56 Sparta Avenue • Newton, New Jersey 07860
(973) 300-3000 Sales • (973) 300-3600 Fax
www.thorlabs.com

THORLABS

DK2 - January 4, 2017

Item # DK2 was discontinued on January 4, 2017. For informational purposes, this is a copy of the website content at that time and is valid only for the stated product.

DRILL AND TAP KITS

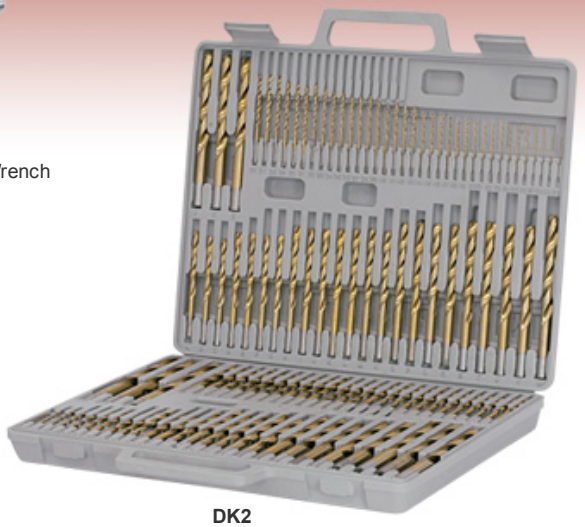
- **Individual Imperial & Metric Plug Taps**
- **115-Piece Drill Bit Set**
- **Tap Guides Help Ensure Tapped Holes are Perpendicular to Flat Surfaces**

TTT001
Tap Guide for Optical Tables and Breadboards

71529
1/4"-80 Tap

TW25
Tap Wrench

XE25TG
Tap Guide for 25 mm Rails



DK2
Drill Kit

OVERVIEW

Features

- Wide Selection of Plug Taps Including Thorlabs' SM05 (0.535"-40) and SM1 (1.035"-40) Standards
- Drill Kit Includes 115 Drill Bits in a Labeled Plastic Case
- Universal Tap Wrench is an Essential Tool for Custom Applications
- Tap Guide for Our 25 mm Construction Rails
- Table and Breadboard Tapping Guide for Repairing Damaged Tapped Holes

The items on this webpage can be used to add taps in user-selected locations and repair damaged tapped holes on breadboards and optical tables.

Click to Enlarge
The 83373 Imperial Tap for Tapping Thorlabs' SM05 Standard Threads

Click to Enlarge
The 97355 Imperial Tap for Tapping Thorlabs' SM1 Standard Threads

Specialty Taps - Imperial

- Specialized Plug Taps
- Covers SM05, SM1, and Most Other Threads Used by Thorlabs
- Material: High Speed Steel

These specialty taps aid in the integration of our optomechanical components into your custom-built devices. Our imperial taps selection includes many of the thread standards used by Thorlabs, including our SM05 (0.535"-40) and SM1 (1.035"-40) standards. Please see below for our metric taps.

Tapping Recommendations

To tap a hole, first machine a pilot bore, using the table to the right to find the recommended pilot bore diameter. The bore can be made using a drill bit or an end mill. For fine pitch threads, the pilot bore should be tightly toleranced because of the shallow thread depth; a reamer is also recommended in this case.

Next, secure the tap into a tap wrench, drill press, or lathe to create the threads. Lubricant or tapping fluid should be used to create the hole. If resistance is felt while tapping, carefully rotate the tap backwards to remove it, as broken taps are exceptionally difficult to remove.

If using these specialty taps for production, precision ring and plug gauges should be used to verify hole diameters. For additional details on threading and taps, please consult the *Machinery's Handbook*, available in many machine shops and bookstores.

Item #	Thread	Pilot Bore			Example Uses
		Diameter	Tolerance[a]	Drill Size Imperial[b]	
54029	0-80	0.049"	+0.003"/-0.002"	-	Locking Setscrews
54087	2-56	0.070"	±0.004"	#50 (0.0700")	Miniature Translation Stage Mounting Holes
54150	4-40	0.089"	±0.005"	#43 (0.0890")	Cage Rod Locking Setscrews
99943	6-80	0.126"	±0.002"	1/8" (0.1250")	6-80 Adjustment Screws
54278	8-32	0.135"	+0.004"/-0.005"	#29 (0.1360")	8-32 Mounting Holes
74580	3/16"-100	0.177"	+0.002"/-0.001"	#16 (0.1770")	3/16"-100 Adjustment Screws
71598	1/4"-20	0.202"	+0.005"/-0.006"	#7 (0.2010")	1/4"-20 Mounting Holes
71529	1/4"-80	0.238"	±0.002"	B (0.2380")	1/4"-80 Adjustment Screws
99940	1/4"-100	0.240"	+0.002"/-0.001"	-	1/4"-100 Adjustment Screws
60202	5/16"-32	0.282"	+0.004"/-0.003"	9/32" (0.2812")	3/16"-100 Locking Bushings
60242	3/8"-40	0.348"	±0.003"	S (0.3480")	1/4"-80 Locking Bushings
83373	0.535"-40 (SM05 Standard)	0.511"	±0.003"	-	Ø1/2" Lens Tubes
46720	0.800"-36 (RMS Standard)	0.773"	+0.004"/-0.003"	-	RMS-Threaded Objectives
60538	1.00"-32 (C-Mount Standard)	0.970"	±0.004"	-	C-Mount Extension Tubes, Machine Vision Camera Lenses
97355	1.035"-40 (SM1 Standard)	1.011"	±0.003"	-	Ø1" Lens Tubes

a. For fine pitch threads, it is especially important to tightly tolerance the pilot bore because of the shallow thread depth.

b. Item numbers with drill sizes listed are within the provided tolerance for each item. For item numbers without a corresponding standard drill size, please refer solely to the pilot bore diameter column, as drill bits in that size are not available.

Part Number	Description	Price	Availability
54029	**English (Imperial) Tap: 0-80 Thread**	**$20.00**	**Today**
54087	**English (Imperial) Tap: 2-56 Thread**	**$15.00**	**Today**
54150	**English (Imperial) Tap: 4-40 Thread**	**$10.00**	**Today**
99943	**English (Imperial) Tap: 6-80 Thread**	**$30.50**	**Today**
54278	**English (Imperial) Tap: 8-32 Thread**	**$8.00**	**Today**
74580	**English (Imperial) Tap: 3/16"-100 Thread**	**$27.40**	**Today**
71598	**English (Imperial) Tap: 1/4"-20 Thread**	**$15.00**	**Today**
71529	**English (Imperial) Tap: 1/4"-80 Thread**	**$27.40**	**Today**
99940	**English (Imperial) Tap: 1/4"-100 Thread**	**$35.70**	**Today**
60202	**English (Imperial) Tap: 5/16"-32 Thread**	**$25.00**	**Today**
60242	**English (Imperial) Tap: 3/8"-40 Thread**	**$26.40**	**Today**
83373	**English (Imperial) Tap: 0.535"-40 Thread (SM05 Standard)**	**$86.20**	**Today**
46720	**English (Imperial) Tap: 0.800"-36 Thread (RMS Standard)**	**$86.20**	**Today**
60538	**English (Imperial) Tap: 1.00"-32 Thread (C-Mount Standard)**	**$100.00**	**Today**
97355	**English (Imperial) Tap: 1.035"-40 Thread (SM1 Standard)**	**$86.20**	**Today**

Specialty Taps - Metric

- Specialized Plug Taps
- Covers Many Threads Used by Thorlabs
- Material: High Speed Steel

These specialty taps aid in the integration of our optomechanical components into your custom-built devices. Our metric taps selection includes many of the thread standards used by Thorlabs. Please see above for our imperial taps, as well as taps for our SM05 (0.535"-40) and SM1 (1.035"-40) standards.

Tapping Recommendations

To tap a hole, first machine a pilot bore, using the table to the right to find the recommended pilot bore diameter. The bore can be made using a drill bit or an end mill. For fine pitch threads, the pilot bore should be tightly toleranced because of the shallow thread depth; a reamer is also recommended in this case.

Next, secure the tap into a tap wrench, drill press, or lathe to create the threads. Lubricant or tapping fluid should be used to create the hole. If resistance is felt while tapping, carefully rotate the tap backwards to remove it, as broken taps are exceptionally difficult to remove.

If using these specialty taps for production, precision ring and plug gauges should be used to verify hole diameters. For additional details on threading and taps, please consult the *Machinery's Handbook*, available in many machine shops and bookstores.

Item #	Thread	Pilot Bore				Example Uses
		Diameter	Tolerance[a]	Drill Size Metric[b]	Drill Size Imperial[b]	
42872	M2.5 x 0.2	2.313 mm	±0.030 mm	2.3 mm (0.0905")	-	M2.5 x 0.2 Adjustment Screws
24564	M3 x 0.2	2.813 mm	±0.030 mm	2.8 mm (0.1102")	#34 (0.1110")	M3 x 0.2 Adjustment Screws
99946	M3 x 0.25	2.766 mm	±0.037 mm	2.75 mm (0.1083")	7/64" (0.1093")	M3 x 0.25 Adjustment Screws
54247	M4 x 0.7 (M4 Standard)	3.332 mm	±0.090 mm	3.3 mm (0.1299")	#30 (0.1285")	M4 Mounting Holes
99833	M4.5 x 0.5	4.029 mm	±0.070 mm	4.0 mm (01575")	#21 (0.1590")	-
35824	M6 x 0.25	5.575 mm	±0.0165 mm	5.6 mm (0.2205")	#2 (0.2210")	M6 x 0.25 Adjustment Screws
97368	M6 x 0.5	5.526 mm	±0.068 mm	5.5 mm (0.2165")	7/23" (0.2187")	Aspheric Lens Housings[c]
71498	M6 x 1.0 (M6 Standard)	5.035 mm	±0.118 mm	5.1 mm (0.2008")	#8 (0.1990")	M6 Mounting Holes
48443	M8 x 0.5	7.526 mm	±0.068 mm	7.5 mm (0.2953")	M (0.2950")	Aspheric Lens Housings[c]
98109	M9 x 0.5	8.526 mm	±0.068 mm	8.5 mm (0.3346")	Q (0.3340")	Aspheric Lens Housings[c]
43122	M10 x 0.5	9.526 mm	±0.068 mm	9.5 mm (0.3740)	3/8" (0.3750")	Aspheric Lens Housings[c]
98110	M11 x 0.5	10.526 mm	±0.068 mm	10.5 mm (0.4133")	Z (0.4130")	Mounted Aspheric Lens Pair Housings[c]
46152	M12 x 0.5	11.526 mm	±0.068 mm	11.5 mm (0.4528")	29/64" (0.4531")	Aspheric Lens Housings[c]
45283	M14 x 0.5	13.526 mm	±0.068 mm	13.5 mm (0.5315")	17/23" (0.5312")	-
99925	M25 x 0.75 (M25 Standard)	24.284 mm	±0.096 mm	-	-	M25-Threaded Objectives

a. For fine pitch threads, it is especially important to tightly tolerance the pilot bore because of the shallow thread depth.
b. Item numbers with drill sizes listed are within the provided tolerance for each item. For item numbers without a corresponding standard drill size, please refer solely to the pilot bore diameter column, as drill bits in that size are not available.
c. The webpages for our mounted aspheric lenses indicate the external thread of the lens housing.

Part Number	Description	Price	Availability
42872	**Metric Tap: M2.5 x 0.2 Thread**	**$90.00**	**Today**
24564	**Metric Tap: M3 x 0.2 Thread**	**$50.00**	**Today**
99946	**Metric Tap: M3 x 0.25 Thread**	**$35.70**	**Today**
54247	**Metric Tap: M4 x 0.7 Thread (M4 Standard)**	**$10.00**	**Today**
99833	**Metric Tap: M4.5 x 0.5 Thread**	**$31.60**	**Today**
35824	**Metric Tap: M6 x 0.25 Thread**	**$35.70**	**Today**
97368	**Metric Tap: M6 x 0.5 Thread**	**$26.40**	**Today**
71498	**Metric Tap: M6 x 1.0 Thread (M6 Standard)**	**$12.00**	**Today**
48443	**Metric Tap: M8 x 0.5 Thread**	**$30.50**	**Today**
98109	**Metric Tap: M9 x 0.5 Thread**	**$40.00**	**Today**
43122	**Metric Tap: M10 x 0.5 Thread**	**$46.30**	**Today**
98110	**Metric Tap: M11 x 0.5 Thread**	**$47.40**	**Today**

46152	**Metric Tap: M12 x 0.5 Thread**	**$48.20**	**Today**
45283	**Metric Tap: M14 x 0.5 Thread**	**$55.70**	**Today**
99925	**Customer Inspired!Metric Tap: M25 x 0.75 Thread (M25 Standard)**	**$135.00**	**Today**

Drill Kit

- 60 Number-Sized Drill Bits Ranging from #1 Bit to #60 Bit
- 26 Letter-Sized Drill Bits Ranging from Letter A Bit Through Letter Z Bit
- 29 Fractional-Sized Drill Bits Ranging from 1/16" to 1/2" (See List at Right)
- Maintenance Grade
- Labeled Gray Plastic Case

Included Fractional-Sized Drill Bits

• 1/16"	• 9/64"	• 7/32"	• 19/64"	• 3/8"	• 29/64"
• 5/64"	• 5/32"	• 15/64"	• 5/16"	• 25/64"	• 15/32"
• 3/32"	• 11/64"	• 1/4"	• 21/64"	• 13/32"	• 31/64"
• 7/64"	• 3/16"	• 17/64"	• 11/32"	• 27/64"	• 1/2"
• 1/8"	• 13/64"	• 9/32"	• 23/64"	• 7/16"	

These 115 drill bits come in standard jobber lengths and are constructed from high-quality, high-speed, titanium-nitride-coated steel, enabling them to withstand extremely harsh environments. The drill bits are maintenance grade and are not intended for precision applications. They ship packaged in a labeled plastic carrying case.

Part Number	Description	Price	Availability
DK2	**115-Piece Drill Kit**	**$99.90**	**Today**

Universal Tap Wrench

- Universal Ratcheting Tap Wrench with Sliding Crossbar
- Accommodates Taps from #0 to 1/4" or 2 mm to 6 mm
- Ideal for Customizing Structures Made from Our 25 mm Rails

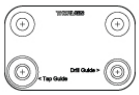
Click to Enlarge
Ratcheting Selector Knob and Sliding Crossbar

This machinist-quality Hand Tap Wrench is ideally suited for everyday tapping requirements. The rugged stainless steel design provides durability and long life, and the crossbar conveniently slides to provide extra torque when required. Ratcheting in either direction can be selected using the knob at the top of the wrench (see photo to the right). The Hand Tap Wrench can accommodate taps as small as #0 or 2 mm and as large as 1/4" or 6 mm.

The XE25TG Tap Guide aligns a tap such that the resulting tapped hole is parallel to the axis of a 25 mm rail.

Part Number	Description	Price	Availability
TW25	**Hand Tap Wrench**	**$56.00**	**Today**
XE25TG	**Tap Guide for 25 mm Rails**	**$66.30**	**Today**

Table Tapping Guide



Click for Details
TTT001(/M) Tap Guide Dimensions

- Repair 1/4"-20 or M6 Holes in Optical Tables and Breadboards
- Bushings Help Ensure Tapped Holes are Perpendicular to the Work Surface
- Two 1/4"-20 or M6 Countersunk Mounting Screws Supplied

The TTT001(/M) Tap Guide is designed to assist in the re-drilling and re-tapping of an optical table or breadboard damaged by broken screws or cross threading. Two countersunk mounting screws (also known as flat head socket cap screws) are supplied for bolting the guide to the existing 1/4"-20- or M6-threaded hole matrix. A toughened, tool-grade steel bushing insert acts as a precise guide for drilling the broken screw out of the damaged hole. Another steel bushing guides the tap into the drilled-out hole, restoring the threads and ensuring that the resulting tapped hole is perpendicular to the work surface.

Repairing a Damaged Tapped Hole

Click to Enlarge
To repair a hole with the TTT001(/M) guide, first secure it to the optical table using the included countersunk screws. These screws are designed to center the steel bushing over the damaged hole.

Click to Enlarge
Once the TTT001(/M) guide is properly aligned over the hole, use the TW25 Hand Tap Wrench with a 1/4"-20 tap (Item # 71598) or an M6 tap (Item # 71498) to restore the threads.

The main cause of tap breakage is unwanted sideways motion when the operator attempts to rotate the tap while simultaneously applying a force not purely parallel to the drill axis. This device discourages this costly error. We advise the use of a sharp, carbide-tipped drill bit to drill out the broken screw. When mounting the tap guide, care should be taken not to overtighten the countersunk mounting screws.

Part Number	Description	Price	Availability
TTT001/M	**Table Tapping Guide for M6 Threads**	**$55.00**	**Today**
TTT001	**Table Tapping Guide for 1/4"-20 Threads**	**$55.00**	**Today**