

GARD Specialists®

Distinctively Unique Maintenance Products of Unusually High Quality

Guard Against Repair & Downtime



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GARD Specialists® was founded in 1969 and is headquartered in Eagle River, WI, U.S.A.

GARD Specialists® develops and markets specialty maintenance products of unusually high quality. We target heavy industrial maintenance operations nationwide, small businesses, and individuals.

Unlike any other suppliers, GARD Specialists® offers unique products, technical support, and a skilled sales force.

We will provide you and/or your company with practical, cost-effective solutions to help lower your downtime and increase operational efficiency.

Please take time to review our exceptional product line.

Terms and Conditions

Product Quality Guarantee: All GARD Specialists® products are warranted to be free from defects in workmanship and material. If a product should prove unsatisfactory for any reason, GARD Specialists® liability shall be limited, at its option, to replacement, repair, or credit of the original purchase price.

Order Policy: All orders are subject to acceptance. Cancellation, reduction, or change of any order is subject to GARD Specialists® approval with terms to protect GARD Specialists® from any loss.

Prices: All accepted orders are subject to prices in effect on the date the order is received by GARD Specialists®. Prices are subject to change without notice.

Transportation Policy: F.O.B. Eagle River, WI. Shipping and handling will be prepaid and added to the invoice. Shipping is as requested by the customer. If shipping is not specified, routing is at the discretion of GARD Specialists®, normally United Parcel Service.

Payment Terms: All invoices are due and payable within 30 days from the invoice date. Customers/accounts with established credit can be applied to an open account. New customers/accounts must pay with a credit card for the first order unless special arrangements are made. GARD Specialists® accepts VISA, MasterCard, American Express, and Discover (credit cards may be subject to a fee), E.F.T. (Electronic Funds Transfer), and A.C.H. (Automated Clearing House).

Invoices are payable in United States Dollars (USD) only. GARD Specialists® reserves the right to withhold any shipment in part or its entirety if the account is determined to be delinquent. A 1-1/2% per month (18% annually) interest charge will be assessed on all past-due account balances.

Return Goods Policy: Merchandise cannot be returned without prior authorization from the corporate office of GARD Specialists®, telephone 800-541-9301. Returned goods must be in full package quantity and sellable condition. Return freight charges may be charged to the customer or Sales Representative, this being at GARD Specialists® discretion. All returns are subject to inspection.

NO RETURN WILL BE PERMITTED FOR THE FOLLOWING:

Non-Catalog Products
Special Order Products
Custom Made Products

All claims must be made within sixty (60) days of the shipment date. If a return is authorized, the customer will be issued a credit for the original purchase price. All credits have a six (6) month expiration period.

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GARDsert®/Thread Repair

GARDsert® Features:

**Self-Tapping • Self-Cutting • Self-Locking
Won't Pull Out • Won't Wear Out**

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**Buy American Act
GARDsert® made in the U.S.A.**





GARDsert® by Industry

AUTOMOTIVE/TRUCKING INDUSTRY

Repair: Spark plug, O² sensor, brake caliper, transmission, bell housing, cylinder head, and engine block.
Manufacturing: Machine tools, pedestrian guards (attach plexiglass to metal rail), heat treat oven door hinges, dynamometer, stamping machine components, and robotic arm screw adjustment.

RAIL/MARINE

Repair: Engines - Caterpillar®, Cummins®, Detroit®, and various foreign manufacturers, fuel injection pump, powertrain, hull fittings, traction motor, brake system, generator/alternator, and suspension/frame components.

AIRCRAFT

Federal Aviation Administration (FAA) approved: for powerplants, airframe, instrument and experimental.

PLASTIC/POLYMERS

Molding platens, injection molding, extrusion die, and cutter bar assembly.

AIRPORT

FAA-approved base can light repair (custom assortment part number 200AW-06, contact GARD Specialists for details.)

MANUFACTURING

Repair: Guide bars and brackets, fixtures, machine tools, and drum dryers.

POWER/ENERGY

G.E.® Turbines - custom 8 thread pitch are available (contact GARD Specialists for details), turbine housing repair, generators, and pumps.

HEAVY EQUIPMENT

Engine, transmission, drive line, chassis components, hydraulic pump, and fuel injection pumps.

RUBBER/TIRE

Mold Rings, tread mold, and cutter bar/grinders.

MILITARY

Auxiliary equipment approved (see all applications above), Coast Guard approved, TACOM approved; all wheel and tracked vehicles, IAV Stryker, Bradley Fighting, etc., (excludes Abrams). National Stock Number assignment (assortment part number MGA-412614-TDA, contact GARD Specialists for details).

If you have a new application for GARDserts®, please let us know!

Thin Wall, Gen 3/Hole Type, and Gen 5



Gen 3/Hole Type-Thin Wall



Gen 3/Hole Type-Standard



Gen 5-Standard



GARDsert® Installations



GARDserts® are a permanent repair of damaged threads without pull-out or wear-out.

GARDserts® are self-tapping and require no special tools.

GARDserts® are made of 54-58 hardened stainless steel.

(If installing in over 35 Rockwell C-scale, please call for technical support.)

MANUAL INSTALLATION

You will need the appropriate wrenches, **exact size drill bit**, heavy-duty hex nut, and a minimum-rated Grade 8 cap screw matching the internal thread of the GARDsert®.

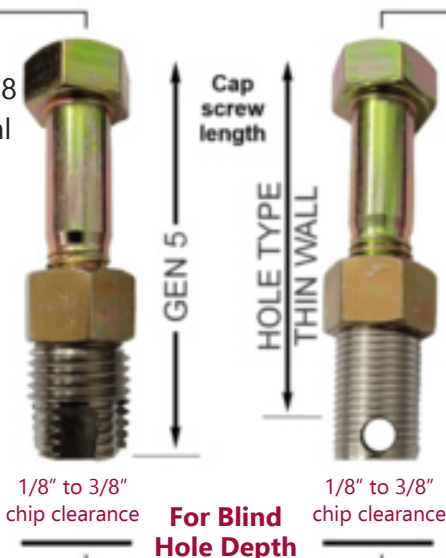
(When installing in 6000 Series Aluminum - use the steel & cast iron drill size OR call technical support.)

1) Drill out damaged threads (reference drill card included with each shipment).

For blind holes, drill 1/8" to 3/8" deeper for chip clearance.

2A) Gen 5

Using a minimum-rated Grade 8 cap screw matching the internal thread of the GARDsert®, assemble the unit as shown. Screw GARDsert® onto the cap screw with flats away from the nut. Screw to the bottom but **DO NOT screw past the bottom of the GARDsert®**. Thread hex nut down to the GARDsert®. Tighten snugly to the top of the GARDsert®.



2B) Hole Type or Thinwall

Using a minimum-rated Grade 8 cap screw matching the internal thread of the GARDsert®, assemble the unit as shown. Screw the GARDsert® onto the cap screw to chip hole. **DO NOT protrude tip of the cap screw into the chip hole**. Thread the hex nut down to the GARDsert®. Tighten snugly to the top of the GARDsert®.

3) Apply GARD Deluxe Tapping Fluid to external GARDsert® threads and the predrilled hole. Carefully align the GARDsert® straight into the hole by hand. Using a wrench, turn the hex nut clockwise until the nut is flush with the workpiece. The GARDsert® is now fully installed. To remove the installation tool, hold the head of the cap screw with a wrench not allowing it to turn counter-clockwise. Loosen the nut turning counter-clockwise and remove the cap screw. You now have a newly threaded hole and a solid repair.



GARDsert® Installations

AIR TOOL INSTALLATION

You will need an air tool, wrench, **exact size drill bit**, minimum-rated Grade 8 cap screw matching the internal thread of the GARDsert®, oversized close tolerance heavy-duty hex nut, and oversized close tolerance heavy-duty flat washer. (If unsure of sizes needed, call technical support for sizing.)

(When installing in 6000 Series Aluminum - use the steel & cast iron drill size OR call technical support.)

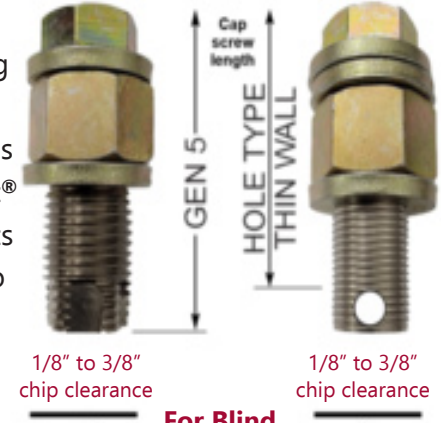
- 1) Drill out damaged threads (reference drill card included with each shipment.)
For blind holes, drill 1/8" to 3/8" deeper for chip clearance.

2A) Gen 5

Using a minimum-rated Grade 8 cap screw matching the internal thread of the GARDsert®, assemble unit as shown. Screw the GARDsert® onto the cap screw with flats away from the nut. Screw to the bottom but **DO NOT screw past the bottom of the GARDsert®.**

2B) Hole Type or Thinwall

Using a minimum-rated Grade 8 cap screw matching the internal thread of the GARDsert®, assemble the unit as shown. Screw the GARDsert® onto the cap screw to the chip holes but **DO NOT protrude the tip of the cap screw into the chip hole.**



For Blind Hole Depth

- 3) Apply GARD Deluxe Tapping Fluid to external GARDsert® threads and the predrilled hole. Carefully align the GARDsert® straight into the hole by hand. Drive in clockwise by putting the air tool socket on the cap screw head. Apply the air tool to turn the GARDsert® into substrate until the washer is flush with the workpiece. The GARDsert® is now fully installed. To remove the installation tool, place a wrench on the oversized nut and secure it. Reverse the air tool to break the assembly loose and remove the cap screw. You now have a newly threaded hole and a solid repair.





Stainless Steel Coarse GARDsert® (Gen 5)

SIZE: Coarse Fractional

MATERIAL: Hardened Stainless Steel

WALL: Standard

Part Number	Internal Thread Size	Length	Outside Diameter	Steel & Cast Iron Drill Bit	Aluminum Non-Ferrous Drill Size
832-200	#8-32	.328	.250	"B"	15/64"
C-400-200	1/4"-20	.484	.375	23/64"	"S"
C-500-200	5/16"-18	.562	.469	29/64"	7/16"
C-600-200	3/8"-16	.687	.563	17/32"	17/32"
C-700-200	7/16"-14	.780	.641	39/64"	19/32"
C-800-200	1/2"-13	.750	.734	11/16"	43/64"
C-1000-200	5/8"-11	.938	.906	55/64"	55/64"
C-1200-200	3/4"-10	1.125	1.078	1-1/32"	1-1/64"
C-1400-200	7/8"-9	1.313	1.250	1-3/16"	N/A
C-1600-200	1"-8	1.500	1.500	1-7/16"	N/A
C-1800-200	1-1/8"-7	1.680	1.750	1-11/16"	N/A
C-2000-200	1-1/4"-7	1.875	1.750	1-11/16"	N/A
C-2200-200	1-3/8"-6	2.000	1.955	1-7/8"	N/A
C-2400-200	1-1/2"-6	2.125	2.050	2-3/16"	N/A



Stainless Steel Coarse GARDsert® (Hole Type or Gen 3)

SIZE: Coarse Fractional

MATERIAL: Hardened Stainless Steel

WALL: Standard

Part Number	Internal Thread Size	Length	Outside Diameter	Steel & Cast Iron Drill Bit	Aluminum Non-Ferrous Drill Size
440-200-3	#4-40	.234	.172	#19	#21
632-200-3	#6-32	.281	.219	#4	#5
1024-200-3	#10-24	.3750	.2969	"K"	"I"
C-900-200-3	9/16"-12	1.000	.812	25/32"	49/64"



Stainless Steel Coarse Thin Wall GARDsert® (Hole Type or Gen 3)

SIZE: Coarse Fractional

MATERIAL: Hardened Stainless Steel

WALL: Thin Wall

Part Number	Internal Thread Size	Length	Outside Diameter	Steel & Cast Iron Drill Bit	Aluminum Non-Ferrous Drill Size
1024-200TW	#10-24	.375	.263	"D"	"D"
C-400-200TW	1/4"-20	.484	.344	21/64"	"P"
C-500-200TW	5/16"-18	.562	.406	"W"	"V"
C-600-200TW	3/8"-16	.690	.500	15/32"	15/32"
C-700-200TW	7/16"-14	.780	.563	17/32"	17/32"
C-800-200TW	1/2"-13	.910	.625	19/32"	19/32"



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Stainless Steel Fine GARDsert® (Gen 5)

SIZE: Fine Fractional

MATERIAL: Hardened Stainless Steel

WALL: Standard



Part Number	Internal Thread Size	Length	Outside Diameter	Steel & Cast Iron Drill Bit	Aluminum Non-Ferrous Drill Size
F-600-200	3/8"-24	.687	.563	17/32"	17/32"
F-800-200	1/2"-20	.750	.734	11/16"	43/64"
F-1000-200	5/8"-18	.938	.906	55/64"	55/64"
F-1400-200	7/8"-14	1.313	1.250	1-3/16"	N/A
F-1600-200	1"-14	1.500	1.500	1-7/16"	N/A
F-2000-200	1-1/4"-12	1.875	1.750	1-11/16"	N/A
F-2400-200	1-1/2"-12	2.125	2.050	2-3/16"	N/A



Stainless Steel Fine GARDsert® (Hole Type or Gen 3)

SIZE: Fine Fractional

MATERIAL: Hardened Stainless Steel

WALL: Standard



Part Number	Internal Thread Size	Length	Outside Diameter	Steel & Cast Iron Drill Bit	Aluminum Non-Ferrous Drill Size
836-200-3	#8-36	.329	.248	"B"	15/64"
1032-200Gen3	#10-32	.375	.296	"K"	"I"
F-400-200-3	1/4"-28	.484	.375	23/64"	"S"
F-500-200-3	5/16"-24	.562	.465	29/64"	7/16"
F-700-200-3	7/16"-20	.785	.635	39/64"	19/32"
F-900-200-3	9/16"-18	1.000	.812	25/32"	49/64"
F-1200-200-3	3/4"-16	1.370	1.070	1-1/32"	1-1/64"



Stainless Steel Fine Thin Wall GARDsert® (Hole Type or Gen 3)

SIZE: Fine Fractional

MATERIAL: Hardened Stainless Steel

WALL: Thin Wall



Part Number	Internal Thread Size	Length	Outside Diameter	Steel & Cast Iron Drill Bit	Aluminum Non-Ferrous Drill Size
836-200TW	#8-36	.331	.215	#4	13/64"
1032-200TW	#10-32	.375	.263	"D"	"D"
F-400-200TW	1/4"-28	.484	.344	21/64"	"P"
F-500-200TW	5/16"-24	.562	.406	"W"	"V"
F-600-200TW	3/8"-24	.690	.500	15/32"	15/32"
F-700-200TW	7/16"-20	.780	.563	17/32"	17/32"
F-800-200TW	1/2"-20	.910	.625	19/32"	19/32"

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Stainless Steel Metric GARDsert® (Gen 5)

SIZE: Metric

MATERIAL: Hardened Stainless Steel

WALL: Standard



Part Number	Internal Thread Size	Length	Outside Diameter	Steel & Cast Iron Drill Bit	Aluminum Non-Ferrous Drill Size
M3-200	3 mm x .50	.234	.172	#19	#21
M4-200	4 mm x .70	.328	.250	"B"	15/64"
M5-200	5 mm x .80	.3750	.2969	"K"	"I"
M6-200	6 mm x 1.00	.484	.375	23/64"	"S"
M8-200	8 mm x 1.25	.562	.469	29/64"	7/16"
M10-200	10 mm x 1.5	.687	.563	17/32"	17/32"
M121.5-200	12 mm x 1.5	.750	.734	11/16"	43/64"
M12-200	12 mm x 1.75	.750	.734	11/16"	43/64"
M161.5-200	16 mm x 1.50	.938	.906	55/64"	55/64"
M16-200	16 mm x 2.00	.938	.906	55/64"	55/64"
M18-200	18 mm x 2.50	1.125	1.078	1-1/32"	1-1/64"
M201.5-200	20 mm x 1.50	1.188	1.078	1-1/32"	1-1/64"
M202.0-200	20 mm x 2.00	1.188	1.078	1-1/32"	1-1/64"
M20-200	20 mm x 2.50	1.188	1.078	1-1/32"	1-1/64"
M221.5-200	22 mm x 1.50	1.313	1.250	1-3/16"	1-5/32"
M22-200	22 mm x 2.50	1.313	1.250	1-3/16"	1-5/32"
M241.5-200	24 mm x 1.50	1.500	1.475	1-7/16"	N/A
M242.0-200	24 mm x 2.00	1.500	1.500	1-7/16"	N/A
M24-200	24 mm x 3.00	1.500	1.500	1-7/16"	N/A
M243.5-200	24 mm x 3.50	1.500	1.500	1-7/16"	N/A
M302.0-200	30 mm x 2.00	1.875	1.750	1-11/16"	N/A
M30-200	30 mm x 3.50	1.750	1.690	1-11/16"	N/A
M36-200	36 mm x 3.00	1.850	1.975	1-7/8"	N/A



Stainless Steel Metric GARDsert® (Hole Type or Gen 3)

SIZE: Metric

MATERIAL: Hardened Stainless Steel

WALL: Standard



Part Number	Internal Thread Size	Length	Outside Diameter	Steel & Cast Iron Drill Bit	Aluminum Non-Ferrous Drill Size
M3.5-200-3	3.5 mm x .60	.2810	.2188	#4	#5
M14-200-3	14 mm x 2.00	1.000	.812	25/32"	49/64"
M16-200-3	16 mm x 2.00	1.125	.906	55/64"	55/64"

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Stainless Steel Metric Thin Wall GARDsert® (Hole Type or Gen 3)

SIZE: Metric

MATERIAL: Hardened Stainless Steel

WALL: Thin Wall

Part Number	Internal Thread Size	Length	Outside Diameter	Steel & Cast Iron Drill Bit	Aluminum Non-Ferrous Drill Size
M4-200TW	4 mm x .70	.3280	.218	#4	13/64"
M5-200TW	5 mm x .80	.3750	.263	1/4"	"D"
M6-200TW	6 mm x 1.00	.484	.344	21/64"	"P"
M8-200TW	8 mm x 1.25	.562	.406	"W"	"V"
M101.25-200TW	10 mm x 1.25	.690	.500	15/32"	15/32"
M10-200TW	10 mm x 1.50	.690	.500	15/32"	15/32"
M11x1.5-200TW	11 mm x 1.50	.780	.563	17/32"	17/32"
M121.25-200TW	12 mm x 1.25	.910	.625	19/32"	19/32"
M12-200TW	12 mm x 1.75	.910	.625	19/32"	19/32"



Stainless Steel Coarse Special GARDsert®

SIZE: Coarse Special

MATERIAL: Hardened Stainless Steel

WALL: Various

Part Number	Internal Thread Size	Length	Outside Diameter	Steel & Cast Iron Drill Bit	Aluminum Non-Ferrous Drill Size	Special Aspect
C-400-200M	1/4"-20	.550	.375	23/64"	"S"	Medium Length
C-400-200L	1/4"-20	.611	.375	23/64"	"S"	Long Length
C-500-200L	5/16"-18	.680	.469	29/64"	7/16"	Long Length
C-500-200CE	5/16"-18	.565	.463	29/64"	7/16"	Closed End
C-600-200L	3/8"-16	.813	.563	17/32"	17/32"	Long
C-600-200LP	3/8"-16	.900	.563	17/32"	17/32"	Long Length with Pocket
C-800-200HW	1/2"-13	.750	.875	53/64"	55/64"	Heavy Wall
C-800-200CE	1/2"-13	.750	.730	55/64"	55/64"	Closed End
C-1000-200HXL-2	5/8"-11	2.000	1.000	15/16"	15/16"	Heavy Wall and V-Type Threads
C-1000-200HW	5/8"-11	.938	1.000	29/32"	29/32"	Heavy Wall
C-1000-200XHW	5/8"-11	.938	1.078	1-1/32"	1-1/32"	Extra Heavy Wall
C-1200-200H-2	3/4"-10	1.500	1.313	1-1/4"	1-1/4"	Lug Type
C-1200-200HXL-2	3/4"-10	2.000	1.250	1-3/16"	1-3/16"	Long Length with V-Type Threads
C-1200-200M	3/4"-10	1.004	1.080	1-1/32"	1-1/64"	Medium Length
C-1600-200HW	1"-8	1.875	1.717	1-11/16"	N/A	Heavy Wall



Stainless Steel Fine Special GARDsert®

SIZE: Fine Special

MATERIAL: Hardened Stainless Steel

WALL: Various

Part Number	Internal Thread Size	Length	Outside Diameter	Steel & Cast Iron Drill Bit	Aluminum Non-Ferrous Drill Size	Special Aspect
F-1200-200Gen3S	3/4"-16	.812	1.078	55/64"	55/64"	Short Length and Hole Type
F-1400-200MH	7/8"-14	1.250	1.375	1-5/16"	N/A	Long Length and Heavy Wall
F-1600-200M	1"-14	1.378	1.500	1-7/16"	N/A	Medium Length



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Stainless Steel Metric Special GARDsert®

SIZE: Metric Special

MATERIAL: Hardened Stainless Steel

WALL: Various



Part Number	Internal Thread Size	Length	Outside Diameter	Steel & Cast Iron Drill Bit	Aluminum Non-Ferrous Drill Size	Special Aspect
M10-200L	10 mm x 1.50	.880	.563	17/32"	17/32"	Long Length
M12-200L	12 mm x 1.75	1.120	.734	45/64"	11/16"	Long Length
M18-200L	18 mm x 2.50	1.375	1.078	1-1/32"	1-1/64"	Long Length
M20-200HW	20 mm x 2.50	1.188	1.250	1-3/16"	N/A	Heavy Wall



8 Thread GARDsert®

SIZE: 8 Thread

MATERIAL: Hardened Stainless Steel

WALL: Standard



Part Number	Internal Thread Size	Length	Outside Diameter	Steel & Cast Iron Drill Bit	Installation Tool	Installation Socket
8-1800-200	1-1/8"-8	1.680	1.475	1-7/16"	200M-1808T	N/A
8-2000-200	1-1/4"-8	1.877	1.750	1-11/16"	200M-2008T	N/A
8-2200-200	1-3/8"-8	2.000	1.950	1-7/8"	200M-2208T	N/A
8-2400-200	1-1/2"-8	2.125	2.250	2-3/16"	200M-2408T	N/A
8-2800-200	1-3/4"-8	2.630	2.475	2-3/8"	200M-2808T	N/A
8-3200-200	2"-8	3.000	2.725	2-5/8"	N/A	8-3200-200-SOCKET
8-3600-200	2-1/4"-8	3.385	2.975	2-29/32"	N/A	8-3600-200-SOCKET
8-4000-200	2-1/2"-8	3.760	3.500	3-11/32"	N/A	8-4000-200-SOCKET
8-4400-200	2-3/4"-8	4.125	3.757	3-19/32"	N/A	8-4400-200-SOCKET
8-4800-200	3"-8	4.500	3.968	3-27/32"	N/A	8-4800-200-SOCKET



8 Thread Special GARDsert®

SIZE: 8 Thread Special

MATERIAL: Hardened Stainless Steel

WALL: Various



Part Number	Internal Thread Size	Length	Outside Diameter	Steel & Cast Iron Drill Bit	Installation Tool	Special Aspect
8-2400-200M	1-1/2"-8	1.755	2.210	2-3/16"	200M-2408T	Medium Length

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Stainless Steel Coarse GARDsert® Assortments

All assortments come with a 2 oz bottle of GARD Deluxe Tapping Fluid.

See page 34 for more sizes of GARD Deluxe Tapping Fluid.



Part Number	1/4"-20	5/16"-18	3/8"-16	7/16"-14	1/2"-13	9/16"-12	5/8"-11	3/4"-10	Drill Bits
*200-408C	6	6	6	6	6				No
*200-408CD	6	6	6	6	6				Yes
*200-408CL	12	12	12	12	12				No
*200-408CLD	12	12	12	12	12				Yes
*200-412C	6	6	6	6	6	3	3	3	No
200-412CD	6	6	6	6	6	3	3	3	Yes
*200-412CL	12	12	12	12	12	6	6	6	No
200-412CLD	12	12	12	12	12	6	6	6	Yes



Stainless Steel Metric GARDsert® Assortments

All assortments come with a 2 oz bottle of GARD Deluxe Tapping Fluid.

See page 34 for more sizes of GARD Deluxe Tapping Fluid.



Part Number	3 mm x .50	3.5 mm x .60	4 mm x .70	5 mm x .80	6 mm x 1.0	8 mm x 1.25	10 mm x 1.5	12 mm x 1.75	14 mm x 2.0	16 mm x 2.0	18 mm x 2.5	Drill Bits
*200M-312	6	6	6	6	6	6	6	6				No
*200M-312D	6	6	6	6	6	6	6	6				Yes
*200M-312L	12	12	12	12	12	12	12	12				No
*200M-312LD	12	12	12	12	12	12	12	12				Yes
*200M-318	6	6	6	6	6	6	6	6	3	3	3	No
200M-318D	6	6	6	6	6	6	6	6	3	3	3	Yes
*200M-318L	12	12	12	12	12	12	12	12	6	6	6	No
200M-318LD	12	12	12	12	12	12	12	12	6	6	6	Yes



Stainless Steel Coarse and Metric Thinwall GARDsert® Assortments

All assortments come with a 2 oz bottle of GARD Deluxe Tapping Fluid.

See page 34 for more sizes of GARD Deluxe Tapping Fluid.



Part Number	1/4"-20	5/16"-18	3/8"-16	7/16"-14	1/2"-13	5 mm x .80	6 mm x 1.0	8 mm x 1.25	10 mm x 1.5	12 mm x 1.75	Drill Bits
*200TW-408C	6	6	6	6	6						No
*200TW-408CD	6	6	6	6	6						Yes
*200TW-408CL	12	12	12	12	12						No
*200TW-408CLD	12	12	12	12	12						Yes
*200MTW-512						6	6	6	6	6	No
*200MTW-512D						6	6	6	6	6	Yes
*200MTW-512L						12	12	12	12	12	No
*200MTW-512LD						12	12	12	12	12	Yes

*Assortments are in small case (all other assortments not marked are in large case).

**GARD Deluxe Tapping Fluid is required for all GARDserts®.

***Custom GARDsert® assortments can be made upon request - call to inquire.

Stainless Steel Coarse and Metric Combination GARDsert® Assortments

Standard

1/4"-20 thru 3/4"-10 & 3 mm thru 18 mm, Half Package

6 each - C-400-200, C-500-200, C-600-200, C-700-200, C-800-200, M3-200, M3.5-200, M4-200, M5-200, M6-200, M8-200, M10-200, and M12-200
3 each- C-900-200-3, C-1000-200, C-1200-200, M14-200-3, M16-200, and M18-200
1 each- 5906-DTF-2
97 Pieces total, in large metal storage tray.
Part Number: 200-CM

1/4"-20 thru 3/4"-10 & 10 mm thru 18 mm, Half Package With Drill Bits

6 each - C-400-200, C-500-200, C-600-200, C-700-200, C-800-200, M10-200, and M12-200
3 each- C-900-200-3, C-1000-200, C-1200-200, M14-200-3, M16-200, and M18-200
1 each - 34-S, 30-058, 30-07, 30-073, 30-85, 30-095, 30-098, 30-11, 30-113, 30-123, 30-125, 30-138, 30-163, and 30-165
1 each- 5906-DTF-2
75 Pieces total, in large metal storage tray.
Part Number: 200-CMD

Thinwall

1/4"-20 thru 1/2"-13 & 5 mm thru 12 mm, Half Package

6 each - C-400-200TW, C-500-200TW, C-600-200TW, C-700-200TW, C-800-200TW, M5-200TW, M6-200TW, M8-200TW, M10-200TW, and M12-200TW
1 each- 5906-DTF-2
61 Pieces total, in large metal storage tray.
Part Number: 200TW-CM

1/4"-20 thru 1/2"-13 & 5 mm thru 12 mm, Half Package With Drill Bits

6 each - C-400-200TW, C-500-200TW, C-600-200TW, C-700-200TW, C-800-200TW, M5-200TW, M6-200TW, M8-200TW, M10-200TW, and M12-200TW
1 each - 34-D, 34-P, 34-V, 34-W, 30-04, 30-053, 30-075, 30-085, and 30-095
1 each- 5906-DTF-2
70 Pieces total, in large metal storage tray.
Part Number: 200TW-CMD



Small Metal Storage Case
13-9/16" x 9-7/8" x 2-1/8"



Large Metal Storage Case
18" x 12" x 3"

GARDsert® Individual Kits**Material: Hardened Stainless Steel****Includes everything you need to install GARDserts® in one kit!****Coarse**

Part Number	Size	Application	Drill Size
C-400SK	1/4"-20	Steel	23/64"
C-400AK	1/4"-20	Aluminum	"S"
C-500SK	5/16"-18	Steel	29/64"
C-500AK	5/16"-18	Aluminum	7/16"
C-600SAK	3/8"-16	Steel and Aluminum	17/32"
C-700SK	7/16"-14	Steel	39/64"
C-700AK	7/16"-14	Aluminum	19/32"
C-800SK	1/2"-13	Steel	11/16"
C-800AK	1/2"-13	Aluminum	43/64"

Coarse Thinwall

Part Number	Size	Application	Drill Size
C-400TWSK	1/4"-20	Steel	21/64"
C-400TWAK	1/4"-20	Aluminum	"P"
C-400TWSAK	1/4"-20	Steel and Aluminum	21/64" & "P"
C-500TWSK	5/16"-18	Steel	"W"
C-500TWAK	5/16"-18	Aluminum	"V"
C-500TWSAK	5/16"-18	Steel and Aluminum	"W" & "V"
C-600TWSAK	3/8"-16	Steel and Aluminum	15/32"
C-700TWSAK	7/16"-14	Steel and Aluminum	17/32"
C-800TWSAK	1/2"-13	Steel and Aluminum	19/32"

Fine

Part Number	Size	Application	Drill Size
F-400SK	1/4"-28	Steel	23/64"
F-400AK	1/4"-28	Aluminum	"S"
F-500SK	5/16"-24	Steel	29/64"
F-500AK	5/16"-24	Aluminum	7/16"
F-600SAK	3/8"-24	Steel and Aluminum	17/32"
F-700SK	7/16"-20	Steel	39/64"
F-700AK	7/16"-20	Aluminum	19/32"
F-800SK	1/2"-20	Steel	11/16"
F-800AK	1/2"-20	Aluminum	43/64"

Fine Thinwall

Part Number	Size	Application	Drill Size
F-400TWSK	1/4"-28	Steel	21/64"
F-400TWAK	1/4"-28	Aluminum	"P"
F-500TWSK	5/16"-24	Steel	"W"
F-500TWAK	5/16"-24	Aluminum	"V"
F-600TWSAK	3/8"-24	Steel and Aluminum	15/32"
F-700TWSAK	7/16"-20	Steel and Aluminum	17/32"
F-800TWSAK	1/2"-20	Steel and Aluminum	19/32"

Metric

Part Number	Size	Application	Drill Size
M-580SK	5 mm x 0.80	Steel	"K"
M-580AK	5 mm x 0.80	Aluminum	"I"
M-610SK	6 mm x 1.00	Steel	23/64"
M-610AK	6 mm x 1.00	Aluminum	"S"
M-8125SK	8 mm x 1.25	Steel	29/64"
M-8125AK	8 mm x 1.25	Aluminum	7/16"
M-1015SAK	10 mm x 1.50	Steel and Aluminum	17/32"
M-12175SK	12 mm x 1.75	Steel	11/16"
M-12175AK	12 mm x 1.75	Aluminum	43/64"

Metric Thinwall

Part Number	Size	Application	Drill Size
M-580TWSK	5 mm x 0.80	Steel	1/4"
M-580TWAK	5 mm x 0.80	Aluminum	"D"
M-610TWSK	6 mm x 1.00	Steel	21/64"
M-610TWAK	6 mm x 1.00	Aluminum	"P"
M-8125TWSK	8 mm x 1.25	Steel	"W"
M-8125TWAK	8 mm x 1.25	Aluminum	"V"
M-8125TWSAK	8 mm x 1.25	Steel and Aluminum	"W" & "V"
M-1015TWSAK	10 mm x 1.50	Steel and Aluminum	15/32"
M-12175TWSAK	12 mm x 1.75	Steel and Aluminum	19/32"

**C-400SK****Each kit includes:**

- (6) GARDserts®
- (1) Drill Bit(s)
- (1) Installation Tool
- (1) .5 oz GARD Deluxe Tapping Fluid

GARDsert® Installation Tools

Includes hardened cap screw, hardened hex nut and
hardened flat washers for both manual and power install.

Coarse Standard

Part Number	Size
200M-440T	#4-40
200M-632T	#6-32
200M-832T	#8-32
200M-1024T	#10-24
200M-420T	1/4"-20
200M-518T	5/16"-18
200M-616T	3/8"-16
200M-714T	7/16"-14
200M-813T	1/2"-13
200M-912T	9/16"-12
200M-1011T	5/8"-11
200M-1210T	3/4"-10
200M-1409T	7/8"-9
200M-1608T	1"-8
200M-1807T	1-1/8"-7
200M-2007T	1-1/4"-7
200M-2206T	1-3/8"-6
200M-2406T	1-1/2"-6

Fine Standard

Part Number	Size
200M-1032T	#10-32
200M-428T	1/4"-28
200M-524T	5/16"-24
200M-624T	3/8"-24
200M-820T	1/2"-20
200M-918T	9/16"-18
200M-1018T	5/8"-18
200M-1216T	3/4"-16
200M-1414T	7/8"-14
200M-1614T	1"-14
200M-2012T	1-1/4"-12

Metric Standard

Part Number	Size
200M-M305T	3 mm x 0.50
200M-M3.506T	3.5 mm x 0.60
200M-M407T	4 mm x 0.70
200M-M508T	5 mm x 0.80
200M-M610T	6 mm x 1.00
200M-M8125T	8 mm x 1.25
200M-M1015T	10 mm x 1.50
200M-M12150T	12 mm x 1.50
200M-M12175T	12 mm x 1.75
200M-M1420T	14 mm x 2.00
200M-M1620T	16 mm x 2.00
200M-M1825T	18 mm x 2.50
200M-M2015T	20 mm x 1.50
200M-M2025T	20 mm x 2.50
200M-M2225T	22 mm x 2.50
200M-M2430T	24 mm x 3.00
200M-M3035T	30 mm x 3.50

Coarse Thinwall/Hole Type

Part Number	Size
200M-420TW	1/2"-20
200M-518TW	5/16"-18
200M-616TW	3/8"-16
200M-714TW	7/16"-14
200M-813TW	1/2"-13

Fine Thinwall/Hole Type

Part Number	Size
200M-428TW	1/4"-28
200M-524TW	5/16"-24
200M-624TW	3/8"-24
200M-720TW	7/16"-20
200M-820TW	1/2"-20

Metric Thinwall/Hole Type

Part Number	Size
200M-M610TW	6 mm x 1.00
200M-M8125TW	8 mm x 1.25
200M-M10125TW	10 mm x 1.25
200M-M1015TW	10 mm x 1.50
200M-M12125TW	12 mm x 1.25
200M-M12175TW	12 mm x 1.75



Thinwall/Hole Type

8 Thread Standard

Part Number	Size
200M-1808T	1-1/8"-8
200M-2008T	1-1/4"-8
200M-2208T	1-3/8"-8
200M-2408T	1-1/2"-8
200M-2808T	1-3/4"-8



Standard/Gen 5

GARDsert® Technical Information

Applications, Certifications and Approvals:

US Military- Approval, NSN assignment
 MSHA - Test
 ABS - Certification
 ETL - Testing for FAA ground fixtures
 Froehling & Robertson - Testing for proof load
 Aircraft Industry
 Airframe Industry
 Instrumentation Industry
 Power Plant Industry
 Railroad Industry
 Power Generation
 Food Processing
 All Heavy Industrial Maintenance
 Automotive Industry

GARDsert® Technical Information

Installed GARDsert® Pull-out Strength

Nominal Size Internal Thread Shear	Effective Shear Area Sq. Inch	Paper Base Bakelite Approx. 9,700 PSI Shear	Cast Aluminum 356T6 26,000 PSI Shear	Wrought Aluminum 2024T4 40,000 PSI Shear	Cast Magnesium EZ33AT5 16,000 PSI Shear	Magnesium AMS4434T6 AMS4490T6 20,000 PSI Shear	Cast Magnesium AMS4424T6 21,000 PSI Shear
#4	.053	630	1380	2150	825	1060	1120
#6	.081	775	2140	3240	1295	1620	1700
#8	.111	1080	2880	4440	1752	2220	2320
#10	.148	1400	3804	5900	2365	2960	3650
1/4"	.247	2400	6350	9840	3945	4940	5390
5/16"	.352	3400	9200	14130	5515	7040	7400
3/8"	.531	5100	13750	21200	8450	10600	11190
7/16"	.690	6600	17910	27600	11200	13800	14500
1/2"	.930	9200	24200	37000	14900	18600	19500



FROEHLING & ROBERTSON, INC
GEOTECHNICAL • ENVIRONMENTAL • MATERIALS
ENGINEERS • LABORATORIES
"OVER ONE HUNDRED YEARS OF SERVICE"

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Richmond, Virginia 23228
Telephone (804) 264-2701 Fax: (804) 264-3549

December 14, 2004

REPORT OF PROOFLOAD TESTS

TEST DATES: December 6 & 13, 2004

PROJECT NO.: F60-0612M

CLIENT: GARD Specialists Co. Inc.
PO BOX 157
Eagle River WI 54521

REPORT NO.: 1

PROJECT: GARDSERT Proofload Tests

On the referenced dates, an F&R technician conducted proofload tests on assemblies supplied by the client's representative. Samples were tested in tension in a Baldwin Tate-Emery Universal Testing Machine calibrated in accordance with NIST requirements in June 2004.

Materials supplied:

Hex head cap screws (GARD F-911), 4140 modified alloy steel

1/4-20 x 2" batch #29293

1/2-13 x 2-1/2" batch #30122

3/4-10 x 3" batch #29388

GARDSERTS, AISI 420 stainless steel

Plates for inserts

ASTM A312, Type 304

ASTM A312, Type 316

ASTM A36

Attached documents indicate the test parameters accomplished and the results of the tests. Should you have any questions or require additional information, please contact our office.

Respectfully submitted,

FROEHLING & ROBERTSON, INC.

Brett D. Clarke
Metals/NDT Department Manager

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CROZET, VA • FAYETTEVILLE, NC • FREDERICKSBURG, VA
GREENVILLE, SC • HICKORY, NC • RALEIGH, NC • ROANOKE, VA • STERLING, VA

**1/4" Hex Cap Screw in A312, Type 316 Plate**

After bolt failure, the remaining bolt segment was removed by hand, with no insert thread deformation.

Screw Size	Base Material	Load, Lbs	Load, PSI	Failure Mode
1/4"	A36	3,960	80,700	Insert pulled from plate
1/4"	A312, Type 316	5,400	110,000	Bolt fracture

**1/2" Hex Cap Screw in A312, Type 304 Plate**

After bolt failure, the remaining bolt segment was removed by hand, with no insert thread deformation.

Screw Size	Base Material	Load, Lbs	Load, PSI	Failure Mode
1/2"	A36	27,100	138,000	Bolt fracture
1/2"	A312, Type 304	24,500	124,800	Test guide failure

**3/4" Hex Cap Screw in A36**

After bolt failure, the remaining bolt segment was removed by hand, with no insert thread deformation.

Screw Size	Base Material	Load, Lbs	Load, PSI	Failure Mode
3/4"	A36	62,000	140,300	Bolt fracture
3/4"	A312, Type 316	63,000	142,600	Bolt fracture



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TEST CERTIFICATE – EAR-CONTROLLED DATA

Date: April 23, 2025
P.O. No.: Credit Card
Report No.: ENB037715P

Subject: Pull-Out Tests of Threaded Inserts

Sample Description: Threaded inserts, sizes 1/4-20, 1/2-13, and 3/4-10
One of each insert installed into A36, 316L SS and 6061-T6511 material

Testing Performed: Using a bolt, a tensile load was applied to each insert until failure of the bolt or insert occurred.

Table 1: Pull-Out Test Results

Insert Thread Size	Base Material	Peak Load (lbs)	Failure Mode
1/4-20	A36	5,705	Bolt Failure
	316L SS	5,344	Bolt Failure
	6061-T6511	5,443	Bolt Failure
1/2-13	A36	24,195	Bolt Failure
	316L SS	24,203	Bolt Failure
	6061-T6511	19,783	Insert Failure
3/4-10	A36	54,867	Bolt Failure
	316L SS	55,259	Bolt Failure
	6061-T6511	48,804	Insert Failure

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Electronic Original

Signed:


Tom D. Lake
Product Evaluation Engineer
tom.lake@element.com



1/4"-20 Insert in A36 Material, Bolt Failure
After bolt failure, the remaining bolt segment was removed by hand, with no insert thread deformation.



The test setup

Insert Thread Size	Base Material	Peak Load (lbs)	Failure Mode
1/4"-20	A36	5,705	Bolt Failure
1/4"-20	316L SS	5,344	Bolt Failure
1/4"-20	6061-T6511	5,443	Bolt Failure



1/2"-13 Insert in A36 Material, Bolt Failure
After bolt failure, the remaining bolt segment was removed by hand, with no insert thread deformation.

Insert Thread Size	Base Material	Peak Load (lbs)	Failure Mode
1/2"-13	A36	24,195	Bolt Failure
1/2"-13	316L SS	24,203	Bolt Failure
1/2"-13	6061-T6511	19,783	Insert Failure



3/4"-10 Insert in A36 Material, Bolt Failure
After bolt failure, the remaining bolt segment was removed by hand, with no insert thread deformation.



3/4"-10 Insert in 6061-T6511 Material, Insert Failure due to Substrate Material

Insert Thread Size	Base Material	Peak Load (lbs)	Failure Mode
3/4"-10	A36	54,867	Bolt Failure
3/4"-10	316L SS	55,259	Bolt Failure
3/4"-10	6061-T6511	48,804	Insert Failure

Spark Plug GARDserts®

Unique design fits all major styles of long-reach 14 mm spark plugs (gasket seat and taper seat, full and partial thread). Special design makes it nearly impossible to “cross-thread” a spark plug a major cause of spark plug thread damage. Great reliability and a permanent thread repair.



SP-14MM12-200

Part Number	Internal Thread Size	Length	Drill Size	Assortments (8) GARDserts, Drill Bit, and Fluid
SP-10MM08-200	10 mm x 1.00	.500	17/32"	500-SP1008-200
SP-10MM12-200	10 mm x 1.00	.750	17/32"	500-SP1012-200
SP-12MM10-200	12 mm x 1.25	.625	19/32"	500-SP1210-200
SP-12MM12-200	12 mm x 1.25	.750	19/32"	500-SP1212-200
SP-14MM06-200	14 mm x 1.25	.375	23/32"	500-SP1406-200
SP-14MM08-200	14 mm x 1.25	.500	23/32"	500-SP1408-200
SP-14MM12-200	14 mm x 1.25	.750	23/32"	500-SP1412-200
*SP-18MM08-200	18 mm x 1.50	.500	7/8"	500-SP1808-200
SP-18MM13-200	18 mm x 1.50	.813	7/8"	500-SP1813-200



SP-18MM08-200

*SP-18MM08-200 is for sparkplugs and O² sensors for trucks and automobiles.

Installation Tools



SP-10MM-TOOL-STUD



SP-14MM-TOOL-STUD



SP-12MM-TOOL-STUD



SP-18MM-TOOL-STUD

GARD Locking Fluid is required when installing spark plug GARDserts®.

Part number: 5905-TLF-10ML

Auto Repair Kit

(4) SP-14MM12-200, (4) SP-18MM08-200, (1) 5905-TLF-10ML,
(1) 5906-DTF-1, (1) 30-115, and (1) 30-14.

12 Pieces total, in a plastic case.

Part Number: 500-SP1418-200

GARDsert® Spark Plug Assortment with 12" Drill Bit

(4) SP-14MM12-200, (1) 5905-TLF-10ML, (1) 5906-DTF-1,
(1) 70-115-12-08 (23/32" x 12" Drill Bit), and (1) 30-115.

8 Pieces total, in a plastic case.

Part Number: 500-SP1412LD-200

How to Install a Spark Plug GARDsert®

This process is used on all of our Spark Plug GARDserts® with appropriate size drill and install tool or spark plug. While performing this operation, it is **imperative** to make sure everything is lined up and straight when drilling and installing.

This is your 10 steps to the proper repair. NO shortcuts.

Step 1 - Make sure the piston is not at the top of the stroke of the engine.

Step 2 - Wrap tape 1 inch from the tip of the drill bit, creating a stop.

Step 3 - Apply grease on the end of the bit to collect chips. **Make sure chips do not enter the cylinder.**

Step 4 - Apply GARD Deluxe Tapping Fluid (5906-DTF) in the undrilled spark plug hole.

Step 5 - Drill hole - **Do Not Drill Past the Stopper.**

Step 6 - Clean out the drilled hole.

Step 7 - Screw Spark Plug GARDsert® onto the install tool or new spark plug.

Step 8 - Apply Thread Locking Fluid (5905-TLF-10ML) to the **outside threads** of the GARDsert®.

Step 9 - You are ready to install the GARDsert®. The insert will be fully installed once the shoulder is flush with the material.

Step 10 - It is necessary for this procedure to stand for 24 hours.

Note: Any questions, please contact Technical Support at 1-800-541-9301

Airport Runway Lighting Base Can Top Flange Repair Kit

Part Number: 200AW-06

Fits L-867B and L-868B



- Make repairs quickly and accurately
- Replace damaged threads
- No need to remove spacer rings
- GARDserts® are made of 400 series stainless steel
- Independent third-party certification
- GARDserts® are FAA approved

Airport Runway Lighting Base Can Top Flange Repair Kit

includes the following:

- Drill fixture ring for proper alignment with the existing bolt pattern with dual bolt pattern for L-867B and L-868B.
- Steel "Mag-Plate" supplied for use with magnetic drills.
- Drill Bits to remove broken bolts.
- Reamer for clearance with stop collar.
- Hard bushings for precision guidance.
- Custom installation tool.
- 3/8"-16 Stainless Steel Thinwall GARDsert® to repair threaded holes (25 pieces).
- 2 oz. Deluxe Tapping Fluid.
- 1/2"-18 taper tap for 3/16" pre-tap depth of the stainless fixture.



"Mag-Plate"



FAA Approved

Airport Runway Lighting Base Can Top Flange Repair Kit

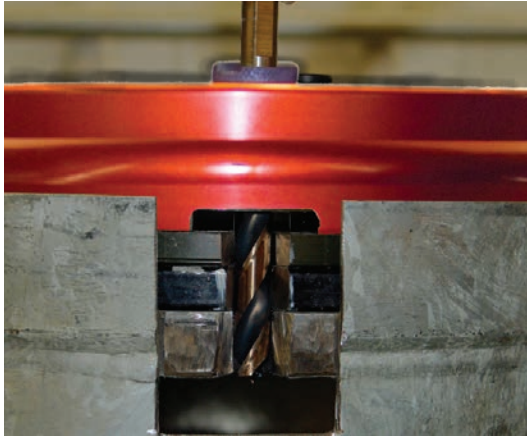
See instructions on page 24-26

Airport Runway Lighting Base Can Top Flange Repair Instructions

Part Number: 200AW-06

Fits L-867B and L-868B

Repair top flange threaded hole:



Cut away for illustration purposes only.

Remove the light fitting and install the drill fixture ring using the proper fasteners.
(L-867B or L-868B)

Step 1)

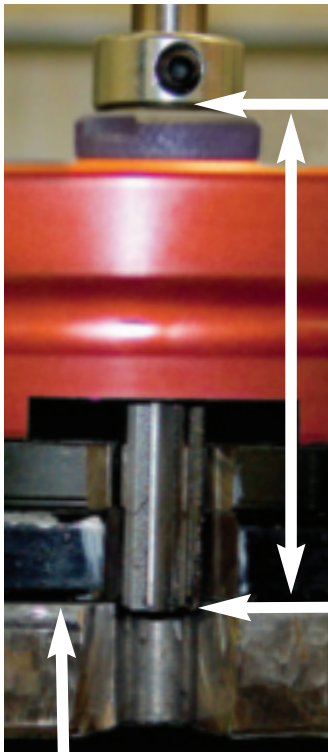
Install the 15/32" bushing in the fixture. Use a 15/32" drill bit and deluxe tapping fluid to drill through the spacer rings, flange, and/or top flange. (If there are multiple spacer rings, consider using a 6" or 12" extension drill bit.)



Step 2)

If there are NO spacer rings and/or extensions, proceed to Step 3.

Measure the total depth of the flange ring and/or spacer rings and set the depth for the reamer using the stop collar. Install the 1/2" bushing. Use the 1/2" chucking reamer to enlarge the 7/16" through holes in the spacer ring and/or extensions. Then, install the 1/2" bushing.

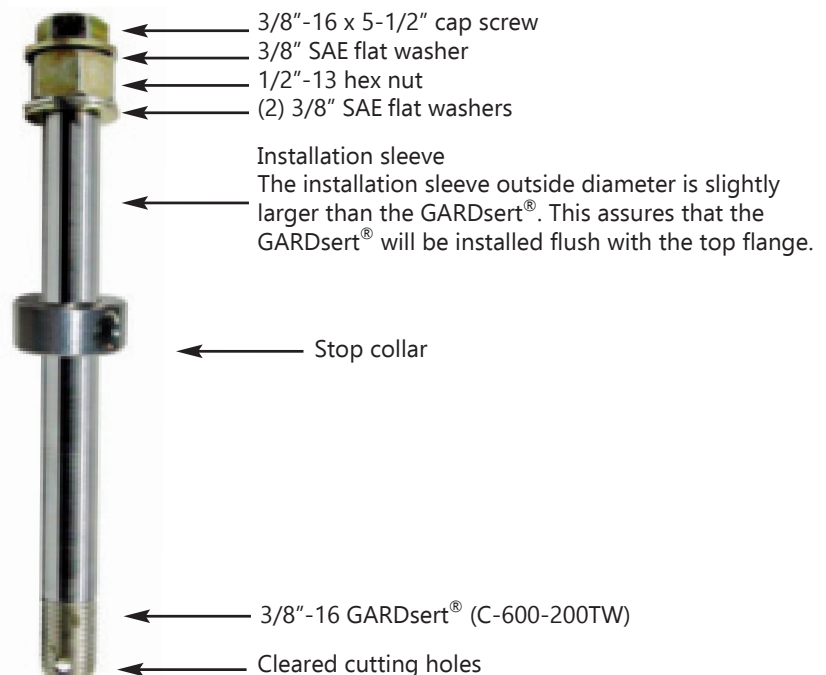


Depth for stop collar.

**STOP before the top flange.
DO NOT use the reamer to
enlarge the hole in the base
can flange.**

Step 3)

Assemble the GARDsert® installation tool as shown.



Airport Runway Lighting Base Can Top Flange Repair Instructions (continued)

Part Number: 200AW-06

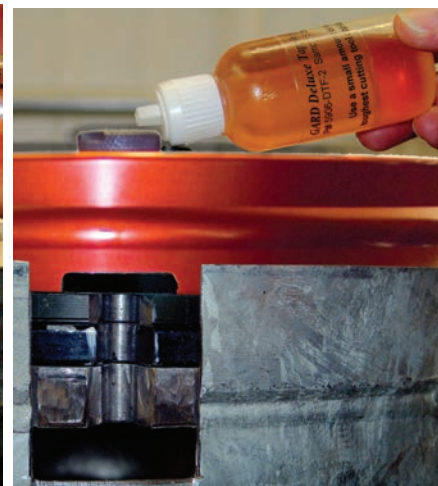
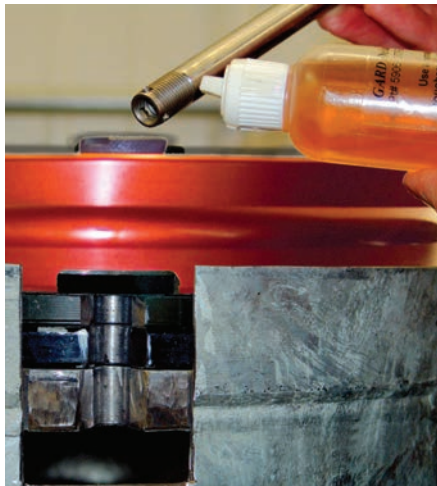
Fits L-867B and L-868B

Repair top flange threaded hole (cont.)

Step 4)

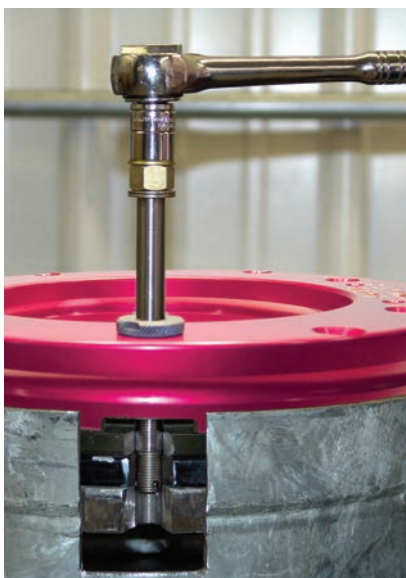
Apply Deluxe Tapping Fluid to the GARDsert® and the drilled hole. Allow some of the tapping fluid to flow down into the hole in the top flange.

Insert the GARDsert® installation tool assembly into the bushing.



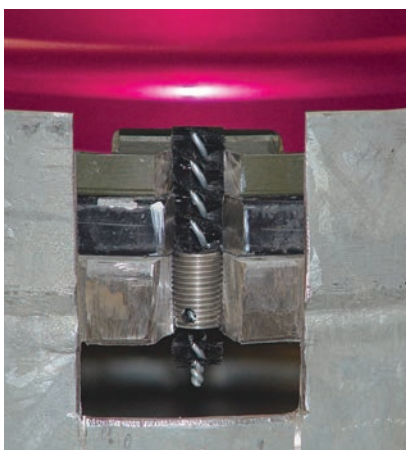
Step 5)

Place a wrench on the cap screw and turn the GARDsert® assembly until the tool bottoms out and the GARDsert® is installed flush with the top flange. Place a second wrench on the hex nut to hold it and reverse the direction of the cap screw to break the tension between the assembly and the GARDsert®.



Step 6)

Using the tube brush, remove the chips from the GARDsert®. Then, remove the drill fixture and reinstall the light fitting.



GARDsert®
Won't Wear out...
Won't Pull out...
Hardened Stainless Steel

Airport Runway Lighting Base Can Top Flange Repair Instructions (continued)

Part Number: 200AW-06

Fits L-867B and L-868B

Removing the broken bolt from a GARDsert®

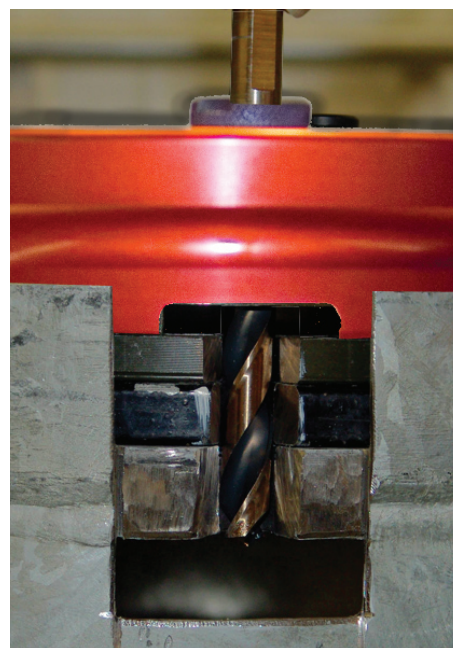
Because the GARDsert® is harder than the 18/8 bolt, you may be able to turn out the broken stud by following this procedure.

Remove the light fitting and install the drill fixture ring using proper fasteners.

(L-867B or L-868B)



Install the 1/4" bushing in the fixture. Use the 1/4" drill bit and drill through the bolt. Remove the drill fixture ring. If the bolt hole is not clear, use the screw extractor and remove the broken stud.





Intertek

PROGRAM ADMINISTRATOR
DEPARTMENT ALECP
INTERTEK
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CORTLAND, NY 13045-0950

ORIGINAL ISSUE DATE: December 7, 2023Recertification due: May 2031

An Activity Sponsored and Administered by
Intertek

JAQUITH INDUSTRIES, INC.
600 East Brighton Ave
Syracuse, NY 13205

**AIRPORT LIGHTING
EQUIPMENT
CERTIFICATION PROGRAM**

**CERTIFICATE OF CONFORMANCE
NUMBER 32010531-006-1**

The product described below is hereby approved for listing in the next issue of the Federal Aviation Administration (FAA) Advisory Circular (AC) 150/5345-53, Appendix 3 Addendum "Airport Lighting Equipment Certification Program. The approval is based on successful completion of tests in accordance with the specifications listed in, and the requirements for approval described in the Advisory Circular, and the reporting to the Program Administrator the results of such tests, accompanied by related documents by an Intertek recognized testing laboratory. This Certificate is only confirmable in conjunction with equipment being listed in AC 150/5345-53, Appendix 3, Addendum, as currently published by the FAA. The certification is not valid for a product modified with non-OEM replacement parts or non-production components.

L-868 – Light Base, Load Bearing (AC 150/5345-42J)									
Manufacturer	Type	Size	Class	Manufacturer's Catalog Number					
				Base	Multiple Section Base			Top	Ext
					Bottom	Middle			
Jaquith Ind.	L-868	A	1A	AC08XXXXXXXXXX	AC40XXXXXXXXXX	AE4703M	AF0XXXX	AX0XXXX	
	L-868	B	1A	AC24XXXXXXXXXX	AC44XXXXXXXXXX	AE4704M	AF2XXXX	AX2XXXX	
	L-868	C	1A	AC35XXXXXXXXXX	AC45XXXXXXXXXX	AE4705M	AF3XXXX	AX3XXXX	

1. This Equipment requires continuing validation in accordance with the requirements of AC 150/5345-53, and the Intertek Airport Lighting Equipment Certification Program.
2. Product tested and Report issued by: Jaquith Industries; Intertek

(A) Report No: G105371484W1; 105371484CRT- 001D1 (B) Date of Report: 12/2023; 12/2023

NOTE: PLEASE REVIEW, AND ADVISE ADMINISTRATOR AT INTERTEK IMMEDIATELY IF DATA, AS SHOWN, NEED TO BE CORRECTED.

Approved for Certification by:

Jeremy N. Downs, P.E., Program Administrator
Date: December 7, 2023



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Industrial Chemicals

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All Shipments Include MSDS (Material Safety Data Sheets)



GARD Eco-Cut Heavy Duty Tool Coolant

Machine (CNC) or Manual

GARD Eco-Cut is a universal, high-performance semi-synthetic metalworking coolant. Great for machining and grinding on ferrous and non-ferrous metals. Provides excellent bio-resistance for long sumps life.



Machine (CNC)



Manual

Eco-Cut Benefits:

- Low Foam
- Low Odor
- Gives long sump life without the use of additives
- Leaves no sticky deposits or slippery residues on machines or parts
- Provides corrosion protection
- Minimal drag out and quickly rejects tramp oils

(continued on next page)

GARD Eco-Cut Heavy Duty Tool Coolant (continued)

Eco-Cut Applications

Mix Ratio

For Manual Drilling Applications	4:1
Milling, drilling, turning	10:1 to 25:1
General Machining	10:1 to 25:1
Grinding -ID, OD, Centerless, Surface and Blanchard Grinding	20:1 to 30:1
Sawing	10:1 to 20:1

Eco-Cut Typical Physical Properties

Appearance (Neat)	Amber Liquid*
Odor	Low
Specific Gravity	1.00
pH @ 5% Solution	9.5
Phenols, nitrites, chlorine and sulfur	None

* A milky discoloration is natural in this product; it does not affect the products performance.

Eco-Cut Toxicity and Handling Precautions:

Eco-Cut is safe to handle in concentrated or diluted form. Keep concentrate away from sparks and open flames. Exercise care consistent with good industrial practices. Adhere to prevailing OSHA safety regulations, guidelines, and/or procedures for this class of product. Refer to Eco-Cut 5905-EC-(oz) MSDS for additional information.



Part Number	Volume	Pre-Mix or Concentrate	Container Type
5905-EC-16	16 oz	Pre-Mix	Bottle
5905-EC-128	1 Gallon	Concentrate*	Jug
5905-EC-640	5 Gallon	Concentrate*	Pail

*When diluting the concentrate, only use distilled water.

GARD Eco-Solv Heavy Duty Degreaser

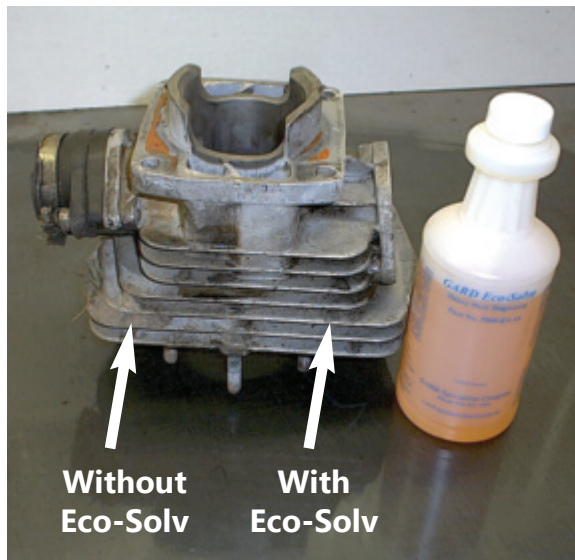
GARD Eco-Solv quickly penetrates, emulsifies, and liquefies heavy grease and oil deposits.

GARD Eco-Solv is designed explicitly for safely degreasing and cleaning electric motors, engines, engine parts, and machinery.

GARD Eco-Solv has a fast evaporating, non-conductive formula and is an ideal replacement for hazardous chemicals, degreasing, and cleaning solutions.

GARD Eco-Solv's rapid evaporation and low attack rate on varnish makes it ideal for use with an air gun, sprayer, or dip tank cleaning of electric motors.

Part Number	Volume	Container Type
5905-ES-16	16 oz	Bottle
5905-ES-128	1 Gallon	Jug



Before



After

GARD Eco-Solv cuts through:

- Grease
- Black Tire Marks
- Tar
- Asphalt
- Encrusted oil and rubber burns on concrete floors
- Cold dye from small parts
- Cleans grease, oil, and gasoline from engines, and auto chassis, and other metal surfaces.
- Dissolves adhesive and cosmoline quickly

GARD Deluxe Tapping Fluid

Part Number	Volume	Container Type
5906-DTF-2	2 oz	Bottle
5906-DTF-8	8 oz	Bottle
5906-DTF-16	16 oz	Bottle
5906-DTF-128	1 Gallon	Jug
5906-DTF-5G	5 Gallon	Pail



Try GARD's Deluxe Tapping Fluid on other applications, such as hacksaw blades or carbide burrs.

You will not be disappointed.

- Reduce Breakage
- Cut Precision Threads
- Non-Toxic
- Non-Explosive
- Reduces Dulling
- Prolong Tool Life
- Extremely Effective on Mild Steel
- Outstanding on Stainless Steel (May Discolor Aluminum)
- Absolutely NO 1.1.1. Trichloroethane
- No Harsh Chemicals
- No Harmful Ingredients

Tapping



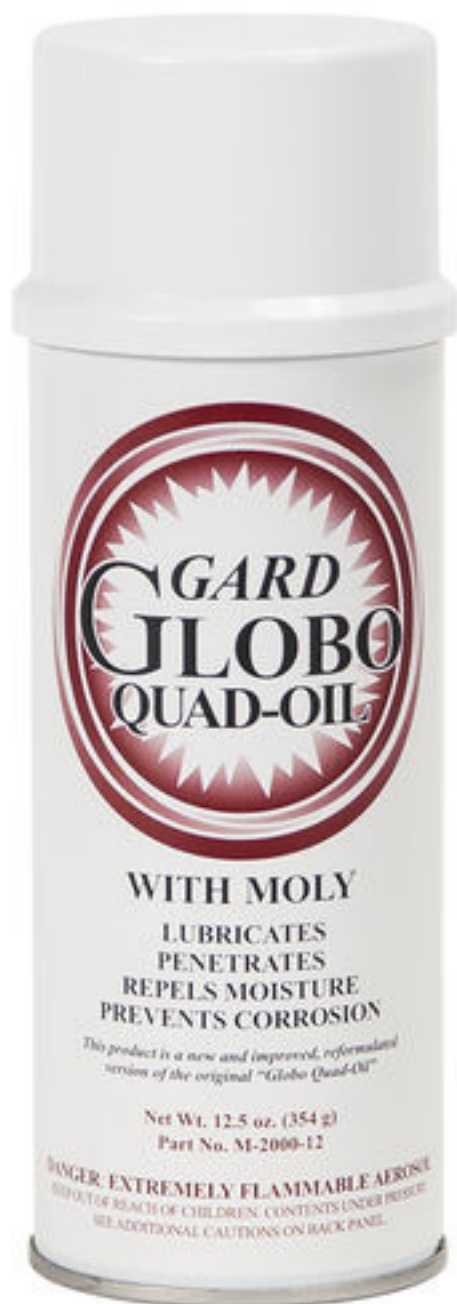
Drilling



Directions for Use:

Before contacting the workpiece, apply GARD's Deluxe Tapping Fluid to the tap or drill (using a small amount). You will immediately notice no offensive odor and the fluid is cohesive; it stays on your cutting tool! GARD's Deluxe Tapping Fluid is specifically formulated to give you optimum results without excessive waste or harsh chemicals.

Globo Quad-Oil



Part Number	Volume	Container Type
M-2000-12	12.5 oz	Can

A lubricating product containing molybdenum disulfide, formulated to quickly penetrate rust, corrosion, and moisture quickly. Four-way action: lubricates, penetrates, displaces moisture, and prevents corrosion.

Prevents corrosion and provides lubrication on nuts, bolts, corroded parts, door hinges, locks, machine parts, gears, slides, wire cable, and other turning and sliding parts.

Directions:

Shake well. Remove the protective cap. Hold the container 6-12 inches from the surface to be treated. Point the opening in the desired direction and spray liberally as needed.

Uses

- Automotive
- Oil Fields
- Marine
- Mold Releases
- Manufacturing
- Construction
- Mining
- Foundries
- General Maintenance
- Machine Shops

GARD Teflon Lubricant

A unique formulation for use on surfaces that require lubrication. Applications include conveyors, couplings, belts, pulleys, hospital beds, chains, etc. Also is excellent for coating parts to prevent corrosion during shipping.

An excellent product for cutting and tapping aluminum workpieces. Withstands high temperatures, high solids, safe on plastics. NO OZONE DEPLETERS. Each can comes with a plastic nozzle extension for tight applications.

GARD Teflon also aids in drilling aluminum, keeping the metal from overheating and the aluminum shavings from loading up on the drill bit.

SHAKE WELL BEFORE USING

Part Number	Volume	Container Type
5906-83311	11 oz	Can

Product Tip:

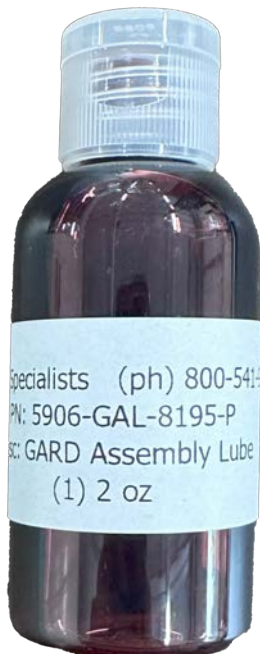
Spray the aluminum part and drill bit with GARD Teflon, then drill.



Uses

- Automotive
- Oil Fields
- Marine
- Bakeries
- Mold Releases
- Construction
- Mining
- Foundries
- General Maintenance
- Machine Shops
- Plumbing
- Textile
- Printing
- Agricultural
- Manufacturing

GARD Assembly Lube



Part Number	Volume	Container Type
5906-GAL-8195-P	4 oz	Bottle

- Adheres to component surfaces to prevent scuffing and galling during initial start-up.
- Proper lubrication of metal mating surfaces is essential before starting a new or rebuilt engine.
- High-quality formulation meets or exceeds OEM performance specs.

Works great on engine bearings, camshafts, lifters, valves, guides, and rocker shaft assemblies.

GARD Thread Locking Fluid



Part Number	Volume	Container Type
5905-TLF-10ML	10 ml	Bottle
5905-TLF-20ML	20 ml	Bottle

Note: Read package insert for precautions

- Fast curing (only 24 hours) and high strength.
- High curability at low temperatures.
- Low viscosity
- -40°F through 248°F

Exclusively developed for the installation of GARD Pipeserts and certain Spark Plug repair applications.

GARD Globo Bond Package

An adhesive and welding powder that instantly repairs almost anything!

For Industrial And Professional use only



Part Number	Volume	Container Type
5905-GGB	25 ml each (50 ml)	Bottles

GARD Globo Bond Adhesive is not suitable for polyethylene, polypropylene plastics, PTFE, or fiber-based materials like paper or cloth.

Adhesive Application

Apply GARD Globo Bond Adhesive to one surface of the repair. For a strong bond, you simply need to hold the surfaces firmly together to allow GARD Globo Bond Adhesive to bond instantly. Different materials, like rubber, plastic, and vinyl-based materials bond almost instantly. Metals and glass may need up to 30 seconds before the bond is set. Some other materials may require several minutes to achieve a strong bond. The adhesive will achieve maximum strength in 24 hours. GARD Globo Bond Adhesive can also repair many mixed materials, from copper to plastic, rubber to acrylic.

Care of GARD Globo Bond Adhesive

It contains no solvents. It will not dry out in everyday use. After each use, clean the nozzle and replace the cap. For longer shelf life, store GARD Globo Bond Adhesive in the refrigerator. Allow adhesive to reach room temperature before next use.

Do not mix the caps or dip the adhesive nozzle into the Welding Powder. This may cause the adhesive to spoil or neutralize.

Welding Powder Application

The GARD Globo Bond Welding Powder can repair, seal, and fill gaps in plastic, wood, and metal. When activated with GARD Globo Bond Adhesive, it will build support to strengthen the repair or can be used to weld materials together, just like solder. For deep holes, seal one end with tape. Apply the welding powder in layers, saturating each layer with GARD Globo Bond Adhesive. Do not exceed a maximum depth of 1/16" to 2mm before activating the welding powder with GARD Globo Bond adhesive. This process is repeated until the cavity is full. After a few minutes, the repair can be drilled, filed, or sanded, ready for staining or painting.

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Mechanic Length-Fractional Drill Bits

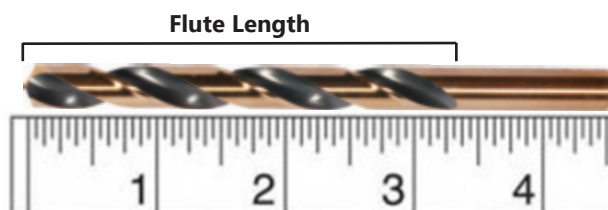
GARD drill bits are tough, long-lasting, and designed for maintenance as well as production applications.



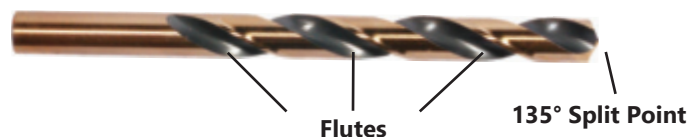
Part Number	Size	Overall Length	Flute Length	3 Flat Shank
30-01	1/16"	1-7/8"	7/8"	No
30-013	5/64"	2"	1"	No
30-015	3/32"	2-1/4"	1-1/4"	No
30-018	7/64"	2-3/8"	1-5/16"	No
30-02	1/8"	2-1/2"	1-7/16"	No
30-023	9/64"	2-5/8"	1-9/16"	No
30-025	5/32"	2-3/4"	1-11/16"	No
30-028	11/64"	2-7/8"	1-13/16"	No
30-03	3/16"	3"	1-7/8"	Yes
30-033	13/64"	3-1/8"	1-15/16"	Yes
30-035	7/32"	3-1/4"	2"	Yes
30-038	15/64"	3-3/8"	2-1/16"	Yes
30-04	1/4"	3-1/2"	2"	Yes
30-043	17/64"	3-5/8"	2-1/8"	Yes
30-045	9/32"	3-3/4"	2-1/4"	Yes
30-048	19/64"	3-7/8"	2-3/8"	Yes
30-05	5/16"	4"	2-1/2"	Yes
30-053	21/64"	4-1/16"	2-9/16"	Yes
30-055	11/32"	4-1/8"	2-5/8"	Yes
30-058	23/64"	4-3/16"	2-11/16"	Yes
30-06	3/8"	4-1/4"	2-11/16"	Yes
30-063	25/64"	4-5/16"	2-3/4"	Yes
30-065	13/32"	4-3/8"	2-13/64"	Yes
30-068	27/64"	4-7/16"	2-7/8"	Yes
30-07	7/16"	4-1/2"	2-15/16"	Yes
30-073	29/64"	4-5/8"	3"	Yes
30-075	15/32"	4-3/4"	3-1/8"	Yes
30-078	31/64"	4-7/8"	3-1/4"	Yes
30-08	1/2"	5"	3-3/8"	Yes
30-083	33/64"	6"	3-1/8"	Yes
30-085	17/32"	6"	3-1/8"	Yes
30-088	35/64"	6"	3-1/8"	Yes
30-09	9/16"	6"	3-1/8"	Yes
30-093	37/64"	6"	3-1/8"	Yes
30-095	19/32"	6"	3-1/8"	Yes
30-098	39/64"	6"	3-1/8"	Yes
30-10	5/8"	6"	3-1/8"	Yes

Part Number	Size	Overall Length	Flute Length	3 Flat Shank
30-103	41/64"	6"	3-1/8"	Yes
30-105	21/32"	6"	3-1/8"	Yes
30-108	43/64"	6"	3-1/8"	Yes
30-11	11/16"	6"	3-1/8"	Yes
30-113	45/64"	6"	3-1/8"	Yes
30-115	23/32"	6"	3-1/8"	Yes
30-118	47/64"	6"	3-1/8"	Yes
30-12	3/4"	6"	3"	Yes
30-123	49/64"	6"	3"	Yes
30-125	25/32"	6"	3"	Yes
30-128	51/64"	6"	3"	Yes
30-13	13/16"	6"	3"	Yes
30-133	53/64"	6"	3"	Yes
30-135	27/32"	6"	3"	Yes
30-138	55/64"	6"	3"	Yes
30-14	7/8"	6"	3"	Yes
30-143	57/64"	6"	3"	Yes
30-145	29/32"	6"	3"	Yes
30-148	59/64"	6"	3"	Yes
30-15	15/16"	6"	3"	Yes
30-153	61/64"	6"	3"	Yes
30-155	31/32"	6"	3"	Yes
30-158	63/64"	6"	3"	Yes
30-16	1"	6"	3"	Yes
30-163	1-1/64"	6"	3"	Yes
30-165	1-1/32"	6"	3"	Yes
30-17	1-1/16"	6"	3"	Yes
30-175	1-3/32"	6"	3"	Yes
30-18	1-1/8"	6"	3"	Yes
30-185	1-5/32"	6"	3"	Yes
30-19	1-3/16"	6"	3"	Yes
30-195	1-7/32"	6"	3"	Yes
30-20	1-1/4"	6"	3"	Yes
30-21	1-5/16"	6"	3"	Yes
30-22	1-3/8"	6"	3"	Yes
30-23	1-7/16"	6"	3"	Yes
30-24	1-1/2"	6"	3"	Yes

Flute Length



Number of Flutes



Mechanic Length-Fractional Drill Bit Assortments

8 PC Set

1 piece each, with 9/16" thru 1"
by 1/16" with steel index.

Part No. 500-8-30



13 PC Set

1 piece each, 1/16" thru 1/4"
by 1/64" with steel index.

Part No. 500-13-30



15 PC Set

1 piece each, 1/16" thru 1/2"
by 1/32" with steel index.

Part No. 500-15-30



21 PC Set

1 piece each, 1/16" thru 3/8"
by 1/64" with 29-hole steel index.

Part No. 500-21-30



29 PC Set

1 piece each, 1/16" thru 1/2"
by 1/64" with steel index.

Part No. 500-29-30



33 PC Set

1 piece each, 1/2" thru 1"
by 1/64" with steel stand.

Part No. 500-33-30



29 PC Drawer Set

1 piece each, 1/16" thru 1/2"
by 1/64" with 3 drawer dispenser.

Part No. 500-29D-30



93 PC Drawer Set

93 pieces with 3 drawer dispenser,
see chart for quantity.

Part No. 500-29D-30L



Size	QTY	Size	QTY
1/16"	3	9/32"	4
5/64"	3	19/64"	2
3/32"	3	5/16"	6
7/64	3	21/64"	3
1/8"	6	11/32"	2
9/64"	4	23/64"	2
5/32"	4	3/8"	4
11/64"	3	25/64"	2
3/16"	6	13/32"	2
13/64"	4	27/64"	2
7/32"	4	7/16"	2
15/64"	3	29/64"	2
1/4"	6	15/32"	1
17/64"	4	31/64"	1
		1/2"	2

Jobber Length-Fractional Cryogenic Drill Bits

Cryogenic treatment creates a more uniform "grain" structure by transforming retained austenite into martensite. It modifies the carbon micro-structure through precipitation of carbides increasing resistance to wear. The nitride process diffuses nitrogen into the surface to create a case hardening resulting in superior tool life and exceptional corrosion resistance.



Part Number	Size	Overall Length	Flute Length	3 Flat Shank
29-01-CNB	1/16"	1-7/8"	7/8"	No
29-02-CNB	5/64"	2"	1"	No
29-03-CNB	3/32"	2-1/4"	1-1/4"	No
29-04-CNB	7/64"	2-5/8"	1-1/2"	No
29-05-CNB	1/8"	2-3/4"	1-5/8"	No
29-06-CNB	9/64"	2-7/8"	1-3/4"	No
29-07-CNB	5/32"	3-1/8"	2"	No
29-08-CNB	11/64"	3-1/4"	2-1/8"	No
29-09-CNB	3/16"	3-1/2"	2-5/16"	Yes
29-10-CNB	13/64"	3-5/8"	2-7/16"	Yes
29-11-CNB	7/32"	3-3/4"	2-1/2"	Yes
29-12-CNB	15/64"	3-7/8"	2-5/8"	Yes
29-13-CNB	1/4"	4"	2-3/4"	Yes
29-14-CNB	17/64"	4-1/8"	2-7/8"	Yes
29-15-CNB	9/32"	4-1/4"	2-15/16"	Yes
29-16-CNB	19/64"	4-3/8"	3-1/16"	Yes
29-17-CNB	5/16"	4-1/2"	3-3/16"	Yes
29-18-CNB	21/64"	4-5/8"	3-5/16"	Yes
29-19-CNB	11/32"	4-3/4"	3-7/16"	Yes
29-20-CNB	23/64"	4-7/8"	3-1/2"	Yes
29-21-CNB	3/8"	5"	3-5/8"	Yes
29-22-CNB	25/64"	5-1/8"	3-3/4"	Yes
29-23-CNB	13/32"	5-1/4"	3-7/8"	Yes
29-24-CNB	27/64"	5-3/8"	3-15/16"	Yes
29-25-CNB	7/16"	5-1/2"	4-1/16"	Yes
29-26-CNB	29/64"	5-5/8"	4-3/16"	Yes
29-27-CNB	15/32"	5-3/4"	4-5/16"	Yes
29-28-CNB	31/64"	5-7/8"	4-3/8"	Yes
29-29-CNB	1/2"	6"	4-1/2"	Yes

Jobber Length-Fractional Cryogenic Drill Bit Assortments

13 PC Set

1 piece each, 1/16" thru 1/4"
by 1/64" with steel index.

Part No. 500-13-30-Cr-Gray



21 PC Set

1 piece each, 1/16" thru 3/8"
by 1/64" with steel index.

Part No. 500-21-30-Cr-Burgundy



29 PC Set

1 piece each, 1/16" thru 1/2"
by 1/64" with round travel case.

Part No. 500-29-30-Cr-Red



58 PC Drawer Set

2 pieces each, 1/16" thru 1/2"
by 1/64" with 3 drawer dispenser.

Part No. 500-58-29-D2-Cr



Jobber Length-Number/Wire Gauge Drill Bits



Part Number	Number Size	Overall Length	Flute Length	Part Number	Number Size	Overall Length	Flute Length
34-1	#1	3-7/8"	2-5/8"	34-41	#41	2-3/8"	1-3/8"
34-2	#2	3-7/8"	2-5/8"	34-42	#42	2-1/4"	1-1/4"
34-3	#3	3-3/4"	2-1/2"	34-43	#43	2-1/4"	1-1/4"
34-4	#4	3-3/4"	2-1/2"	34-44	#44	2-1/8"	1-1/8"
34-5	#5	3-3/4"	2-1/2"	34-45	#45	2-1/8"	1-1/8"
34-6	#6	3-3/4"	2-1/2"	34-46	#46	2-1/8"	1-1/8"
34-7	#7	3-5/8"	2-7/16"	34-47	#47	2"	1"
34-8	#8	3-5/8"	2-7/16"	34-48	#48	2"	1"
34-9	#9	3-5/8"	2-7/16"	34-49	#49	2"	1"
34-10	#10	3-5/8"	2-7/16"	34-50	#50	2"	1"
34-11	#11	3-1/2"	2-5/16"	34-51	#51	2"	1"
34-12	#12	3-1/2"	2-5/16"	34-52	#52	1-7/8"	7/8"
34-13	#13	3-1/2"	2-5/16"	34-53	#53	1-7/8"	7/8"
34-14	#14	3-3/8"	2-3/16"	34-54	#54	1-7/8"	7/8"
34-15	#15	3-3/8"	2-3/16"	34-55	#55	1-7/8"	7/8"
34-16	#16	3-3/8"	2-3/16"	34-56	#56	1-3/4"	3/4"
34-17	#17	3-3/8"	2-3/16"	34-57	#57	1-3/4"	3/4"
34-18	#18	3-1/4"	2-1/8"	34-58	#58	1-5/8"	11-16"
34-19	#19	3-1/4"	2-1/8"	34-59	#59	1-5/8"	11/16"
34-20	#20	3-1/4"	2-1/8"	34-60	#60	1-5/8"	11/16"
34-21	#21	3-1/4"	2-1/8"	34-61	#61	1-5/8"	11/16"
34-22	#22	3-1/8"	2"	34-62	#62	1-1/2"	5/8"
34-23	#23	3-1/8"	2"	34-63	#63	1-1/2"	5/8"
34-24	#24	3-1/8"	2"	34-64	#64	1-1/2"	5/8"
34-25	#25	3"	1-7/8"	34-65	#65	1-1/2"	5/8"
34-26	#26	3"	1-7/8"	34-66	#66	1-3/8"	1/2"
34-27	#27	3"	1-7/8"	34-67	#67	1-3/8"	1/2"
34-28	#28	2-7/8"	1-3/4"	34-68	#68	1-3/8"	1/2"
34-29	#29	2-7/8"	1-3/4"	34-69	#69	1-3/8"	1/2"
34-30	#30	2-3/4"	1-5/8"	34-70	#70	1-1/4"	3/8"
34-31	#31	2-3/4"	1-5/8"	34-71	#71	1-1/4"	3/8"
34-32	#32	2-3/4"	1-5/8"	34-72	#72	1-1/8"	5/16"
34-33	#33	2-5/8"	1-1/2"	34-73	#73	1-1/8"	5/16"
34-34	#34	2-5/8"	1-1/2"	34-74	#74	1"	1/4"
34-35	#35	2-5/8"	1-1/2"	34-75	#75	1"	1/4"
34-36	#36	2-1/2"	1-7/16"	34-76	#76	7/8"	3/16"
34-37	#37	2-1/2"	1-7/16"	34-77	#77	7/8"	3/16"
34-38	#38	2-1/2"	1-7/16"	34-78	#78	7/8"	3/16"
34-39	#39	2-3/8"	1-3/8"	34-79	#79	3/4"	1/8"
34-40	#40	2-3/8"	1-3/8"	34-80	#80	3/4"	1/8"

Jobber Length-Letter Drill Bits

Part Number	Letter Size	Overall Length	Flute Length	Part Number	Letter Size	Overall Length	Flute Length
34-A	A	3-7/8"	2-5/8"	34-N	N	4-3/8"	3-1/16"
34-B	B	4"	2-3/4"	34-O	O	4-1/2"	3-3/16"
34-C	C	4"	2-3/4"	34-P	P	4-5/8"	3-5/16"
34-D	D	4"	2-3/4"	34-Q	Q	4-3/4"	3-7/16"
34-E	E	4"	2-3/4"	34-R	R	4-3/4"	3-7/16"
34-F	F	4-1/8"	2-7/8"	34-S	S	4-7/8"	3-1/2"
34-G	G	4-1/8"	2-7/8"	34-T	T	4-7/8"	3-1/2"
34-H	H	4-1/8"	2-7/8"	34-U	U	5"	3-5/8"
34-I	I	4-1/8"	2-7/8"	34-V	V	5"	3-5/8"
34-J	J	4-1/8"	2-7/8"	34-W	W	5-1/8"	3-3/4"
34-K	K	4-1/4"	2-15/16"	34-X	X	5-1/8"	3-3/4"
34-L	L	4-1/4"	2-15/16"	34-Y	Y	5-1/4"	3-7/8"
34-M	M	4-3/8"	3-1/16"	34-Z	Z	5-1/4"	3-7/8"

Jobber Length-Left Hand Drill Bits



Part Number	Size	Overall Length	Flute Length
SP36-01	1/16"	1-7/8"	7/8"
SP36-013	5/64"	2"	1"
SP36-015	3/32"	2-1/4"	1-1/4"
SP36-018	7/64"	2-5/8"	1-1/2"
SP36-02	1/8"	2-3/4"	1-5/8"
SP36-023	9/64"	2-7/8"	1-3/4"
SP36-025	5/32"	3-1/8"	2"
SP36-028	11/64"	3-1/4"	2-1/8"
SP36-03	3/16"	3-1/2"	2-5/16"
SP36-033	13/64"	3-5/8"	2-7/16"
SP36-035	7/32"	3-3/4"	2-1/2"
SP36-038	15/64"	3-7/8"	2-5/8"
SP36-04	1/4"	4"	2-3/4"
SP36-043	17/64"	4-1/8"	2-7/8"
SP36-045	9/32"	4-1/4"	2-15/16"

Part Number	Size	Overall Length	Flute Length
SP36-048	19/64"	4-3/8"	3-1/16"
SP36-05	5/16"	4-1/2"	3-3/16"
SP36-053	21/64"	4-5/8"	3-5/16"
SP36-055	11/32"	4-3/4"	3-7/16"
SP36-058	23/64"	4-7/8"	3-1/2"
SP36-06	3/8"	5"	3-5/8"
SP36-063	25/64"	5-1/8"	3-3/4"
SP36-065	13/32"	5-1/4"	3-7/8"
SP36-068	27/64"	5-3/8"	3-15/16"
SP36-07	7/16"	5-1/2"	4-1/16"
SP36-073	29/64"	5-5/8"	4-3/16"
SP36-075	15/32"	5-3/4"	4-5/16"
SP36-078	31/64"	5-7/8"	4-3/8"
SP36-08	1/2"	6"	4-1/2"

Aircraft Extension Drill Bits



6"

Part Number	Size	Overall Length	Flute Length
AC6-008	3/64"	6"	3/4"
AC6-01	1/16"	6"	7/8"
AC6-013	5/64"	6"	1"
AC6-015	3/32"	6"	1-1/4"
AC6-018	7/64"	6"	1-1/2"
AC6-02	1/8"	6"	1-5/8"
AC6-023	9/64"	6"	1-3/4"
AC6-025	5/32"	6"	2"
AC6-028	11/64"	6"	2-1/8"
AC6-03	3/16"	6"	2-5/16"
AC6-033	13/64"	6"	2-7/16"
AC6-035	7/32"	6"	2-1/2"
AC6-038	15/64"	6"	2-5/8"
AC6-04	1/4"	6"	2-3/4"
AC6-043	17/64"	6"	2-7/8"
AC6-045	9/32"	6"	2-15/16"
AC6-048	19/64"	6"	3-1/16"
AC6-05	5/16"	6"	3-3/16"
AC6-053	21/64"	6"	3-5/16"
AC6-055	11/32"	6"	3-7/16"
AC6-058	23/64"	6"	3-1/2"
AC6-06	3/8"	6"	3-5/8"
AC6-063	25/64"	6"	3-3/4"
AC6-065	13/32"	6"	3-7/8"
AC6-068	27/64"	6"	3-15/16"
AC6-07	7/16"	6"	4-1/16"
AC6-073	29/64"	6"	4-3/16"
AC6-075	15/32"	6"	4-5/16"
AC6-078	31/64"	6"	4-3/8"
AC6-08	1/2"	6"	4-1/2"

12"

Part Number	Size	Overall Length	Flute Length
AC12-01	1/16"	12"	7/8"
AC12-013	5/64"	12"	1"
AC12-015	3/32"	12"	1-1/4"
AC12-018	7/64"	12"	1-1/2"
AC12-02	1/8"	12"	1-5/8"
AC12-023	9/64"	12"	1-3/4"
AC12-025	5/32"	12"	2"
AC12-028	11/64"	12"	2-1/8"
AC12-03	3/16"	12"	2-5/16"
AC12-033	13/64"	12"	2-7/16"
AC12-035	7/32"	12"	2-1/2"
AC12-038	15/64"	12"	2-5/8"
AC12-04	1/4"	12"	2-3/4"
AC12-043	17/64"	12"	2-7/8"
AC12-045	9/32"	12"	2-15/16"
AC12-048	19/64"	12"	3-1/16"
AC12-05	5/16"	12"	3-3/16"
AC12-053	21/64"	12"	3-5/16"
AC12-055	11/32"	12"	3-7/16"
AC12-058	23/64"	12"	3-1/2"
AC12-06	3/8"	12"	3-5/8"
AC12-063	25/64"	12"	3-3/4"
AC12-065	13/32"	12"	3-7/8"
AC12-068	27/64"	12"	3-15/16"
AC12-07	7/16"	12"	4-1/16"
AC12-073	29/64"	12"	4-3/16"
AC12-075	15/32"	12"	4-5/16"
AC12-078	31/64"	12"	4-3/8"
AC12-08	1/2"	12"	4-1/2"

Jobber Length-Metric Drill Bits



Part Number	Size	Overall Length	Flute Length	Part Number	Size	Overall Length	Flute Length
47-0-8	0.8 mm	1-3/8"	1/2"	47-5-5	5.5 mm	3-3/4"	2-1/2"
47-0-85	0.85 mm	1-1/2"	5/8"	47-5-8	5.8 mm	3-7/8"	2-5/8"
47-0-9	0.9 mm	1-1/2"	5/8"	47-6-0	6.0 mm	4"	2-3/4"
47-0-95	0.95 mm	1-1/2"	5/8"	47-6-1	6.1 mm	4"	2-3/4"
47-1-0	1.0 mm	1-5/8"	11/16"	47-6-2	6.2 mm	4"	2-3/4"
47-1-05	1.05 mm	1-5/8"	11/16"	47-6-5	6.5 mm	4-1/8"	2-7/8"
47-1-1	1.1 mm	1-3/4"	3/4"	47-6-7	6.7 mm	4-1/8"	2-7/8"
47-1-15	1.15 mm	1-3/4"	3/4"	47-6-8	6.8 mm	4-1/8"	2-7/8"
47-1-2	1.2 mm	1-7/8"	7/8"	47-7-0	7.0 mm	4-1/8"	2-7/8"
47-1-3	1.3 mm	1-7/8"	7/8"	47-7-5	7.5 mm	4-3/8"	3"
47-1-35	1.35 mm	1-7/8"	7/8"	47-7-6	7.6 mm	4-3/8"	3"
47-1-4	1.4 mm	1-7/8"	7/8"	47-8-0	8.0 mm	4-1/2"	3-3/16"
47-1-45	1.45 mm	1-7/8"	7/8"	47-8-5	8.5 mm	4-3/4"	3-27/64"
47-1-5	1.5 mm	1-7/8"	7/8"	47-9-0	9.0 mm	4-7/8"	3-1/2"
47-1-6	1.6 mm	1-7/8"	7/8"	47-9-5	9.5 mm	5"	3-5/8"
47-1-65	1.65 mm	2"	1"	47-10-0	10.0 mm	5-1/8"	3-3/4"
47-1-7	1.7 mm	2"	1"	47-10-2	10.2 mm	5-15/64"	3-7/8"
47-1-75	1.75 mm	2"	1"	47-10-5	10.5 mm	5-15/64"	3-7/8"
47-1-8	1.8 mm	2"	1"	47-11-0	11.0 mm	5-1/2"	4-1/16"
47-1-9	1.9 mm	2"	1"	47-11-5	11.5 mm	5-5/8"	4-7/32"
47-2-0	2.0 mm	2"	1"	47-12-0	12.0 mm	5-7/8"	4-3/8"
47-2-05	2.05 mm	2-1/8"	1-5/32"	47-12-5	12.5 mm	6"	4-1/2"
47-2-2	2.2 mm	2-1/4"	1-1/4"	47-13-0	13.0 mm	6"	4-1/2"
47-2-5	2.5 mm	2-23/64"	1-3/8"	47-14-0	14.0 mm	6"	4-1/2"
47-2-6	2.6 mm	2-1/2"	1-29/64"	47-15-0	15.0 mm	6"	4-1/2"
47-2-9	2.9 mm	2-3/4"	1-5/8"	47-16-0	16.0 mm	6"	4-1/2"
47-3-0	3.0 mm	2-3/4"	1-5/8"	47-17-0	17.0 mm	6"	4-1/2"
47-3-3	3.3 mm	2-7/8"	1-3/4"	47-17-5	17.5 mm	6"	4-1/2"
47-3-5	3.5 mm	2-7/8"	1-3/4"	47-18-0	18.0 mm	6"	4-1/2"
47-3-6	3.6 mm	3"	1-7/8"	47-19-0	19.0 mm	6"	4-1/2"
47-3-7	3.7 mm	3"	1-7/8"	47-20-0	20.0 mm	6"	4-1/2"
47-4-0	4.0 mm	3-1/4"	2-1/8"	47-21-0	21.0 mm	6"	4-1/2"
47-4-1	4.1 mm	3-1/4"	2-1/8"	47-22-0	22.0 mm	6"	4-1/2"
47-4-2	4.2 mm	3-1/4"	2-1/8"	47-23-0	23.0 mm	6"	4-1/2"
47-4-5	4.5 mm	3-3/8"	2-13/64"	47-24-0	24.0 mm	6"	4-1/2"
47-5-0	5.0 mm	3-5/8"	2-7/16"	47-25-0	25.0 mm	6"	4-1/2"
47-5-1	5.1 mm	3-5/8"	2-7/16"				

Screw Machine Length "Stubby"-Fractional Drill Bits



Part Number	Size	Overall Length	Flute Length	Part Number	Size	Overall Length	Flute Length
37-01	1/16"	1-5/8"	5/8"	37-048	19/64"	2-3/4"	1-9/16"
37-013	5/64"	1-11/16"	11/16"	37-05	5/16"	2-13/16"	1-5/8"
37-015	3/32"	1-3/4"	3/4"	37-053	21/64"	2-15/16"	1-11/16"
37-018	7/64"	1-13/16"	13/16"	37-055	11/32"	3"	1-11/16"
37-02	1/8"	1-7/8"	7/8"	37-058	23/64"	3-1/16"	1-3/4"
37-023	9/64"	1-15/16"	15/16"	37-06	3/8"	3-1/8"	1-13/16"
37-025	5/32"	2-1/16"	1"	37-063	25/64"	3-1/4"	1-7/8"
37-028	11/64"	2-1/8"	1-1/16"	37-065	13/32"	3-5/16"	1-15/16"
37-03	3/16"	2-3/16"	1-1/8"	37-068	27/64"	3-3/8"	2"
37-033	13/64"	2-1/4"	1-3/16"	37-07	7/16"	3-7/16"	2-1/16"
37-035	7/32"	2-3/8"	1-1/4"	37-073	29/64"	3-9/16"	2-1/8"
37-038	15/64"	2-7/16"	1-5/16"	37-075	15/32"	3-5/8"	2-1/8"
37-04	1/4"	2-1/2"	1-3/8"	37-078	31/64"	3-11/16"	2-3/16"
37-043	17/64"	2-5/8"	1-7/16"	37-08	1/2"	3-3/4"	2-1/4"
37-045	9/32"	2-11/16"	1-1/2"				

Screw Machine Length "Stubby"-Number Drill Bits

Part Number	Number Size	Overall Length	Flute Length
42-1	#1	2-7/16"	1-5/16"
42-2	#2	2-7/16"	1-5/16"
42-3	#3	2-3/8"	1-1/4"
42-4	#4	2-3/8"	1-1/4"
42-5	#5	2-3/8"	1-1/4"
42-6	#6	2-3/8"	1-1/4"
42-7	#7	2-1/4"	1-3/16"
42-8	#8	2-1/4"	1-3/16"
42-9	#9	2-1/4"	1-3/16"
42-10	#10	2-1/4"	1-3/16"
42-11	#11	2-1/4"	1-3/16"
42-12	#12	2-1/4"	1-3/16"
42-13	#13	2-3/16"	1-1/8"
42-14	#14	2-3/16"	1-1/8"
42-15	#15	2-3/16"	1-1/8"
42-16	#16	2-3/16"	1-1/8"
42-17	#17	2-3/16"	1-1/8"
42-18	#18	2-1/8"	1-1/16"
42-19	#19	2-1/8"	1-1/16"
42-20	#20	2-1/8"	1-1/16"
42-21	#21	2-1/8"	1-1/16"
42-22	#22	2-1/8"	1-1/16"
42-23	#23	2-1/16"	1"
42-24	#24	2-1/16"	1"
42-25	#25	2-1/16"	1"
42-26	#26	2-1/16"	1"
42-27	#27	2-1/16"	1"
42-28	#28	1-15/16"	15/16"
42-29	#29	1-15/16"	15/16"
42-30	#30	1-15/16"	15/16"

Part Number	Number Size	Overall Length	Flute Length
42-31	#31	1-7/8"	7/8"
42-32	#32	1-7/8"	7/8"
42-33	#33	1-7/8"	7/8"
42-34	#34	1-7/8"	7/8"
42-35	#35	1-7/8"	7/8"
42-36	#36	1-13/16"	13/16"
42-37	#37	1-13/16"	13/16"
42-38	#38	1-13/16"	13/16"
42-39	#39	1-13/16"	13/16"
42-40	#40	1-13/16"	13/16"
42-41	#41	1-13/16"	13/16"
42-42	#42	1-3/4"	3/4"
42-43	#43	1-3/4"	3/4"
42-44	#44	1-3/4"	3/4"
42-45	#45	1-3/4"	3/4"
42-46	#46	1-3/4"	3/4"
42-47	#47	1-3/4"	3/4"
42-48	#48	1-11/16"	11/16"
42-49	#49	1-11/16"	11/16"
42-50	#50	1-11/16"	11/16"
42-51	#51	1-11/16"	11/16"
42-52	#52	1-11/16"	11/16"
42-53	#53	1-5/8"	5/8"
42-54	#54	1-5/8"	5/8"
42-55	#55	1-5/8"	5/8"
42-56	#56	1-3/8"	1/2"
42-57	#57	1-3/8"	1/2"
42-58	#58	1-3/8"	1/2"
42-59	#59	1-3/8"	1/2"
42-60	#60	1-3/8"	1/2"

Drill Bit Assortments

26 PC Letter Set

1 piece each, A thru Z with steel index.

Part No. 500-26-AZ



25 PC Metric Set

1 piece each, 1 mm thru 13 mm by .5 mm with steel index.

Part No. 500-47-24



29 PC 6" Aircraft Set

1 piece each, 1/16" thru 1/2" by 1/64" with steel stand.

Part No. 500-AC6-29



29 PC 12" Aircraft Set

1 piece each, 1/16" thru 1/2" by 1/64" with steel stand.

Part No. 500-AC12-29



29 PC Screw Machine Length "Stubby" Set

1 piece each, 1/16" thru 1/2" by 1/64" with steel index.

Part No. 500-29-37



29 PC Left Hand Drill Bit Set

1 piece each, 1/16" thru 1/2" by 1/64" with steel index.

Part No. 500-SP36-29



Screw Extractors

Remove broken screws, bolts, threaded parts, and pipe. The broken piece is extracted without any damage to the threads.

Recommended Drill Bits: Use GARD's Left Hand Drill Bits (Page 45)



Part Number	Extractor Number	To Remove Diameter of Screw	Diameter of Extractor Shank Point	Drill Size
5271-1	#1	3/32" to 5/32"	1/8"	5/64"
5271-2	#2	5/32" to 7/32"	3/16"	7/64"
5271-3	#3	7/32" to 9/32"	1/4"	5/32"
5271-4	#4	9/32" to 3/8" & 1/8" Pipe	5/16"	1/4"
5271-5	#5	3/8" to 5/8" & 1/4" Pipe	7/16"	17/64"
5271-6	#6	5/8" to 7/8" & 3/8" Pipe	5/8"	13/32"

5 PC Screw Extractor Set

1 piece each, #1 thru #5
in plastic pouch.

Part No. 5271-S1



6 PC Screw Extractor Set

1 piece each, #1 thru #6
in plastic pouch.

Part No. 5271-S2

Pipe Extractors

Standard extractors for right-hand pipe thread, four-point grip assures strong bite, shallow grip, and instantly releases.



Part Number	Extractor Number	For Broken Pipe	For Broken Stud or Screw	Drill Size
1-98	#1	1/8"	3/8"	13/64" or 15/64"
2-98	#2	1/4"	1/2"	9/32" or 19/64"
3-98	#3	3/8"	5/8"	25/64" or 13/32"
4-98	#4	1/2"	N/A	N/A
10-98	#10	N/A	7/8"	1/2"
5-98	#5	3/4"	1-1/8"	23/32"
6-98	#6	1"	1-1/2"	29/32" or 59/64"
7-98	#7	1-1/4"	2"	1-3/16"
8-98	#8	1-1/2"	2-1/4"	1-15/32"
9-98	#9	2"	3" or 3-1/2"	2-1/16"

7 PC Pipe Extractor Set

1 piece each, #1 thru #6 and #10
with plastic case.

Part No. 98S



10 PC Pipe Extractor Set

1 piece each, #1 thru #9 and #10
with plastic case.

Part No. 98L

Ultimate Square Screw Extractors

Remove broken bolts, screws, pipes, and debris without destroying or expanding the object being removed.

Recommended Drill Bits: Use GARD's Left Hand Drill Bits (Page 45)



Part Number	Screw Extractor Number	To Remove Diameter of Screw	Diameter of Extractor Shank Point	Drill Size
52-03-045	E-1	3/16" to 9/32"	3/16"	1/8"
52-045-055	E-2	9/32" to 11/32"	1/4"	3/16"
52-055-08	E-3	11/32" to 1/2"	5/16"	1/4"
52-08-12	E-4	1/2" to 3/4"	3/8"	5/16"
52-10-58	E-5	5/8" to 7/8"	7/16"	3/8"

5 PC Square Extractor Set

1 piece each, E-1, E-2, E-3, E-4, and E-5 with steel index.

Part No. 500-52



10 PC Square Extractor Set

1 piece each, E-1, E-2, E-3, E-4, and E-5 with left hand drill bits with steel index.

Part No. 500-52-SP36

Fractional Double End Drill Bits



Part Number	Size	Overall Length	Flute Length
38-015	3/32"	1-3/4"	9/16"
38-018	7/64"	1-15/16"	5/8"
38-02	1/8"	1-15/16"	5/8"
38-023	9/64"	2"	5/8"
38-025	5/32"	2-1/8"	5/8"
38-03	3/16"	2-5/16"	5/8"
38-035	7/32"	2-9/16"	3/4"
38-04	1/4"	2-5/8"	13/16"

Number Double End Drill Bits



Part Number	Size	Overall Length	Flute Length
39-10	#10	2-5/16"	5/8"
39-11	#11	2-5/16"	5/8"
39-20	#20	2-1/8"	5/8"
39-30	#30	2"	5/8"

Combined Drill Countersink

Used for centering work ends, where the workpiece is to be revolved on machine centers. Drill ends are of equal diameter. The 60° countersink angle fits all standard centers.



Part Number	Size	Diameter of Body	Diameter & Length of Drill	Overall Length
50-02-005	#0	1/8"	1/32" x .038"	1-7/32"
50-02-008	#1	1/8"	3/64" x 3/64"	1-1/4"
50-03-013	#2	3/16"	5/64" x 5/64"	1-7/8"
50-04-018	#3	1/4"	7/64" x 7/64"	2"
50-05-02	#4	5/16"	1/8" x 1/8"	2-1/8"
50-07-03	#5	7/16"	3/16" x 3/16"	2-3/4"
50-08-035	#6	1/2"	7/32" x 7/32"	3"
50-10-04	#7	5/8"	1/4" x 1/4"	3-1/4"
50-12-05	#8	3/4"	5/16" x 5/16"	3-1/2"

Forbor Enlargement Drill Bits

Eliminate snagging and catching when breaking through thinner material, such as truck frames. It is made from superior-performance steel and has a short stout body to reduce breakage associated with other drill bits. This tool is only for enlarging existing holes.



Part Number	Size	Minimum Starting Hole Size	Overall Length	Flute Length
43-06	3/8"	1/4"	4-5/16"	1-7/8"
43-08	1/2"	5/16"	4-5/16"	1-7/8"
43-09	9/16"	3/8"	4-5/16"	1-7/8"
43-10	5/8"	25/64"	4-5/16"	1-7/8"
43-11	11/16"	7/16"	4-5/16"	1-7/8"
43-12	3/4"	15/32"	4-5/16"	1-7/8"

Step Drill Bits

Self-Starting Point, automatic hole deburring, chuck one bit instead of several, and eliminate vibration and chatter.



Part Number	Size Range	Shank Size	Step Increments	Step Thickness
46-02-08	1/8" to 1/2"	1/4"	1/32"	1/8"
46-03-14	3/16" to 7/8"	3/8"	1/16"	1/8"
46-04-12	1/4" to 3/4"	3/8"	1/16"	5/32"
46-04-22	1/4" to 1-3/8"	3/8"	1/8"	N/A

Reamers

Enlarge and align existing holes even in tight spots. Widely used by transportation, manufacturing, and maintenance departments. Outstanding performance in stainless steel, alloy steel and structural steel, and three flats on shank - FAST spiral action.



Part Number	Size	Minimum Starting Hole Size	Overall Length	Shank Size
6-187	3/8"	1/4"	4-5/8"	3/8"
7-187	7/16"	9/32"	5-7/8"	7/16"
8-187	1/2"	5/16"	5-7/8"	1/2"
9-187	9/16"	5/16"	5-7/8"	1/2"
10-187	5/8"	11/32"	6-3/8"	1/2"
11-187	11/16"	13/32"	6-3/8"	1/2"
12-187	3/4"	7/16"	6-7/8"	1/2"
13-187	13/16"	1/2"	6-7/8"	1/2"
14-187	7/8"	17/32"	6-7/8"	1/2"
15-187	15/16"	19/32"	6-7/8"	1/2"
16-187	1"	5/8"	6-7/8"	1/2"
20-187	1-1/4"	3/4"	6-7/8"	1/2"

Countersinks

Single cutting edge, molybdenum tungsten steel, continuous feed no stop n' go, and 82° angle.



Part Number	Size Range	Angle	Shank Size
199-08-82	#8 Screw Size	82°	1/4"
199-10-82	#10 Screw Size	82°	1/4"
199-03085-82	3/16" to 17/32"	82°	1/4"
199-05125-82	.307" to 25/32"	82°	1/2"
199-0714-82	.431" to 7/8"	82°	1/2"
199-08235-82	1/2" to 1-15/32"	82°	1/2"

Assortments

4 PC Reamer Set

1 piece each, 3/8", 1/2", 5/8", and 3/4"
with plastic case.

Part No. 500-187-4



10 PC Reamer Set

1 piece each, 3/8", 1/2", 9/16", 5/8", 11/16", 3/4",
13/16", 7/8", 15/16", and 1"
in large metal storage tray.

Part No. 500-187-10



4 PC Step Drill Bits Set

1 piece each, 1/8" to 1/2", 3/16" to 7/8",
1/4" to 3/4", and 1/4" to 1-3/8"
with plastic case.

Part No. 500-46HD



5 PC Countersink Set

1 piece each, #8 screw size, #10 screw
size, 3/16" to 17/32, .307" to 25/32", and
.431" to 7/8"
with plastic case.

Part No. 500-199



6 PC Countersink Set

1 piece each, #8 screw size, #10 screw size,
3/16" to 17/32, .307" to 25/32", .431" to 7/8",
and 1/2" to 1-15/32"
with plastic case.

Part No. 500-199L



Twister Taps

Lifts chips out of the hole, the twister tap is more ductile than cobalt, ideally suited for tapping blind holes, and modified bottoming chamfer allows threading close to the bottom of the hole.



Fractional

Part Number	Size	Number of Flutes	Drill Bit Size
196-632	#6-32	3	#36
196-832	#8-32	3	#29
196-1024	#10-24	3	#25
196-1032	#10-32	3	#21
196-420	1/4"-20	3	#7
196-428	1/4"-28	3	#3
196-518	5/16"-18	3	"F"
196-524	5/16"-24	3	"I"
196-616	3/8"-16	3	5/16"
196-624	3/8"-24	3	"Q"
196-714	7/16"-14	4	"U"
196-720	7/16"-20	4	25/64"
196-813	1/2"-13	4	27/64"
196-820	1/2"-20	4	29/64"

Metric

Part Number	Size	Number of Flutes	Drill Size
196-M2545	2.5 mm x .45	3	2.05mm
196-M350	3.0 mm x .50	3	2.5mm
196-M3560	3.5 mm x .60	3	2.9mm
196-M470	4.0 mm x .70	3	3.3mm
196-M580	5.0 mm x .80	3	4.2mm
196-M610	6.0 mm x 1.0	3	5.0mm
196-M8125	8.0 mm x 1.25	3	6.7mm
196-M1015	10.0 mm x 1.25	3	8.5mm
196-M12175	12.0 mm x 1.75	3	10.2mm
196-M1420	14.0 mm x 2.0	4	12.0mm

Combined Drill/Tap

GARDs combined drill/tap bit is a tough, long-lasting tool designed for maintenance as well as production applications.



Fractional

Part Number	Size	Max Material Thickness
197-632	#6-32	1-3/4"
197-640	#6-40	1-15/16"
197-832	#8-32	1-15/16"
197-836	#8-36	2"
197-1024	#10-24	2-1/8"
197-1032	#10-32	2-5/16"
197-420	1/4"-20	2-9/16"
197-428	1/4"-28	2-5/8"
197-518	5/16"-18	1-15/16"
197-524	5/16"-24	2"
197-616	3/8"-16	2-1/8"
197-624	3/8"-24	2-5/16"
197-714	7/16"-14	2-9/16"
197-720	7/16"-20	2-5/8"
197-813	1/2"-13	2-9/16"
197-820	1/2"-20	2-5/8"

Metric

Part Number	Size	Max Material Thickness
197-M305	3.0 mm x .50	1-3/4"
197-M407	4.0 mm x .70	1-15/16"
197-M508	5.0 mm x .80	1-15/16"
197-M610	6.0 mm x 1.0	2"
197-M8125	8.0 mm x 1.25	2-1/8"
197-M1015	10.0 mm x 1.50	2-5/16"
197-M12175	12.0 mm x 1.75	2-9/16"

InstaTap

The InstaTap is more ductile than cobalt, needs no special surface treatment to increase lubricity, reduced shank prevents the InstaTap from jamming or breaking at the end of the cutting threads, and retains a usable edge much longer than ordinary taps!



Part Number	Size	Number of Flutes	Drill Size
198-632	#6-32	2	#36
198-832	#8-32	3	#29
198-1024	#10-24	3	#25
198-1032	#10-32	3	#21
198-420	1/4"-20	3	5/8"
198-518	5/16"-18	3	5/8"
198-616	3/8"-16	3	3/4"
198-714	7/16"-14	3	13/16"
198-813	1/2"-13	3	3/4"

Taper Pipe Tap

Taper Pipe taps are used for tapping pipe fittings and couplings in a wide variety of materials.



Part Number	Size NPT	Overall Length	Number of Flutes	Drill Size
94-0227	1/8"-27	2-1/8"	4	11/32"
94-0418	1/4"-18	2-7/16"	4	7/16"
94-0618	3/8"-18	2-9/16"	4	37/64"
94-0814	1/2"-14	3-1/8"	4	23/32"
94-1214	3/4"-14	3-1/4"	5	59/64"
94-1611	1"-11.5	3-3/4"	5	1-5/32"
94-2411	1-1/2"-11.5	4-1/4"	7	1-47/64"
94-3211	2"-11.5	4-1/2"	7	2-7/32"

Assortments

8 PC Twister Set (Coarse)

1 piece each, #6-32, #8-32, #10-24, 1/4"-20, 5/16"-18, 3/8"-16, 7/16"-14, and 1/2"-13 with steel index.

Part No. 500-196



8 PC Twister Set (Fine)

1 piece each, #6-32, #8-32, #10-32, 1/4"-28, 5/16"-24, 3/8"-24, 7/16"-20, and 1/2"-20 with steel index.

Part No. 500-196F



9 PC Twister Set (Metric)

1 piece each, 2.5mm x .45, 3mm x .5, 3.5mm x .6, 4mm x .7, 5mm x .8, 6mm x 1.0, 8mm x 1.25, 10mm x 1.5, and 12mm x 1.75 with steel index.

Part No. 500-196M



16 PC Twister Set (Coarse)

1 piece each, #6-32, #8-32, #10-24, 1/4"-20, 5/16"-18, 3/8"-16, 7/16"-14, and 1/2"-13 with drill bits with steel index.

Part No. 500-196DT



16 PC Twister Set (Fine)

1 piece each, #6-32, #8-32, #10-32, 1/4"-28, 5/16"-24, 3/8"-24, 7/16"-20, and 1/2"-20 with drill bits with steel index.

Part No. 500-196FDT



18 PC Twister Set (Metric)

1 piece each, 2.5mm x .45, 3mm x .5, 3.5mm x .6, 4mm x .7, 5mm x .8, 6mm x 1.0, 8mm x 1.25, 10mm x 1.5, and 12mm x 1.75 with drill bits with steel index.

Part No. 500-196MDT



8 PC Drill/Tap Set (Coarse)

1 piece each, #6-32, #8-32, #10-24, 1/4"-20, 5/16"-18, 3/8"-16, 7/16"-14, and 1/2"-13 with steel index.

Part No. 500-197C



8 PC Drill/Tap Set (Fine)

1 piece each, #6-40, #8-36, #10-36, 1/4"-24, 5/16"-24, 3/8"-24, 7/16"-20, and 1/2"-20 with steel index.

Part No. 500-197F



7 PC Drill/Tap Set (Metric)

1 piece each, 3mm x .5, 4mm x .7, 5mm x .8, 6mm x 1.0, 8mm x 1.25, 10mm x 1.5, and 12mm x 1.75 with steel index.

Part No. 500-197M



8 PC InstaTap Set

1 piece each, #6-32, #8-32, #10-24, 1/4"-20, 5/16"-18, 3/8"-16, 7/16"-14, and 1/2"-13 with steel index.

Part No. 500-198



16 PC InstaTap Set

1 piece each, #6-32, #8-32, #10-24, 1/4"-20, 5/16"-18, 3/8"-16, 7/16"-14, and 1/2"-13 with drill bits with steel index.

Part No. 500-198DT



Taper, Plug, and Bottoming Hand Taps

Bottoming Part Number	Plug Part Number	Taper Part Number	Size	Number of Flutes
671-256B	671-256P	671-256T	#2-56	3
671-348B	671-348P	671-348T	#3-48	3
671-440B	671-440P	671-440T	#4-40	3
671-540B	671-540P	671-540T	#5-40	3
671-632B	671-632P	671-632T	#6-32	3
671-640B	671-640P	671-640T	#6-40	3
671-832B	671-832P	671-832T	#8-32	4
671-836B	671-836P	671-836T	#8-36	4
671-1024B	671-1024P	671-1024T	#10-24	4
671-1032B	671-1032P	671-1032T	#10-32	4
671-1224B	671-1224P	671-1224T	#12-24	4
671-1228B	671-1228P	671-1228T	#12-28	4
671-420B	671-420P	671-420T	1/4"-20	4
671-428B	671-428P	671-428T	1/4"-28	4
671-518B	671-518P	671-518T	5/16"-18	4
671-524B	671-524P	671-524T	5/16"-24	4
671-616B	671-616P	671-616T	3/8"-16	4
671-624B	671-624P	671-624T	3/8"-24	4
671-714B	671-714P	671-714T	7/16"-14	4
671-720B	671-720P	671-720T	7/16"-20	4
671-813B	671-813P	671-813T	1/2"-13	4
671-820B	671-820P	671-820T	1/2"-20	4
671-912B	671-912P	671-912T	9/16"-12	4
671-918B	671-918P	671-918T	9/16"-18	4
671-1011B	671-1011P	671-1011T	5/8"-11	4
671-1018B	671-1018P	671-1018T	5/8"-18	4
671-1210B	671-1210P	671-1210T	3/4"-10	4
671-1216B	671-1216P	671-1216T	3/4"-16	4
671-1409B	671-1409P	671-1409T	7/8"-9	4
671-1414B	671-1414P	671-1414T	7/8"-14	4
671-1608B	671-1608P	671-1608T	1"-8	4
671-1614B	671-1614P	671-1614T	1"-14	4
671-1807B	671-1807P	671-1807T	1-1/8"-7	4
671-1812B	671-1812P	671-1812T	1-1/8"-12	4
671-2007B	671-2007P	671-2007T	1-1/4"-7	4
671-2012B	671-2012P	671-2012T	1-1/4"-12	6
671-2206B	671-2206P	671-2206T	1-3/8"-6	4
671-2212B	671-2212P	671-2212T	1-3/8"-12	6
671-2406B	671-2406P	671-2406T	1-1/2"-6	4
671-2412B	671-2412P	671-2412T	1-1/2"-12	6

Bottoming Tap

Used after the threads have been started to tread the very bottom of the hole.

1-2 threads chamfered



Plug Tap

Best choice for when tapping into the bottom is not critical. Most widely used.

3-5 threads chamfered



Taper Tap

Best for easier starting and to use less torque.

7-10 threads chamfered



3 PC Tap Sets

1 of each Bottoming, Plug, and Taper in plastic bags.

Part Number	Size
671-1024S	#10-24
671-420S	1/4"-20
671-518S	5/16"-18
671-616S	3/8"-16
671-813S	1/2"-13
671-1011S	5/8"-11
671-1608S	1"-8

Metric Taper, Plug, and Bottoming Hand Taps



Bottoming Part Number	Plug Part Number	Taper Part Number	Size	Number of Flutes
671-M3050B	671-M350P	671-M3050T	3 mm x .50	3
671-M5080B	671-M580P	671-M5080T	5 mm x .80	4
671-M6100B	671-M6100P	671-M6100T	6 mm x 1.00	4
671-M8125B	671-M8125P	671-M8125T	8 mm x 1.25	4
671-M10150B	671-M10150P	671-M10150T	10 mm x 1.50	4
671-M12175B	671-M12175P	671-M12175T	12 mm x 1.75	4
671-M14200B	N/A	671-M14200T	14 mm x 2.00	4
671-M16200B	671-M16200P	671-M16200T	16 mm x 2.00	4
671-M20250B	N/A	671-M20250T	20 mm x 2.50	4

Hex Dies

Fractional

Part Number	Size	Across Flat
672-632	#6-32	1"
672-832	#8-32	1"
672-1024	#10-24	1"
672-1032	#10-32	1"
672-420	1/4"-20	1"
672-428	1/4"-28	1"
672-518	5/16"-18	1"
672-524	5/16"-24	1"
672-616	3/8"-16	1"
672-624	3/8"-24	1"
672-714	7/16"-14	1"
672-720	7/16"-20	1"
672-813	1/2"-13	1"
672-820	1/2"-20	1"
672-912	9/16"-12	1-7/16"
672-918	9/16"-18	1-7/16"
672-1011	5/8"-11	1-7/16"
672-1018	5/8"-18	1-7/16"
672-1210	3/4"-10	1-7/16"
672-1216	3/4"-16	1-7/16"
672-4NPT	1/4"-18	1-7/16"



Metric

Part Number	Size	Across Flat
672-M350	3 mm x .50	1"
672-M470	4 mm x .70	1"
672-M580	5 mm x .80	1"
672-M6100	6 mm x 1.0	1"
672-M8125	8 mm x 1.25	1"
672-M10150	10 mm x 1.50	1"
672-M12175	12 mm x 1.75	1-7/16"
672-M14200	14 mm x 2.0	1-7/16"
672-M16200	16 mm x 2.0	1-7/16"

Assortments

33 PC Metric Set

Metric Taps and Dies 3 mm thru 14 mm
Straight Handle Wrenches: #4-1/2" and 1/4"-3/4"
T-handle Wrench: 0-1/4"
Die Stock: Med R/H and 1" R/H
Screw pitch gauge and screwdriver
Spiral flute extractors: Ex 1 thru Ex 5
with plastic case.

Part No. 500-671TDM



57 PC Master Set

Coarse and Fine Plug Taps and Dies
#6-32 thru 3/4", 1/8"-27 NPT and 1/4"-18 NPT
Straight Handle Wrenches: #4-1/2" and 1/4"-3/4"
T-handle Wrench: 0-1/4"
Die Stock: Med R/H and 1" R/H
Screw pitch gauge and screwdriver
Spiral flute extractors: Ex 1 thru Ex 5
with plastic case.

Part No. 500-671TD

Tap Tools

Professional Die Stock

Part Number	Across Flats
5290-16	1"
5290-23	1-7/16"



"T" Handle Tap Wrench

Part Number	For Tap Sizes
5291-1	1/16" - 1/4"
5291-2	3/16" - 1/2"



Bar Handle Tap Wrench

Part Number	For Tap Sizes
5293-408	#4 - 1/2"
5293-12	5/32" - 3/4"
5293-0826	1/2" - 1-3/8"



Custom Bi-Metal Bandsaw Blades

- Wear resistant tooth tips are outstanding due to the fully developed heat treatment process.
- Variable tooth pitch give you a smoother cut, reduced vibrations, and improved surface finish.
- Particularly suitable for vibration-susceptible cutting tasks in serial cuts.
- Manufactured "in-house" / Assures timely delivery.
- Temperature resistance 1020°F 550°C
- (68-69 HRC) Tooth hardness



Part Number **	Width	Thickness	TPI
6308-1014FT	1/2"	.025	10-14
6308-18FT	1/2"	.025	18
6312-1014FT	3/4"	.035	10-14
6312-58FT	3/4"	.035	5-8
6312-610FT	3/4"	.035	6-10
6312-812FT	3/4"	.035	8-12
6316-1014FT	1-1/16"	.035	10-14
6316-46FT	1-1/16"	.035	4-6
6316-58FT	1-1/16"	.035	5-8
6316-610FT	1-1/16"	.035	6-10
6316-812FT	1-1/16"	.035	8-12

** Customer provides exact length in feet and inches

HOW TO MEASURE:

Q.) I don't know what blade length I require. Is there a way of working this out?

A.) Yes, there is. For two wheel bandsaws, the following procedure can be followed:

1. Adjust the wheels to their correct position. (about the middle of the adjustment range)
2. Referring to the diagram, measure the distance between the center point of each wheel. (measurement D)
3. Now measure the radius of each wheel. (R1 and R2)
4. Use this formula to calculate the band length from the measurements you have taken: Band length = $(R1 \times 3.1416) + (R2 \times 3.1416) + (2 \times D)$



Ensure the wheels are not adjusted to their extremes; you need to allow for take-up to tension the band and also for possible future blade re-welding. Around the middle of the adjustment range is best.

Always break in a new bandsaw blade before use. To break in blade run the blade at a reduced feed pressure during the first few cuts, this helps prevent premature tooth breakage and ensures consistent cutting. 2-3 cuts is preferred before returning back to normal cutting speed and feed. Any questions, please contact Technical Support at 1-800-541-9301.

Portable Bandsaw Blades

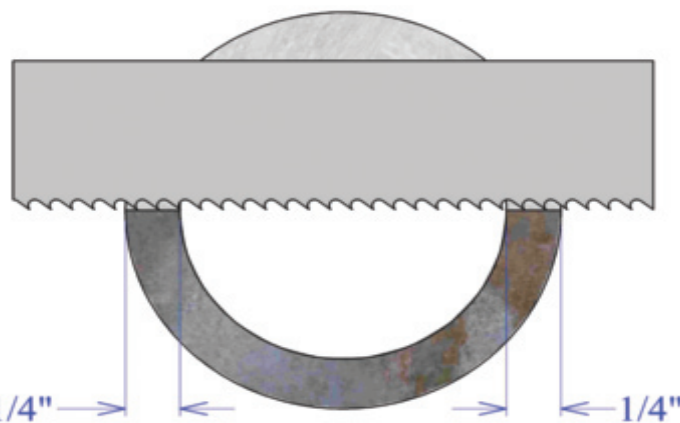
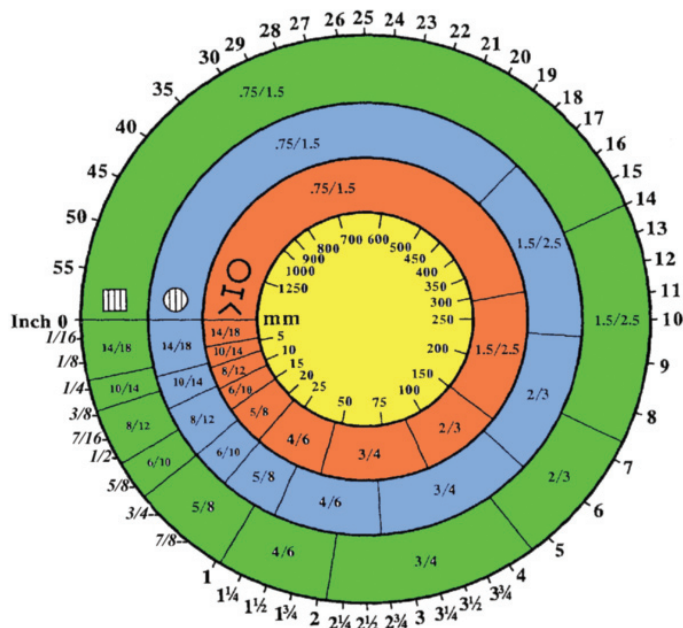


Part Number	Length	Width	Thickness	TPI
6308-1014-4414	44-7/8"	1/2"	.025	10-14
6308-18-4414	44-7/8"	1/2"	.025	18



Bandsaw Blade Selection

The primary factors to consider in choosing a saw blade are: the Pitch, or the number of teeth per inch of blade; the tooth form; and the blade type (material and construction). Tooth pitch selection depends upon the size and shape of the work, whereas tooth form and blade type depend upon material properties of the work piece and on economic considerations of the job.



Example: This illustration is to help demonstrate length of cut in an odd shape. In this case, a tube; you must add the two wall thickness together to get the actual length of cut.

The tooth selection chart above is a guide to help determine the best blade pitch for a particular job. The tooth specifications in the chart are standard variable-pitch blade sizes as specified by the NORTH AMERICAN SAWING ASSOCIATION. The variable-pitch blades listed are designated by two numbers that refer to the approximate maximum and minimum tooth pitch. A 4/6 blade, for example, has a maximum tooth spacing of approximately 1/4 inch and a minimum tooth spacing of about 1/6 inch. Blades are available, from most manufacturers, in sizes within about ± 10 per cent of the sizes listed.

To use the chart, locate the length of cut in inches on the outside circle of the table (for millimeters, use the inside circle) and then find the tooth specification that aligns with the length, on the ring corresponding to the material shape. The length of cut is the distance that any tooth of the blade is in contact with the work as it passes once through the cut.

- For cutting Solid Square or Solid Rectangle stock, use the length of cut and select a blade from the ring with the solid square.
- For cutting Solid Round stock, use the diameter as the length of cut and select a blade from the ring with the solid circle.
- When cutting Angles, Channels, Beams, Tubular pieces, Pipe and Hollow or Irregular shapes, the length of cut is found by finding the narrowest cross-sectional area of the cut by the distance the blade needs to travel. If, for instance, there are multiple cuts happening at the same time, the cut lengths may be added to find the actual cut length. Locate the length of cut on the outer ring (inner ring for millimeters), and select a blade from the ring marked with the Angle, I-Beam and Pipe sections.

Bandsaw Blade Selection

Fig. 1

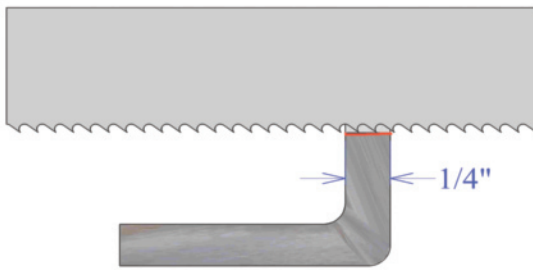


Fig. 2

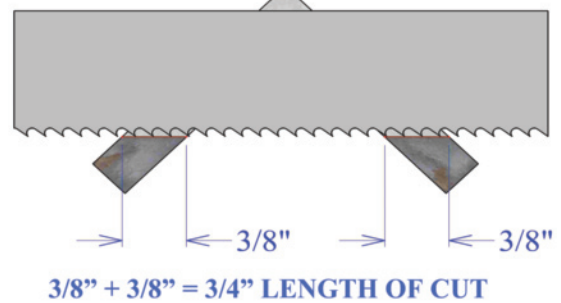


Fig. 3

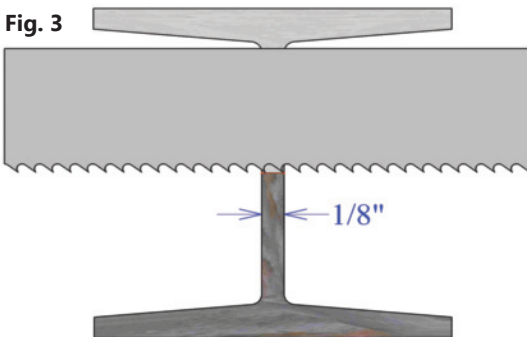


Fig. 4

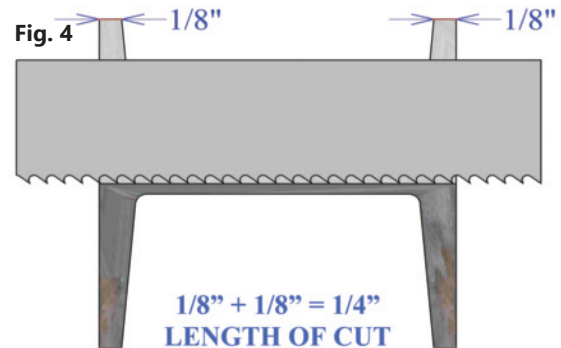


Fig. 5

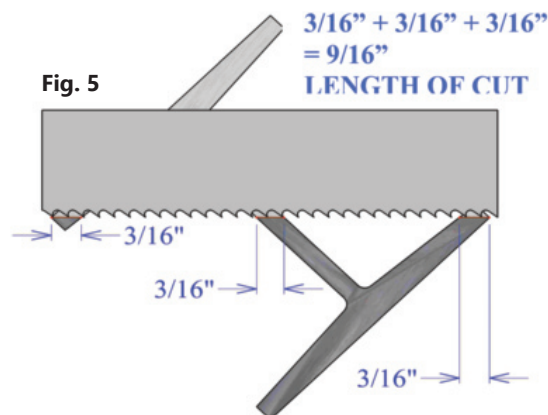
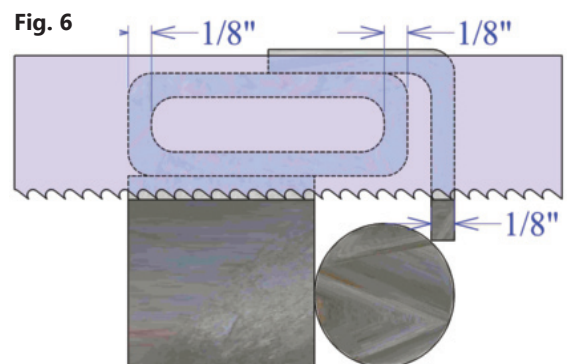


Fig. 6



(Fig. 1) Non-optimal method for cutting angle iron stock. Notice, the short cut length initially and the long cut length at the end.

(Fig. 2) Optimal method for cutting angle iron stock. Notice, better cut length over the entire cut, and the option to use a coarser tooth pitch because of the longer cut length. This offers a faster cut!

(Fig. 3) Non-optimal method for cutting I-beam stock. Notice, two long cut lengths with a very short minimum cut length in the middle. The short cut length requires a fine tooth pitch, thus a very slow cut.

(Fig. 4) Better cut length, still less than optimal.

(Fig. 5) Optimal cut length, coarser tooth pitch, fast cut!

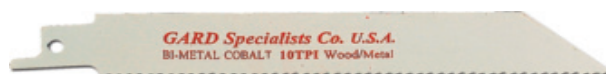
(Fig. 6) When cutting bundles or multiple different shapes, always figure the maximum pitch by the minimum length of cut.

Super Duty Reciprocating Blades

Universal Shank 1/2"



12-6-100-062



6-10-100

Part Number	Length	Height	Thickness	TPI
4-14-100	4"	5/8"	.035	14
4-18-100	4"	5/8"	.035	18
4-24-100	4"	5/8"	.035	24
*6-6-100	6"	3/4"	.035	6
6-6-100-050	6"	3/4"	.050	6
6-6-100-062	6"	7/8"	.062	6
6-10-100	6"	3/4"	.035	10
6-14-100	6"	3/4"	.035	14
6-18-100	6"	3/4"	.035	18
6-24-100	6"	3/4"	.035	24
8-10-100	8"	3/4"	.035	10
8-14-100	8"	3/4"	.035	14
8-18-100	8"	3/4"	.035	18
9-6-100-050	9"	3/4"	.050	6
9-6-100-062	9"	7/8"	.062	6
*12-6-100-050	12"	3/4"	.050	6
*12-6-100-062	12"	7/8"	.062	6
12-14-100	12"	3/4"	.035	14
12-18-100	12"	3/4"	.035	18

*For wood cutting only

Assortments

30 PC Wood Cutting Set

6"- 5 pieces each, 6-6-100, 6-6-100-050, 6-6-100-062, and 6-10-100

9"- 5 pieces each, 9-6-100-050

12"- 5 pieces each, 12-6-100-062

with plastic case.

Part No. 500-100W



40 PC Metal Cutting Set

4"- 5 pieces each, 4-14-100, 4-18-100, and 4-24-100

6"- 5 pieces each, 6-14-100 and 6-24-100

8"- 5 pieces each, 8-14-100 and 8-18-100

12"- 5 pieces each, 12-14-100

with plastic case.

Part No. 500-100M



Rapid Cut Wood Blades

Very high carbon chrome vanadium steel. Super fast cuts. Flexible and shatter resistant. FAST cutting of damp or green woods. Extremely rugged tool. Not intended for use on embedded nails.



Part Number	Length	Height	Thickness	TPI
8-W-100	8.25"	3/4"	.017	Special

Professional Grade Hole Saws

Create a clean-cut hole in all machinable materials including copper, stainless steel, aluminum, wood, brass, steel, plastic, pipe and sheet metal.

Part Number	Size	Arbor Part Number
5146-09	9/16"	5146-4R or 5146-7H
5146-10	5/8"	5146-4R or 5146-7H
5146-11	11/16"	5146-4R or 5146-7H
5146-12	3/4"	5146-4R or 5146-7H
5146-14	7/8"	5146-4R or 5146-7H
5146-16	1"	5146-4R or 5146-7H
5146-17	1-1/16"	5146-4R or 5146-7H
5146-18	1-1/8"	5146-4R or 5146-7H
5146-19	1-3/16"	5146-7HP or 5146-7HPS
5146-20	1-1/4"	5146-7HP or 5146-7HPS
5146-22	1-3/8"	5146-7HP or 5146-7HPS
5146-24	1-1/2"	5146-7HP or 5146-7HPS
5146-26	1-5/8"	5146-7HP or 5146-7HPS
5146-28	1-3/4"	5146-7HP or 5146-7HPS
5146-30	1-7/8"	5146-7HP or 5146-7HPS
5146-32	2"	5146-7HP or 5146-7HPS
5146-34	2-1/8"	5146-7HP or 5146-7HPS
5146-36	2-1/4"	5146-7HP or 5146-7HPS
5146-38	2-3/8"	5146-7HP or 5146-7HPS
5146-40	2-1/2"	5146-7HP or 5146-7HPS



Part Number	Size	Arbor Part Number
5146-42	2-5/8"	5146-7HP or 5146-7HPS
5146-44	2-3/4"	5146-7HP or 5146-7HPS
5146-46	2-7/8"	5146-7HP or 5146-7HPS
5146-48	3"	5146-7HP or 5146-7HPS
5146-50	3-1/8"	5146-7HP or 5146-7HPS
5146-52	3-1/4"	5146-7HP or 5146-7HPS
5146-56	3-1/2"	5146-7HP or 5146-7HPS
5146-58	3-5/8"	5146-7HP or 5146-7HPS
5146-60	3-3/4"	5146-7HP or 5146-7HPS
5146-62	3-7/8"	5146-7HP or 5146-7HPS
5146-64	4"	5146-7HP or 5146-7HPS
5146-66	4-1/8"	5146-7HP or 5146-7HPS
5146-68	4-1/4"	5146-7HP or 5146-7HPS
5146-70	4-3/8"	5146-7HP or 5146-7HPS
5146-72	4-1/2"	5146-7HP or 5146-7HPS
5146-76	4-3/4"	5146-7HP or 5146-7HPS
5146-80	5"	5146-7HP or 5146-7HPS
5146-84	5-1/4"	5146-7HP or 5146-7HPS
5146-88	5-1/2"	5146-7HP or 5146-7HPS

Assortments

12 PC Small Maintenance Kit

1 of each, 1/4" Round Shaft, 7/16" Hex Shaft, and 7/16" Hex Shaft Push-Lock
1 of each size, 3/4", 7/8", 1-1/8", 1-3/8", 1-1/2", 1-3/4", 2", 2-1/4", and 2-1/2"
in large metal storage tray.

Part No. 500-5146-S



14 PC Electrician's Kit

1 of each, 1/4" Round Shaft, 7/16" Hex Shaft, and 7/16" Hex Shaft Push-Lock
1 of each size, 3/4", 7/8", 1-1/8", 1-3/8", 1-3/4", 2", 2-1/2", 3", 3-5/8", 4-1/8", and 4-1/2"
in large metal storage tray.

Part No. 500-5164-E

Professional Grade Hole Saw Accessories



1/4" Round Shaft
Part No. 5146-4R



7/16" Hex Shaft
Part No. 5146-7H



7/16" Hex Shaft Push-Lock
Part No. 5146-7HP



1/4" x 6" Pilot Drill
Part No. 5146-PD



7/16" Hex Shaft Screw-Lock
Part No. 5146-7HPS



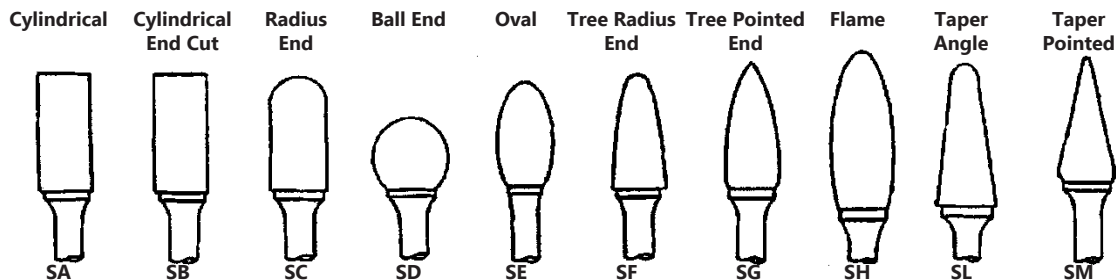
12" Extension Bar fits 7/16" Hex arbors above
Part No. 5146-12X

Tungsten Carbide Burrs

Every double-cut Tungsten Carbide Burr is torque tested for strength and accuracy during its production. This process not only executes high safety ethics but provides the distinguished quality product you expect from GARD Specialists.

FOUNDRIES - FACTORIES - Specialized industries such as shipbuilding, aircraft production . . .
Save TIME and MONEY by dressing cast components in iron, steel and non-ferrous foundries.

Rapid Freehand Stock Removal • Weld Preparation Areas • Less Chatter
Smooth Finish on Metals, Plastics, Cast and More • Highly Durable
Tooth Design Provides Clean and Even Cut Right to the Tip of the Burr



GENERAL USAGE GUIDELINES:

- 1) Use the correct speed to minimize tooth loading and ensure longer tool life.
- 2) Apply constant movement and light pressure. Unlike common burrs, GARDs burrs do not require heavy manual pressure, this could actually damage the burr.
- 3) Prolonged usage may cause over-heating and operator fatigue.

Running Speed Guide - RPM Material

Aluminum Alloys, Hard Industrial Plastics, Zinc Based Alloy	Size of BURR HEAD
30,000 to 90,000	1/8"
15,000 to 75,000	1/4"
10,000 to 50,000	3/8"
7,000 to 38,000	1/2"
6,000 to 30,000	5/8"
Brass, Cast Iron, Copper	
45,000 to 90,000	1/8"
22,500 to 45,000	1/4"
15,000 to 40,000	3/8"
11,000 to 30,000	1/2"
9,000 to 24,000	5/8"
Ceramics, Hardened Alloy Steels, Nimonic Alloys, Stainless Steels, Titanium	
60,000 to 90,000	1/8"
30,000 to 45,000	1/4"
19,000 to 30,000	3/8"
15,000 to 22,500	1/2"
12,000 to 18,000	5/8"

Running Speed Guide - RPM Material

Mild Steel or Bronze	Size of BURR HEAD
60,000 to 90,000	1/8"
45,000 to 60,000	1/4"
30,000 to 40,000	3/8"
22,500 to 30,000	1/2"
18,000 to 24,000	5/8"
Glass-Fiber	
45,000 to 60,000	1/8"
22,500 to 30,000	1/4"
15,000 to 20,000	3/8"
11,000 to 15,000	1/2"
9,000 to 12,000	5/8"

Note: Use the proper speed to minimize tooth loading and ensure longer tool life without chipping.

As with any cutting tool, take proper safety precautions. Wear protective glasses with side shields.

Tungsten Carbide Burrs

- 1 13 PC 1/4" Shank Set**
1/4" and 3/8" Head Diameter
1/4" shank
with steel index
Part No. 500-5480

- 2 8 PC 1/8" Shank Set**
1/4" Head Diameter
1/8" shank
with steel index
Part No. 500-5480-02-04

- 3 8 PC 1/8" Shank Set**
1/8" Head Diameter
1/8" shank
with steel index
Part No. 500-5480-02

Cylindrical Tungsten Carbide Burr SA

Part Number	Head Diameter	Head Length	Shank Diameter
1 5480-SA1	1/4"	3/4"	1/4"
5480-SA2	5/16"	3/4"	1/4"
1 5480-SA3	3/8"	3/4"	1/4"
5480-SA5	1/2"	1"	1/4"
5480-SA6	5/8"	1"	1/4"
5480-SA43	1/8"	1/2"	1/8"
5480-SA51	1/4"	1/2"	1/8"

Cylindrical Burr, Soft Metals SA (Non-Ferrous)

Part Number	Head Diameter	Head Length	Shank Diameter
NF 5480-SA3NF	3/8"	3/4"	1/4"
NF 5480-SA5NF	1/2"	1"	1/4"
NF 5480-SA6NF	5/8"	1"	1/4"

Cylindrical Tungsten Carbide Burr with End Cut SB

Part Number	Head Diameter	Head Length	Shank Diameter
1 5480-SB1	1/4"	3/4"	1/4"
5480-SB2	5/16"	3/4"	1/4"
1 5480-SB3	3/8"	3/4"	1/4"
5480-SB5	1/2"	1"	1/4"
5480-SB6	5/8"	1"	1/4"
3 5480-SB43	1/8"	1/2"	1/8"
2 5480-SB51	1/4"	1/2"	1/8"

Radius End Tungsten Carbide Burr SC

Part Number	Head Diameter	Head Length	Shank Diameter
1 5480-SC1	1/4"	3/4"	1/4"
5480-SC2	5/16"	3/4"	1/4"
1 5480-SC3	3/8"	3/4"	1/4"
5480-SC5	1/2"	1"	1/4"
5480-SC6	5/8"	1"	1/4"
5480-SC42	1/8"	1/2"	1/8"
2 5480-SC51	1/4"	1/2"	1/8"

Ball End Tungsten Carbide Burr SD

Part Number	Head Diameter	Head Length	Shank Diameter
1 5480-SD1	1/4"	1/4"	1/4"
5480-SD2	5/16"	5/16"	1/4"
1 5480-SD3	3/8"	3/8"	1/4"
5480-SD5	1/2"	1/2"	1/4"
5480-SD6	5/8"	5/8"	1/4"
5480-SD7	3/4"	3/4"	1/4"
3 5480-SD42	1/8"	1/8"	1/8"
2 5480-SD51	1/4"	1/4"	1/8"



500-5480

Radius End Burr, Soft Metals SC (Non-Ferrous)

Part Number	Head Diameter	Head Length	Shank Diameter
NF 5480-SC3NF	3/8"	3/4"	1/4"
NF 5480-SC5NF	1/2"	1"	1/4"
NF 5480-SC6NF	5/8"	1"	1/4"

- NF 12 PC Soft Metals Set**
Various Head Diameters
1/4" shank
Part No. 500-5480-NF

Tungsten Carbide Burrs (cont.)

- 1** **13 PC 1/4" Shank Set**
1/4" and 3/8" Head Diameter
1/4" shank
with steel index
Part No. 500-5480

- 2** **8 PC 1/8" Shank Set**
1/4" Head Diameter
1/8" shank
with steel index
Part No. 500-5480-02-04

- 3** **8 PC 1/8" Shank Set**
1/8" Head Diameter
1/8" shank
with steel index
Part No. 500-5480-02

Oval Tungsten Carbide Burr SE

Part Number	Head Diameter	Head Length	Shank Diameter
5480-SE3	1/4"	3/4"	1/4"
5480-SE5	5/16"	3/4"	1/4"
5480-SE6	3/8"	3/4"	1/4"
3 5480-SE41	1/8"	1/2"	1/8"
2 5480-SE51	1/4"	1/2"	1/8"

Tree Radius End Tungsten Carbide Burr SF

Part Number	Head Diameter	Head Length	Shank Diameter
1 5480-SF1	1/4"	5/8"	1/4"
5480-SF3	3/8"	3/4"	1/4"
5480-SF5	1/2"	1"	1/4"
5480-SF6	5/8"	1"	1/4"
5480-SF42	1/8"	1/2"	1/8"
2 5480-SF51	1/4"	1/2"	1/8"

Tree Radius End Burr, Soft Metal SF (Non-Ferrous)

Part Number	Head Diameter	Head Length	Shank Diameter
NF 5480-SF3NF	3/8"	3/4"	1/4"
NF 5480-SF5NF	1/2"	1"	1/4"
NF 5480-SF6NF	5/8"	1"	1/4"

Tree Pointed End Tungsten Carbide Burr SG

Part Number	Head Diameter	Head Length	Shank Diameter
1 5480-SG1	1/4"	5/8"	1/4"
5480-SG3	3/8"	3/4"	1/4"
5480-SG5	1/2"	1"	1/4"
5480-SG6	5/8"	1"	1/4"
3 5480-SG44	1/8"	1/2"	1/8"
2 5480-SG51	1/4"	1/2"	1/8"

Flame Tungsten Carbide Burr SH

Part Number	Head Diameter	Head Length	Shank Diameter
5480-SH1	1/4"	1/2"	1/4"
5480-SH2	5/16"	3/4"	1/4"
5480-SH5	1/2"	1-1/4"	1/4"
3 5480-SH41	1/8"	5/16"	1/8"

Taper Tungsten (Rounded) Carbide Burr 14° SL

Part Number	Head Diameter	Head Length	Shank Diameter
1 5480-SL1	1/4"	5/8"	1/4"
1 5480-SL3	3/8"	1"	1/4"
5480-SL4	1/2"	1-3/16"	1/4"
5480-SL6	5/8"	1-1/4"	1/4"
5480-SL42	1/8"	5/16"	1/8"
2 5480-SL51	1/4"	1/2"	1/8"

Taper Tungsten (Rounded) Carbide Burr 14° SL (Non-Ferrous)

Part Number	Head Diameter	Head Length	Shank Diameter
NF 5480-SL3NF	3/8"	1"	1/4"
NF 5480-SL4NF	1/2"	1-1/4"	1/4"
NF 5480-SL6NF	5/8"	1-1/4"	1/4"

Taper Tungsten Carbide (SHARP) Burr 14°, 22° and 28° SM

Part Number	Head Diameter & Angle	Head Length	Shank Diameter
1 5480-SM2	1/4" 14°	3/4"	1/4"
5480-SM4	3/8" 28°	5/8"	1/4"
5480-SM5	1/2" 28°	7/8"	1/4"
3 5480-SM42	1/8" 14°	3/8"	1/8"
2 5480-SM51	1/4" 22°	1/2"	1/8"

Rim Tungsten Carbide Burr

Part Number	Head Diameter	Head Length	Shank Diameter
5480-RIM-04	1/2"	1/8"	1/4"
3 5480-SR56	3/8"	1/16"	1/8"

Inverted Cone Tungsten Carbide Burr

Part Number	Head Diameter	Head Length	Shank Diameter
3 5480-SN42	1/8"	1/4"	1/8"



Soft Metals

Drill Speed Chart

The speed of a drill is usually measured in terms of the rate at which the outside or periphery of the tool moves in relation to the work being drilled. The common term for this is Surface Feet Per Minute, abbreviated to sfm and Revolution Per Minute, or rpm, is indicated by the following formulas:

$$\text{sfm} = .26 \times \text{rpm} \times \text{Drill Diameter in Inches}$$

$$\text{rpm} = 3.8 \times \frac{\text{sfm}}{\text{Drill Diameter in Inches}}$$

In general, when operating a drill at a speed anywhere within its range for the particular material involved, reductions in speed result in more holes before re-grinding is necessary. On every job there is a problem of choosing a speed which will permit the most economical rate of production. This is determined by drill costs, pieces produced in a given time and down time for tool changing. The most economical speed for operating a drill will depend upon many variables, some of which are:

- 1) Composition and hardness of material
- 2) Depth of hole
- 3) Efficiency of cutting fluid
- 4) Type and condition of drilling machine
- 5) Quality of holes desired
- 6) Difficulty of set-up

Speeds shown in the table on right include a range in feet-per-minute. On most jobs, it is usually better to start with a slower speed and build up to the maximum after trials indicate the job can run faster.

Material	Speed in feet Per Minute (fpm)
Aluminum and its Alloys	200 – 300
Brass and Bronze (ordinary)	150 – 300
Bronze (High Tensile)	70 – 150
Die Castings (Zinc Base)	300 – 400
High Temperature Alloys	10 – 20
Cobalt Base: HS25, S816, V36	10 – 20
Iron Base: INCO 800, A286, N155	7 – 15
Nickel Base: INCONEL 700, U500, Rene41	7 – 15
Iron Cast (soft)	75 – 125
Cast (medium hard)	50 – 100
Hard Chilled	10 – 20
Malleable	80 – 90
Magnesium and its Alloys	250 – 400
Monel Metal or High-Nickel Steel	30 – 50
Plastics or Similar Materials (Bakelite)	100 – 300
Steel-Mild - .2 to .3 carbon	80 – 110
Steel - .4 to .5 carbon	70 – 80
Tool - 1.2 carbon	50 – 60
Forgings	40 – 50
Alloy- 300 to 400 Brinell	20 – 30
High Tensile (Heat Treated)	
35 to 40 Rockwell C	30 – 40
40 to 45 Rockwell C	25 – 35
45 to 50 Rockwell C	15 – 25
50 to 55 Rockwell C	7 – 15
Maraging (Heat Treated)	7 – 20
(Annealed)	40 – 55
Stainless Steel	
Free Machining Group: 303, 303SE, 430F, 416F, 420F	30 – 100
Chromium-Nickel Group (Non-Hardenable):	
(300 Series) (1) (400 Series) (2)	20 – 60
Straight Chromium Group (Heat Treated): (400 Series) (3)	10 – 30
Titanium Alloys,	
Commercially Pure	50 – 60
5Al-2Sn, 8Al-1Mo-1V	30 – 40
2 Fe-2Cr-Mo	Annealed
6Al-4V, 4Al-4Mn, 7Al-4Mo	Annealed
6Al-4V, 4Al-4Mn, 7Al-4Mo	25 – 35
2Fe-2Cr-2Mo	Solution Treated and Aged
Wood	15 – 20
	300 – 400

Drill Bit & Tap Size / Thread Chart

Tap Size	Bit Size	% Thread	Tap Size	Bit Size	% Thread	Tap Size	Bit Size	% Thread
0-80 NF	3/64	71	10-32 NF	#21	68	5/8"-18 NF	37/64"	58
1.6 mm x .35	1.25 mm	69	5 mm x .80	4.20 mm	68	16 mm x 2.0	14.0 mm	76
1-64 NC	#53	59	12-24 NC	#16	66	3/4"-10 NC	21/32"	68
2 mm x .40	1.60 mm	66	12-28 NF	#15	70	3/4"-16 NF	11/16"	71
1-72 NF	#53	67	6 mm x 1.00	5.00 mm	71	20 mm x 2.5	17.5 mm	74
2-56 NC	#50	62	1/4"-20 NC	#7	70	7/8"-9 NC	49/64"	61
2-64 NF	#50	70	1/4"-28 NF	3	72	7/8"-14 NF	13/16"	62
2.5 mm x .45	2.05 mm	67	5/16"-18 NC	F	66	24 mm x 3.0	21.0 mm	72
3-48 NC	#47	70	5/16"-24 NF	I	67	1"-8 NC	7/8"	73
3-56 NF	#46	69	8 mm x 1.25	6.70 mm	70	1"-12 NF	59/64"	67
4-40 NC	#43	65	3/8"-16 NC	5/16"	68	1"-14 NS	15/16"	61
4-48 NF	#42	61	3/8"-24 NF	Q	71	1-1/8"-7 NC	63/64"	72
3 mm x .50	2.50 mm	70	10 mm x 1.50	8.5 mm	71	1-1/8"-12 NF	1-3/64"	66
5-40 NC	#38	65	7/16"-14 NC	U	70	30 mm x 3.5	26.5 mm	75
5-44 NF	#37	63	7/16"-20 NF	25/64"	65	1-1/4"-7 NC	1-7/64"	67
3.5 mm x .60	2.90 mm	63	12 mm x 1.75	10.20 mm	69	1-1/4"-12 NF	1-11/64"	72
6-32 NC	#36	72	1/2"-13 NC	27/64"	73	1-3/8"-6 NC	1-7/32"	72
6-40 NF	#33	69	1/2"-20 NF	29/64"	65	1-3/8"-12 NF	1-19/64"	72
4 mm x .70	3.30 mm	73	14 mm x 2.00	12.00 mm	72	36 mm x 4.0	32.0 mm	82
8-32 NC	#29	62	9/16"-12 NC	31/64"	68	1-1/2"-6 NC	1-11/32"	72
8-36 NF	#29	70	9/16"-18 NF	33/64"	58	1-1/2"-12 NF	1-27/64"	72
10-24 NC	#26	69	5/8"-11 NC	17/32"	62			

Tap Speed Chart

Tapping speeds not only affect productivity, but also they can influence the tap life and the part quality. The feed of a tap cannot be varied independently as can be done with other cutting tools. The tap feed is fixed by the number of threads per inch or the lead of the tap threads.

Excessive speed can cause early tap failure due to high temperature. Also, failure can be accelerated due to the welding of small particles of the work piece material to the tap surfaces. Factors to be considered when determining the best tapping speed are the following:

1. Type of material to be tapped
2. Hardness of material to be tapped
3. Length or depth of hole
4. Whether through or blind hole
5. Length of tap chamfer
6. Lead of thread
7. Tapping fluid used
8. Condition and type of machine
9. Percentage of thread to be cut

The tabulated recommended tapping speeds should be modified for the following:

- Speeds may have to be lowered as the length of hole increases, owing to the accumulation of chips that increase friction and interfere with lubrication.
- Speeds can be increased when using spiral point, spiral flute, or forming taps.
- Speeds should be decreased when using bottoming taps.
- Speeds can be increased as the percentage of thread is decreased.
- Speeds should be decreased for coarse thread taps.
- Taper pipe taps should be run at between one-half and three-quarters the speed of a comparable tap of the same diameter and pitch.
- The quantity and quality of tapping fluids may affect the tapping speed significantly.

Material	Speed in Feet Per Minute (fpm)
Aluminum	50 – 150
Aluminum Bronze	20 – 80
Brass	50 – 200
Bronze	50 – 100
Cast Iron	50 – 100
Copper	30 – 60
Fiber	80 – 90
Magnesium	75 – 200
Malleable Iron	35 – 60
Monel Metal	20 – 40
Plastic – thermoplastic	50 – 100
thermosetting	50 – 100
Steel – free machining	40 – 80
Stainless Steel	5 – 35
Titanium Alloy	10 – 40
Zinc Die Casting	60 – 150

Decimal Equivalency Chart

Bit Size	Decimal Equiv.	Bit Size	Decimal Equiv.	Bit Size	Decimal Equiv.	Bit Size	Decimal Equiv.
80	0.0135	36	0.1065	D	0.2460	13.5mm	0.5315
79	0.0145	7/64"	0.1094	1/4" E	0.2500	35/64"	0.5469
1/64"	0.0156	35	0.1100	6.5mm	0.2559	14.0mm	0.5512
78	0.0160	34	0.1110	F	0.2570	9/16"	0.5625
77	0.0180	33	0.1130	G	0.2610	14.5mm	0.5709
.5mm	0.0197	32	0.1160	17/64"	0.2656	37/64"	0.5781
76	0.0200	3.0mm	0.1181	H	0.2660	15.0mm	0.5906
75	0.0210	31	0.1200	I	0.2720	19/32"	0.5938
74	0.0225	1/8"	0.1250	7.0mm	0.2756	39/64"	0.6094
73	0.0240	30	0.1285	J	0.2770	15.5mm	0.6102
72	0.0250	29	0.1360	K	0.2810	5/8"	0.6250
71	0.0260	3.5mm	0.1378	9/32"	0.2812	16.0mm	0.6299
70	0.0280	28	0.1405	L	0.2900	41/64"	0.6406
69	0.0292	9/64"	0.1406	M	0.2950	16.5mm	0.6496
68	0.0310	27	0.1440	7.5mm	0.2953	21/32"	0.6562
1/32"	0.0312	26	0.1470	19/64"	0.2969	17.0mm	0.6693
67	0.0320	25	0.1495	N	0.3020	43/64"	0.6719
66	0.0330	24	0.1520	5/16"	0.3125	11/16"	0.6875
65	0.0350	23	0.1540	8.0mm	0.3150	17.5mm	0.6890
64	0.0360	5/32"	0.1562	O	0.3160	45/64"	0.7031
63	0.0370	22	0.1570	P	0.3230	18.0mm	0.7087
62	0.0380	4.0mm	0.1575	21/64"	0.3281	23/32"	0.7188
61	0.0390	21	0.1590	Q	0.3320	18.5mm	0.7283
1.0mm	0.0394	20	0.1610	8.5mm	0.3346	47/64"	0.7344
60	0.0400	19	0.1660	R	0.3390	19.0mm	0.7480
59	0.0410	18	0.1695	11/32"	0.3438	3/4"	0.7500
58	0.0420	11/64"	0.1719	S	0.3480	49/64"	0.7656
57	0.0430	17	0.1730	9.0mm	0.3543	19.5mm	0.7677
56	0.0465	16	0.1770	T	0.3580	25/32"	0.7812
3/64"	0.0469	4.5mm	0.1772	23/64"	0.3594	20.0mm	0.7874
55	0.0520	15	0.1800	U	0.3680	51/64"	0.7969
54	0.0550	14	0.1820	9.5mm	0.3740	20.5mm	0.8071
1.5mm	0.0591	13	0.1850	3/8"	0.3750	13/16"	0.8125
53	0.0595	3/16"	0.1875	V	0.3770	21.0mm	0.8268
1/16"	0.0625	12	0.1890	W	0.3860	53/64"	0.8281
52	0.0635	11	0.1910	25/64"	0.3906	27/32"	0.8438
51	0.0670	10	0.1935	10.0mm	0.3937	21.5mm	0.8465
50	0.0700	9	0.1960	X	0.3970	55/64"	0.8594
49	0.0730	5.0mm	0.1969	Y	0.4040	22.0mm	0.8661
48	0.0760	8	0.1990	13/32"	0.4062	7/8"	0.8750
5/64"	0.0781	7	0.2010	Z	0.4130	22.5mm	0.8858
47	0.0785	13/64"	0.2031	10.5mm	0.4134	57/64"	0.8906
2.0mm	0.0787	6	0.2040	27/64"	0.4219	23.0mm	0.9055
46	0.0810	5	0.2055	11.0mm	0.4331	29/32"	0.9062
45	0.0820	4	0.2090	7/16"	0.4375	59/64"	0.9219
44	0.0860	3	0.2130	11.5mm	0.4528	23.5mm	0.9252
43	0.0890	5.5mm	0.2165	29/64"	0.4531	15/16"	0.9375
42	0.0935	7/32"	0.2188	15/32"	0.4688	24.0mm	0.9449
3/32"	0.0938	2	0.2210	12.0mm	0.4724	61/64"	0.9531
41	0.0960	1	0.2280	31/64"	0.4844	24.5mm	0.9646
40	0.0980	A	0.2340	12.5mm	0.4921	31/32"	0.9688
2.5mm	0.0984	15/64"	0.2344	1/2"	0.5000	25.0mm	0.9843
39	0.0995	6.0mm	0.2362	13.0mm	0.5118	63/64"	0.9844
38	0.1015	B	0.2380	33/64"	0.5156	1"	0.1000
37	0.1040	C	0.2420	17/32"	0.5312		

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Abrasive Product Use Instructions

THE IMPORTANCE OF GRINDING AND CUTOFF WHEEL SAFETY

The safe use of grinding and cutoff wheels is essential to everyone concerned with the manufacture and use of bonded abrasive products.

For some time, grinding wheel manufacturers have been involved in compliance with and publishing information about the safe use of these products. One of these basic documents is the American National Standards Institute ANSI B-7.1 1988 and Addendum entitled "Safety Requirements for the Use, Care and Protection of Abrasive Wheels".

The safe use of abrasive wheels relies upon common sense, and recognition of these two factors:

Grinding wheels can be broken.

Rotating wheels develop stresses, which can cause the wheel to break.

Since wheels can be broken, they must be handled, stored and used with care. Because rotating wheels develop stresses, their safe operating speed must never be exceeded. Ultimately, the user assumes responsibility for carefully selecting, properly handling, and safely using any abrasive grinding or cutting wheel.

This is not intended to be a complete guide to the use, care and protection of abrasive wheels. All users should read and familiarize themselves with "American National Standards Institute" (ANSI B-7.1) for complete safety and use requirements.

NEVER . . .

Never use a wheel that has been dropped. The impact may have caused cracks that will result in breakage.

Never force a wheel onto the machine or alter the size of the arbor hole. Don't use a wheel that fits the arbor too loosely.

Never exceed maximum operating speed of the wheel.

Never use dirty, nicked, warped or sprung mounting flanges. Don't tighten mounting nut excessively.

Never grind on the side of the wheel, unless the wheel is specifically designed for that purpose.

Never start machine without safety guard in place.

Never jam work into the wheel. Don't cut or grind material for which the wheel was not designed.

Never stand directly in wheel's plane of rotation when machine is started.

Never forget that cutting and grinding wheels are dangerous when misused or improperly handled.

ALWAYS . . .

Always select the right wheel for the job.

Always use the right equipment and machines. They should be maintained and checked regularly, and any sub-standard conditions should be corrected before use for safety and efficiency.

Always inspect, handle and store wheels in a careful manner. Wheels should be stored horizontally on flat surfaces. Do not lean wheels against equipment, or roll wheels on the floor.

Always use wheel guards or protective hoods. Certain small sizes, cones and plugs (Type 16, 17 and 18) are exceptions. Refer to ANSI B-7.1 for details.

Always use proper mounting procedures for wheels, particularly for cones and plugs.

Always wear safety glasses or other suitable eye protection equipment.

Always check maximum wheel operating speed against rate speed of equipment. Do not over-speed wheels.

Always determine that mounting flanges are at least the minimum diameter specified in ANSI B-7.1 (section 5).

Always run machine at operating speed for at least one minute (with guard in place) before cutting or grinding.

Wire Brush Wheels

BRUSH TERMINOLOGY

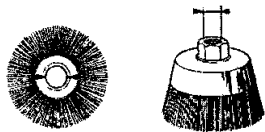
OUTSIDE DIAMETER



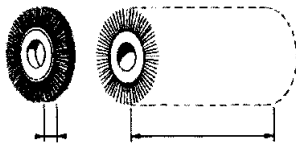
TRIM LENGTH



ARBOR HOLE



FACE WIDTH



BRUSH LENGTH



BRUSH CORRECTION GUIDE

Desired Changes	Suggested Brush Change
Slower Action	• Smaller diameter brush • Run brush slower • Brush with thinner wire • Brush with longer trim length • Narrower brush face
Faster Action	• Larger diameter brush • Run brush faster • Brush with heavier wire • Brush with shorter trim length • Wider brush face
Finer Finish Desired	• Run brush faster • Brush with longer filaments • Brush with thinner wire • Wider brush face
Coarser Finish Desired	• Run brush slower • Brush with shorter filaments • Brush with thinner wire • Narrower brush face
Remove Burr Instead of Rolling or Peening It	• Brush with shorter trim length • Wider brush face • Brush with heavier wire • Run brush faster
Filaments Break Off	• Reduce pressure • Brush with thinner wire
Short Brush Life	• Brush with thinner wire • Reduce pressure • Wider brush face

Hand-Held Wire Brush

Ideal for aluminum weld prep and light duty cleaning in hard-to-reach areas with a long handle for use with welding gloves. Wooden handle-will not melt when used on hot welds, .006 stainless steel, and 3 x 7 rows.



Part No. 5437-SBSS
Box of 6



Bench Wire Wheel Brushes

When arbor is 2" please specify desired arbor size and we will include an arbor bushing at no extra charge.
Can be stacked for extra face width.



Part Number	Outside Diameter	Wire Size	Face Width	Max RPM	Arbor Hole	Trim Length	Wire Material
7200-6-010C	6"	.010	1-1/4"	6,000	2"	1-1/8"	Carbon
7200-6-010CN	6"	.010	3/4"	6,000	1/2" and 5/8"	N/A	Carbon
7200-6-014C	6"	.014	1-1/4"	6,000	2"	1-1/8"	Carbon
7200-6-014CN	6"	.014	3/4"	6,000	1/2" and 5/8"	1-7/16"	Carbon
7200-6-014S	6"	.014	7/8"	6,000	2"	1"	Stainless
7200-8-014C	8"	.014	1-1/2"	4,500	2"	1-3/8"	Carbon



Standard Twist Knot Wheels

All wheels are standard 2/3" twist. For medium to heavy duty cleaning. Ideal for first run brush for weld beads.
De-burring and fast stock removal.



Part Number	Outside Diameter	Wire Size	Face Width	Max RPM	Arbor Hole	Trim Length	Wire Material
7205-6-014C	6"	.014	1/2"	9,000	1/2" and 5/8"	1-3/8"	Carbon
7205-6-020C	6"	.020	1/2"	9,000	1/2" and 5/8"	1-3/8"	Carbon



Knotted Grinder Wire Wheels

All wheels are a standard 2/3" twist. Great for surface preparation, de-burring, and weld cleaning.



Part Number	Outside Diameter	Wire Size	Face Width	Max RPM	Arbor Hole/ Stem Size	Trim Length	Wire Material
7210-48-014C-04	3"	.014	3/8"	25,000	1/4" (Stem)	5/8"	Carbon
7210-64-014C	4"	.014	1/2"	20,000	5/8"-11	7/8"	Carbon
7210-64-014S	4"	.014	1/2"	20,000	5/8"-11	7/8"	Stainless
7210-64-020C	4"	.020	3/16"	20,000	5/8"-11	7/8"	Carbon
7210-64-020S	4"	.020	3/16"	20,000	5/8"-11	7/8"	Stainless



Mini Wire Wheels

Remove scale, burrs, and corrosion in hard-to-reach areas including internal surfaces. A high speed air grinder or electric die grinder operation is necessary for optimum performance.



Part Number	Outside Diameter	Wire Size	Face Width	Max RPM	Arbor Hole	Trim Length	Wire Material
7230-24-006C	1-1/2"	.006	1/4"	20,000	3/8"	7/16"	Carbon
7230-24-006S	1-1/2"	.006	1/4"	20,000	3/8"	7/16"	Stainless
7230-24-010C	1-1/2"	.010	1/4"	20,000	3/8"	7/16"	Carbon
7230-24-010S	1-1/2"	.010	1/4"	20,000	3/8"	7/16"	Stainless
7230-24-014C	1-1/2"	.014	1/4"	20,000	3/8"	7/16"	Carbon
7230-32-006C	2"	.006	3/8"	20,000	1/2"	1/2"	Carbon
7230-32-006S	2"	.006	3/8"	20,000	1/2"	1/2"	Stainless
7230-32-010C	2"	.010	3/8"	20,000	1/2"	1/2"	Carbon
7230-32-010S	2"	.010	3/8"	20,000	1/2"	1/2"	Stainless
7230-32-014C	2"	.014	3/8"	20,000	1/2" and 3/8"	1/2"	Carbon
7230-32-014S	2"	.014	3/8"	20,000	1/2" and 3/8"	1/2"	Stainless
7230-48-006C	3"	.008	5/8"	20,000	1/2"	1"	Carbon
7230-48-006S	3"	.006	5/8"	20,000	1/2"	1"	Stainless
7230-48-010C	3"	.010	5/8"	20,000	1/2"	1"	Carbon
7230-48-010S	3"	.010	5/8"	20,000	1/2" and 3/8"	1"	Stainless
7230-48-014C	3"	.014	5/8"	20,000	1/2" and 3/8"	1"	Carbon
7230-48-014S	3"	.014	5/8"	20,000	1/2" and 3/8"	1"	Stainless

Arbors



3/8" Arbor Size with 1/4" Shank

Part No. 7230-06-04

1/2" Arbor Size with 1/4" Shank

Part No. 7230-08-04



Safety De-Scaler Cup Brushes

Safety FIRST! Unique safety guard alters the path of thrown debris away from the operator. Attach to your grinder with our permanent arbor (5/8"-11 and 14 mm x 2.0) for safe and secure material removal. Use on multiple machines! Resists against torque, friction, and brush "back off".



Cable Crimp



Twist Knot

Part Number	Outside Diameter	Wire Size	Arbor Size	Max RPM	Wire Material	Wire Type
8215-44-020C	2-3/4"	.020	5/8"-11	15,000	Carbon	Twist
8215-44-020S	2-3/4"	.020	5/8"-11	15,000	Stainless	Twist
8235-48-009C	3"	.009	5/8"-11	13,000	Carbon	Crimp
8235-48-012S	3"	.012	5/8"-11	13,000	Stainless	Crimp



Knotted Cup Brushes

Expressly designed for heavy-duty material removal of large surfaces. Best for removing dense corrosion, old paint, rust scale, weld scale, and more.

Use on portable, electric, or high speed air tools.

Single Row - Fast Cutting and Flexible

Double Row - Longer Life = Less Tool Changes, Rugged, and Fast Cutting



Single Row



Double Row

Part Number	Outside Diameter	Wire Size	Arbor Size	Max RPM	Trim Length	Wire Material	Single or Double Row
7220-64-014C	4"	.014	5/8"-11	9,000	1-1/4"	Carbon	Single Row
7220-64-020C	4"	.020	5/8"-11	9,000	1-1/4"	Carbon	Single Row
7225-64-014C	4"	.014	5/8"-11	9,000	1-1/4"	Carbon	Double Row
7225-64-020C	4"	.020	5/8"-11	9,000	1-1/4"	Carbon	Double Row



Power End Brushes

Best for light to medium duty cleaning, and hard to reach areas.



Part Number	Outside Diameter	Wire Size	Wire Type	Max RMP	Shank Size	Wire Material
7235-08-006C	1/2"	.006	Crimped	25,000	1/4"	Carbon
7235-08-006S	1/2"	.006	Crimped	25,000	1/4"	Stainless
7235-08-010C	1/2"	.010	Crimped	25,000	1/4"	Carbon
7235-08-010S	1/2"	.010	Crimped	25,000	1/4"	Stainless
7235-08-014C	1/2"	.014	Crimped	25,000	1/4"	Carbon
7235-08-014S	1/2"	.014	Crimped	25,000	1/4"	Stainless
7235-08-020C	1/2"	.020	Crimped	25,000	1/4"	Carbon
7235-08-020S	1/2"	.020	Crimped	25,000	1/4"	Stainless
7235-12-006C	3/4"	.006	Crimped	22,000	1/4"	Carbon
7235-12-006S	3/4"	.006	Crimped	22,000	1/4"	Stainless
7235-12-010C	3/4"	.010	Crimped	22,000	1/4"	Carbon
7235-12-010S	3/4"	.010	Crimped	22,000	1/4"	Stainless
7235-12-014C	3/4"	.014	Crimped	22,000	1/4"	Carbon
7235-12-014S	3/4"	.014	Crimped	22,000	1/4"	Stainless
7235-12-020C	3/4"	.020	Crimped	22,000	1/4"	Carbon
7235-12-020S	3/4"	.020	Crimped	22,000	1/4"	Stainless
7235-16-006C	1"	.006	Crimped	22,000	1/4"	Carbon
7235-16-006S	1"	.006	Crimped	22,000	1/4"	Stainless
7235-16-010C	1"	.010	Crimped	22,000	1/4"	Carbon
7235-16-010S	1"	.010	Crimped	22,000	1/4"	Stainless
7235-16-014C	1"	.014	Crimped	22,000	1/4"	Carbon
7235-16-020C	1"	.020	Crimped	22,000	1/4"	Carbon
7235-16-020S	1"	.020	Crimped	22,000	1/4"	Stainless

Knotted Wire Power End Brushes

Best for light to medium duty cleaning.



Part Number	Outside Diameter	Wire Size	Wire Type	Max RMP	Shank Size	Wire Material
7235-12-014KC	3/4"	.014	Knotted	22,000	1/4"	Carbon
7235-16-014KC	1"	.014	Knotted	22,000	1/4"	Carbon





Power End Cup Brush

Light to medium-duty cleaning and removal of rust, paint, and corrosion.



Part Number	Outside Diameter	Wire Size	Shank Size	Max RPM	Wire Material	Trim Length
7215-2804-012C	1-3/4"	.012	1/4"	13,000	Carbon	3/4"

Flapper Wheels

Great for metals, plastic, and wood. Use to deburr, grind, polish, and finish. Aluminum oxide resin bond cloth that is contaminate-free.



Part Number	Diameter	Width	Shank Size	Max RPM	Grit
5428-16N60	1"	5/8"	1/4"	30,000	60
5428-16N80	1"	5/8"	1/4"	30,000	80
5428-16N120	1"	5/8"	1/4"	30,000	120
5428-16W40	1"	1"	1/4"	30,000	40
5428-16W60	1"	1"	1/4"	30,000	60
5428-16W80	1"	1"	1/4"	30,000	80
5428-16W120	1"	1"	1/4"	30,000	120
5428-24N60	1-1/2"	1/2"	1/4"	25,000	60
5428-24N80	1-1/2"	1/2"	1/4"	25,000	80
5428-24N120	1-1/2"	1/2"	1/4"	25,000	120
5428-24W40	1-1/2"	1"	1/4"	25,000	40
5428-24W60	1-1/2"	1"	1/4"	25,000	60
5428-24W80	1-1/2"	1"	1/4"	25,000	80
5428-24W120	1-1/2"	1"	1/4"	25,000	120
5428-32N60	2"	1/2"	1/4"	25,000	60
5428-32N80	2"	1/2"	1/4"	25,000	80
5428-32N120	2"	1/2"	1/4"	25,000	120
5428-32W40	2"	1"	1/4"	25,000	40
5428-32W60	2"	1"	1/4"	25,000	60
5428-32W80	2"	1"	1/4"	25,000	80
5428-32W120	2"	1"	1/4"	25,000	120
5428-40W60	2-1/2"	1"	1/4"	20,000	60
5428-40W80	2-1/2"	1"	1/4"	20,000	80
5428-40W120	2-1/2"	1"	1/4"	20,000	120
5428-48N60	3"	1/2"	1/4"	20,000	60
5428-48N80	3"	1/2"	1/4"	20,000	80
5428-48W40	3"	1"	1/4"	20,000	40
5428-48W60	3"	1"	1/4"	20,000	60
5428-48W80	3"	1"	1/4"	20,000	80
5428-48W120	3"	1"	1/4"	20,000	120



GARD Aluma-Blend Wheels

Great for grinding, blending, and sanding aluminum and non-ferrous metals. Made with high quality aluminum oxide grains that are contaminate-free to help prevent load-up on the wheel.



Part Number	Diameter	Arbor/Hole Size	Max RPM	Grit
5422-7214-36	4-1/2"	7/8"	13,300	36
5422-7214-36A	4-1/2"	5/8"-11	13,300	36
5422-7214-60	4-1/2"	7/8"	13,300	60
5422-7214-60A	4-1/2"	5/8"-11	13,300	60



Ceramic



GARD Blender Elite Wheels

Excels in medium to high pressure grinding. Great for all metals and are contaminate-free. Designed to work with heat-sensitive materials such as stainless steel, titanium alloys, and super-alloys.



Aluminum



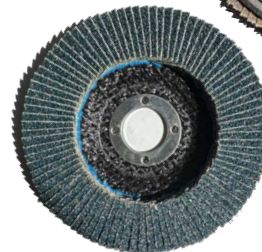
Steel



Stainless



Zirconia



Ceramic

Part Number	Diameter	Arbor/Hole Size	Max RPM	Grit
5426-7214-40	4-1/2"	7/8"	13,300	40
5426-7214-40A	4-1/2"	5/8"-11	13,300	40
5426-7214-60	4-1/2"	7/8"	13,300	60
5426-7214-60A	4-1/2"	5/8"-11	13,300	60
5426-7214-80	4-1/2"	7/8"	13,300	80
5426-7214-80A	4-1/2"	5/8"-11	13,300	80
5426-9614-40	6"	7/8"	10,200	40
5426-9614-40A	6"	5/8"-11	10,200	40
5426-9614-60	6"	7/8"	10,200	60
5426-9614-60A	6"	5/8"-11	10,200	60
5426-9614-80	6"	7/8"	10,200	80
5426-714-40	7"	7/8"	8,600	40
5426-714-40A	7"	5/8"-11	8,600	40

Zirconia

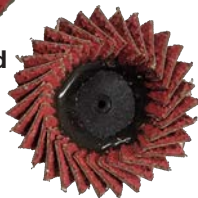
Part Number	Diameter	Arbor/Hole Size	Max RPM	Grit
5424-6410-60	4"	5/8"	13,300	60
5424-7214-40	4-1/2"	7/8"	13,300	40
5424-7214-40A	4-1/2"	5/8"-11	13,300	40
5424-7214-60	4-1/2"	7/8"	13,300	60
5424-7214-60A	4-1/2"	5/8"-11	13,300	60
5424-7214-80	4-1/2"	7/8"	13,300	80
5424-7214-80A	4-1/2"	5/8"-11	13,300	80
5424-9614-36	6"	7/8"	10,200	36
5424-9614-36A	6"	5/8"-11	10,200	36
5424-9614-60	6"	7/8"	10,200	60
5424-9614-60A	6"	5/8"-11	10,200	60

Quick Change Mini and Turbo Blender Discs

All the great features you like about the Blender Elite Wheels in 2" and 3". Great to use in hard-to-reach areas. For use on ferrous metals, composites, plastics, fiberglass, and wood.



Turbo-Blend



Mini Blender

Quick Change Ceramic Mini Blender Discs

Part Number	Diameter	Drive Pad Part Number	Max RPM	Grit
5732-36	2"	5731-DP32	24,000	36
5732-60	2"	5731-DP32	24,000	60
5732-80	2"	5731-DP32	24,000	80
5748-36	3"	5731-DP48	20,000	36
5748-60	3"	5731-DP48	20,000	60
5748-80	3"	5731-DP48	20,000	80



R-Type

Quick Change Ceramic Turbo Blender and Corner Discs



Corner Disc



Part Number	Diameter	Drive Pad Part Number	Max RPM	Grit	Type
5832-36-C	2"	5731-DP32-C	24,000	36	Corner Disc
5832-60	2"	5731-DP32	24,000	60	Turbo-Blend
5832-80	2"	5731-DP32	24,000	80	Turbo-Blend
5832-80-C	2"	5731-DP32-C	24,000	80	Corner Disc
5832-120	2"	5731-DP32	24,000	120	Turbo-Blend
5848-36	3"	5731-DP48	20,000	36	Turbo-Blend
5848-36-C	3"	5731-DP32	20,000	36	Corner Disc
5848-60	3"	5731-DP48	20,000	60	Turbo-Blend
5848-80	3"	5731-DP48	20,000	80	Turbo-Blend
5848-120	3"	5731-DP48	20,000	120	Turbo-Blend



R-Type

DRIVE PADS

Size

1-1/2" with 1/4" shank
2" with 1/4" shank
3" with 1/4" shank

Part Number

5731-DP32-C
5731-DP32
5731-DP48

Large Ceramic Turbo Blender and Corner Discs



Large Turbo-Blend



Part Number	Diameter	Arbor/Hole Size	Max RPM	Grit	Type
5872-7214-40	4-1/2"	7/8"	13,300	40	Turbo-Blend
5872-7214-40A	4-1/2"	5/8"-11	13,300	40	Turbo-Blend
5872-7214-40-C	4-1/2"	7/8"	13,300	40	Corner Disc
5872-7214-40A-C	4-1/2"	5/8"-11	13,300	40	Corner Disc
5872-7214-60	4-1/2"	7/8"	13,300	60	Turbo-Blend
5872-7214-60A	4-1/2"	5/8"-11	13,300	60	Turbo-Blend
5872-7214-80	4-1/2"	7/8"	13,300	80	Turbo-Blend
5872-7214-80A	4-1/2"	5/8"-11	13,300	80	Turbo-Blend



Large Corner Disc

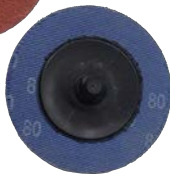


Quick Change Ceramic Grain and Softi Non-Woven Discs

Works great for grinding, deburring, cleaning,
finishing, and polishing.



Ceramic



R-Type



Aluminum
Oxide

Ceramic Grain Quick Change Discs

Part Number	Diameter	Drive Pad Part Number	Max RPM	Grit
5725-32-36	2"	5731-DP32	25,000	36
5725-32-50	2"	5731-DP32	25,000	50
5725-32-60	2"	5731-DP32	25,000	60
5725-32-80	2"	5731-DP32	25,000	80
5725-48-36	3"	5731-DP48	20,000	36
5725-48-50	3"	5731-DP48	20,000	50
5725-48-60	3"	5731-DP48	20,000	60
5725-48-80	3"	5731-DP48	20,000	80

Softi Non-Woven Quick Change Discs

Part Number	Diameter	Drive Pad Part Number	Max RPM	Grit	Density	Material
5730-32AC	2"	5731-DP32	25,000	60	Coarse	Aluminum Oxide
5730-32AM	2"	5731-DP32	25,000	80-120	Medium	Aluminum Oxide
5730-32AVF	2"	5731-DP32	25,000	180-240	Very Fine	Aluminum Oxide
5730-32UF	2"	5731-DP32	25,000	240-320	Ultra Fine	Silicon Carbide
5730-48AC	3"	5731-DP48	20,000	60	Coarse	Aluminum Oxide
5730-48AM	3"	5731-DP48	20,000	80-120	Medium	Aluminum Oxide
5730-48AVF	3"	5731-DP48	20,000	180-240	Very Fine	Aluminum Oxide
5730-48UF	3"	5731-DP48	20,000	240-320	Ultra Fine	Silicon Carbide

Assortments

Ceramic Quick Change Discs

2"- (6) pieces each 36, 50, 60, and 80 grit

3"- (6) pieces each 36, 50, 60, and 80 grit

(1) 2" Drive Pad with 1/4" shank

(1) 3" Drive Pad with 1/4" shank

50 Pieces, in a large metal storage tray.

Part Number: 500-5725

Aluminum Oxide Quick Change Discs

2"- (6) pieces each coarse, medium, and very fine grit

3"- (6) pieces each coarse, medium, and very fine grit

(1) 2" Drive Pad with 1/4" shank

(1) 3" Drive Pad with 1/4" shank

38 Pieces, in a large metal storage tray.

Part Number: 500-5730

DRIVE PADS

Size

2" with 1/4" shank

3" with 1/4" shank

Part Number

5731-DP32

5731-DP48

Resin Fiber Grinding Discs

Coated on both sides of the wheel for double reinforcement.
A sturdy metal hub provides secure mounting to the backing pad.



Front

Part Number	Diameter	Grit	Backing Pad Part Number
5723-72-36	4-1/2"	36	5720-BP7210
5723-72-50	4-1/2"	50	5720-BP7210
5723-80-36	5"	36	5720-BP8010
5723-80-50	5"	50	5720-BP8010
5723-7-36	7"	36	5720-BP710
5723-7-50	7"	50	5720-BP710
5723-7-60	7"	60	5720-BP710



Back



Aluminum

Steel

Stainless

Note: A backing pad is required for the use of Resin Fiber Grinding Discs. R.P.M. is not listed, as speed is determined by the tool being used, the material being removed, and surface conditions. For optimum performance, determine a safe speed by starting to grind slowly and applying light to medium operator pressure.

Polymer Backing Pads

Size	Part Number
4-1/2" with 5/8"-11	5720-BP7210
5" with 5/8"-11	5720-BP8010
7" with 5/8"-11	5720-BP710



Front

Mini Bite Grinding Discs
High speed miniature abrasives. 1-piece, rigid backing flexible disc. Simple "spin-on" arbor.

Part Number	Diameter	Density	Max RPM	Grit
5466-3C	3"	Coarse	21,000	36
5466-3M	3"	Medium	21,000	60
5466-3F	3"	Fine	21,000	120



Back

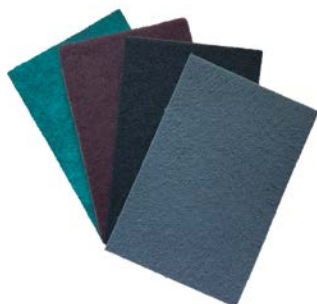
Arbor

Size
1/4" Shank

Part Number
5466-A4

Softi Abrasive Hand Pads

Part Number	Size	Color	Material	Specification
5530-69GP	6" x 9"	Maroon	Aluminum Oxide	Medium
5530-69HD	6" x 9"	Black	Black Silicon Carbide	Heavy Duty
5530-69UF	6" x 9"	Gray	Silicon Carbide	Fine
5530-69CS	6" x 9"	Green	Aluminum Oxide	Heavy Duty



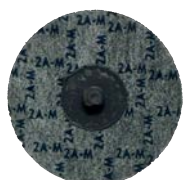


Resin Bond Abrasive Shop Rolls

High quality J Wt. flexible backing for advanced quality finishing and longer working life.



Part Number	Size	Grit	Material
5440-060-50	1" x 50 yds	60	Aluminum Oxide
5440-060-50-32	2" x 50 yds	60	Aluminum Oxide
5440-080-50	1" x 50 yds	80	Aluminum Oxide
5440-080-50-32	2" x 50 yds	80	Aluminum Oxide
5440-100-50	1" x 50 yds	100	Aluminum Oxide
5440-100-50-32	2" x 50 yds	100	Aluminum Oxide
5440-120-50	1" x 50 yds	120	Aluminum Oxide
5440-120-50-32	2" x 50 yds	120	Aluminum Oxide
5440-150-50	1" x 50 yds	150	Aluminum Oxide
5440-150-50-32	2" x 50 yds	150	Aluminum Oxide
5440-180-50	1" x 50 yds	180	Aluminum Oxide
5440-180-50-32	2" x 50 yds	180	Aluminum Oxide
5440-240-50	1" x 50 yds	240	Aluminum Oxide
5440-240-50-32	2" x 50 yds	240	Aluminum Oxide
5440-320-50	1" x 50 yds	320	Aluminum Oxide
5440-320-50-32	2" x 50 yds	320	Aluminum Oxide



5529-4804-
MMR

Quick Change Uni-Blend Mini Wheels

Cleaning and prep on ceramic, aluminum, copper, bronze, brass, stainless steel, chrome, steel, glass, tile, titanium, and magnesium.

Part Number	Diameter	Density	Thickness	Drive Pad Part Number	Max RPM
5529-3204-SFR	2"	Fine	1/4"	5731-DP32	22,000
5529-3204-SMR	2"	Soft/Medium	1/4"	5731-DP32	22,000
5529-3204-MMR	2"	Medium	1/4"	5731-DP32	22,000
5529-4804-SFR	3"	Fine	1/4"	5731-DP48	15,000
5529-4804-SMR	3"	Soft/Medium	1/4"	5731-DP48	15,000
5529-4804-MMR	3"	Medium	1/4"	5731-DP48	15,000



5529-4804-
SMR



R-Type



Without
Hub

Uni-Blend Wheels

GARD's Uni-Blend unitized wheels are ideal for de-burring, buffing and polishing applications. They are great for all metals including stainless steel, bronze, copper, aluminum, and titanium.

Type 27

Part Number	Diameter	Hole/ Arbor Size	Thickness	Max RPM	Density
5529-7214-SF	4-1/2"	7/8"	1/2"	10,000	Fine
5529-7214-SFA	4-1/2"	5/8"-11	1/2"	10,000	Fine



With
Hub

Aluminum
Oxide

Surface Prep Wheels

GARD's Non-Woven Surface Prep Wheels provide total use of fine abrasive grains embedded in the full body of the wheel. Extremely effective in the removal of blue discoloration caused by welding stainless steel while producing a high glossy polish of the surface area.

Type 27

Part Number	Diameter	Hole/Arbor Size	Material	Max RPM	Density
5272-72-SC	4-1/2"	7/8"	Silicon Carbide	13,300	Super Fine
5272-72-AO	4-1/2"	7/8"	Aluminum Oxide	13,300	Fine
5272-7-SC	7"	7/8"	Silicon Carbide	8,500	Super Fine
5272-7-AO	7"	7/8"	Aluminum Oxide	8,500	Fine

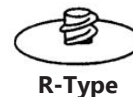
Silicon
Carbide

5388-72

Stripper Disc Wheels

Easy removal of heavy rust, paint, and coatings from any surface. New dense, non-woven design will outperform other similar materials for longer life and maximum performance.

Part Number	Diameter	Type/Arbor Size	Max RPM
5388-32	2"	Type R	10,500
5388-48	3"	Type R	7,000
5388-72	4-1/2"	7/8"	11,000
5388-72A	4-1/2"	5/8"-11	11,000



R-Type



5388-48

Mounted Stone Points

Mounted points are made of premium abrasives grains. The shank is perfectly centered for balance without run-out or vibration. For fitting, shaping, enlarging holes, and finishing work in confined spaces. For use on die grinders, point grinders, flexible shaft machines, etc. Custom assortments are available upon request.

Tough Steel



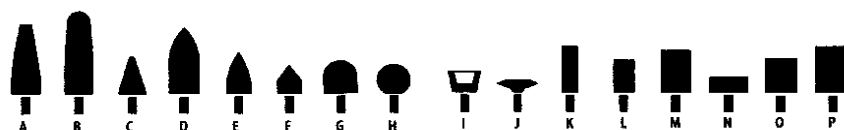
5490-W222T

Part Number	Diameter	Length	Shank Size	Head Shape
5490-A1T	3/4"	2-1/2"	1/4"	A*
5490-A3T	1"	2-3/4"	1/4"	B
5490-A5T	3/4"	1-1/8"	1/4"	C*
5490-A11T	7/8"	2"	1/4"	D
5490-A12T	11/16"	1-1/4"	1/4"	E*
5490-A14T	11/16"	7/8"	1/4"	F*
5490-A21T	1"	1"	1/4"	G
5490-A25T	1"	1"	1/4"	H*
5490-A32T	1"	5/8"	1/4"	I*
5490-A37T	1-1/4"	1/4"	1/4"	J*
5490-W179T	3/8"	1-1/4"	1/4"	K*
5490-W196T	5/8"	1"	1/4"	L*
5490-W205T	3/4"	1"	1/4"	M*
5490-W217T	1"	3/8"	1/4"	N*
5490-W220T	1"	1"	1/4"	O
5490-W222T	1"	2"	1/4"	P



5490-A25T

*Special Order Items



Green Grind All Wheels

The unique "Turbo-Vortex" design on the face of the wheel keeps the workpiece and wheel cooler. It is made from a combination of zirconium and aluminum oxide and is contaminate-free so there is no discoloring or warpage on stainless steel. Great for grinding on aluminum, stainless steel, and alloys.



5433-72-36



5433-72-36A

Part Number	Diameter	Hole/ Arbor Size	Thickness	Grit	Max RPM
5433-72-36	4-1/2"	7/8"	1/8"	36	13,300
5433-72-36A	4-1/2"	5/8"-11	1/8"	36	13,300
5433-72-60	4-1/2"	7/8"	1/8"	60	13,300
5433-72-60A	4-1/2"	5/8"-11	1/8"	60	13,300
5433-80-36	5"	7/8"	1/8"	36	12,200
5433-80-36A	5"	5/8"-11	1/8"	36	12,200



5381-72

GARD Extreme Cool Grid Grinding Wheels
The unique blend of zirconia, ceramic, white aluminum oxide, other resins, and reinforcing materials, along with the exclusive grid pattern, it rapidly removes material and helps keep the wheel and workpiece cool. Made with quality grains so there is little to no dust and dirt, no clogging, and non-glazing, they are also contaminate-free. Great for grinding on any ferrous and non-ferrous metals.



5381-72A

Part Number	Diameter	Thickness	Hole/Arbor Size	Max RPM
5381-72	4-1/2"	1/4"	7/8"	13,300
5381-72A	4-1/2"	1/4"	5/8"-11	13,300
5381-80	5"	1/4"	7/8"	12,250
5381-80A	5"	1/4"	5/8"-11	12,250
5381-96	6"	1/4"	7/8"	10,200
5381-96A	6"	1/4"	5/8"-11	10,200



5411-72

GARD Piper Wheels
These long-lasting grinding wheels are great for facing ferrous pipe and notching weld preparations. They are best used on ferrous metals including stainless and high-heat alloys. It is made of premium abrasive grains with some ceramic grain and is contaminate-free. It is not recommended for grinding non-ferrous metals.



5411-72A

Part Number	Diameter	Thickness	Hole/Arbor Size	Max RPM
5411-72	4-1/2"	1/8"	7/8"	13,500
5411-72A	4-1/2"	1/8"	5/8"-11	13,500
5411-80	5"	1/8"	7/8"	12,000
5411-80A	5"	1/8"	5/8"-11	12,000



GARD GrindCut Wheels

These wheels are designed for higher productivity than your average cut off wheel. The GrindCut wheels give you the best of both worlds by being great for cutting and grinding on ferrous metals including stainless steel. These wheels are made of aluminum oxide and are not contaminate-free. It is not recommended for cutting and grinding on non-ferrous metals.



5404-64-6



5406-72-14DC

Part Number	Diameter	Thickness	Hole/Arbor Size	Max RPM
5404-48-6	3"	1/8"	3/8"	25,000
5404-64-6	4"	1/8"	3/8"	19,000
5406-32-6	2"	1/16"	3/8"	25,000
5406-48-6	3"	1/16"	3/8"	25,000
5406-64-6	4"	1/16"	3/8"	19,000
5406-72-14	4-1/2"	1/16"	7/8"	13,300
5406-80-14	5"	1/16"	7/8"	12,200
5406-7-14	7"	1/16"	7/8"	8,740

Depressed Center

Part Number	Diameter	Thickness	Hole/Arbor Size	Max RPM
5403-32-6DC	2"	1/8"	3/8"	21,000
5406-72-14DC	4-1/2"	1/16"	7/8"	13,500
5406-72-14DCA	4-1/2"	1/16"	5/8"-11	13,500



GARD ThinFlex Cutoff Wheels

Use this wheel on hand-held or stationary tools. It outlasts other standard thin wheels 8 to 1 and is great for cutting all ferrous metals.

These wheels are made of aluminum oxide and are not contaminate-free. It is not recommended for cutting stainless steel.



5407-64-6



5407-32-6

Part Number	Diameter	Thickness	Hole Size	Max RPM
5407-16-2	1"	.040	1/8"	61,000
5407-24-2	1-1/2"	.040	1/8"	45,000
5407-24-4	1-1/2"	.040	1/4"	45,000
5407-32-4	2"	.040	1/4"	30,000
5407-32-6	2"	.040	3/8"	30,000
5407-40-4	2-1/2"	.035	1/4"	27,000
5407-40-6	2-1/2"	.035	3/8"	27,000
5407-48-4	3"	.040	1/4"	25,000
5407-48-6	3"	.040	3/8"	25,000
5407-64-4	4"	.040	1/4"	19,000
5407-64-6	4"	.040	3/8"	19,000
5407-64-14	4"	.040	7/8"	19,000
5407-72-14	4-1/2"	.040	7/8"	13,500
5407-80-6	5"	.035	3/8"	12,200
5407-80-14	5"	.040	7/8"	12,200
5407-96-14	6"	.040	7/8"	10,200
5407-7-8	7"	.040	1/2"	8,740
5407-7-14	7"	.040	7/8"	8,740



GARD ThinFlex N/F Cutoff Wheels

Use this wheel on hand-held or stationary tools. It outlasts other standard thin wheels 8 to 1 and is great for cutting all non-ferrous metals. It is made of silicon carbide abrasive grain and is not contaminate-free. It is not suitable for cutting stainless steel.



5351-040-96-14



5351-040-64-6



Part Number	Diameter	Thickness	Hole Size	Max RPM
5351-040-48-6	3"	.040	3/8"	25,000
5351-040-64-6	4"	.040	3/8"	19,000
5351-040-72-14	4-1/2"	.040	7/8"	13,500
5351-040-80-14	5"	.040	7/8"	12,200
5351-040-96-14	6"	.040	7/8"	10,200



GARD ThinFlex Elite Cutoff Wheels

With a slightly thicker design than our other Thinflex wheels, the Thinflex Elite is great for cutting thicker metals and is safe to use on stainless steel. It is made of zirconia and is contaminate-free. A zirconia wheel is better for high-pressure projects.



5507-72-14



5507-72-14DC



Part Number	Diameter	Thickness	Hole Size	Max RPM
5507-48-4	3"	.045	1/4"	25,000
5507-48-6	3"	.045	3/8"	25,000
5507-64-6	4"	.045	3/8"	19,000
5507-64-10	4"	.045	5/8"	19,000
5507-72-14	4-1/2"	.045	7/8"	13,500
5507-80-10	5"	.045	5/8"	12,200
5507-80-14	5"	.045	7/8"	12,200
5507-96-14	6"	.045	7/8"	10,200

Depressed Center

Part Number	Diameter	Thickness	Hole/Arbor Size	Max RPM
5507-72-14DC	4-1/2"	.040	7/8"	13,500
5507-72-14DCA	4-1/2"	.040	5/8"-11	13,500
5507-96-14DC	6"	.040	7/8"	10,200



GARD ThinFlex Elite II Cutoff Wheels

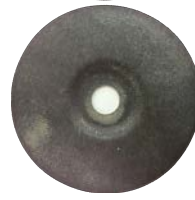
With a slightly thicker design than our other Thinflex wheels, the Thinflex Elite II is great for cutting thicker metals and is safe to use on stainless steel. It is made of ceramic and is contaminate-free. A ceramic wheel is better for low-pressure projects and heat-sensitive metals.



5807-72-14



5807-96-14DC



Part Number	Diameter	Thickness	Hole Size	Max RPM
5807-48-4	3"	.045	1/4"	25,000
5807-48-6	3"	.045	3/8"	25,000
5807-64-6	4"	.045	3/8"	19,000
5807-72-14	4-1/2"	.045	7/8"	13,500
5807-80-14	5"	.045	7/8"	12,200
5807-96-14	6"	.045	7/8"	10,200

Depressed Center

Part Number	Diameter	Thickness	Hole/Arbor Size	Max RPM
5807-72-14DC	4-1/2"	.045	7/8"	13,500
5807-72-14DCA	4-1/2"	.045	5/8"-11	13,500
5807-96-14DC	6"	.045	7/8"	11,000



Mandrels and Accessories

Mandrel Arbor for 1/8" Hole ThinFlex Wheels

1/8" Shank

2 pcs.

Part Number: 5407-22



Universal Arbor Kit for 1/4" or 3/8" Hole ThinFlex Wheels

(1) 1/4" Shank Adapter

(1) 1/4" Mandrel

(1) 3/8" Mandrel

3 pcs.

Part Number: 5407-6444



Wheel Mounting Kit - Adapts 7/8" to 5/8"-11 Female Thread

4-1/2", 5" and 6" wheels

(2) clamp nuts

(1) Spanner wrench

3 pcs.

Part Number: 5407-A10-14



Wheel Mounting Nut - Adapts 7/8" to 5/8"-11 Female Thread - No Wrench

4-1/2", 5" and 6" wheels

(2) clamp nuts

2 pcs.

Part Number: 5407-A10



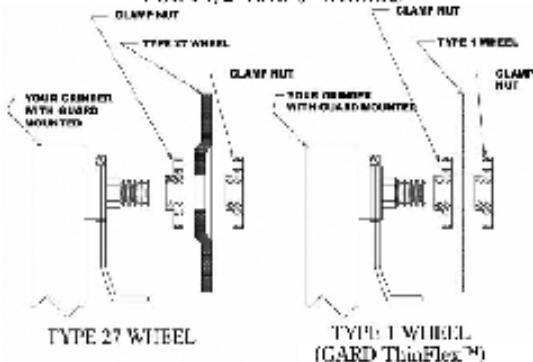
GARD SAFETY BULLETIN

GARD Abrasive Wheel Mounting and Use

1. Eye protection for all present.
2. Operator must be wearing gloves to protect their hands.
3. Angle grinder with guard securely tightened and in place.
4. Grinder must be unplugged while changing wheels.
5. Adapter kit (Part No. 5407-A10-14) MUST BE USED. USE OF OTHER WHEEL ADAPTERS MAY BE DANGEROUS.
6. The GARD ThinFlex-Elite IS NOT TO BE USED IN OPERATIONS WHERE FLEXING MAY OCCUR.

For flexible cutting operations, use the standard ThinFlex Series (Part No. 5407-xx-xx).

PROPER WHEEL MOUNTING WITH KIT NO. 5407-A10-14
FOR 4-1/2" AND 5" WHEELS



PROPER WHEEL MOUNTING WITH KIT NO. 5407-A10-14
FOR 6" WHEELS

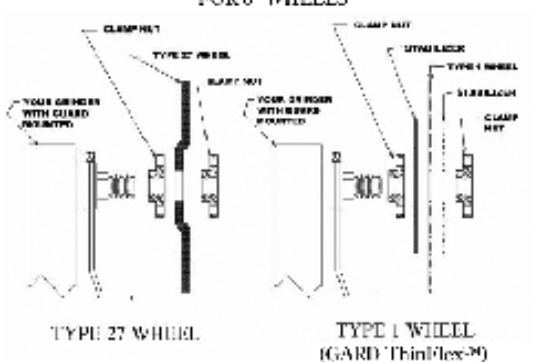


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Air Brake Fittings (D.O.T.* Standard)

Automatic locking and sealing to maximize pressure. All male pipe threads are pre-tapped with teflon. "Push and Connect" allows fast and easy installation and allows for fast line checks and tube removal.

Union Tube to Tube



Part Number	Tube Outside Diameter
100-44DB	1/4"
100-66DB	3/8"
100-88DB	1/2"



Tee Tube to Tube

Part Number	Tube Outside Diameter
102-444DB	1/4"
102-666DB	3/8"



Male Connector Tube to NPT



Part Number	Tube Outside Diameter	NPT Size
104-4-4DB	1/4"	1/4"
104-6-6DB	3/8"	3/8"



Male Elbow Tube to NPT

Part Number	Tube Outside Diameter	NPT Size
105-4-2DB	1/4"	1/8"
105-4-4DB	1/4"	1/4"
105-4-6DB	1/4"	3/8"
105-6-4DB	3/8"	1/4"
105-6-6DB	3/8"	3/8"
105-8-4DB	1/2"	1/4"
105-8-8DB	1/2"	1/2"



Swivel Male Tee Tube to NPT



Part Number	Tube Outside Diameter	NPT Size
107-66-6DBS	3/8"	3/8"



*D.O.T. is imprinted on all air brake fittings to verify compliance of standards set by the National Highway Traffic Safety Administration, and Department of Transportation FMVSS 106 for all air brake applications except those designed for use between frame and axle or between towed and towing vehicle.

Super-Flo Quick Connect Couplings

Easy one hand "Push to Connect" make tool changes fast. Great for compressed air or gas. Temperature range -40°F through 250°F.

Male Part Number	Female Part Number	Style	Body Diameter	NPT Size
4-4M-116	4-4F-116	Coupler	1/4"	1/4"
4-4M-117	4-4F-117	Stem	1/4"	1/4"
4801-08M	N/A	Barb	1/2"	1/2"



4-4M-116



4-4F-116



4-4M-117



4-4F-117



4801-08M

Stainless Steel Hose Clamps

**Absolutely no spot welds, corrosion resistant, solid stainless steel
with only 10 pounds torque, seals pressures up to 1000 PSI.**



Part Number	Clamp Range	Size	Band Width
M4-150	7/32" - 5/8"	#4	5/16"
M6-150	5/16" - 7/8"	#6	5/16"
M8-150	7/16" - 1"	#8	5/16"
M10-150	1/2" - 1-1/16"	#10	5/16"
M20-150	7/8" - 1-3/4"	#20	5/16"
6-150	3/8" - 7/8"	#6	1/2"
8-150	7/16" - 1"	#8	1/2"
10-150	1/2" - 1-1/16"	#10	1/2"
12-150	9/16" - 1-1/4"	#12	1/2"
16-150	11/16" - 1-1/2"	#16	1/2"
20-150	3/4" - 1-3/4"	#20	1/2"
24-150	1-1/16" - 2"	#24	1/2"
28-150	1-5/16" - 2-1/4"	#28	1/2"
32-150	1-9/16" - 2-1/2"	#32	1/2"
36-150	1-13/16" - 2-3/4"	#36	1/2"
40-150	2-1/16" - 3"	#40	1/2"
44-150	2-5/16" - 3-1/4"	#44	1/2"
48-150	2-9/16" - 3-1/2"	#48	1/2"
52-150	2-13/16" - 3-3/4"	#52	1/2"
56-150	3-1/16" - 4"	#56	1/2"
60-150	3-5/16" - 4-1/4"	#60	1/2"
64-150	3-9/16" - 4-1/2"	#64	1/2"
72-150	4-1/16" - 5"	#72	1/2"
80-150	4-5/8" - 5-1/2"	#80	1/2"
88-150	4-3/32" - 6"	#88	1/2"
96-150	4-1/2" - 6-1/2"	#96	1/2"
104-150	5" - 7"	#104	1/2"

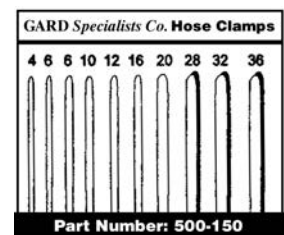


Assortment

Hose Clamp Set

10 pieces each, M4-150, M6-150, 6-150, 10-150,
12-150, 16-150, 20-150, 28-150, 32-150, and 36-150
100 Pieces, on display rack.

Part No. 500-150



Recoil Tubing with Swivel Ends (Red)

**Lightweight, abrasion-resistant, excellent coil memory, and resistant to kinks. Thread sealant
supplied on all fittings. Temperature range -68°F through 140°F.**



Part Number	Tube Outside Diameter	Tube Inside Diameter	Length	Male Swivel Fitting Size
4800-06RD-10	3/8"	1/4"	10'	1/4"
4800-06RD-15	3/8"	1/4"	15'	1/4"
4800-06RD-20	3/8"	1/4"	20'	1/4"
4800-06RD-25	3/8"	1/4"	25'	1/4"
4800-06RD-50	3/8"	1/4"	50'	1/4"
4800-09RD-25	9/16"	3/8"	25'	3/8"

Recoil Tubing with Swivel Ends Chemical Resistance Chart

	Rating		Rating
Acetic Acid, Glacial	4	Coke Oven Gas	4
Acetic Acid, 30%	4	Copper Chloride (aq)	1
Acetone	4	Copper Cyanide (aq)	1
Acetylene	1	Corn Oil	1
Alkazene	4	Cotton Seed Oil	1
Aluminum Chloride (aq)	3	Creosol (Methyl Phenol)	4
Aluminum Nitrate (aq)	3	Cyclohexane	1
Ammonia Anhydrous	4	Denatured Alcohol	4
Ammonia Gas (cold)	3	Detergent Solution	3
Ammonia Gas (hot)	4	Diesel Oil	2
Ammonium Chloride (aq) 40%	2	Dioxane	4
Ammonium Sulfate (aq)	1	Dowtherm Oil	3
Amyl Alcohol	4	Dry Cleaning Fluids	4
Amyl Naphthalene	4	Ethane	1
Animal Fats	1	Ethyl Acrylate	4
Aqua Regia	4	Ethyl Alcohol (Ethanol)	4
Arsenic Acid	3	Ethyl Benzine	4
Asphalt	2	Ethyl Cellulose	2
ASTM Fuel A	2	Ethyl Chloride	4
ASTM Fuel B	3	Ethyl Ether	3
Barium Chloride (aq)	1	Ethylene Chloride	4
Beer	2	Ethylene Glycol5 (Anti-Freeze)	2
Beet Sugar Liquors	4	Ethylene Oxide	4
Benzine	3	Ethylene Trichloride	4
Benzine	2	Ferric Chloride (aq)	1
Blast Furnace Gas	4	Ferric Nitrate (aq)	1
Bleach Solutions	4	Ferric Sulfate (aq)	2
Borax	1	Fluorine (Liquid)	4
Boric Acid	1	Formaldehyde (RT)	4
Brake Fluid	4	Formic Acid	4
Brine	2	Freon 11	4
Bromine Water	4	Freon 12	1
Bunker Oil	2	Freon 22	4
Butane	1	Fuel Oil (Bunker 'C')	2
Butter	1	Gasoline (100 Octane, High Test)	3
Butyl Alcohol (Butanol)	3	Glue	1
Butylene	4	Glycerin (Glycerol)	1
Calcium Chloride (aq)	1	Glycols	4
Calcium Hydroxide (aq)	2	Green Sulfate Liquor	1
Calcium Nitrate (aq)	1	Hexane	2
Calcium Sulfide (aq)	1	Hydraulic Oil	1
Cane Sugar Liquors	4	Hydrochloric Acid (cold) 37%	4
Carbolic Acid	3	Hydrochloric Acid (hot) 37%	4
Carbon Dioxide	1	Hydrofluoric Acid (Conc.) (cold)	4
Carbon Monoxide	1	Hydrofluoric Acid (Conc.) (hot)	4
Carbonic Acid	4	Hydrogen Gas	1
Castor Oil	1	Isobutyl Alcohol	3
Chlorine (dry)	4	Isooctane	2
Chlorine (wet)	4	Isopropyl Acetate	4
Chloroform	4	Isopropyl Alcohol (Isopropanol)	3
Chlorox	4	Isopropyl Ether	2
Chromic Acid 50%	4	Kerosene	1
Citric Acid	1	Lacquer Solvents	4
Coal Tar (Creosote)	3	Lacquers	4
Coconut Oil	2	Lard	1
Cod Liver Oil	1	Lavender Oil	4

RATING SCALE:

1 Little or No Impact

2 Minor Effect

3 Moderate Effect

4 Severe Effect

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Recoil Tubing with Swivel Ends

Chemical Resistance Chart (Continued)

	Rating		Rating
Lead Acetate (aq)	4	Pydraul 230E, 312C, 540C	4
Linseed Oil	2	Rapeseed Oil	2
Liquified Petroleum Gas	1	Red Oil (MIL-H-5606)	1
Lubricating Oils	1-2	RJ-1 (MIL-F-23338 B)	1
Lye	4	RP-1 (MIL-F-25576 C)	1
Magnesium Chloride (aq)	1	Salt Water	2
Magnesium Hydroxide (aq)	4	Sewage	1
Mercury	1	Silicate Esters	1
Methane	3	Silicone Oils	1
Methyl Acetate	4	Silver Nitrate	1
Methyl Acrylate	4	Skydrol 500	4
Methyl Alcohol (Methanol)	4	Skydrol 700	4
Methyl Butyl Ketone	4	Soap Solutions	3
Methyl Chloride	4	Sodium Chloride (aq)	1
Methylene Chloride	4	Sodium Hydroxide (aq)	4
Methyl Ethyl Ketone	4	Sodium Peroxide (aq)	4
Methyl Isobutyl Ketone	4	Sodium Phosphate (aq)	1
Milk	4	Sodium Sulfate (aq)	1
Mineral Oil	1	Soy Bean Oil	2
Motor Oil 20W, 10W40	2	Stoddard Solvent	1
N-Octane	4	Styrene (Monomer)	4
Naphtha (Lighter Fluid)	2	Sucrose Solution	4
Naphthalene (Moth Repellent)	2	Sulfuric Acid (Dilute Battery Acid)	3
Natural Gas	2	Sulfuric Acid (Conc)	4
Neatsfoot Oil	1	Sulfuric Acid (20% Oleum)	4
Nitric Acid 70%	4	Sulfurous Acid	4
Nitric Acid (Dilute) 10%	3	Tannic Acid	4
Oleic Acid	2	Tetrochlorethylene	4
Oleum Spirits	3	Toluene (Toluol)	4
Olive Oil	1	Transformer Oil	2
Oxygen (cold)	1	Transmission Fluid Type A	2
Oxygen (200-400F)	4	Trichloroethane	4
Nitroethane	4	Trichloroethylene	4
Paint Thinner, Duco	4	Turbine Oil	1
Perchloric Acid	4	Turpentine	4
Perchloroethylene	4	Varnish	3
Petroleum - Below 250°F	2	Vinegar	2
Petroleum - Above 250°F	4	Vinyl Chloride	4
Phenol (Carbolic Acid)	3	Water	1
Phosphoric Acid - 45%	4	Whiskey, Wines	2
Phenyl Ethyl Ether	4	White Oil	1
Picric Acid	2	Wood Oil	3
Pickling Solution	4	Xylene	4
Potassium Acetate (aq)	4	Zinc Acetate (aq)	4
Potassium Chloride (aq)	1	Zinc Chloride (aq)	2
Potassium Cyanide (aq)	1		
Potassium Hydroxide (aq)	4		
Producer Gas	1		
Propane	1		
Propyl Alcohol (Propanol)	4		
Propylene	4		
Propylene Glycol (Anti-Freeze)	3		
Propylene Oxide	4		
Pydraul, 10E, 29 ELT	4		
Pydraul 30E, 50E, 65E	4		
Pydraul, 115E	4		

RATING SCALE:

1 Little or No Impact 2 Minor Effect 3 Moderate Effect 4 Severe Effect

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Nutserts

Large head flange provides extra push out resistance. Painted and polished surfaces won't be damaged during installation. Easily installed from one side of the workpiece "Blind Install" provides strong threads for material too thin to tap.

Fractional

Nutsert Part Number	Size	Grip Range	Hand Tool Part Number	Drill Size
221-632-080	#6-32	.020 - .080	221-632-Tool	17/64"
221-632-130	#6-32	.080 - .130	221-632-Tool	17/64"
221-832-080	#8-32	.020 - .080	221-832-Tool	17/64"
221-832-130	#8-32	.080 - .130	221-832-Tool	17/64"
221-1024-130	#10-24	.020 - .130	221-1024-Tool	19/64"
221-1024-225	#10-24	.130 - .225	221-1024-Tool	19/64"
221-1032-130	#10-32	.020 - .130	221-1032-Tool	19/64"
221-1032-225	#10-32	.130 - .225	221-1032-Tool	19/64"
221-420-165	1/4"-20	.027 - .165	221-420-Tool	25/64"
221-420-260	1/4"-20	.165 - .260	221-420-Tool	25/64"
221-428-165	1/4"-28	.027 - .167	221-428-Tool	25/64"
221-428-260	1/4"-28	.165 - .260	221-428-Tool	25/64"
221-518-150	5/16"-18	.027 - .150	221-518-Tool	17/32"
221-518-312	5/16"-18	.150 - .312	221-518-Tool	17/32"
221-524-150	5/16"-24	.027 - .150	221-524-Tool	17/32"
221-524-312	5/16"-24	.150 - .312	221-524-Tool	17/32"
221-616-150	3/8"-16	.027 - .150	221-616-Tool	17/32"
221-616-312	3/8"-16	.150 - .312	221-616-Tool	17/32"
221-624-150	3/8"-24	.027 - .150	221-624-Tool	17/32"
221-624-312	3/8"-24	.150 - .312	221-624-Tool	17/32"



Metric

Nutsert Part Number	Size	Grip Range	Hand Tool Part Number	Drill Size
222-M470-2.0	4 mm x .70	0.5 mm - 2.0 mm	222-M470-Tool	17/64"
222-M470-3.3	4 mm x .70	2.0 mm - 3.3 mm	222-M470-Tool	17/64"
222-M580-3.3	5 mm x .80	0.5 mm - 3.3 mm	222-M580-Tool	19/64"
222-M580-5.7	5 mm x .80	3.3 mm - 5.7 mm	222-M580-Tool	19/64"
222-M610-4.2	6 mm x 1.0	0.7 mm - 4.2 mm	222-M610-Tool	25/64"
222-M610-6.6	6 mm x 1.0	4.2 mm - 6.6 mm	222-M610-Tool	25/64"
222-M8125-3.8	8 mm x 1.25	0.7 mm - 3.8 mm	222-M8125-Tool	17/32"
222-M8125-7.9	8 mm x 1.25	3.8 mm - 7.9 mm	222-M8125-Tool	17/32"
222-M1015-3.8	10 mm x 1.5	0.7 mm - 3.8 mm	222-M1015-Tool	17/32"
222-M1015-7.9	10 mm x 1.5	3.8 mm - 7.9 mm	222-M1015-Tool	17/32"



Assortments

Master Nutsert Assortment

(25) each - #6-32 through 1/4"-28
 (15) each - 5/16"-18 through 3/8"-24
 (1) each - Hand tool for each size
 430 Pieces, in a large metal storage tray.

Part Number: 500-221MK

Metric Master Nutsert Assortment

(25) each - 4 mm x .70 through 10 mm x 1.5
 (1) each - Hand tool for each size
 255 Pieces, in a large metal storage tray.

Part Number: 500-222MK

Master Nutsert Assortment With Drill Bits

(25) each - #6-32 through 1/4"-28
 (15) each - 5/16"-18 through 3/8"-24
 (1) each - Hand tool for each size
 (1) each - 17/64", 19/64", 25/64", and 17/32" Drill Bits
 434 Pieces, in a large metal storage tray.

Part Number: 500-221MKD

Metric Master Nutsert Assortment With Drill Bits

(25) each - 4 mm x .70 through 10 mm x 1.5
 (1) each - Hand tool for each size
 (1) each - 17/64", 19/64", 25/64", and 17/32" Drill Bits
 259 Pieces, in a large metal storage tray.

Part Number: 500-222MKD



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Important Information

Stud Size Table

DIAMETER

Inches Millimeters

• #0 - .066 1.68

• #2 - .093 2.36

• #4 - .119 3.02

• #6 - .148 3.76

• #8 - .178 4.52

• #10 - .198 5.03

• 1/4" - .265 6.73

• 5/16" - .326 8.28

• 3/8" - .390 9.91

• 7/16" - .454 11.53

• 1/2" - .518 13.16

• 5/8" - .656 16.66

• 3/4" - .779 19.79

Wire Gauge Conversions

Wire Gauge (AWG)	Diameter (inches)	Diameter (mm)	Cross Sectional Area (mm ²)
0000	0.46	11.68	107.16
000	0.4096	10.40	84.97
00	0.3648	9.27	67.40
0	0.3249	8.25	53.46
1	0.2893	7.35	42.39
2	0.2576	6.54	33.61
3	0.2294	5.83	26.65
4	0.2043	5.19	21.14
5	0.1819	4.62	16.76
6	0.162	4.11	13.29
7	0.1443	3.67	10.55
8	0.1285	3.26	8.36
9	0.1144	2.91	6.63
10	0.1019	2.59	5.26
11	0.0907	2.30	4.17
12	0.0808	2.05	3.31
13	0.072	1.83	2.63
14	0.0641	1.63	2.08
15	0.0571	1.45	1.65
16	0.0508	1.29	1.31
17	0.0453	1.15	1.04
18	0.0403	1.02	0.82
19	0.0359	0.91	0.65
20	0.032	0.81	0.52
21	0.0285	0.72	0.41
22	0.0254	0.65	0.33
23	0.0226	0.57	0.26
24	0.0201	0.51	0.20
25	0.0179	0.45	0.16
26	0.0159	0.40	0.13

Decimal Equivalent Table

1/64	.015625	33/64	.515625
1/32	.03125	17/32	.53125
3/64	.046875	35/64	.546875
1/16	.0625	9/16	.5625
5/64	.078125	37/64	.578125
3/32	.09375	19/32	.59375
7/64	.109375	39/64	.609375
1/8	.125	5/8	.625
9/64	.140625	41/64	.640625
5/32	.15625	21/32	.65625
11/64	.171875	43/64	.671875
3/16	.1875	11/16	.6875
13/64	.203125	45/64	.703125
7/32	.21875	23/32	.71875
15/64	.234375	47/64	.734375
1/4	.25	3/4	.75
17/64	.265625	49/64	.765625
9/32	.28125	25/32	.78125
19/64	.296875	51/64	.796875
5/16	.3125	13/16	.8125
21/64	.328125	53/64	.828125
11/32	.34375	27/32	.84375
23/64	.359375	55/64	.859375
3/8	.375	7/8	.875
25/64	.390625	57/64	.890625
13/32	.40625	29/32	.90625
27/64	.421875	59/64	.921875
7/16	.4375	15/16	.9375
29/64	.453125	61/64	.953125
15/32	.46875	31/32	.96875
31/64	.484375	63/64	.984375
1/2	.50	1	1.00

Heat Shrink Terminals

Butt Connectors



1210-2HS

Part Number	Wire Gauge	Color
1210-2HS	12-10 AWG	Yellow
*1210-2HSPS	12-10 AWG	Yellow
1614-2HS	16-14 AWG	Blue
*1614-2HSPS	16-14 AWG	Blue
2218-2HS	22-18 AWG	Red

*Perma-Seal Heat Shrink



1614-2HSPS

Insulated Step Down Connectors



1216-SDHS

Part Number	Wire Gauge Range	Color
1216-SDHS	12-10 to 16-14 AWG	Yellow/Blue
1622-SDHS	16-14 to 22-18 AWG	Blue/Red



1622-SDHS

3-Way Butt Connectors



1210-3HS

Part Number	Wire Gauge	Color
1210-3HS	12-10 AWG	Yellow
1614-3HS	16-14 AWG	Blue
2018-3HS	20-18 AWG	Red



2018-3HS

Ring Terminals



1210-4RHS



1614-4RHS



2018-6RHS

Part Number	Wire Gauge	Color	Stud Size
1210-4RHS	12-10 AWG	Yellow	1/4"
1210-5RHS	12-10 AWG	Yellow	5/16"
1210-6RHS	12-10 AWG	Yellow	3/8"
1210-8RHS	12-10 AWG	Yellow	1/2"
1210-10RHS	12-10 AWG	Yellow	#10
1614-4RHS	16-14 AWG	Blue	1/4"
1614-6RHS	16-14 AWG	Blue	3/8"
1614-10RHS	16-14 AWG	Blue	#10
2018-06RHS	20-18 AWG	Red	#6
2018-4RHS	20-18 AWG	Red	1/4"
2018-5RHS	20-18 AWG	Red	5/16"
2018-6RHS	20-18 AWG	Red	3/8"
2018-08RHS	20-18 AWG	Red	#8
2018-10RHS	20-18 AWG	Red	#10



1210-8RHS



2018-08RHS



1210-10RHS

Spade Terminals



1614-08SHS

Part Number	Wire Gauge	Color	Stud Size
1210-08SHS	12-10 AWG	Yellow	#8
1210-10SHS	12-10 AWG	Yellow	#10
1614-08SHS	16-14 AWG	Blue	#8
1614-10SHS	16-14 AWG	Blue	#10
2018-08SHS	20-18 AWG	Red	#8
2018-10SHS	20-18 AWG	Red	#10



2018-10SHS

Slip-On Connectors



1210-4QFHS

Female Part Number	Male Part Number	Wire Gauge	Color	Tab Size
1210-4QFHS	1210-4QMHS	12-10 AWG	Yellow	1/4"
1614-4QFHS	1614-4QMHS	16-14 AWG	Blue	1/4"



1210-4QMHS

Nylon Terminals



1210-2



1614-2

Double Crimp Butt Connectors

Part Number	Wire Gauge	Color
1210-2	12-10 AWG	Yellow
1614-2	16-14 AWG	Blue
2218-2	22-18 AWG	Red



2218-2

Ring Terminals



1210-124R



1210-46R



1614-5R

Part Number	Wire Gauge	Color	Stud Size
1210-124R	12-10 AWG	Yellow	1/4"
1210-46R	12-10 AWG	Yellow	#6
1210-6R	12-10 AWG	Yellow	3/8"
1614-124R	16-14 AWG	Blue	1/4"
1614-46R	16-14 AWG	Blue	#6
1614-5R	16-14 AWG	Blue	5/16"
1614-6R	16-14 AWG	Blue	3/8"
1614-68R	16-14 AWG	Blue	#8
1614-810R	16-14 AWG	Blue	#10
2218-124R	22-18 AWG	Red	1/4"
2218-46R	22-18 AWG	Red	#6
2218-68R	22-18 AWG	Red	#8
2218-810R	22-18 AWG	Red	#10



1614-6R



2218-68R



2218-810R

Spade Terminals



1210-46S



2218-68S

Part Number	Wire Gauge	Color	Stud Size
1210-46S	12-10 AWG	Yellow	#6
1210-68S	12-10 AWG	Yellow	#8
1210-810S	12-10 AWG	Yellow	#10
1614-46S	16-14 AWG	Blue	#6
1614-68S	16-14 AWG	Blue	#8
1614-810S	16-14 AWG	Blue	#10
2218-46S	22-18 AWG	Red	#6
2218-68S	22-18 AWG	Red	#8
2218-810S	22-18 AWG	Red	#10



1614-810S



1210-4QFIF



1614-4QFIF

Flag Terminals

Part Number	Wire Gauge	Color	Stud Size
1210-4QFIF	12-10 AWG	Yellow	1/4"
1614-4QFIF	16-14 AWG	Blue	1/4"
2218-4QFIF	22-18 AWG	Red	1/4"



2218-4QFIF

Nylon Terminals (Continued)



2218-3QFI



2218-3QMI



1614-4QF

Slip-On Connectors

Female Part Number	Male Part Number	Wire Gauge	Color	Tab Size
1210-4QFI	1210-4QMI	12-10 AWG	Yellow	.250"
1614-3QFI	N/A	16-14 AWG	Blue	.187"
1614-4QF	1614-4QM	16-14 AWG	Blue	.250"
1614-4QFI	1614-4QMI	16-14 AWG	Blue	.250"
2218-3QFI	2218-3QMI	22-18 AWG	Red	.187"
2218-4QF	2218-4QM	22-18 AWG	Red	.250"
2218-4QFI	2218-4QMI	22-18 AWG	Red	.250"



1614-4QM



1210-4QFI



1210-4QMI

Non-Insulated Terminals

Butt Connectors



Part Number	Wire Gauge
1210-2N	12-10 AWG
1614-2N	16-14 AWG
2218-2N	22-18 AWG



Ring Terminals



Part Number	Wire Gauge	Stud Size
1210-124RN	12-10 AWG	1/4"
1210-6RN	12-10 AWG	3/8"
1210-68RN	12-10 AWG	#8
1210-810RN	12-10 AWG	#10
1614-124RN	16-14 AWG	1/4"
1614-6RN	16-14 AWG	3/8"
1614-68RN	16-14 AWG	#8
1614-810RN	16-14 AWG	#10
2218-810RN	22-18 AWG	#10



Spade Terminals



Part Number	Wire Gauge	Stud Size
1210-68SN	12-10 AWG	#8
1210-810SN	12-10 AWG	#10
1614-46SN	16-14 AWG	#6
1614-68SN	16-14 AWG	#8
2218-68SN	22-18 AWG	#8
2218-810SN	22-18 AWG	#10



Slip-On Connectors



Female

Female Part Number	Male Part Number	Wire Gauge	Tab Size
1614-4QFN	1614-4QMN	16-14 AWG	.250"
2218-2QFN	2218-2QMN	22-18 AWG	.110"
2218-4QFN	2218-4QMN	22-18 AWG	.250"



Male

Vinyl Terminals

Bullet Connectors

	Female	Male	Wire Gauge	Color	Bullet Diameter	
	Part Number	Part Number				
	1614-B1NF	1614-B1N	16-14 AWG	Blue	.157"	
	2218-B1NF	2218-B1N	22-18 AWG	Red	.157"	2218-B1N

Assortments

Heat Shrink Terminal Assortment

(25) each - 1210-2HS, 1210-4RHS, 1210-4SHS, 1210-4QFIHS, 1210-4QMIHS, 1210-6RHS, 1210-10RHS, 1210-10SHS, 1614-06RHS, 1614-06SHS, 1614-2HS, 1614-4RHS, 1614-4QFIHS, 1614-4QMIHS, 1614-10RHS, 1614-10SHS, 2018-06RHS, 2018-06SHS, 2018-2HS, 2018-4RHS, 2018-4QFIHS, 2018-4QMIHS, 2018-10RHS, and 2018-10SHS
600 Pieces, in a large metal storage tray.
Part Number: 500-HSTD

Non-Insulated Terminal Assortment

(25) each - 1210-124RN, 1210-2N, 1210-5RN, 1210-6RN, 1210-68RN, 1210-68SN, 1210-810RN, 1210-810SN, 1614-124RN, 1614-2N, 1614-46RN, 1614-46SN, 1614-6RN, 1614-68RN, 1614-68SN, 1614-810RN, 1614-810SN, 2218-2N, 2218-46RN, 2218-46SN, 2218-68RN, 2218-68SN, 2218-810RN, and 2218-810SN
600 Pieces, in a large metal storage tray.
Part Number: 500-NIT



Heavy Duty Butt Splice



Part Number	Cable Size
1-2N	1 AWG
2-2N	2 AWG
4-2N	4 AWG
6-2N	6 AWG
8-2N	8 AWG
10-2N	1/0 AWG
20-2N	2/0 AWG
30-2N	3/0 AWG
40-2N	4/0 AWG



Heavy Duty Electrical Lugs



Part Number	Cable Size	Stud Size
1-6GL	1 AWG	3/8"
1-8GL	1 AWG	1/2"
2-4GL	2 AWG	1/4"
2-5GL	2 AWG	5/16"
2-6GL	2 AWG	3/8"
4-4GL	4 AWG	1/4"
4-5GL	4 AWG	5/16"
4-6GL	4 AWG	3/8"
4-10GL	4 AWG	#10
6-4GL	6 AWG	1/4"
6-5GL	6 AWG	5/16"
6-6GL	6 AWG	3/8"

Part Number	Cable Size	Stud Size
6-10GL	6 AWG	#10
8-4GL	8 AWG	1/4"
8-5GL	8 AWG	5/16"
8-10GL	8 AWG	#10
10-4GL	1/0 AWG	1/4"
10-6GL	1/0 AWG	3/8"
10-8GL	1/0 AWG	1/2"
20-6GL	2/0 AWG	3/8"
20-8GL	2/0 AWG	1/2"
30-6GL	3/0 AWG	3/8"
30-8GL	3/0 AWG	1/2"
40-6GL	4/0 AWG	3/8"



Ferrule Connectors (Tube Pin Connectors)



TPC-14

Part Number	Wire Gauge	Color	Twin Wire
TPC-6	6 AWG	Green	No
TPC-10	10 AWG	Black	No
TPC-12	12 AWG	Gray	No
TPC-14	14 AWG	Blue	No
TPC-14-2	14 AWG	Blue	Yes
TPC-16	16 AWG	Red	No
TPC-16-2	16 AWG	Black	Yes
TPC-18	18 AWG	Gray	No
TPC-18-2	18 AWG	Red	Yes
TPC-20	20 AWG	White	No
TPC-22	22 AWG	Orange	No
TPC-28	28 AWG	Light Blue	No



TPC-14-2

Tapes

Part Number	Type	Width	Length	Color
1266E-74	Black Electric Tape	3/4"	66'	Black
1610CS-74	Cold Shrink Electric Tape	1"	10'	Black
1630CS-74	Cold Shrink Electric Tape	1"	30'	Black
4010S-74	Sealing Compound Tape	2-1/2"	10'	Black
RR-1612-BLK	Rapid Repair Tape	1"	12'	Black
RR-1612-CLR	Rapid Repair Tape	1"	12'	Clear
TT-520	Teflon Tape	1/2"	520"	White



1266E-74



1610CS-74



4010S-74



RR-1612-BLK



RR-1612-CLR



TT-520

Heat Shrink Tubing

Standard

Part Number	Diameter	Length	Color
860-02BN-12	1/8"	12"	Brown
860-03GY-12	3/16"	12"	Gray
860-04BK-12	1/4"	12"	Black
860-06RD-12	3/8"	12"	Red
860-08BE-12	1/2"	12"	Blue
860-12YW-12	3/4"	12"	Yellow
860-16BK-12	1"	12"	Black



Standard



Battery

Battery

Part Number	Diameter	Length	Color
861-12BK-12	3/4"	12"	Black
861-12RD-12	3/4"	12"	Red
861-16BK-12	1"	12"	Black
861-16RD-12	1"	12"	Red

** Colored quantity is limited, please ask about color availability

Assortment

Heat Shrink Tubing Assortment

(4) each - 860-02BN-12, 860-03GY-12, 860-04BK-12,
860-06RD-12, 860-08BE-12, 860-12YW-12, and 860-16BK-12
28 Pieces, in large metal storage tray.

Part Number: 500-860-12



Black Cable Ties

Standard

Part Number	Length	Width	Thickness
850-4SG	4"	.095"	.035"
850-6SG	6"	.13"	.055"
850-8MG	8"	.17"	.055"
850-11MG	11"	.17"	.055"
850-14MG	14"	.17"	.055"
850-21MG	21"	.35"	.070"
850-36MG	36"	.35"	.070"

Heavy Duty Metal Tab

Part Number	Length	Width	Thickness
85-13T	13"	.27"	N/A



Reduced neck minimizes stress
on overall body

Close knit serration for accurate
adjustments

Slightly hooked tip provides
easy, fast insertion

Tools

Crimp Tool

24 AWG to 10 AWG

Part Number: 2210-CT



Ferrule Connector (Tube Pin Connector) Crimp Tool

22 AWG to 10 AWG

Part Number: TPCCT-2210



Hand-Held Butane Torch

Part Number: 2050-TORCH



Heat Shrink Tubing

Technical Data for 860 Series

Heat Shrink Tubing / 860 Series

Characteristics	Test	Requirement
Electrical:		
Dielectric Strength (volts/mil)	ASTM D 876	500 minimum
Volume resistivity (ohm-cm)	ASTM D 876	1 x 10 ¹⁵ min
Physical		
Tensile Strength (psi)	ASTM D638	1500 minimum
Elongation (%)	ASTM D638	200 minimum
Cold Impact (-55°C)	ASTM D746	no cracking
Heat Shock (250°C, 4 Hours)	MIL-I-23053	no cracking
Secant Modulus (psi)	ASTM D882	25000 minimum
Longitudinal Change (%)	MIL-I-23053	+5, -10
Chemical		
Water Absorption (%)	ASTM D570	0.5 maximum
Corrosion	MIL-I-23053	no corrosion
Fluid Resistance (23°C, 24 Hrs)		
Tensile Strength (psi)	MIL-I-23053	1000 minimum
Shrink Temperature		130°C
Flammability		N/A



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Storage Trays

GARD custom burgundy trays are constructed of durable cold rolled steel and finished with acid and rust resistant baked enamel. Covers are designed to stay open making it easy to read part numbers and access parts. Each model has a handle for easy mobility and positive pull-down latch.

18" Wide x 3" High x 12" Deep / Adjustable Trays



Individual pocket dividers. 16 compartment maximum.
Part No. 600-ADL



Expando-Tray with moveable dividers.
Part No. 600-EXP

Easy SCOOP-OUT Trays



6 Horizontal Compartments
Part No. 600-6HT



6 Vertical Compartments
Part No. 600-6VT



12 Compartments
Part No. 600-12T



16 Compartments
Part No. 600-16T



20 Compartments
Part No. 600-20T



21 Compartments
Part No. 600-21T

Tray Racks and Tray Rack Base



4 Tray Roller Rack

20" W x 8-1/8" H x 15-3/4" D

Part No. 600-4RH

* Fits all large storage trays

4 Tray Roller Rack Base

21"W x 17"D x 12" H

Part No. 600-4RHB

Indexes and Dispenser

Indexes and dispenser only/empty

Part Number	Description	Number of Holes
600-13	Mechanic Length-Drill Bit Index - 1/16" to 1/4" by 1/64"	13
600-13-5480	Carbide Burr Index - 1/4" shank	13
600-20	Jobber Length-Number/Wire Gauge Drill Bit Index - #61 to #80	20
600-21	Mechanic Length-Drill Bit Index - 1/16" to 3/8" by 1/64"	21
600-25	Jobber Length-Metric Drill Bit Index - 1.0 mm to 13 mm by 0.5 mm	25
600-29	Mechanic Length-Drill Bit Index - 1/16" to 1/2" by 1/64"	29
600-29D	Drill Bits 3 Drawer Dispenser - 1/16" to 1/2" by 1/64"	29
600-29W	Mechanic Length-Drill Bit Heavy Duty Wall Mount Index - 1/16" to 1/2" by 1/64"	29
600-30-8	Large Drill Bit Index - 9/16", 5/8", 11/16", 3/4", 13/16", 7/8", 15/16", and 1"	8
600-60	Jobber Length-Number/Wire Gauge Drill Bit Index - #1 to #60	60
600-80	Jobber Length-Number/Wire Gauge Drill Bit Index - #1 to #80	80
600-DTI	Coarse Thread Tap and Drill Bit Index - #6-32 to 1/2"-13	18
600-DTI-F	Fine Thread Tap and Drill Bit Index - #6-40 to 1/2"-20	18
600-DTI-M	Metric Thread Tap and Drill Bit Index - 2.5 mm x 0.45 to 12 mm x 1.75	18
600-TI-10C	Tap Index - #4-40 to 5/8"-11 OR 3 mm to 16 mm (does not hold both at the same time)	10



600-29



600-29D



600-25