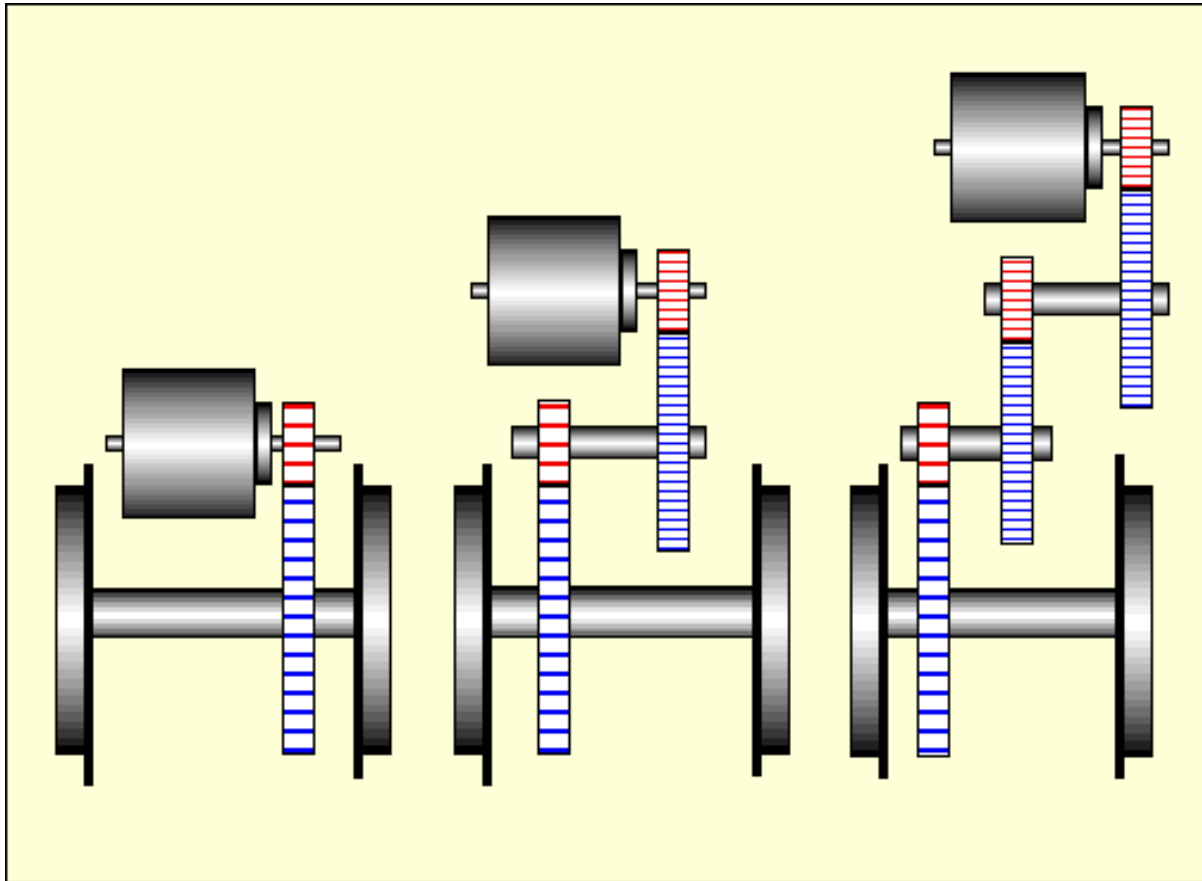


Gearbox Design

The following design criteria was based on the premise that a 2mm or 3.2mm shaft would be the motor, and that a 3, 4, or 5mm shaft would be an intermediate stage, with a 6mm or 8mm shaft being the driving axle.



The drawing above shows one, two and three stage reduction gearing. It is advisable to use MOD 1.0 gears for the drive axle as the larger tooth size does not harbor grit etc as well as a smaller tooth size would. Use the design tables below to select a primary gear for the motor. It is advisable to use the 4mm bore gear set as this has the widest range of sizes.

The following motors have a 2mm output shaft

RE-280 RE-360 RE-385 MM-36

The possible first stage gears are Hostaform MOD 0.5 with the following output shaft sizes.

Motor	3mm bore	4mm bore	6mm bore
12	15	18	48
13	16	19	50
14	17	20	52
		21	54
		22	
		23	
		24	
		25	
		26	
		27	
		30	
		32	
		35	
		36	
		40	
		42	
		45	

The following motors have a 3.2mm shaft

RE-540/1 MM543M MM545Y

The possible first stage gears are Hostaform MOD 0.7 with the following output shaft sizes.

Motor	4mm bore	6mm bore
12	16	25
13	17	26
14	18	27
15	19	30
	20	32
	21	35
	22	36
	23	40
	24	42
		45
		48
		50
		52
		54

MOD 1.0 Gears 3mm bore

Polythene 10 15 20 40

Note: Could be force fitted to 3.2mm shaft for RE-540/1, MM543M, MM545Y

MOD 1.0 Gears	4mm bore											
Polythene	12	18	38	58								
Nylon	10	12	15	18	20	30	38	40	50	58 60		
Hostaform	12	13	14	15	16	17	18	19	20			
Steel	12	15	16	Note: user must bore 4mm hole from pilot								

MOD 1.0 Gears 5mm bore

Hostaform 21 22 23

MOD 1.0 Gears 6mm bore

Hostaform 23 24 25 26 27 30 32

MOD 1.0 Gears 8mm bore

Hostaform 35 36 40 42 45 48 50 52 54

Steel 20 25 30

Worked Example:

An 4-6-0 locomotive requires a 30:1 gearbox with a final drive of 1,162 Grammes per Centimetre torque to a 6mm shaft, the motor to be used is a RE-540/1.

- | | | |
|--------|--|------------|
| Step 1 | 12 tooth Hostaform MOD 0.7 fitted to motor
24 tooth Hostaform MOD 0.7 fitted to 4mm shaft | Output 2:1 |
| Step 2 | 12 tooth Nylon MOD 1.0 fitted to 4mm shaft
60 tooth Nylon MOD 1.0 fitted to 4mm shaft | Output 5:1 |
| Step 3 | 10 tooth Nylon MOD 1.0 fitted to 4mm shaft
30 tooth Hostaform MOD 1.0 fitted to 6mm shaft | Output 3:1 |