

Project : SPUR GEAR REDUCER Ref: PAGE 1

Date : 27-12-2018

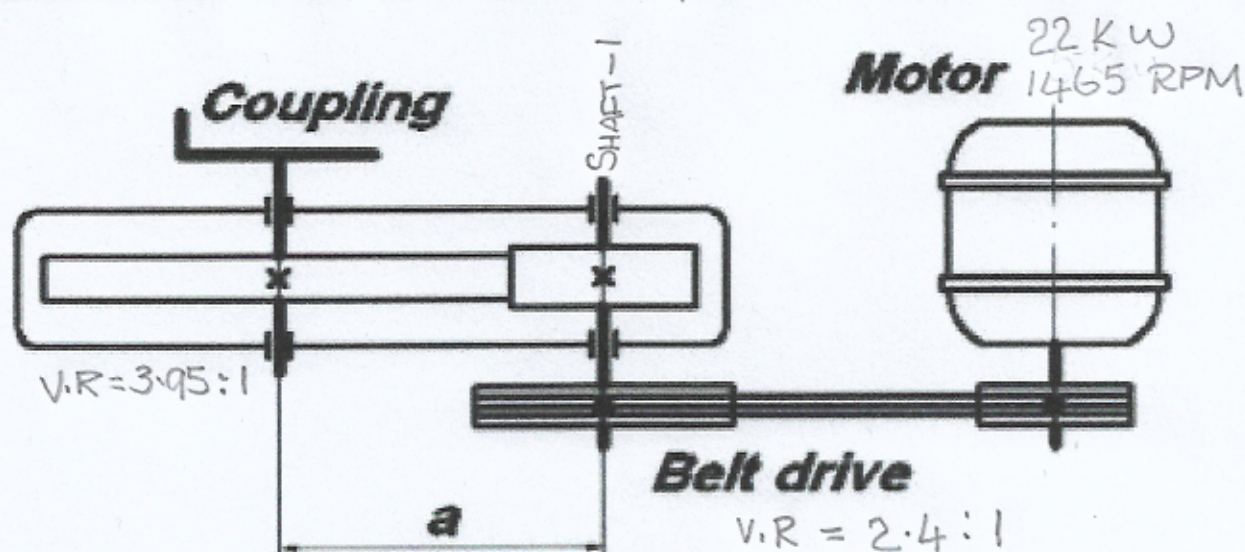


Figure 1: Spur gear reducer

AS WITH S.I. UNITS STD. TIME = 1 SEC CONVERT RPM TO Rev/sec

$$1465 / 60 = 24.416 \text{ Rev/sec}$$

CALC SPEED SHAFT-1

$$\text{SHAFT-1} = \text{INPUT} / 2.4 = 24.416 / 2.4$$

$$= 10.174 \text{ Rev/Sec}$$

CALC SPEED COUPLING

$$\text{COUPLING} = \text{SHAFT-1} / 3.95 = 10.174 / 3.95$$

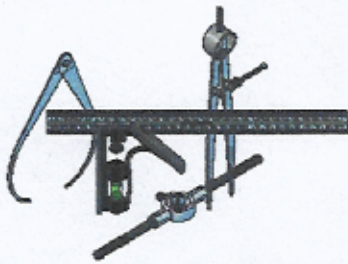
$$= 2.576 \text{ Rev/sec}$$

CALC. TORQUE COUPLING

$$\text{TORQUE} = P_w / 2\pi n \quad \text{WHERE } T = \text{N-M, } P = \text{WATTS, } n = \text{Rev/sec}$$

$$= (22 \times 1000) / (2 \times \pi \times 2.576)$$

$$= 1358.7 \text{ N-M} = 1.4 \text{ KN-M}$$



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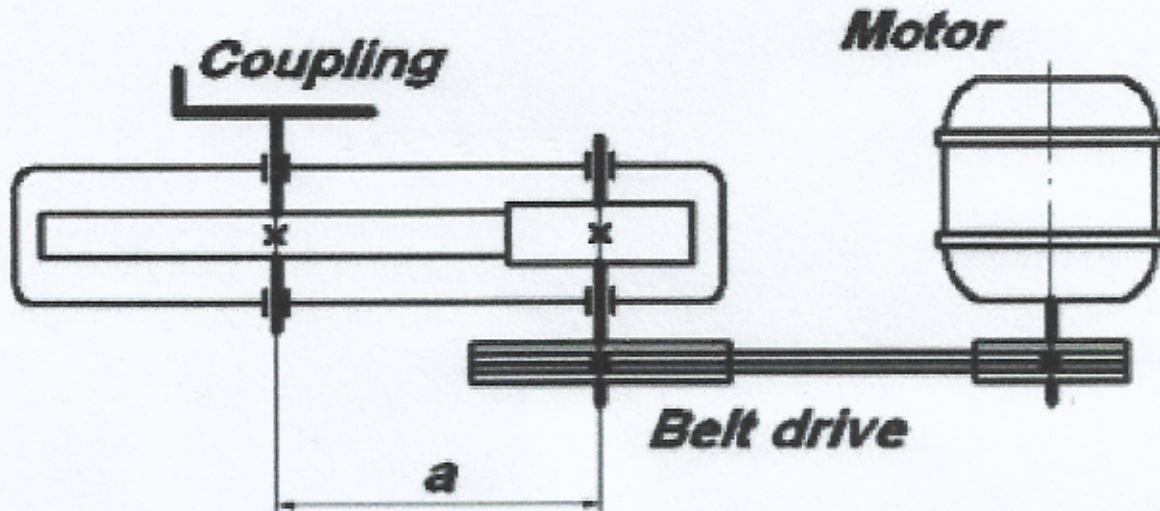


Figure 1: Spur gear reducer

A QUICKER WAY TO CALC. TORQUE AT COUPLING

AS THIS IS A COMPOUND DRIVE WE CAN CALC. OVERALL RATIO

$$V.R. O/A = V.R. 1 \times V.R. 2 = 2.4:1 \times 3.95:1 = 9.48:1$$

WE USE THIS TO DIRECTLY CALC COUPLING RPM

$$= \frac{1445}{9.48} = 154.54 \text{ RPM} = 154.54/60 \text{ REV/SEC}$$

$$= 2.576 \text{ REV/SEC}$$

THEN USE THIS TO CALC. TORQUE AT COUPLING

CALC. THE SPEED AT EACH STAGE IS USEFUL AS WE CAN CALC. TORQUE AT SHAFT-1. WE WOULD THEN USE THIS DATA TO SIZE AND DESIGN SHAFT AND GEARS.