



Hougen®



**MAGNETIC DRILLS, ANNULAR CUTTERS,
HOLE PUNCHERS & ACCESSORIES**



WWW.HOUGEN.COM

NEW!

**FOR THE LATEST
PRODUCTS**



**40V CORDLESS
HOLE PUNCHER**
(Page 32)



XTREME COBALT™
(Page 20)

**HMD2X2
LOW PROFILE
MAG DRILL**
(Page 3)



1" CARBIDE HOLCUTTERS
(Page 28)

Quad Helix Cutters™
(Page 17)



INDEX

Magnetic Drills

HMD2X2	3
HMD130	4
HMD900	5
HMD904	6
HMD905	7
HMD927	8
HMD920.....	9
HMD918	10
HMD934	11
Magnetic Drill Comparison Chart	12
Magnetic Drill Accessories	13-15

Cutters

Cutter Comparison Chart	16
"12,000-Series" Fract. Cutters	18
"12,000-Series" Metric / Pilots	19
"12,000-Series" Xtreme Cobalt™ / Kits	20
RotaLoc Plus™ Cutters	21
Copperhead™ Carbide Cutters	22

Lubricants	23
Arbors for Machine Tools	24
Sharpening Machine	24
Custom Machines & Cutters	25
RotaCut™ Sheet Metal Cutters	26
Step Drills	27
Holcutter™ Sheet Metal Cutters	28
Paint Shaker / Displays	29
Electro-Hydraulic Hole Punchers	
Punch Comparison Chart	31
76004PR	32
76000PR	33
75002.5PR	33
75004PR	34
75006PR	34
Punches and Dies	35-38
Warranty Service Centers	41
Other Helpful Information	42-43

HOUGEN® PORTABLE MAGNETIC DRILLS

HMD2X2

Low profile lightweight right angle drill with a two speed motor and a 2" x 2" capacity.

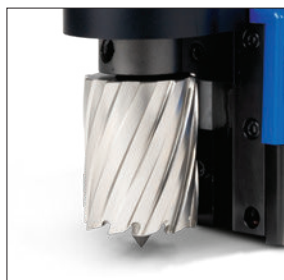
- Only 7-5/8" high easily fits into tight spots
- Lightweight at only 29 lbs (13.2 kg)
- Telescoping spline arbor for smooth cuts and minimal maintenance
- Uses standard two flat shank annular cutters
- Pilot light for low light conditions and greater hole accuracy
- Two stage magnet. Engages full power only when motor is turned on which increases magnet life
- Positive slug ejection
- High torque two speed gear box
- Carrying handle
- Lift detector safety system
- Ratchet drive feed for confined spaces and convenience
- Rear mounted controls
- Carrying case (20213) & ratchet included
- Two year warranty



Made in U.S.A.

Unmatched Power & Torque

The HMD2X2 has a true 2" x 2" hole capacity while maintaining a constant height coupled with a two speed gearbox for improved tool life and high torque throughout the power band.



HMD2X2 SPECIFICATIONS

Electrical System		115V, 50/60 Hz - 10A, 1150W	
Motor		9A, 1035W (115V), 300/450 RPM	
Diameter		7/16"- 2" (12mm - 50mm)	
Depth		2" (50mm)	
Cutter/Mount		"12,000-Series" & Copperhead™ cutters, 3/4" (19mm) shank	
Dimensions		7-5/8" H x 4" W x 13-3/4" L (194mm H x 102mm W x 349mm L)	
Magnet	Base	3-1/2" W x 8" L (89mm W x 203mm L)	
	1" Plate (25mm)	Dead Lift 1960 lb. (889 kg)	Drillpoint Breakaway 905 lb. (411 kg)
	3/8" Plate (9.5mm)	1405 lb. (637 kg)	640 lb. (290 kg)
	Weight	29.2 lb. (13.2 kg) • Shipping 38.2 lb. (17.3 kg)	

MODELS & PART NO.

Part No.	Description	Voltage	CSA
0202101	HMD2X2	115V	X

- Includes: carrying case, Slick-Stik™ lubricant, & safety strap.

Power & performance for general metal fabrication and drilling holes in confined spaces



HOUGEN® PORTABLE MAGNETIC DRILLS

HMD130

Ultra low profile lightweight right angle drill for truck frames & general fabrication.

- Only 6-15/32" high for extreme tight spots
- Lightweight at only 23.8 lbs (10.8 kg)
- Patented quill feed arbor for smooth cuts and minimal maintenance
- Uses RotaLoc Plus™ cutters which requires no tools for installation or removal
- Pilot light for low light conditions and greater hole accuracy
- Two stage magnet. Engages full power only when motor is turned on which increases magnet life
- Positive slug ejection
- High torque gearing
- Lift detector safety system
- Feed handle switches easily from side to side
- Ratchet can be used in place of feed handle
- Rear mounted controls
- Carrying case included (08498)
- Two year warranty



Made in
U.S.A.



MODELS & PART NO.

Part No.	Description	Voltage	CSA
0130101	HMD130	115V	X
0130201	HMD130	230V	

- All drills include: carrying case, Slick-Stik™ lubricant, & safety strap.

HMD130 SPECIFICATIONS

Electrical System		115V, 50/60 Hz - 9A, 1035W 230V, 50/60 Hz - 4.5A, 1035W	
Motor		8A (115V), 4A (230V) 450 RPM	
Diameter		7/16"- 1-3/8" (12mm - 35mm)	
Depth		1" (25mm)	
Cutter/Mount		RotaLoc Plus™ Cutters with push & turn style shank	
Dimensions		6-15/32" H x 6-3/4" W x 14-11/16" L (164mm H x 171mm W x 373mm L)	
Magnet	Base	4" W x 9" L (102mm W x 229mm L)	
	1" Plate (25mm)	Dead Lift 2165 lb. (982 kg)	Drillpoint Breakaway 735 lb. (333 kg)
	3/8" Plate (9.5mm)	1200 lb. (544 kg)	500 lb. (227 kg)
Weight		23.8 lb. (10.8 kg) • Shipping 31.7 lb. (14.4 kg)	

Get into the tightest of spaces and drill holes behind the wheels on truck frames



HOUGEN® PORTABLE MAGNETIC DRILLS

HMD900

Basic, no frills low cost economical magnetic drill.

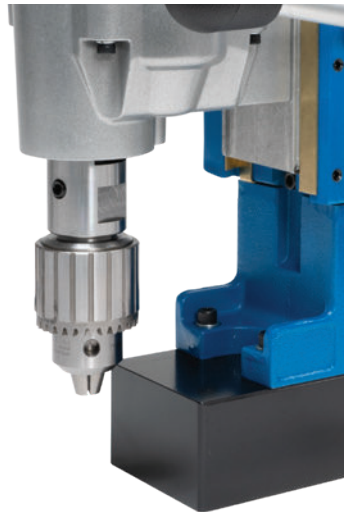
- Hidden motor cord
- High torque Hougen motor
- Rigid dove tail slide
- Powerful magnet
- Slot drive arbor system
- Many accessories are available for a portable machine shop including: drill chucks, countersink, vac-pad and more...
- Uses "12,000-Series" or Copperhead carbide cutters
- Lift detector safety system
- Two year warranty

MODELS & PART NO.

Part No.	Description	Voltage
0900101	HMD900	115V

DRILL CHUCK & ADAPTER

Equip your drill with a 1/2" drill chuck for drilling small diameter holes using twist drills. Part No 09377 includes 1/2" Hougen drill chuck and arbor adapter.



 **Made in U.S.A.**

Patented

HMD900 SPECIFICATIONS

Electrical System		115V, 50/60 Hz - 9A, 1035W	
Motor		8A, 920W (115V), 450 RPM	
Diameter		7/16" - 1-1/2" (12mm - 38mm)	
Depth		2" (50mm)	
Cutter/Mount		"12,000-Series" & Copperhead™ cutters, 3/4" (19mm) shank	
Twist Drill Capacity		1/2" w/ drill chuck	
Dimensions		15-1/8" H x 6-3/4" W x 11-3/8" L (384mm H x 171mm W x 289mm L)	
Base		3.16" W x 6.10" L (80.3mm W x 155mm L)	
Magnet	1" Plate (25mm)	Dead Lift 1952 lb. (885 kg)	Drillpoint Breakaway 960 lb. (435 kg)
	3/8" Plate (9.5mm)	1460 lb. (662 kg)	720 lb. (327 kg)
	Weight	27.7 lb. (12.6 kg)	

HOUGEN® PORTABLE MAGNETIC DRILLS

HMD904

The drill of choice for fabrication. Lightweight, powerful, & versatile.

- Hidden motor cord
- Increased safety with less maintenance
- Lower overall height
- Pilot light for low light conditions and greater hole accuracy
- Two stage magnet. Engages full power only when motor is turned on which increases magnet life
- Slot drive arbor system with positive slug ejection
- Many accessories are available for a portable machine shop including: drill chucks, tapping, countersink, and more...
- Lift detector safety system
- Gravity fed coolant system
- Carrying case included (09202)
- Two year warranty

Swivel Base adds even greater versatility:

- Precisely line up your pilot with the holes center location
- One stroke lock and unlock handle
- Great for horizontal, overhead, tight areas, and getting out over another piece of steel

MODELS & PART NO.

Part No.	Description	Voltage	Coolant Bottle	Swivel	Cutter Kit	CSA
0904101	HMD904	115V				X
0904102	HMD904	115V	X			X
0904103	HMD904	115V		X		X
0904104	HMD904	115V	X	X		X
0904105	Fabricator's Kit	115V	X		12002	X
0904109	Fabricator's Kit	115V	X	X	12002	X
0904122	Permanent Magnet	115V	X			
0904202	HMD904	230V	X			
0904204	HMD904	230V	X	X		

- All drills include: carrying case, pint of coolant, safety chain & hex wrenches.

- Fabricator's Kit Includes: drill, 1/2" drill chuck, adapter, & "12,000-Series" Cutter Kit.

0904105 Fab Kit



THE COMPLETE MAG DRILL PACKAGE

All Fabricator's
Kits Include:
HMD904, 1/2" drill
chuck, adapter, &
"12,000-Series"
Cutter Kit



Made in U.S.A.

Patented
 C US

HMD904 SPECIFICATIONS

Electrical System	115V, 50/60 Hz - 9A, 1035W	
	230V, 50/60 Hz - 4.5A, 1035W	
Motor	8A, 920W (115V), 4A, 920W (230V) 450 RPM	
Diameter	7/16" - 1-1/2" (12mm - 38mm)	
Depth	2" (50mm)	
Cutter/Mount	"12,000-Series" & Copperhead™ cutters, 3/4" (19mm) shank	
Twist Drill Capacity	1/2" w/ drill chuck	
Tapping Capacity	1/2" w/ tapping unit	
Dimensions*	18" H x 7-3/4" W x 11-5/8" L (457mm H x 197mm W x 295mm L)	
Swivel Area	1-1/8" W x 1-3/8" L (28.5mm W x 34.9mm L)	
Magnet*	Base	3-1/8" W x 6-9/16" L (79mm W x 167mm L)
	1" Plate (25mm)	Dead Lift 1750 lb. (794 kg) Drillpoint Breakaway 995 lb. (452 kg)
	3/8" Plate (9.5mm)	1310 lb. (594 kg) 710 lb. (322 kg)
Swivel Magnet	1" Plate (25mm)	Dead Lift 1340 lb. (608 kg) Forward - 695 lb. (315 kg) Back - 835 lb. (379 kg)
	3/8" Plate (9.5mm)	1015 lb. (460 kg) Forward - 503 lb. (228 kg) Back - 605 lb. (274 kg)
Weight	30 lb. (13.6 kg) • Shipping 44.1 lb. (20 kg)	
Weight (Swivel)	33 lb. (15 kg) • Shipping 46.1 lb. (20.9 kg)	
Weight (Perm Mag)	36 lb. (16.3 kg) • Shipping 50.1 lb. (22.7 kg)	

* Visit Hougen.com for the Permanent magnet drill

HOUGEN® PORTABLE MAGNETIC DRILLS

HMD905

Larger motor with two speeds adds increased strength and versatility.

- Powerful high torque Hougen motor and gears
- Two speed gear box - 250 & 450 RPM
- Pilot light for low light conditions and greater hole accuracy
- Two stage magnet. Engages full power only when motor is turned on which increases magnet life
- Available with or without the swivel base
- Positive slug ejection
- Many accessories are available to turn your drill into a portable machine shop including: drill chucks, tapping, countersink, and more...
- Lift detector safety system
- Integrated gravity fed coolant bottle
- Carrying case included (08077)
- Two year warranty

Swivel Base adds even greater versatility:

- Precisely line up your pilot with the holes center location
- One stroke lock and unlock handle
- Great for horizontal, overhead, tight areas, and getting out over another piece of steel

MODELS & PART NO.

Part No.	Description	Voltage	Coolant Bottle	Swivel	Cutter Kit	CSA
0905102	HMD905	115V	X			X
0905104	HMD905	115V	X	X		X
0905105	Fabricator's Kit	115V	X		12002	X
0905109	Fabricator's Kit	115V	X	X	12002	X

- All drills include: carrying case, pint of coolant, safety chain & hex wrenches.

- Fabricator's Kit Includes: drill, 1/2" drill chuck, adapter, & "12,000-Series" Cutter Kit.



THE COMPLETE MAG DRILL PACKAGE

All Fabricator's Kits Include:
HMD905, 1/2" drill chuck, adapter, & "12,000-Series" Cutter Kit

0905109 Fab Kit



HMD905 SPECIFICATIONS

Electrical System		115V, 50/60 Hz - 10A, 1150W	
Motor		9A, 1035W (115V), 250/450 RPM	
Diameter		7/16" - 2" (12mm - 50mm)	
Depth		2" (50mm)	
Cutter/Mount		"12,000-Series" & Copperhead™ cutters, 3/4" (19mm) shank	
Twist Drill Capacity		1/2" w/ drill chuck	
Tapping Capacity		1/2" w/ tapping unit	
Dimensions		22-13/16" H x 7-11/16" W x 11-3/4" L (579mm H x 195mm W x 299mm L)	
Swivel Area		1-1/8" W x 1-3/8" L (28.5mm W x 34.9mm L)	
Magnet	Base	3-1/8" W x 6-9/16" L (79mm W x 167mm L)	
	1" Plate (25mm)	Dead Lift 1750 lb. (794 kg)	Drillpoint Breakaway 995 lb. (452 kg)
	3/8" Plate (9.5mm)	1310 lb. (594 kg)	710 lb. (322 kg)
Swivel Magnet	1" Plate (25mm)	Dead Lift 1340 lb. (608 kg)	Drillpoint Breakaway Forward - 695 lb. (315 kg) Back - 835 lb. (379 kg)
	3/8" Plate (9.5mm)	1015 lb. (460 kg)	Forward - 503 lb. (228 kg) Back - 605 lb. (274 kg)
Weight		35 lb. (15.9 kg) • Shipping 52 lb. (23.6 kg)	
Weight (Swivel)		38 lb. (17.2 kg) • Shipping 55 lb. (24.9 kg)	

HOUGEN® PORTABLE MAGNETIC DRILLS

HMD927 POWER FEED

Power Feed - Saves time and money with less effort.

- Powerful high torque Hougen motor and gears
- Two speed gear box - 250 & 450 RPM
- Pilot light for low light conditions and greater hole accuracy
- Two stage magnet. Engages full power only when motor is turned on which increases magnet life
- Available with or without the swivel base
- Smart technology optimizes feed rate for increased tool life and excellent hole quality
- Single handle to engage power feed system
- Positive slug ejection
- Lift detector safety system
- Side mounted controls
- Gravity fed coolant bottle included
- Many accessories are available (manual mode only)
- Selectable manual/power feed mode
- Two year warranty

MODEL & PART NO.

Part No.	Description	Voltage	Coolant Bottle	CSA
0927102	HMD927	115V	X	X

- Includes: pint of coolant, safety chain & hex wrenches.



Made in U.S.A.



Patented
SP[®]
C US



HMD927 SPECIFICATIONS

Electrical System		115V, 50/60 Hz - 10A, 1150W	
Motor		9A, 1035W (115V), 250/450 RPM	
Diameter		7/16" - 2" (12mm - 50mm)	
Depth		2" (50mm)	
Cutter/Mount		"12,000-Series" & Copperhead™ cutters, 3/4" (19mm) shank	
Dimensions		22-13/16" H x 8-3/4" W x 14-11/16" L (579mm H x 222mm W x 373mm L)	
		Base	3-1/8" W x 6-9/16" L (79mm W x 167mm L)
Magnet	1" Plate (25mm)	Dead Lift 1750 lb. (794 kg)	Drillpoint Breakaway 995 lb. (452 kg)
	3/8" Plate (9.5mm)	1310 lb. (594 kg)	710 lb. (322 kg)
	Weight	43 lb. (19.5 kg) • Shipping 56 lb. (25.4 kg)	

HOUGEN® PORTABLE MAGNETIC DRILLS

HMD920

Powerful workhorse with a large capacity and built in versatility.

- Powerful high torque Hougen motor and gears
- Three speed gear box - 250 / 450 / 700 RPM
- Pilot light for low light conditions and greater hole accuracy
- Hidden motor cord
- Two stage magnet. Engages full power only when motor is turned on which increases magnet life
- Positive slug ejection
- Many accessories are available to turn your drill into a portable machine shop including: drill chucks, tapping, #2 Morse Taper Adapter, and more...
- Feed handles quickly change from side to side
- Lift detector safety system
- Gravity fed coolant bottle
- Carrying case included (09495)
- Two year warranty

Swivel Base adds even greater versatility:

- Precisely line up your pilot with the holes center location
- One stroke lock and unlock handle
- Great for horizontal, overhead, tight areas, and getting out over another piece of steel

MODELS & PART NO.

Part No.	Description	Voltage	Coolant Bottle	Swivel	Cutter Kit	CSA
0920102	HMD920	115V	X			X
0920104	HMD920	115V	X	X		X
0920105	Fabricator's Kit	115V	X		12002	X
0920109	Fabricator's Kit	115V	X	X	12002	X

- All drills include: carrying case, pint of coolant, safety chain & hex wrenches.

- Fabricator's Kit Includes: drill, 1/2" drill chuck, adapter, & "12,000-Series" Cutter Kit.



THE COMPLETE MAG DRILL PACKAGE

All Fabricator's Kits Include:
HMD920, 1/2" drill chuck, adapter, & "12,000-Series" Cutter Kit



Made in
U.S.A.



HMD920 SPECIFICATIONS

Electrical System		115V, 50/60 Hz - 13.5A, 1553W	
Motor		12.5A, 1438W (115V), 6.25A, 250/450/700 RPM	
Diameter		7/16" - 2-3/8" (12mm - 60mm)	
Depth		3" (76mm)	
Cutter/Mount		"12,000-Series" & Copperhead™ cutters, 3/4" (19mm) shank	
Twist Drill Capacity		3/4" w/ drill chuck	
Tapping Capacity		3/4"-16 UNF w/ tapping unit	
Dimensions		25-15/16" H x 8-3/16" W x 12-13/16" L (659mm H x 208mm W x 325mm L)	
Swivel Area		1-1/8" W x 1-3/8" L (28.5mm W x 34.9mm L)	
Magnet	Base	3-1/2" W x 7-3/4" L (89mm W x 197mm L)	
	1" Plate (25mm)	Dead Lift 2385 lb. (1082 kg)	Drillpoint Breakaway 1290 lb. (585 kg)
	3/8" Plate (9.5mm)	1635 lb. (742 kg)	825 lb. (374 kg)
Swivel Magnet	1" Plate (25mm)	Dead Lift 2480 lb. (1125 kg)	Drillpoint Breakaway For - 1043 lb. (473 kg) Back - 1218 lb. (552 kg)
	3/8" Plate (9.5mm)	1782 lb. (808 kg)	For - 796 lb. (361 kg) Back - 1067 lb. (484 kg)
Weight		49 lb. (22.2 kg) • Shipping 66 lb. (29.9 kg)	
Weight (Swivel)		53 lb. (24.1 kg) • Shipping 70 lb. (31.8 kg)	

HOUGEN® PORTABLE MAGNETIC DRILLS

HMD918

Fabricate even more... Extended drill depth and reach for holes up to 6" deep.

- Powerful high torque Hougén motor and gears
- Two speed gear box - 250 & 450 RPM
- Pilot light for low light conditions and greater hole accuracy
- Pressurized coolant system for increased productivity & better coolant flow for deep hole drilling
- Includes extra arbor system for positive slug ejection when drilling holes up to 3" deep
- Two stage magnet. Engages full power only when motor is turned on which increases magnet life
- Many accessories are available to turn your drill into a portable machine shop including: drill chucks, tapping, #2 Morse Taper Adapter, and more...
- Feed handles quickly change from side to side
- Lift detector safety system
- Carrying case included (08684)
- Two year warranty

MODEL & PART NO.

Part No.	Description	Voltage	Coolant System
0918102	HMD918	115V	X

- Includes: carrying case, pint of coolant, safety chain & hex wrenches.



Includes pressurized coolant system for increased productivity.

INCLUDES TWO ARBORS

Short arbor for deep holes



Standard arbor for everyday holes



Patented

HMD918 SPECIFICATIONS

Electrical System	115V, 50/60 Hz - 13.5A, 1553W		
Motor	12.5A, 1438W (115V), 250/450 RPM		
Diameter	Up to 3" DOC		
	• 7/16" - 2-3/8" (w/ Arbor & FSB)		
	Up to 6" DOC		
	• 13/16" - 1-1/4" (21mm - 32mm) "12,000-Series" • 13/16" - 2" (21mm - 50mm) Copperhead Carbide		
Depth (max.)	6" (152mm)		
Stroke	6.80" (172.7mm)		
Cutter/Mount	"12,000-Series" & Copperhead™ cutters, 3/4" shank		
Dimensions	26-5/16" H x 7-1/2" W x 12-13/16" L (668mm H x 191mm W x 325mm L)		
Magnet	Base	3-1/2" W x 7-3/4" L (89mm W x 197mm L)	
	1" Plate (25mm)	Dead Lift 2385 lb. (1082 kg)	Drillpoint Breakaway 1195 lb. (542 kg)
	3/8" Plate (9.5mm)	1635 lb. (742 kg)	765 lb. (347 kg)
	Weight	44.2 lb. (20.1 kg) • Shipping 68 lb. (30.8 kg)	

HOUGEN® PORTABLE MAGNETIC DRILLS



HMD934

Industrial Duty drill for large deep holes with four speed gearing.

- Powerful motor with two speed gear box
- Interchangeable gears for up to four speeds
- Uses "12,000-Series" Cutters
- Integrated motor/gearbox design with guide rails for a rigid compact design
- Pilot light for low light conditions and greater hole accuracy
- Positive slug ejection
- Integrated coolant system (optional pressurized system available 08446)
- Two stage magnet. Engages full power only when motor is turned on which increases magnet life
- Increased magnet holding power with impactor points
- Lift detector safety system
- Two year warranty

MODEL & PART NO.

Part No.	Description	Voltage
0934102	HMD934	115V

- Includes: pint of coolant, hex wrenches, handle & safety chain.

HMD934 SPECIFICATIONS

Electrical System	115V, 50/60 Hz - 13.5A, 1553W		
Motor	12.5A, 1438W (115V), 70/120/200/332 RPM		
Diameter	3/4" - 3-1/16" (19mm - 77mm)		
Depth	4" (100mm)		
Cutter/Mount	"12,000-Series" cutters, 3/4" (19mm) shank		
Dimensions	26-1/4" H x 10" W x 17-3/4" L (667mm H x 254mm W x 451mm L)		
	Base	5" W x 7" L (127mm W x 178mm L)	
Magnet	1" Plate (25mm)	Dead Lift 2745 lb. (1245 kg)	Drillpoint Breakaway 1492 lb. (676 kg)
	3/8" Plate (9.5mm)	1153 lb. (522 kg)	627 lb. (284 kg)
Weight	72 lb. (32.6 kg) • Shipping 94 lb. (42.6 kg)		

HMD934 INCLUDES THE FOLLOWING CUTTER RPM

Cutter RPM	Part No. (Number Teeth Per Gear)	
	Shaft A	Shaft B
Motor High Speed		
120	40012 (18)	40016 (30)
332	40016 (30)	40012 (18)
Motor Low Speed		
70	40012 (18)	40016 (30)
200	40016 (30)	40012 (18)



Patented

Optional pressurized coolant system increases productivity. Part No. 08446





PORTABLE MAGNETIC DRILLS

		HMD130	HMD2X2	HMD900	HMD904	HMD905	HMD927	HMD920	HMD918	HMD934
		Low Profile		Fabricating				Heavy Duty Drilling		
Cutters	RotaLoc Plus™	✓	With Adapter	With Adapter	With Adapter	With Adapter	With Adapter	With Adapter	With Adapter	
	"12,000-Series"		✓	✓	✓	✓	✓	✓	✓	✓
	Copperhead™ Carbide Tipped		✓	✓	✓	✓	✓	✓	✓	
Model Specifications	Diameter Min./Max.	7/16" to 1-3/8" (12 - 35mm)	7/16" to 2" (12 - 50mm)	7/16" to 1-1/2" (12 - 38mm)	7/16" to 1-1/2" (12 - 38mm)	7/16" to 2" (12 - 50mm)	7/16" to 2" (12 - 50mm)	7/16" to 2-3/8" (12 - 60mm)	7/16" to 2-3/8" (12 - 60mm)	3/4" to 3-1/16" (19 - 77mm)
	Depth Max.	1" (25mm)	2" (50mm)	2" (50mm)	2" (50mm)	2" (50mm)	2" (50mm)	3" (76mm)	6" (152mm)	4" (100mm)
	Cutter Mounting	Bayonet Style	3/4" Double Flat	3/4" Double Flat	3/4" Double Flat	3/4" Double Flat	3/4" Double Flat	3/4" Double Flat	3/4" Double Flat	3/4" Double Flat
	No-Load R.P.M.	450	300 / 450	450	450	250 / 450	250 / 450	250 / 450 / 700	250 / 450	70 / 120 200 / 332
	Model Weight	23.8 lbs (10.8 kg)	29.2 lbs (13.2 kg)	27.7 lbs (12.6 kg)	30 lbs (13.6 kg)	35 lbs (15.9 kg)	43 lbs (19.5 kg)	49 lbs (22.2 kg)	44.2 lbs (20.1 kg)	72 lbs (32.6 kg)
	Thru-the-Tool Coolant				✓	✓	✓	✓	✓	✓
Available Accessories	Carrying Case Included	✓	✓		✓	✓		✓	✓	
	Swivel Base				Optional	Optional		Optional		
	#2 Morse Taper							With Adapter	With Adapter	
	Pipe Adapter			✓	✓	✓	Manual Mode	✓	✓	
	Tap Attachment				✓	✓	Manual Mode	✓	✓	
	Vac-Pad™			✓	✓	✓				
	Coolant Bottle				Optional	Included	Included	Included	Pressurized	Included
	Countersink Kit		✓	✓	✓	✓	Manual Mode	✓	✓	✓
	Twist Drill Adapter		✓	✓	✓	✓	Manual Mode	✓	✓	✓
	Ratchet Drive	✓	✓		✓	✓		✓	✓	
	Arbor Extender		✓	✓	✓	✓	Manual Mode	✓	✓	✓
	Drill Chuck			✓	✓	✓	Manual Mode	✓	✓	
	RotaLoc™ Spindle Adapter		✓	✓	✓	✓	Manual Mode	✓	✓	

HOUGEN® MAGNETIC DRILL ACCESSORIES



DRILL CHUCKS

Part No.	Description
10731	1/2" Hougen Chuck with Key
10737	5/8" Hougen Chuck with Key (HMD918 & 920)
07930	Replacement key for 1/2" Chucks
07931	Replacement key for 5/8" Chucks
09377	1/2" Chuck & adapter for HMD900

Required Spindle Adapters:

Drill	Spindle Adapter
HMD904, 905 & 927 (Slot Drive)	08186
HMD918/920	08190



TWIST DRILL ADAPTER KIT

Part No.	Description
02608	Twist Drill Adapter
03835	1/2" Twist Drill Bit
03837	7/16" Twist Drill Bit
03839	3/8" Twist Drill Bit
03841	5/16" Twist Drill Bit
03843	1/4" Twist Drill Bit
03845	Twist Drill Adapter Kit

Makes using twist drills quick and easy. Fits most any mag drill that will fit a 3/4" two flat shank. Adapter accepts a modified 118° twist drill with a 1/4" flattened shank that secures in adapter with a set screw.



82° CARBIDE-INSERT COUNTERSINK KIT

Part No.	Description
12965	(1) 82° Countersink (double fluted) with carbide inserts, (4) Pilots - 9/16, 11/16, 13/16, 15/16", plus a Torx Wrench
12960	9/16" Pilot
12961	11/16" Pilot
12962	13/16" Pilot
12963	15/16" Pilot
12966	Countersink Ass'y w/Carbide Inserts
05465	Replacement Torx Wrench
05467	Carbide Inserts (10 pieces)
05779	Carbide Inserts Wear Resistant (10 pieces)

Countersink provides 82° chamfers on holes quickly and easily. Two types of carbide inserts are available depending upon material hardness.

- Use 05467 inserts on mild steel, cast steel & malleable iron.
- Use 05779 inserts on structural steel, stainless steel, harder steels & non-ferrous metals.

WARNING: This product contains Cobalt, a chemical known to the State of California to cause cancer. For more information, go to www.P65Warnings.ca.gov



TAPPING ATTACHMENT KITS

Part No.	Description
20068	For use with HMD904 & HMD905 (Slot Drive-includes adapter 08176) 1/2" Max.
20069	For use with HMD918/920 - 3/4" Max. (Includes adapter 08179)

Required Collets for Tap Units:

For HMD904 & HMD905 (1/2" Max.)

Collets: 02495 for #6 thru 1/4" tap
02496 for 1/4" thru 1/2" tap

For HMD918 & 920 (3/4" Max.)

Collets: 10807 for #10 thru 1/2" tap
10808 for 1/2" thru 3/4" tap

Incorporates a planetary gear reverse with a 1:1 ratio. Reversing speed is equal to spindle speed so in-feed and out-feed of the unit can be employed without reversing motor direction. **Tapping attachments are not recommended for use with swivel base drills.**

HOUGEN® MAGNETIC DRILL ACCESSORIES



PIPE ADAPTER KIT

Part No.	Description
02564*	Chain Mount for use with HMD904, HMD905, HMD918 & HMD920
02582	Additional chain - sold in 3 foot sections
07283	Master Link for additional chain

These kits let you drill pipe and tubing with a minimum 3" (76mm) diameter and some convex surfaces. Kits quickly attach to your Hougen® Magnetic Drill and positive non-slip positioning assures centered hole location.

*Minimum 3" dia. schedule 160, maximum 12" dia. schedule 160.



VAC-PAD™

Part No.	Description
05000	Vacuum Base Attachment

Vac-Pad™ works with the HMD904, HMD905 on non-ferrous materials, diamond plate and materials with surface imperfections up to 3mm deep. Standard shop air provides 761 lbf surface holding power at 85 kpa. Safety switch shuts off drill motor if air pressure drops. (For current models of non-swivel base units only)

SPINDLE ADAPTERS

Spindle adapters are required for some Hougen mag drill accessories.

Part No.	Description
07448	#2 Morse Taper Adapter for HMD918 & 920
08176	HMD904 & HMD905 Tapping Adapter (Slot Drive)
08179	HMD918, 920 Tapping Adapter
08186	HMD904, HMD905 & HMD927 Chuck Adapter (Slot Drive)
08190	HMD918, 920 Chuck Adapter
08597	HMD933 & HMD915 3/4" Shank Adapter



HOUGEN® MAGNETIC DRILL ACCESSORIES



ALTERNATIVE COOLANT SYSTEMS

Part No.	Description
08446	2 gal. pressurized bottle for use with HMD934

The pressurized coolant systems are used for production applications or when gravity feed coolant is not applicable.



ROTALOC™ SPINDLE ADAPTER

Part No.	Description
17680	RotaLoc Adapter Assembly
04778	Replacement Adapter
04780	Replacement Pilot

With the RotaLoc™ Spindle Adapter you use RotaLoc™ or RotaLoc Plus™ Annular Cutters in virtually all Hougen® Portable Magnetic Drills or any other drill that also accepts "12,000-Series" Cutters.

ARBOR EXTENDERS

Part No.	Description
10100	1" Arbor Extender Assembly
10200	2" Arbor Extender Assembly

When extended reach is necessary, Hougen offers 1" (25mm) and 2" (50mm) Arbor Extenders with a 1.310" (33.3mm) outside diameter that fit arbors using "12,000-Series" Cutters. Contact Hougen's Customer Service Department for more information about how the Arbor Extenders may help in your application.

RATCHET DRIVES

Part No.	Description
02449	For use with Models HMD904 & HMD905

With the feed handles removed the Ratchet Drive is easily installed, allowing use of a standard ratchet handle for drilling in confined areas. *(Ratchet not included)*

For more accessories and replacement carrying cases... visit www.hougen.com

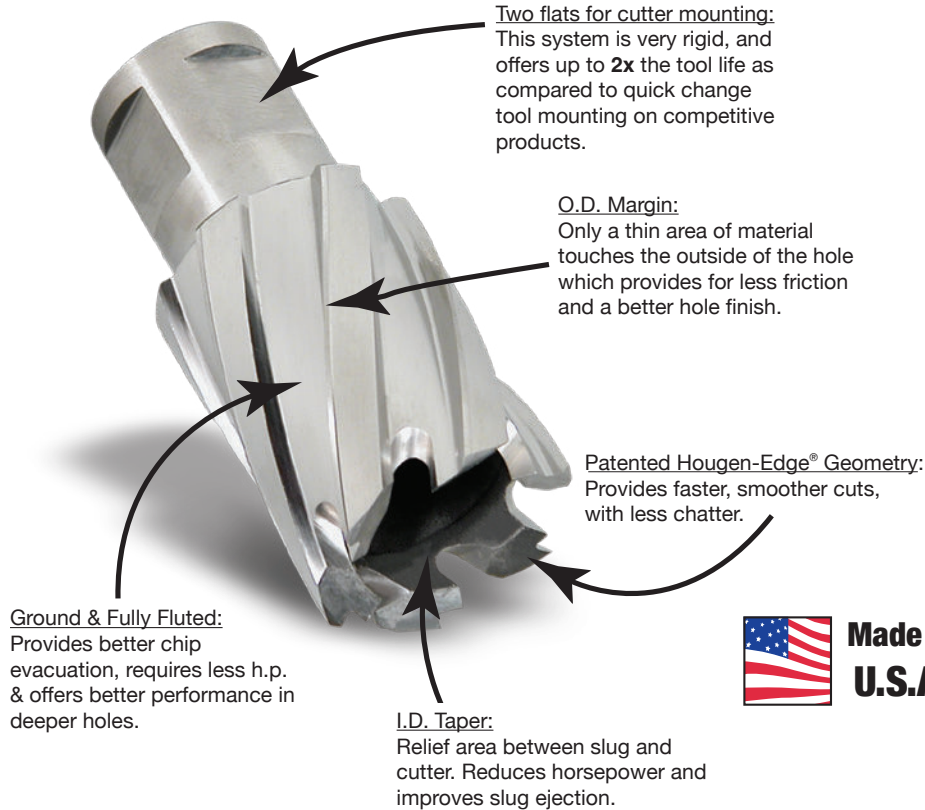
**FOR THE LATEST
PRODUCTS**



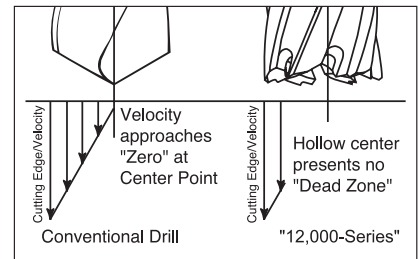
HOUGEN® CUTTER COMPARISON CHART

							
Tool Series:	RotaCut™	Holcutter™	Carbide Holcutter™	Rotaloc™	Rotaloc Plus™	11/2,000-Series	Copperhead™
Diameter Range Min. / Max.	1/4" to 1-1/2" (6mm - 25mm)	11/16" to 3"	5/8" to 4-1/2"	1/2" to 1-1/16" (12mm - 26mm)	7/16" to 1-3/8" (12mm - 35mm)	7/16" to 3-1/16" (12mm - 77mm)	1/2" to 3" (14mm - 60mm)
Max. Depth of Cut	1/4" to 1/2" (6.4mm - 12.7mm)	1/8" (3.2mm)	1" (25mm)	3/4" - (19mm) Stack Geometry	1" - (25mm) Stack Geometry	1" to 6" (25mm to 152mm)	1" to 6" (25mm to 152mm)
Mounting	3/8" or 1/2" Triple Flat Shank	3/8" Triple Flat Shank	1/2" Triple Flat Shank	Bayonet Style	Bayonet Style	3/4" Double Flat	3/4" Fusion2™ Shank
Cutter Material(s) Available	M2 HSS	M2 HSS	Carbide Tip	M42 HSS or Carbide Tip	M42 HSS	M2 HSS or M42 Xtreme Cobalt™	Carbide Tip
Can be Reshaped	===== Disposable =====						
Available Grind Down (Within Limits)							
Max. Application Hardness Rating	275 BHN (28.5 HRC)	275 BHN (28.5 HRC)	450 BHN (47.2 HRC)	350 BHN (37.7 HRC)	350 BHN (37.7 HRC)	275 BHN (Coated)	450 BHN (47.2 HRC)
Recommended Lubrication	Slick-Stik™ or RotaGel™	Slick-Stik™ or RotaGel™	Slick-Stik™ or RotaGel™	Slick-Stik™ or RotaGel™	Slick-Stik™ or RotaGel™	RotaMagic™	RotaMagic™
Aluminum	===== High RPM & Fast Feed Rates Suggested =====						
Mild Steel							
Harder Steel	Good			Better	Better	Standard - Good Xtreme - Better	
Stainless Steel	Good	Recommend Speed Reducer		Good	Good	Xtreme Cobalt™ Recommended	

HOUGEN® "12,000-SERIES" CUTTERS - SIMPLY THE BEST



Hougen "12,000-Series" cutters were the original annular cutters invented over 35 years ago. With the most features of any annular cutter, "12,000-Series" cutters provide the best performance in the largest variety of materials. Compared to traditional tooling (twist drills, etc.) "12,000-Series" cutters can multiply your cutting speed by up to 3 times. And you get longer tool life, a more accurate hole, a better finish, with no burrs. Hougen cutters maximize feed rates because up to 10 cutting edges distribute the cutting load evenly. "12,000-Series" cutters convert a smaller area to chips, requiring less horsepower and thrust. The Hougen-Edge® feature is a patented tooth geometry that provides long tool life, less chatter, and extended resharpenability. The slug also offers a higher scrap value than loose chips.



Why use Stack-Cut Geometry?



Hougen "12,000-Series" Annular Cutters with a Stack-Cut tooth geometry must be used whenever two or more plates are being drilled simultaneously. When drilling multiple pieces with traditional cutters, after the first piece is drilled, you need to stop and remove the slug before continuing on thru the second piece. Not a problem with stack cutters. Drill straight thru without stopping.

Most sizes of "12,000-Series" cutters are available from stock with stack cut geometry. All sizes are available by special request with stack-cut geometry.

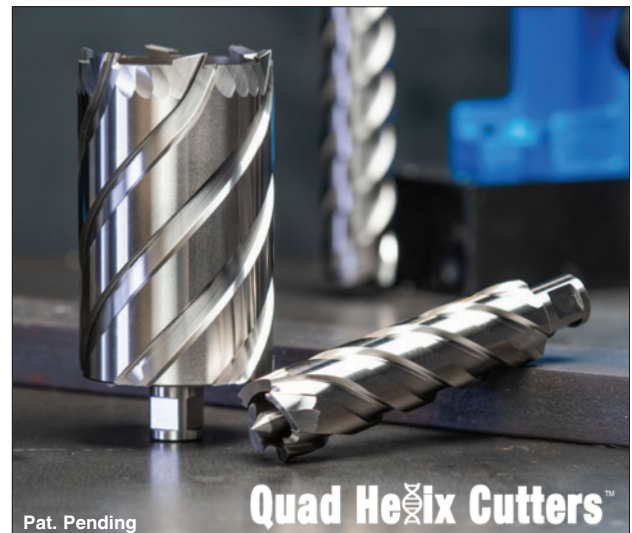
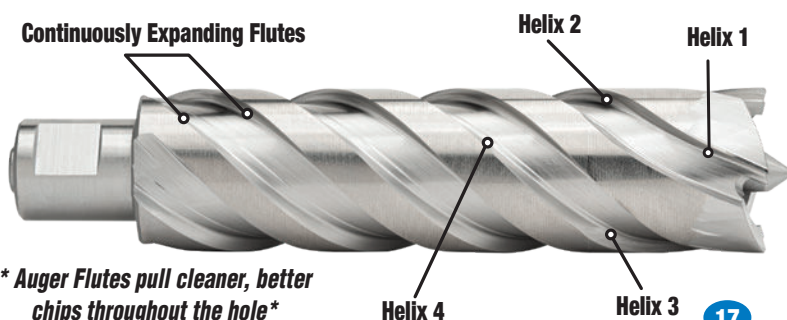
Hougen's Technical Service Department should be contacted whenever special tooth geometry and applications will be necessary.

Hougen can design & manufacture custom cutters and tools for your specific application. Call or email us today...

**(810) 635-7111
info@hougen.com**

Deep Hole Drilling

After years of design and testing, the game has changed for deep hole drilling with the NEW Quad Helix Flute "12,000-Series" Cutters. The new design improves chip flow from the bottom recesses of the cutting teeth. Reducing chip build up, time to clear the chips and increasing productivity. The one-of-a-kind continuously expanding flutes act as an auger to more efficiently extract the chips. Quad Helix Cutters feature the time proven Hougen-Edge® tooth geometry, they are resharpenable and of course, made in the USA.



HOUGEN® "12,000-SERIES" ANNULAR CUTTERS

Cutter Dia. (Inches)	Decimal Equiv.	Part No.				
		1" D.O.C.	2" D.O.C.	3" D.O.C.	4" D.O.C.	6" D.O.C.
Use with Pilot		10531	10532			
7/16	.4375	12114	12214	----	----	----
29/64	.4531	----	12010	----	----	----
31/64	.4844	----	12011	----	----	----
1/2	.5000	12116	12216	----	----	----
33/64	.5156	----	12012	----	----	----
17/32	.5313	12117	12217	----	----	----
9/16	.5625	12118	12218	----	----	----
19/32	.5938	----	12219	----	----	----
Use with Pilot		10527	10528	24131	4-10528	6-10528
5/8	.6250	12120	12220	----	----	----
21/32	.6563	12121	12221	----	----	----
11/16	.6875	12122	12222	----	----	----
23/32	.7188	----	12223	----	----	----
3/4	.7500	12124	12224	3-12224	----	----
49/64	.7656	----	12020	----	----	----
25/32	.7812	12125	12225	----	----	----
13/16	.8125	12126	12226	3-12226	4-12226	6-12226
7/8	.8750	12128	12228	3-12228	----	----
59/64	.9219	----	12025	----	----	----
15/16	.9375	12130	12230	3-12230	4-12230	6-12230
1	1.0000	12132	12232	3-12232	4-12232	6-12232
1-1/16	1.0625	12134	12234	3-12234	4-12234	6-12234
1-1/8	1.1250	12136	12236	3-12236	4-12236	6-12236
1-3/16	1.1875	12138	12238	3-12238	4-12238	6-12238
1-1/4	1.2500	12140	12240	3-12240	4-12240	6-12240
1-5/16	1.3125	12142	12242	3-12242	----	----
1-3/8	1.3750	12144	12244	3-12244	----	----
1-7/16	1.4375	12146	12246	3-12246	----	----
1-1/2	1.5000	12148	12248	3-12248	----	----
1-9/16	1.5625	12150	12250	3-12250	----	----
1-5/8	1.6250	12152	12252	3-12252	----	----
1-11/16	1.6875	12154	12254	3-12254	----	----
1-3/4	1.7500	12156	12256	3-12256	----	----
1-13/16	1.8125	12158	12258	3-12258	----	----
1-7/8	1.8750	12160	12260	3-12260	----	----
1-15/16	1.9375	12162	12262	3-12262	----	----
2	2.0000	12164	12264	3-12264	----	----
2-1/16	2.0625	12166	12266	3-12266	----	----
2-1/8	2.1250	12168	12268	3-12268	----	----
2-3/16	2.1875	12170	12270	3-12270	----	----
2-1/4	2.2500	12172	12272	3-12272	----	----
2-5/16	2.3125	12174	12274	3-12274	----	----
2-3/8	2.3750	12176	12276	3-12276	----	----
2-7/16	2.4375	12178	12278	3-12278	4-12278	----
2-1/2	2.5000	12180	12280	3-12280	4-12280	----
2-9/16	2.5625	12182	12282	3-12282	4-12282	----
2-5/8	2.6250	12184	12284	3-12284	4-12284	----
2-11/16	2.6875	12186	12286	3-12286	4-12286	----
2-3/4	2.7500	12188	12288	3-12288	4-12288	----
2-13/16	2.8125	12190	12290	3-12290	4-12290	----
2-7/8	2.8750	12192	12292	3-12292	4-12292	----
2-15/16	2.9375	12194	12294	3-12294	4-12294	----
3	3.0000	12196	12296	3-12296	4-12296	----
3-1/16	3.0625	----	12298	3-12298	4-12298	----



- Cuts holes faster
- Longer tool life
- Lower cost per hole
- Precision tooth geometry
- For the widest range of materials
- Resharpenable

For use with Hougen® Portable Magnetic Drills and many competitive models on materials up to 6" thick. They are made from hardened M2 high speed steel and are precision ground for excellent performance throughout the cut and long tool life. "12,000-Series" cutters have a 3/4" dia. double-flatted shank and for extended tool life and lower cost per hole. "12,000-Series" Cutters are resharpenable. Modified end tooth geometry is also available for drilling in stacked plate applications.



All Cutters are available with **stack geometry**. To order: add 'S' to end of part no. ie...12226S. (Some sizes may take 7-10 days. Call for availability).

HOUGEN® "12,000-SERIES" ANNULAR CUTTERS - METRIC

Cutter Dia. (Metric)	Decimal Equivalent	Part No.		
		25mm D.O.C.	50mm D.O.C.	76mm D.O.C.
Use with Pilot		10531	10532	
12mm	.4724	12312	12412	----
13mm	.5118	12313	12413	----
14mm	.5512	12314	12414	----
15mm	.5906	12315	12415	----
Use with Pilot		10527	10528	24131
16mm	.6299	12316	12416	----
17mm	.6693	12317	12417	----
18mm	.7087	12318	12418	----
19mm	.7480	12319	12419	12519
20mm	.7874	12320	12420	12520
21mm	.8268	12321	12421	12521
22mm	.8661	12322	12422	12522
23mm	.9055	12323	12423	12523
24mm	.9449	12324	12424	12524
25mm	.9843	12325	12425	12525
26mm	1.0236	12326	12426	12526
27mm	1.0630	12327	12427	12527
28mm	1.1024	12328	12428	12528
29mm	1.1417	12329	12429	12529
30mm	1.1811	12330	12430	12530
31mm	1.2205	12331	12431	12531
32mm	1.2598	12332	12432	12532
33mm	1.2992	12333	12433	12533
34mm	1.3386	12334	12434	12534
35mm	1.3779	12335	12435	12535

Cutter Dia. (Metric)	Decimal Equivalent	Part No.		
		25mm D.O.C.	50mm D.O.C.	76mm D.O.C.
Use with Pilot		10527	10528	24131
36mm	1.4173	12336	12436	12536
37mm	1.4567	12337	12437	12537
38mm	1.4961	12338	12438	12538
39mm	1.5354	12339	12439	12539
40mm	1.5743	12340	12440	12540
41mm	1.6142	12341	12441	12541
42mm	1.6535	12342	12442	12542
43mm	1.6929	12343	12443	12543
44mm	1.7323	12344	12444	12544
45mm	1.7717	12345	12445	12545
46mm	1.8110	12346	12446	12546
47mm	1.8504	12347	12447	12547
48mm	1.8898	12348	12448	12548
49mm	1.9291	12349	12449	12549
50mm	1.9685	12350	12450	12550
51mm	2.0079	12351	12451	12551
52mm	2.0472	12352	12452	12552
53mm	2.0866	12353	12453	----
54mm	2.1260	12354	12454	----
55mm	2.1654	12355	12455	----
56mm	2.2047	12356	12456	----
57mm	2.2441	12357	12457	----
58mm	2.2835	12358	12458	----
59mm	2.3228	12359	12459	----
60mm	2.3622	12360	12460	----

Quad Helix Cutters™
All 4" & 6" Cutters now
feature the NEW
Quad Helix Design



Pat. Pending

"12,000-SERIES" TAP DRILL SIZES

A clean, accurate hole helps to make tapping an easier task. You can achieve that task easily with these tap drill size "12,000-Series" Cutters. Kit #12007 contains five popular sizes of tap drills.

Cutter Dia. (Inches)	Decimal Equivalent	Thread	Part No.	
			1" D.O.C.	2" D.O.C.
Use with Pilot			10531	10532
7/16	.4375	1/2-13	12114	12214
29/64	.4531	1/2-20	----	12010
31/64	.4844	9/16-12	----	12011
33/64	.5156	9/16-18	----	12012
17/32	.5313	5/8-11	12117	12217
37/64	.5781	5/8-18	----	12014
19/32	.5938	11/16-11	----	12219
Use with Pilot			10527	10528
21/32	.6563	3/4-10	12121	12221
11/16	.6875	3/4-16	12122	12222
23/32	.7188	1/2-14 NPT	----	12223
49/64	.7656	7/8-9	----	12020
25/32	.7812	7/8-9	12125	12225
13/16	.8125	7/8-14	12126	12226
7/8	.8750	1-8	12128	12228
59/64	.9219	1-12	----	12025

PILOTS - "12,000-SERIES"

The pilot serves three functions when used with "12,000-Series" cutters in a portable magnetic drill; 1) Locate the holes center point, 2) Initiate coolant flow to the center of the tool, 3) Eject the slug at the end of the cut. Always use a sharp pilot for best results.



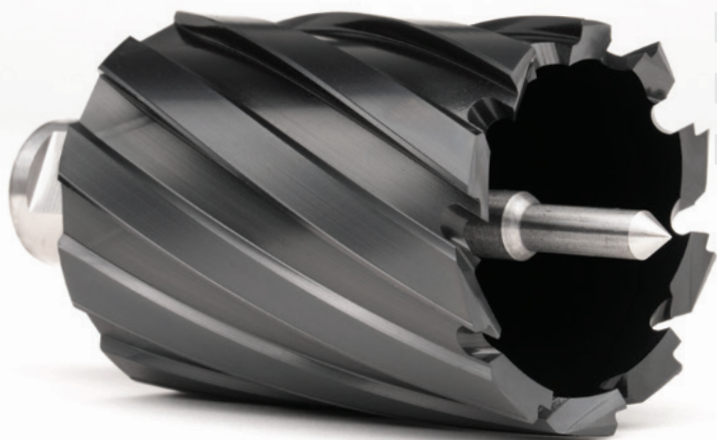
Part No.	Description
10527	1" D.O.C. Pilot (5/8" - 2-3/8" & 16mm - 60mm)
10528	2" D.O.C. Pilot (5/8" - 2-3/8" & 16mm - 60mm)
10531	1" D.O.C. Pilot (7/16 - 9/16" & 12 - 15mm)
10532	2" D.O.C. Pilot (7/16 - 9/16" & 12 - 15mm)
24131	3" D.O.C. Pilot (3/4" - 3-1/16" & 19mm - 52mm)
4-10528	4" Pilot for Extended Reach "12,000-Series"
6-10528	6" Pilot for Extended Reach "12,000-Series"
Pilots for Old Style "12,000-Series" Cutters	
10533	1" D.O.C. Pilot (1/2" - 11/16" & 13mm - 18mm)
10534	2" D.O.C. Pilot (1/2" - 11/16" & 13mm - 18mm)

"12,000-SERIES" **Xtreme COBALT™** CUTTERS

NEW Xtreme Cobalt™ cutters are the ultimate solution for harsh conditions, challenging materials and those wanting to maximize their tool life. Crafted from a top notch M42 base material, machined with Hougen's exclusive tooth geometry and then enhanced with an advanced IronEdge™ coating for the highest performance and longest tool life.



**Made in
U.S.A.**



Cutter Dia. (Inches)	Decimal Equiv.	2" D.O.C.
Use with Pilot		10532
1/2	.5000	12816
9/16	.5625	12818
Use with Pilot		10528
5/8	.6250	12820
11/16	.6875	12822
3/4	.7500	12824
13/16	.8125	12826
7/8	.8750	12828
15/16	.9375	12830
1	1.0000	12832
1-1/16	1.0625	12834
1-1/8	1.1250	12836
1-3/16	1.1875	12838
1-1/4	1.2500	12840
1-5/16	1.3125	12842
1-3/8	1.3750	12844

Cutter Dia. (Inches)	Decimal Equiv.	2" D.O.C.
Use with Pilot		10528
1-7/16	1.4375	12846
1-1/2	1.5000	12848
1-9/16	1.5625	12850
1-5/8	1.6250	12852
1-11/16	1.6875	12854
1-3/4	1.7500	12856
1-13/16	1.8125	12858
1-7/8	1.8750	12860
1-15/16	1.9375	12862
2	2.0000	12864
2-1/16	2.0625	12866
2-1/8	2.1250	12868
2-3/16	2.1875	12870
2-1/4	2.2500	12872
2-5/16	2.3125	12874
2-3/8	2.3750	12876

All sizes include a pilot

Premium M42 & IronEdge™ Coated

WARNING: This product contains Cobalt, a chemical known to the State of California to cause cancer. For more information, go to www.P65Warnings.ca.gov

"12,000-SERIES" CUTTER KITS



"12,000-Series" cutter kits are conveniently packaged with the most popular diameters in protective cases for easy transporting and safe storage. Choose from fractional or metric diameters, in 1", 2" or 3" depth of cut.



**Made in
U.S.A.**

Part No.	Mat'l / Coating	D.O.C.	Diameters Included
12001	M2 HSS	1"	9/16, 11/16, 13/16, 15/16, 1-1/16" & (2) Pilots
12002	M2 HSS	2"	9/16, 11/16, 13/16, 15/16, 1-1/16" & (2) Pilots
12003	M2 HSS	25mm	14mm, 16mm, 18mm, 20mm, 22mm & (2) Pilots
12004	M2 HSS	50mm	14mm, 16mm, 18mm, 20mm, 22mm & (2) Pilots
12005	M2 HSS	1"	5/8, 3/4, 7/8, 1, 1-1/8" & (2) Pilots
12006	M2 HSS	2"	5/8, 3/4, 7/8, 1, 1-1/8" & (2) Pilots
12007	M2 HSS	2"	7/16, 17/32, 21/32, 25/32, 7/8" & (2) Pilots
12802	M42 / Xtreme	2"	9/16, 11/16, 13/16, 15/16, 1-1/16" & (2) Pilots
12980-1	M2 HSS	1"	1/2, 5/8, 3/4" & (3) Pilots
12981-1	M2 HSS	1"	9/16, 11/16, 13/16" & (3) Pilots
12982-1	M2 HSS	1"	5/8, 3/4, 7/8" & (3) Pilots
12983-1	M2 HSS	1"	11/16, 13/16, 15/16" & (3) Pilots
12985-1	M2 HSS	1"	13/16, 15/16, 1-1/16" & (3) Pilots
12980-2	M2 HSS	2"	1/2, 5/8, 3/4" & (3) Pilots
12981-2	M2 HSS	2"	9/16, 11/16, 13/16" & (3) Pilots
12982-2	M2 HSS	2"	5/8, 3/4, 7/8" & (3) Pilots
12983-2	M2 HSS	2"	11/16, 13/16, 15/16" & (3) Pilots
12985-2	M2 HSS	2"	13/16, 15/16, 1-1/16" & (3) Pilots
12985-3	M2 HSS	3"	13/16, 15/16, 1-1/16" & (3) Pilots

ROTALOC PLUS™ ANNULAR CUTTERS



Made in
U.S.A.

Patented

RotaLoc Plus™ Annular Cutters are designed for the Hougen® HMD130 Low Profile Drill. They're made of M42 high speed steel, feature Stack Cut geometry for penetrating multiple plates in a single pass and are designed for a full 1" D.O.C. They feature a 5/8" bayonet-style shank mounting for fast change out, with no tools required to install. For optimum cutter tool life and cutter efficiency use Hougen® Slick-Stik™ Lubricant or RotaGel™ Cutting Lube.

ROTALOC PLUS™ CUTTER KITS (HMD130 ONLY)

Kit No.	Description
17802	Kit contains (3) cutters, 1" D.O.C. - 1/2, 5/8, 3/4" dia, plus (3) Pilots in a sturdy plastic case.
17803	Kit contains (3) cutters, 1" D.O.C. - 9/16, 11/16, 13/16" dia, plus (3) Pilots in a sturdy plastic case.
17805	Kit contains (3) cutters, 1" D.O.C. - 14mm, 16mm, 18mm dia, plus (3) Pilots in a sturdy plastic case.
17808	Kit contains (14) cutters: 7/16, 1/2, 9/16, 5/8, 11/16, 3/4, 13/16, 7/8, 15/16, 1, 1-1/16, 1-1/8, 1-1/4 & 1-3/8" RotaLoc Plus cutters and two pilots (17810)

With the RotaLoc™ Spindle Adapter you use RotaLoc™ or RotaLoc Plus™ Annular Cutters in virtually all Hougen® Portable Magnetic Drills or any other drill that also accepts "12,000-Series" Cutters.

ROTALOC™ SPINDLE ADAPTER

Part No.	Description
17680	RotaLoc Adapter Assembly
04778	Replacement Adapter
04780	Replacement Pilot

Cutter Dia. (Inches)	Decimal Equiv.	Part No.
Use Pilot 17810		
7/16	.4375	17814*
1/2	.5000	17816
17/32	.5313	17817
9/16	.5625	17818
5/8	.6250	17820
11/16	.6875	17822
3/4	.7500	17824
13/16	.8125	17826
7/8	.8750	17828
15/16	.9375	17830
1	1.0000	17832
1-1/16	1.0625	17834
1-1/8	1.1250	17836
1-3/16	1.1875	17838
1-1/4	1.2500	17840
1-5/16	1.3125	17842
1-3/8	1.3750	17844

* Made from M2 HSS

RotaLoc Plus cutters can also be used with the HMD150 mag drill.



Cutter Dia. (Metric)	Decimal Equiv.	Part No.
Use Pilot 17810		
12mm	.4724	17900
13mm	.5118	17902
14mm	.5512	17904
15mm	.5906	17906
16mm	.6299	17908
17mm	.6693	17910
17.5mm	.6890	17911
18mm	.7087	17912
19mm	.7480	17914
20mm	.7874	17916
21mm	.8268	17918
22mm	.8661	17920
23mm	.9055	17922
24mm	.9449	17924
24.5mm	.9645	17925
25mm	.9843	17926
26mm	1.0236	17928
26.5mm	1.0433	17929
27mm	1.0630	17930
28mm	1.1024	17932
29mm	1.1417	17934
30mm	1.1811	17936
31mm	1.2205	17938
32mm	1.2598	17940
33mm	1.2992	17942
34mm	1.3386	17944
35mm	1.3779	17946

ROTALOC PLUS™ PILOTS

Part No.	Description
17810	For use with HMD130 / HMD150

ROTALOC™ ANNULAR CUTTERS - 3/4" D.O.C. - STACK CUT

Cutter Dia. (Inches)	Carbide Tip	M42 HSS
See Chart for Pilot		
1/2	.5000	17116
9/16	.5625	17118
5/8	.6250	17120
11/16	.6875	17122
3/4	.7500	17124
13/16	.8125	17126
7/8	.8750	17128
15/16	.9375	17130
1	1.0000	17132
1-1/16	1.0625	17134

Cutter Dia. (Metric)	Carbide Tip	M42 HSS
See Chart for Pilot		
12mm	.4724	17300
13mm	.5118	17302
14mm	.5512	17304
15mm	.5906	17306
16mm	.6299	17308
17mm	.6693	17310
18mm	.7087	17312
20mm	.7874	17316
22mm	.8661	17320
24mm	.9449	17324
26mm	1.0236	17328



ROTALOC™ KITS

Part No.	Description
17001 (HMD115)	Contains (10) M42 cutters, plus (2) Pilots
17700 (HMD115)	Contains (3) M42 cutters, 1/2, 5/8, 3/4" dia, plus (3) Pilots
17701 (HMD115)	Contains (3) M42 cutters, 9/16, 11/16, 13/16" dia, plus (3) Pilots

WARNING: This product contains Cobalt, a chemical known to the State of California to cause cancer. For more information, go to www.P65Warnings.ca.gov

COPPERHEAD™ CARBIDE TIP CUTTERS



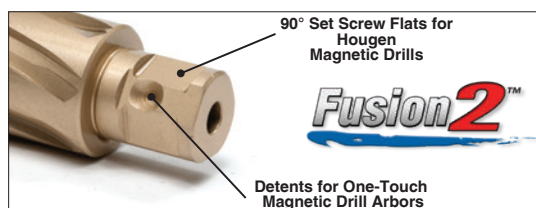
Copperhead™ Carbide Tip Cutters offer extended tool life on abrasive, tough-to-cut materials and in high-speed mag drills. The unique Hougen design includes a special tooth geometry that helps maintain a better chip flow than other brands. Copperhead Cutters are available in fractional & metric sizes with the Fusion2™ shank. The shank allows for cutters to be used in Hougen drills and competitive models utilizing the one-touch arbor system. Using the set screw arbor system can result in up to **2x** the tool life as tool-less systems.

Cutter Dia. (Metric)	Part No. Fusion2™ Shank
2" (50mm) D.O.C.	
Use with Pilot 10530	
12mm	18412
13mm	18413
14mm	18414
15mm	18415
16mm	18416
17mm	18417
18mm	18418
19mm	18419
20mm	18420
21mm	18421
22mm	18422
23mm	18423
24mm	18424
25mm	18425
26mm	18426
27mm	18427
28mm	18428
29mm	18429
30mm	18430
31mm	18431
32mm	18432
33mm	18433
34mm	18434
35mm	18435
36mm	18436
37mm	18437

Cutter Dia. (Metric)	Part No. Fusion2™ Shank
2" (50mm) D.O.C.	
Use with Pilot 10530	
38mm	18438
39mm	18439
40mm	18440
41mm	18441
42mm	18442
43mm	18443
44mm	18444
45mm	18445
46mm	18446
47mm	18447
48mm	18448
49mm	18449
50mm	18450
51mm	18451
52mm	18452
53mm	18453
54mm	18454
55mm	18455
56mm	18456
57mm	18457
58mm	18458
59mm	18459
60mm	18460

WARNING: This product contains Cobalt, a chemical known to the State of California to cause cancer. For more information, go to www.P65Warnings.ca.gov

Cutter Dia. (Inches)	Part No. - Fusion2™ Shank				
	1" D.O.C. (25mm)	2" D.O.C. (50mm)	3" D.O.C. (76mm)	4" D.O.C. (102mm)	6" D.O.C. (152mm)
Use with Pilot	10529	10530	10535	10540	10547
1/2	----	18216	----	----	----
9/16	18118	18218	3-18218	----	----
5/8	18120	18220	3-18220	4-18220	----
11/16	18122	18222	3-18222	4-18222	6-18222
3/4	18124	18224	3-18224	4-18224	6-18224
13/16	18126	18226	3-18226	4-18226	6-18226
7/8	----	18228	3-18228	4-18228	6-18228
15/16	18130	18230	3-18230	4-18230	6-18230
1	----	18232	3-18232	4-18232	6-18232
1-1/16	18134	18234	3-18234	4-18234	6-18234
1-1/8	----	18236	3-18236	4-18236	6-18236
1-3/16	----	18238	3-18238	4-18238	6-18238
1-1/4	----	18240	3-18240	4-18240	6-18240
1-5/16	----	18242	3-18242	4-18242	6-18242
1-3/8	----	18244	3-18244	4-18244	6-18244
1-1/2	----	18248	3-18248	4-18248	6-18248
1-9/16	----	18250	----	----	----
1-5/8	----	18252	3-18252	4-18252	6-18252
1-11/16	----	18254	----	----	----
1-3/4	----	18256	3-18256	4-18256	6-18256
1-7/8	----	18260	3-18260	4-18260	6-18260
2	----	18264	3-18264	4-18264	6-18264
2-1/16	----	18266	3-18266	----	----
2-1/8	----	18268	3-18268	----	----
2-3/16	----	18270	----	----	----
2-1/4	----	18272	3-18272	----	----
2-5/16	----	18274	----	----	----
2-3/8	----	18276	3-18276	----	----
2-1/2	----	18280	3-18280	----	----
2-3/4	----	18288	3-18288	----	----
3	----	18296	3-18296	----	----



COPPERHEAD™ CUTTER KITS

Part No.	D.O.C.	Diameters Included
18002	2"	9/16, 11/16, 13/16, 15/16, 1-1/16" & (2) Pilots
18004	50mm	14, 16, 18, 20, & 22mm & (2) Pilots
18981-1	1"	9/16, 11/16, 13/16" & (3) Pilots
18983-1	1"	11/16, 13/16, 15/16" & (3) Pilots
18985-1	1"	13/16, 15/16, 1-1/16" & (3) Pilots
18981-2	2"	9/16, 11/16, 13/16" & (3) Pilots
18982-2	2"	5/8, 3/4, 7/8" & (3) Pilots
18983-2	2"	11/16, 13/16, 15/16" & (3) Pilots
18985-2	2"	13/16, 15/16, 1-1/16" & (3) Pilots
18983-3	3"	11/16, 13/16, 15/16" & (3) Pilots
18985-3	3"	13/16, 15/16, 1-1/16" & (3) Pilots

HOLE ENLARGING PILOTS - "12,000-SERIES"

Take an existing hole and make it larger using Hougen's Hole Enlarging Pilots. Available in three select sizes. Replaceable "Nose" screws on to the end of the pilot.



* Use with 2" Cutters.
Sold separately.

Part No.	Description
07370	Replacement Pilot
07373	11/16" Pilot & Nose
07372	13/16" Pilot & Nose
07371	15/16" Pilot & Nose
07368	11/16" Replacement Nose
07367	13/16" Replacement Nose
07366	15/16" Replacement Nose
09111	Kit contains: 11/16, 13/16 & 15/16" diameter noses and (1) pilot in a plastic case

LUBRICANT & CUTTING FLUID



RotaFoam™ Cutting Fluid works on all types of metals to extend tool life and improve hole finish. Blue foamy lubricant visually assures thorough coverage.
(No Air Shipments. Available only in the US & Canada)

Part No.	Description
11747-12	(12) 17 oz. (482g) RotaFoam™ Lubricant



Slick-Stik™ is softer than other stick lubricants for easy application, superior adhesion to the tool, assuring thorough coverage. (Non-Toxic)

Part No.	Description
11746-12	(12) 1.68 oz. (48g) Slick-Stik™ Lubricant
11746-24	(24) 1.68 oz. (48g) Slick-Stik™ Lubricant in display box
11745-6	(6) 16 oz. (454g) Slick-Stik™ Lubricant



**Made in
U.S.A.**



Slick Stik™, RotaGel™ and RotaMagic™ are environmentally friendly and do not contain harmful ingredients as do many lubricants.



NEW FORMULA - NOW IN HOUGEN BLUE

Use with ferrous or non-ferrous materials. RotaMagic™ Concentrated Cutting Fluid is water soluble and yields a 10:1 ratio when mixed with water. (Biodegradable & Non-Toxic)

Part No.	Description
11741-12	(12) 1 Pint (.47L) Bottles - makes 1 pint each, 12 pints total
11742-4	(4) 1 Gallon (3.8L) Bottles - makes 11 gallons (41.6L) each, 44 gallons (167.6L) total
11743	(1) 5 Gallon Pail (18.9L) - makes 55 gallons (208L) total
11744	(1) 55 Gallon Drum (208L) - Makes a lot of coolant!

WARNING: This product contains Diethanolamine, a chemical known to the State of California to cause cancer. For more information, go to www.P65Warnings.ca.gov



RotaGel™ Cutting Lube is a very environmentally safe industrial lubricant that works on all types of metals to extend tool life and improve hole finish. Blue gel visually assures thorough coverage. (Biodegradable & Non-Toxic)

Part No.	Description
11748-10	(10) 8 oz. (227g) RotaGel™ Lubricant

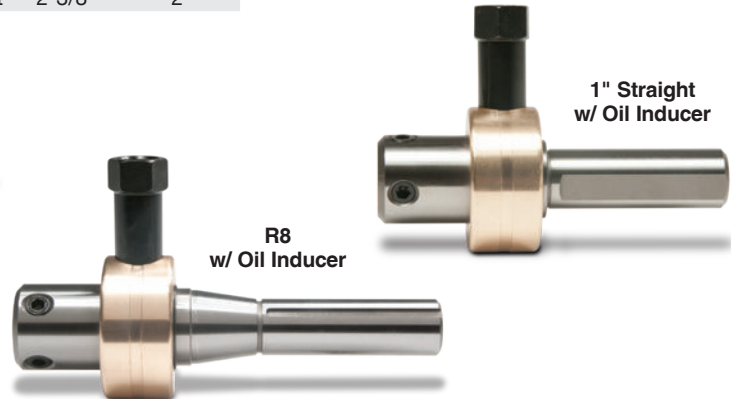
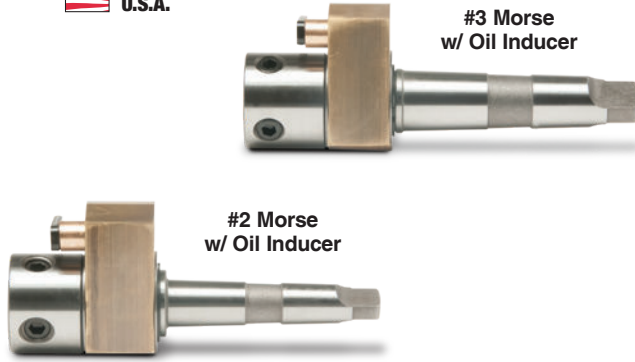
ARBORS FOR MACHINE TOOLS

Convert CNC machines such as drill presses or mills into fast hole makers. 3 styles of holders: R-8, Straight, and Morse taper accommodate "12,000-Series" Cutters.



Part No.	Shank Size	Hole Capacity	
		Diameter	Depth
Arbor Assembly with Oil Inducer			
10804	#2 Morse	1"	1-1/2"
10806	#3 Morse	2-3/8"	1-1/2"
49849	R8	2-3/8"	2"
49850	1" Straight	2-3/8"	2"

Arbor Assembly without Oil Inducer			
10814	#2 Morse	1"	1-1/2"
10816	#3 Morse	2-3/8"	1-1/2"
49853	R8	2-3/8"	2"
49851	1" Straight	2-3/8"	2"



ARBORS FOR STATIONARY TOOLS



You can also use "12,000-Series" Cutters with stationary tools and drill presses. Triple flatted shank fits 1/2" drill chucks. Uses 1" (25mm) depth of cut "12,000-Series" Cutters for materials up to **1/2" (12.7mm) thick max.** (Not for use with Copperhead Cutters)

Part No.	Description
11016	Arbor Assembly (with set screws and spring) for 3/4" Shank Cutters up to 1/2" D.O.C. (Pilot not included)
Pilots	
11022	Starter Pilot for 7/16" - 9/16" & 12mm-15mm Dia. Cutters
11031	Starter Pilot for 5/8" - 2-1/16" & 16mm-52mm Dia. Cutters
Pilot for Old Style Cutters	
11032	Starter Pilot for 1/2"-11/16" & 13mm-18mm Dia. Cutters



SHARPENING MACHINE



Shipping Weight: 64 lbs (29 kgs)

The Model 10950 Sharpening Machine has been specifically designed for resharpening "12,000-Series", RotaLoc™, and RotaLoc Plus™ Annular Cutters. It provides ease of operation while restoring factory specified tooth geometry.

- Improved holders and fasteners allow easier changes and tool sharpening.
- Holder bushing is more accurate for precise tooth height.

Part No.	Description
10950	Sharpening Machine (120V)
10950A	Sharpening Machine - No Motor (Requires Bosch Motor - 230V Model GGS 27L Purchase from local source)
03983	Borazon® Cup Wheel
04049	Tool holder - "12,000-Series"
04072	Borazon® Gullet Wheel
10747	Dressing Stick
Optional Accessories	
04147	Tool Holder - RotaLoc™ Cutters
04118	Work Stand

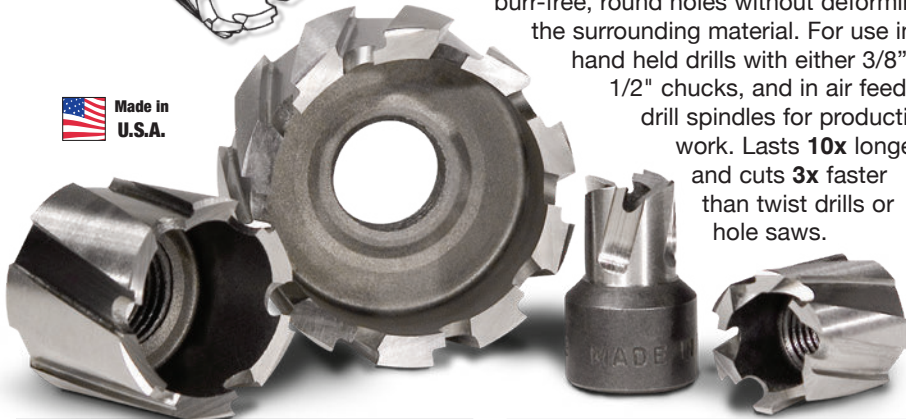


CUSTOM CUTTERS AND MACHINES

Hougen can solve your holmaking problems with creative solutions to help you get the job done, complete it faster and at a lower cost. We have helped thousands of customers with unique holmaking solutions, from grind downs, to special cutting tools, to one of a kind magnetic drills. Give us a call or send us an email with your holmaking challenge.



ROTACUT™ SHEET METAL HOLE CUTTERS



Holemaking – faster and easier than with conventional twist drills and hole saws – in sheet metal, plate materials, and plastics up to 1/2" thick. RotaCut™ Cutters are precision-ground and produce clean, burr-free, round holes without deforming the surrounding material. For use in hand held drills with either 3/8" or 1/2" chucks, and in air feed drill spindles for production work. Lasts **10x** longer and cuts **3x** faster than twist drills or hole saws.

Cutter Dia. (Inches) **Decimal Equiv.** **Part No.**
3/8"-24 Thread Mount & 1/4" D.O.C.
Use with Arbor 11088 or 11006

1/4	.2500	11100
9/32	.2812	11102
5/16	.3125	11104
11/32	.3438	11106
Use with Arbor 11088, 11089, or 11006		
3/8	.3750	11108
13/32	.4062	11110
27/64	.4219	11111
7/16	.4375	11112
29/64	.4531	11113
15/32	.4688	11114
1/2	.5000	11116
17/32	.5312	11118
9/16	.5625	11120
5/8	.6250	11124
11/16	.6875	11128
23/32	.7188	11130
3/4	.7500	11132

1/2"-20 Thread Mount & 1/2" D.O.C.
Use with Arbor 11005 or 11012

13/16	.8125	11136
7/8	.8750	11140
15/16	.9375	11144
1	1.0000	11148
1-1/16	1.0625	11152
1-1/8	1.1250	11156
1-3/16	1.1875	11160
1-1/4	1.2500	11164
1-5/16	1.3125	11165
1-3/8	1.3750	11166
1-7/16	1.4375	11167
1-1/2	1.5000	11168

Cutter Dia. (Metric) **Decimal Equiv.** **Part No.**
3/8"-24 Thread Mount & 6.4mm D.O.C.
Use with Arbor 11088 or 11006

6mm	.2362	11206
7mm	.2756	11207
8mm	.3150	11208
8.5mm	.3346	11285
9mm	.3543	11209
Use with Arbor 11088, 11089, or 11006		
10mm	.3937	11210
11mm	.4331	11211
12mm	.4724	11212
13mm	.5118	11213
14mm	.5512	11214
15mm	.5906	11215
16mm	.6299	11216
17mm	.6693	11217
18mm	.7087	11218
19mm	.7480	11219
20mm	.7874	11220

1/2"-20 Thread Mount & 12.7mm D.O.C.
Use with Arbor 11005 or 11012

21mm	.8268	11221
22mm	.8661	11222
23mm	.9055	11223
24mm	.9449	11224
25mm	.9843	11225

11087 Kit



ROTACUT™ KITS

11075 Kit



Hougen® offers kits packaged in sturdy cases for keeping handy the most often used sizes of RotaCut™ Annular Cutters.

Part No. **Description**

11075 / 11075C (Fractional) Kit contains an 11088 Arbor Assembly, Center Punch, extra Pilot, and (7) Cutters: 5/16, 3/8, 7/16, 1/2, 9/16, 5/8, & 3/4" (DOC: 1/4" / 6.4mm)

11075-12 (Fractional) Contains (12) 11075 Kits in a pop up display box

11077 (Metric) Kit contains an 11088 Arbor Assembly, Center Punch, extra Pilot, and (7) Metric Cutters: 8, 10, 12, 14, 16, 18, & 20mm (DOC: 1/4" / 6.4mm)

11078 (Fractional) Kit contains an 11005 Arbor Assembly, Center Punch, extra Pilot, and (6) Cutters: 7/8, 1, 1-1/8, 1-1/4, 1-3/8, & 1-1/2" (DOC: 1/2" / 12.7mm)

11078-12 (Fractional) Contains (12) 11078 Kits

11085 (Fractional) Fractional Master Kit
16 Sizes of cutters from 1/4" to 3/4", extra Pilots, Arbor & Center Punch (DOC: 1/4" / 6.4mm)

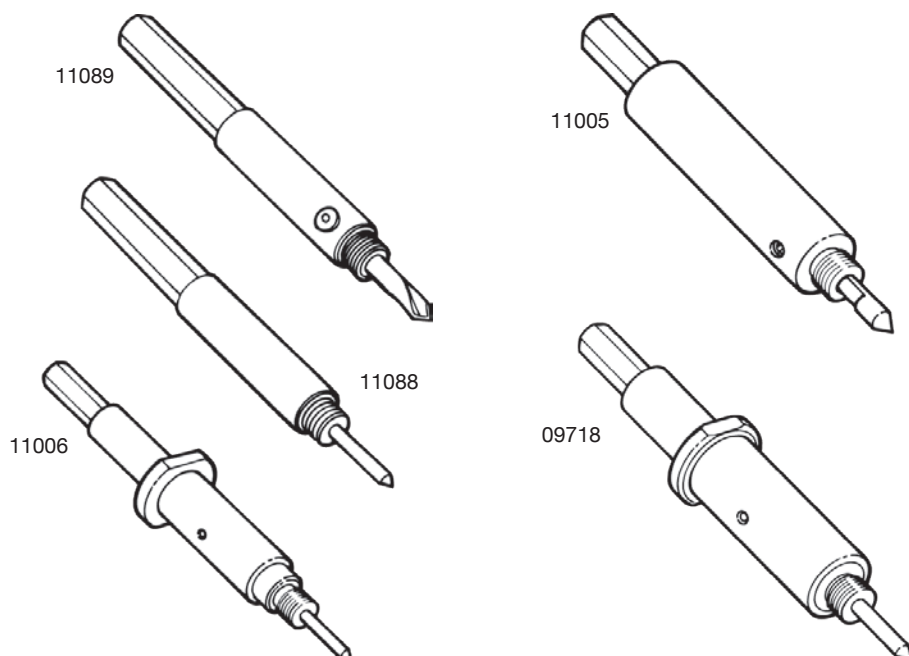
11085-12 (Fractional) Contains (12) 11085 Kits

11086 (Metric) Metric Master Kit
16 Sizes of cutters from 6mm to 20mm, extra Pilots, Arbor & Center Punch (DOC: 1/4" / 6.4mm)

11087 (Fractional) Fractional Combo Kit
Combines the 11075 and 11078 kits into one awesome package.

Special sizes of RotaCut™ Cutters are available on request. Contact the Hougen Customer Service Department for more information.
800-426-7818

ROTACUT™ SHEET METAL ARBORS



ARBORS FOR 3/8" CHUCKS

Part No.	Description
With 3/8"-24 Mounting Thread	
11088	Arbor with Pilot Pin (11083)
11089	Arbor with Pilot Drill (03913C) (For use with 3/8" thru 3/4" dia.)
11006	Arbor with Pilot Pin (11083) (For use in 5/8" Drill Bushing)

ARBORS FOR 1/2" CHUCKS

Part No.	Description
With 1/2"-20 Mounting Thread	
11005	Arbor with Pilot Pin (11027) (For use with 13/16" thru 1-1/2" dia.)
09718	Arbor with Pilot Pin (17810) (For use with 15/16" Drill Bushing)

For additional arbor replacement parts
visit www.hougen.com

ROTACUT™ SPOTWELD CUTTER

Remove spotwelds in auto body and restoration work quickly with the RotaCut™ Premium Spotweld Cutter. Heavy cutter wall and fast cutting action that can last for hundreds of spotwelds.

Part No.	Description
11200C	Package includes 3/8" RotaCut p/n 11108, Arbor p/n 11088, and instructions.



STEP DRILLS



Hougen® Step Drills allow the convenience of drilling multiple size holes using one drill bit. These tools offer improved tool life because they are made from premium Cobalt M42 HSS and TiN coated. The Hougen split point quickly starts the hole and the double angled flutes increase penetration speed. For use in sheet metal, aluminum, stainless steel and some plastics.



Part No.	Size	Material Thickness
35200*	1/8" to 1/2"	1/8"
35201*	3/16" to 1/2"	3/8"
35202**	3/16" to 7/8"	1/8"

* 1/4" shank
** 3/8" shank

WARNING: This product contains Cobalt, a chemical known to the State of California to cause cancer. For more information, go to www.P65Warnings.ca.gov

**Find your nearest
Hougen dealer at
www.hougen.com**

CARBIDE HOLCUTTER™ FOR MATERIALS UP TO 1" THICK



Carbide Holcutters cut smooth, fast, burr-free holes in all types of materials and are designed for day in & day out use. They feature a shoulder stop to prevent over penetration of the work piece and an ejector spring helps with slug ejection. Tungsten carbide provides long tool life and smooth cutting action. Dramatically outlasts bi-metal hole saws and step drills. For materials up to 1" (25mm) thick. (All cutters include arbor, pilot drill & spring.)

Cutter Dia. (Inches)	Decimal Equiv.	Part No.
Replacement Pilot 14503 & Spring 14505 (1/2" Shank)		
5/8	.6250	14520
11/16	.6875	14522
3/4	.7500	14524
13/16	.8125	14526
7/8	.8750	14528
15/16	.9375	14530
1	1.0000	14532
1-1/16	1.0625	14534
1-1/8	1.1250	14536
1-3/16	1.1875	14538
1-1/4	1.2500	14540
1-5/16	1.3125	14542
1-3/8	1.3750	14544
1-1/2	1.5000	14548
1-5/8	1.6250	14552
1-3/4	1.7500	14556
2	2.0000	14562
2-1/8	2.1250	14566
2-1/4	2.2500	14568

WARNING: This product contains Cobalt, a chemical known to the State of California to cause cancer. For more information, go to www.P65Warnings.ca.gov

Cutter Dia. (Inches)	Decimal Equiv.	Part No.
Replacement Pilot 14504 & Spring 14506 (1/2" Shank)		
2-3/8	2.3750	14572
2-1/2	2.5000	14574
2-5/8	2.6250	14578
2-3/4	2.7500	14580
3	3.0000	14584
3-1/4	3.2500	14586
3-3/8	3.3750	14588
3-1/2	3.5000	14590
3-5/8	3.6250	14592
3-3/4	3.7500	14594
4	4.0000	14595
4-1/4	4.2500	14596
4-3/8	4.3750	14597
4-1/2	4.5000	14598

Part No.	Description
14503	Pilot for cutters up to 2-1/4" (3 Pk)
14504	Pilot for cutters 2-3/8" & up" (3 Pk)
14505	Spring for cutters up to 2-1/4" (3 Pk)
14506	Spring for cutters 2-3/8" & up (3 Pk)

HOLCUTTER™ FOR SHEET METAL AND THIN MATERIALS



HSS Holcutters last **10x** longer and cut **3x** faster than bi-metal hole saws or twist drills.

All cutters use a single arbor, with a patented Quad-Lead thread mounting system. For materials up to 1/8" (3.2mm) thick.

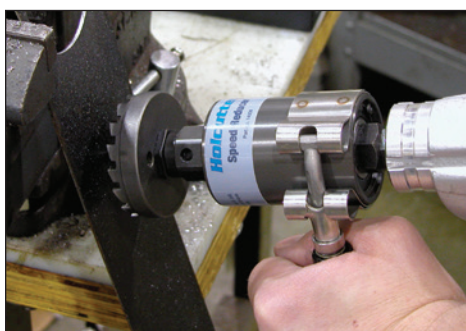
Cutter Dia. (Inches)	Decimal Equiv.	Part No.
Quad-Lead thread mount - Use Arbor 14009		
11/16	.6875	14222
3/4	.7500	14224
13/16	.8125	14226
7/8	.8750	14228
15/16	.9375	14230
1	1.0000	14232
1-1/16	1.0625	14234
1-1/8	1.1250	14236

1-3/16	1.1875	14238
1-1/4	1.2500	14240
1-5/16	1.3125	14242
1-3/8	1.3750	14244
1-7/16	1.4375	14246
1-1/2	1.5000	14248
1-9/16	1.5625	14250
1-5/8	1.6250	14252
1-11/16	1.6875	14254
1-3/4	1.7500	14256
1-7/8	1.8750	14260
2	2.0000	14262
2-1/16	2.0625	14264
2-1/8	2.1250	14266
2-1/4	2.2500	14268
2-3/8	2.3750	14272
2-1/2	2.5000	14274
2-9/16	2.5625	14276
2-5/8	2.6250	14278
2-3/4	2.7500	14280
2-7/8	2.8750	14282
3	3.0000	14284

Part No.	Description
14009	Arbor (3/8" Chuck) for Quad-Lead Threaded Cutters includes pilot & hex washer
04812	Replacement Hex Washer
13007C	Pilot for 14009 Arbor (3 Pk)
Arbors for Discontinued Holcutters	
14001	Arbor for 3/8" Threaded Cutters
14004	Arbor for Double "D" Cutters
14005 / 14005C	Kit Includes: Arbor, Pilots, Hex Washer, instructions, and HSS Holcutters: 7/8, 1-1/8, 1-3/8, 1-3/4, 2 & 2-1/2"
14005-12	Case of (12) 14005 Kits



HOLCUTTER™ SPEED REDUCER



Featuring a 4:1 gear ratio, the Holcutter™ Speed Reducer mounts directly to your 1/2" drill and maintains torque while reducing RPMs for 1" and larger HSS Holcutters. Cutters mount to Speed Reducer with no arbor required.

Part No.	Description
14008	Speed Reducer for 1/2" Drills
*04938	Clamp Handle
*04939	3/16" Pilot
04942	Thread Adapter for 3/8" Drills
04943	Triple-flatted Shank Adapter (for use in 1/2" drill chuck)
04812	Hex Washer (for easy cutter removal)

* Details marked are required to operate Speed Reducer

TORNADO II™ PAINT SHAKER



The lightweight Hougen® Tornado II™ Portable Paint Shaker can be used on benches or the floor without bolting it down. Blending cycles can be set to numerous time intervals via the convenient up-front control panel. Three-axis orbital action assures complete mixing of gallons, pints, quarts or aerosols. Easy to use four-point clamping securely holds containers while minimal moving parts provide quiet operation. Weight: 24lbs (10.9 kg) 26" H x 15-3/8" W x 11-1/2" D (660mm H x 391mm W x 292mm D) Can/Paint weight limit: 11 lbs (5kg)

**Mixes Pints, Quarts, Gallons,
& Aerosols**

Multi-Motion Blending



Orbital



Side-to-Side



Up & Down

TORNADO II PAINT SHAKER

Part No.	Description
51200	Tornado II™ Paint Shaker (115V)

Shipping Weight: 31 lbs (14 kgs)

DISPLAYS



12900



11075-12

11746-24

These attractive displays help to make the point-of-purchase sale for you. They're easy to setup and are a good way to get the product in front of your customer.



11745-6

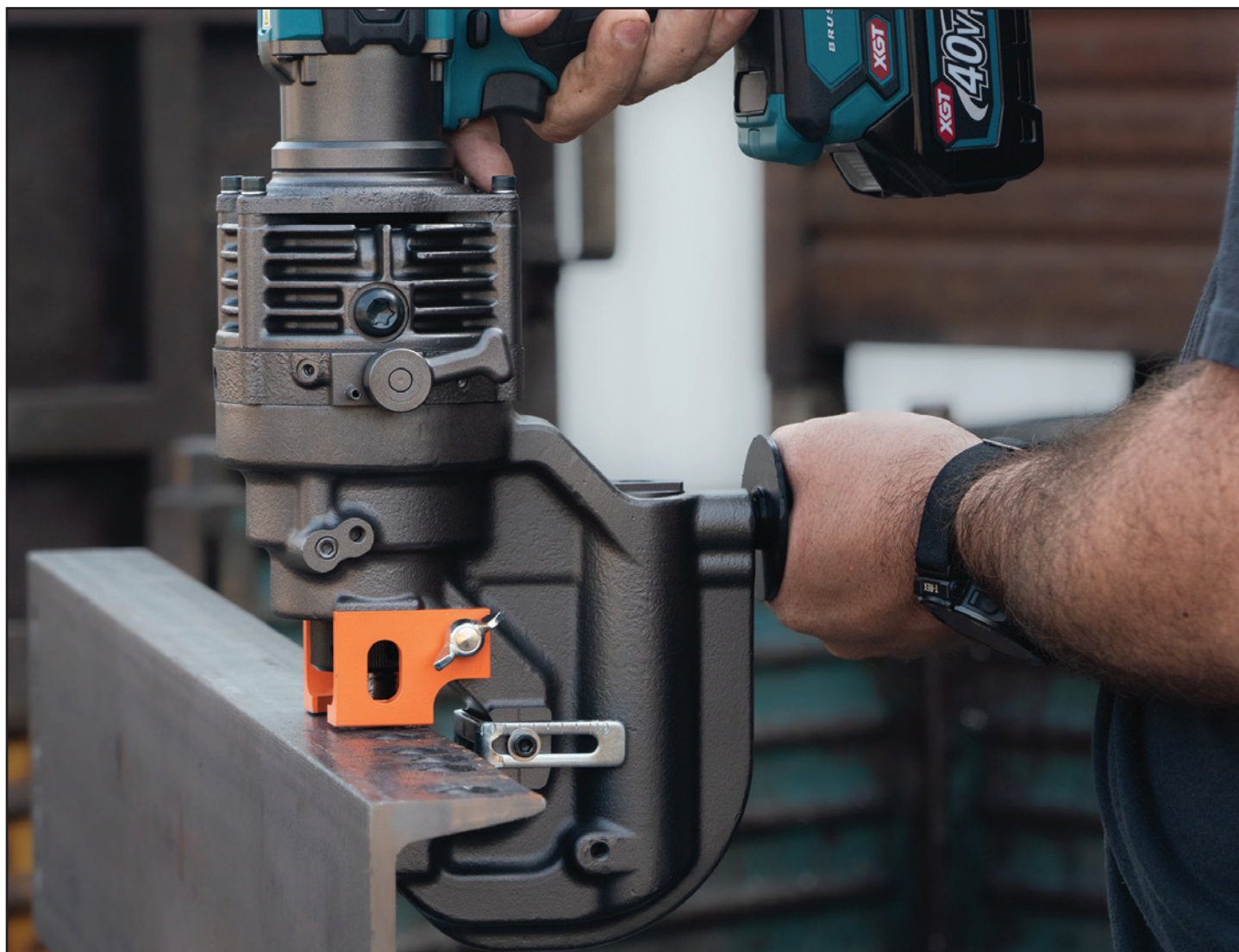
Part No.	Description
08165	Empty end cap display with signage
08197	Fully stocked end cap display
11075-12	Case of (12) RotaCut™ Kits
11745-6	Case of (6) Large Slick-Stik™
11746-24	Case of (24) Mini Slick-Stik™
12900	Display of (28) "12,000-Series" Cutters in 1" and 2" D.O.C. in sizes from 7/16" up to 1-3/8"
12901	Empty "12,000-Series" cutter display
12903	Display of (28) "12,000-Series" Cutters in 25mm and 50mm D.O.C. in sizes from 12mm up to 32mm



08197

PUNCH-PRO™

PUNCH MORE HOLES, MORE OFTEN, IN MORE PLACES, IN LESS TIME



You'll punch more holes, more often in more places all in less time using a Hougen®-Ogura™ Punch-Pro™ Electro-hydraulic Hole Puncher because of its lightweight and single body construction. Unlike hole punchers with separate hydraulics that require hydraulic hoses, the Punch-Pro™ series has a unique single-body construction meaning there is only a power cord to deal with.

Punch-Pro™ models require less punching tonnage than traditional hole punchers because of an exclusive punch and die design. Five Punch-Pro™ models offer punching diameters from 1/4" up to 15/16" thru material thicknesses from 5/64" up to 1/2". Punching beats drilling.

A Punch-Pro™ dramatically reduces your hole-making costs over conventional drilling methods.

Time Savings — Punch-Pro™ users have documented increases in productivity over other holemaking methods. One user stated that he had achieved a 75% time savings over the old method of using twist drills.

Fast Cycle Times — Punch clean and accurate holes in as little as 2 seconds. A single trigger actuates the punch while an exclusive auto-return mechanism returns to the punch starting position.

Ease Of Handling — Single body lightweight construction starting at 17.4 lbs make these units easy to handle and move with only a single power cord and no separate hydraulics. And operator fatigue is reduced since the Punch-Pro™ does all the work.

Accuracy — Eliminates the need to pre-drill or pre-punch. To confirm the punch position, simply jog the punch down to the center mark for the hole location. A convenient release valve allows ease of repositioning if required.



Punches are designed to punch mild or structural steel. For other materials contact Hougen Technical Service 810-635-7111.

Hougen-Ogura™ PUNCH-PRO™

Electro-hydraulic Hole Punchers



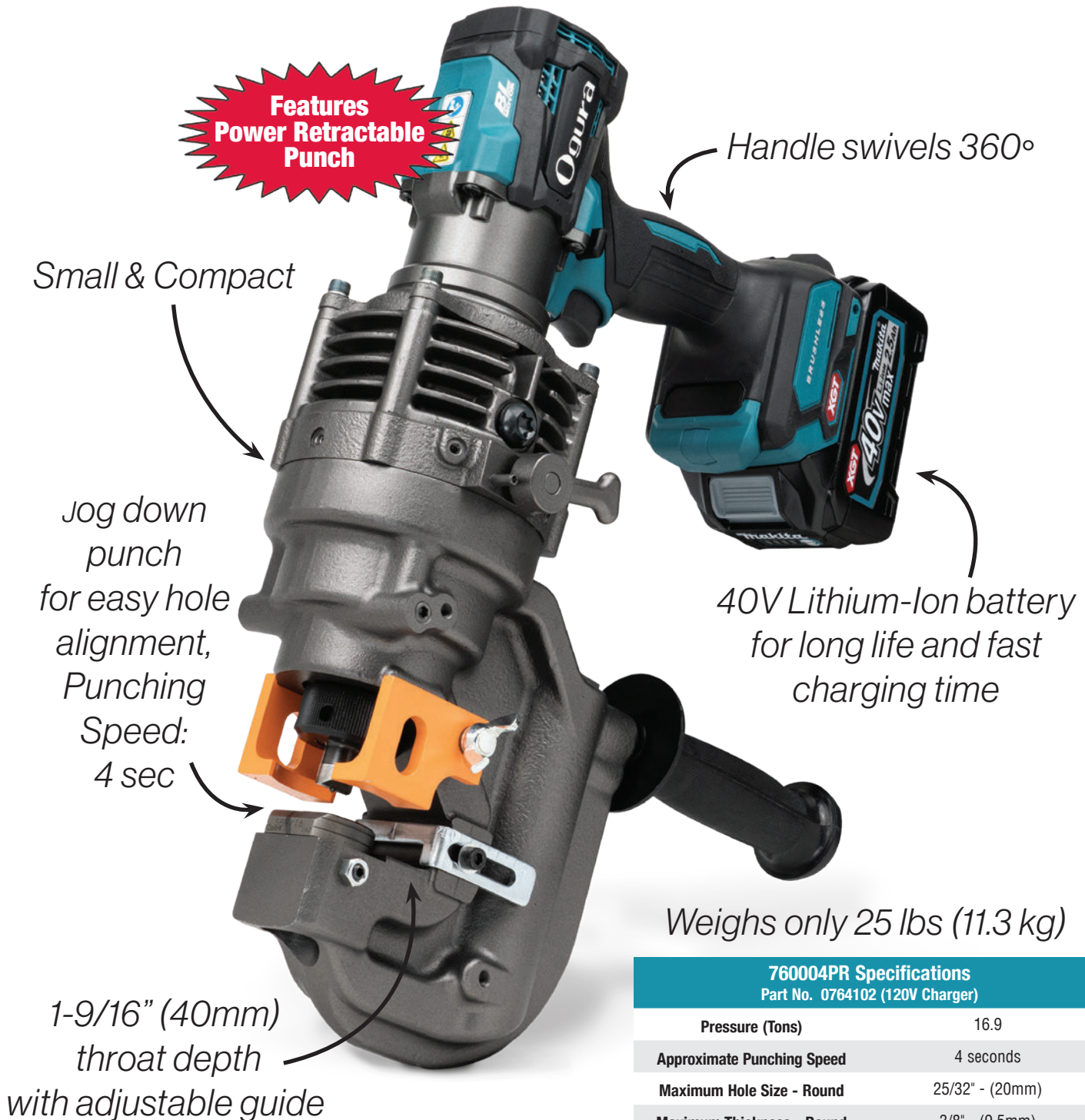
Model:		76000PR	76004PR	75002.5PR	75004PR	75006PR
SPECIFICATIONS	Pressure (Tons)	11	16.9	10.1	16.9	26.9
	Approximate Punching Speed	4.5 seconds	4 seconds	2.3 seconds	2.5 seconds	4 seconds
	Maximum Punch Throat Depth	.98" (25mm)	1-9/16" (40mm)	2-3/8" (60mm)	1-9/16" (40mm)	1-31/32" (50mm)
	Single Phase Motor	18V Cordless	40V Cordless	120V 6.3 Amp	120V 9.5 Amp	120V 13 Amp
	Weight (Less Work Stand)	17.4 lbs. (7.9 kg)	24.9 lbs. (11.3 kg)	24.9 lbs. (11.3 kg)	24.9 lbs. (11.3 kg)	62.9 lbs. (28.5 kg)
	Shipping Weight (Approx.)	34.8 lbs. (15.8 kg)	42 lbs. (19 kg)	41.2 lbs. (18.7 kg)	41.2 lbs. (18.7 kg)	82.6 lbs. (37.5 kg)
ROUND	Maximum Hole Size	19/32" (15mm)	25/32" (20mm)	3/4" (19mm)	25/32" (20mm)	15/16" (23.8mm)
	Maximum Thickness	1/4" (6.35mm)	3/8" (9.5mm)	1/4" (6.4mm)	3/8" (9.5mm)	1/2" (12.7mm)
OBLONG	Maximum Hole Size	7/16" x 5/8" (11mm x 15.9mm)	9/16" x 13/16" (14mm x 21mm)	9/16" x 13/16" (14mm x 21mm)	9/16" x 13/16" (14mm x 21mm)	11/16" x 13/16" (18mm x 21mm)
	Maximum Thickness	1/4" (6.35mm)	3/8" (9.5mm)	1/4" (6.4mm)	3/8" (9.5mm)	1/2" (12.7mm)
STEEL STYLES	Flat Bar	✓	✓	✓	✓	✓
	Channel		✓	✓	✓	✓
	H-Steel		✓	✓	✓	✓
	Angle	✓	✓	✓	✓	✓

Hougen-Ogura punches are self contained units, no need for external hydraulic pumping systems.

76004PR

Hougen®-Ogura™

40V CORDLESS HOLE PUNCHER



Weighs only 25 lbs (11.3 kg)

760004PR Specifications

Part No. 0764102 (120V Charger)

Pressure (Tons)	16.9
Approximate Punching Speed	4 seconds
Maximum Hole Size - Round	25/32" - (20mm)
Maximum Thickness - Round	3/8" - (9.5mm)
Maximum Hole Size - Oblong	9/16" x 13/16" (14mm x 21mm)
Maximum Thickness - Oblong	3/8" - (9.5mm)
Maximum Punch Throat Depth	1-9/16" - (40mm)
Weight	24.9 lbs - (11.3 kg)
Shipping Weight	42 lbs - (19 kg)

Includes: carrying case, 9/16" (14mm) punch (76341) & die (76323) and charger.

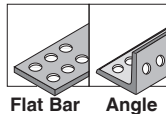
Optional Stand: 76456

Replacement Battery: 09788

76000PR



18V CORDLESS HOLE PUNCHER



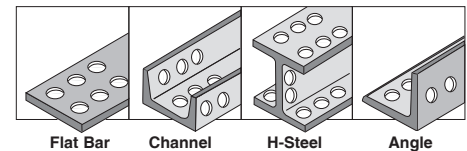
Flat Bar Angle

Our 18V cordless hole puncher is our smallest and most lightweight punch. The unit can quickly put holes through quarter inch material. At just 17.4 lbs (7.9 kg), the 76000PR is easy to move around or carrying for variety of applications. Punch round and oblong holes in materials from up to 1/4" (6.4mm) thick. Easily confirm the hole position with the jog down feature. Punch automatically returns to the starting position after the punching cycle is complete. Or if punch resists returning to the home position, use the power retract. 15/32" (12mm) punch (76567) & die (76587), tool kit, battery, charger and carrying case are included.

76000PR Specifications Part No. 0760102 (120V Charger)

Pressure (Tons)	11
Approximate Punching Speed	4.5 seconds
Maximum Hole Size - Round	19/32" - (15mm)
Maximum Thickness - Round	1/4" - (6.35mm)
Maximum Hole Size - Oblong	7/16" x 5/8" (11mm x 15.9mm)
Maximum Thickness - Oblong	1/4" - (6.35mm)
Maximum Punch Throat Depth	.98" - (25mm)
Weight	17.4 lbs - (7.9 kg)
Shipping Weight	34.8 lbs - (15.8 kg)

75002.5PR



Flat Bar Channel H-Steel Angle

Designed for applications typically done with hand held twist drills. At just 24.9 lbs (11.3 kg), the 75002.5PR is easily handled in all types of punching applications, on site or in the shop. Punch round and oblong holes in materials from up to 1/4" (6.4mm) thick. Its 2-3/8" (60mm) throat depth provides excellent reach and versatility. Easily confirm the hole position with the jog down feature. Punch automatically returns to the starting position after the punching cycle is complete. Or if punch resists returning to the home position, use the power retract. Work stand, foot switch, 7/16" (11mm) punch (76339) & die (76319), tool kit and carrying case are included.

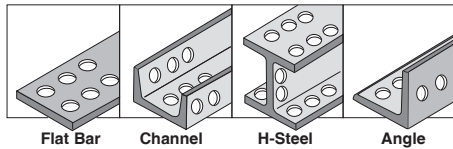
Model 75002.5PR Specifications Part No. 0752102 (120V)

Pressure (Tons)	10.1
Approximate Punching Speed	2.3 seconds
Maximum Hole Size - Round	3/4" - (19mm)
Maximum Thickness - Round	1/4" - (6.4mm)
Maximum Hole Size - Oblong	9/16" x 13/16" (14mm x 21mm)
Maximum Thickness - Oblong	1/4" - (6.4mm)
Maximum Punch Throat Depth	2-3/8" - (60mm)
120V/50-60Hz AC	6.3 Amps / 710 Watts
Weight (less work stand)	24.9 lbs - (11.3 kg)
Shipping Weight (approx)	41.2 lbs - (18.7 kg)

75004PR



**Features
Power Retractable
Punch**



Portable electro-hydraulic punch with 16.9 tons of punching pressure can quickly punch through 3/8" (9.5mm) materials in 2.5 seconds. At just 24.9 lbs (11.3 kg), the 75004PR is easily handled in all types of punching applications, on site or in the shop. Easily confirm the hole position with the jog down feature. Punch automatically returns to the starting position after the punching cycle is complete. Or if punch resists returning to the home position, use the power retract. Work stand, foot switch, 9/16" (14mm) punch (76341) & die (76323), tool kit and carrying case are included.

Model 75004PR Specifications

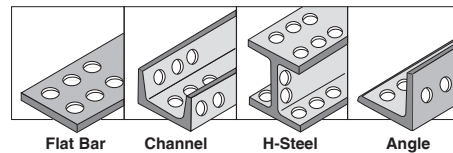
Part No. 0754102 (120V)

Pressure (Tons)	16.9
Approximate Punching Speed	2.5 seconds
Maximum Hole Size - Round	25/32" - (20mm)
Maximum Thickness - Round	3/8" - (9.5mm)
Maximum Hole Size - Oblong	9/16" x 13/16" (14mm x 21mm)
Maximum Thickness - Oblong	3/8" - (9.5mm)
Maximum Punch Throat Depth	1-9/16" - (40mm)
120V/50-60Hz AC	9.5 Amps / 1050 Watts
Weight (less work stand)	24.9 lbs - (11.3 kg)
Shipping Weight (approx)	41.2 lbs - (18.7 kg)

75006PR



**Features
Power Retractable
Punch**



Our heaviest duty model, the 75006PR, develops 26.9 tons pressure and will produce round holes up to a maximum of 15/16" (23.8mm) diameter and punch through a maximum thickness of 1/2" (12.7mm) material in approximately 4 seconds. It has eyebolts on both sides for easy attachment to a lift assist or a counter-balancer for improved ergonomics. Like all Punch-Pro models, its single body design makes it easy to use anywhere. Easily confirm the hole position with the jog down feature. Punch automatically returns to the starting position after the punching cycle is complete. Or if punch resists returning to the home position, use the power retract. Work stand, foot switch, 13/16" (20mm) punch (76366) & die (75605) and tool kit are included.

75006PR Specifications

Part No. 0756102 (120V)

Pressure (Tons)	26.9
Approximate Punching Speed	4 seconds
Maximum Hole Size - Round	15/16" - (23.8mm)
Maximum Thickness - Round	1/2" - (12.7mm)
Maximum Hole Size - Oblong	11/16" x 13/16" (18mm x 21mm)
Maximum Thickness - Oblong	1/2" - (12.7mm)
Maximum Punch Throat Depth	1-31/32" - (50mm)
115V/50-60Hz AC	13 Amps / 1460 Watts
Weight (less work stand)	62.9 lbs - (28.5 kg)
Shipping Weight (approx)	82.6 lbs - (37.5 kg)

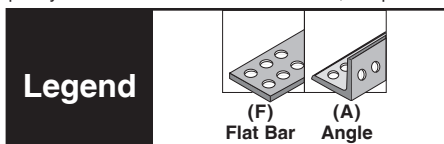
PUNCH-PRO™ — MODEL 76000PR

ROUND PUNCH				MATERIAL			DIE	
Nominal	Actual	Metric	Part No.	Thickness	Style	Size	Part No.	
5/32"	.157	4mm	76558	5/64 (.078) 14 GA.	F, A	Die 5/32 SA	76571	
3/16"	.197	5mm	76559	5/64 (.078) to .118 14 to 12 GA.	F, A	Die 3/16 SA	76572	
7/32"	.217	5.5mm	76560	5/64 (.078) to .118 14 to 12 GA.	F, A	Die 7/32 SA	76573	
15/64"	.236	6mm	76561	5/64 (.078) to 1/8 (.125) 14 to 11 GA.	F, A	Die 15/64 SA	76574	
				5/64 (.125) to 5/32 (.157) 10 to 9 GA.	F, A	Die 15/64 SB	76575	
1/4"	.256	6.5mm	76562	5/64 (.078) to 1/8 (.125) 14 to 11 GA.	F, A	Die 1/4 SA	76576	
				>5/64 (.125) to 1/4 (.250) 10 to 3 GA.	F, A	Die 1/4 SB	76577	
5/16"	.315	8mm	76563	5/64 (.078) to 1/8 (.125) 14 to 11 GA.	F, A	Die 5/16 SA	76578	
				>5/64 (.125) to 1/4 (.250) 10 to 3 GA.	F, A	Die 5/16 SB	76579	
11/32"	.335	8.5mm	76564	5/64 (.078) to 1/8 (.125) 14 to 11 GA.	F, A	Die 11/32 SA	76580	
				>5/64 (.125) to 1/4 (.250) 10 to 3 GA.	F, A	Die 11/32 SB	76581	
3/8"	.394	10mm	76565	5/64 (.078) to 1/8 (.125) 14 to 11 GA.	F, A	Die 3/8 SA	76582	
				>5/64 (.125) to 1/4 (.250) 10 to 3 GA.	F, A	Die 3/8 SB	76583	
7/16"	.433	11mm	76566	5/64 (.078) to 1/8 (.125) 14 to 11 GA.	F, A	Die 7/16 SA	76584	
				>5/64 (.125) to 1/4 (.250) 10 to 3 GA.	F, A	Die 7/16 SB	76585	
15/32"	.472	12mm	76567	5/64 (.078) to 1/8 (.125) 14 to 11 GA.	F, A	Die 15/32 SA	76586	
				>5/64 (.125) to 1/4 (.250) 10 to 3 GA.	F, A	Die 15/32 SB	76587	
1/2"	.512	13mm	76568	5/64 (.078) to 1/8 (.125) 14 to 11 GA.	F, A	Die 1/2 SA	76588	
				>5/64 (.125) to 1/4 (.250) 10 to 3 GA.	F, A	Die 1/2 SB	76589	
9/16"	.551	14mm	76569	5/64 (.078) to 1/8 (.125) 14 to 11 GA.	F, A	Die 9/16 SA	76590	
				>5/64 (.125) to 1/4 (.250) 10 to 3 GA.	F, A	Die 9/16 SB	76591	
19/32"	.591	15mm	76570	5/64 (.078) to 1/8 (.125) 14 to 11 GA.	F, A	Die 19/32 SA	76592	
				>5/64 (.125) to 1/4 (.250) 10 to 3 GA.	F, A	Die 19/32 SB	76593	

OBLONG PUNCH				MATERIAL			DIE	
Nominal	Actual	Metric	Part No.	Thickness	Style	Size	Part No.	
1/4" x 3/8"	.256 x .394	6.5mm x 10mm	76594	>1/8 (.125) to 1/4 (.250) 10 to 3 GA.	F, A	Die 1/4 x 3/8	76236	
1/4" x 1/2"	.256 x .512	6.5mm x 13mm	76595	>1/8 (.125) to 1/4 (.250) 10 to 3 GA.	F, A	Die 1/4 x 1/2	76237	
11/32" x 1/2"	.335 x .512	8.5mm x 13mm	76596	>1/8 (.125) to 1/4 (.250) 10 to 3 GA.	F, A	Die 11/32 x 1/2	76238	
23/64" x 17/32"	.354 x .531	9mm x 13.5mm	76597	>1/8 (.125) to 1/4 (.250) 10 to 3 GA.	F, A	Die 23/64 x 17/32	76240	
3/8" x 19/32"	.394 x .591	10mm x 15mm	76598	>1/8 (.125) to 1/4 (.250) 10 to 3 GA.	F, A	Die 3/8 x 19/32	76241	
7/16" x 5/8"	.433 x .625	11mm x 15.9mm	76599	>1/8 (.125) to 1/4 (.250) 10 to 3 GA.	F, A	Die 7/16 x 5/8	76242	



Punching capacity data is based on mild steel of 65,000 psi tensile strength.



Punches are designed to punch mild or structural steel. For other materials contact Hougén Technical Service.

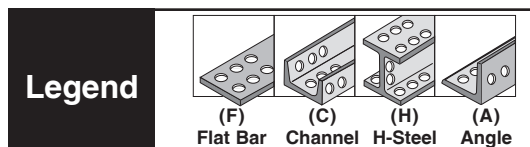
PUNCH-PRO™ — MODEL 75002.5PR

ROUND PUNCH			MATERIAL		DIE	
Nominal	Size		Part No.	Thickness	Style	Part No.
	Actual	Metric				
15/64"	.234	6mm	76334	5/64 (.078) to 1/8 (.125) 14 to 11 GA.	F, A, H	Die 15/64 SA 76308
				5/64 (.078) to 1/4 (.250) 14 to 3 GA.	F, A, H	Die 15/64 SB 76309
1/4"	.256	6.5mm	76335	5/64 (.078) to 1/8 (.125) 14 to 11 GA.	F, A, H	Die 1/4 SA 76310
				5/64 (.078) to 1/4 (.250) 14 to 3 GA.	F, A, H	Die 1/4 SB 76311
5/16"	.315	8mm	76336	5/64 (.078) to 1/8 (.125) 14 to 11 GA.	F, A, H	Die 5/16 SA 76312
				5/64 (.078) to 1/4 (.250) 14 to 3 GA.	F, A, H	Die 5/16 SB 76313
11/32"	.335	8.5mm	76337	5/64 (.078) to 1/8 (.125) 14 to 11 GA.	F, A, H	Die 11/32 SA 76314
				5/64 (.078) to 1/4 (.250) 14 to 3 GA.	F, A, H	Die 11/32 SB 76315
3/8"	.394	10mm	76338	5/64 (.078) to 1/8 (.125) 14 to 11 GA.	F, A, H	Die 3/8 SA 76316
				5/64 (.078) to 1/4 (.250) 14 to 3 GA.	F, A, H	Die 3/8 SB 76317
				19/64" (.297) max.	C	Die 3/8 C 75450
7/16"	.433	11mm	76339	5/64 (.078) to 1/8 (.125) 14 to 11 GA.	F, A, H	Die 7/16 SA 76318
				5/64 (.078) to 1/4 (.250) 14 to 3 GA.	F, A, H	Die 7/16 SB 76319
				19/64" (.297) max.	C	Die 7/16 C 75451
15/32"	.472	12mm	75910	5/64 (.078) to 1/8 (.125) 14 to 11 GA.	F, A, H	Die 15/32 SA 75912
				5/64 (.078) to 1/4 (.250) 14 to 3 GA.	F, A, H	Die 15/32 SB 75913
1/2"	.512	13mm	76340	5/64 (.078) to 1/8 (.125) 14 to 11 GA.	F, A, H	Die 1/2 SA 76320
				5/64 (.078) to 1/4 (.250) 14 to 3 GA.	F, A, H	Die 1/2 SB 76321
				19/64" (.297) max.	C	Die 1/2 C 75452
9/16"	.551	14mm	76341	5/64 (.078) to 1/8 (.125) 14 to 11 GA.	F, A, H	Die 9/16 SA 76322
				5/64 (.078) to 1/4 (.250) 14 to 3 GA.	F, A, H	Die 9/16 SB 76323
				19/64" (.297) max.	C	Die 9/16 C 75453
19/32"	.591	15mm	76342	5/64 (.078) to 1/8 (.125) 14 to 11 GA.	F, A, H	Die 19/32 SA 76324
				5/64 (.078) to 1/4 (.250) 14 to 3 GA.	F, A, H	Die 19/32 SB 76325
5/8"	.625	15.9mm	76343	5/64 (.078) to 1/8 (.125) 14 to 11 GA.	F, A, H	Die 5/8 SA 76326
				5/64 (.078) to 1/4 (.250) 14 to 3 GA.	F, A, H	Die 5/8 SB 76327
11/16"	.688	17.5mm	76344	5/64 (.078) to 1/8 (.125) 14 to 11 GA.	F, A, H	Die 11/16 SA 76328
				5/64 (.078) to 1/4 (.250) 14 to 3 GA.	F, A, H	Die 11/16 SB 76329
23/32"	.709	18mm	75911	5/64 (.078) to 1/8 (.125) 14 to 11 GA.	F, A, H	Die 23/32 SA 75915
				5/64 (.078) to 1/4 (.250) 14 to 3 GA.	F, A, H	Die 23/32 SB 75916
3/4"	.750	19mm	76345	5/64 (.078) to 1/8 (.125) 14 to 11 GA.	F, A, H	Die 3/4 SA 76330
				5/64 (.078) to 1/4 (.250) 14 to 3 GA.	F, A, H	Die 3/4 SB 76331

OBLONG PUNCH			MATERIAL		DIE	
Nominal	Size		Part No.	Thickness	Style	Part No.
	Actual	Metric				
1/4"	.256	6.5mm	76347	5/64 (.078) to 1/8 (.125) 14 to 11 GA.	F, A, H	Die 1/4 x 3/8 A 76300
x	x	x		5/64 (.078) to 1/4 (.250) 14 to 3 GA.	F, A, H	Die 1/4 x 3/8 B 76301
3/8"	.394	10mm				
1/4"	.256	6.5mm	76348	5/64 (.078) to 1/8 (.125) 14 to 11 GA.	F, A, H	Die 1/4 x 1/2 A 75643
x	x	x		5/64 (.078) to 1/4 (.250) 14 to 3 GA.	F, A, H	Die 1/4 x 1/2 B 75644
1/2"	.512	13mm				
11/32"	.335	8.5mm	76349	5/64 (.078) to 1/8 (.125) 14 to 11 GA.	F, A, H	Die 11/32 x 1/2 A 75645
x	x	x		5/64 (.078) to 1/4 (.250) 14 to 3 GA.	F, A, H	Die 11/32 x 1/2 B 75646
1/2"	.512	13mm				
11/32"	.335	8.5mm	76350	5/64 (.078) to 1/8 (.125) 14 to 11 GA.	F, A, H	Die 11/32 x 43/64 A 76302
x	x	x		5/64 (.078) to 1/4 (.250) 14 to 3 GA.	F, A, H	Die 11/32 x 43/64 B 76303
43/64"	.669	17mm				
23/64"	.354	9mm	76351	5/64 (.078) to 1/8 (.125) 14 to 11 GA.	F, A, H	Die 23/64 x 17/32 A 76304
x	x	x		5/64 (.078) to 1/4 (.250) 14 to 3 GA.	F, A, H	Die 23/64 x 17/32 B 76305
17/32"	.531	13.5mm				
3/8"	.394	10mm	76352	5/64 (.078) to 1/8 (.125) 14 to 11 GA.	F, A, H	Die 3/8 x 19/32 A 76306
x	x	x		5/64 (.078) to 1/4 (.250) 14 to 3 GA.	F, A, H	Die 3/8 x 19/32 B 76307
19/32"	.591	15mm				
7/16"	.433	11mm	76353	5/64 (.078) to 1/8 (.125) 14 to 11 GA.	F, A, H	Die 7/16 x 5/8 A 75647
x	x	x		5/64 (.078) to 1/4 (.250) 14 to 3 GA.	F, A, H	Die 7/16 x 5/8 B 75648
5/8"	.625	15.9mm				
				19/64" (.297) max.	C	Die 7/16 x 5/8 C 75655
1/2"	.512	13mm	76354	5/64 (.078) to 1/8 (.125) 14 to 11 GA.	F, A, H	Die 1/2 x 3/4 A 75649
x	x	x		5/64 (.078) to 1/4 (.250) 14 to 3 GA.	F, A, H	Die 1/2 x 3/4 B 75650
3/4"	.750	19mm				
9/16"	.551	14mm	76355	5/64 (.078) to 1/8 (.125) 14 to 11 GA.	F, A, H	Die 9/16 x 13/16 A 75651
x	x	x		5/64 (.078) to 1/4 (.250) 14 to 3 GA.	F, A, H	Die 9/16 x 13/16 B 75652
13/16"	.827	21mm				



Punching capacity data is based on mild steel of 65,000 psi tensile strength.



Punches are designed to punch mild or structural steel. For other materials contact Houghton Technical Service.

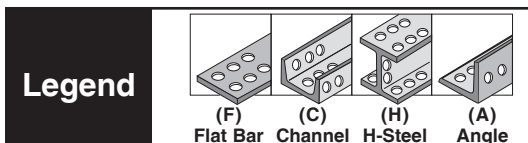
PUNCH-PRO™ — 76004PR & 75004PR

ROUND PUNCH			Part No.	MATERIAL		DIE	
Nominal	Actual	Metric		Thickness	Style	Size	Part No.
15/64"	.234	6mm	76334	5/64 (.078) to 1/8 (.125) 14 to 11 GA.	F, A, H	Die 15/64 SA	76308
				5/64 (.078) to 1/4 (.250) 14 to 3 GA.	F, A, H	Die 15/64 SB	76309
1/4"	.256	6.5mm	76335	5/64 (.078) to 1/8 (.125) 14 to 11 GA.	F, A, H	Die 1/4 SA	76310
				5/64 (.078) to 1/4 (.250) 14 to 3 GA.	F, A, H	Die 1/4 SB	76311
5/16"	.315	8mm	76336	5/64 (.078) to 1/8 (.125) 14 to 11 GA.	F, A, H	Die 5/16 SA	76312
				5/64 (.078) to 1/4 (.250) 14 to 3 GA.	F, A, H	Die 5/16 SB	76313
11/32"	.335	8.5mm	76337	5/64 (.078) to 1/8 (.125) 14 to 11 GA.	F, A, H	Die 11/32 SA	76314
				5/64 (.078) to 1/4 (.250) 14 to 3 GA.	F, A, H	Die 11/32 SB	76315
3/8"	.394	10mm	76338	5/64 (.078) to 1/8 (.125) 14 to 11 GA.	F, A, H	Die 3/8 SA	76316
				5/64 (.078) to 1/4 (.250) 14 to 3 GA.	F, A, H	Die 3/8 SB	76317
				5/16 (.312) max.	C	Die 3/8 C	75450
7/16"	.433	11mm	76339	5/64 (.078) to 1/8 (.125) 14 to 11 GA.	F, A, H	Die 7/16 SA	76318
				5/64 (.078) to 3/8 (.375) 14 to 3 GA.	F, A, H	Die 7/16 SB	76319
				5/16 (.312) max.	C	Die 7/16 C	75451
15/32"	.472	12mm	75910	5/64 (.078) to 1/8 (.125) 14 to 11 GA.	F, A, H	Die 15/32 SA	75912
				5/64 (.078) to 3/8 (.375) 14 to 11 GA.	F, A, H	Die 15/32 SB	75913
1/2"	.512	13mm	76340	5/64 (.078) to 1/8 (.125) 14 to 11 GA.	F, A, H	Die 1/2 SA	76320
				5/64 (.078) to 3/8 (.375) 14 to 3 GA.	F, A, H	Die 1/2 SB	76321
				5/16 (.312) max.	C	Die 1/2 C	75452
9/16"	.551	14mm	76341	5/64 (.078) to 1/8 (.125) 14 to 11 GA.	F, A, H	Die 9/16 SA	76322
				5/64 (.078) to 3/8 (.375) 14 to 3 GA.	F, A, H	Die 9/16 SB	76323
				5/16 (.312) max.	C	Die 9/16 C	75453
19/32"	.591	15mm	76342	5/64 (.078) to 1/8 (.125) 14 to 11 GA.	F, A, H	Die 19/32 SA	76324
				5/64 (.078) to 3/8 (.375) 14 to 3 GA.	F, A, H	Die 19/32 SB	76325
5/8"	.625	15.9mm	76343	5/64 (.078) to 1/8 (.125) 14 to 11 GA.	F, A, H	Die 5/8 SA	76326
				5/64 (.078) to 3/8 (.375) 14 to 3 GA.	F, A, H	Die 5/8 SB	76327
				5/16 (.312) max.	C	Die 5/8 C	75959
11/16"	.688	17.5mm	76344	5/64 (.078) to 1/8 (.125) 14 to 11 GA.	F, A, H	Die 11/16 SA	76328
				5/64 (.078) to 3/8 (.375) 14 to 3 GA.	F, A, H	Die 11/16 SB	76329
				5/16 (.312) max.	C	Die 11/16 C	75960
23/32"	.709	18mm	75911	5/64 (.078) to 1/8 (.125) 14 to 11 GA.	F, A, H	Die 23/32 SA	75915
				5/64 (.078) to 3/8 (.375) 14 to 3 GA.	F, A, H	Die 23/32 SB	75916
3/4"	.750	19mm	76345	5/64 (.078) to 1/8 (.125) 14 to 11 GA.	F, A, H	Die 3/4 SA	76330
				5/64 (.078) to 3/8 (.375) 14 to 3 GA.	F, A, H	Die 3/4 SB	76331
				5/16 (.312) max.	C	Die 3/4 C	75961
25/32"	.787	20mm	76346	5/64 (.078) to 1/8 (.125) 14 to 11 GA.	F, A, H	Die 25/32 SA	76332
				5/64 (.078) to 3/8 (.375) 14 to 3 GA.	F, A, H	Die 25/32 SB	76333
				5/16 (.312) max.	C	Die 25/32 C	75962

OBLONG PUNCH			Part No.	MATERIAL		DIE	
Nominal	Actual	Metric		Thickness	Style	Size	Part No.
1/4"	.256	6.5mm	76347	5/64 (.078) to 1/8 (.125) 14 to 11 GA.	F, A, H	Die 1/4 x 3/8 A	76300
x	x	x		5/64 (.078) to 1/4 (.250) 14 to 3 GA.	F, A, H	Die 1/4 x 3/8 B	76301
3/8"	.394	10mm	76348	5/64 (.078) to 1/8 (.125) 14 to 11 GA.	F, A, H	Die 1/4 x 1/2 A	75643
x	x	x		5/64 (.078) to 1/4 (.250) 14 to 3 GA.	F, A, H	Die 1/4 x 1/2 B	75644
11/32"	.335	8.5mm	76349	5/64 (.078) to 1/8 (.125) 14 to 11 GA.	F, A, H	Die 11/32 x 1/2 A	75645
x	x	x		5/64 (.078) to 1/4 (.250) 14 to 3 GA.	F, A, H	Die 11/32 x 1/2 B	75646
1/2"	.512	13mm	76350	5/64 (.078) to 1/8 (.125) 14 to 11 GA.	F, A, H	Die 11/32 x 43/64 A	76302
x	x	x		5/64 (.078) to 1/4 (.250) 14 to 3 GA.	F, A, H	Die 11/32 x 43/64 B	76303
23/64"	.354	9mm	76351	5/64 (.078) to 1/8 (.125) 14 to 11 GA.	F, A, H	Die 23/64 x 17/32 A	76304
x	x	x		5/64 (.078) to 1/4 (.250) 14 to 3 GA.	F, A, H	Die 23/64 x 17/32 B	76305
17/32"	.531	13.5mm	76352	5/64 (.078) to 1/8 (.125) 14 to 11 GA.	F, A, H	Die 3/8 x 19/32 A	76306
x	x	x		5/64 (.078) to 1/4 (.250) 14 to 3 GA.	F, A, H	Die 3/8 x 19/32 B	76307
3/8"	.394	10mm	76353	5/64 (.078) to 1/8 (.125) 14 to 11 GA.	F, A, H	Die 7/16 x 5/8 A	75647
x	x	x		5/64 (.078) to 3/8 (.375) 14 to 3 GA.	F, A, H	Die 7/16 x 5/8 B	75648
5/8"	.625	15.9mm	76354	5/16 (.312) max.	C	Die 7/16 x 5/8 C	75655
x	x	x		5/64 (.078) to 1/8 (.125) 14 to 11 GA.	F, A, H	Die 1/2 x 3/4 A	75649
19/32"	.591	15mm	76355	5/64 (.078) to 3/8 (.375) 14 to 3 GA.	F, A, H	Die 1/2 x 3/4 B	75650
x	x	x		5/16 (.312) max.	C	Die 1/2 x 3/4 C	75963
9/16"	.551	14mm	76355	5/64 (.078) to 1/8 (.125) 14 to 11 GA.	F, A, H	Die 9/16 x 13/16 A	75651
x	x	x		5/64 (.078) to 3/8 (.375) 14 to 3 GA.	F, A, H	Die 9/16 x 13/16 B	75652
13/16"	.827	21mm	75964	5/16 (.312) max.	C	Die 9/16 x 13/16 C	75964
x	x	x					



Punching capacity data is based on mild steel of 65,000 psi tensile strength.



Punches are designed to punch mild or structural steel. For other materials contact Hougen Technical Service.

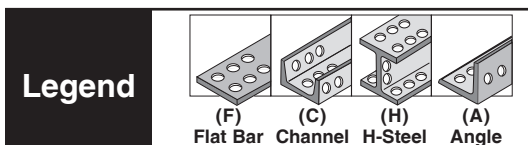
PUNCH-PRO™ — MODEL 75006PR

ROUND PUNCH				MATERIAL		DIE	
Size			Part No.	Thickness	Style	Size	Part No.
Nominal	Actual	Metric					
7/16"	.433	11mm	76359	5/64 (.078) to 1/8 (.125) 14 to 11 GA.	F, A, H	Die 7/16 SA	75578
				5/64 (.078) to 3/8 (.375)	F, A, H	Die 7/16 SB	75579
				5/16 (.312) Max.	C	Die 7/16 CC	75616
1/2"	.512	13mm	76360	5/64 (.078) to 1/8 (.125) 14 to 11 GA.	F, A, H	Die 1/2 SA	75581
				5/64 (.078) to 3/8 (.375)	F, A, H	Die 1/2 SB	75582
				5/16 (.312) Max.	C	Die 1/2 CC	75617
9/16"	.551	14mm	76361	5/64 (.078) to 1/8 (.125) 14 to 11 GA.	F, A, H	Die 9/16 SA	75584
				5/64 (.078) to 1/2 (.512)	F, A, H	Die 9/16 SB	75585
				5/16 (.312) Max.	F, A, H	Die 9/16 CC	75618
5/8"	.625	15.9mm	76362	5/64 (.078) to 1/8 (.125) 14 to 11 GA.	F, A, H	Die 5/8 SA	75588
				5/64 (.078) to 1/2 (.512)	F, A, H	Die 5/8 SB	75589
				5/16 (.312) Max.	C	Die 5/8 CC	75620
11/16"	.688	17.5mm	76363	5/64 (.078) to 1/8 (.125) 14 to 11 GA.	F, A, H	Die 11/16 SA	75592
				5/64 (.078) to 1/2 (.512)	F, A, H	Die 11/16 SB	75593
				5/16 (.312) Max.	C	Die 11/16 CC	75622
3/4"	.750	19mm	76364	5/64 (.078) to 1/8 (.125) 14 to 11 GA.	F, A, H	Die 3/4 SA	75596
				5/64 (.078) to 1/2 (.512)	F, A, H	Die 3/4 SB	75597
				5/16 (.312) Max.	C	Die 3/4 CC	75624
25/32"	.787	20mm	76365	5/64 (.078) to 1/2 (.512)	F, A, H	Die 25/32 SB	75601
				5/16 (.312) Max.	C	Die 25/32 CC	75626
13/16"	.812	20.6mm	76366	5/64 (.078) to 1/8 (.125) 14 to 11 GA.	F, A, H	Die 13/16 SA	75604
				5/64 (.078) to 1/2 (.512)	F, A, H	Die 13/16 SB	75605
				5/16 (.312) Max.	C	Die 13/16 CC	75628
7/8"	.875	22.2mm	76367	5/64 (.078) to 1/8 (.125) 14 to 11 GA.	F, A, H	Die 7/8 SA	75608
				5/64 (.078) to 1/2 (.512)	F, A, H	Die 7/8 SB	75609
				5/16 (.312) Max.	C	Die 7/8 CC	75630
15/16"	.938	23.8mm	76368	5/64 (.078) to 1/8 (.125) 14 to 11 GA.	F, A, H	Die 15/16 SA	75612
				5/64 (.078) to 15/32 (.472)	F, A, H	Die 15/16 SB	75613

OBLONG PUNCH				MATERIAL		DIE	
Size			Part No.	Thickness	Style	Size	Part No.
Nominal	Actual	Metric					
7/16"	.433	11mm	76369	5/64 (.078) to 3/8 (.375)	F, A, H	Die 7/16 x 5/8 B	75710
x	x	x					
5/8"	.625	15.9mm		5/16 (.312) Max.	C	Die 7/16 x 5/8 CC	75723
1/2"	.512	13mm	76370	5/64 (.078) to 1/8 (.125) 14 to 11 GA.	F, A, H	Die 1/2 x 3/4 A	75712
x	x	x		5/64 (.078) to 1/2 (.512)	F, A, H	Die 1/2 x 3/4 B	75713
3/4"	.750	19mm		5/16 (.312) Max.	C	Die 1/2 x 3/4 CC	75724
9/16"	.551	14mm	76371	5/64 (.078) to 1/8 (.125) 14 to 11 GA.	F, A, H	Die 9/16 x 13/16 A	75715
x	x	x		5/64 (.078) to 1/2 (.512)	F, A, H	Die 9/16 x 13/16 B	75716
13/16"	.827	20.6mm		5/16 (.312) Max.	C	Die 9/16 x 13/16 CC	75725
11/16"	.688	17.5mm	76372	5/64 (.078) to 1/8 (.125) 14 to 11 GA.	F, A, H	Die 11/16 x 13/16 A	75719
x	x	x		5/64 (.078) to 1/2 (.512)	F, A, H	Die 11/16 x 13/16 B	75720
13/16"	.827	20.6mm		5/16 (.312) Max.	C	Die 11/16 x 13/16 CC	75727

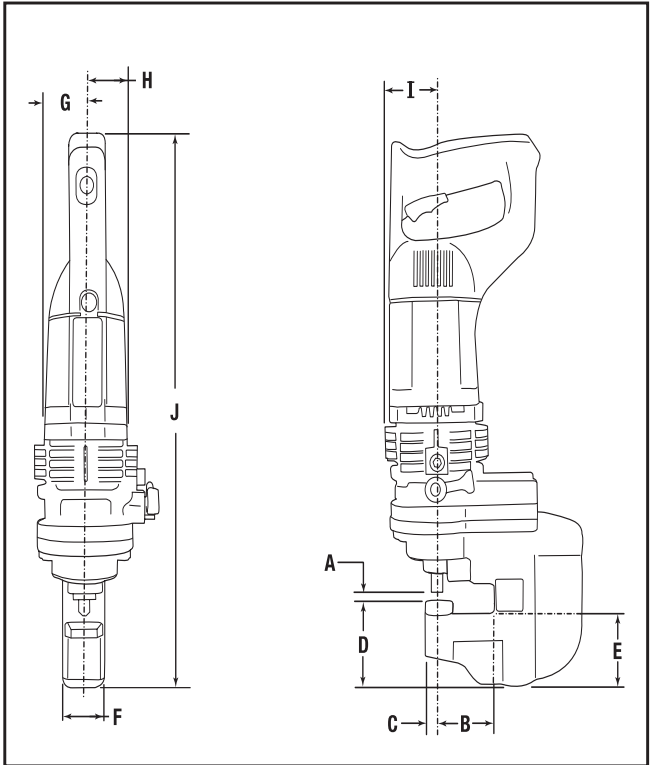


Punching capacity data is based on mild steel of 65,000 psi tensile strength.



Punches are designed to punch mild or structural steel. For other materials contact Hougen Technical Service.

Model Dimensions



Special Notice Regarding Punches and Dies

The exclusive Hougen®-Ogura™ punch geometry and die clearances reduces press tonnage requirements and increases portability. Premium heat treated materials help achieve tool life increases of two to two and a half times that of other manufacturers and generic copies. The use of incorrect punches or dies could result in unacceptable performance or damage to the machine and may void the warranty. Hougen Manufacturing Inc. recommends the use of only genuine Hougen-Ogura punches and dies.

Model No.	A	B	C	D	E	F	G	H	I	J
76000PR	.28	.98	.51	1.77	1.54	1.57	1.42	1.42	1.82	15.39
75002.5PR	.33	2.36	.59	2.66	2.36	1.77	1.65	1.65	2.05	19.37
75004PR	.39	1.57	.59	2.85	2.56	1.77	1.73	1.73	2.05	20.83
75006PR	.57	1.97	.94	3.74	3.31	2.56	2.46	2.46	3.15	20.59
76004PR	.39	1.57	.59	2.85	2.56	1.77	---	---	---	20.75

Measured in inches

TECHNICAL TIPS

- **#1 cause of broken or prematurely dull cutters is too slow of feed rate. Slower feed rates will not add life to your cutter but actually reduce the cutter's life. Use firm steady feed pressure throughout cut.**
- **Always make sure to clear all chips from your cutter before starting the next hole.**
- **Make sure support system for drill arbor is in place and not worn out. If using on a drill press, a support system must be used.**
- **For harder material use Hougen's Copperhead™ Carbide Tip or Hougen Xtreme Cobalt™ Cutters.**
- **Make sure mag drill is on a clean work piece and securely attached. Uneven or large build up of debris can cause drill slippage. Material must be at least 3/8" thick. Painted material can also be troublesome, paint buildup does not allow magnet to hold securely.**
- **When slug ejection becomes unreliable or tool resists cutting, sharpen or replace your cutter.**
- **Always use coolant when drilling. For best results use Hougen's Slick-Stik™, RotaGel™ and RotaMagic™ cutting lubricant.**
- **For best performance always maintain your drill as instructed in your operator's manual.**
- **Always observe standard and specific safety instructions.**

**FOR MORE INFORMATION VISIT WWW.HOUGEN.COM
OR CALL HOUGEN TECHNICAL SERVICE (810) 635-7111**



**For a Warranty Service Center
near you visit**

www.hougen.com

Technical Support Contact

(810) 635-7111
tech@hougen.com

COMMERCIAL/INDUSTRIAL LIMITED WARRANTY

Hougen Manufacturing, Inc. warrants its Portable Magnetic Drills, Trak-Star Rail Drills, and Tornado II Paint Shakers for two (2) years, Electro-hydraulic Hole Punchers for one (1) year and it's Husqvarna Saw and other products for ninety (90) days from date of purchase against defects due to faulty material or workmanship and will repair or replace (at its option) without charge any items returned. This warranty is void if the item has been damaged by accident or unreasonable use, neglect, improper service, or other causes not arising out of defects in material or workmanship. No other expressed warranty is given or authorized. Hougen Manufacturing, Inc. disclaims any implied warranty of Merchantability or fitness for any period beyond the expressed warranty and shall not be liable for incidental or consequential damages. Some states do not allow exclusion of incidental or consequential damages or limitation on how long an implied warranty lasts and, if the law of such a state governs your purchase, the above exclusion and limitation may not apply to you. This warranty gives you specific legal rights and you may also have other rights which vary from state to state.

To obtain warranty service, return the item(s), transportation prepaid to your nearest Factory Authorized Warranty Service Center, or to Hougen Manufacturing, Inc., 3001 Hougen Drive, Swartz Creek, MI 48473.

This warranty is in lieu of any other warranty, expressed or implied, including any warranty of merchantability or fitness for a particular purpose.

Hougen Patent Notice

The products covered in this catalog may be covered by one or more of the following U.S. patents, foreign patents, and pending patents.

D577,750	D579,033	9,889,508	D774,570	12,057,755
11,850,668	12,128,485			

Photographs and specifications are accurate in detail at time of printing. Manufacturer reserves the right to make improvements and modifications to designs without prior notice.

Hougen, Hougen-Edge, Rotabroach, and Trak-Star and their respective logos are proprietary trademarks of Hougen Manufacturing, Inc. Ogura and the Ogura logo are proprietary trademarks of Ogura & Co., Ltd., Vac-Pad is a proprietary trademark of Drillmate PTY, Ltd.

OTHER HELPFUL INFORMATION

Material Cutting Speed: Surface Feet per Minute (SFM)

Type of Material		Brinell Hardness	Cutting Speed (sfm)	Tool Material
Aluminum	• Wrought & Cast	* 30-150	500-1000	M2
	• Die cast	360.0, 380.0	* 40-125	M2
		383.0, 413.0	* 40-125	M2
		390.0, 392.0	* 40-125	M2
Brass & Bronze		----	300-600	M2
Cast Iron	• Soft	120-150	75-125	M2
	• Medium	160-220	50-100	M2/M42
	• Chilled	230-300	30-50	M42
Malleable Iron	• Ferritic	110-160	100-130	M2
	• Pearlitic	160-220	75-100	M2
	• Tempered Matensite	200-320	30-60	M42
Magnesium		* 50-90	400-800	M2
Nickel Alloys	• 200-230	80-170	60-80	M2
	• Monel 400-404	115-240	35-50	M2
	• Monel K500, 502	150-330	20-40	M42
Steel Free Machining	• Resulphurized/Leaded	----	105-130	M2
Carbon Steel		125-160	90-110	M2
Steel Alloys Soft		170-210	65-90	M2
Steel Alloys Medium		220-250	55-75	M2
Steel Alloys Hard		260-300	35-50	M2/M42
		325-400	30-40	M42/ M42 Xtreme
Tool Steel	• T15, M42, D2 • M2, A2 • S6, H13	210-250	35-60	M2/M42
Forgings		----	40-50	M2
Armor Plate		200-250	40-55	M2/M42
		250-300	30-45	M42/ M42 Xtreme
Stainless Steel Ferritic	• 430/405 • 430F	135-185	90-125	M2
Stainless Steel Austenitic	• Lower BHN	135-185	55-75	M2
	• Higher BHN			
	• 309/316	225-275	40-70	M2
	• 301/304			
Stainless Steel Nitronic (Low Alloy)		275-325	25-35	M42
		135-185	70-125	M2
Stainless Steel Martensitic	By Hardness Range	185-240	45-110	M2
	• 501	275-325	35-55	M42
	• 416/440F	375-425	30-55	M42 Xtreme
		150-200	45-55	M2
Stainless Steel Precipitation Hardening Range	By Hardness	275-325	40-50	M42
	• 17-4 PH	325-375	35-45	M42 Xtreme

Hardness Conversion Chart

Rockwell Hardness "C" Scale	Brinell Hardness
20	226
25	253
28	271
30	286
32	301
34	319
36	336
38	353
40	371
43	400

Grind Down Limits

Dia. Range	Minimum (Inches)	Maximum (Inches)
RotaCut™		
1/4", 9/32", 6mm, 7mm	No Grind Down	
5/16" - 17/32"	.0015	.0070
8mm - 14mm	.0015	.0070
9/16" - 1-1/2"	.0020	.0100
15mm - 25mm	.0020	.0100
"12,000-Series"		
7/16", 1/2", 12mm, 13mm	.0020	.0100
9/16" - 1-5/16"	.0020	.0150
14mm - 34mm	.0020	.0150
1-3/8" - 3-1/16"	.0020	.0200
35mm - 60mm	.0020	.0200

Carbide Cutting Speed: Surface Feet per Minute (SFM)

Mild Steel	Stainless	Cast Iron
164	115	131

OTHER HELPFUL INFORMATION

Conversion Chart: SFM to RPM

Cutter Dia. (Inches)	Surface Feet per Minute Revolutions per Minute (RPM)									
	10	20	30	40	50	60	70	80	90	100
.7500	51	102	153	204	255	306	357	407	458	509
.8750	44	87	131	175	218	262	306	349	393	437
1.0000	38	76	115	153	191	229	267	306	344	382
1.1250	34	68	102	136	170	204	238	272	306	340
1.2500	31	61	92	122	153	183	214	244	275	306
1.3750	28	56	83	111	139	167	194	222	250	278
1.5000	25	51	76	102	127	153	178	204	229	255
1.6250	24	47	71	94	118	141	165	188	212	235
1.7500	22	44	65	87	109	131	153	175	196	218
1.8750	20	41	61	81	102	122	143	163	183	204
2.0000	19	38	57	76	95	115	134	153	172	191
2.1250	18	36	54	72	90	108	126	144	162	180
2.2500	17	34	51	68	85	102	119	136	153	170
2.3750	16	32	48	64	80	96	113	129	145	161
2.5000	15	31	46	61	76	92	107	122	138	153
2.6250	15	29	44	58	73	87	102	116	131	146
2.7500	14	28	42	56	69	83	97	111	125	139
2.8750	13	27	40	53	66	80	93	106	120	133
3.0000	13	25	38	51	64	76	89	102	115	127
3.1250	12	24	37	49	61	73	86	98	110	122
3.2500	12	24	35	47	59	71	82	94	106	118
3.3750	11	23	34	45	57	68	79	91	102	113
3.5000	11	22	33	44	55	64	76	87	98	109
3.6250	11	21	32	42	53	63	74	84	95	105
3.7500	10	20	31	41	51	61	71	81	92	102
3.8750	10	20	30	39	49	59	69	79	89	99
4.0000	10	19	29	38	48	57	67	76	86	95

To compute RPM's for cutting speeds other than those shown, either select two speeds from the table that add up to the speed desired and then add their RPM's, or select a factor which, when multiplied by one of the speeds in the table, gives the desired speed and multiply its RPM by the same factor.

Examples: To find the RPM for a 1" diameter cutter run at 150 SFM --

- 1) Add RPM's for 100 SFM (382) and 50 SFM (191) = 573 rpm
- 2) Or multiply the RPM for 50 SFM (191) by a factor of 3 = 573 rpm



Service • Integrity • Reliability

At Hougen®, we want you to make more holes, more often, in more places all in less time... profitably. To that end, Hougen engineers are constantly striving to bring you the right tools.

Hougen portable magnetic drills and annular cutters are just one of a family of Hole making products that can be found on the production floor or the job-site.

Ask your distributor about how Hougen's fine products can improve your Hole making productivity.

Hougen® Quality

No matter the tool, we stand behind our product 100%. If ever you are not satisfied with one of our products, let us know and we'll work to make you happy.

STAY UP TO DATE!

Follow for the latest tips, how to's & product info



HOUGEN MANUFACTURING, INC.

3001 Hougen Drive • Swartz Creek, MI 48473 USA
(810) 635-7111 • www.hougen.com

Distributed By:

