



THREAD ROLLING DIES



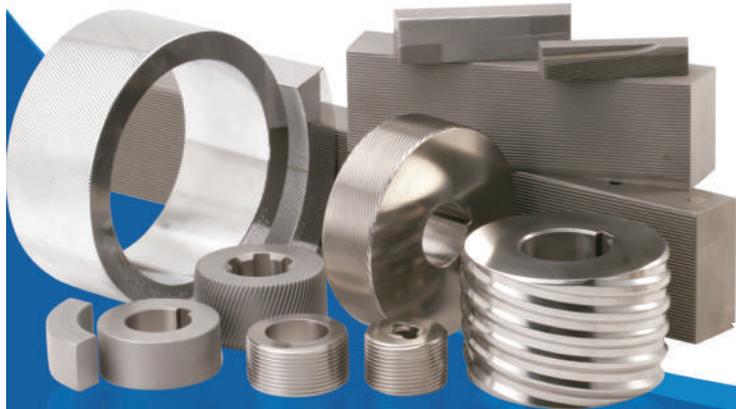
PTG

PRECISION TOOL GROUP



Precision Tool Group is the leading global supplier of the complete range of tools required by fastener and special formed parts manufacturers. Our products cover the broadest range of applications in the aerospace, automotive and general industrial market sectors. We are committed to premier customer service throughout our focused operations and customer friendly service centres. We believe the combination of the strongest brands, low cost manufacturing and our dedicated regional sales and service centres provides the winning strategy to meet the demanding needs of our customers.

Our brands, Reed, Hi-Life Tools and Howell Penncraft are some of the longest established, strongest and technically competent servicing the fastener industry. We enjoy a world-class quality reputation utilizing state-of-the-art equipment, and facilities together with active product development programs. Precision Tool Group is working hard to be your one stop shop for all your fastener tooling requirements.



OUR PRODUCTS

Our broad range of tooling is manufactured in a variety of materials, heat treatment and surface treatment options to maximize tool life and minimize tool ownership costs.

Cylindrical Dies

- 3-roll and 2-roll
- Helical, Annular and Plunge
- Regrinding

Planetary Dies

- Machine screw and special thread forms
- Nail Dies - Annular and Helical

Flat Thread Roll Dies

- All standard thread forms
- Knurl Dies
- Licensed and special forms
- Regrinding

Trim and Nut Forming Dies

Thread Rolls

- Attachment Thread Rolls
- Single Bump Rolls
- End Rolling Head Thread Rolls

Committed to Premier Customer Service

Hi-Life Tools has developed a highly specialised operation for the production of thread roll dies employing a fully integrated manufacturing operation with state-of-the-art equipment including extensive use of CNC machine tools and in-house heat treatment. Hi-Life Tools quality systems carefully control all processes from receipt of your order until it is shipped to you. We have been certified to ISO 9002 since May 1990. Hi-Life Tools continue to invest significant resources each year to develop a customer focused continuous improvement culture.

Consistent Accuracy on your threaded parts is guaranteed



Precise and accurate thread rolling dies are essential for today's precision threading. To roll uniform accurate threads and attain maximum die life, dies of the highest dimensional and metallurgical quality are essential.

600kg TAV Model TPH 600 Vacuum Furnace with 10 bar overpressure quenching. Installation of this furnace has resulted in reduced heat treatment cycle times and increased loading factors. This will help Hi-Life ensure a high quality solution to its expanding tool heat treatment requirements.

Hi-Life Thread Roll Dies offer faster set up time, minimum adjustment and ease of die replacement resulting in **longer production runs** and **reduced threading costs per piece**. **Consistent Accuracy** on your threaded parts is guaranteed with Hi-Life Thread Roll Dies which are held to extremely close tolerances. A full range of flat and cylindrical thread roll dies are available.

Benefits of using Hi-Life Thread Rolling Dies

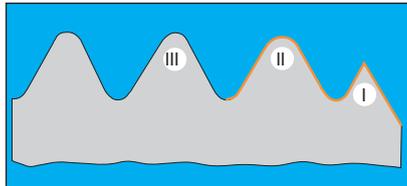


1. **Reduced Threading Costs Per Piece.** Dies, Blanks, Set-up and Machine are the variables which contribute to thread rolling costs. Using Hi-Life Thread Rolling Dies eliminates the die variable from thread rolling operations thus reducing threading costs. Production tolerance goes to the thread of the product being rolled rather than being lost to the dies themselves.
2. **Installation is made easy** because of the accuracy of Hi-Life dies which are made to closely controlled limits of squareness in adjacent surfaces and parallelism of all edges to less than 0.01 per 25mm (0.0004" per inch). This ensures that dies rest on a true flat base, make initial contact with the screw blank to be rolled at its starting end, and presents a threaded surface square to the blank.
3. **Reduced setup time, minimised shimming, elimination of drunkenness and extended die life** due to squareness of roll-on and roll-off in Hi-Life dies. At the start of the threading cycle the screw must roll in a path parallel to the top surface of the die rather than parallel with the thread helix of the die. When the screw blank makes initial contact with the stationary die, a smooth start is needed in order not to tip the blank. Otherwise, a drunkenness of thread or other thread starting problems may result. Squareness of roll-on is especially important in today's high-speed flat die machine where misalignment problems may become pronounced.
4. **Produce a Better, Smoother Thread** with Hi-Life dies. Root configuration plays a vital role in threading fasteners. The root curve must blend smoothly with thread flanks and be free of all surface imperfections. The tightly controlled tolerances of Hi-Life dies hold the radii of finished parts to very narrow limits. The well blended radii in Hi-Life dies allow the metal of the part being formed to flow more easily and produce a better, smoother thread.
5. **Increased Fatigue Resistance** due to radiused runout offered by Hi-Life Tools. With this well blended radius a better, smoother thread is produced. **75% of die failure today is believed to be due to fatigue.** For further information on the Radiused Runout offered on Hi-Life dies see page 3.
6. **Consistent Accuracy** on your threaded parts is guaranteed with Hi-Life Thread Roll Dies which are held to extremely close tolerances. There is a vital relationship between the lead of a screw thread and its actual pitch diameter (PD), and its virtual or effective PD as seen by the mating thread. Any deviation from the proper lead eats into the available PD tolerance. (See page 4 for detailed information on Hi-Life Tool's role in controlling lead error.)

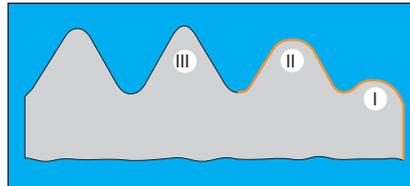
Superior controlled radiused runout

RADIUSED RUNOUT

With the controlled radiused root runout offered by Hi-Life, the smooth radius continues up to the point where the thread blends in the shank or to the head of the screw. This radius distributes stresses evenly increasing fatigue resistance in an area of the screw where failure is most likely to occur. With this well blended radius a better, smoother thread is produced. This radiused runout was designed for rolling high strength aerospace bolts, however, **it is standard on all Hi-Life dies.** (See page 10 for the RRO types available).



Conventional Thread Runout

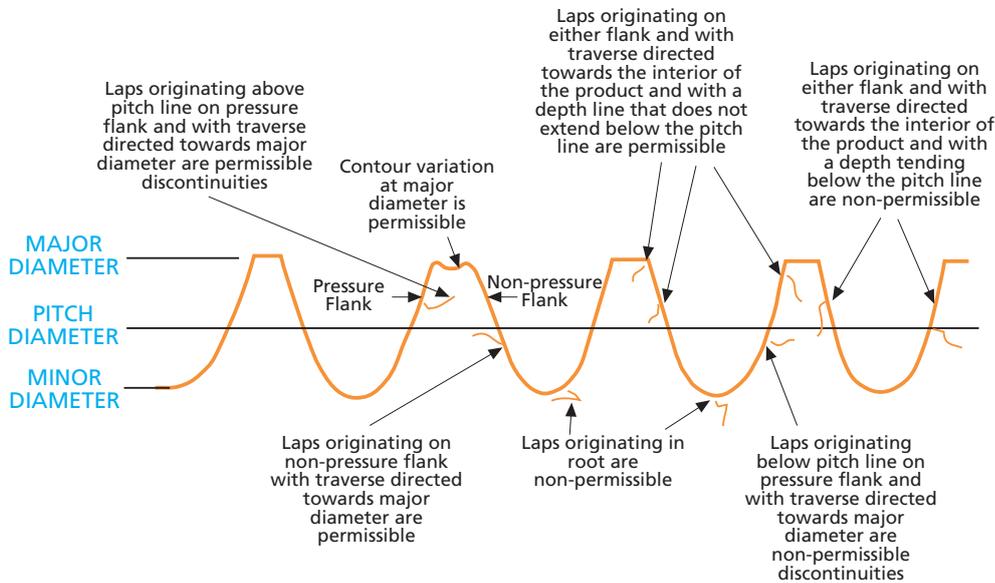


Hi-Life Radiused Runout

- Lap Prevention:** Lapped threads are primarily caused by Misalignment of the Thread Roll Dies, Quality of Blank, Improper Die Design, Tilting of Blank, Slippage of Blanks and Condition of Machine. These problems are influenced by Thread Roll Design, Machine, Set-Up, Blank Quality and Specification. (See page 14 for tips on Set-Up procedure and Blank Quality).

HI-LIFE'S ROLE IN LAP PREVENTION

Hi-Life Dies are ground to extremely close tolerances. Thread Form, lead and angle deviations are held to an absolute minimum and dies are uniform from set to set.



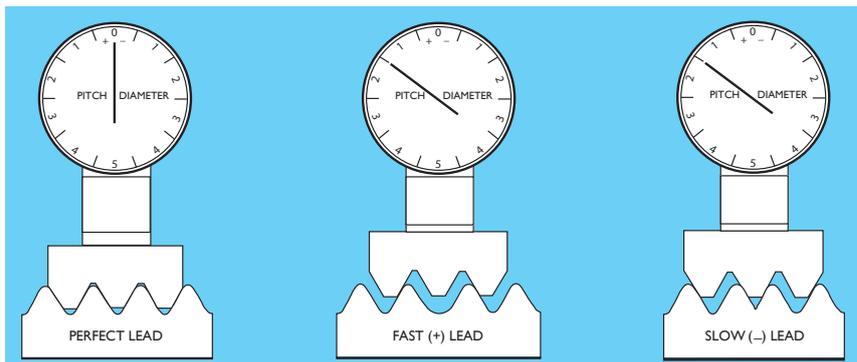
- Close Die Tolerances:** Hi-Life Dies are held to extremely close tolerances.
- A wide range of highest quality tool steels available to suit your requirements.**
- Conformance to specifications:** UNR (ANSI B1.1 and MIL-S-7838), UNJ (MIL-S-8879), ISO Metric (ANSI B1.13M) and MJ Profile (ANSI B1-21M). Other thread forms are also available upon request.

Lead error is today probably the largest single factor contributing to misfit fasteners.

SPECIAL FEATURES OF HI-LIFE THREAD ROLL DIES

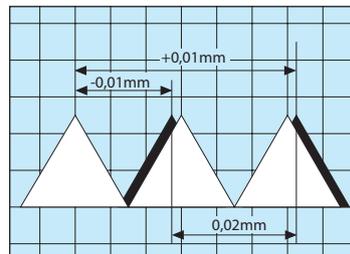
ACCURATE LEAD

By definition, lead is the distance a threaded part travels axially with respect to a fixed mating part in one turn. On a single-start thread the lead is equal to the distance between successive individual threads. For example, for a 1mm pitch the lead and thread spacing should measure 1mm (or if the number of threads per inch is 20 then the lead and the thread spacing should ideally be 0.050 inch). When the distance between any two individual threads varies we have the problem of lead error. When two successive threads are closer together than they should be, the lead is 'Slow' and when further apart the lead is 'Fast'. Lead deviation, fast or slow, increases effective pitch diameter.

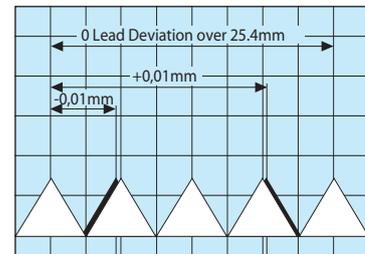


Lead deviation, fast or slow, increases pitch diameter.

This lead induced increase in PD is greater than expected. Due to the geometry of thread form, the amount of PD tolerance consumed is roughly 1.7 times the amount of lead error. Each 0.025mm (0.001") of lead error (whether plus or minus) within actual length of engagement increases the effective pitch diameter of the screw by 1.7 times the lead error. At this rate it doesn't take much lead variation to destroy a fastener!



(+) and (-) lead deviations do not cancel, they add.



Measure over 25.4mm may mislead. There may be deviation within this measurement.

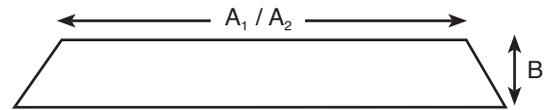
TOLERANCE CONSUMPTION

A lead error of .05mm (0.002 inch) within normal length of thread engagement can consume more than half of the total pitch diameter tolerance of a 1/2-20 Class 1A bolt. The same error in lead eats up 81% of the PD tolerance for a 1/2-20 Class 2A thread and actually makes a class 3A screw of that size too big to go into its tapped hole even if all other thread variables are perfect. Lead error is today probably the largest single factor contributing to misfit fasteners.

LEAD ERROR CONTROLLED

There will always be a certain amount of lead error. However, the important thing is to minimize lead error. This can be done simply and economically by using correctly controlled dies. The lead in Hi-Life dies is held to within a ±0.008mm deviation per 25mm (±0.0003" per inch), and meticulous care is exercised to insure uniformity in helix control resulting in consistent accuracy in your threaded parts.

RADIUSED RUNOUT

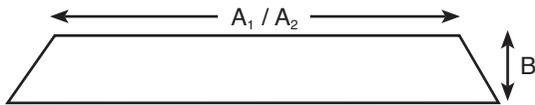


Single Face Dimensions for Boltmaker Machines

Machine Manufacturers				Die Specifications				Special Die Thickness for Threads Larger than Nominal Size of Machine	
Scama	National Machinery	Nedschroef	Peltzer & Ehlers	Length		Thickness (B)	Holding Angle	Thickness Both Dies	Thread Diameter
				Stationery Die (A ₁)	Moving Die (A ₂)				
	3/16 M			3 1/2 (89)	4 3/16 (106)	1/2 (13)	5°		
SP27	1/4 M		FWK6	4 1/4 (108)	5 (127)	5/8 (16)	5°	19/32 (15.1)	5/16 (7.9)
	5/16 M		FWK8	5 (127)	5 3/4 (146)	5/8 (16)	5°	19/32 (15.1)	3/8 (9.5)
SP37	3/8 M	BV.3 BMV3	FWK10	6 (152)	6 3/4 (171)	5/8 (16)	5°	19/32 (15.1)	7/16 (11.1)
SP47	1/2 M	BV.4 BMV4	FWK12	7 1/2 (190.5)	8 1/2 (216)	13/16 (21)	5°	25/32 (19.8)	9/16 (14.3)
	5/8 M	BL.4 BMV5	FWK16	9 (228)	10 (254)	7/8 (22)	5°	13/16 (21)	3/4 (19)
	3/4 M		FWK20	11 (279)	12 (305)	1 (25.4)	5°	15/16 (24)	7/8 (22)
		BV.5		276.3	306.5	37	5°		
	M24			13 (330.2)	14 (335.6)	1 1/4 (31.8)	5°		
		BV.6		321.1	351.5	37	5°		
		W6		318.8	351.5	50.8	5°		
	1M			15 (381)	17 (432)	1 1/4 (31.8)	5°	1 3/16 (30)	1 1/8 (28.6)
	1 1/4 M			19 (483)	21 (533)	1 5/8 (41.3)	5°		

NOTES:

- (1) Boltmaker style Thread Rolling Dies can be used in other thread rollers i.e. Waterbury Farrel, with the use of suitable backing blocks (details available on request)
- (2) When it is necessary to roll threads larger than nominal Boltmaker machine size, the thickness of both the stationery die and the reciprocating die is reduced accordingly.



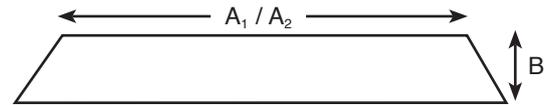
Duplex & Single Face Die Dimensions for flat die machines

Machine Manufacturers				Die Specifications			
Waterbury Farrel	Sacma	Hartford Special	Warren	Length		Thickness (B)	Holding Angle
				Stationery Die (A ₁)	Moving Die (A ₂)		
000		000-1000		1 1/2 (38.1)	1 25/32 (45.2)	15/32 (12)	0°
00			WT 500	1 3/4 (44.5)	2 (50.8)	1 1/16 (17.5)	5°
0		A190 0-500	WT 1000	2 3/4 (70)	3 1/4 (83)	13/16 (21)	5°
1015	RU1/S	4-600	WT 1500	3 1/2 (89)	4 (102)	13/16 (21)	5°
10	RU2/S	A312 10-400	WT- 10-600	4 1/4 (108)	5 (127)	15/16 (24)	5°
20		20-225	WT- 20-400	6 (152)	6 3/4 (171)	1 3/16 (30)	5°
30		30-180	WT- 30-300	7 1/2 (190.5)	8 1/2 (216)	1 7/16 (36.5)	5°
40		40-140		9 (229)	10 (254)	1 11/16 (43)	5°
50				11 (279)	12 (305)	1 15/16 (49)	5°
60		60-100		15 (381)	16 (406)	2 3/16 (56)	5°
70				19 (483)	20 (508)	2 7/16 (62)	5°
100				26 (660)	27 (686)	3 (76)	5°

NOTES:

Popular sizes have been listed

If your machine is not listed please enquire.



Duplex & Single Face Die Dimensions for flat die machines cont.

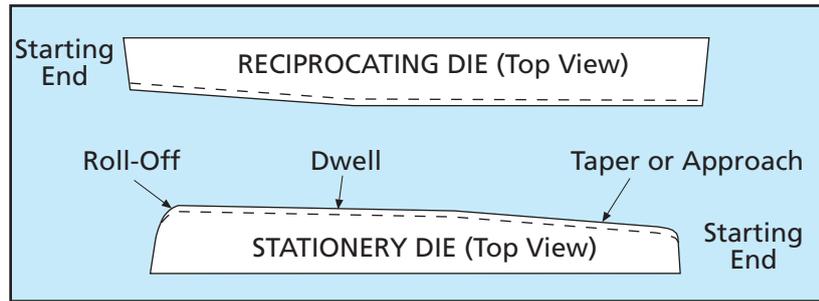
Machine Manufacturers					Die Specifications			
Chun Zu	Ingramatic	Menn	Hilgeland	TLM	Length		Thickness (B)	Holding Angle
					Stationery Die (A ¹)	Moving Die (A ²)		
		GW22			1.496 (38)	1.771 (45)	0.472 (12)	0°
DPR3	RP0	GW31	TR0	RP4	2.284 (58)	2.598 (66)	0.787 (20)	0°
DPR5					2.75 (69.85)	3.25 (82.55)	0.787 (20)	0°
DPR6	RP1	GW51 52	TR1	RP6	3.346 (85)	3.740 (95)	0.984 (25)	0°
DPR8	RP2	GW61 62	TR2	RP8	4.528 (115)	5.118 (130)	1.181 (30)	0°
	RP3	GW81 82	TR3	RP10	5.118 (130)	5.906 (150)	1.378 (35)	0°
	RP4				5.906 (150)	6.693 (170)	1.181 (30)	0°
		GW100	TR4	RP10/L	5.906 (150)	6.693 (170)	1.575 (40)	0°
DPR10					7.087 (180)	7.874 (200)	1.575 (40)	0°
	RP5				8.268 (190)	8.268 (210)	1.378 (35)	0°
		GW120	TR5		7.480 (190)	8.268 (210)	1.969 (50)	0°
		GW140	TR6		9.055 (230)	10.039 (255)	1.969 (50)	0°
	RP6				9.055 (230)	10.039 (255)	1.692 (43)	0°
DPR16					9.055 (230)	10.236 (260)	1.575 (40)	0°
DPR20					11 (279.4)	12 (304.8)	1.937 (49.21)	5°
DPR25					15.748 (400)	17.716 (450)	2.559 (65)	0°

NOTES:

Popular sizes have been listed.

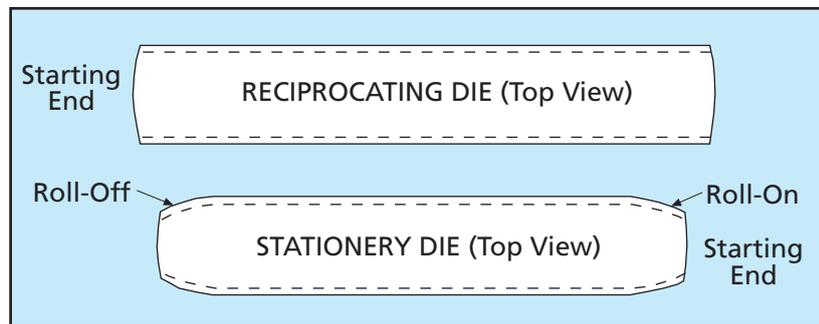
If your machine is not listed please enquire.

Popular Flat Thread Rolling Die Profiles



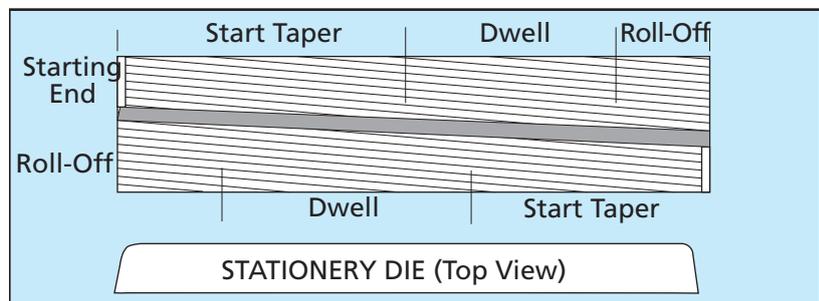
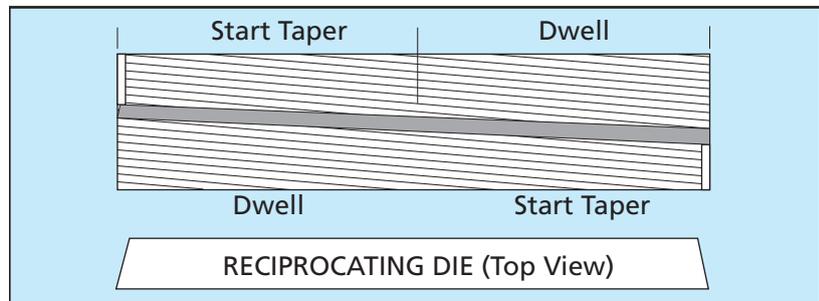
SINGLE FACE THREAD ROLLING DIES

- Threads on one side only
- Single setting application
- Recommended for lap-free rolling and hard rolling



DUPLEX (DOUBLE-FACED) THREAD ROLLING DIES

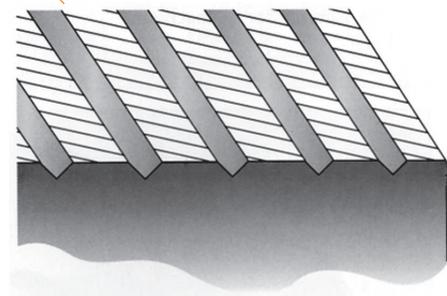
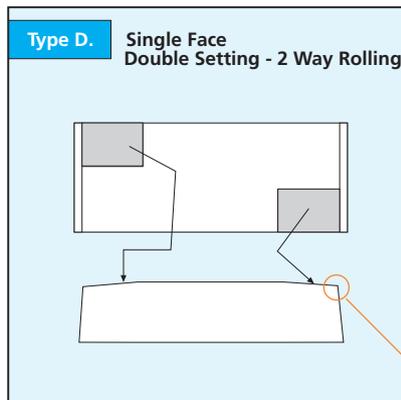
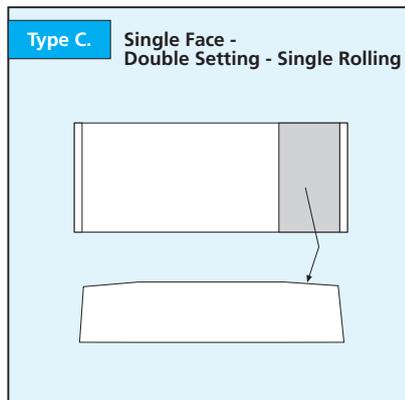
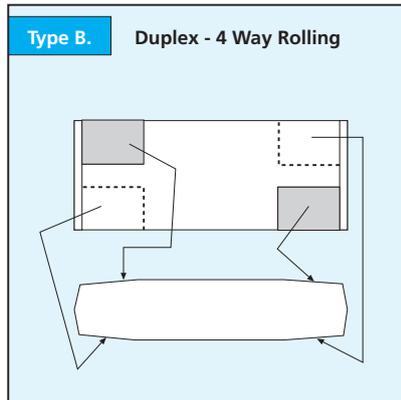
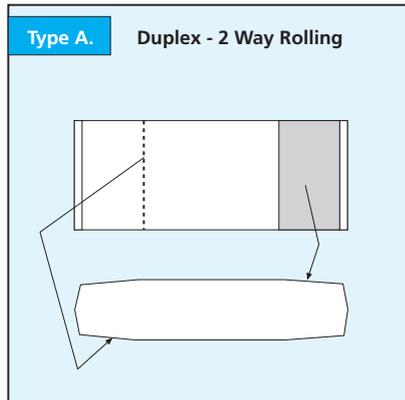
- Threads on both sides
- Can be used for two-way or four-way setting
- Recommended for commercial machine screw threads (see numbers 2, 3 and 4 on page 11)



SPLIT FACE THREAD ROLLING DIES

- Threads on one side only
- Single or two-way setting
- A double setting for accurate rolling
- Recommended for lap-free rolling and hard rolling
- Suitable for all machines

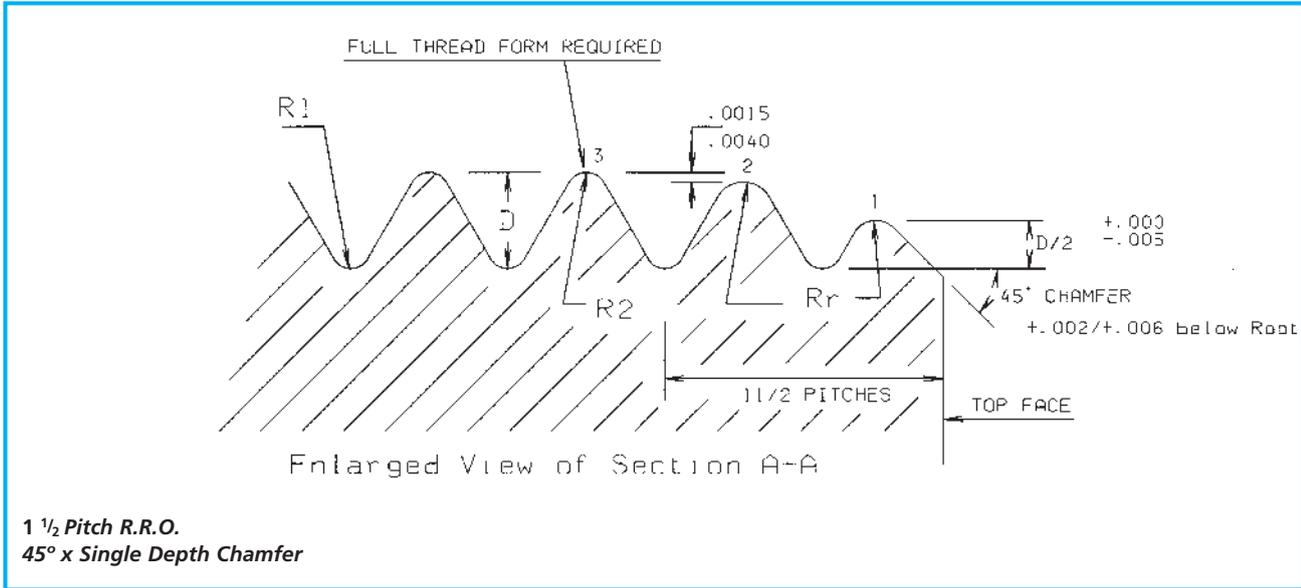
Sandblasting and Crossnicking examples



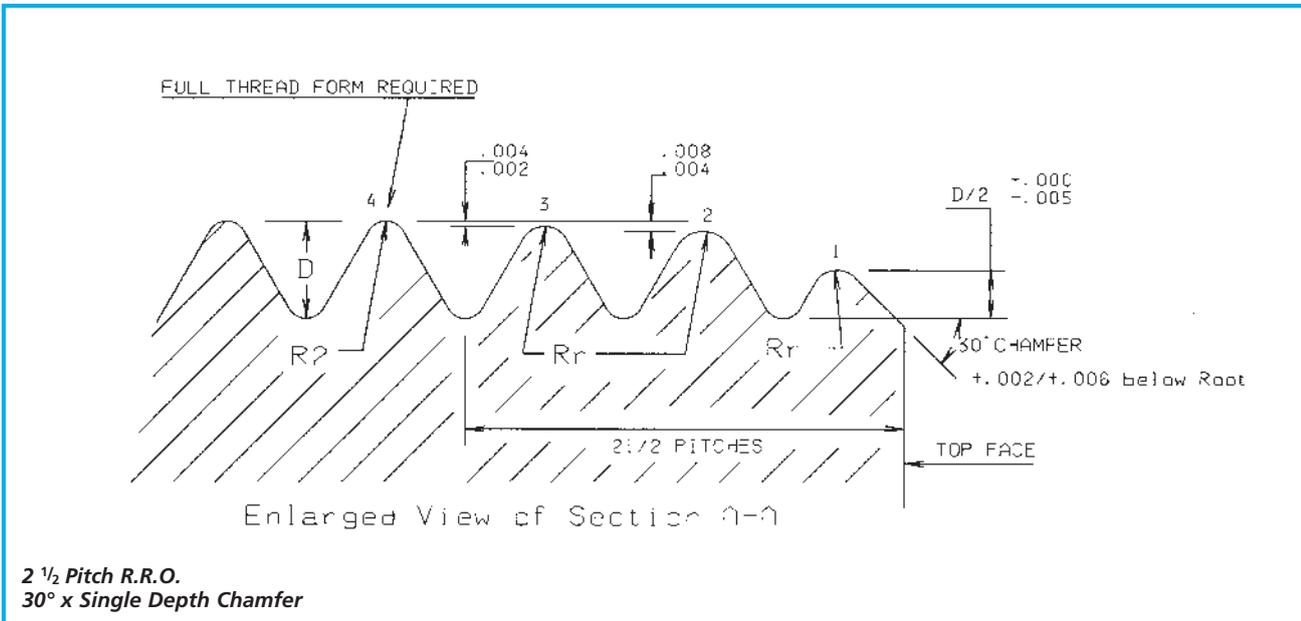
Crossnick



Standard RRO types



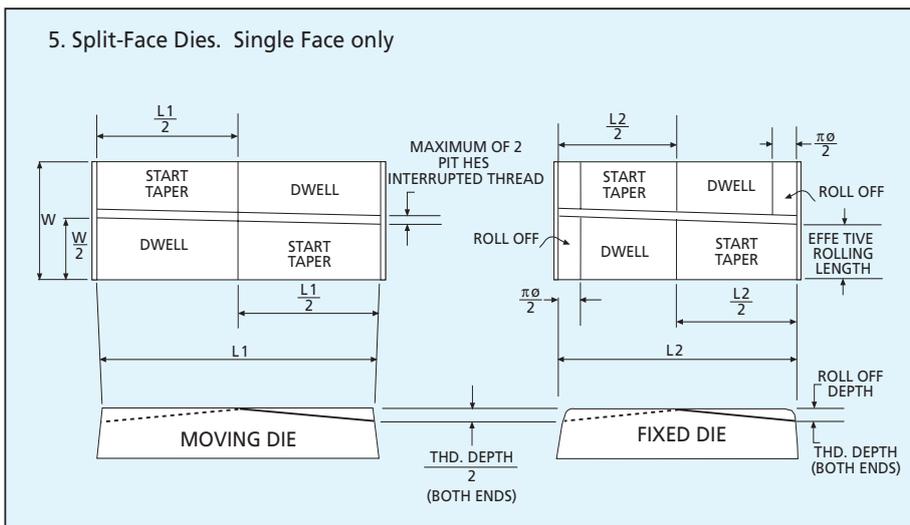
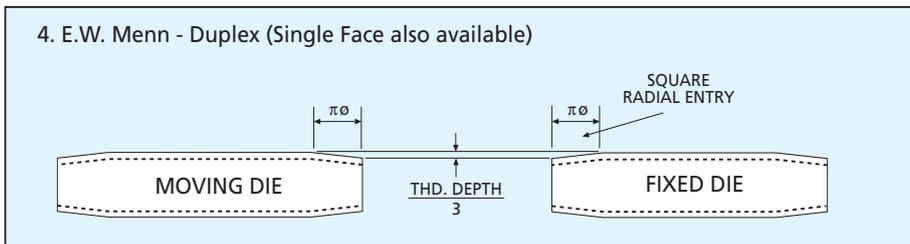
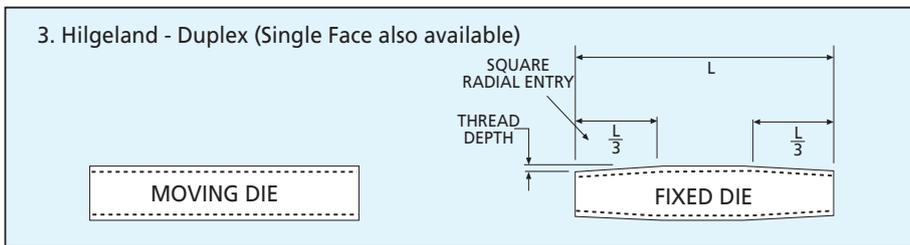
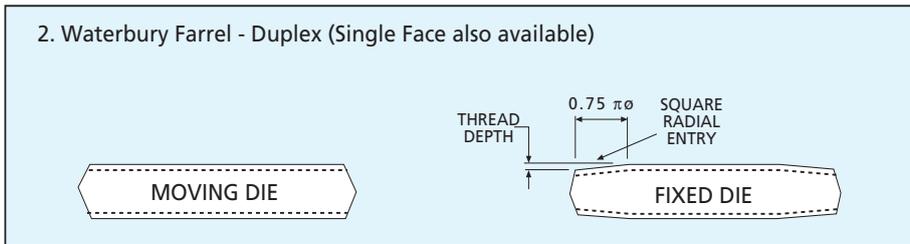
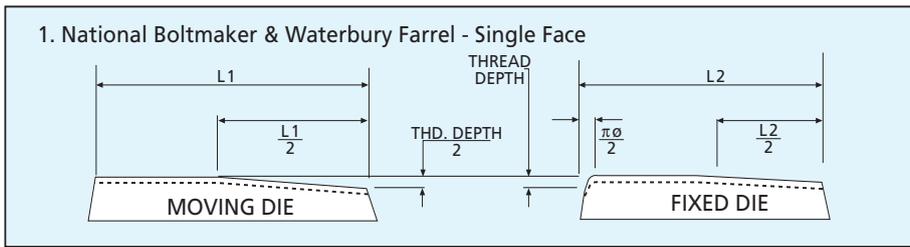
RRO type B



RRO type C

Hi-Life Tools can customize the RRO according to customer needs.

Typical Roll-on / roll-off on Flat Thread Rolling Dies



Classic[®] Thread Roll Dies

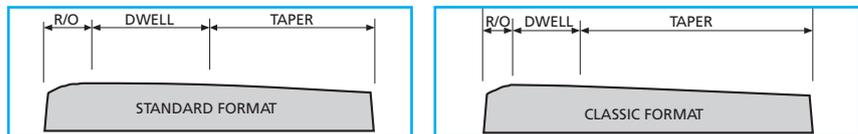
designed for rolling exotic materials for Aerospace and other high grade applications and rolling after heat treatment

Classic Thread Roll Dies were designed by Hi-Life for rolling exotic materials. They incorporate a 'full form radial' start as opposed to a ground chamfered start. This type of start leaves a less severe indentation on the screw blank upon starting and allows the blank to commence rolling in the optimum upright position. It also rolls more gradually than the conventional die design.

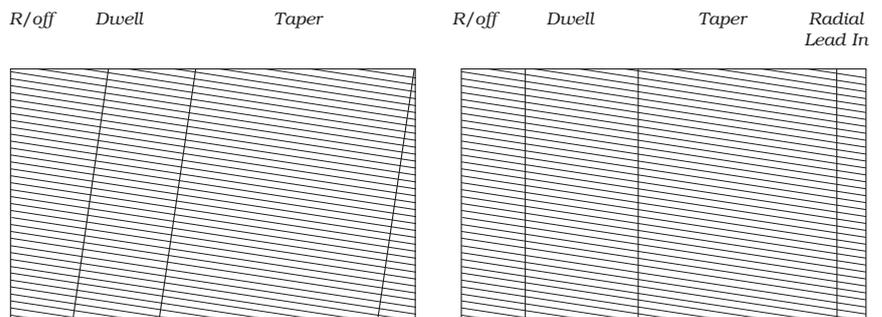
The profile of the die (roll-on, taper dwell and roll-off) is based on the thread size to be rolled as opposed to normal practice which dimensions in accordance with the thread rolling machine. This gradual forming process distributes the rolling forces over the entire face of the die. Die failure mode is due to random breakdown along face of die compared to normal failure on conventional dies which occurs at one point along the die.

The consistency and uniformity of thread rolling dies on match and form is guaranteed due to elimination of set-up variables brought about by grinding in a single operation using fixed data and pre-developed CNC programs. (See page 13 for Classic 2F, 2H and C6 Dies).

CLASSIC v STANDARD PROFILE



	TAPER	DWELL	R/OFF	REVOLUTIONS ON LEAD-IN
STANDARD	95.25mm 3.705"	76.2mm 3.000"	19.05mm 3.250"	5
CLASSIC	146.05mm 5.750"	34.80mm 1.370"	9.40mm 0.370"	8



STANDARD LEAD-IN

Entry start perpendicular to helix which tends to tilt the blank on entry. Direction of tilt is reversed on subsequent 180° of rolling which attributes to 'Drunk Threads'.

CLASSIC RADIAL LEAD-IN

Entry start perpendicular to die face which tends to side of die which tends to position the blank in the optimum pick-up position.

BENEFITS

- Increased Die Life
- Helps in the prevention of laps
- Dies consistent from lot to lot
- Accommodates higher speed rolling.

Classic[®] Thread Roll Dies



CLASSIC 2F RADIAL FULL-FORM START



CLASSIC 2H CHAMFERED START



CLASSIC C6 DUPLEX

Appendices APPENDIX 1

MATERIALS EQUIVALENT CHART

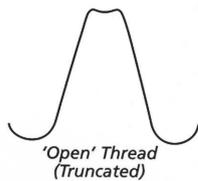
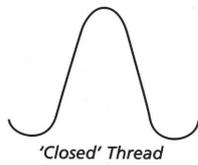
TRADE NAME	AISI GRADE	GERMAN (DIN)	FRANCE (AFNOR)	SWEDEN	JAPAN
	D2	1.2379	Z160 CDV 12	2310	SKD11
	M1	1.3346	Z85 WDCV 08-04-02-01	2715	
	M2	1.3343	Z85 WDCV 06-05-04-02	2722	SKH51
	M35	1.3243	Z85WDKCV06-05-05-04-02		SKH55
	M42	1.3247	Z110 DKCWV 09-08-04-02		
	M50	1.2369 or 1.3551	Y80 DCV 42-16		SKH59
ASP23	M3 TYPE 2	1.3344	Z120 WDCV 06-05-04-03		
ASP30		1.3207	Z130 WKCDV 10-10-04-04-03		

OPTIMUM MATERIALS & SURFACE TREATMENTS

TRD MATERIAL	APPLICATION	GRADE
Spec 72 / Spec 72 XDL	Low tensile	5.8, 8.8
Spec 53 / Spec 53 XDL	High tensile to HRc 38 and 300 Series S.S	10.9
Titan / Titan XDL	High tensile HRc 39+ and Exotic materials	12.9

APPENDIX 2

HINTS ON SET-UP PROCEDURE



Diagrams are for illustrative purposes only and do not represent actual measurements.

- Check tops of dies are parallel with each other by passing base of a dial indicator along one die and a probe on the opposite die.
- Check die faces are parallel with each other, top and bottom.
- Check starter pusher to ensure it holds the blanks in vertical position. If long top heavy work is tilting towards or away from the starter pusher a special height starter may be made that pushes on the thread and body sections.
- Check that starter pusher does not retract before blank has started rolling in dies.

• **Do not overfill thread form. Crest of screw threads should be slightly underfilled to allow for expansion of dies as they warm up during production runs. Rolling a full crest on threads may cause any excess material to roll into laps or cause skidding and misalignment.**

- Check dies for proper alignment. Start blank into dies a half revolution then reverse machine to remove blank. Inspect blank with a magnifying glass to ensure grooves made by stationary and moving dies are in perfect alignment.
- Heavy grit blast on the entrance ends of dies can cause small laps in roots of threads, the excess material displaced results in a small lap. A practice which is prevalent within the industry is to remove dies as they wear smooth and then reblast them. Extreme care must be exercised if this applies to your operation.

HINTS ON BLANK QUALITY

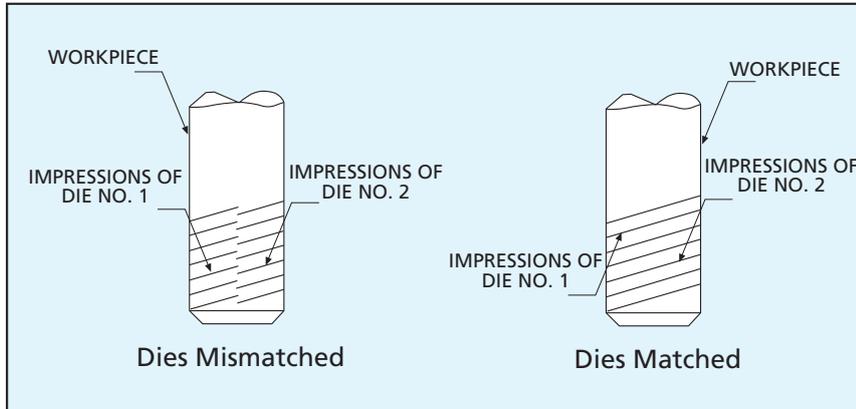
The main features to look for in blanks are:

- **Blank Size:** Selection of proper blank size is of prime importance in rolling threads. This varies for each diameter/pitch combination.
- **Roundness:** Roundness of blanks is very important. Out of round conditions such as ovality will seriously affect product quality of thread rolling operation.
- **Taper:** Taper on blank will also seriously affect product quality.
- **Surface Integrity:** Blank surface should be free from adverse conditions such as work hardening or Alpha Phase in the case of Titanium Alloys.

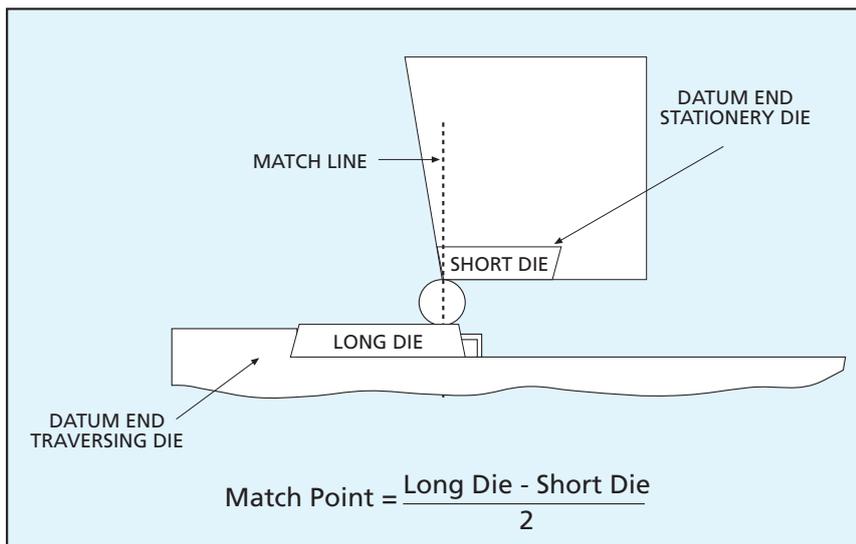
APPENDIX 3

Appendices

Effects of Mismatched and Correctly Matched Dies on thread impression



Die Match Point Position





THREAD ROLL DIE REGRINDS

Thread Roll Die Regrinds - A Tool in Cost Savings

Precise and accurate thread rolling dies are essential for today's fastener threading requirements. To roll uniform, accurate threads and attain maximum tool life, dies of the highest dimensional and metallurgical quality are essential. Hi-Life Tools, in our continuous drive to meet customer demands and offer cost savings ideas, has opened a thread die regrind facility to better serve you and provide a cost savings option, essential in today's marketplace.

SERVICE

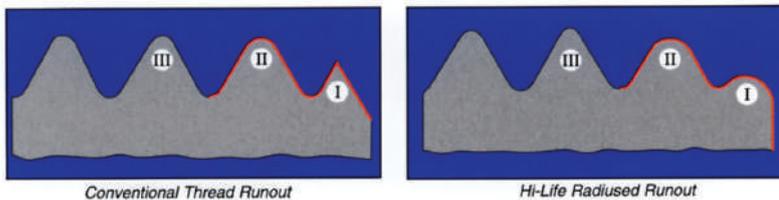
- State-of-the-art facility, employing a CNC-equipped manufacturing cell and key proprietary machines and fixtures.
- Dedicated Quality systems to ensure optimum performance, from receipt of Regrind blanks to delivery of finished tools.
- Die blank sorting and stocking on receipt.
- Regular summary reports of your stocked die blanks with information on size and face width.

BENEFITS

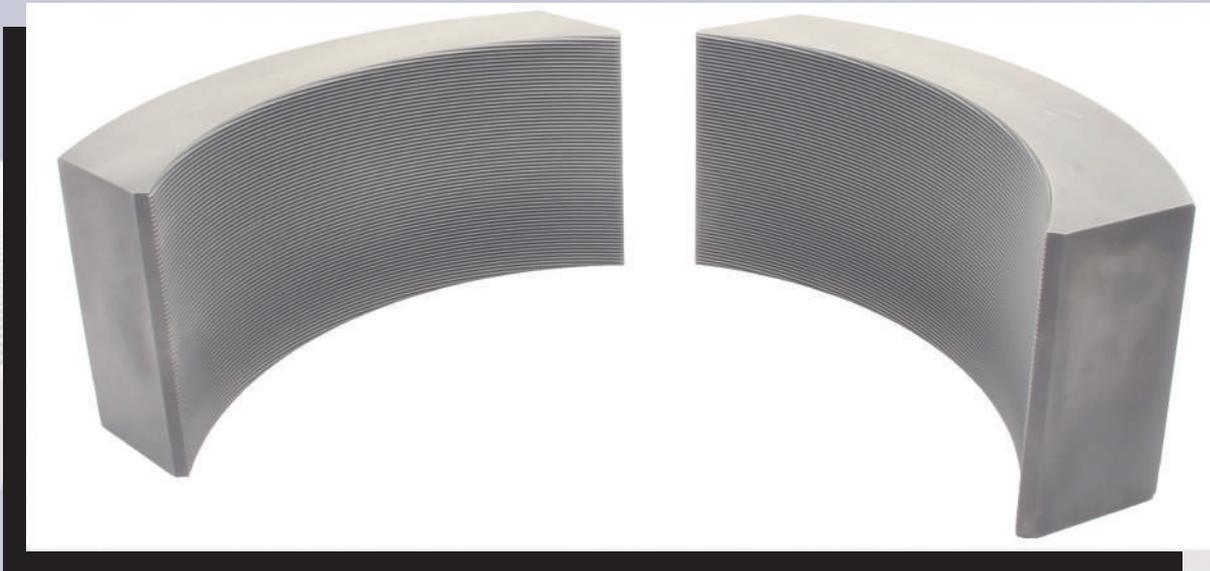
- Cost savings through re-use of tool material.
- New die inventory reductions through a regrind 'Blank' stocking program.
- Opportunities to reduce and eliminate slow-moving inventory through regrind conversion to desired thread specifications.
- Very favorable regrind tool life returns.
- Easy replacement and fast set-ups assured through our policy of "fixed increment" regrinds.

FEATURES

- Our policy to totally remove worn-out threads ensures elimination of all fractures.
- Thread removal through 'fixed-increments' to our normal tolerances of 0.001" eliminates the possibility of die thickness variation and ensures perfect and easy replacement and set-up.
- A choice of superior Hi-Life controlled Root Radius Runouts are applied as standard. This radius distributes stresses evenly, increasing fatigue resistance in an area of the product where failure is most likely to occur.



- With our regrind dies you will enjoy the same constant repeatability and precise thread production as you experience on our new dies.
- Very favorable and consistent Tool-Life return on our regrind dies. Independent controlled trials have consistently yielded return life of 90-95% of the new die.



HI-TECH PLANITARY DIES

Hi-Tech Planetary Dies

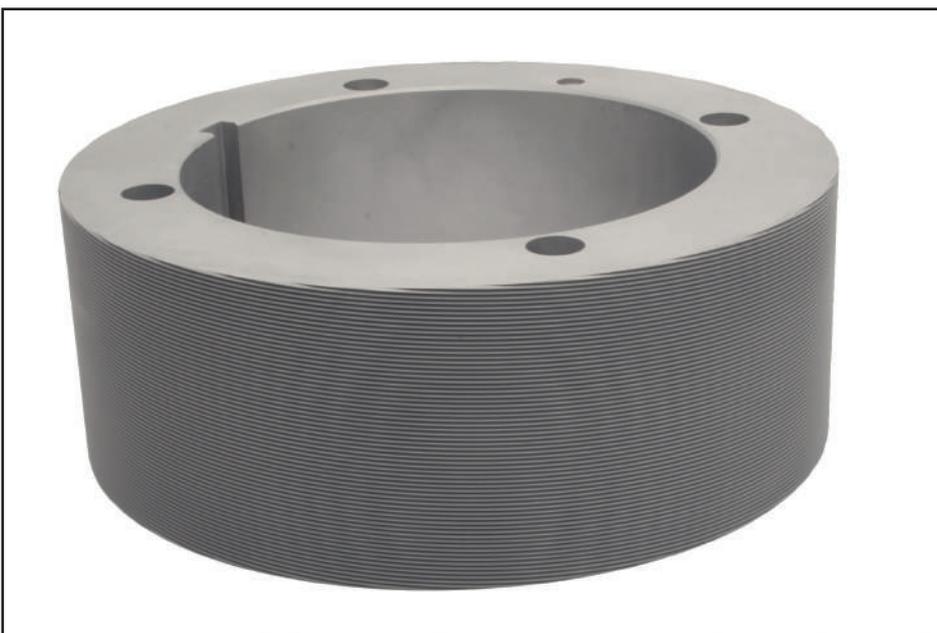
Hi-Life Tools Hi-Tech Planetary Dies are manufactured to exacting standards in a range of materials suitable for all applications.

Thread forms are precision ground and dies are produced in all sizes to suit all types of planetary thread rolling machines. The popular sizes are listed. However, if your machine is not listed please enquire.

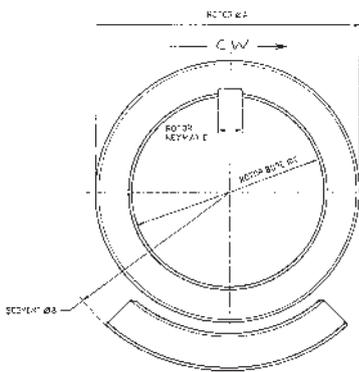
Dies may be turned over for additional settings where thread length permits.

ADVANTAGES

- **Today — Tomorrow**
Consistant Quality
Long Life
- **Interchangeable segments allow segment flip-over or change with minimum re-setting required.**
- **Reduce Downtime**



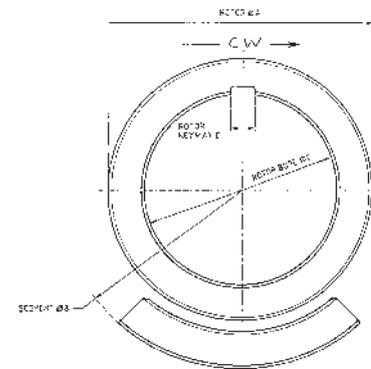
Hi-Tech Planetary Dies Hi-Life Groups 1- 5



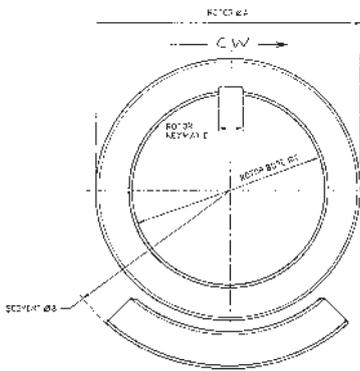
M/C MODEL	ROTOR øA	SEGMENT øB	ROTOR BORE øC	ROTOR KEYWAY D	SEGMENTS / SET
HILGELAND SW0	85mm (3.346)	120mm (4.724)	40mm (1.575)	12mm (.472)	4
INGRAMATIC GR1	85mm (3.346)	120mm (4.724)	40mm (1.575)	10mm (.394)	4
MENN RW3	85mm (3.346)	120mm (4.724)	40mm (1.575)	10mm (.394)	4
MENN RW5	80mm (3.15)	120mm (4.724)	40mm (1.575)	12mm (.472)	4
OMEGA RR3	80mm (3.15)	120mm (4.724)	40mm (1.575)	10mm (.394)	4
OMEGA RR4	80mm (3.15)	120mm (4.724)	40mm (1.575)	10mm (.394)	4
VIDEX VA0	80mm (3.15)	120mm (4.724)	40mm (1.575)	10mm (.394)	4
SIMA RAP4	75mm (2.953)	120mm (4.724)	40mm (1.575)	10mm (.394)	3
GREFFE 2/4	102mm (4.016)	150mm (5.906)	60mm (2.362)	18mm (.709)	4
GREFFE 2/6	108mm (4.252)	170mm (6.693)	60mm (2.362)	18mm (.709)	3
FRAY NF1037	177.80mm (7)	222.25mm (8.750)	133.35mm (5.250)	12.70mm (.500)	3 (slotted)
FRAY 28591	177.80mm (7)	222.25mm (8.750)	133.35mm (5.250)	12.70mm (.500)	3 (slotted)
CAPELLI 106	184.15mm (7.250)	241.30mm (9.500)	127mm (5)	12.70mm (.500)	4
CAPELLI 108	184.15mm (7.250)	241.30mm (9.500)	127mm (5)	12.70mm (.500)	4
CAPELLI 206	184.15mm (7.250)	241.30mm (9.500)	127mm (5)	12.70mm (.500)	4

Hi-Tech Planetary Dies Hi-Life Groups 1 – 5

M/C MODEL	ROTOR ϕA	SEGMENT ϕB	ROTOR BORE ϕC	ROTOR KEYWAY D	SEGMENTS / SET
HILGELAND SW2	190.5mm (7.500)	241.3mm (9.500)	127mm (5)	12.70 (.500)	4
INGRAMATIC GR2	184.15mm (7.250)	241.3mm (9.500)	127mm (5)	12.70 (.500)	4
SENY D-8-TRS	184.15mm (7.250)	241.3mm (9.500)	127mm (5)	12.70 (.500)	4
NEDSCHROEF BS2	190.5mm (7.500)	241.3mm (9.500)	127mm (5)	12.70 (.500)	4
PRUTTON 75RKG	184.15mm (7.250)	241.3mm (9.500)	127mm (5)	12.70 (.500)	4
PRUTTON 75RTHE	177.8mm (7)	241.3mm (9.500)	140mm (5.500)	no keyway	5
PRUTTON 75RKE	184.15mm (7.250)	241.3mm (9.500)	127mm (5)	12.7mm (.500)	5
VIDEX VA1	190.5mm (7.500)	241.3mm (9.500)	127mm (5)	12.7mm (.500)	4
VIDEX VS1	190.5mm (7.500)	241.3mm (9.500)	127mm (5)	12.7mm (.500)	4
VIDEX V5	190.5mm (7.500)	241.3mm (9.500)	127mm (5)	12.7mm (.500)	4
VIDEX VA10	190.5mm (7.500)	241.3mm (9.500)	127mm (5)	12.7mm (.500)	4
VIDEX VS10	190.5mm (7.500)	241.3mm (9.500)	127mm (5)	12.7mm (.500)	4
VIDEX VAS10	190.5mm (7.500)	241.3mm (9.500)	127mm (5)	12.7mm (.500)	4
VIDEX VAS 10D	190.5mm (7.500)	241.3mm (9.500)	127mm (5)	12.7mm (.500)	4
CAPELLI 101	184.15mm (7.250)	241.3mm (9.500)	140mm (5.500)	no keyway	5



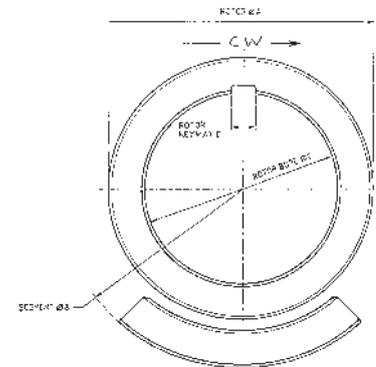
Hi-Tech Planetary Dies Hi-Life Groups 6 & 7



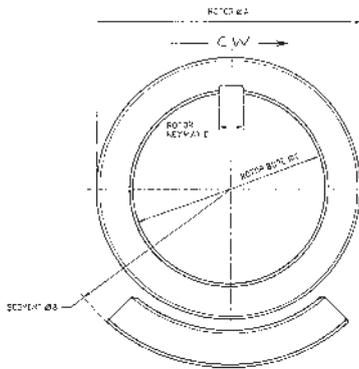
M/C MODEL	ROTOR ØA	SEGMENT ØB	ROTOR BORE ØC	ROTOR KEYWAY D	SEGMENTS / SET
BEARCAT No 30	190.5mm (7.500)	240mm (9.449)	127mm (5)	12.7mm (.500)	3
CARLO SALVI 502R	190.5mm (7.500)	241.3mm (9.500)	127mm (5)	12.7mm (.500)	3
HARTFORD PTR	190.5mm (7.500)	241.3mm (9.500)	127mm (5)	no keyway	4
IZPE ETR2	190.5mm (7.500)	241.3mm (9.500)	127mm (5)	24mm (.947)	3
IZPE S1	177.8mm (7)	241.3mm (9.500)	127mm (5)	24mm (.947)	3
OMEGA RR6	171.45mm (6.750)	241mm (9.488)	127mm (5)	12.7mm (.500)	3
PRESSAVIT R112	203.2mm (8)	280mm (11.024)	127mm (5)	12.7mm (.500)	3
PRUTTON 75RKG	177.8mm (7)	280mm (11.024)	127mm (5)	12.7mm (.500)	5
RUJA No5	190.5mm (7.500)	241.3mm (9.500)	127mm (5)	12.7mm (.500)	3
SAKAMURA ACR30	190.5mm (7.500)	240mm (9.449)	127mm (5)	12.7mm (.500)	3
SAKAMURA SSR30	190.5mm (7.500)	240mm (9.449)	127mm (5)	12.7mm (.500)	3
SIMA RAV6	190.5mm (7.500)	240mm (9.449)	127mm (5)	12.7mm (.500)	3 slotted
SIMA RA7	190.5mm (7.500)	240mm (9.449)	127mm (5)	12.7mm (.500)	3 slotted
SIMA RAV10	190.5mm (7.500)	240mm (9.449)	127mm (5)	12.7mm (.500)	3 slotted
WATERBURY 1	177.8mm (7)	241.3mm (9.500)	127mm (5)	12.7mm (.500)	3 slotted
WATERBURY 10	190.5mm (7.500)	241.3mm (9.500)	127mm (5)	12.7mm (.500)	3 slotted
SIMA RAP7	190.5mm (7.500)	240mm (9.449)	127mm (5)	12.7mm (.500)	3 slotted
CRIMELLA RUT/T1	22.25mm (8.750)	300mm (11.811)	150mm (5.906)	12mm (.472)	3

Hi-Tech Planetary Dies Hi-Life Groups 6 & 7

M/C MODEL	ROTOR ØA	SEGMENT ØB	ROTOR BORE ØC	ROTOR KEYWAY D	SEGMENTS / SET
INGRAMATIC GR3	203.2mm (8)	280mm (11.024)	127mm (5)	12.7mm (.500)	3
SENY D12-TRS	203.2mm (8)	280mm (11.024)	127mm (5)	12.7mm (.500)	3
OMEGA RR10	203.2mm (8)	280mm (11.024)	127mm (5)	12.7mm (.500)	3
PRESSAVIT R112	203.2mm (8)	280mm (11.024)	127mm (5)	12.7mm (.500)	3
PRUTTON 150RKEE	231.8mm (9.125)	304.8mm (12)	177.8mm (7)	12.7mm (.500)	4
SACMA RU2TG	215.9mm (8.500)	280mm (11.024)	177.8mm (7)	12.7mm (.500)	3
SIMA RAP10	222.25mm (8.750)	304.8mm (12)	127mm (5)	12.7mm (.500)	3 slotted
SIMA RAP11	222.25mm (8.750)	304.8mm (12)	127mm (5)	12.7mm (.500)	3 slotted
SIMA RAP12	222.25mm (8.750)	304.8mm (12)	127mm (5)	12.7mm (.500)	3 slotted
VIDEX VA2	222.25mm (8.750)	300mm (11.811)	150mm (5.906)	12mm (.472)	3
VIDEX VS2	222.25mm (8.750)	300mm (11.811)	150mm (5.906)	12mm (.472)	3
VIDEX V-15	222.25mm (8.750)	300mm (11.811)	150mm (5.906)	12mm (.472)	4
VIDEX VAS20	222.25mm (8.750)	300mm (11.811)	150mm (5.906)	12mm (.472)	3
VIDEX VA20	222.25mm (8.750)	300mm (11.811)	150mm (5.906)	12mm (.472)	3
PRUTTON 150RKE	241.3mm (9.500)	304.8mm (12)	177.8mm (7)	12.7mm (.500)	4
PRUTTON 155TH	228.6mm (9)	304.8mm (12)	190.5mm (7.500)	no keyway	5
PRUTTON 155AVB	228.6mm (9)	304.8mm (12)	177.8mm (7)	12.7mm (.500)	5



Hi-Tech Planetary Dies Hi-Life Groups 8 -12



M/C MODEL	ROTOR ØA	SEGMENT ØB	ROTOR BORE ØC	ROTOR KEYWAY D	SEGMENTS / SET
RUJA No6	266.7mm (10.500)	342.9mm (13.500)	152.4mm (6)	15.86mm (.625)	3
SAKAMURA SSR50	241.3mm (9.500)	340mm (13.386)	127mm (5)	12.7mm (.500)	3
VIDEX VA25	241.3mm (9.500)	342.9mm (13.500)	167.5mm (6.595)	15.86mm (.625)	3
VIDEX VS25	241.3mm (9.500)	342.9mm (13.500)	167.5mm (6.595)	15.86mm (.625)	3
VIDEX VAS-25D	254mm (10)	342.9mm (13.500)	167.5mm (6.595)	15.86mm (.625)	3
WATERBURY 20	266.7mm (10.500)	342.9mm (13.500)	152.4mm (6)	15.86mm (.625)	3
NEDSCHROEF BS3	266.7mm (10.500)	342.9mm (13.500)	152.4mm (6)	15.86mm (.625)	4
NEDSCHROEF BS4	266.7mm (10.500)	342.9mm (13.500)	152.4mm (6)	15.86mm (.625)	3
PRUTTON 200RKE	323.85mm (12.750)	419.1mm (16.500)	228.6mm (9)	18mm (.709)	3 or 4
PRUTTON 200RKEE	323.85mm (12.750)	419.1mm (16.500)	228.6mm (9)	18mm (.709)	3 or 4
PRUTTON 200RK 7K	323.85mm (12.750)	406.4mm (16)	228.6mm (9)	18mm (.709)	4
PRUTTON 200 CHD	323.85mm (12.750)	419.1mm (16.500)	228.6mm (9)	18mm (.709)	3 or 4
RUJA 9/EAGLE 3	349.25mm (13.750)	420mm (16.530)	228.6mm (9)	18mm (.709)	3
SAKAMURA SSR70	330.2mm (13)	420mm (16.530)	228.6mm (9)	18mm (.709)	3
SIMA RAP16	330.2mm (13)	419.1mm (16.500)	228.6mm (9)	18mm (.709)	3 slotted
SIMA RAP20	330.2mm (13)	419.1mm (16.500)	228.6mm (9)	18mm (.709)	3 slotted
VIDEX VA3	228.6mm (9)	419.1mm (16.500)	228.6mm (9)	18mm (.709)	3
VIDEX Vs3	228.6mm (9)	419.1mm (16.500)	228.6mm (9)	18mm (.709)	3
VIDEX VS 30	330.2mm (13)	419.1mm (16.500)	228.6mm (9)	18mm (.709)	3
VIDEX V35	330.2mm (13)	419.1mm (16.500)	228.6mm (9)	18mm (.709)	2
PRUTTON 300RTH	355.6mm (14)	393.7mm (15.500)	254mm (10)	no keyway	2
PRUTTON 300LRTH	355.6mm (14)	393.7mm (15.500)	254mm (10)	no keyway	2
PRUTTON 400RKE	355.6mm (14)	393.7mm (15.500)	254mm (10)	no keyway	2
RUJA 10	342.9mm (13.500)	520mm (20.472)	254mm (10)	25.4mm (1)	2
SAKAMURA SSR100	374.65mm (14.750)	520mm (20.472)	266.7mm (10.500)	20mm (.787)	3

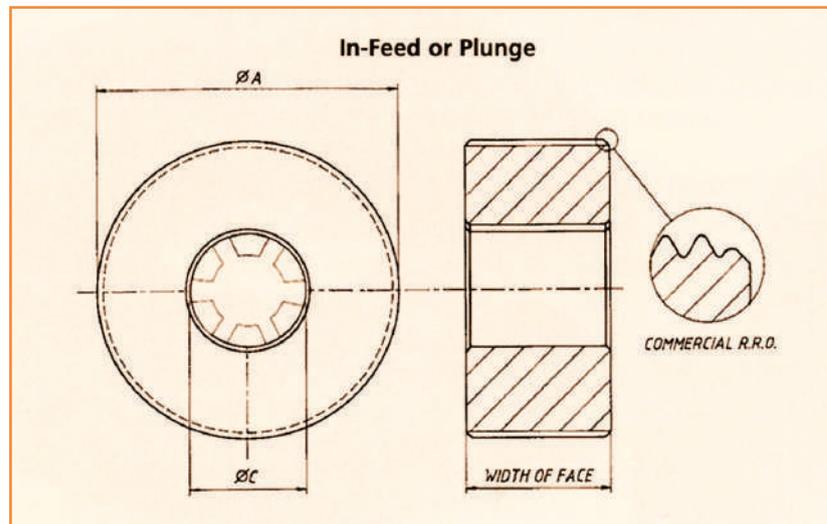
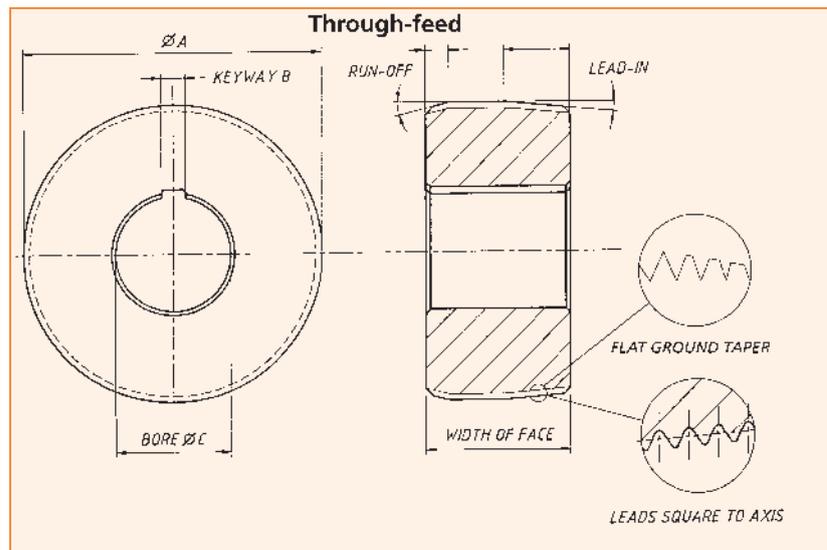
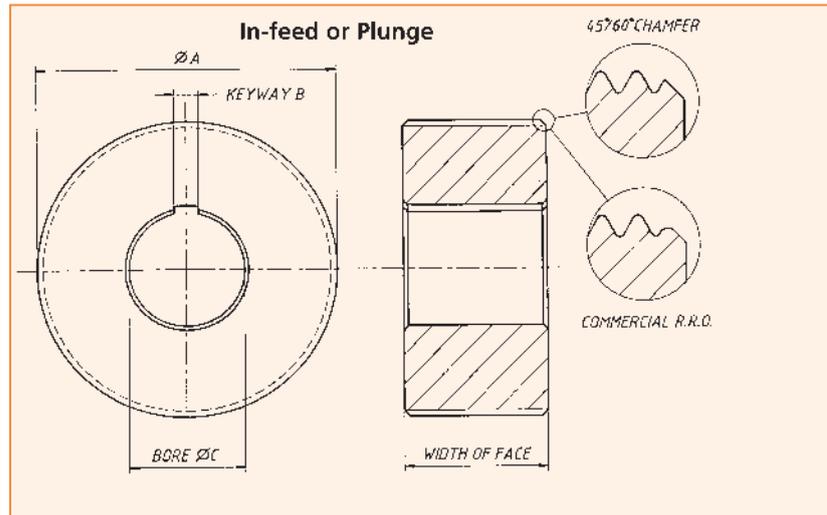


CIRCULAR DIES

Circular Dies

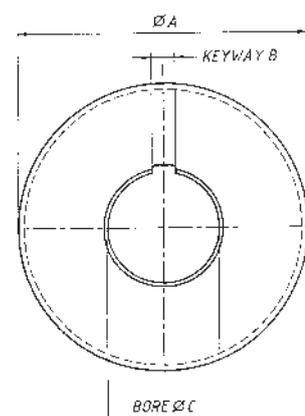
Hi-Life Tools Cylindrical Dies are manufactured to exacting standards from the finest materials and can be supplied in standard and special thread forms for both in-feed and through-feed applications.

Thread forms are precision ground and dies are produced to suit most types of circular thread rolling machines. A selection of common machines are listed although most makes and types can be accommodated.

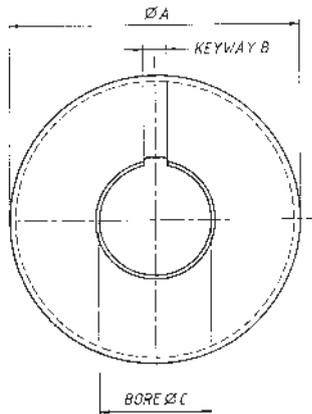


Circular Dies

M/C MODEL	øA MAX	B	øC	RECOMMENDED W.O.F.	NO. PER SET
ALONSO P10	170mm (6.693")	12mm (0.472")	54mm (2.126")	90mm max. (3.543")	2
ALONSO P15	170mm (6.693")	12mm (0.472")	54mm (2.126")	130mm max. (5.118")	2
ALONSO P25	195mm (7.677")	12.7mm (0.5")	69.85mm (2.75")	220mm max. (8.661")	2
ALONSO P25 AUTO	195mm (7.677")	12.7mm (0.5")	69.85mm (2.75")	220mm max. (8.661")	2
NO. 3 BSA	187.4mm (7.378")	12.7mm (0.5")	69.85mm (2.75")	158.75mm max. (6.26")	2
CAMPORESI RB7	120mm (4.724")	8mm (0.315")	28mm (1.102")	60mm max. (2.362")	2
ESCOFIER H12	170mm (6.693")	12mm (0.472")	54mm (2.126")	130mm max. (5.118")	2
ESCOFIER H24	220mm (8.661")	12.7mm (0.5")	69.85mm (2.75")	160mm max. (6.299")	2
ESCOFIER H30	220mm (8.661")	12.7mm (0.5")	69.85mm (2.75")	260mm max. (9.823")	2
ESCOFIER H80	300mm (11.811")	32mm (1.260")	120mm (4.724")	300mm max. (11.811")	2
GROB RM28X	80mm (3.150")	6mm (0.238")	28mm (1.102")	70mm max. (2.756")	2
GROB RM54A	150mm (5.906")	12mm (0.472")	54mm (2.126")	160mm max. (6.299")	2
IZPE RSC300	160mm (6.299")	12mm (0.472")	54mm (2.126")	120mm max. (4.724")	2
IZPE RSC300H	220mm (8.661")	12mm (0.472")	54mm (2.126")	200mm max. (7.874")	2
MAGNAGHI T12	175mm (6.890")	12mm (0.472")	54mm (2.126")	200 mm (7.874")	2
MAGNAGHI T30	215mm (8.465")	12.7mm (0.5")	69.85mm (2.75")	280mm (11.024")	2
MAPRE 2B	110mm (4.331")	12mm (0.472")	54mm (2.126")	130mm max. (5.118")	2
MAPRE 3B	190.5mm (7.5")	12.7mm (0.5")	69.85mm (2.75")	150mm max. (5.906")	2
ORT ITALIA 18B	185mm (7.283")	12mm (0.472")	54mm (2.126")	150mm max. (5.906")	2
ORT ITALIA 3RP15	175mm (6.890")	12mm (0.472")	40mm (1.575")	80mm max. (3.150")	2
ORT ITALIA 3RP42	215mm (8.465")	16mm (0.630")	69.85mm (2.75")	150mm max. (5.906")	2
ORT RP50	215mm (8.465")	16mm (0.630")	80mm (3.150")	150mm max. (5.906")	2
ORT RP75	300mm (11.811")	16mm (0.630")	80mm (3.150")	200mm max. (7.874")	2
ORT ITALIA 3RP8	80mm (3.150")	6mm (0.236")	28mm (1.102")	150mm max. (5.906")	2
PEE WEE P5	120mm (4.724")	10mm (0.394")	40mm (1.575")	38mm max. (1.496")	2
PEE WEE P12	152.4mm (6.000")	12mm (0.472")	54mm (2.126")	130mm max. (5.118")	2
PEE WEE P15	200mm (7.874")	12.7mm (0.5")	69.85mm (2.75")	160mm max. (6.299")	2
PEE WEE P20	195mm (7.677")	12mm (0.472")	54mm (2.126")	160mm max. (6.299")	2



Circular Dies



M/C MODEL	øA MAX	B	øC	RECOMMENDED W.O.F.	NO. PER SET
PEE WEE P24	209.9mm (8.265")	12.7mm (0.5")	69.85mm (2.75")	150mm max. (5.906")	2
PEE WEE P25	195mm (7.677")	12.7mm (0.5")	69.85mm (2.75")	150mm max. (5.906")	2
PEE WEE P50	258mm (10.200")	Splined	92mm (3.622")	260mm max. (9.823")	2
REED A25	152.4mm (6.00")	6.35, 12.7mm	25.4, 38.1 57.15mm	79.375mm max. (3.025")	2
SENY D25	125mm (4.921")	12mm (0.472")	40mm (1.575")	50mm max. (1.969")	2
SENY D30	100mm (3.937")	12mm (0.472")	40mm (1.575")	50mm max. (1.969")	2
SENY D44H	120mm (4.724")	12mm (0.472")	40mm (1.575")	80mm max. (3.150")	2
SENY D40H	120mm (4.724")	12mm (0.472")	40mm (1.575")	70mm max. (2.756")	2
SENY D50H	170mm (8.693")	12mm (0.472")	54mm (2.126")	100mm max. (3.937")	2
SENY D75B	170mm (8.693")	12mm (0.472")	54mm (2.126")	160mm max. (6.299")	2
STEINLE NO1	132mm (5.197")	6.35mm (0.25")	69.85mm (2.75")	78.2mm (3")	2
G07 THOMMEN	95mm (3.740")	6mm (0.236")	28mm (1.102")	55mm max. (2.165")	2
G15 THOMMEN	150mm (5.906")	12mm (0.472")	54mm (2.126")	130mm max. (5.118")	2
G17 THOMMEN	148mm (5.827")	12mm (0.472")	54mm (2.126")	130mm max. (5.118")	3
TESKER 200	127mm (5.00")	Various	Various	82.6mm max. (3.25")	2
TESKER 215	152.4mm (6.00")	Various	Various	114.3mm max. (4.5")	2
TESKER 320	203.2mm (8.00")	Various	Various	139.7mm max. (5.5")	2
TESKER 635	254mm (10.00")	Various	Various	203.2mm max. (8")	2
TSUGAMI T15	180mm (7.087")	12mm (0.472")	54mm (2.126")	150mm max. (5.906")	2
TSUGAMI T25D	210mm (8.268")	18mm (0.709")	85mm (3.348")	300mm max. (11.811")	2
UPW 6.3 X 40	140mm (6.512")	12mm (0.472")	54mm (2.126")	58mm max. (2.283")	2
UPW 12.5 X 70	195mm (7.677")	12mm (0.472")	63mm (2.480")	125mm max. (4.921")	2
UPW 25 X 100	230mm (9.055")	16mm (0.630")	80mm (3.150")	180mm max. (7.087")	2
UPW 31.5 X 100	195mm (7.677")	16mm (0.630")	80mm (3.150")	160mm max. (6.299")	2
YIEH CHEN 30A	80mm (3.150")	25.4mm (1")	6.35mm (0.25")	40mm max. (1.575")	3
YIEH CHEN 60A/AP	140mm (5.512")	40mm (1.575")	12mm (0.472")	50mm max. (1.969")	3
YIEH CHEN 420	150mm (5.906")	54mm (2.126")	12mm (0.472")	80mm max. (3.150")	2
YIEH CHEN 530	180mm (7.087")	54mm (2.126")	12mm (0.472")	150mm max. (5.906")	2

Thread Rolling on circular machines gives more control to the rolling process, with power to all rolls and controlled penetration rates. This allows harder and more difficult materials to be threaded.

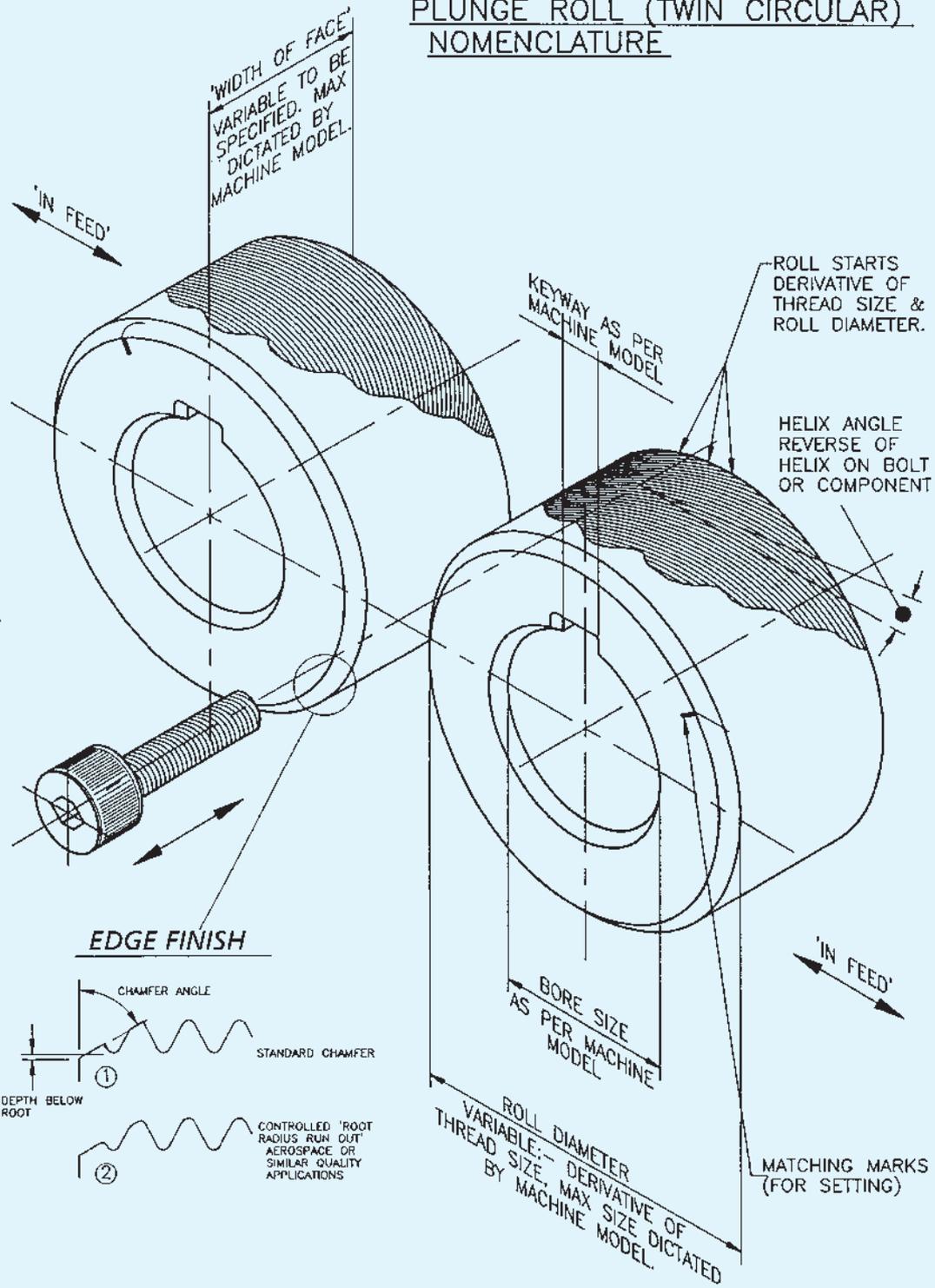
In-feed rolling uses a timed machine cycle. This is used for general rolling of parts up to the maximum width of face of the dies, less die chamfers. In-feed rolling dies (also known as plunge rolling) can be used for threading up to a shoulder or a headed workpiece.

Through-feed rolling is used for rolling threads which exceed the maximum width of the dies. It is also used for the continuous rolling of long threaded bars or studs. The annular ring type die is the most popular used for through-feed rolling, however for certain applications the helical combination dies are best suited. These can be in the form of Speed-up dies, where the work piece does not rotate any faster than with annular ring dies. The feed rate is increased in proportion to percentage of speed-up die used. The helical slow-feed dies, allows a coarser pitch thread to be rolled on a smaller machine than with annular rings. It feeds through at a slower rate giving dies more time to form the thread.

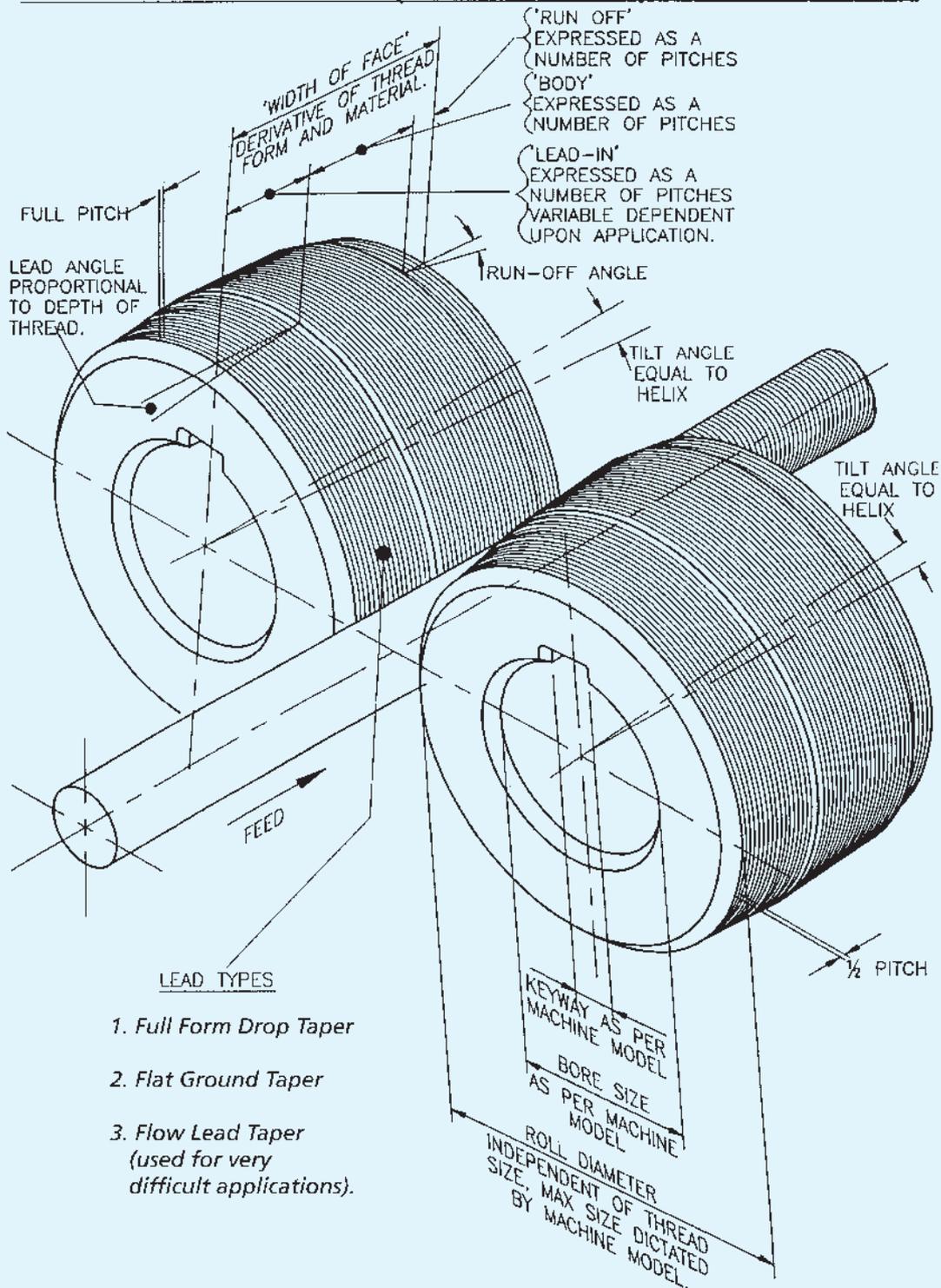
*More control
to rolling
pieces*



PLUNGE ROLL (TWIN CIRCULAR) NOMENCLATURE



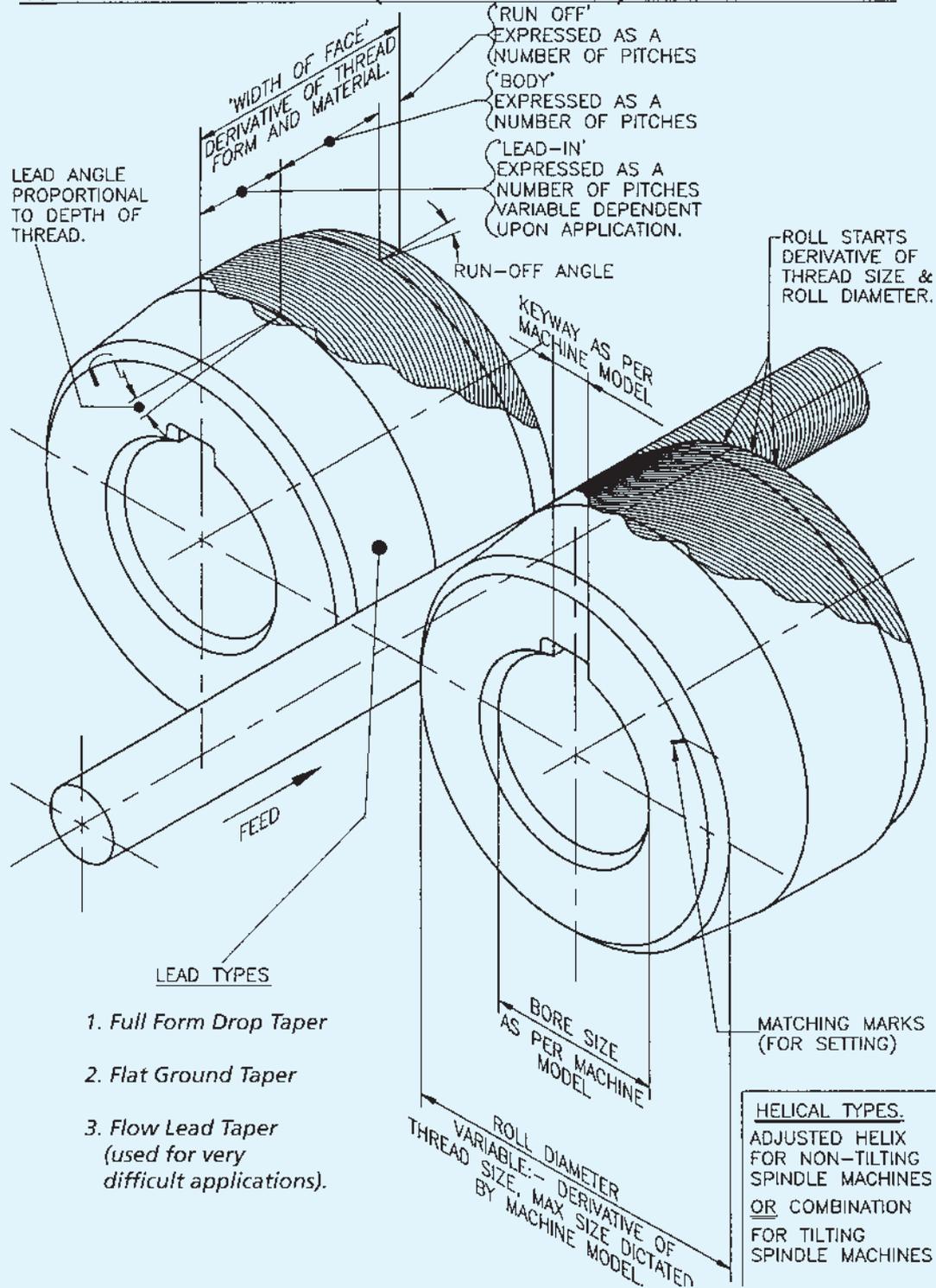
'ANNULAR' THRU-ROLL (TWIN CIRCULAR) NOMENCLATURE.



LEAD TYPES

1. Full Form Drop Taper
2. Flat Ground Taper
3. Flow Lead Taper (used for very difficult applications).

'HELICAL' THRU-ROLL (TWIN CIRCULAR) NOMENCLATURE.



ORDER FORM

FLAT DIES

PLEASE COMPLETE THE FOLLOWING

CUSTOMER _____

MAKE OF MACHINE

MODEL

MACHINE SPECIFICATION

NO. OF SETS

DIE SIZE

Dimension	Measurement
L ¹	
L ²	
S	
H	

DIE PROFILE

	YES	NO
Single face	<input type="checkbox"/>	<input type="checkbox"/>
Duplex face	<input type="checkbox"/>	<input type="checkbox"/>
Split face	<input type="checkbox"/>	<input type="checkbox"/>
Single setting	<input type="checkbox"/>	<input type="checkbox"/>
Double setting	<input type="checkbox"/>	<input type="checkbox"/>
X-nick	<input type="checkbox"/>	<input type="checkbox"/>
Sandblast	<input type="checkbox"/>	<input type="checkbox"/>
Holding Angle	<input type="text"/>	

THREAD STANDARD

ISO ANSI JIS

Others _____

Please state class & thread tolerances _____

RRO

Type B Type C See page 11. None
 Other, please specify or provide product print

Type B and Type C are standards to Hi-Life Dies unless otherwise requested.

MATERIAL TO BE ROLLED AND GRADE

ROLLED HARD SOFT

SPECIALS ONLY

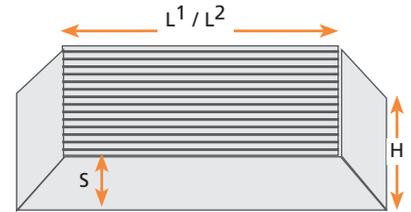
MAJOR DIAMETER
 PITCH DIAMETER
 BLANK DIAMETER

SPECIAL REQUIREMENTS

Are you rolling titanium alloys or other exotic materials?
 See page 12 for further details on Hi-Life classic dies.

Note: Dies for right hand threads will be supplied unless otherwise specified.

Please copy this page and fax or post with your order.



www.ptgtools.com



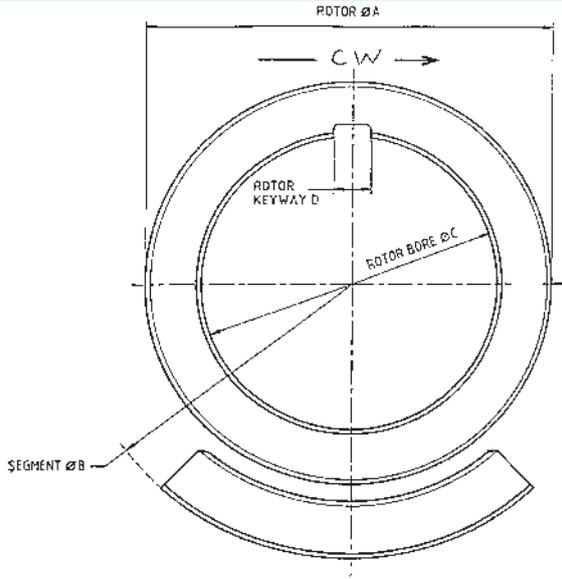
ORDER FORM

PLANETARY DIES

PLEASE COMPLETE THE FOLLOWING

CUSTOMER _____

MAKE OF MACHINE
 MODEL
 MACHINE SPECIFICATION
 NO. OF PIECES _____



ROTAR

SEGMENTS

DEPTH OF FACE

(WIDTH OF FACE)

THREAD INFORMATION

LENGTH ON WORK

MAJOR (NOMINAL DIAMETER)

NUMBER OF THREADS /INCH OR PITCH MM

THREAD FORM

CLASS OF THREAD / THREAD TOLERANCE

FOR NAIL DIES - ANNULAR PART OUTSIDE DIAMETER

BLANK DIAMETER

FORM

PITCH

DIRECTION OF ROTATION CW CCW

ROTAR STARTS

NUMBER OF LOBES ON CAM

www.ptgtools.com

*Note: Dies for right hand threads will be supplied unless otherwise specified.
 Please copy this page and fax or post with your order.*

QUOTE / ORDER FORM

CYLINDRICAL DIES

PLEASE COMPLETE THE FOLLOWING

CUSTOMER

MAKE OF MACHINE

MODEL

MACHINE SPECIFICATION

NO. OF SETS

NO. OF DIES PER SET 2 ROLLS 3 ROLLS

ROLL DETAILS

- DIE TYPE
- IN-FEED
 - THROUGH-FEED
 - HELICAL
 - ANNULAR

OUTSIDE DIAMETER

FACE WIDTH

BORE DIAMETER

KEYWAY / SPLINE

EDGE FINISH CHAMFERED

RADIUS RUN OUT

RRO SPECIFICATION

ROLL MATERIAL

MATERIAL TO BE ROLLED

THREAD TO BE ROLLED

LEAD CORRECTION YES NO

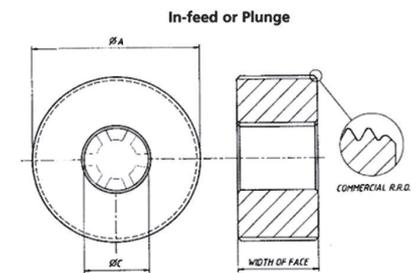
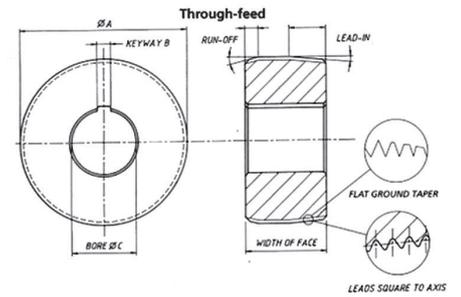
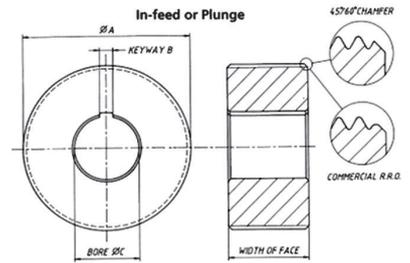
AMOUNT

SPECIALS ONLY

MAJOR DIAMETER

PITCH DIAMETER

BLANK DIAMETER



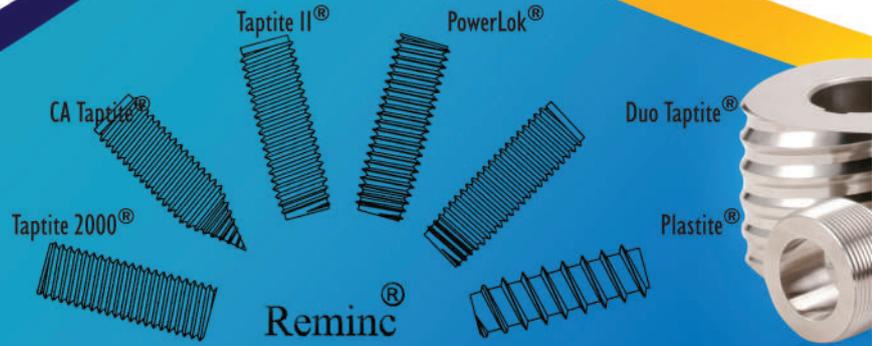
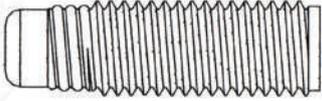
*Note: Dies for right hand threads will be supplied unless otherwise specified.
Please copy this page and fax or post with your order.*

www.ptgtools.com

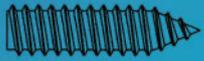
WSH SPIRALFORM®



MAThread



Standard Fasteners:



Type AB



Type F



Type B



Hilo Screw



Type A



Ogival Screw
(Radial Point)

Special Fasteners:



Cone Point Machine Screw



Straight Knurl and Thread Form in one pass



Groove, Thread Form with Paint Scraper
feature in one pass



Multi grooves in one pass



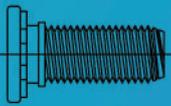
Multi grooves and diamond
knurl in one pass



Groove, thread form and
point in one pass

TEXTRON Fastening Systems

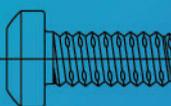
STRUX®



RIVTEX®



MAGFORM®



EJOT®

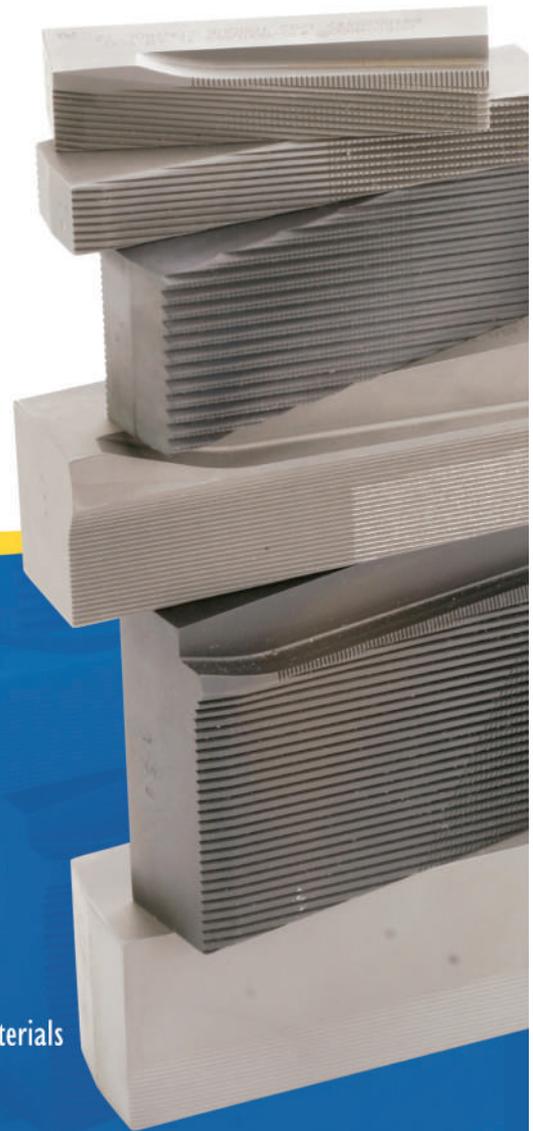
EJOT PT®

EJOT Duro-PT®

EJOT PT Type DG®

EJOT DELTA PT®

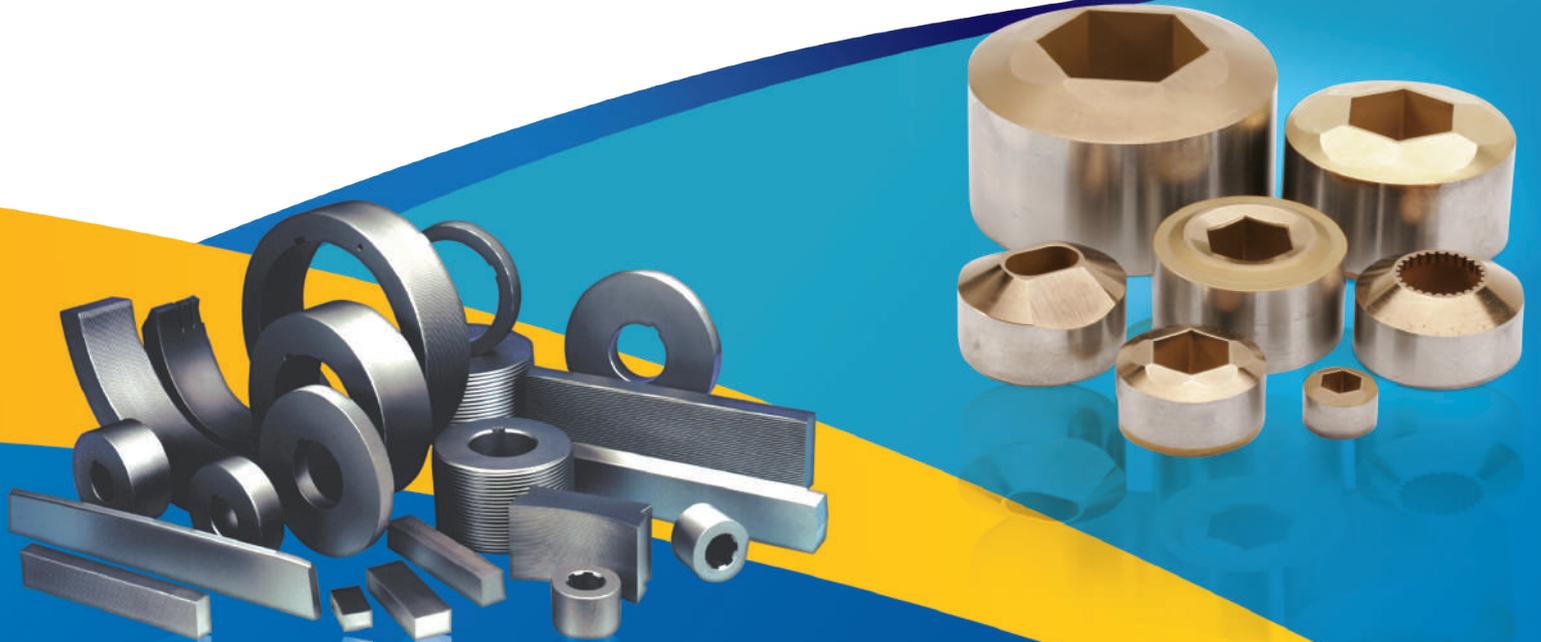




THREAD ROLLING DIE FEATURES

- Highest tolerance specifications for repeatability and ease of set-up
- Special F3 Dies for lap free rolling
- Hi-Life Classic Profile Dies for rolling after "heat treat" product and exotic materials
- Controlled Radius Root Run-out (RRO)
- Leaders in Special and Licensed Die technology
- Optimized roll-forming designs using finite element analysis
- Widest range of materials, and surface treatments to suit your application





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03/2012