VIEWPOINT

Dear Editor:

I received a letter from Mr. G. W. Richmond, Sullivan Machinery Company, N.H., in which in addition to correcting mistyping, he made several suggestions concerning my article "General Equations for Gear Cutting Tool Calculations". (Gear Technology, Nov/Dec 1985)

I have found his recommendations commendable and would like to share them with the readers interested in the article:

1. The term "$-r_w/i$" in the second equation of (2), page 27, should not have been used. It is just enough to subtract the generating radius r_w *after* differentiation to bring the ordinate Y_c for the hob profile to the pitch line.

2. The expression for r_A, page 23, can be also received directly from Fig. 2.

3. The "$-$" sign before Y_c on Fig. 2 might be confusing. It is better to disregard it. (as the "$-$" sign before 0 in the second equation on page 22).

Please express my personal gratitude to Mr. G. W. Richmond for these suggestions.

Ilya Bass
Bourn & Koch
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Editors Note: We regret that some typographical errors appeared in the Bass' article. Formula corrections should appear as follows.

The first formula on page 21 is:

$$\psi_c = \psi_P \times \frac{n}{N} = \psi_P \times \frac{r_w}{R_w} = \psi_P \times i,$$

Formula (2) is:

$$y_c = \frac{r_w}{i} \times \cos(\psi_P \times i)$$
$$+ \frac{r_A \times \sin \sigma_P}{\cos \alpha} \times \sin(\alpha + \psi_P \times i) - \frac{r_w}{i} \qquad (2)$$

The 2nd line of formula (3) is:

$$y_c = r_A \times \cos \sigma_P - r_w$$

The last line of the last formula on page 23 is:

$$\varphi_A = \frac{180°}{30} - (\mu_A - \beta) = 3.860106°$$

QUICK CHANGE SYSTEMS

CUTTER ADAPTOR QUICK
CHANGE SYSTEM

CLAMPING FIXTURE
QUICK CHANGE
SYSTEM

Fig. 16

1) fixture quick change system
2) tool quick change system
3) parallel programming
4) Y-axis required
5) V-axis required
6) Z-axis required
7) B-axis required

E-3 ON READER REPLY CARD

COMPUTER SOLUTION . . .
(continued from page 30)

17. BLOK, H., Theoretical Study of Temperature Rise at Surfaces of Actual Contact Under Oiliness Lubricating Con-ditions. Proc. Inst. Mech. Engrs., Pt. 2, 1973.

18. JAEGER, J. C., Moving Sources of Heat and Temperature at Sliding Contact. Proc. Roy. Soc. N.S.W. 76, 1942.

19. CAMERON, A., GORDON, A. N. and SYMM, G. T., Contact Temperature in Rolling and Sliding Surfaces. Proc. Roy. Soc., A286, 1965.

20. FRANCIS, H. A., Interfacial Temperature Distribution Within a Sliding Hertzian Contact. Trans. ASLE, vol. 14, 1970.

E-1 ON READER REPLY CARD

VIEWPOINT
(continued from page 6)

I would like to point out an error in the November/December 1985, Gear Technology article "Finding Gear Teeth Ratios" which may be causing undue stress to some of your readers.

Equation number 4 on page 26 which is shown as:

$$Y_n = 1 - A_n Y_n - 1 + Y_n - 2$$

Should Be

$$Y_n = Y_n - 2 - A_n Y_n - 1$$

I found the article interesting and plan to use the program as a computerized method of selecting change gears for set-ting up hobbing machines.

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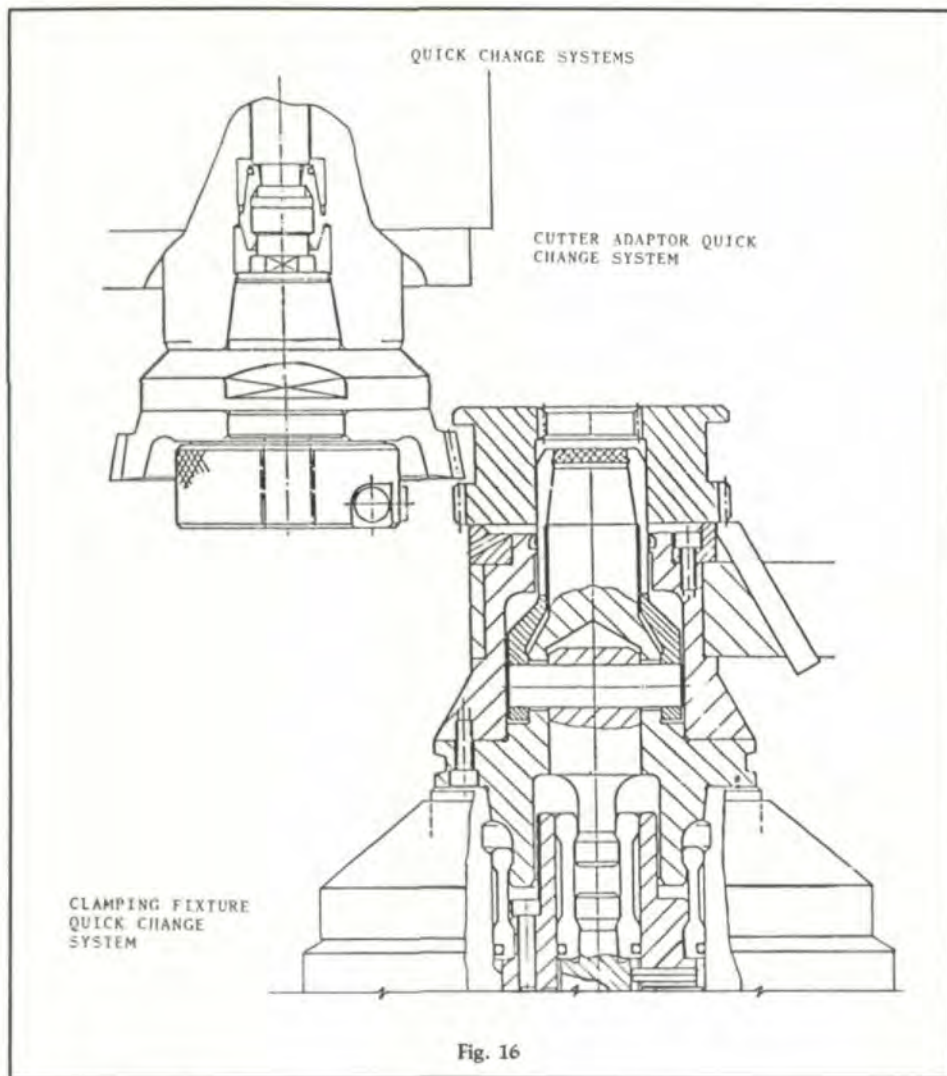

NC differential can cope with any helix angle.

It is possible to shape different helix angles of the same hand with one guide. (Fig. 15) A large range of helix angles can be cut by using differing numbers of teeth on the cutters (different diameter). Cur-rently, the possibilities of modern CNC shaping machines are not being fully ex-ploited by gear designers.

Conclusions
Some of the technical possibilities of CNC gear shaping have been described. The decision about installing a full CNC shaping machine is however, based on economic factors. Determining factors are savings in set-up cycle times. The following table shows a comparison be-tween the set-up times for a conventional and a full CNC machine: (Fig. 16)

Operation	Time (min)		
	conv	full CNC	
Fixture change	20	5	1) (Fig. 19)
Cutter change	5	1	2)
Change index gears	10	-	
Select program feeds speeds	1	-	3)
Set cutter/workpiece offset	8	-	4)
Set limit switches radial	3	-	
Set cutting depth	1	-	
Set stroke length	5	-	5)
Set stroke position	5	-	6)
Set relief angle (taper)	8	-	7)
Correct cutting depth after 1 gear			
	71 min	7 min	