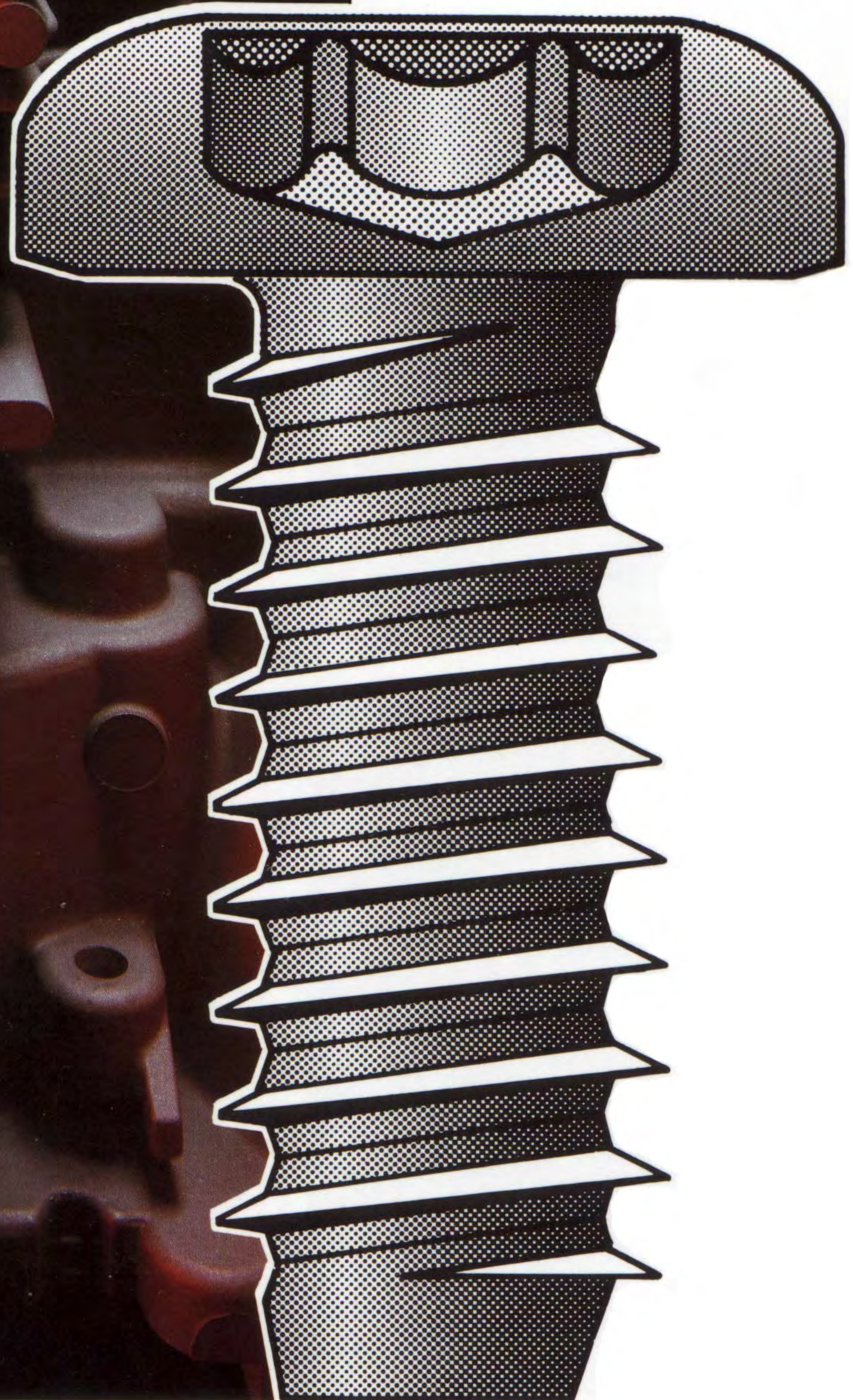
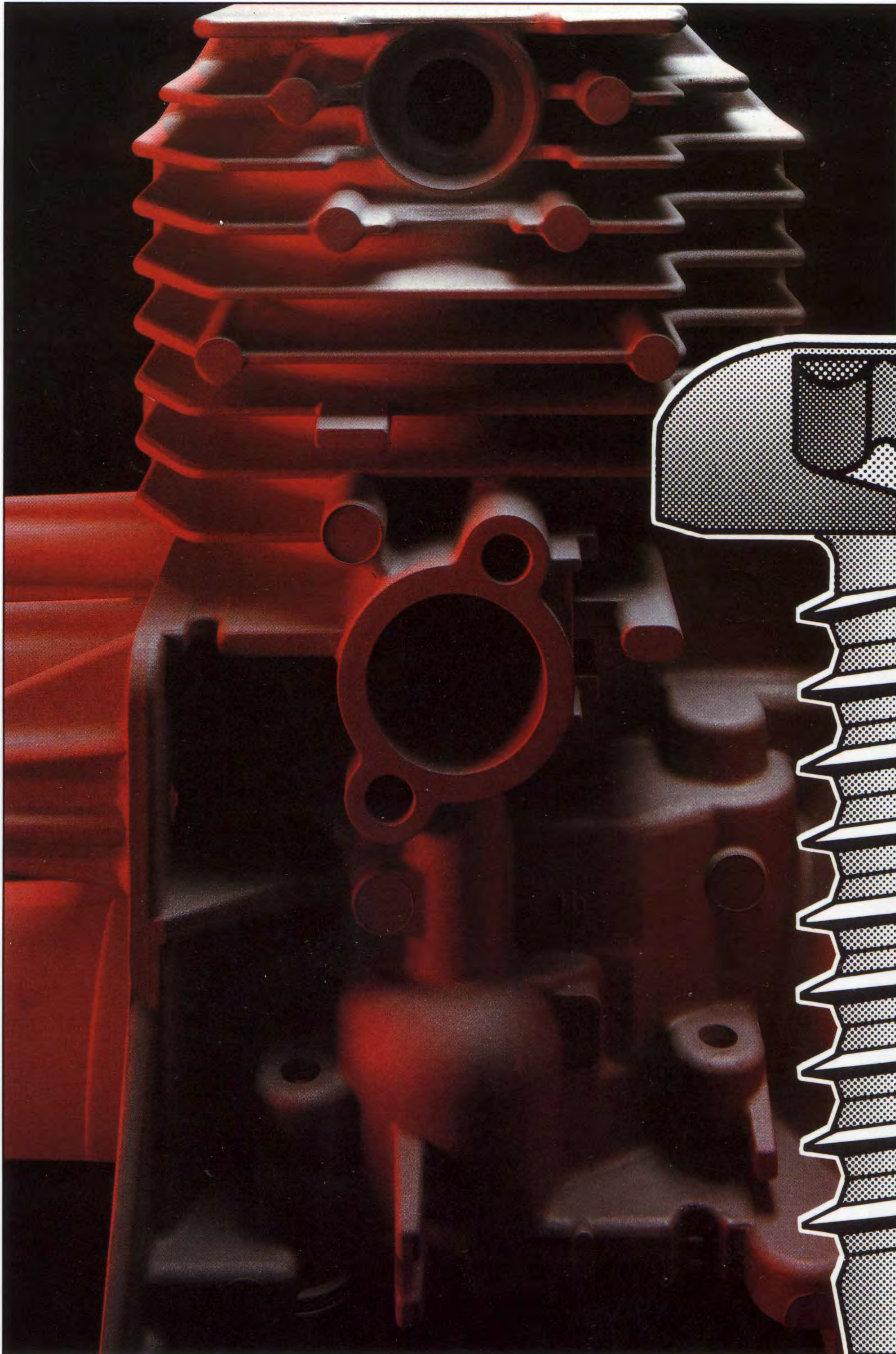


Semblem PT[®] Type DG[®]



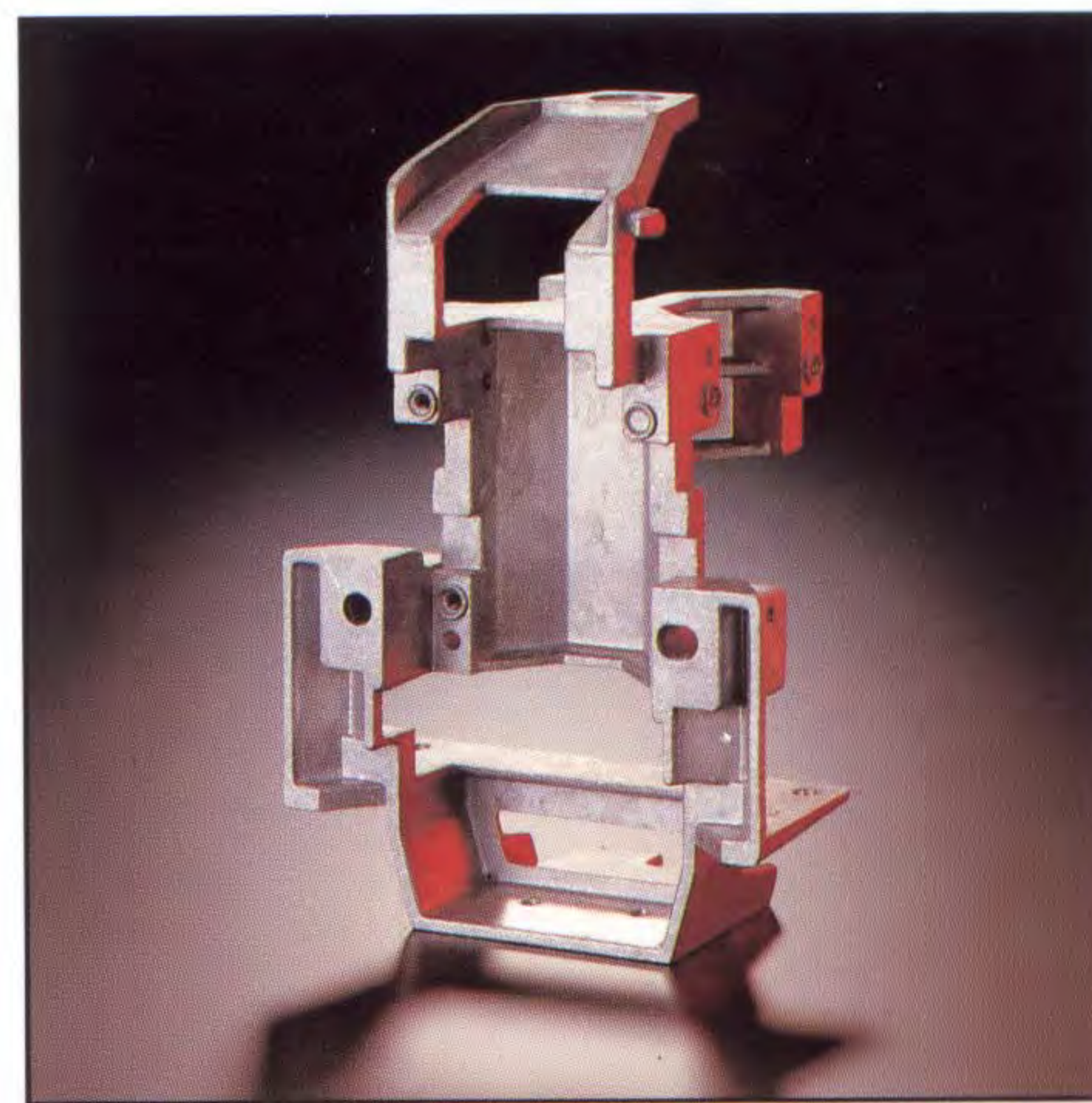
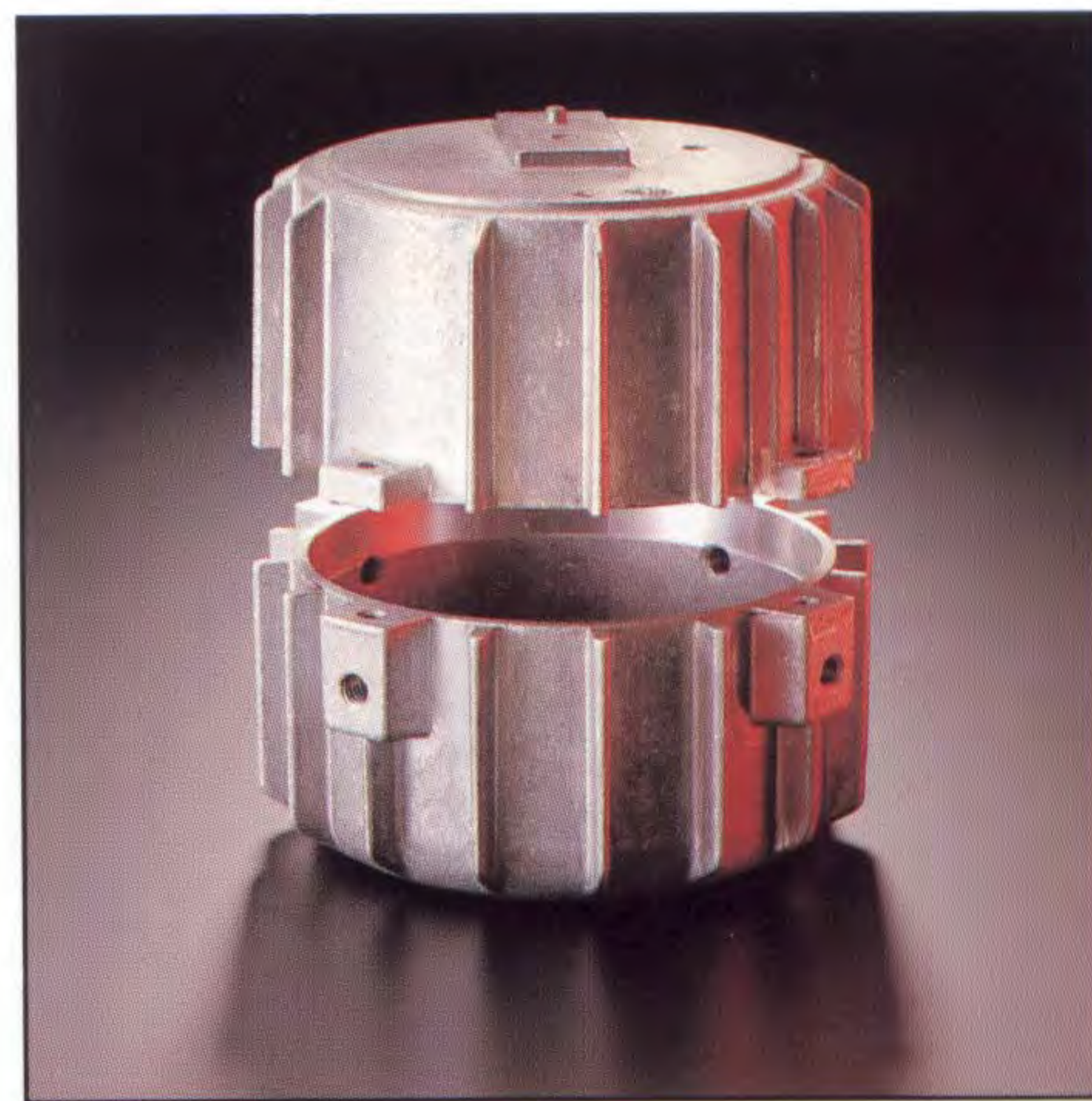
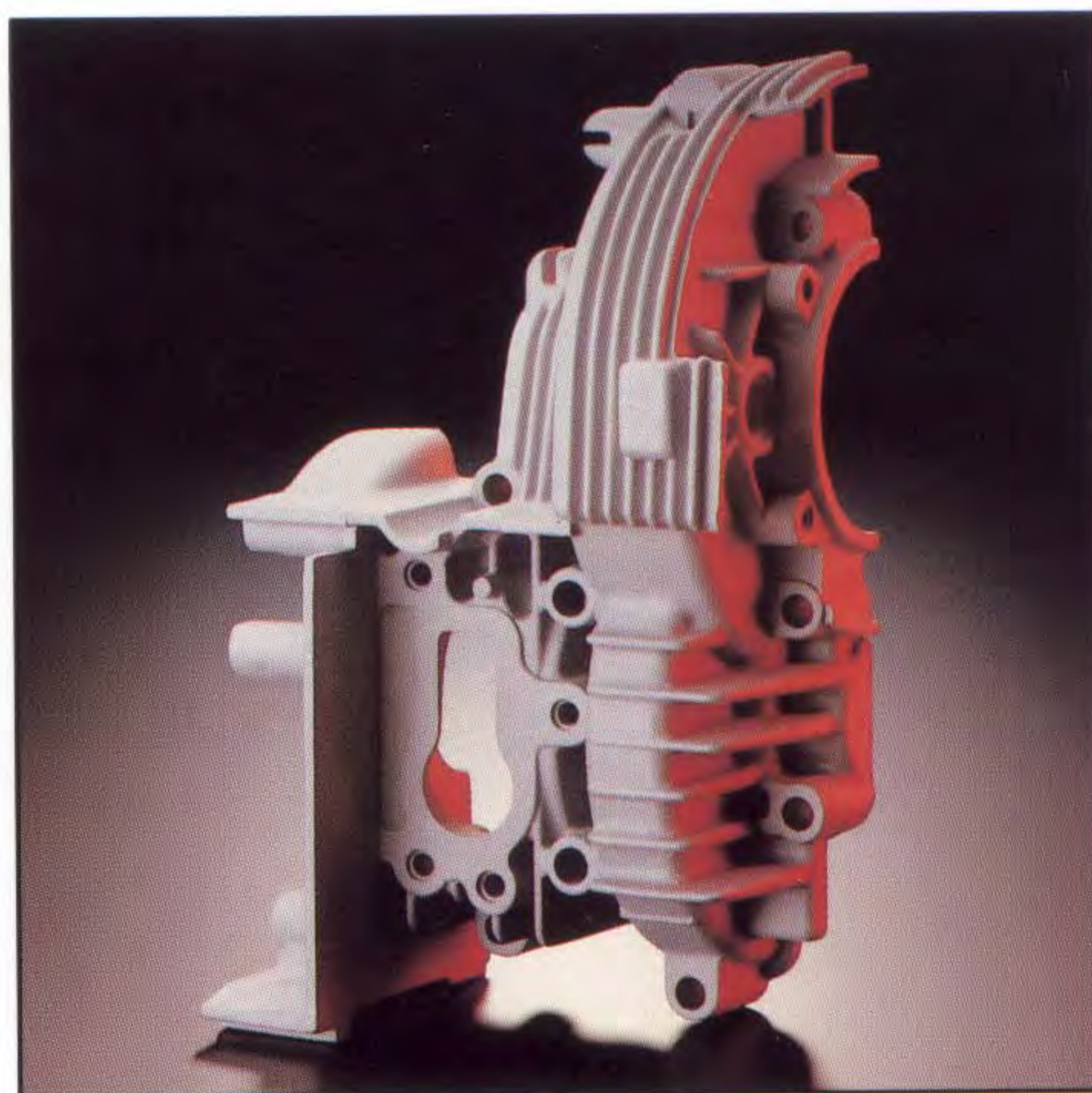
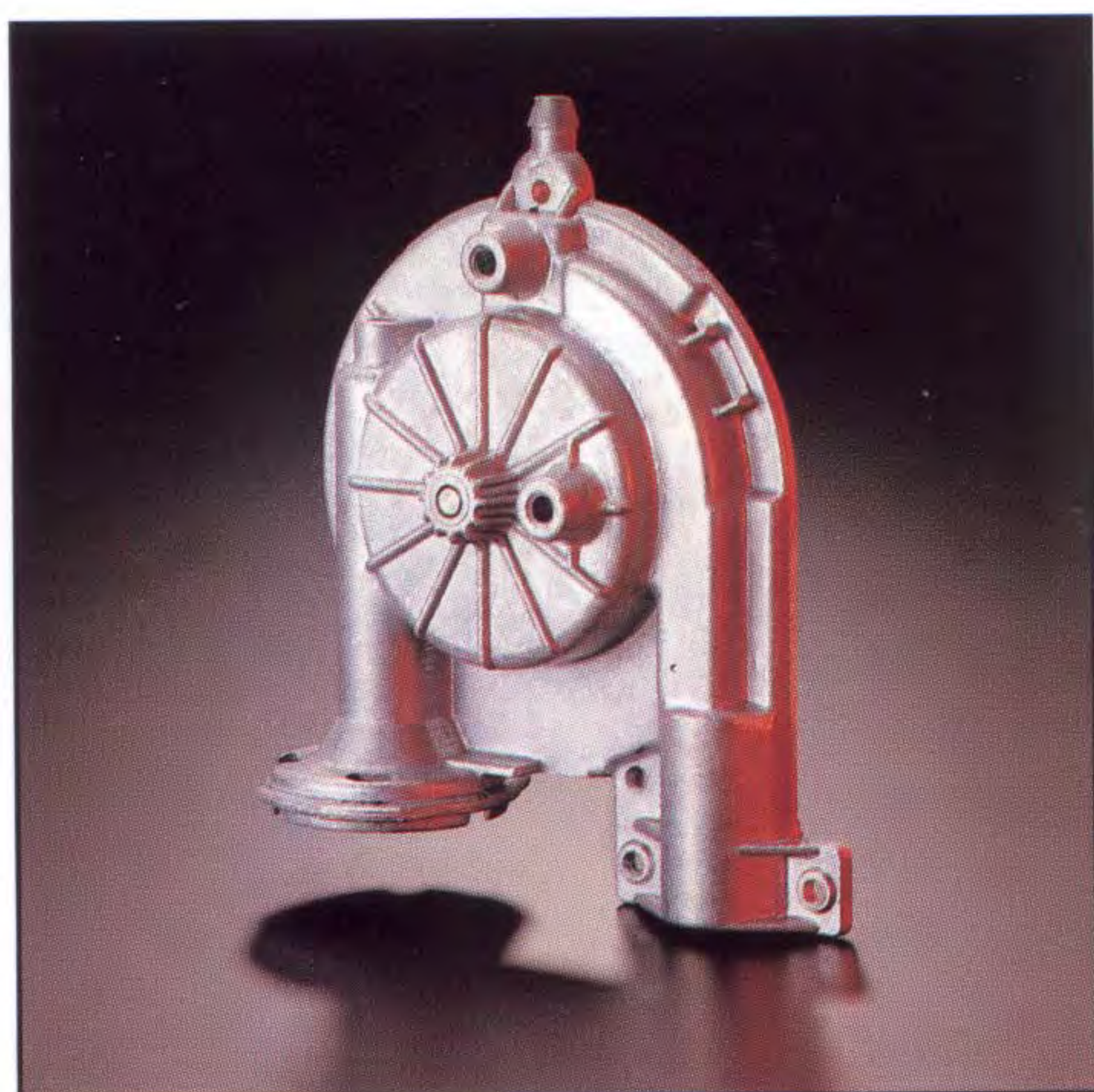
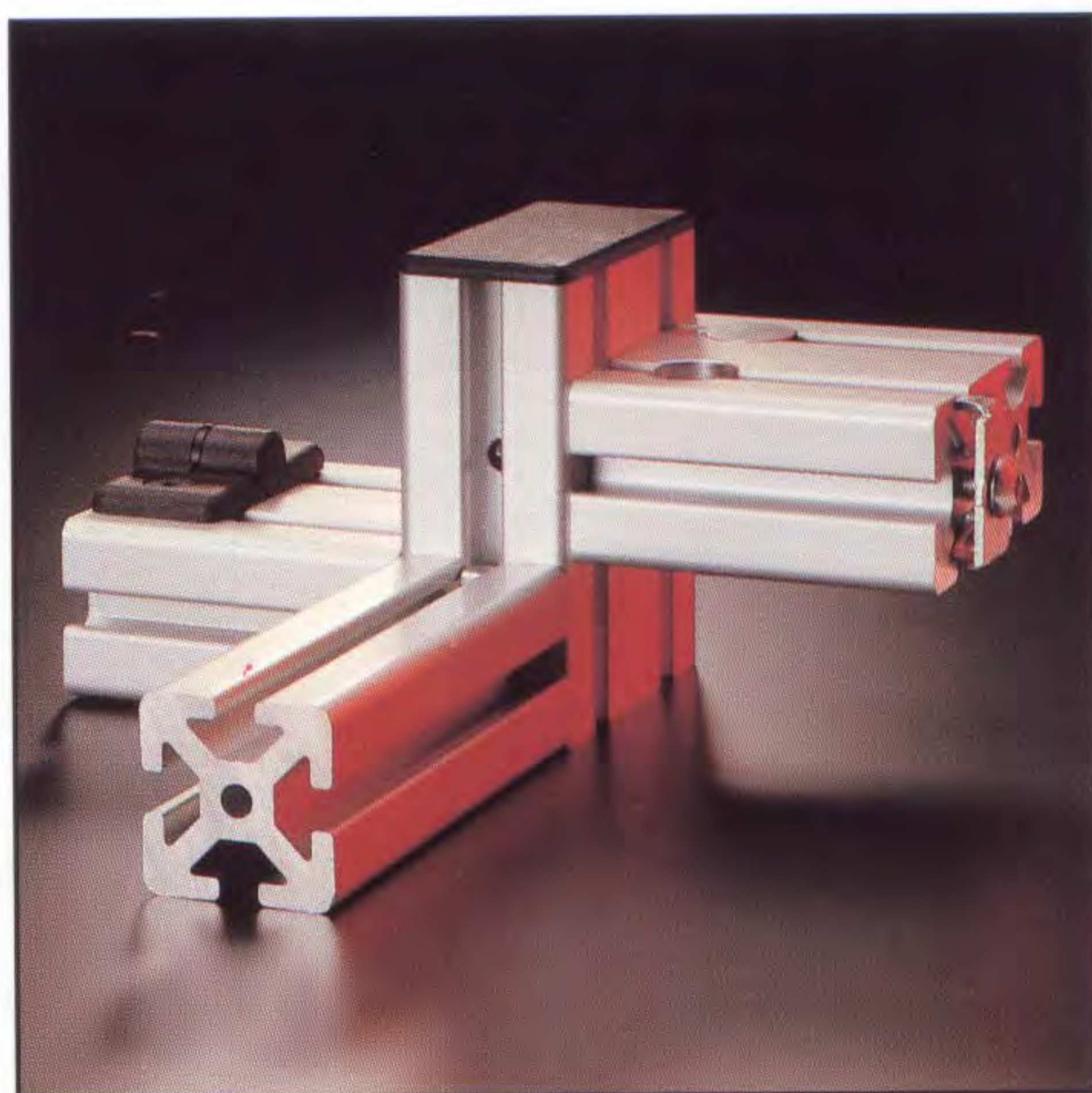
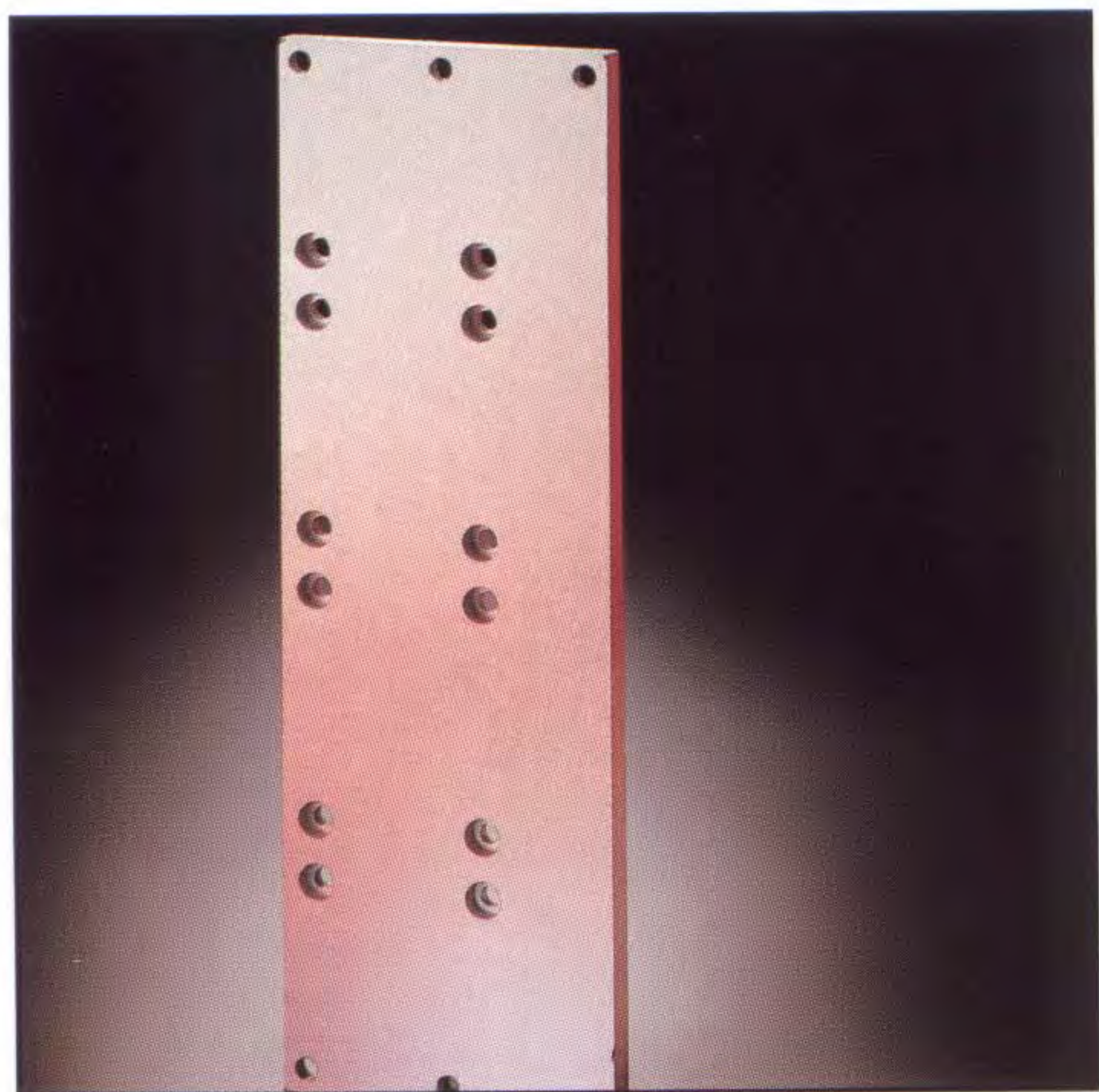
PT Type DG

The fastener for light alloys, die castings and high-filled thermoplastics

PT[®] screws, type DG are the consistent advancement of the proven Duro-PT[®] screws.

The need to assemble alternately high filled engineering plastics ($\geq 30\%$ filler) along with light alloy components in only one assembly station led to the development of the PT[®] screw type DG.

The PT[®] screw, type DG offers the advantages of the thread forming PT[®] screw for reinforced thermoplastics and in addition exceeds the performance capabilities of the thread forming metric screws according to DIN 7500 in light alloys.

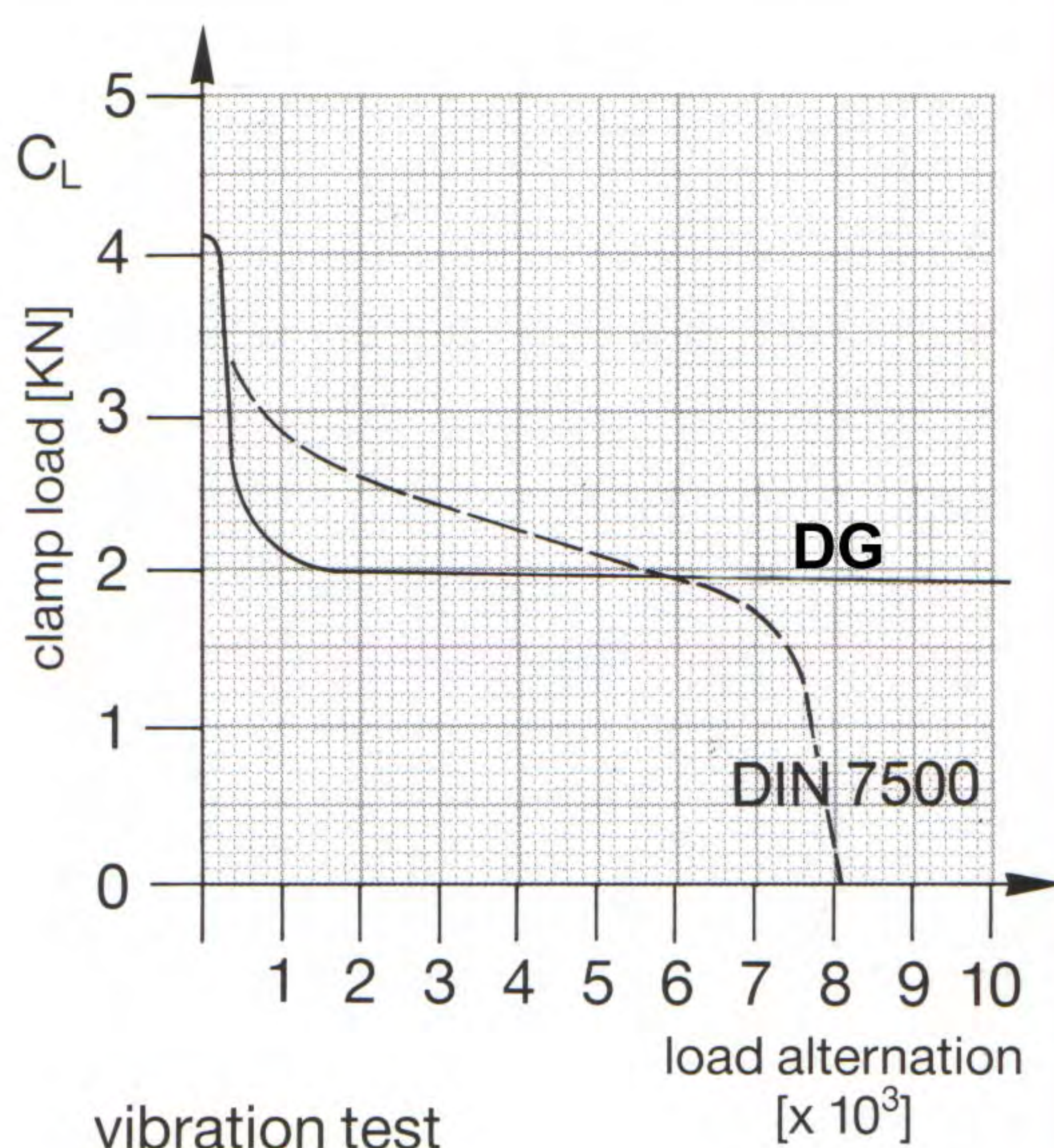


The basic advantages of thread forming screws in light alloys and die castings are:

- elimination of thread cutting operation,
- chipless assembly,
- no cleaning and control of formed threads,
- reliable and easy installation into punched, drilled and molded holes,
- many repeat assemblies possible.

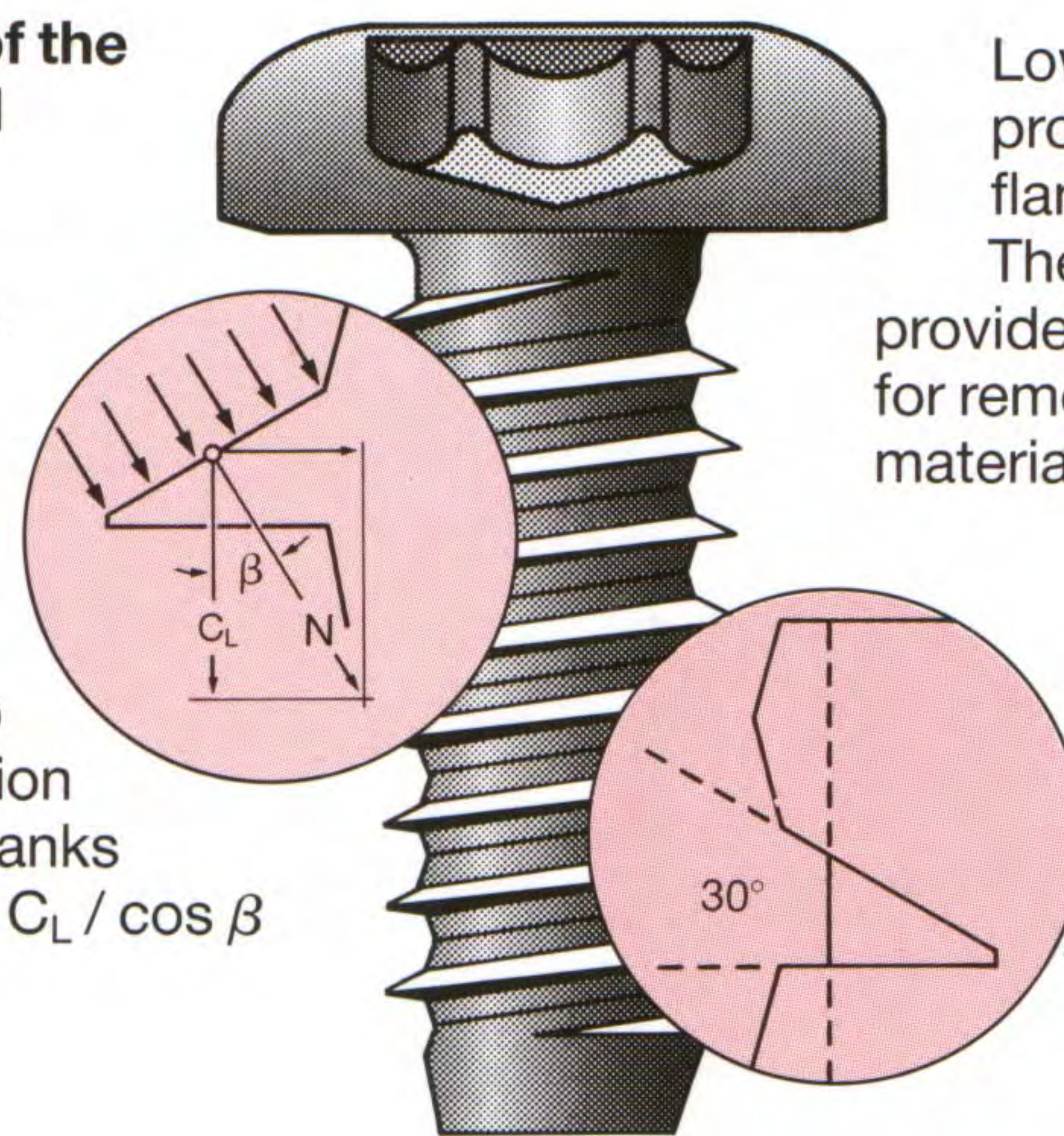
Additional advantages of the PT® screw, type DG:

- high strip resistance due to asymmetrical thread flanks,
- no additional locking devices required (see figure below),
- vibration resistance,
- increased pull-out strength due to large flank engagement,
- minimized risk of clogging due to integrated conical blunt point.



Advantages of the asymmetrical thread

The 30 degree flank angle allows high tightening and break loose torques due to increased friction at the thread flanks

$$F_R = \mu \cdot N; N = C_L / \cos \beta$$


Low drive torques produced by small flank areas. The core recess provides space for removed material.

The specific conical blunt point allows problem free starting at assembly.

Product Description

PT® screws, type DG are characterized by an asymmetrical thread flank having a 30 degree flank angle inclined towards the load surface.

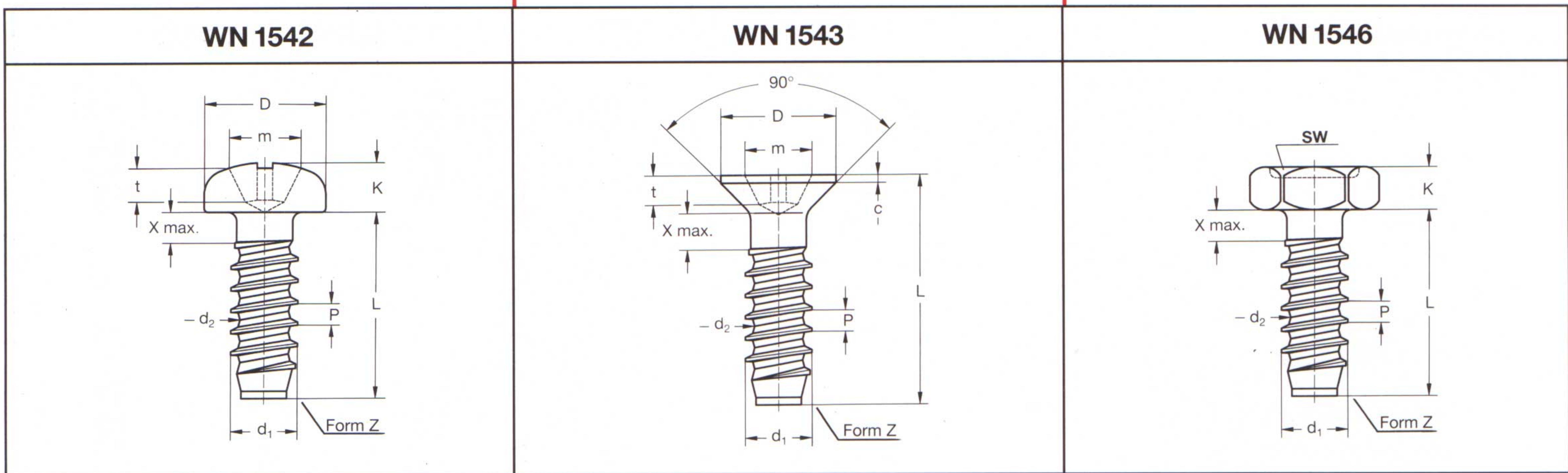
Thus a high thread friction between the component part and the screw is achieved resulting in high stripping and break loose torques.

By reducing the flank area to one-half of that of the 60 degree metric flank angle thread forming torques and thus drive torques are decreased.

The additional core recess eliminates clogging and galling of threads at assembly.

In respect of tolerances the performance of the screw is distinctly increased by the combination of a large flank engagement and the core recess.

The special conical blunt point provides an optimum start in thread forming.



How to specify:

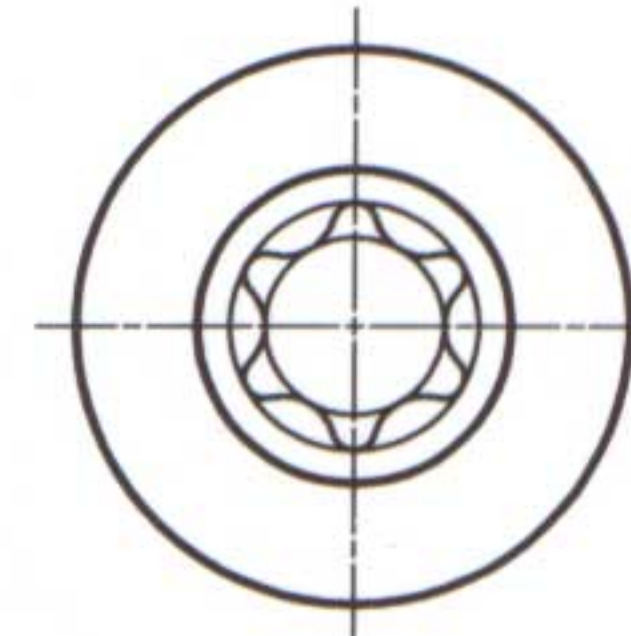
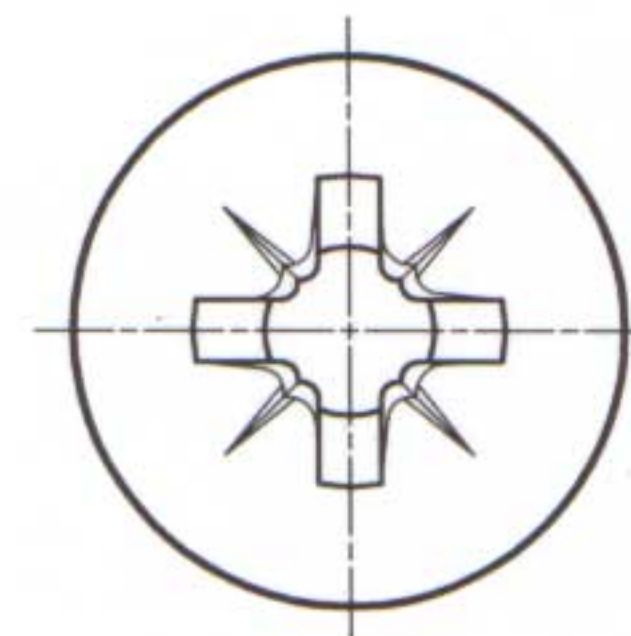
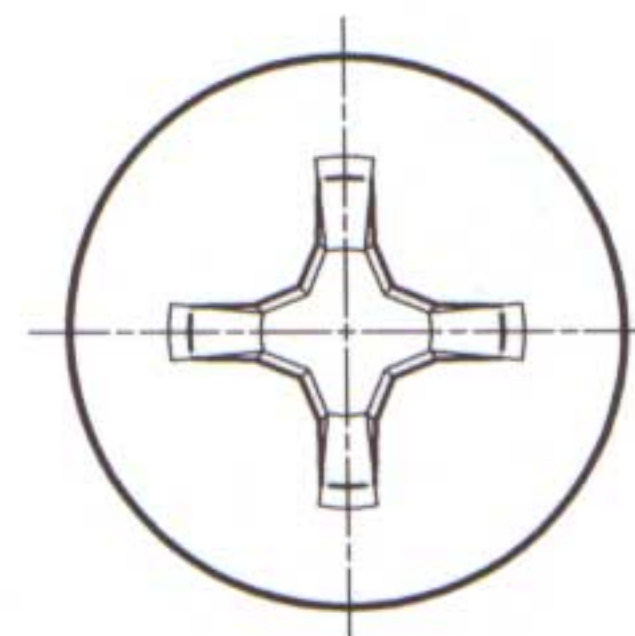
Specification of a PT® screw type DG
with TORX® drive, nominal dia. 4.0 and length
L = 20 mm acc. to head style WN 1552

PT® screw type DG 40 x 20 WN 1552

**H-cross recess
(A)**

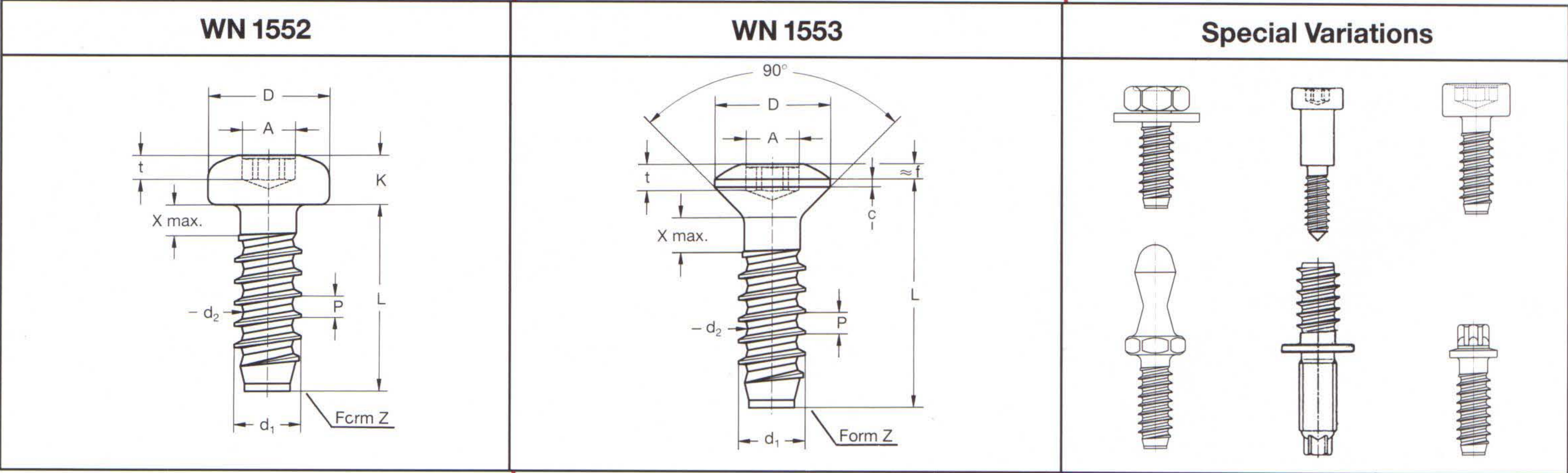
**Z-cross recess
(B)**

TORX®



Next to the nominal diameters indicated, DG Ø 18, 80, 90, 100
are available on request.

DG	Nominal-Ø			22	25	30	35	40	50	60	80
	External threadØ	d ₁		2.2	2.5	3.0	3.5	4.0	5.0	6.0	8.0
	Core Ø	d ₂		1.59	1.81	2.18	2.56	2.93	3.68	4.42	5.91
	Thread pitch	P		0.71	0.77	0.86	0.95	1.05	1.23	1.42	1.79
	Thread run-out	X _{max}		1.1	1.3	1.5	1.8	2.0	2.5	3.0	4.0
WN 1542	Head diameter	D		4.0	5.0	6.0	7.0	8.0	10.0	12.0	16.0
	Head height	K		1.6	2.0	2.4	2.7	3.1	3.8	4.6	6.0
	A	H- width/size	≈m	2.5/1	2.7/1	3.1/1	4.2/2	4.6/2	5.3/2	6.8/3	9.0/4
		cross penetration	t min.	1.10	1.30	1.70	1.74	2.04	2.77	3.03	4.18
		recess depth	t max.	1.40	1.60	2.00	2.24	2.54	3.27	3.53	4.68
	B	Z- width/size	≈m	2.4/1	2.6/1	3.0/1	4.0/2	4.3/2	5.0/2	6.7/3	8.8/4
		cross penetration	t min.	1.10	1.27	1.68	1.65	1.90	2.64	3.02	4.06
		recess depth	t max.	1.35	1.52	1.93	2.11	2.36	3.10	3.48	4.52
WN 1543	Head diameter	D		3.8	4.7	5.6	6.5	7.5	9.2	11.0	14.5
		c		0.25	0.30	0.35	0.40	0.45	0.50	0.55	0.65
	A	H- width/size	≈m	2.35/1	2.7/1	2.9/1	3.9/2	4.4/2	4.6/2	6.6/3	8.7/4
		cross penetration	t min.	0.95	1.25	1.50	1.40	1.90	2.10	2.80	3.90
		recess depth	t max.	1.25	1.55	1.80	1.90	2.40	2.60	3.30	4.40
	B	Z- width/size	≈m	2.2/1	2.5/1	2.8/1	3.7/2	4.0/2	4.4/2	6.1/3	8.5/4
		cross penetration	t min.	0.92	1.22	1.48	1.34	1.60	2.05	2.46	3.86
		recess depth	t max.	1.17	1.47	1.73	1.80	2.06	2.51	2.92	4.32



New: **TORX***plus*[®]

The new drive system.
For further information
please have a look
into our TORX PLUS[®] brochure.

Material:

Case hardened mild steel,
stainless steel A2 and through-
hardened mild steel available
on request.

Strength according to WN 1561

Special designs:

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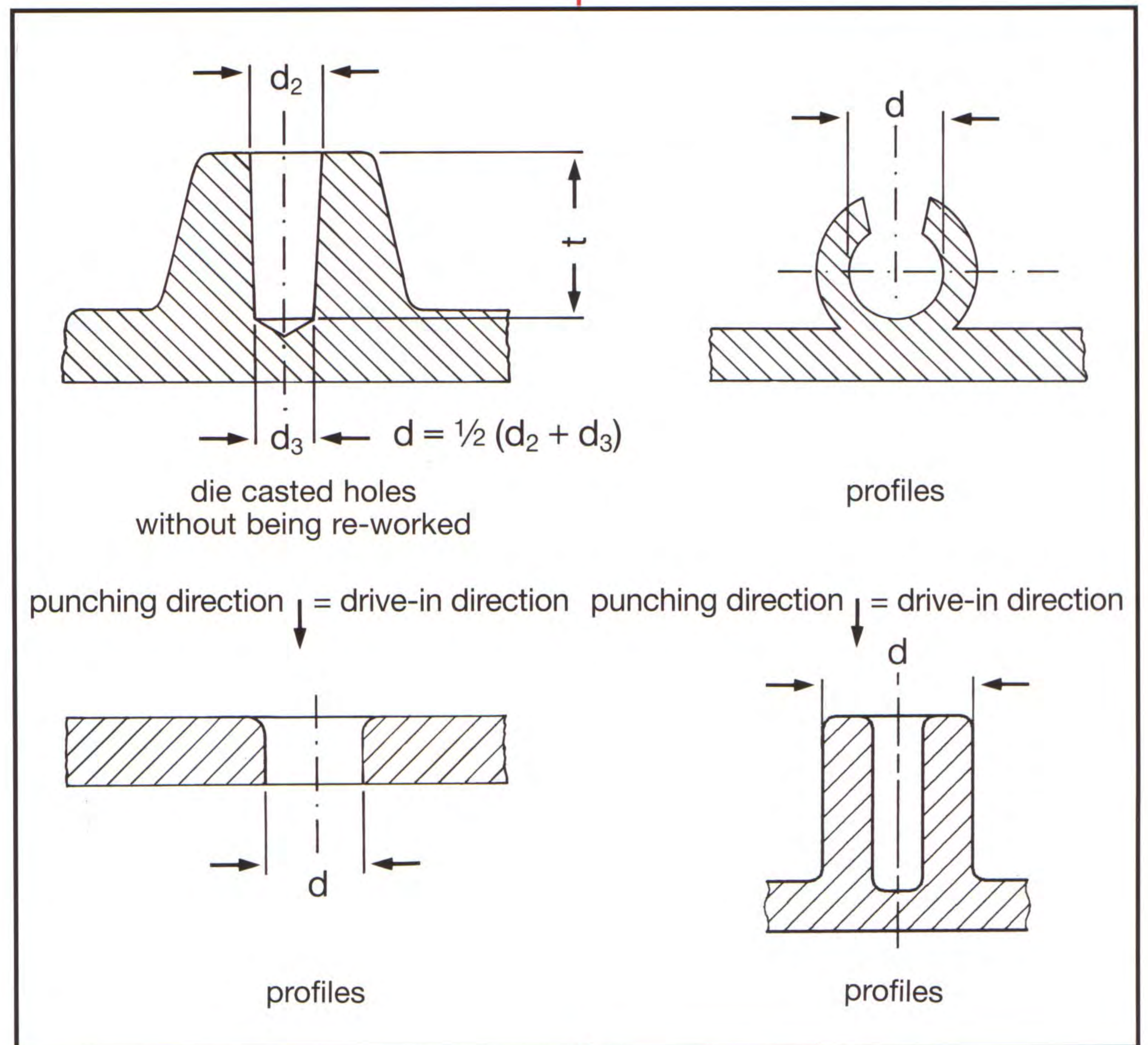
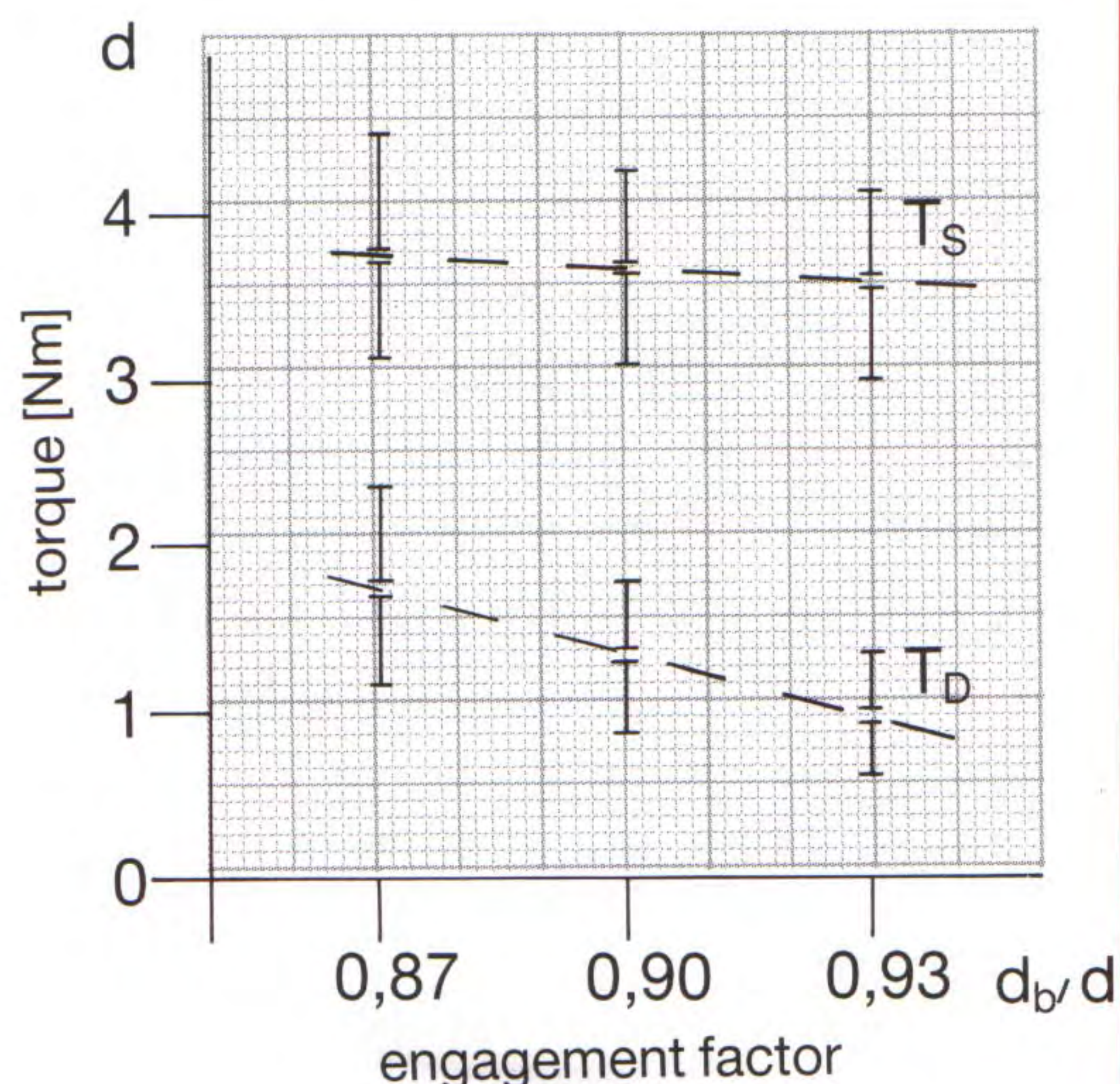
DG	Nominal-Ø		22	25	30	35	40	50	60	80
	External threadØ	d ₁	2.2	2.5	3.0	3.5	4.0	5.0	6.0	8.0
	Core Ø	d ₂	1.59	1.81	2.18	2.56	2.93	3.68	4.42	5.91
	Thread pitch	P	0.71	0.77	0.86	0.95	1.05	1.23	1.42	1.79
	Thread run-out	X _{max}	1.1	1.3	1.5	1.8	2.0	2.5	3.0	4.0
WN 1546	Width across flats	SW	4.0	5.0	5.5	6.0	7.0	8.0	10.0	13.0
	Head height	K	1.4	1.7	2.0	2.4	2.8	3.5	4.0	5.3
WN 1552	Head diameter	D	4.0	5.0	6.0	7.0	8.0	10.0	12.0	16.0
	Head height	K	1.6	2.0	2.4	2.7	3.1	3.8	4.6	6.0
		TORX [®]	T 6	T 8	T 10	T 15	T 20	T 25	T 30	T 40
	Penetration depth	A nominal dimension	1.75	2.40	2.80	3.35	3.95	4.50	5.60	6.75
		t min.	0.70	0.90	1.00	1.20	1.40	1.60	2.00	2.70
		t max.	0.85	1.15	1.30	1.50	1.80	2.00	2.40	3.20
WN 1553	Head diameter	D	3.8	4.7	5.6	6.5	7.5	9.2	11.0	14.5
		f≈	0.5	0.6	0.75	0.9	1.0	1.25	1.5	2.0
	Head height	c	0.25	0.30	0.35	0.40	0.45	0.50	0.55	0.70
		TORX [®]	T 6	T 8	T 10	T 15	T 20	T 25	T 30	T 40
	Penetration depth	A nominal dimension	1.75	2.40	2.80	3.35	3,95	4,50	5,60	6,75
		t min.	0,70	0,90	1,00	1,20	1,40	1,60	2,00	2,70
		t max.	0,85	1,15	1,30	1,50	1,80	2,00	2,40	3,20

Basic requirement for an effective and problem free assembly is the correct dimensioning of the joint. Optimum driving and stripping torques are to be applied whereas a high strip to drive ratio must be ensured. On the one hand optimum driving and stripping torques are to be ensured and on the other there must be a high strip to drive ratio.

An important parameter for an optimized difference between driving and stripping torque is the thread forming torque which is proportionate to the deformation energy of the material.

The thread forming torque is dependent on the following parameters:

- flank angle of the screw
- ratio of hole dia. to nominal screw dia. (engagement factor)
- thread pitch
- component material



Our application engineers will assist you in finding the proper solution to your fastening problems, particularly in the design, engineering and application of screw joints.

For this purpose we maintain our own modern test laboratory in order to work out for you the optimum in fastener engineering.

Standard PT® screws, type DG are manufactured from:

- case hardened mild steel

and are available in the following finishes:

zinc plated clear passivated, yellow and black chromated and nickel plated

- other materials and special finishes upon request.

Range of application for PT® screws, type DG

PT® screws, type DG are recommended for use in light alloy components and die castings, specifically aluminum, zinc and magnesium alloys. They are also well suited for the assembly of reinforced thermo-plastic components.



PT® screws, type DG can easily be driven with commercial hand, power or pneumatic screw-drivers and are also suited for automated assembly. For problem free assemblies we recommend the TORX® drive which allows the transmission of higher torques without producing cam out.

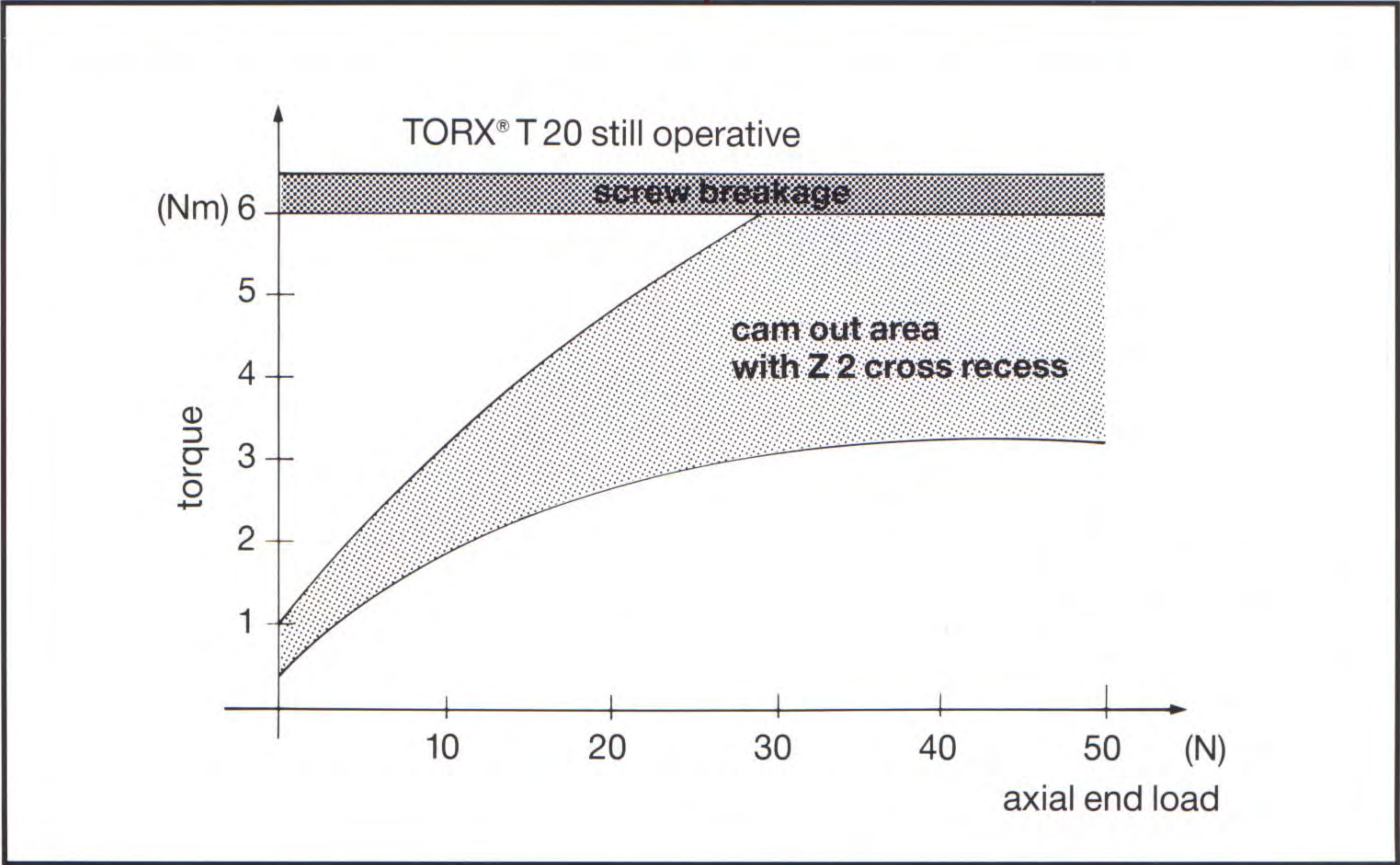
You achieve an improvement in driver bit life by using the new developed TORX PLUS® drive system. We recommend the TORX PLUS® with AUTOSERT® feature especially for the automated assembly where the driver bit may be continuously rotating.

Material Brinell hardness depth HB 5/250	Nominal screw dia. (mm)							Installation (mm)
	DG 25	DG 30	DG 35	DG 40	DG 50	DG 60	DG 80	
GD Al Si12 60–100 (values according to DIN 1725)	2.35	2.80	3.25	3.70	4.70	–	–	over 3.0– 6.0
	–	2.80	3.25	3.70	4.75	5.65	7.60	over 6.0–10.0
	–	–	–	–	4.80	5.75	7.70	over 10.0
GD Al Si9 Cu3 80–120 (values according to DIN 1725)	2.35	2.75	3.20	3.65	4.65	–	–	over 3.0– 6.0
	–	2.80	3.25	3.70	4.70	5.65	7.55	over 6.0–10.0
	–	–	–	–	4.75	5.70	7.65	over 10.0
GD Zn Al4 Cu1 85–105 (values according to DIN 1743)	2.35	2.80	3.30	3.75	4.75	–	–	over 3.0– 6.0
	–	2.80	3.30	3.75	4.75	5.70	7.65	over 6.0–10.0
	–	–	–	–	4.85	5.80	7.75	over 10.0

Recommended hole diameters for PT® screws, type DG

The recommended hole diameters given in the table are based on laboratory tests. In practice , deviations from these values are possible.

We therefore recommend to check the assembly parameters with shaped parts before starting production.



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