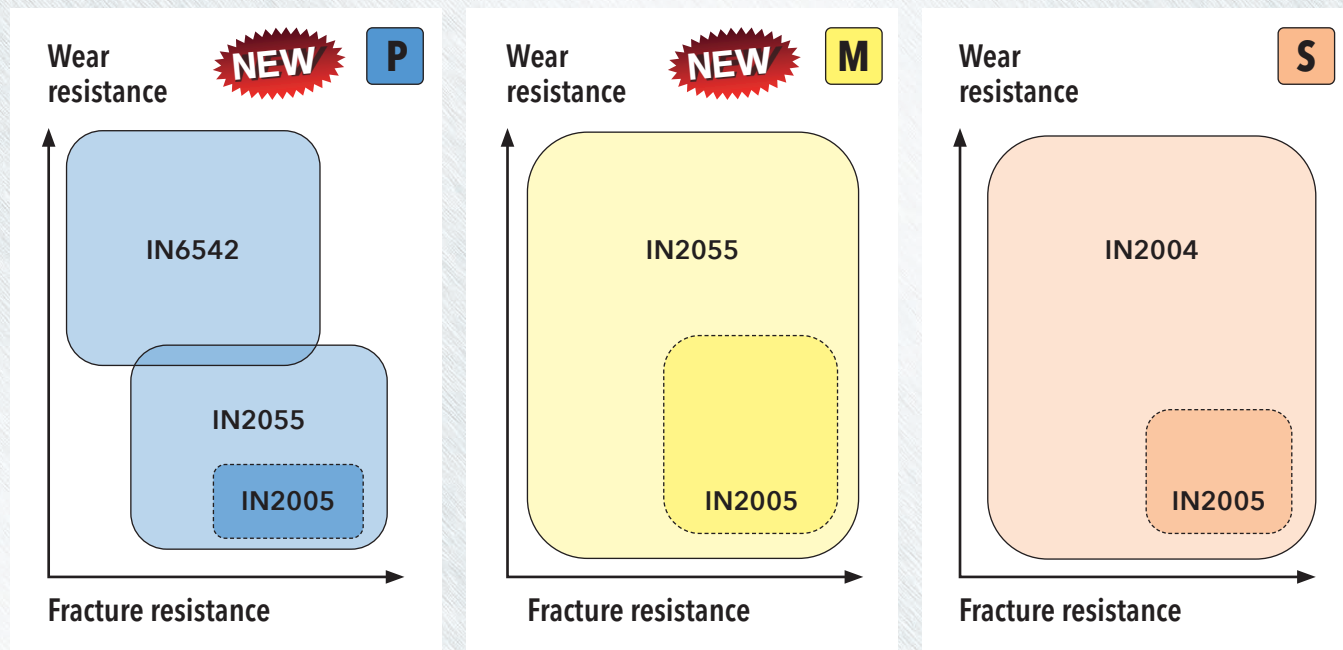
BTA DRILLS

Deep Hole Indexable Head Inserts Receive New Insert Grade IN2055, Reformulated Grade IN6542 and Uncoated Grade IN05S

Features & Benefits:

- IN2055 - Nano multi-layer PVD coated grade
 - For steel and stainless steel materials
 - Balanced carbide substrate for wear and fracture resistance
 - Multi-layered PVD coating for:
 - » Resistance to built up edge
 - » Prevention of micro chipping on cutting edge
 - » **UPDATE:** IN2005 grade will be phased out as stock is depleted
- IN6542 - Multi-layer CVD coated grade
 - For ISO P materials
 - High fracture resistance
 - Post coating surface treatment to increase and improve edge strength
- IN05S - Uncoated and polished for aluminum applications

DEEPTHOLE DRILLING GRADES : APPLICATION RANGE BY MATERIAL GROUP

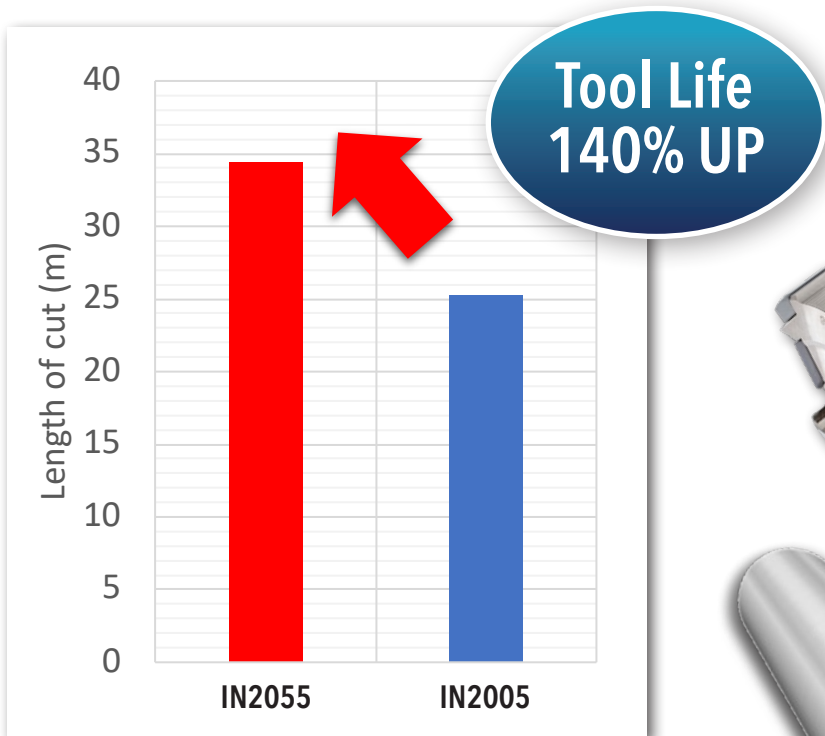


Grade	Coating	Application	Features	TBTA-H	DeepTrío	BTA Drills
UPDATED IN6542 P15-P25	CVD	P	- High shock resistance - Improved edge strength	•		•
IN2005 P15-P30 M15-M30 K25-K30 S15-S25	PVD	P M K S	- General purpose grade for most applications - Provides even wear and chipping resistance	•	•	•
IN2004 M10-M20 S10-S20	PVD	M S	- Excellent hardness and wear resistance - Prevents microchipping and built-up edge	•		•
NEW IN2055 P15-P35 M25-M35 K10-K25 S15-S30	PVD	P M K S	- Steel and stainless applications - Balanced substrate for wear and fracture resistance	•	•	•
NEW IN05S	-	N	- For aluminum applications - Polished face		•	

BTADRILLS™ CASE HISTORY

Drill Pipe

IN2055 improved the tool life by 140% in Inconel 925

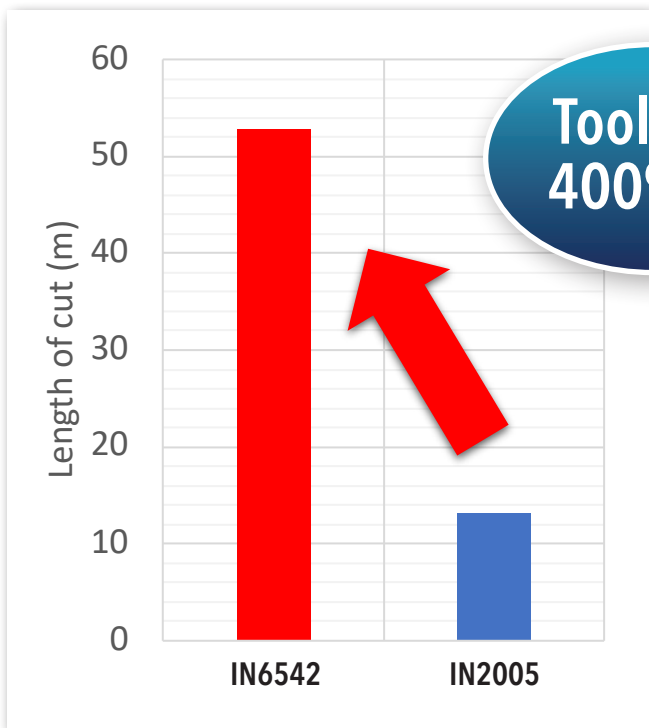


	IN2055	IN2005
Workpiece Material	Stainless Steel 304	
Drill Head	TBTA-H1.280SE4-28	
Insert	NPHT080408R-G IN2055	NPHT080408R-G IN2005
Hole Diameter (in)	1.280	1.280
Cutting Speed (SFM)	210	210
Spindle Speed (RPM)	626	626
Feed (IPR)	0.007	0.007
Tool Life per Insert Corner (ft)	1,354" (34.4m)	992" (25.2m)
Coolant	Oil	Oil

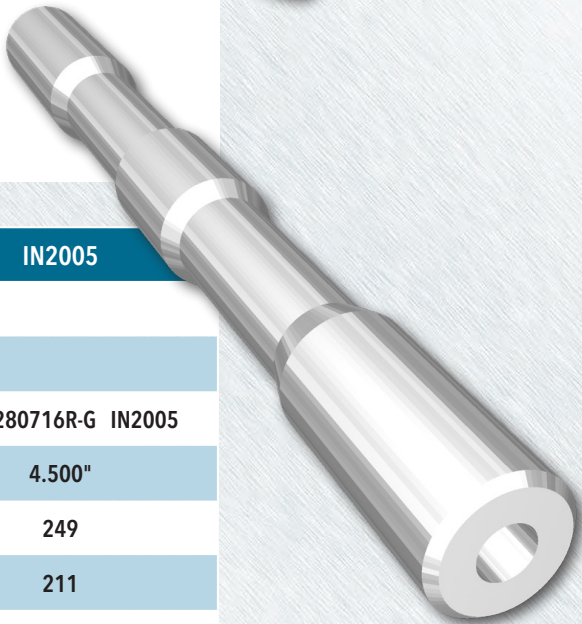
BTADRILLS™ CASE HISTORY

Drill Pipe

IN6542 improved the tool life by 400% over IN2005



**Tool Life
400% UP**

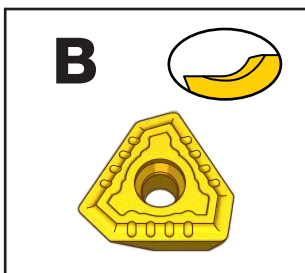


	IN6542 (NEW)	IN2005
Workpiece Material	4340	
Drill Head	TBTA5-4.500SE4-106	
Insert	TPMX280716R-G IN6542	TPMX280716R-G IN2005
Hole Diameter (in)	4.500"	4.500"
Cutting Speed (SFM)	249	249
Spindle Speed (RPM)	211	211
Feed (IPR)	0.012	0.012
Tool Life per Insert Corner (ft)	2,079" (52.8m)	520" (13.25m)
Coolant	Oil	Oil

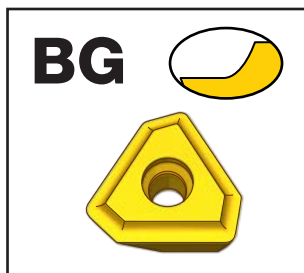
BTADRILLS™ CHIPBREAKERS



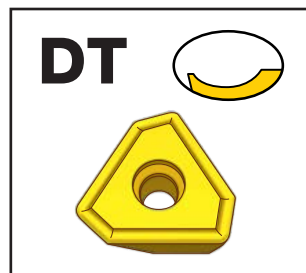
Good chip control with most materials



Good chip control with heat resistant super alloy



Good chip control with long-chipping materials



Good for lowering cutting resistance

BTADRILLS™ GRADES

← Toughness Wear Resistance →

ISO P		
IN6542	IN2005/IN2055 *	IN2004

ISO M	
IN2005/IN2055 *	IN2004

ISO K	
IN2005/IN2055 *	IN2004

* First Choice

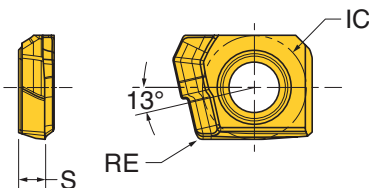
← Toughness Wear Resistance →

ISO N	
IN2005/IN2055 *	IN2004

ISO S	
IN2005/IN2055	IN2004 *

ISO H	
IN2005/IN2055	IN2004 *

DEEPTRIO™ ZPHT INSERTS

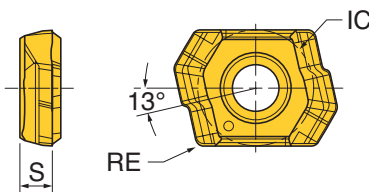


Insert	Drill Diameter - inch (mm)	Part Number	Dimensions (inch)			Grades		
			IC	S	RE	IN2005*	IN2055	IN05S
	0.394-0.471" (10.00 mm-11.99 mm)	ZPHT060204R-DT	0.236	0.059	0.016		•	
	0.394-0.471" (10.00 mm-11.99 mm)	ZPHT060204R-DT-P NEW	0.236	0.059	0.016			•

*IN2005 to be phased out as stock is depleted.

• = Stocked Items

DEEPTRIO™ LPHT INSERTS



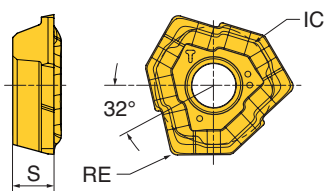
Insert	Drill Diameter - inch (mm)	Part Number	Dimensions (inch)			Grades		
			IC	S	RE	IN2005*	IN2055	IN05S
	0.472-0.550" (12.00 mm-13.99 mm)	LPHT060204R-DT	0.278	0.078	0.016	•	•	
	0.472-0.550" (12.00 mm-13.99 mm)	LPHT060204R-DT-P NEW	0.278	0.078	0.016			•

*IN2005 to be phased out as stock is depleted.

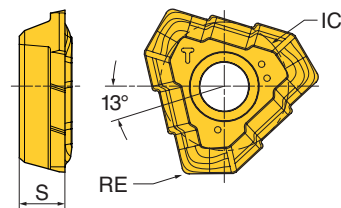
• = Stocked Items

DEEPTRIO™ TPHT-DT INSERTS

TPHT07...-DT - TPHT08...-DT



TPHT09...-DT - TPHT14...-DT

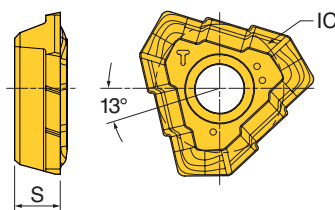


Insert	Drill Diameter - inch (mm)	Part Number	Dimensions (inch)			Grades	
			IC	S	RE	IN2005*	IN2055 NEW
	0.551-0.629" (14.00 mm-15.99 mm)	TPHT070304R-DT	0.302	0.090	0.016	•	•
	0.630-0.708" (16.00 mm-18.00 mm)	TPHT080304R-DT	0.337	0.110	0.020	•	•
	0.709-0.787" (18.01 mm-20.00 mm)	TPHT090305R-DT	0.328	0.118	0.020	•	•
	0.788-0.865" (20.01 mm-21.99 mm)	TPHT100305R-DT	0.363	0.130	0.020	•	•
	0.866-0.984" (22.00 mm-25.00 mm)	TPHT110405R-DT	0.409	0.150	0.020	•	•
	0.985-1.102" (25.01 mm-28.00 mm)	TPHT120405R-DT	0.456	0.169	0.020	•	•
	1.103-1.260" (28.01 mm-32.00 mm)	TPHT130408R-DT	0.506	0.187	0.031	•	•
	1.261-1.575" (32.01 mm-40.00 mm)	TPHT140510R-DT	0.663	0.207	0.039	•	•

*IN2005 to be phased out as stock is depleted.

• = Stocked Items

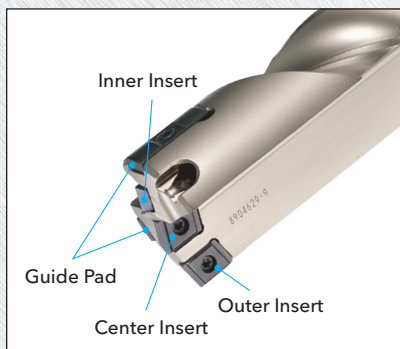
DEEPTRIO™ TPHT-DT-P INSERTS **NEW**



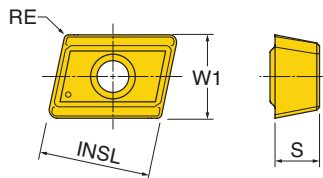
Insert	Drill Diameter - inch (mm)	Part Number	Dimensions (inch)			Grades
			IC	S	RE	IN055
	0.551-0.629" (14.00 mm-15.99 mm)	TPHT070304R-DT-P	0.302	0.090	0.016	•
	0.630-0.708" (16.00 mm-18.00 mm)	TPHT080304R-DT-P	0.337	0.110	0.020	•
	0.709-0.787" (18.01 mm-20.00 mm)	TPHT090305R-DT-P	0.328	0.118	0.020	•
	0.788-0.865" (20.01 mm-21.99 mm)	TPHT100305R-DT-P	0.363	0.130	0.020	•
	0.866-0.984" (22.00 mm-25.00 mm)	TPHT110405R-DT-P	0.409	0.150	0.020	•
	0.985-1.102" (25.01 mm-28.00 mm)	TPHT120405R-DT-P	0.456	0.169	0.020	•
	1.103-1.260" (28.01 mm-32.00 mm)	TPHT130408R-DT-P	0.506	0.187	0.031	•
	1.261-1.575" (32.01 mm-40.00 mm)	TPHT140510R-DT-P	0.663	0.207	0.039	•

• = Stocked Items

TBTA-H / DEEPDUO™ NPMT, NPHT INSERTS

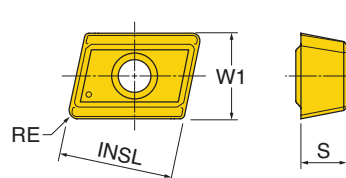


NPMT



Right-Hand insert shown

NPHT



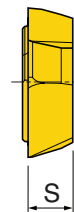
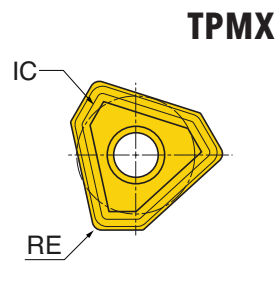
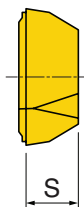
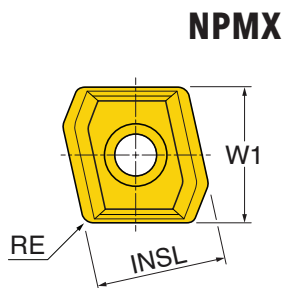
Right-Hand insert shown

Chipbreaker	Part Number	Dimensions (in)				Grades			
		W1	INSL	S	RE	IN6542	IN2004	IN2005	IN2055 NEW
 G (General Use)	Center	NPMT060308L-G	0.217	0.315	0.118	0.031		•	•
		NPMT070408L-G	0.256	0.394	0.157	0.031	•	•	•
		NPMT080408L-G	0.315	0.394	0.157	0.031	•	•	•
		NPMT100408L-G	0.374	0.394	0.157	0.031	•	•	•
		NPMT130408L-G	0.492	0.394	0.157	0.031	•	•	•
	Inner	NPMT060304R-G	0.217	0.315	0.118	0.016		•	•
		NPMT070404R-G	0.256	0.394	0.157	0.016	•	•	•
		NPMT080404R-G	0.315	0.394	0.157	0.016	•	•	•
		NPMT100404R-G	0.374	0.394	0.157	0.016	•	•	•
		NPMT130404R-G	0.492	0.394	0.157	0.016	•	•	•
	Outer (R0.16")	NPHT060304R-G	0.236	0.315	0.118	0.016		•	•
		NPHT080404R-G	0.295	0.394	0.157	0.016		•	•
		NPHT090404R-G	0.354	0.394	0.157	0.016		•	•
		NPHT110404R-G	0.433	0.394	0.157	0.016		•	•
		NPHT130404R-G	0.512	0.394	0.157	0.016		•	•
	Outer (R0.32")	NPHT060308R-G	0.236	0.315	0.118	0.032		•	•
		NPHT080408R-G	0.295	0.394	0.157	0.032		•	•
		NPHT090408R-G	0.354	0.394	0.157	0.032		•	•
		NPHT110408R-G	0.433	0.394	0.157	0.032		•	•
		NPHT130408R-G	0.512	0.394	0.157	0.032		•	•
 B (High-Temp/ Stainless)	Center	NPMT060308L-B	0.217	0.315	0.118	0.031		•	•
		NPMT070408L-B	0.256	0.394	0.157	0.031		•	•
		NPMT080408L-B	0.315	0.394	0.157	0.031		•	•
		NPMT100408L-B	0.374	0.394	0.157	0.031		•	•
		NPMT130408L-B	0.492	0.394	0.157	0.031		•	•
	Inner	NPMT060304R-B	0.217	0.315	0.118	0.016		•	•
		NPMT070404R-B	0.256	0.394	0.157	0.016		•	•
		NPMT080404R-B	0.315	0.394	0.157	0.016		•	•
		NPMT100404R-B	0.374	0.394	0.157	0.016		•	•
		NPMT130404R-B	0.492	0.394	0.157	0.016		•	•
	Outer	NPHT060308R-B	0.236	0.315	0.118	0.031		•	•
		NPHT080408R-B	0.295	0.394	0.157	0.031		•	•
		NPHT090408R-B	0.354	0.394	0.157	0.031		•	•
		NPHT110408R-B	0.433	0.394	0.157	0.031		•	•
		NPHT130408R-B	0.512	0.394	0.157	0.031		•	•

Ordering Example: NPHT060304R-G IN2005 10pcs

• = Standard stock item

BTADRILLS™ NPMX, TPMX INSERTS



ChipBreaker	Part Number	IC Inscribed Circle	S Thickness	RE Radius	INSL	W1	Grades		
							IN6542	IN2005	IN2055 NEW
 G	NPMX080308R-G	-	0.125	0.031	0.315	0.329	•	•	•
 B	NPMX080304R-B	-	0.125	0.016	0.315	0.329	•	•	•

ChipBreaker	Part Number	IC Inscribed Circle	S Thickness	RE Radius	Grades			
					IN6542	IN2005	IN2055	IN2004
 G	TPMX140308R-G	0.333	0.138	0.031	•	•	•	•
	TPMX170408R-G	0.406	0.157	0.031	•	•	•	•
	TPMX240512R-G	0.559	0.217	0.047	•	•	•	•
	TPMX280716R-G	0.669	0.295	0.063	•	•	•	•
 BG	TPMX170408R-BG	0.406	0.157	0.031		•	•	•
	TPMX240512R-BG	0.559	0.217	0.047		•	•	•
	TPMX280716R-BG	0.669	0.295	0.063		•	•	•
 B	TPMX140304R-B	0.333	0.138	0.016	•	•	•	•
	TPMX140308R-B	0.333	0.138	0.031			•	•
	TPMX170404R-B	0.406	0.157	0.016	•	•	•	•
	TPMX170408R-B	0.406	0.157	0.031			•	•
	TPMX240504R-B	0.559	0.217	0.016	•	•	•	•
	TPMX240512R-B	0.559	0.217	0.047			•	•
	TPMX280708R-B	0.669	0.295	0.031	•	•	•	•
	TPMX280716R-B	0.669	0.295	0.063			•	•
 DT	TPMX140308R-DT	0.333	0.138	0.031		•	•	
	TPMX170408R-DT	0.406	0.157	0.031		•	•	
	TPMX240512R-DT	0.559	0.217	0.047		•	•	
	TPMX280716R-DT	0.669	0.295	0.063		•	•	

• = Stocked Items