

# **Eckel Tong Die Directive**

**Industry Leader in Make-Up / Break-Out Technology**

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**Rig Dies (Typically 1" and 1-1/4" wide)** - Available in coarse tooth these dies are typically used for casing and drill pipe where tool joint O.D. sizes vary from joint to joint. Rig dies are available with the following surface areas:

- **Coarse Tooth Dies** - Used on higher torque applications on carbon steel, hard band drill strings and drill collars.
- **Coated Contour Grit Faced Dies** - Used on chrome and fiberglass tubulars where reduced die penetration and die marking is greatly desired. Available for any size upon request.
- **Pencil Dies (Typically 5/8" wide)** - Mainly used on tongs with smaller width heads, also when a more aggressive grip on the tubular is required.

**Wrap-Around Dies** - Considered the best choice for thinner wall tubulars where point loading is a concern. Wrap-Around Dies are symmetrically spaced from each other at all times insuring an equally distributed load on the tubular. Having a larger gripping surface area allows more teeth to come in contact with the tubular. Wrap-Around Dies come in any size to match tubing and casing tubulars and API coupling diameters. Wrap-Around dies are available with the following surface areas:

- **Coarse Tooth Dies** - Used on higher torque applications on carbon steel, hard band drill strings and drill collars.
- **Pyramid Fine Tooth Dies** - Used for slightly lower torque applications with chrome and fiberglass tubulars.
- **Coated Grit Faced Dies** - Used on chrome and fiberglass tubulars where reduced die penetration and die marking is greatly desired.

### Eckel Coated Grit Face Dies and Corrosion Resistant Alloy (CRA) Tubulars

**Stress-corrosion Cracking** - Industry experience has concluded that local surface hardened spots on tubulars are caused from regular carbon steel contact, die penetration, compression or through other non-tong related impact damage. These hardened spots are susceptible to embrittlement causing microscopic fractures known as stress-corrosion cracking (SCC). SCC is cracking induced from the combined influences of tensile stress and corrosive environments that can eventually lead to tubular failure. Some design specifications for chrome tubing indicate acceptable penetration of less than 5% of the wall thickness while Eckel and numerous oil companies desire to alleviate all tubular penetration.

**API Specification 5CT, eighth edition July 1, 2005 and ISO11960:2004 January 1st 2006 provides specifications for tubulars including L-80 13% Cr.**

**8.13 External Defects** - All surfaces of up upset and upset run-out interval cannot exceed a maximum depth of 5% the wall thickness for Group 3, Group 4 and Grades C90 and T95 pipe while 12.5% maximum depth of the wall thickness for Group 1, Group except C90 and T95 pipe.

**9.14.5 External Imperfections** - Coupling imperfections cannot exceed a maximum depth of 0.10 inches on the box end external surface and a maximum depth of 0.15 in. on the pin end internal surface.

**Eckel Coated Grit Faced Dies** - Eckel Manufacturing Co., Inc. Coated Grit Faced Dies have set a NEW industry standard for handling CRA tubular goods. Eckel Coated Grit Faced Dies utilizes Tungsten Carbide grit which provides many more points of contact on the surface of the tubular than our Pyramid Fine Tooth dies. The Tungsten Carbide is a dense, metal like substance that does not flake or shear off the face of the die.

**Heat Treating** - Eckel's Coated Grit Faced Dies are heat treated and do not deform. This allows the die to be easily removed from the head after a job and stored for future use.

**Contamination** - Die clogging is minimized when running painted or varnished tubulars.

**Resilience** - Field tests have shown that Eckel's Grit Faced Dies last up to 3 times longer than other manufacturers grit faced dies.

**Penetrations** - Grit Faced Die penetrations are typically less than half of API allowable surface defect depth.

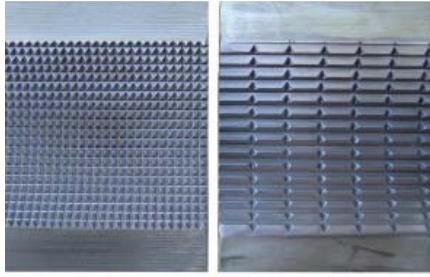
**Custom Sizes** - Eckel Coated Grit Face dies are available for any model of Eckel tong.

**Performance** - Eckel Coated Grit Face dies perform better than any steel tooth die when running (SUPER or HYPER) Chrome as these type tubulars are as hard or harder than heat treated steel dies.



Eckel's Exceptional  
Grit Surface Structure

# Eckel Head and Die Types



Pyramid Tooth

Coarse Tooth



Contour Coated Rig Dies

Tong Model	Tong Head Type	Head Designation		Die Type					Wrap-Around Letter Designation		Notes
		Tong	Backup	Wrap-Around Finetooth & Grit Face	Flat Rig 1" and 1-1/4"	Contour Rig <sup>1</sup>	Contour Rig Grit <sup>2</sup>	Pencil 5/8"	Tong	Backup	
2-1/16 HS	SLIDE	SS	SST	✓	✓	✓	✓	✓	SS	SST	
3500 DTT HS	SLIDE	T	TB	✓	✓	✓	✓	✓	T	T, TB	3
4-1/2 Hydra-Shift	SLIDE	L	NNB	✓	✓	✓	✓	✓	L	NNB, L	4
4-1/2 UHT	SLIDE	L	NNB	✓	✓	✓	✓	✓	L	NNB, L	4
5-1/2 Standard	PIVOT	H	OTB	✓	✓	✓	✓		H	OTB, P	5
5-1/2 UHT / UHT HS	SLIDE	WH	WTB	✓	✓	✓	✓		Z	ZTB, Z	6
5-1/2 Hydra-Shift LS	SLIDE	O	OTB	✓	✓	✓	✓		P	OTB, P	5
5-1/2 Hydra-Shift VS	SLIDE	O	OTB	✓	✓	✓	✓		P	OTB, P	5
6-3/4 DPT	PIVOT	Y	-		✓		✓		-	-	
7-5/8 Standard	PIVOT	J	ZTB	✓	✓		✓		J	ZTB, Z	6
7-5/8 Heavy Duty	PIVOT	JH	MTB	✓	✓		✓		JH	ZTB, Z	6
870 DPT	SLIDE	C	C		✓		✓		-	-	
8-5/8 Hydra-Shift HT	SLIDE	ZH	ZHT	✓	✓		✓		Z	ZTB, Z	6
9-5/8 Hydra-Shift	PIVOT	KC	KCB	✓	✓		✓		KC	ZTB, Z	6
10-3/4 Standard	PIVOT	E	EB	✓	✓		✓		S	S	
10-3/4 Heavy Duty	PIVOT	EH	EB	✓	✓		✓		S	S	
13-3/8 Standard	PIVOT	S	SB	✓	✓		✓		S	S	
13-5/8 Heavy Duty	PIVOT	LL	SB	✓	✓		✓		S	S	
14 Hydra-Shift	PIVOT	GG	GGB	✓	✓		✓		GG	GG	
14 UHT	PIVOT	FH	FHB	✓	✓		✓		F	F	
14 Hydra-Shift HT	PIVOT	CD	-		✓		✓		-	-	
17 Hydra-Shift	PIVOT	Q	QB	✓	✓		✓		Q	Q	
20 Standard	PIVOT	A	AB	✓	✓		✓		A	A	
20 UHT	PIVOT	B	BB	✓	✓		✓		B	B	
21 Hydra-Shift	PIVOT	HH	HHB	✓	✓		✓		HH	HH	
24 UHT	PIVOT	N	-		✓		✓		H	-	
25 Hydra-Shift	PIVOT	DD	-	✓	✓		✓		DD	-	
30 Hydra-Shift	PIVOT	TT	-	✓	✓		✓		TT	-	
36 Hydra-Shift	PIVOT	V	-	✓	✓		✓		V	-	
36 UHT	PIVOT	V	-	✓	✓		✓		V	-	

<sup>1</sup> Steel Tooth Contour Rig Dies available only in 2-1/16, 2-3/8, 2-7/8, 3-1/2 sizes. All other sizes use Flat Rig, Pencil Dies or Contour Grit Rig Dies.

<sup>2</sup> Contour Grit Rig Dies sizes available in all sizes.

<sup>3</sup> Dies larger than 3-1/2 use TB

<sup>4</sup> Dies larger than 4-1/2 use L

<sup>5</sup> Dies larger than 5" use P

<sup>6</sup> Dies larger than 5-1/2" use Z

## Eckel Manufacturing Co., Inc.

8035 North County Road West

Odessa, Texas 79764

Phone 432-362-4336, 800-654-4779

Fax 432-362-1827