

SOLID CARBIDE REPLACEABLE HEAD DRILLS



HYDRA DRILL

Solid Carbide Replaceable Head Drilling

FEATURES:

- The Hydra Drill is manufactured for EASY head changes for 3X and 5X depth of cut
- The HSS high wear resistant body will accommodate multiple head sizes, maintaining its structural integrity- even after numerous head changes!
- Special 140° s;lit point TiAlN coated solid carbide head ensures optimum chip flow and longer tool life.
- Coolant hole provides optimized coolant direction for chip evacuation



NEW ITEM!



Carbide Head Diameters Accommodated:	OAL	Drill Depth	Shank Dia	Body Length	Shank Length	PTD Reference Number	Hydra Drill Body Part Number	Price Each	Carbide Head Group #
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3X BODY DIA

35/64, 14mm, 9/16, 14.50mm	4.527 (115mm)	2.008 (51mm)	0.75	2.527	2.000	PTDH055M	HD-55-MDB-PTD	\$174.64	55
37/64, 15mm, 19/32, 39/64, 15.50mm	4.921 (125mm)	2.126 (54mm)	0.75	2.921	2.000	PTDH059M	HD-59-MDB-PTD	\$179.93	59
5/8, 16mm, 41/64, 16.30mm, 16.50mm	5.118 (130mm)	2.283 (58mm)	0.75	3.118	2.000	PTDH063M	HD-63-MDB-PTD	\$185.22	63
21/32, 17mm, 43/64, 11/16, 17.50mm	5.315 (135mm)	2.401 (61mm)	0.75	3.315	2.000	PTDH067M	HD-67-MDB-PTD	\$190.51	67
17.60mm, 45/64, 18mm, 23/32, 18.50mm	5.512 (140mm)	2.559 (65mm)	0.75	3.512	2.000	PTDH071M	HD-71-MDB-PTD	\$195.80	71
47/64, 19mm, 3/4, 49/64, 19.50mm	6.102 (155mm)	2.677 (68mm)	1.00	3.852	2.250	PTDH075M	HD-75-MDB-PTD	\$201.10	75
25/32, 20mm, 51/64	6.102 (155mm)	2.834 (72mm)	1.00	3.852	2.250	PTDH079M	HD-79-MDB-PTD	\$206.39	79
13/16, 21mm, 53/64, 27/32, 21.50mm	6.102 (155mm)	2.953 (75mm)	1.00	3.852	2.250	PTDH083M	HD-83-MDB-PTD	\$211.68	83
55/64, 22mm, 7/8, 22.50mm, 57/64	6.299 (160mm)	3.110 (79mm)	1.00	4.049	2.250	PTDH087M	HD-87-MDB-PTD	\$216.97	87

5X BODY DIA

35/64, 14mm, 9/16, 14.50mm	5.708 (145mm)	3.150 (80mm)	0.75	3.708	2.000	PTDH055L	HD-55-LDB-PTD	\$211.68	01
37/64, 15mm, 19/32, 39/64, 15.50mm	6.102 (155mm)	3.346 (85mm)	0.75	4.102	2.000	PTDH059L	HD-59-LDB-PTD	\$216.97	02
5/8, 16mm, 41/64, 16.30mm, 16.50mm	6.496 (165mm)	3.582 (91mm)	0.75	4.496	2.000	PTDH063L	HD-63-LDB-PTD	\$222.26	03
21/32, 17mm, 43/64, 11/16, 17.50mm	6.694 (170mm)	3.789 (96mm)	0.75	4.693	2.000	PTDH067L	HD-67-LDB-PTD	\$227.56	04
17.60mm, 45/64, 18mm, 23/32, 18.50mm	6.890 (175mm)	4.015 (102mm)	0.75	4.890	2.000	PTDH071L	HD-71-LDB-PTD	\$232.85	05
47/64, 19mm, 3/4, 49/64, 19.50mm	7.480 (190mm)	4.212 (107mm)	1.00	5.230	2.250	PTDH075L	HD-75-LDB-PTD	\$238.14	06
25/32, 20mm, 51/64	7.677 (195mm)	4.449 (113mm)	1.00	5.427	2.250	PTDH079L	HD-79-LDB-PTD	\$243.43	07
13/16, 21mm, 53/64, 27/32, 21.50mm	7.677 (195mm)	4.645 (118mm)	1.00	5.427	2.250	PTDH083L	HD-83-LDB-PTD	\$248.72	08
55/64, 22mm, 7/8, 22.50mm, 57/64	7.874 (200mm)	4.882 (124mm)	1.00	5.624	2.250	PTDH087L	HD-87-LDB-PTD	\$254.02	09

For Replaceable Carbide Heads, Please See Next Page.

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SOLID CARBIDE REPLACEABLE HEADS

HYDRA DRILL

Replaceable Solid Carbide Heads



Hydra Drill Solid Carbide Heads											
Group # (from drill body table)	Cutting Dia	Head Dia	PTD Reference Number	Replaceable Head Part Number	Price Each	Screws	Screw Driver				
55	35/64	0.5469	PTDT05469MTL	HD-55-35/64-PTD	\$59.85	SC-10093-PTD \$2.98	TX-10097-PTD \$9.07				
	14.00	0.5512	PTDT1400MTL	HD-55-M1400-PTD	\$59.85						
	9/16	0.5265	PTD05625MTL	HD-55-9/16-PTD	\$59.85						
	14.50	0.5709	PTDT1450MTL	HD-55-M1450-PTD	\$59.85						
59	37/64	0.5781	PTDT05781MTL	HD-59-37/64-PTD	\$61.85			SC-10094-PTD \$2.98	TX-10098-PTD \$11.98		
	15.00	0.5906	PTDT1500MTL	HD-59-M1500-PTD	\$61.85						
	19/32	0.5938	PTDT05937MTL	HD-59-19/32-PTD	\$61.85						
	39/64	0.6094	PTDT06094MTL	HD-59-39/64-PTD	\$61.85						
	15.50	0.6102	PTDT1550MTL	HD-59-M1550-PTD	\$61.85						
63	5/8	0.625	PTDT06250MTL	HD-63-5/8-PTD	\$63.84					SC-10095-PTD \$2.98	TX-10099-PTD \$11.98
	16.00	0.63	PTDT1600MTL	HD-63-M1600-PTD	\$63.84						
	41/64	0.6406	PTDT06406MTL	HD-63-41/64-PTD	\$63.84						
	16.30	0.6417	PTDT1630MTL	HD-63-M1630-PTD	\$63.84						
	16.50	0.6496	PTDT1650MTL	HD-63-M1650-PTD	\$63.84						
67	21/32	0.6563	PTDT06562MTL	HD-67-21/32-PTD	\$65.84	SC-10096-PTD \$2.98	TX-10100-PTD \$11.98				
	17.00	0.6693	PTDT1700MTL	HD-67-M1700-PTD	\$65.84						
	43/64	0.6719	PTDT06719MTL	HD-67-43/64-PTD	\$65.84						
	11/16	0.6875	PTDT06875MTL	HD-67-11/16-PTD	\$65.84						
	17.50	0.689	PTDT1750MTL	HD-67-M1750-PTD	\$65.84						
71	17.60	0.6929	PTDT1760MTL	HD-71-M1760-PTD	\$66.83			SC-10097-PTD \$2.98	TX-10101-PTD \$11.98		
	45/64	0.7031	PTDT07031MTL	HD-71-45/64-PTD	\$66.83						
	18.00	0.7087	PTDT1800MTL	HD-71-M1800-PTD	\$66.83						
	23/32	0.7188	PTDT07187MTL	HD-71-23/32-PTD	\$66.83						
	18.50	0.7283	PTDT1850MTL	HD-71-M1850-PTD	\$66.83						
75	47/64	0.7344	PTDT07344MTL	HD-75-47/64-PTD	\$69.83					SC-10098-PTD \$2.98	TX-10102-PTD \$11.98
	19.00	0.748	PTDT1900MTL	HD-75-M1900-PTD	\$69.83						
	3/4	0.75	PTDT07500MTL	HD-75-3/4-PTD	\$69.83						
	49/64	0.7656	PTDT07656MTL	HD-75-49/64-PTD	\$69.83						
	19.50	0.7677	PTDT1950MTL	HD-75-M1950-PTD	\$69.83						
79	25/32	0.7813	PTDT07812MTL	HD-79-25/32-PTD	\$71.82	SC-10099-PTD \$2.98	TX-10103-PTD \$11.98				
	20.00	0.7874	PTDT2000MTL	HD-79-M2000-PTD	\$71.82						
	51/64	0.7969	PTDT07969MTL	HD-79-51/64-PTD	\$71.82						
83	13/16	0.8125	PTDT08125MTL	HD-83-13/16-PTD	\$73.82			SC-10100-PTD \$2.98	TX-10104-PTD \$11.98		
	21.00	0.8268	PTDT2100MTL	HD-83-M2100-PTD	\$73.82						
	53/64	0.8281	PTDT08281MTL	HD-83-53/64-PTD	\$73.82						
	27/32	0.8438	PTDT08437MTL	HD-83-27/32-PTD	\$73.82						
	21.50	0.8465	PTDT2150MTL	HD-83-M2150-PTD	\$73.82						
87	55/64	0.8594	PTDT08594MTL	HD-87-55/64-PTD	\$76.81					SC-10101-PTD \$2.98	TX-10105-PTD \$11.98
	22.00	0.8661	PTDT2200MTL	HD-87-M2200-PTD	\$76.81						
	7/8	0.875	PTDT08750MTL	HD-87-7/8-PTD	\$76.81						
	57/64	0.8906	PTDT08906MTL	HD-87-57/64-PTD	\$76.81						
	22.50	0.8858	PTDT2250MTL	HD-87-M2250-PTD	\$76.81						

DRILLING TIPS & TROUBLESHOOTING

Drilling Effectively With Hydra Drills:

Holders: Toolholders and collets must provide good concentricity through the drill and the machine spindle. Using a positive back stop to prevent the tool from backing up into the holder is recommended. Static runout in the tool assembly must be accurately checked and maintained.

Workpiece: A secure and rigid workpiece to minimize deflection is needed, particularly on through-hole applications.

Speeds: Hydra Drills are run at substantially higher speeds than high speed steel drills.

Feeds: The feed rates for Hydra Drills are normally comparable to that of high speed steel drills. It is important not to underfeed the drill, which will cause it to dwell and dull. This is particularly true in work hardening materials.

Note: Reducing feed rate to .004-.006IPR is recommended when drilling through cross holes, interruptions at exit and/or entrance or exit on an angular surface.

Drilling With Coolants:

For maximum chip ejection and tool performance, coolant must be used with the Hydra Drill. Emulsion coolant mix of 6-8% is recommended for most applications. Use a higher 10% mix for high strength steel, stainless steels and tougher drilling applications.

When Using coolant fed drills, a coolant pressure of 150PSI or higher is recommended. Internal coolant holes provide improved web strength and deliver lubrication on cutting edges for increased productivity and longer tool life.



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2007-08 Product Catalog

305

SPEEDS & FEEDS

SPEEDS & FEEDS FOR HYDRA DRILL

Use this chart to help you determine the best cutting tool machine parameters for your HYDRA DRILL application.



MATERIAL GROUP	BHN HARDNESS	NORMAL CHIP FORM	MATERIAL TYPE		SFM (Surface Feet Per Minute)	
					HYDRA 3X	HYDRA 5X
1. STEEL						
1.1 Magnetic Soft Steel Free Machining, Low Carbon, Leaded	≤ 120	Extra Long	1116, 1118 12L13	10L8, 1212 12L14	365D	350D
1.2 Structural Steel, Case Carburizing Steel	≤ 200	Medium/Long	30, 55	70, 100	350D	325D
1.3 Plain Carbon Steel	≤ 250	Long	1008, 1010, 1020	1040, 1055, 1524	350D	325D
1.4 Alloyed Steel, Medium Carbon, Tool Steel, Wrought	≤ 250	Long	4140, 4150 4340	A 36, 01 D2	315D	300D
1.5 Alloyed Steel, Hardened and Tempered Steel, Tool Steel	≥ 250 ≤ 300	Long	01, L6, D3 A2, 4140	4150, 4340, 8620 M7, M42	235D	225D
1.6 Alloyed Steel, Hardened and Tempered Steel, Tool Steel	> 350	Long	01, L6, D3 A2, 4140	4150, 4340, 8620 8630	170C	165C
2. STAINLESS STEEL						
2.1 Free Machining Stainless Steel	≤ 250	Middle	303 416	430F 440F	230B	215B
2.2 Austenitic	≤ 250	Long	304, 310, 316	321, Nitronic 50	125B	125B
2.3 Ferritic + Austenitic, Ferritic, Marten- sitic	≤ 300	Long	409, 430, 436	304, 440A, 440C	125B	125B
2.4 Precipitation Hardened	≤ 300	Long	15-5PH, 17-4PH	Custom 450	140A	130A
3. CAST IRON						
3.1 Soft Gray Cast, Ferritic	≤ 150	Extra Short	ASTM A48 Class 20, 40 G3000		395D	375D
3.2 Soft Gray Cast, Pearlitic	> 150 ≤ 260	Extra Short	ASTM A48 Class 20, 60 G3500, G4000		385D	355D
3.3 Nodular Graphite, Malleable Cast Iron	> 150 ≤ 250	Middle Short	ASTM A220 Grade 40010 SAE J158 Grade M4504	ASTM A602 Grade M4504	290D	280D
3.4 Nodular Graphite, Malleable Cast Iron	> 250 ≤ 320	Middle Short	ASTM A220 Grade 80002 ASTM A602 Grade M8501	ASTM A220 Grade 90001	290D	280D
4. TITANIUM						
4.1 Titanium, Unalloyed	≤ 200	Extra Long	Commercially Pure 99.0		165B	160B
4.2 Titanium, Alloy Cast	≤ 270	Middle/Short	ASTM B367	Grades C-1 - C-7A	85B	80B
4.3 Titanium Alloys	> 270 ≤ 350	Middle/Short	TI6AL4V TI6AL6V2SN		85B	80B
5. NICKEL						
5.1 Nickel, Unalloyed	≤ 150	Extra Long	Nickel 200, Nickel 230	Monel 400	170C	165C
5.2 Nickel, Alloys	> 150 ≤ 240	Long	Nimonic 75 Monel 502	Hastelloy C Inconel 600	75B	70B
5.3 Nickel, Alloys	> 240 ≤ 400	Long	Nimonic 80 Inconel 718	Rene 77 Inconel 825	75B	70B
6. COPPER						
6.1 Copper Alloys, Wrought	≤ 100Rb	Extra Long	101, 130, 170	630, 725	N/A	N/A
6.2 Brass, Bronze	≤ 200Rh	Middle/Short	ASTM B30		--	--
6.3 Brass	≤ 200Rh	Long	ASTM B367		--	--
6.4 High Strength Bronze	≤ 470Rf	Short	Phosphor Bronze		--	--
7. ALUMINUM						
7.1 Al, MG, Unalloyed	≤ 100Kg	Extra Long	EC, 1060	1100	N/A	N/A
7.2 Al, Alloys, Si>5%	≤ 150Kg	Middle	380, 520.0, 520.2	2024, 6061	--	--
7.3 Al, Alloys, Si>5%, <10%	≤ 120Kg	Middle	319, 333	356	--	--
Al, Alloys, MG Alloys	≤ 120Kg	Short	390, 392, 4032	222.1, A332.0	--	--
8. SYNTHETIC MATERIALS						
8.1 Thermoplastics	≤ 120Rr	Extra Long	Polyethylene, Acrylic	35% Glass filled	N/A	N/A
8.2 Thermosetting	≤ 128Rr	Short	Phenolic	(Nylons) 35% Glass	--	--

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