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DRILLING &
COMPLETIONS

PRODUCT CATALOG



PRECISION
Die Technologies



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Company Information

McCoy Drilling & Completions/Precision Die Technologies was formed in early 2005, with over a decade of research and experience in producing the well known throughout the world **GRITFACE®*** dies and inserts. We have now applied this technology to manufacturing all of the most common dies and inserts used throughout the world. Our goal at McCoy Drilling & Completions/Precision is to deliver the fastest turnaround and highest quality of dies and inserts available.

McCoy Drilling & Completions/Precision inserts are machined, not cast, to provide the accuracy required for today's critical applications. Our dies are heat treated to provide maximum insert life. A variety of tooth patterns are available to securely grip the hardest strings of casing, tubing and drill-pipe.

Today's hostile well environments often use corrosion resistant alloy (CRA) tubulars that require special handling tools. McCoy Drilling & Completions/Precision can provide you with **GRITFACE®** inserts* that allow you to utilize your standard handling tools with CRA strings. The **GRITFACE®** coating prevents contamination and marking caused by standard inserts.

WE NOW ALSO SUPPLY THE FULL LINE OF CLINCHER® WRAPAROUND DIES FOR TONGS, BACKUPS AND BUCKING UNITS.

McCoy Drilling & Completions/Precision maintains a large inventory of tong and handling tool inserts for fast response 24/7/365. Our Engineering and Manufacturing Departments are ready to respond to your needs for custom made dies and inserts for unique applications.

We guarantee you will be satisfied with McCoy Drilling & Completions/Precision products!



** Trademark of Precision Die Technologies. **GRITFACE®** Dies and Inserts are covered by US Patent 6, 755,09. Other US and foreign patents pending.*

CLINCHER® GRITFACE® Die and Insert Coating

The **CLINCHER® GRITFACE®** die and insert coating system combines the use of extremely hard grit particles, high strength corrosion resistant brazing materials and application processes which insure optimum dimensional control.

Tungsten carbide grit particles are graded by size and shape to provide uniform granules with desired geometry. Different particle sizes are selected based on the intended application. Coatings on smooth faced dies use larger particles than the coatings applied to dies that have machined teeth. Coating thickness for small particles is approximately 0.010". Thickness for standard large particle coating is approximately 0.025".

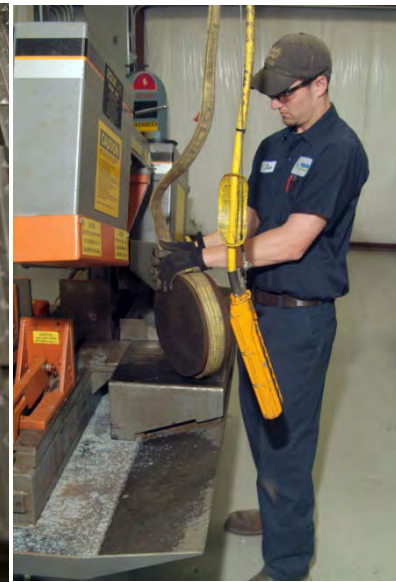
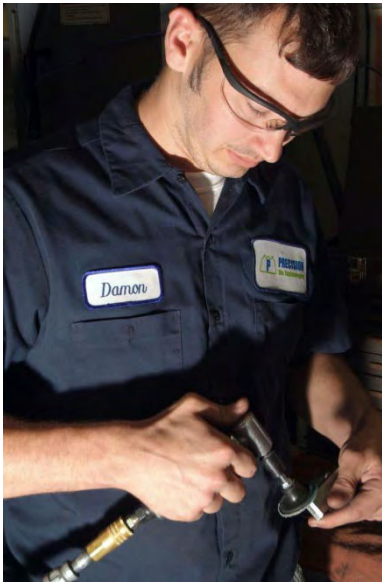
Tungsten carbide refractory material manufacturing processes control the chemistry of the grit particles to prevent iron contamination⁽¹⁾. The tungsten carbide particles are metallurgically bonded to the die substrate using a high strength nickel/chrome compound containing 83% nickel, 6.8% chromium, 4.2% silicon and 3% boron. The remaining 3% balance of materials consists of a variety of trace elements including a small percentage of iron. It is important to note these materials are alloys together at extremely high temperatures so there is no free

iron available to contaminate CRA tubulars. The same can be said for the iron that makes up the majority of the materials employed to produce CRA tubular goods. Third party metallurgical laboratory analysis has demonstrated through the use of scanning electron microscope and secondary electron imaging processes that the completed **GRITFACE®** dies and inserts do not contain free iron.

The tungsten carbide grit particles and brazing material are applied in controlled quantities using proprietary dispersion processes that align the particles and insure uniform distribution of materials in a single layer. The quantities of materials used insure the particles are securely fixed to the substrate but left with enough exposed surface to precisely grip oilfield tubulars. Brazing of the components takes place at 1800 degrees Fahrenheit in high vacuum furnaces where temperatures, time and cooling rates are precisely controlled. Mechanical properties of the die or insert substrate are controlled through metal selection and by using a combination of pre and post-brazing heat treatment processes. Conventional industrial brazing and flame spraying processes cannot provide the chemistry or dimensional control required to protect CRA tubulars from damage.

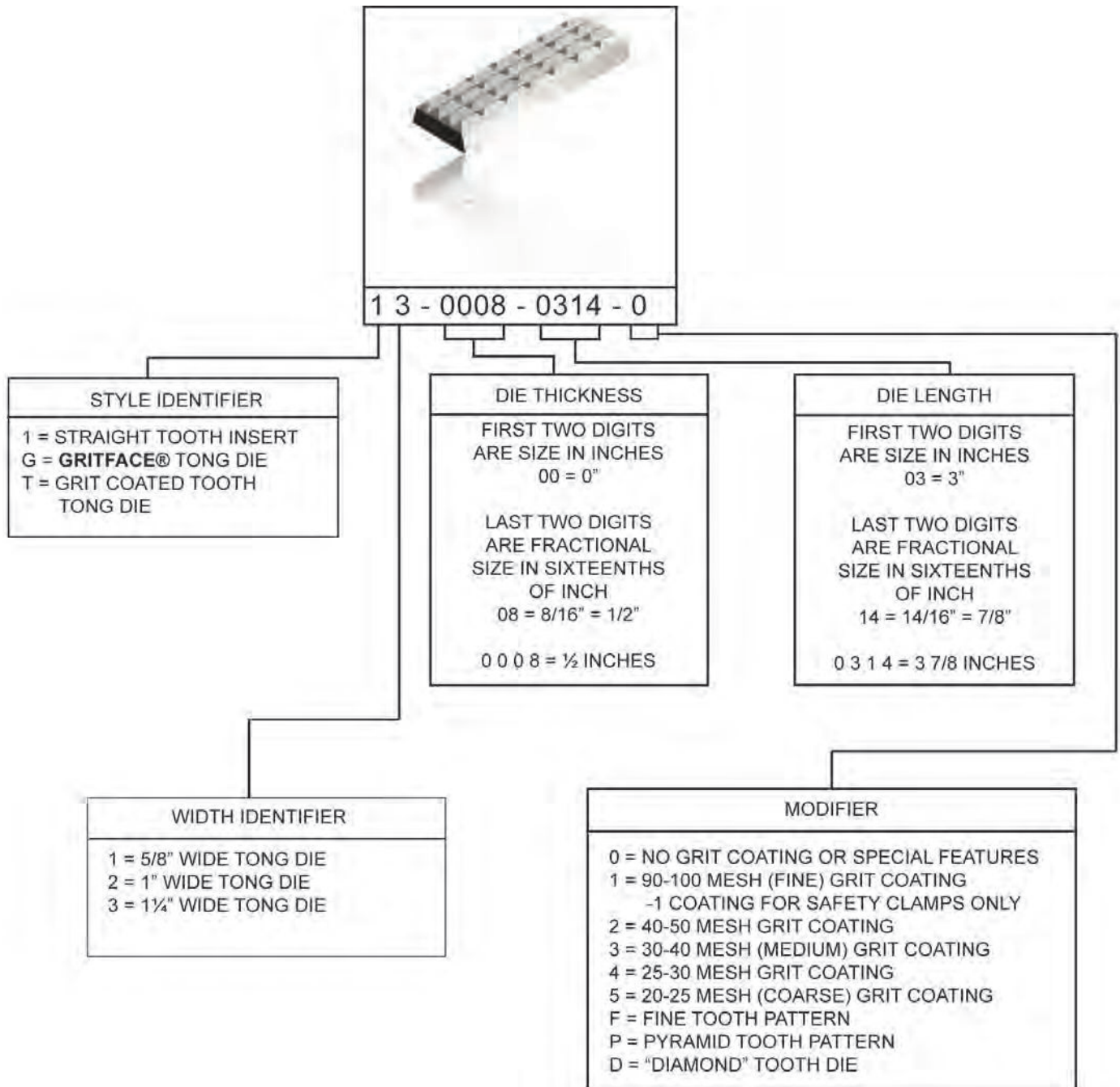
Covered under US Patent 6,378,399 and 6,755,097.

Other US and foreign patents pending.



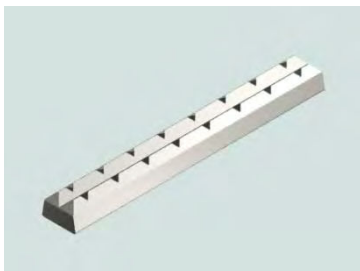
Tong Dies

Part Number Decoder



5/ 8” Width Tong Dies

(5/ 8” Tong Dies also available with Grit Tooth Coating)

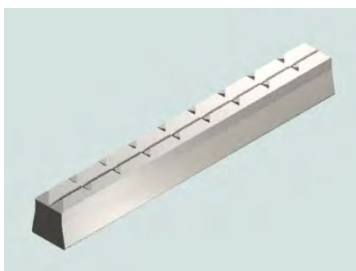


5/8” Standard Tooth Tong Die



5/8” **GRITFACE®** Tong Die
Use with corrosion resistant alloy (CRA) tubulars

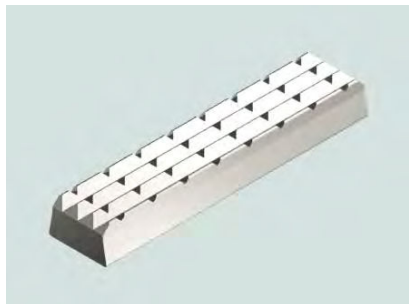
PDT Std Tooth #	PDT GRITFACE® #	Ref #	Dimensions ('h' x 'w' x 'l')	WT.
11-0005-314-0	G1-0005-314-5	4052	5/16" x 5/8" x 3-7/8"	0.160
11-0005-408-0	G1-0005-408-5	4002	5/16" x 5/8" x 4-1/2"	0.180
11-0006-115-0	G1-0006-115-5	4009	3/8" x 5/8" x 1-15/16"	0.100
11-0006-314-0	G1-0006-314-5	4051	3/8" x 5/8" x 3-7/8"	0.380
11-0006-408-0	G1-0006-408-5	4001	3/8" x 5/8" x 4-1/2"	0.440
11-0.532-308-0	G1-0.532-308-5	4031	17/32" x 5/8" x 3-1/2"	0.250
11-0.532-314-0	G1-0.532-314-5	4053	17/32" x 5/8" x 3-7/8"	0.280
11-0.532-408-0	G1-0.532-408-5	4003	17/32" x 5/8" x 4-1/2"	0.320
11-0010-308-0	G1-0010-308-5	4032	5/8" x 5/8" x 3-1/2"	0.300
11-0010-314-0	G1-0010-314-5	4054	5/8" x 5/8" x 3-7/8"	0.330
11-0010-408-0	G1-0010-408-5	4004	5/8" x 5/8" x 4-1/2"	0.380
11-0011-314-0	G1-0011-314-5	4055	11/16" x 5/8" x 3-7/8"	0.360
11-0011-408-0	G1-0011-408-5	4005	11/16" x 5/8" x 4-1/2"	0.420



5/8 Standard Tooth (Reducer) Tong Die

1" Width Tong Dies

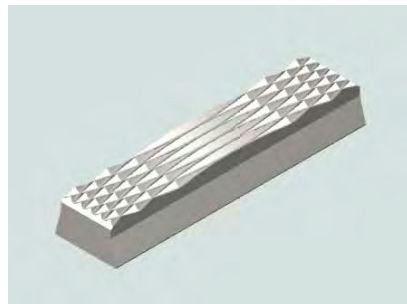
(1" Tong Dies also available with Grit Tooth Coating)



1" Standard Tooth Tong Die



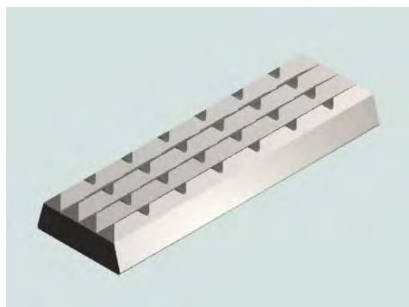
1" GRITFACE® Tong Die
Use with corrosion resistant alloy (CRA) tubulars



1" Diamond Tooth Tong Die

PDT Std Tooth #	PDT GRITFACE® #	PDT Diamond Tooth #	Ref #	Dimensions ('h' x 'w' x 'l')	WT.
12-0006-107-0	G2-0006-107-5	12-0006-107-D	1507	3/8" x 1" x 1-7/16"	0.170
12-0006-114-0	G2-0006-114-5	12-0006-114-D	1506	3/8" x 1" x 1-7/8"	0.180
12-0006-115-0	G2-0006-115-5	12-0006-115-D	1501	3/8" x 1" x 1-15/16"	0.190
12-0006-202-0	G2-0006-202-5	12-0006-202-D	1502	3/8" x 1" x 2-1/8"	0.200
12-0006-208-0	G2-0006-208-5	12-0006-208-D	1503	3/8" x 1" x 2-1/2"	0.210
12-0006-210-0	G2-0006-210-5	12-0006-210-D	1504	3/8" x 1" x 2-5/8"	0.220
12-0006-314-0	G2-0006-314-5	12-0006-314-D	1505	3/8" 1" x 3-7/8"	0.320
12-0006-404-0	G2-0006-404-5	12-0006-404-D	1508	3/8" x 1" x 4-1/4"	0.350
12-0006-408-0	G2-0006-408-5	12-0006-408-D	1509	3/8" x 1" x 4-1/2"	0.370
12-0006-512-0	G2-0006-512-5	12-0006-512-D	1510	3/8" x 1" x 5-3/4"	0.470
12-0007-314-0	G2-0007-314-5	12-0007-314-D	1511	7/16" x 1" x 3-7/8"	0.380
12-0008-314-0	G2-0008-314-5	12-0008-314-D	1521	1/2" x 1" x 3-7/8"	0.440
12-0008-500-0	G2-0008-500-5	12-0008-500-D	1522	1/2" x 1" x 5"	0.560
12-0009-208-0	G2-0009-208-5	12-0009-208-D	1531	9/16" x 1" x 2-1/2"	0.320
12-0010-314-0	G2-0010-314-5	12-0010-314-D	1541	5/8" x 1" x 3-7/8"	0.550
12-0011-314-0	G2-0011-314-5	12-0011-314-D	1542	11/16" x 1" x 3-7/8"	0.610
12-0016-314-0	G2-0016-314-5	12-0016-314-D	1546	1" x 1" x 3-7/8"	0.900

1 1/4" Width Tong Die



1 1/4" Standard Tooth Tong Die



1 1/4" **GRITFACE®** Tong Die
Use with corrosion resistant alloy (CRA) tubulars

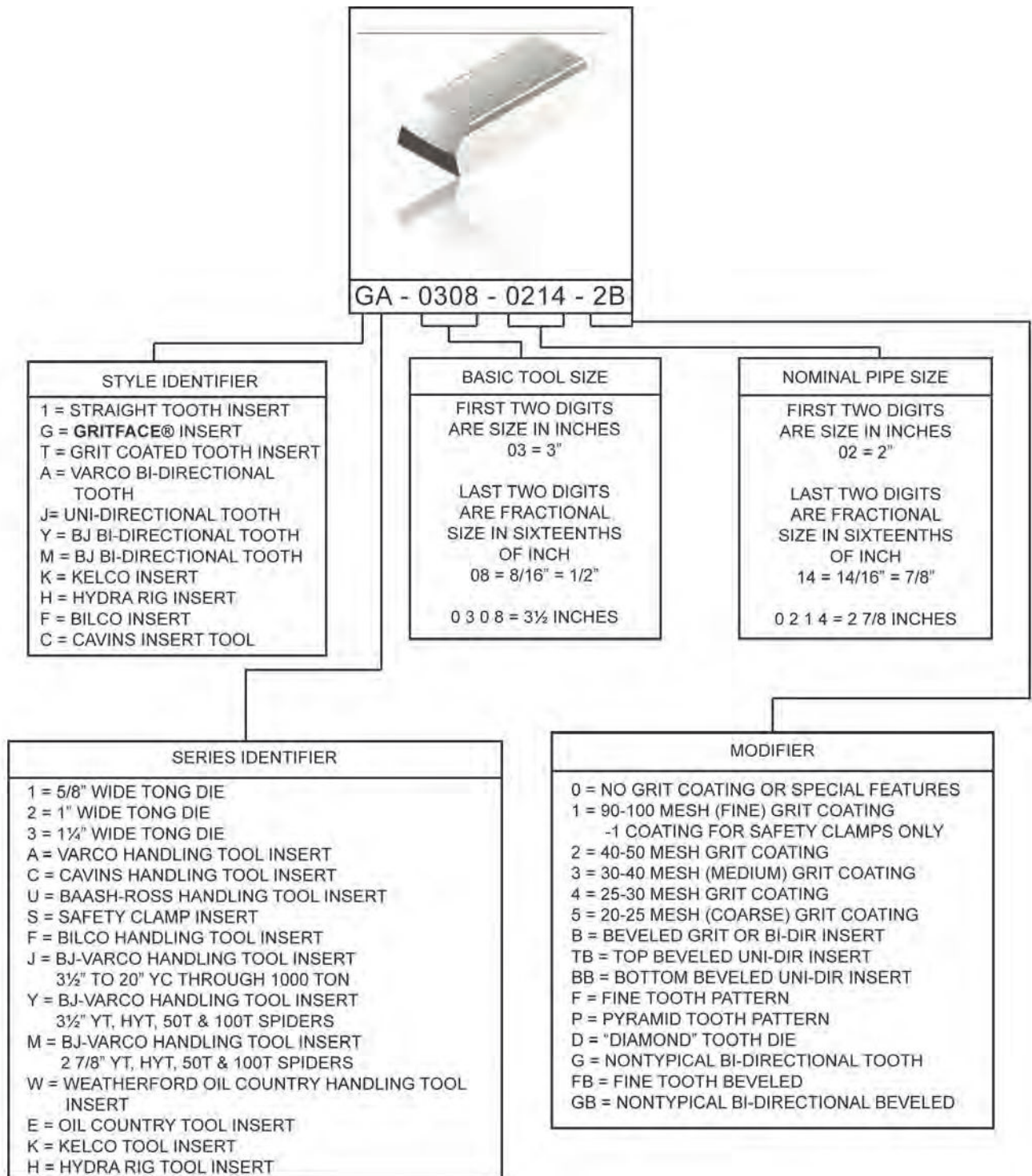


1 1/4" Diamond Tooth Tong Die

PDT Std Tooth #	PDT GRITFACE® #	PDT Diamond Tooth #	Ref#	Dimensions ('h' x 'w' x 'l')	WT.
13-0006-208-0	G3-0006-208-5	13-0006-208-D		3/8" x 1-1/4" x 2-1/2"	0.250
13-0006-314-0	G3-0006-314-5	13-0006-314-D	1614	3/8" x 1-1/4" x 3-7/8"	0.390
13-0006-500-0	G3-0006-500-5	13-0006-500-D	1610	3/8" x 1-1/4" x 5"	0.500
13-0006-514-0	G3-0006-514-5	13-0006-514-D		3/8" x 1-1/4" x 5-7/8"	0.590
13-0007-208-0	G3-0007-208-5	13-0007-208-D	1611	7/16" x 1-1/4" x 2-1/2"	0.300
13-0007-314-0	G3-0007-314-5	13-0007-314-D	1612	7/16" x 1-1/4" x 3-7/8"	0.460
13-0007-500-0	G3-0007-500-5	13-0007-500-D	1617	7/16" x 1-1/4" x 5"	0.600
13-0007-514-0	G3-0007-514-5	13-0007-514-D		7/16" x 1-1/4" x 5 7/8"	0.710
13-0008-208-0	G3-0008-208-5	13-0008-208-D	1620	1/2" x 1-1/4" x 2-1/2"	0.350
13-0008-314-0	G3-0008-314-5	13-0008-314-D	1601	1/2" x 1-1/4" x 3-7/8"	0.540
13-0008-500-0	G3-0008-500-5	13-0008-500-D	1602	1/2" x 1-1/4" x 5"	0.690
13-0008-514-0	G3-0008-514-5	13-0008-514-D	1603	1/2" x 1-1/4" x 5-7/8"	0.820
13-0009-314-0	G3-0009-314-5	13-0009-314-D	1622	9/16" x 1-1/4" x 3-7/8"	0.610
13-0009-500-0	G3-0009-500-5	13-0009-500-D	1623	9/16" x 1-1/4" x 5"	0.780
13-0009-514-0	G3-0009-514-5	13-0009-514-D		9/16" x 1-1/4" x 5 7/8"	0.920
13-0010-208-0	G3-0010-208-5	13-0010-208-D	1631	5/8" x 1-1/4" x 2-1/2"	0.440
13-0010-314-0	G3-0010-314-5	13-0010-314-D	1632	5/8" x 1-1/4" x 3-7/8"	0.680
13-0010-500-0	G3-0010-500-5	13-0010-500-D	1633	5/8" x 1-1/4" x 5"	0.870
13-0010-514-0	G3-0010-514-5	13-0010-514-D		5/8" x 1-1/4" x 5 7/8"	1.020
13-0011-208-0	G3-0011-208-5	13-0011-208-D	1641	11/16" x 1-1/4" x 2-1/2"	0.480
13-0011-314-0	G3-0011-314-5	13-0011-314-D	1642	11/16" x 1-1/4" x 3-7/8"	0.740
13-0011-500-0	G3-0011-500-5	13-0011-500-D	1646	11/16" x 1-1/4" x 5"	0.960
13-0011-514-0	G3-0011-514-5	13-0011-514-D		11/16" x 1-1/4" x 5-7/8"	1.130
13-0012-314-0	G3-0012-314-5	13-0012-314-D	1651	3/4" x 1-1/4" x 3-7/8"	0.810
13-0012-500-0	G3-0012-500-5	13-0012-500-D	1693	3/4" x 1-1/4" x 5"	1.050
13-0012-514-0	G3-0012-514-5	13-0012-514-D	1662	3/4" x 1-1/4" x 5-7/8"	1.230
13-0013-314-0	G3-0013-314-5	13-0013-314-D	1661	13/16" x 1-1/4" x 3-7/8"	0.880
13-0013-500-0	G3-0013-500-5	13-0013-500-D	1664	13/16" x 1-1/4" x 5"	1.140
13-0013-514-0	G3-0013-514-5	13-0013-514-D		13/16" x 1-1/4" x 5-7/8"	1.340
13-0014-314-0	G3-0014-314-5	13-0014-314-D	1671	7/8" x 1-1/4" x 3-7/8"	0.950
13-0014-500-0	G3-0014-500-5	13-0014-500-D	1673	7/8" x 1-1/4" x 5"	1.230
13-0014-514-0	G3-0014-514-5	13-0014-514-D		7/8" x 1-1/4" x 5 7/8"	1.450
13-0015-314-0	G3-0015-314-5	13-0015-314-D	1681	15/16" x 1-1/4" x 3-7/8"	1.020
13-0015-500-0	G3-0015-500-5	13-0015-500-D		15/16" x 1-1/4" x 5"	1.320
13-0015-514-0	G3-0015-514-5	13-0015-514-D		15/16" x 1-1/4" x 5-7/8"	1.550
13-0016-314-0	G3-0016-314-5	13-0016-314-D	1691	1" x 1 1/4" x 3 7/8"	1.250
13-0016-500-0	G3-0016-500-5	13-0016-500-D	1697	1" x 1 1/4" x 5"	1.610
13-0016-514-0	G3-0016-514-5	13-0016-514-D	1692	1" x 1 1/4" x 5 7/8"	1.800

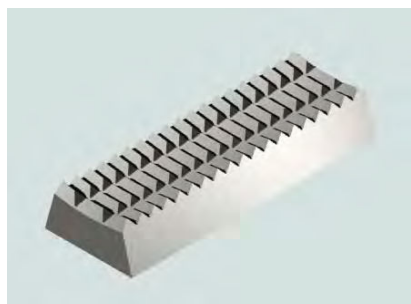
Inserts for Handling Tools

Part Number Decoder



Inserts for Varco® Style Handling Tools

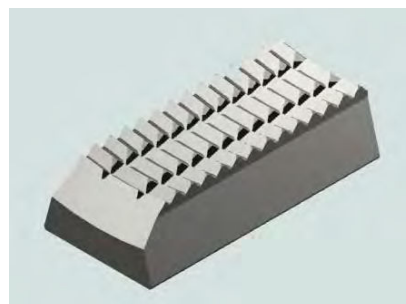
(Grit Tooth and Beveled inserts also available)



Varco® Standard Tooth Insert

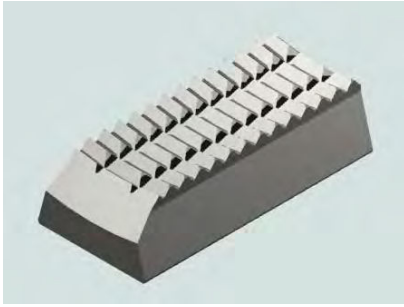


Varco® **GRITFACE®** Insert
Use with corrosion resistant alloy (CRA) tubulars



Varco® Beveled (Reducer) Insert

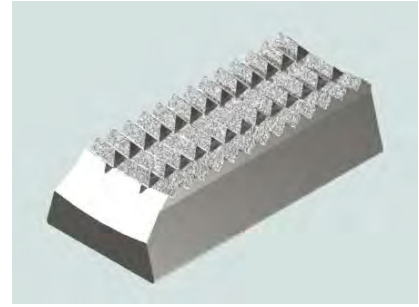
PDT Std Tooth #	PDT GRITFACE® #	Tool Size	Pipe Size	Description	Ref #
AA-0308-0206-0	GA-0308-0206-4	3 1/2	2 3/8	Reducer	2160
AA-0308-0214-0	GA-0308-0214-4	3 1/2	2 7/8	Reducer	2161
AA-0308-0308-0	GA-0308-0308-4	3 1/2	3 1/2	Basic	2162
AA-0408-0308-0	GA-0408-0308-4	4 1/2	3 1/2	Reducer	2163
AA-0408-0400-0	GA-0408-0400-4	4 1/2	4	Reducer	2164
AA-0408-0408-0	GA-0408-0408-4	4 1/2	4 1/2	Basic	2165
AA-0500-0400-0	GA-0500-0400-4	5	4	Reducer	2168
AA-0500-0408-0	GA-0500-0408-4	5	4 1/2	Reducer	2166
AA-0500-0500-0	GA-0500-0500-4	5	5	Basic	2167
AA-0508-0408-0	GA-0508-0408-4	5 1/2	4 1/2	Reducer	2168
AA-0508-0500-0	GA-0508-0500-4	5 1/2	5	Reducer	2169
AA-0508-0508-0	GA-0508-0508-4	5 1/2	5 1/2	Basic	2170
AA-0700-0610-0	GA-0700-0610-4	7	6 5/8	Reducer	2172
AA-0700-0700-0	GA-0700-0700-4	7	7	Basic	2173
AA-0710-0610-0	GA-0710-0610-4	7 5/8	6 5/8	Reducer	2632
AA-0710-0700-0	GA-0710-0700-4	7 5/8	7	Reducer	2623
AA-0710-0702-0	GA-0710-0702-4	7 5/8	7 1/8	Reducer	2652
AA-0710-0710-0	GA-0710-0710-4	7 5/8	7 5/8	Basic	2633
AA-0710-0712-0	GA-0710-0712-4	7 5/8	7 3/4	Oversize	2649
AA-0910-0810-0	GA-0910-0810-4	9 5/8	8 5/8	Reducer	2640
AA-0910-0812-0	GA-0910-0812-4	9 5/8	8 3/4	Reducer	2650
AA-0910-0910-0	GA-0910-0910-4	9 5/8	9 5/8	Basic	2633
AA-0910-0912-0	GA-0910-0912-4	9 5/8	9 3/4	Oversize	2649
AA-0910-0914-0	GA-0910-0914-4	9 5/8	9 7/8	Oversize	2649
AA-1112-1012-0	GA-1112-1012-4	11 3/4	10 3/4	Reducer	2640
AA-1112-1112-0	GA-1112-1112-4	11 3/4	11 3/4	Basic	2637
AA-1112-1114-0	GA-1112-1114-4	11 3/4	11 7/8	Oversize	2651
AA-1306-1212-0	GA-1306-1212-4	13 3/8	12 3/4	Reducer	2636
AA-1306-1306-0	GA-1306-1306-4	13 3/8	13 3/8	Basic	2637
AA-1306-1308-0	GA-1306-1308-4	13 3/8	13 1/2	Oversize	2649
AA-1400-1306-0	GA-1400-1306-4	14	13 3/8	Reducer	2636
AA-1400-1308-0	GA-1400-1308-4	14	13 1/2	Reducer	2652
AA-1400-1310-0	GA-1400-1310-4	14	13 5/8	Reducer	2653



Varco® Beveled Standard Tooth Insert



Varco® Beveled **GRITFACE®** Insert
Use with corrosion resistant alloy (CRA) tubulars



Varco® Beveled Grit Tooth Insert

PDT Std Tooth #	PDT GRITFACE® #	Tool Size	Pipe Size	Description	Ref #
AA-1400-1312-0	GA-1400-1312-4	14	13 3/4	Reducer	2681
AA-1400-1400-0	GA-1400-1400-4	14	14	Basic	2635
AA-1600-1600-0	GA-1600-1600-4	16	16	Basic	2635
AA-2000-1810-0	GA-2000-1810-4	20	18 5/8	Reducer	2668
AA-2000-2000-0	GA-2000-2000-4	20	20	Basic	2635
AA-2400-2400-0	GA-2400-2400-4	24	24	Basic	2635

Quantities Required for Varco® Rotary Slips

Varco® Tool Size	SDS	SDML	SDM	SDXL	SDL
3 1/2"	24	30	30		36
4 1/2"	36	45	45	54	54
5"		45	45	54	54
5 1/2"		45	45	54	54
7"				72	60

Quantities Required for Varco® Casing Elevators

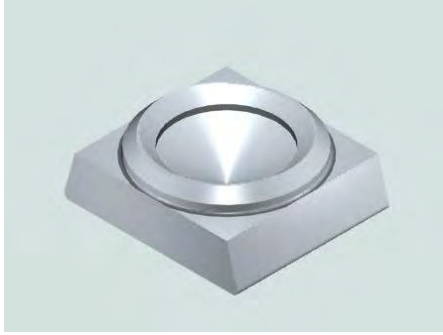
Varco® Tool Size	Pipe Size	200 Ton 7-5/8"	350 Ton 14"	500 Ton 14"	750 Ton 14"	1000 Ton 24"	500 Ton 24"	750 Ton 24"
3 1/2"	2 3/8"	12/12B						
3 1/2"	2 7/8"	12/12B						
3 1/2"	3 1/2"	24						
4 1/2"	3 1/2"	16/16B						
4 1/2"	4"	16/16B						
4 1/2"	4 1/2"	32						
5 1/2"	4 1/2"	16/16B	24/16B	32/16B				
5 1/2"	5"	16/16B	24/16B	32/16B				
5 1/2"	5 1/2"	32	40	48				
7"	7"	48	60	72				
7 5/8"	6 5/8"	24/24B	36/24B	48/24B	60/24B			
7 5/8"	7"	24/24B	36/24B	48/24B	60/24B			
7 5/8"	7 1/8"	24/24B	36/24B	48/24B	60/24B			
7 5/8"	7 5/8"	48	60	72	84			
7 5/8"	7 3/4"	48	60	72	84			

Varco® Tool Size	Pipe Size	200 Ton 7-5/8"	350 Ton 14"	500 Ton 14"	750 Ton 14"	1000 Ton 24"	500 Ton 24"	750 Ton 24"
9 5/8"	8 5/8"		48/32B	64/32B	80/32B	96/24B		
9 5/8"	8 3/4"		48/32B	64/32B	80/32B	96/24B		
9 5/8"	9 5/8"		80	96	112	120		
9 5/8"	9 3/4"		80	96	112	120		
9 5/8"	9 7/8"		80	96	112	120		
11 3/4"	10 3/4"		60	80	100	144		
11 3/4"	11 3/4"		100	120	140	180		
11 3/4"	11 7/8"		100	120	140	180		
13 3/8"	12 3/4"		100	120	140	180		
13 3/8"	13 3/8"		100	120	140	180		
13 3/8"	13 1/2"		100	120	140	180		
14"	13 1/2"		60/40B	80/40B	100/40B	192/48B		
14"	13 5/8"		60/40B	80/40B	100/40B	192/48B		
14"	13 3/8"		60/40B	80/40B	100/40B	192/48B		
14"	13 3/4"		60/40B	80/40B	100/40B	192/48B		
14"	14"		100	120	140	240		
16"	16"			180	210	300	180	210
20"	18 5/8"					720	420	510
20"	20"			180	210	300	180	210
24"	24"			180	210	300	180	210

Quantities Required for Varco® Power Slips

Varco® Tool Size	Pipe Size	PS-15	PS-16
4 1/2"	3 1/2"	32/16B	32/16B
4 1/2"	4"	32/16B	32/16B
4 1/2"	4 1/2"	48	48
5 1/2"	4 1/2"	32/16B	32/16B
5 1/2"	5"	32/16B	32/16B
5 1/2"	5 1/2"	48	48
7 5/8"		48/24B	48/24B

Circular Buttons for Varco® Handling Tools



Circular Button for Varco® Tool

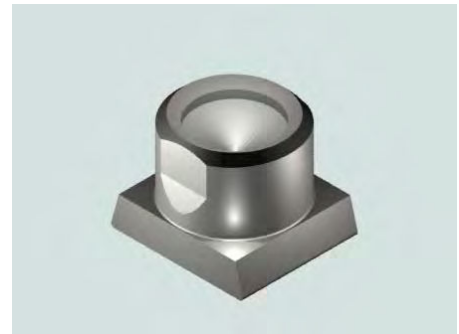
PDT Part #	Description	Ref #
PDT2513	5.5" x 7" Circular Button f/ DCS-L D/C slip	2513
PDT2619	7" Circular Button f/ Varco® Casing Slip CMS-XL	2619
PDT2620	4 - 4.5 & 5.5 - 7 Button f/ Varco® Drill Collar Slips	2620
PDT2625	11 x 12.75 Circular Button f/ Varco® Drill Collar Slips	2625
PDT2626	18.625 Circular Buttons f/ Varco® Casing Slip CMS-XL	2626
PDT2627	8.5 - 10 Button f/Varco® Drill collar Slips	2627
PDT2628	3 - 4 & 4.5 - 6 Button f/ Varco® Drill Collar Slips	2628
PDT2630	6.75-9.5 & 8-9.5 & 12-14 Button f/ Varco® Drill Collar Slips	2630
PDT2631	7.625/8.625/9.625/10.75/ 13.375 Button for Varco® Casing Slip CMS-XL	2631

Quantities Required for Varco® Drill Collar Slips

Tool Size	PDT2513	PDT2620	PDT2625	PDT2626	PDT2627	PDT2628	PDT2630
3" - 4" DCS-S						49	
4" - 4 7/8" DCS-S		49					
4 1/2" - 6" DCS-R						63	
5 1/2" - 7" DCS-R		63					
5 1/2" - 7" DCS-L	88						
6 3/4" - 8 1/4" DCS-L							88
8" - 9 1/2" DCS-L							96
8 1/2" - 10" DCS-L					104		
9 1/4" - 11 1/4" DCS-L							112
11" - 12 3/4" DCS-L			136				
12" - 14" DCS-L							136

Quantities Required for Varco® Casing Slips (CMS-XL)

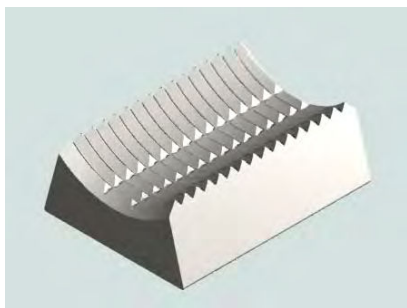
Tool Size	PDT2619	PDT2626	PDT2627	PDT2628	PDT2630	PDT2631
6 5/8"			144			
7"	144					
7 5/8"				144		
8 5/8"				156		
9 5/8"				168		
10 3/4"				180		
11 3/4"		204				
13 3/8"				216		
16"					252	
18 5/8"		300				
20"					312	
24"					360	
26"					396	
30"					444	



Circular Button (Reducer) for Varco® Tool

Inserts for BJ® Handling Tools

(Fine Tooth, Grit Tooth, Bottom Beveled, Top Beveled, Bi-Directional and Bi-Directional Beveled inserts also available)



BJ® Standard Tooth Insert 2 7/8" YT, HYT, MYT, 50T & 100T Spiders



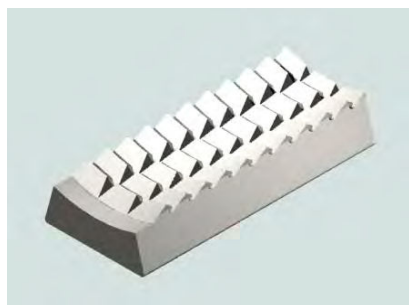
BJ® **GRITFACE®** Insert 2 7/8" YT, HYT, MYT, 50T & 100T Spiders
Use with corrosion resistant alloy (CRA) tubulars



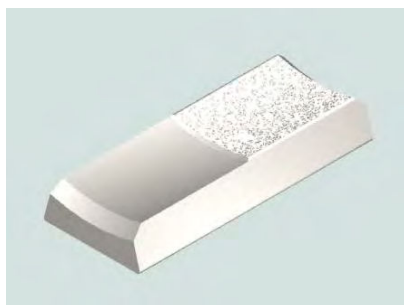
BJ® Grit Tooth Insert 2 7/8" YT, HYT, MYT, 50T & 100T Spiders

Inserts for BJ® YT, MYT, HYT

PDT Std Tooth #	PDT GRITFACE® #	PDT Bi-Dir Tooth #	Tool Size	Pipe Size	Description	Ref #
MM-0214-0201-0	GM-0214-0201-4	MM-0214-0201-G	2 7/8	2 1/16	Reducer	29256
MM-0214-0206-0	GM-0214-0206-4	MM-0214-0206-G	2 7/8	2 3/8	Reducer	29255
MM-0214-0214-0	GM-0214-0214-4	MM-0214-0214-G	2 7/8	2 7/8	Basic	24773
YY-0308-0308-0	GY-0308-0308-4	YY-0308-0308-G	3 1/2	3 1/2	Basic	24774
YY-0308-0214-0	GY-0308-0214-4	YY-0308-0214-G	3 1/2	2 7/8	Reducer	30358



BJ® Standard Tooth Insert 3 1/2" YT, HYT, 50T & 100T Spiders



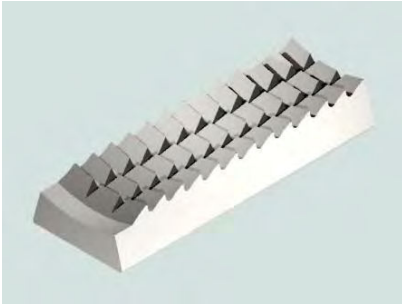
BJ® **GRITFACE®** Insert 3 1/2" YT, HYT, 50T & 100T Spiders
Use with corrosion resistant alloy (CRA) tubulars



BJ® Top Beveled Grit Tooth Insert

Quantities Required for BJ® YT, MYT, HYT

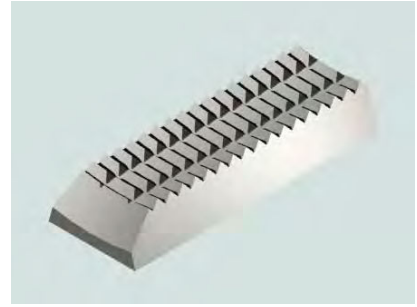
BJ® Tool Size	YT	MYT	HYT
3 1/2" (YY)	24	8	32
2 7/8" (MM)	12	8	16



BJ® Standard Tooth Insert



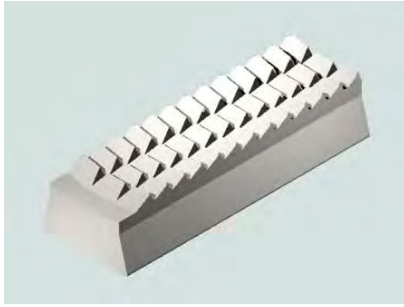
BJ® GRITFACE® (Reducer) Insert
Use with corrosion resistant alloy (CRA) tubulars



BJ® Bi-Directional Beveled Insert

Inserts for BJ® YC, HYC, Casing Elevators, etc

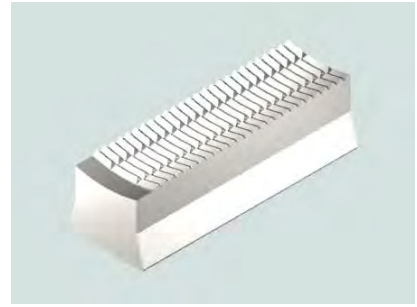
PDT Std Tooth #	PDT GRITFACE® #	PDT Bi-Dir Tooth #	Tool Size	Pipe Size	Description	Ref #
JJ-0308-0214-0	GJ-0308-0214-4	JJ-0308-0214-G	3 1/2	2 7/8	Reducer	25780
JJ-0308-0308-0	GJ-0308-0308-4	JJ-0308-0308-G	3 1/2	3 1/2	Basic	16441
JJ-0400-0400-0	GJ-0400-0400-4	JJ-0400-0400-G	4	4	Basic	16442
JJ-0408-0308-0	GJ-0408-0308-4	JJ-0408-0308-G	4 1/2	3 1/2	Reducer	24779
JJ-0408-0400-0	GJ-0408-0400-4	JJ-0408-0400-G	4 1/2	4	Reducer	24781
JJ-0408-0408-0	GJ-0408-0408-4	JJ-0408-0408-G	4 1/2	4 1/2	Basic	16408
JJ-0508-0408-0	GJ-0508-0408-4	JJ-0508-0408-G	5 1/2	4 1/2	Reducer	24785
JJ-0508-0500-0	GJ-0508-0500-4	JJ-0508-0500-G	5 1/2	5	Reducer	24783
JJ-0508-0508-0	GJ-0508-0508-4	JJ-0508-0508-G	5 1/2	5 1/2	Basic	16407
JJ-0700-0600-0	GJ-0700-0600-4	JJ-0700-0600-G	7	6	Reducer	25474
JJ-0700-0610-0	GJ-0700-0610-4	JJ-0700-0610-G	7	6 5/8	Reducer	24748
JJ-0700-0700-0	GJ-0700-0700-4	JJ-0700-0700-G	7	7	Basic	16407
JJ-0710-0610-0	GJ-0710-0610-4	JJ-0710-0610-G	7 5/8	6 5/8	Reducer	25474
JJ-0710-0700-0	GJ-0710-0700-4	JJ-0710-0700-G	7 5/8	7	Reducer	26750
JJ-0710-0710-0	GJ-0710-0710-4	JJ-0710-0710-G	7 5/8	7 5/8	Basic	16407
JJ-0710-0712-0	GJ-0710-0712-4	JJ-0710-0712-G	7 5/8	7 3/4	Oversized	32477
JJ-0810-0710-0	GJ-0810-0710-4	JJ-0810-0710-G	8 5/8	7 5/8	Reducer	25474
JJ-0810-0712-0	GJ-0810-0712-4	JJ-0810-0712-G	8 5/8	7 3/4	Reducer	34029
JJ-0810-0810-0	GJ-0810-0810-4	JJ-0810-0810-G	8 5/8	8 5/8	Basic	15660
JJ-0810-0812-0	GJ-0810-0812-4	JJ-0810-0812-G	8 5/8	8 3/4	Oversized	32477
JJ-0814-0714-0	GJ-0814-0714-4	JJ-0814-0714-G	8 7/8	7 7/8	Reducer	25474
JJ-0814-0800-0	GJ-0814-0800-4	JJ-0814-0800-G	8 7/8	8	Reducer	34029
JJ-0814-0802-0	GJ-0814-0802-4	JJ-0814-0802-G	8 7/8	8 1/8	Reducer	39289
JJ-0814-0804-0	GJ-0814-0804-4	JJ-0814-0804-G	8 7/8	8 1/4	Reducer	32700
JJ-0814-0806-0	GJ-0814-0806-4	JJ-0814-0806-G	8 7/8	8 3/8	Reducer	39288
JJ-0814-0808-0	GJ-0814-0808-4	JJ-0814-0808-G	8 7/8	8 1/2	Reducer	39287
JJ-0814-0810-0	GJ-0814-0810-4	JJ-0814-0810-G	8 7/8	8 5/8	Reducer	39286
JJ-0814-0812-0	GJ-0814-0812-4	JJ-0814-0812-G	8 7/8	8 3/4	Reducer	39285
JJ-0814-0814-0	GJ-0814-0814-4	JJ-0814-0814-G	8 7/8	8 7/8	Basic	15660
JJ-0910-0810-0	GJ-0910-0810-4	JJ-0910-0810-G	9 5/8	8 5/8	Reducer	25474
JJ-0910-0812-0	GJ-0910-0812-4	JJ-0910-0812-G	9 5/8	8 3/4	Reducer	34029
JJ-0910-0910-0	GJ-0910-0910-4	JJ-0910-0910-G	9 5/8	9 5/8	Basic	15660
JJ-0910-0912-0	GJ-0910-0912-4	JJ-0910-0912-G	9 5/8	9 3/4	Oversized	32477
JJ-1012-0910-0	GJ-1012-0910-4	JJ-1012-0910-G	10 3/4	9 5/8	Reducer	33249
JJ-1012-0914-0	GJ-1012-0914-4	JJ-1012-0914-G	10 3/4	9 7/8	Reducer	34029
JJ-1012-1012-0	GJ-1012-1012-4	JJ-1012-1012-G	10 3/4	10 3/4	Basic	15660



BJ® Standard Tooth Reducer



BJ® GRITFACE® Beveled Reducer
Use with corrosion resistant alloy (CRA) tubulars



BJ® Fine Tooth Reducer

PDT Std Tooth #	PDT GRITFACE® #	PDT Bi-Dir Tooth #	Tool Size	Pipe Size	Description	Ref #
JJ-1014-0914-0	GJ-1014-0914-4	JJ-1014-0914-G	10 7/8	9 7/8	Reducer	25474
JJ-1014-1000-0	GJ-1014-1000-4	JJ-1014-1000-G	10 7/8	10	Reducer	34029
JJ-1014-1002-0	GJ-1014-1002-4	JJ-1014-1002-G	10 7/8	10 1/8	Reducer	39289
JJ-1014-1004-0	GJ-1014-1004-4	JJ-1014-1004-G	10 7/8	10 1/4	Reducer	32700
JJ-1014-1006-0	GJ-1014-1006-4	JJ-1014-1006-G	10 7/8	10 3/8	Reducer	39288
JJ-1014-1008-0	GJ-1014-1008-4	JJ-1014-1008-G	10 7/8	10 1/2	Reducer	39287
JJ-1014-1010-0	GJ-1014-1010-4	JJ-1014-1010-G	10 7/8	10 5/8	Reducer	39286
JJ-1014-1012-0	GJ-1014-1012-4	JJ-1014-1012-G	10 7/8	10 3/4	Reducer	39285
JJ-1014-1014-0	GJ-1014-1014-4	JJ-1014-1014-G	10 7/8	10 7/8	Basic	15660
JJ-1112-1012-0	GJ-1112-1012-4	JJ-1112-1012-G	11 3/4	10 3/4	Reducer	25474
JJ-1112-1014-0	GJ-1112-1014-4	JJ-1112-1014-G	11 3/4	10 7/8	Reducer	25474
JJ-1112-1112-0	GJ-1112-1112-4	JJ-1112-1112-G	11 3/4	11 3/4	Basic	15660
JJ-1208-1108-0	GJ-1208-1108-4	JJ-1208-1108-G	12 1/2	11 1/2	Reducer	25474
JJ-1208-1110-0	GJ-1208-1110-4	JJ-1208-1110-G	12 1/2	11 5/8	Reducer	34029
JJ-1208-1112-0	GJ-1208-1112-4	JJ-1208-1112-G	12 1/2	11 3/4	Reducer	39289
JJ-1208-1114-0	GJ-1208-1114-4	JJ-1208-1114-G	12 1/2	11 7/8	Reducer	32700
JJ-1208-1200-0	GJ-1208-1200-4	JJ-1208-1200-G	12 1/2	12	Reducer	39289
JJ-1208-1202-0	GJ-1208-1202-4	JJ-1208-1202-G	12 1/2	12 1/8	Reducer	39287
JJ-1208-1204-0	GJ-1208-1204-4	JJ-1208-1204-G	12 1/2	12 1/4	Reducer	39286
JJ-1208-1206-0	GJ-1208-1206-4	JJ-1208-1206-G	12 1/2	12 3/8	Reducer	39285
JJ-1208-1208-0	GJ-1208-1208-4	JJ-1208-1208-G	12 1/2	12 1/2	Basic	15660
JJ-1212-1112-0	GJ-1212-1112-4	JJ-1212-1112-G	12 3/4	11 3/4	Reducer	25474
JJ-1212-1114-0	GJ-1212-1114-4	JJ-1212-1114-G	12 3/4	11 7/8	Reducer	34029
JJ-1212-1214-0	GJ-1212-1214-4	JJ-1212-1214-G	12 3/4	12 7/8	Oversized	32477
JJ-1306-1208-0	GJ-1306-1208-4	JJ-1306-1208-G	13 3/8	12 1/2	Reducer	34029
JJ-1306-1212-0	GJ-1306-1212-4	JJ-1306-1212-G	13 3/8	12 3/4	Reducer	32700
JJ-1306-1308-0	GJ-1306-1308-4	JJ-1306-1308-G	13 3/8	13 1/2	Oversized	32477
JJ-1306-1306-0	GJ-1306-1306-4	JJ-1306-1306-G	13 3/8	13 3/8	Basic	15660
JJ-1400-1300-0	GJ-1400-1300-4	JJ-1400-1300-G	14	13	Reducer	25474
JJ-1400-1302-0	GJ-1400-1302-4	JJ-1400-1302-G	14	13 1/8	Reducer	34029
JJ-1400-1304-0	GJ-1400-1304-4	JJ-1400-1304-G	14	13 1/4	Reducer	39289
JJ-1400-1306-0	GJ-1400-1306-4	JJ-1400-1306-G	14	13 3/8	Reducer	32700
JJ-1400-1308-0	GJ-1400-1308-4	JJ-1400-1308-G	14	13 1/2	Reducer	39288
JJ-1400-1310-0	GJ-1400-1310-4	JJ-1400-1310-G	14	13 5/8	Reducer	39287
JJ-1400-1312-0	GJ-1400-1312-4	JJ-1400-1312-G	14	13 3/4	Reducer	39286
JJ-1400-1314-0	GJ-1400-1314-4	JJ-1400-1314-G	14	13 7/8	Reducer	39285
JJ-1400-1400-0	GJ-1400-1400-4	JJ-1400-1400-G	14	14	Basic	15660

Quantities Required for BJ® Casing Elevators

Quantities Required for BJ® Casing Elevators (75 Ton – 350 Ton)

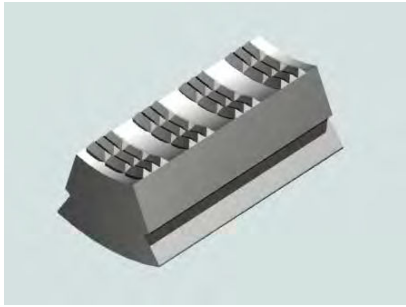
BJ® Tool Size	Pipe Size	75 Ton YC	150 Ton 7-5/8"	175 Ton	350 Ton 13-3/8"
3 1/2"	2 7/8"		18		
3 1/2"	3 1/2"		18	24	
4"	4"	16			
4 1/2"	3 1/2" to 4 1/2"	16	27	24	
5 1/2"	4 1/2" to 5 1/2"	16	27	36	36
7"	6" to 7"	24		48	48
7 5/8"	6 5/8", 7 3/4"		45		60
7 5/8"	7", 7 5/8"		45	48	60
8 5/8"	7 5/8"		45		60
8 5/8"	7 3/4" to 8 3/4"				60
9 5/8"	8 5/8" to 9 3/4"				72
10 3/4"	9 7/8" to 10 3/4"				72
11 3/4"	10 3/4" to 11 3/4"				72
13 3/8"	12 1/2" to 13 1/2"				84

Quantities Required for BJ® Casing Elevators (500 Ton – 1000 Ton)

BJ® Tool Size	Pipe Size	500 Ton 13-3/8"	500 Ton 10-3/4"	1000 Ton 14"
5 1/2"	4 1/2" TO 5 1/2"	45	45	
7"	6"	60		
7"	6 5/8" to 7"	60	60	
7 5/8"	6 5/8" to 7 3/4"	75	75	
8 5/8"	7 5/8" to 8 5/8"		75	
8 7/8"	7 7/8" to 8 7/8"			108
9 5/8"	8 5/8" to 9 3/4"	90	90	
10 3/4"	9 7/8" to 10 3/4"		90	
10 7/8"	9 7/8" to 10 7/8"			126
11 3/4"	10 3/4"	105		126
11 3/4"	10 7/8" to 11 3/4"	105		
12 1/2"	11 1/2" to 12 1/2"			144
13 3/8"	12 1/2" to 13 1/2"	135		
14"	13" to 13 1/4", 13 1/2", 13 3/4", 13 7/8"			162
14"	13 3/8", 13 1/2", 14	135		162

Inserts for Baash-Ross DU Handling Tools

(Grit Tooth Inserts also available)



Baash-Ross DU Standard Tooth Insert



Baash-Ross DU 5 1/2" **GRITFACE®** Insert
Use with corrosion resistant alloy (CRA) tubulars



Baash-Ross DU Full Face Insert

PDT Standard Tooth #	PDT GRITFACE® #	Tool Size	Pipe Size	Description	Ref #
DU-0408-0206-0	GU-0408-0206-4	4 1/2	2 3/8	Reducer	7613-A82
DU-0408-0214-0	GU-0408-0214-4	4 1/2	2 7/8	Reducer	7613-B82
DU-0408-0300-0	GU-0408-0300-4	4 1/2	3	Reducer	
DU-0408-0302-0	GU-0408-0302-4	4 1/2	3 1/8	Reducer	
DU-0408-0304-0	GU-0408-0304-4	4 1/2	3 1/4	Reducer	
DU-0408-0308-0	GU-0408-0308-4	4 1/2	3 1/2	Reducer	7613-C82
DU-0408-0312-0	GU-0408-0312-4	4 1/2	3 3/4	Reducer	
DU-0408-0400-0	GU-0408-0400-4	4 1/2	4	Reducer	7613-FF81
DU-0408-0402-0	GU-0408-0402-4	4 1/2	4 1/8	Reducer	
DU-0408-0404-0	GU-0408-0404-4	4 1/2	4 1/4	Reducer	
DU-0408-0406-0	GU-0408-0406-4	4 1/2	4 3/8	Reducer	
DU-0408-0408-0	GU-0408-0408-4	4 1/2	4 1/2	Basic	7613-A81

PDT Standard Tooth #	PDT GRITFACE®#	Tool Size	Pipe Size	Description	Ref #
DU-0508-0206-0	GU-0508-0206-4	5 1/2	2 3/8	Reducer	
DU-0508-0214-0	GU-0508-0214-4	5 1/2	2 7/8	Reducer	
DU-0508-0300-0	GU-0508-0300-4	5 1/2	3	Reducer	
DU-0508-0302-0	GU-0508-0302-4	5 1/2	3 1/8	Reducer	
DU-0508-0304-0	GU-0508-0304-4	5 1/2	3 1/4	Reducer	
DU-0508-0308-0	GU-0508-0308-4	5 1/2	3 1/2	Reducer	7613-E82
DU-0508-0312-0	GU-0508-0312-4	5 1/2	3 3/4	Reducer	
DU-0508-0400-0	GU-0508-0400-4	5 1/2	4	Reducer	7613-D81
DU-0508-0402-0	GU-0508-0402-4	5 1/2	4 1/8	Reducer	
DU-0508-0404-0	GU-0508-0404-4	5 1/2	4 1/4	Reducer	
DU-0508-0406-0	GU-0508-0406-4	5 1/2	4 3/8	Reducer	
DU-0508-0408-0	GU-0508-0408-4	5 1/2	4 1/2	Reducer	7613-E81
DU-0508-0412-0	GU-0508-0412-4	5 1/2	4 3/4	Reducer	7613-F81
DU-0508-0500-0	GU-0508-0500-4	5 1/2	5	Reducer	7613-G81
DU-0508-0508-0	GU-0508-0508-4	5 1/2	5 1/2	Basic	7613-H81
DU-0508-0512-0	GU-0508-0512-4	5 1/2	5 3/4	Oversized	

PDT Standard Tooth #	PDT GRITFACE® #	Tool Size	Pipe Size	Description	Ref #
DU-0700-0408-0	GU-0700-0408-4	7	4 1/2	Reducer	7613-W81
DU-0700-0500-0	GU-0700-0500-4	7	5	Reducer	7613-Y81
DU-0700-0508-0	GU-0700-0508-4	7	5 1/2	Reducer	7613-Z81
DU-0700-0512-0	GU-0700-0512-4	7	5 3/4	Reducer	7613-BB81
DU-0700-0514-0	GU-0700-0514-4	7	5 7/8	Reducer	
DU-0700-0600-0	GU-0700-0600-4	7	6	Reducer	7613-CC81
DU-0700-0610-0	GU-0700-0610-4	7	6 5/8	Reducer	7613-EE81
DU-0700-0700-0	GU-0700-0700-4	7	7	Basic	7613-EE81



Baash Ross DU Full Face Insert



Baash Ross DU Full Face Reducer

Quantities Required for Baash-Ross DU Rotary Slips

BAASH-ROSS "DU" Rotary Slips

Slip Size	Pipe Size	"DU" Regular	"DU" Long
4 1/2"	All	18	24
5 1/2"	All	18	24
7"	All	18	24

Inserts for Kelco Handling Tools



Kelco K-25 Std Tooth Insert



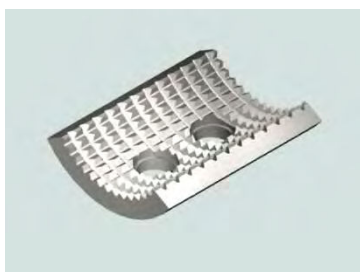
Kelco K-25 **GRITFACE®** Insert
Use with corrosion resistant alloy (CRA) tubulars

Inserts for Kelco K-20 Style Tool (Fine tooth inserts also available)

PDT Std Tooth #	PDT GRITFACE® #	Description	Ref#	Qty
KK-0200-0012-0	GK-0200-0012-5	3/4" (1.050") Insert	Ref. # 04119	3
KK-0200-0100-0	GK-0200-0100-5	1" (1.315") Insert	Ref. # 04120	3
KK-0200-0104-0	GK-0200-0104-5	1 1/4" (1.660") Insert	Ref. # 04121	3
KK-0200-0108-0	GK-0200-0108-5	1 1/2" (1.900") Insert	Ref. # 04122	3
KK-0200-0201-0	GK-0200-0201-5	2 1/16" Insert	Ref. # 04123	3
KK-0200-0204-0	GK-0200-0204-5	1 1/4" (1.660") Insert	Ref. # 04121	3
KK-0200-0206-0	GK-0200-0206-5	2 3/8" Insert	Ref. # 04124	3
KK-0200-0210-0	GK-0200-0210-5	2 1/16" Insert	Ref. # 04123	3

Inserts for Kelco K-25 Style Tool (Fine tooth inserts also available)

PDT Std Tooth #	PDT GRITFACE® #	Description	Ref#	Qty
KK-0250-0012-0	GK-0250-0012-5	3/4" (1.050") Insert	Ref. # 05129	3
KK-0250-0100-0	GK-0250-0100-5	1" (1.315) Insert	Ref. # 05120	3
KK-0250-0104-0	GK-0250-0104-5	1 1/4" (1.660) Insert	Ref. # 05121	3
KK-0250-0108-0	GK-0250-0108-5	1 1/2" (1.900) Insert	Ref. # 05122	3
KK-0250-0109-0	GK-0250-0109-5	1 9/16" Insert	Ref. # 05131	3
KK-0250-0113-0	GK-0250-0113-5	1 13/16" Insert	Ref. # 05132	3
KK-0250-0201-0	GK-0250-0201-5	2 1/16" Insert	Ref. # 05123	3
KK-0250-0202-0	GK-0250-0202-5	2 1/8" Insert	Ref. # 05133	3
KK-0250-0204-0	GK-0250-0204-5	2 1/4" Insert	Ref. # 05134	3
KK-0250-0206-0	GK-0250-0206-5	2 3/8" Insert	Ref. # 05124	3
KK-0250-0208-0	GK-0250-0208-5	2 1/2" Insert	Ref. # 05125	3
KK-0250-0211-0	GK-0250-0211-5	2 11/16" Insert	Ref. # 05126	3
KK-0250-02.776-0	GK-0250-02.776-5	2.776" Insert	Ref. # 05127	3
KK-0250-0214-0	GK-0250-0214-5	2 7/8" Insert	Ref. # 05128	3
KK-0250-0301-0	GK-0250-0301-5	3 1/16" Insert	Ref. # 05130	3

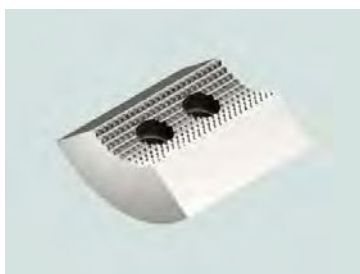


Kelco K-30 Std Tooth Insert

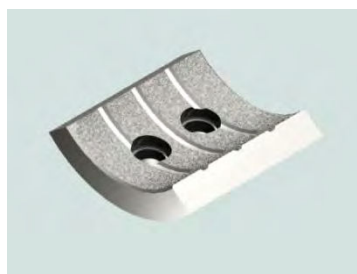

Kelco K-30 **GRITFACE®** Insert
Use with corrosion resistant alloy (CRA) tubulars

Inserts for Kelco K-30 Style Tool (Fine tooth inserts also available)

PDT Std Tooth #	PDT GRITFACE® #	Description	Ref#	Qty
KK-0300-0012-0	GK-0300-0012-5	3/4" (1.050") Insert	Ref. # 06132	3
KK-0300-0100-0	GK-0300-0100-5	1" (1.315") Insert	Ref. # 06136	3
KK-0300-0101-0	GK-0300-0101-5	1 1/16" Insert	Ref. # 06149	3
KK-0300-0102-0	GK-0300-0102-5	1 1/8" Insert	Ref. # 06146	3
KK-0300-0104-0	GK-0300-0104-5	1 1/4" (1.660") Insert	Ref. # 06133	3
KK-0300-0108-0	GK-0300-0108-5	1 1/2" (1.900") Insert	Ref. # 06134	3
KK-0300-0110-0	GK-0300-0110-5	1 5/8" Insert	Ref. # 06140	3
KK-0300-0111-0	GK-0300-0111-5	1 11/16" Insert	Ref. # 06139-1	3
KK-0300-0112-0	GK-0300-0112-5	1 3/4" Insert	Ref. # 06140-1	3
KK-0300-0113-0	GK-0300-0113-5	1 13/16" Insert	Ref. # 06139	3
KK-0300-0200-0	GK-0300-0200-5	2" Insert	Ref. # 06138	3
KK-0300-0201-0	GK-0300-0201-5	2 1/16" Insert	Ref. # 06119	3
KK-0300-0202-0	GK-0300-0202-5	2 1/8" Insert	Ref. # 06144	3
KK-0300-0204-0	GK-0300-0204-5	2 1/4" Insert	Ref. # 06145	3
KK-0300-0206-0	GK-0300-0206-5	2 3/8" Insert	Ref. # 06120	3
KK-0300-02.406-0	GK-0300-02.406-5	2.406" Insert		3
KK-0300-0207-0	GK-0300-0207-5	2 7/16" Insert		3
KK-0300-0208-0	GK-0300-0208-5	2 1/2" Insert	Ref. # 06148	3
KK-0300-0210-0	GK-0300-0210-5	2 5/8" Insert	Ref. # 06142	3
KK-0300-02.718-0	GK-0300-02.718-5	2.718" Insert	Ref. # 06137	3
KK-0300-0212-0	GK-0300-0212-5	2 3/4" Insert	Ref. # 06147	3
KK-0300-0214-0	GK-0300-0214-5	2 7/8" Insert	Ref. # 06121	3
KK-0300-0300-0	GK-0300-0300-5	3" Insert	Ref. # 06135	3
KK-0300-0301-0	GK-0300-0301-5	3 1/16" Insert	Ref. # 06122	3
KK-0300-0302-0	GK-0300-0302-5	3 1/8" Insert	Ref. # 06123	3
KK-0300-0304-0	GK-0300-0304-5	3 1/4" Insert	Ref. # 06124	3
KK-0300-0306-0	GK-0300-0306-5	3 3/8" Insert	Ref. # 06130	3
KK-0300-0308-0	GK-0300-0308-5	3 1/2" Insert	Ref. # 06125	3
KK-0300-0310-0	GK-0300-0310-5	3 5/8" Insert	Ref. # 06141	3
KK-0300-03.668-0	GK-0300-03.668-5	3.668" Insert	Ref. # 06126	3
KK-0300-03.730-0	GK-0300-03.730-5	3.730" Insert	Ref. # 06151	3
KK-0300-0312-0	GK-0300-0312-5	3 3/4" Insert	Ref. # 06127	3
KK-0300-03.866-0	GK-0300-03.866-5	3.866" Insert	Ref. # 06143	3
KK-0300-0314-0	GK-0300-0314-5	3 7/8" Insert	Ref. # 06131	3
KK-0300-0400-0	GK-0300-0400-5	4 " Insert	Ref. # 06129	3
KK-0300-04.035-0	GK-0300-04.035-5	4.035" Insert	Ref. # 06150	3
KK-0300-0402-0	GK-0300-0402-5	4 1/8" Insert	Ref. # 06128	3



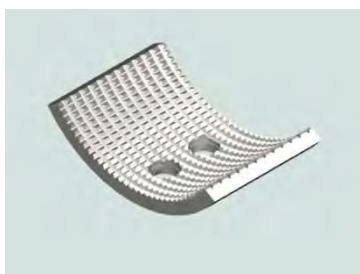
Kelco K-50 Std Tooth Insert



Kelco K-50 **GRITFACE®** Insert
Use with corrosion resistant alloy (CRA) tubulars

Inserts for Kelco K-50 Style Tool (Fine tooth inserts also available)

PDT Std Tooth #	PDT GRITFACE®#	Description	Ref#	Qty
KK-0500-0210-0	GK-0500-0210-5	2 5/8" Insert	Ref. # 06590	3
KK-0500-0304-0	GK-0500-0304-5	3 1/4" Insert	Ref. # 06596	3
KK-0500-0306-0	GK-0500-0306-5	3 3/8" Insert	Ref. # 06594	3
KK-0500-0308-0	GK-0500-0308-5	3 1/2" Insert	Ref. # 06576	3
KK-0500-0310-0	GK-0500-0310-5	3 5/8" Insert	Ref. # 06598	3
KK-0500-0312-0	GK-0500-0312-5	3 3/4" Insert	Ref. # 06577	3
KK-0500-0314-0	GK-0500-0314-5	3 7/8" Insert	Ref. # 06595	3
KK-0500-0400-0	GK-0500-0400-5	4" Insert	Ref. # 06578	3
KK-0500-0401-0	GK-0500-0401-5	4 1/16" Insert	Ref. # 06589	3
KK-0500-0402-0	GK-0500-0402-5	4 1/8" Insert	Ref. # 06579	3
KK-0500-0404-0	GK-0500-0404-5	4 1/4" Insert	Ref. # 06585	3
KK-0500-0406-0	GK-0500-0406-5	4 3/8" Insert	Ref. # 06586	3
KK-0500-0408-0	GK-0500-0408-5	4 1/2" Insert	Ref. # 06580	3
KK-0500-04.668-0	GK-0500-04.668-5	4.668" Insert	Ref. # 06588	3
KK-0500-0412-0	GK-0500-0412-5	4 3/4" Insert	Ref. # 06581	3
KK-0500-0414-0	GK-0500-0414-5	4 7/8" Insert	Ref. # 06597	3
KK-0500-04.88-0	GK-0500-04.88-5	4.880" Insert		3
KK-0500-0500-0	GK-0500-0500-5	5" Insert	Ref. # 06582	3
KK-0500-0504-0	GK-0500-0504-5	5 1/4" Insert	Ref. # 06587	3
KK-0500-05.350-0	GK-0500-05.350-5	5.350" Insert	Ref. # 06584	3
KK-0500-0506-0	GK-0500-0506-5	5 3/8" Insert		3
KK-0500-0508-0	GK-0500-0508-5	5 1/2" Insert	Ref. # 06583	3



Kelco K-70 Std Tooth Insert



Kelco K-70 **GRITFACE®** Insert
Use with corrosion resistant alloy (CRA) tubulars

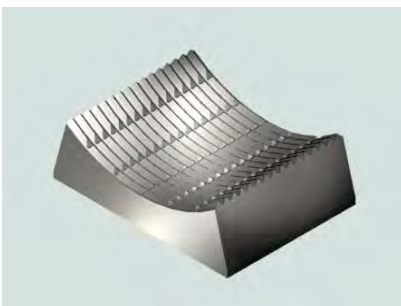
Inserts for Kelco K-70 Style Tool (Fine tooth inserts also available)

PDT Std Tooth #	PDT GRITFACE® #	Description	Ref#	Qty
KK-0700-0308-0	GK-0700-0308-5	3 1/2" Insert	Ref. # 06758	3
KK-0700-0312-0	GK-0700-0312-5	3 3/4" Insert	Ref. 06769	3
KK-0700-0400-0	GK-0700-0400-5	4" Insert	Ref. # 06757	3
KK-0700-0408-0	GK-0700-0408-5	4 1/2" Insert	Ref. # 06756	3
KK-0700-0412-0	GK-0700-0412-5	4 3/4" Insert	Ref. # 06755	3
KK-0700-0413-0	GK-0700-0413-5	4 13/16" Insert		3
KK-0700-0415-0	GK-0700-0415-5	4 15/16" Insert		3
KK-0700-04.961-0	GK-0700-04.961-5	4.961" Insert		3
KK-0700-0500-0	GK-0700-0500-5	5" Insert	Ref. # 06754	3
KK-0700-0504-0	GK-0700-0504-5	5 1/4" Insert	Ref. # 06770	3
KK-0700-0508-0	GK-0700-0508-5	5 1/2" Insert	Ref. # 06753	3
KK-0700-05.600-0	GK-0700-05.600-5	5.600" Insert		3
KK-0700-0512-0	GK-0700-0512-5	5 3/4" Insert	Ref. # 06759	3
KK-0700-0514-0	GK-0700-0514-5	5 7/8" Insert	Ref. # 06771	3
KK-0700-0600-0	GK-0700-0600-5	6" Insert	Ref. # 06752	3
KK-0700-06.050-0	GK-0700-06.050-5	6.050" Insert		3
KK-0700-0602-0	GK-0700-0602-5	6.1/8" Insert		3
KK-0700-06.156-0	GK-0700-06.156-5	6.156" Insert		3
KK-0700-0604-0	GK-0700-0604-5	6 1/4" Insert	Ref. # 06772	3
KK-0700-0605-0	GK-0700-0605-5	6 5/16" Insert	Ref. 06768	3
KK-0700-06.334-0	GK-0700-06.334-5	6.334" Insert		3
KK-0700-0608-0	GK-0700-0608-5	6 1/2" Insert	Ref. # 06760	3
KK-0700-0610-0	GK-0700-0610-5	6 5/8" Insert	Ref. # 06751	3
KK-0700-06.658-0	GK-0700-06.658-5	6.658" Insert		3
KK-0700-0614-0	GK-0700-0614-5	6 7/8" Insert		3
KK-0700-0700-0	GK-0700-0700-5	7" Insert	Ref. # 06750	3
KK-0700-07.015-0	GK-0700-07.015-5	7.015" Insert		3

Inserts for Hydra Rig Bowl & Slip



Hydra Rig 150 Bowl & Slip Insert



Hydra Rig 225 Bowl & Slip Insert



Hydra Rig 300 Bowl & Slip Insert

Inserts for Hydra Rig 150 Bowl and Slip

PDT Std Tooth #	PDT GRITFACE® #	Description	Ref#	Qty
HH-0214-0100-0	GH-0214-0100-4	2 7/8" x 1" (1.315)	Ref. # 6006	8
HH-0214-0104-0	GH-0214-0104-4	2 7/8" x 1 1/4" (1.66)	Ref. # 6005	8
HH-0214-0108-0	GH-0214-0108-4	2 7/8" x 1 1/2" (1.900)	Ref. # 6004	8
HH-0214-0201-0	GH-0214-0201-4	2 7/8" x 2 1/16"	Ref. # 6003	8
HH-0214-0206-0	GH-0214-0206-4	2 7/8" x 2 3/8"	Ref. # 6002	8
HH-0214-0214-0	GH-0214-0214-4	2 7/8" x 2 7/8"	Ref. # 6001	8
HH-0214-0308-0	GH-0214-0308-4	2 7/8" x 3 1/2"	Ref. # 6009	8

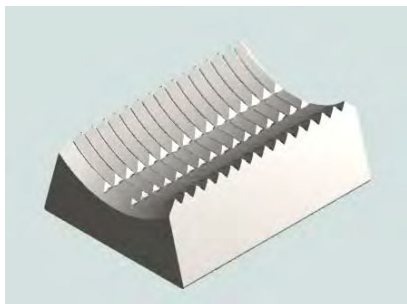
Inserts for Hydra Rig 225 Bowl and Slip

PDT Std Tooth #	PDT GRITFACE® #	Description	Ref#	Qty
HH-0508-0206-0	GH-0508-0206-4	5 1/2" x 2 3/8"	Ref. # 6157	12
HH-0508-0214-0	GH-0508-0214-4	5 1/2" x 2 7/8"	Ref. # 6156	12
HH-0508-0308-0	GH-0508-0308-4	5 1/2" x 3 1/2"	Ref. # 6155	12
HH-0508-0400-0	GH-0508-0400-4	5 1/2" x 4"	Ref. # 6154	12
HH-0508-0408-0	GH-0508-0408-4	5 1/2" x 4 1/2"	Ref. # 6153	12
HH-0508-0508-0	GH-0508-0508-4	5 1/2" x 5 1/2"	Ref. # 6151	12

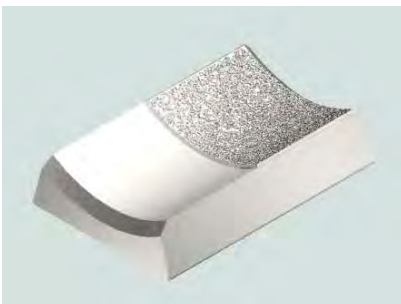
Inserts for Hydra Rig 300 Bowl and Slip

PDT Std Tooth #	PDT GRITFACE® #	Description	Ref#	Qty
HH-0710-0206-0	GH-0710-0206-4	7 5/8" x 3 1/2"	Ref. # 6183	4
HH-0710-0214-0	GH-0710-0214-4	7 5/8" x 2 7/8"	Ref. # 6181	4
HH-0710-0308-0	GH-0710-0308-4	7 5/8" x 3 1/2"	Ref. # 6182	4
HH-0710-0400-0	GH-0710-0400-4	7 5/8" x 4"	Ref. # 6179	4
HH-0710-0408-0	GH-0710-0408-4	7 5/8" x 4 1/2"	Ref. # 6178	4
HH-0710-0500-0	GH-0710-0500-4	7 5/8" x 5"	Ref. # 6180	4
HH-0710-0508-0	GH-0710-0508-4	7 5/8" x 5 1/2"	Ref. # 6176	4
HH-0710-0512-0	GH-0710-0512-4	7 5/8" x 5 3/4"	Ref. # 6177	4
HH-0710-0600-0	GH-0710-0600-4	7 5/8" x 6"	Ref. # 6175	4
HH-0710-0610-0	GH-0710-0610-4	7 5/8" x 6 5/8"	Ref. # 6174	4
HH-0710-0700-0	GH-0710-0700-4	7 5/8" x 7"	Ref. # 6172	4
HH-0710-0710-0	GH-0710-0710-4	7 5/8" x 7 5/8"	Ref. # 6171	4

Inserts for Bilco Handling Tools



Bilco Standard Tooth Insert for Dual Tools



Bilco **GRITFACE®** Insert for Dual Tools
Use with corrosion resistant alloy (CRA) tubulars



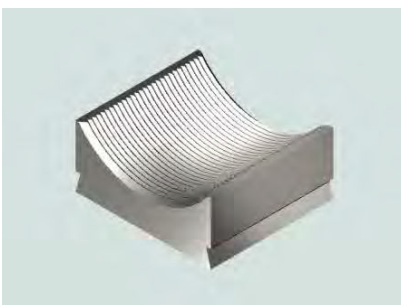
Bilco Grit Tooth Insert for Dual Tools

Inserts for Bilco Dual Tools

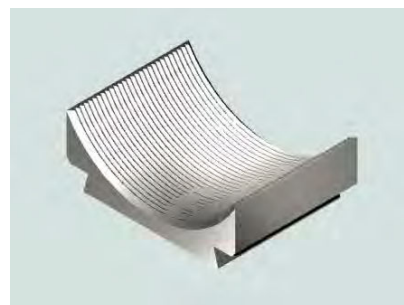
PDT Std Tooth #	PDT GRITFACE® #	Description	Ref#	Qty
FF-0308-0108-0	GF-0308-0108-4	3.5" x 1 1/2" (1.900") Insert	6604	36
FF-0308-0206-0	GF-0308-0206-4	3.5" x 2.375" Insert	6603	36
FF-0308-0214-0	GF-0308-0214-4	3.5" x 2.875" Insert	6602	36
FF-0308-0308-0	GF-0308-0308-4	3.5" x 3.5" Insert	6601	36
FF-0508-0206-0	GF-0508-0206-4	5.5" x 2.375" Insert	6626W	48
FF-0508-0214-0	GF-0508-0214-4	5.5" x 2.875" Insert	6624W	48
FF-0508-0308-0	GF-0508-0308-4	5.5" x 3.5" Insert	6623W	48
FF-0508-0400-0	GF-0508-0400-4	5.5" x 4.0" Insert	6625W	48
FF-0508-0408-0	GF-0508-0408-4	5.5" x 4.5" Insert	6622W	48
FF-0508-0500-0	GF-0508-0500-4	5.5" x 5.0" Insert	6621W	48
FF-0508-0508-0	GF-0508-0508-4	5.5" x 5.5" Insert	6620W	48



Bilco 5 1/2" x 4" Insert for Precision Slips



Bilco 5 1/2" x 4 1/2" Insert for Precision Slips

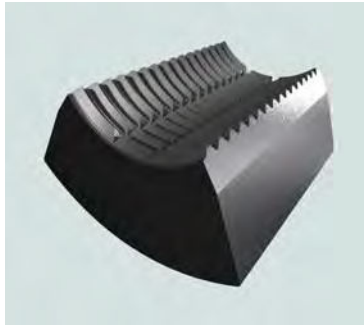


Bilco 5 1/2" x 5 1/2" Insert for Precision Slips

Inserts for Bilco Precision Slips and Elevators

PDT Std Tooth #	Description	Ref#	Qty
FF-0308-0206-WP	3 1/2" x 2 3/8" Wide Body Insert	6603WP	18
FF-0308-0214-WP	3 1/2" x 2 7/8" Wide Body Insert	6602WP	18
FF-0308-0308-WP	3 1/2" x 3 1/2" Wide Body Insert	6601WP	18
FF-0408-0408-WP	4 1/2" x 4 1/2" Wide Body Insert	6617WP	18
FF-0508-0400-WP	5 1/2" x 4" Wide Body Insert	6623WP	18
FF-0508-0408-WP	5 1/2" x 4 1/2" Wide Body Insert	6622WP	18
FF-0508-0500-WP	5 1/2" x 5" Wide Body Insert	6621WP	18
FF-0508-0508-WP	5 1/2" x 5 1/2" Wide Body Insert	6620WP	18

Inserts for 3½ ” TS-100 Spider



TS100-Spider Bi-Directional Tooth Insert

PDT Standard Tooth #	Tool Size	Pipe Size	Description	Ref #	Qty
DU-0308-0308-0	3 1/2	3 1/2	Basic	7502-A-5069	9
DU-0308-0306-0	3 1/2	3 3/8	Reducer		9
DU-0308-0302-0	3 1/2	3 1/8	Reducer		9
DU-0308-0214-0	3 1/2	2 7/8	Reducer	7502-A-5070	9
DU-0308-0206-0	3 1/2	2 3/8	Reducer	7502-A-5071	9
DU-0308-0201-0	3 1/2	2 1/16	Reducer	7502-A-5072	9
DU-0308-0200-0	3 1/2	2	Reducer		9
DU-0308-0108-0	3 1/2	1 1/2 (1.900)	Reducer	7502-A-5074	9
DU-0308-0104-0	3 1/2	1 1/4 (1.660)	Reducer	7502-A-5075	9
DU-0308-0100-0	3 1/2	1 (1.315)	Reducer	7502-A-5076	9
DU-0308-0012-0	3 1/2	3/4 (1.050)	Reducer	7502-A-5077	9

Inserts for Guiberson F-1/ H-1 Bowl and Slip



Guiberson Insert

PDT Std Tooth #	PDT GRITFACE® #	Tool Size	Pipe Size	Description	Ref #	Qty
BB-0308-0308-0	GB-0308-0308-4	3 1/2	3 1/2	Basic	42588	18/12
BB-0214-0214-0	GB-0214-0214-4	2 7/8	2 7/8	Basic	42587	18/12
BB-0214-0206-0	GB-0214-0206-4	2 7/8	2 3/8	Reducer	42586	18/12
BB-0214-0201-0	GB-0214-0201-4	2 7/8	2 1/16	Reducer	62478	18/12
BB-0214-0108-0	GB-0214-0108-4	2 7/8	1 1/2 (1.900)	Reducer	62476	18/12
BB-0214-0104-0	GB-0214-0104-4	2 7/8	1 1/4 (1.660)	Reducer	62475	18/12
BB-0214-0100-0	GB-0214-0100-4	2 7/8	1 (1.315)	Reducer	62474	18/12

Inserts for ST-80 Iron Roughneck Tools



ST-80 Iron Roughneck Lower Insert



ST-80 Iron Roughneck Upper Insert

PDT Standard Part #	Description	Ref #	Qty
PDT-ST80	ST-80 Upper Insert	30160380-500	2
PDT-ST80 Kit	Includes 2 dies & replacement hardware		1
PDT-30160382	ST-80 Lower Insert	30160382	2
PDT-301603820-KIT	Includes 2 dies & replacement hardware		1

Inserts for Cavins & Oil Country Handling Tools

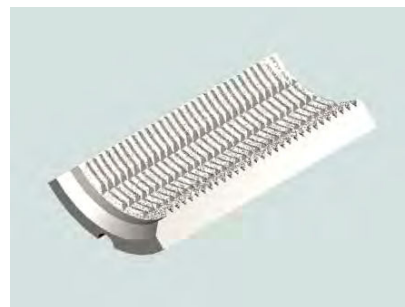
(Grit Tooth, Fine Tooth, and Bi-Directional Inserts also available)



Cavins Uni-Directional Standard Tooth Insert



Cavins **GRITFACE®** Insert
Use with corrosion resistant alloy (CRA) tubulars



Cavins Grit Tooth Insert

Inserts for Cavins Type C (3 1/2" body)

PDT Std Tooth #	PDT GRITFACE® #	Description	Ref #
CC-0308-0105-0	GCC-0308-0105-4	3 1/2" x 1 5/16" Insert f/ Cavins Type "C" Slip	34-231
CC-0308-0206-0	GCC-0308-0206-4	3 1/2" x 2 3/8" Insert f/ Cavins Type "C" Slip	90-03
CC-0308-0214-0	GCC-0308-0214-4	3 1/2" x 2 7/8" Insert f/ Cavins Type "C"	90-02
CC-0308-0308-0	GCC-0308-0308-4	3 1/2" x 3 1/2" Insert f/ Cavins Type "C" Slip	90-01

Inserts for Cavins Type C (4 1/2" body)

PDT Std Tooth #	PDT GRITFACE® #	Description	Ref #
CC-0408-0308-0	GCC-0408-0308-4	4 1/2" x 3 1/2" Insert f/ Cavins Type "C"	90-42
CC-0408-0400-0	GCC-0408-0400-4	4 1/2" x 4" Insert f/ Cavins Type "C"	90-41
CC-0408-0408-0	GCC-0408-0408-4	4 1/2" x 4 1/2" Insert f/ Cavins Type "C"	90-40



Cavins 4 1/2" Bi-Directional Tooth Insert (Reducer)



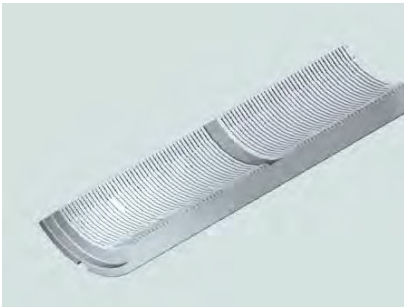
Cavins 4 1/2" **GRITFACE®** Insert (Reducer)
Use with corrosion resistant alloy (CRA) tubulars

Inserts for Cavins Type F (3 1/2" body)

PDT Std Tooth #	PDT GRITFACE® #	Description	Ref #
CF-0308-0206-0	GCF-0308-0206-4	3 1/2" x 2 3/8" Insert f/ Cavins Type "F" Slip	92-03
CF-0308-0214-0	GCF-0308-0214-4	3 1/2" x 2 7/8" Insert f/ Cavins Type "F" Slip	92-02
CF-0308-0308-0	GCF-0308-0308-4	3 1/2" x 3 1/2" Insert f/ Cavins Type "F" Slip	92-01

Inserts for Cavins Type F (5 1/2" body)

PDT Std Tooth #	PDT GRITFACE®™#	Description	Ref #
CF-0508-0400-0	GCF-0508-0400-4	5 1/2" x 4" Insert f/ Cavins Type "F" Slips	92-14
CF-0508-0408-0	GCF-0508-0408-4	5 1/2" x 4 1/2" Insert f/ Cavins Type "F" Slip	92-13
CF-0508-0500-0	GCF-0508-0500-4	5 1/2" x 5" Insert f/ Cavins Type "F" Slips	92-12
CF-0508-0508-0	GCF-0508-0508-4	5 1/2" x 5 1/2" Insert f/ Cavins Type "F" Slips	92-11



Fine Tooth 3 1/2" x 3 1/2" Uni-dir. Insert for Cavins Type F



GRITFACE® 5 1/2" x 5" Insert for Oil Country Type E
Use with corrosion resistant alloy (CRA) tubulars



Grit Tooth Insert for Oil Country Type E

Inserts for Oil Country Type E (3 1/2" body)

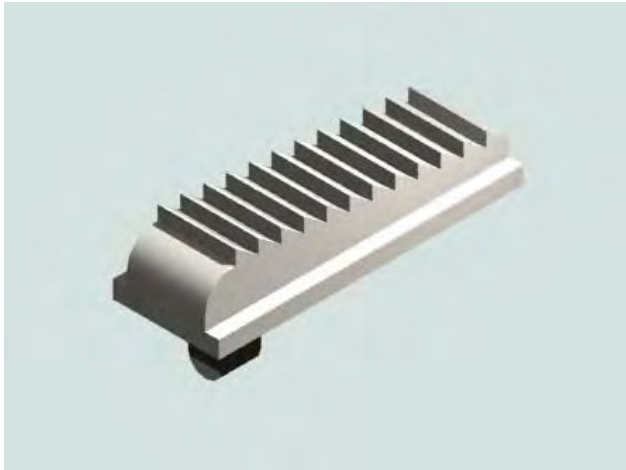
PDT Std Tooth #	PDT GRITFACE® #	Description	Ref #
CE-0308-0206-0	GCE-0308-0206-4	3 1/2" x 2 3/8" Insert f/ Oil Country Type "E" Slip	93-03
CE-0308-0214-0	GCE-0308-0214-4	3 1/2" x 2 7/8" Insert f/ Oil Country Type "E" Slip	93-02
CE-0308-0308-0	GCE-0308-0308-4	3 1/2" x 3 1/2" Insert f/ Oil Country Type "E" Slip	93-01

Inserts for Oil Country Type E (5 1/2" body)

PDT Std Tooth #	PDT GRITFACE® #	Description	Ref #
CE-0508-0400-0	GCE-0508-0400-4	5 1/2" x 4" Insert f/ Oil Country Type "E" Slip	31-39
CE-0508-0408-0	GCE-0508-0408-4	5 1/2" X 4 1/2" Insert f/ Oil Country Type "E" Slip	93-12
CE-0508-0500-0	GCE-0508-0500-4	5 1/2" x 5" Insert f/ Oil Country Type "E" Slip	31-12
CE-0508-0508-0	GCE-0508-0508-4	5 1/2" x 5 1/2" Insert f/ Oil Country Type "E" Slip	31-02

Safety Clamps

"T" Safety Clamps



Standard "T" Safety Clamp



GRITFACE® "T" Safety Clamp

PDT part # - GRITFACE®	TS-0101-0408-1
PDT part #	SS-0101-0408-0
Ref #	7624-A-21

Can be used in the following pipe sizes:

Pipe Outer Dimension Size	# of Safety Clamps Required
From 1 1/8" to 2"	4
From 2 1/8" to 3 1/4"	5
From 3 1/2" to 4 1/2"	6

"C" Safety Clamps



Standard "C" Safety Clamp



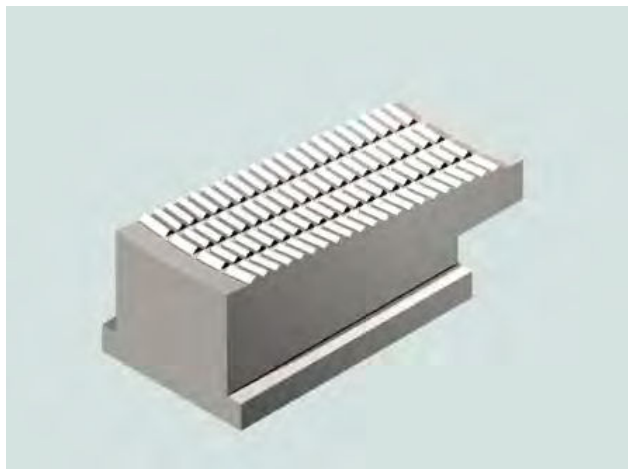
GRITFACE® "C" Safety Clamp

PDT part # - GRITFACE®	TS-0312-3100-1
PDT part #	SS-0312-3100-0
Ref #	7624-A-4

Can be used in the following pipe sizes:

Pipe Outer Dimension Size	# of Safety Clamps Required
From 3 3/4" to 4 5/8"	7
From 4 1/2" to 5 5/8"	8
From 5 1/2" to 6 5/8"	9
From 6 1/2" to 7 5/8"	10
From 7 1/2" to 8 5/8"	11
From 8 1/2" to 9 5/8"	12
From 9 1/2" to 10 5/8"	13
From 10 1/2" to 11 5/8"	14
From 11 1/2" to 12 5/8"	15
From 12 1/2" to 13 5/8"	16
From 13 1/2" to 14 5/8"	17
From 14 1/2" to 15 5/8"	18
From 15 1/2" to 17"	18
From 16 1/2" to 18"	19
From 17 1/2" to 19"	20
From 18 1/2" to 20"	21
From 19 1/2" to 21"	22

"MP" Safety Clamps



Standard "MP" Safety Clamp



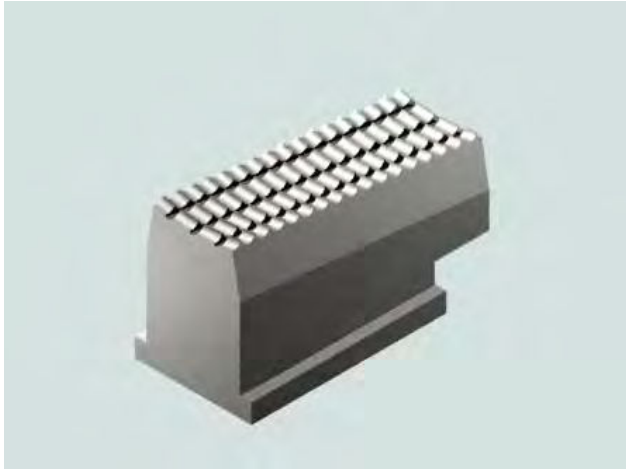
GRITFACE® "MP" Safety Clamp

PDT part # - GRITFACE®	TS-0408-3000-1
PDT part #	SS-0408-3000-0
Ref #	3310

Can be used in the following pipe sizes:

Pipe Outer Dimension Size	# of Safety Clamps Required
From 4 1/2" to 5 5/8"	8
From 5 1/2" to 7"	9
From 6 3/4" to 8 1/4"	10
From 8" to 9 1/4"	11
From 9 1/4" to 10 1/2"	12
From 10 1/2" to 11 1/2"	13
From 11 1/2" to 12 1/2"	14
From 12 1/2" to 13 5/8"	15
From 13 5/8" to 14 3/4"	16
From 14 3/4" to 15 7/8"	17
From 15 7/8" to 17"	18
From 17" to 18 1/2"	19
From 18 1/8" to 19 3/8"	20
From 19 3/8" to 20 3/8"	20
From 20 3/8" to 21 1/2"	21
From 21" to 22 5/8"	22
From 22 5/8" to 23 3/4"	23
From 23 3/4" to 24 7/8"	24
From 24 7/8" to 26"	25
From 26" to 27 1/8"	26
From 29 3/8" to 30 1/2"	29

"MPS" Safety Clamps



Standard "MPS" Safety Clamp



GRITFACE® "MPS" Safety Clamp

PDT part # - GRITFACE®	TS-0214-0500-1
PDT part #	SS-0214-0500-0
Ref #	3333

Can be used in the following pipe sizes:

Pipe Outer Dimension Size	# of Safety Clamps Required
From 2 7/8" to 4 1/8"	8
From 4" to 5"	9

Why GRITFACE® DIES and INSERTS

McCoy Drilling & Completions/Superior Manufacturing & Hydraulics, and its sister company, **McCoy Drilling & Completions/ Precision Die Technologies** have adopted the standard being used by several premium pipe manufacturers that defines 4.5% of wall thickness as a maximum allowable surface indentation for normal tubular gripping applications. The greatest indentation depth documented in testing to date is 3.54% with typical depths ranging from 1.45% to 2.9%.

The benefits of the GRITFACE® Coating for tong dies and handling tool inserts includes:

PROTECTS TUBULARS

Minimal Marking

Typical indentation depth of 0.004 to 0.006 inches

Indentations are typically less than ½ of API allowable surface defect depth

Indentations are in a random scattered pattern

Eliminates linear stress risers known to reduce fatigue life and pipe strength

Gripping Surface is manufactured using exotic materials

Precision manufacturing process provides uniform coated surface with optimal dimensional control

Tungsten Carbide particles are graded for size and shape

Nickel Chrome brazing material applied in vacuum furnace

Prevents creation of pits containing iron or steel which can contaminate the surface of CRA tubulars causing rapid premature corrosion failures

PROVIDES INCREASED PERFORMANCE

Gripping capacity is better than “non-marking” systems

Tongs offer higher torque capabilities

Handling tools do not require preloading

High hardness of coating components (approx 92 HRA) grips “Super” and “Hyper” chrome alloys oxide coatings more effectively than carburized teeth (both are approx 62 HRC)

FIELD PROVEN

- Used to run most CRA tubulars in North Sea since 1997 now used worldwide
- Used on tubulars from 1.06” to 13 3/8”
- Heaviest string run to date weighs in excess of 250 tons
- Heaviest lab test to date 400 tons on 7”-35PPF 22% Cr 125ksi tubing
- Used with expandable tubulars

ECONOMIC

Used with standard handling tools

Over 155 **GRITFACE®** Inserts are available for almost every handling tool and safety clamp

Eliminates need for specially adapted equipment for CRA strings

Increases utilization of handling tool inventory

Field usage shows **GRITFACE®** Dies and Inserts last longer than hardened steel dies and inserts used with high strength tubulars

Decreases operation time, reduces operator fatigue and enhances safety of operations

Does not require "sandpaper" to be replaced at each connection

Operators are not reaching into tools at each connection

Gripping Mechanisms used in tongs, slips and elevators for oilfield tubulars including tubing, casing and drill pipe

Three basic mechanisms used are:

Friction based non-penetrating gripping using smooth faced elastomeric, semi metallic or soft metal dies maximum load transfers are dependent upon applied radial loads and coefficient of friction radial loads maybe limited by tubular collapse resistance or elastomer extrusion resistance may require specialized tongs, slips or elevators

Interference grip using dies with hardened gripping patterns embedding in softer tubes maximum load transfers are dependent upon applied radial loads, gripping pattern, depth of penetration, and shear strength of materials used in die and tubular die mark depths can be significant in softer tubulars at high loads leaving stress riser patterns initial "bite" on high strength tubulars can be difficult to achieve and require "preloading" conventional die materials can contaminate CRA tubulars resulting in aggressive corrosion failures

No-go style handling tools and tongs limited upset tool joints, coupled connections or forged sucker rod connections limited by ultimate weight carrying capacity, shock loading, special considerations required for CRA tubular goods.



Issues with Corrosion Resistant Alloy Tubular Goods

1. 1996 IADC/SPE Paper 36386*
 - a) "Conventional spider & elevator inserts cause die marks that support corrosion."

**1996SPE36386-MS Evaluation of the Corrosion caused by Elevator and Spider Marks on C.R.A.-Pipe comparing Conventional Inserts and a New Gripping System*
 Kinzel, Holger, Weatherford Oil Tool GmbH; Tai, P.T., University of Hannover; Buttner, Kurt, Weatherford Oil Tool GmbH
2. 1998 IADC/SPE Paper 47789*
 - a) "Slips and Tongs produce permanent marks on pipe body & tool joints. Such marks develop high stress concentrations that reduce strength of pipe."

**1998SPE47789-MS Fatigue Life Evaluation: A Key to Avoid Drillpipe Failure Due to Die-marks*
 Hossain, M.M., Rahman, M.K., Rahman, S.S., Akgun, F., University of New South Wales; Kinzel, Holger, EVI Weatherford Oil Tool GmbH
3. ISO13680 2000-07-01 Corrosion Resistant Alloy Seamless Tubes for use and casing, tubing & coupling stock
 - a) 8.6.1.3 Any imperfection on the outside or inside surface, of any orientation, shall be considered a defect if:
 - i) it is linear and deeper than 5% of the specified wall thickness or 0.3mm (0.12 inches), whichever is greater, in the radial direction;
 - ii) it is linear or non-linear and results in a remaining wall thickness of less than 87.5% of the specified wall thickness for hot finished productions and 90% for cold-worked products.
 - b) 15.2 The supplier's handling system shall be designed to avoid any type of damage to the tubes during transit. The use of hooks or similar lifting equipment in the ends of pipes, and for materials in Groups 2 to 4, contact with ferrous metallic materials shall be prohibited.
4. NACE International 2002 revision to RP0291-96
 - a) "CRA materials are more susceptible to damage than carbon steel materials"
 - b) "Ferrous contamination of CRA materials shall be avoided. Some CRA materials e.g. UNS S41000 are susceptible to pitting corrosion if exposed to ferrous (iron or carbon steel materials.) Pipe wrenches, pry bars, turning forks, chains, wire brushes, or other carbon steel tools or equipment shall not be used for handling, processing, or storing CRA materials."
5. 2002 IADC/SPE 77243
 - a) "Slippages of "SUPER" or "HYPER" Chrome alloys have been reported by field personnel. These slippages occurred with various inserts and with all types of slip-type elevators or spiders. An investigation carried out by the University of Hannover revealed that the surface scale on the pipe had a hardness of over 60 Rc."
 - b) Conventional heat-treated inserts for handling tools and tongs have a hardness range of 58 to 62 Rc.

**2002SPE77243-MS Gripping without Slipping - The Safe Handling and Running of Chrome Pipe with Hard Surfaces*
 Holger Kinzel, Kurt Buettner, Manfred Jaensch, Weatherford Oil Tool GmbH, Langenhagen/Germany
6. API Specification 5CT, seventh edition October 21, 2001 and ISO11960:2001 April 1, 2002 define specifications for pipe used in oil & gas wells including L-80 13% Cr
 - a) 8.13 External defects in tubes cannot exceed maximum of 12.5% to 5% of wall thickness based on grade or maximum of 0.015 to 0.010 inches in critical areas of upset tubular goods
 - b) 9.14.5 External imperfections including grip marks on couplings cannot exceed depth maximum of 0.025 to 0.040 inches based on OD of tubulars
 - c) SR2 Supplemental Requirements for examination of grades H40, J55, K55, N80, L80, C95 and P110: imperfections greater than 5% of wall are defects requiring disposition in accordance with 10.15.16

7. 2006 OTC 17221*
 - a) Testing of premium connections for Drilling-With-Casing applications has demonstrated fatigue "failure due to tong (die) marks" as shown in figure 13

**OTC 1722, Premium and Semi-Premium Connections Design Optimization for Varied Drilling-With-Casing Applications
N.J. Santi and G.E. Carcagno, SPE, Tenaris, and R. Toscano, Centro Investigación Industrial*
8. 2006 World Oil July article* regarding use of expandable tubular goods in mono-diameter wells:
 - a) "Expandable tubulars must be manufactured and handled much differently than ordinary pipe. Galling and defects, both internal and external, can act as seed spots for ruptures when the metal is expanded. These problems can be largely overcome, in part, through careful handling similar to Chrome 13 pipe."
9. 2004 OTC 16670*
 - a) "If an expandable material receives exterior marking or galling these areas could develop concentrated stress risers when the material undergoes expansion. These stress risers can develop during the expansion process, resulting in preferential yielding of the pipe at an isolated location and often resulting in rupture or expansion failure."
10. API RP5C1 18th edition
 - a) 5.1.7 "Note slip and tong marks are injurious. Every possible effort should be made to keep such damage at a minimum by using proper up to date equipment."
 - b) 5.1.8 "Tong dies should fit properly and conform to the curvature of the tubing. The use of pipe wrenches is not recommended."
 - c) 6.2 HANDLING "Special handling may be required for sour service and CRA Material. Impact against adjacent pipe or other objects may cause local increase in hardness of the pipe to the extent that they become susceptible to sulfide stress cracking."

Standard Terms and Conditions

ACCEPTANCE – All orders for products supplied by PRECISION DIE TECHNOLOGIES (PDT) are subject to acceptance by PDT in accordance with our standard terms and conditions unless agreed in writing by PDT. Purchaser's submission of written or verbal purchase order or similar document shall be considered express acceptance of PDT Standard Terms and Conditions.

PRICING – All products are quoted and sold on INCOTERMS EX-WORKS basis from our factory in Broussard, Louisiana. All applicable taxes, freight; inland, sea air, etc., along with and including, but not limited to crafting, storage, processing and custom fees are to be borne by the purchaser unless otherwise noted on quote. Minimum order quantities may apply to custom made items. Quoted prices will be honored within quotation validity period. Prices and discounts are subject to change without notice.

PAYMENT TERMS – Unless alternate payment terms are specified in our quotation, all charges, including applicable packing, transportation costs or other charges billed by PDT are payable in US Dollars within Net 30 Days of the date of the invoice. If partial shipments are made, the products will be invoiced as shipped and ill be payable accordingly. INTEREST shall be due from the Purchaser to PDT on overdue accounts at a rate of 1½% per month plus reasonable fees and costs incurred in the collection of overdue accounts. PDT reserves the right to alter its payment or credit terms without notice.

DELIVERY, PACKAGING and SHIPPING – PDT products will be supplied on INTERCOM EX-WORKS basis from our factory in Broussard, Louisiana from stock, subject to availability at the date of delivery, as quoted. Partial shipments may be made as agreed by Purchaser and PDT. Stated delivery dates are approximate and cannot be guaranteed. PDT will have no liability for damages arising out of a failure to meet a projected delivery date. All weights shown are approximate net weights and do not include any boxing, pallets or crating. PDT products are packed using methods suitable for domestic shipping by courier service or common carrier. PDT will attempt to pack or prepare all shipments so that they will not break, rust or deteriorate in shipment but does not guarantee against such damage. Costs of special handling or packaging will be borne by purchaser. We will deliver products to our normal common carriers for shipping to destination defined by customer. Alternate shipping methods and carriers may be made as agreed by Purchaser and PDT. Unless otherwise agreed, PDT does not insure shipments beyond the delivery to the carrier. PDT will not assume any liability in conjunction with such insurance, loss or damage. In-transit damage, shortage or loss claims must be made by Purchaser on the carrier.

CANCELLATION – Orders placed for non-stock products, special designs, sizes or materials may be subject to pro-rata cancellation charges and will not be accepted for return. Such orders cancelled 30 days prior to delivery date will be subject to a minimum 25% cancellation charge plus cost of any special materials, fixtures or tooling. If cancelled thereafter a 100% cancellation charge will be applicable. Buyer is responsible for verifying cancellation charges prior to canceling order.

RETURNS – PDT's RETURN POLICY has no relation to our WARRANTY POLICY. PDT must authorize all product returns and issue a Return Authorization Number (RAN) before returned goods can be considered for any refunds. Goods returned without authorization will not be accepted. The RAN must be noted on supporting documents accompanying the return shipment. Credits will be issued only on new, unused, standard stock goods returned within 30 days of invoice. PDT may, at its discretion, accept for return and charge a restocking fee for certain items requiring special processing. No return will be accepted on any goods not deemed by PDT to be in new and resalable condition. A CREDIT MEMO will be issued for those items determined by PDT to be in compliance with this policy. Credits will be issued for freight charges only in those cases where the goods were defective, shipped incorrectly or fail to perform as specified.

LIMITED WARRANTY – PRECISION DIE TECHNOLOGIES (PDT) warrants its products to be free from defects in material and workmanship for a period of one (1) year from date of shipment from PDT's factory. PDT's warrants for products conform to the material and technical specifications as set forth in our documents. Should any part of said products be found, under normal use and service, during the warranty period, to be defective, PDT will repair or replace said part on INCOTERMS EX-WORKS basis from our factory in Broussard, Louisiana, provided such defective part is returned to the location by the customer with freight charges prepaid or by an authorized PDT representative and provided inspection of the original part establishes the claimed defect to the satisfaction of PDT. The warranty shall not apply to a product upon which repairs or alterations have been made or for equipment misused, neglected, or incorrectly installed. PDT makes no warranty with respect to any components or products that are subject to the warranties of their respective manufacturers.

PDT's liability under this warranty is limited to such repair or replacement subject to the conditions stated, and PDT shall not in any event be held liable for any consequential or contingent damage or for expenses, attorney's fees or delay caused by defective material or workmanship, and no allowance will be made for repairs, replacements or alternations unless made with PDT's written approval.

PDT makes NO WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE and shall not be liable for any guarantees or warranties, express or implied, except those expressly set forth herein.

To the extent any provision of this warranty contravenes the law of any jurisdiction, such provision shall be inapplicable in such jurisdiction, and the remainder of the warranty shall not be affected thereby.

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MCCOY DRILLING & COMPLETIONS | PRECISION DIE TECHNOLOGIES

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phone: 337.837.6666

MCCOY
MOVING GLOBAL ENERGY FORWARD

DRILLING & COMPLETIONS
PRECISION DIE TECHNOLOGIES

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www.mccoysglobal.com

Sales Rep _____

Application for Credit

Company Information:

Company Name _____

Street Address _____

City _____ State _____ Zip _____

Mailing Address _____

City _____ State _____ Zip _____

Telephone # _____ Fax # _____

Officers _____ Title _____

Credit Information:

Are Purchase Orders Required? Yes _____ No _____

Requested Credit Limit _____

Credit References:

Company Name _____	Company Name _____
Address _____	Address _____
City, State, Zip _____	City, State, Zip _____
Phone _____	Phone _____
Fax _____	Fax _____
Company Name _____	Company Name _____
Address _____	Address _____
City, State, Zip _____	City, State, Zip _____
Phone _____	Phone _____
Fax _____	Fax _____

Banking Information:

Bank Name _____

Phone _____

Contact Person _____

In support of this application, Precision Die Technologies is hereby authorized to obtain credit and/or financial information from my bank, other financial institutions or commercial firms with whom this company has done business. It is agreed that all purchases will be paid in full and in accordance with the terms of sale as stated on invoices.

Authorized Signature _____

Title _____ Date _____

