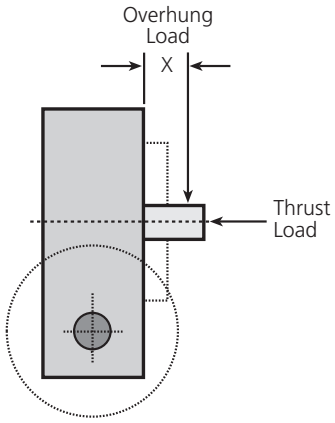
GEARBOXES

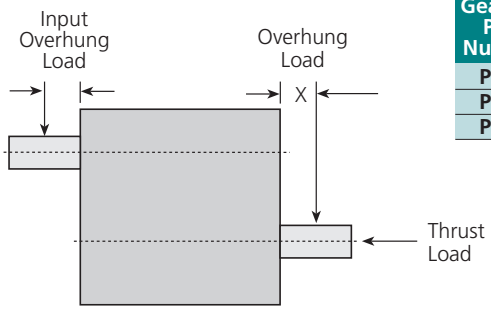
The following tables are based on an input speed of 1000 RPM taking a full load torque plus overhung load and thrust load:-

P/PF BP TYPE WORM & WHEEL GEARBOXES



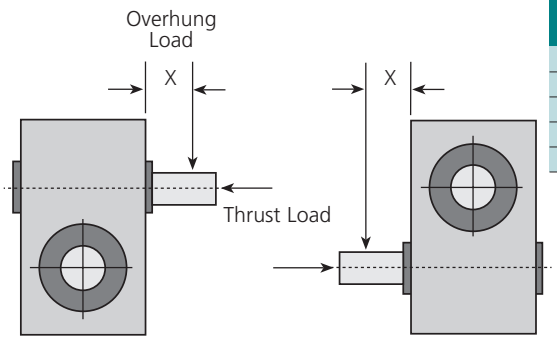
Gearbox Part Number		OUTPUT SHAFT Distance 'X'mm	Overhung Load kg	Thrust Load kg	INPUT Overhung Load kg
P20	PF20	10	12	5	6
P30	PF30	12	20	12	8
P40	PF40	15	30	20	10
P45	PF45	20	45	30	12
P55	PF55	20	60	40	14
P60	PF60	25	70	50	16
P70	PF70	30	80	60	20
	BP50	25	60	40	20
	BP60	30	80	60	25

PP TYPE DOUBLE REDUCTION GEARBOXES



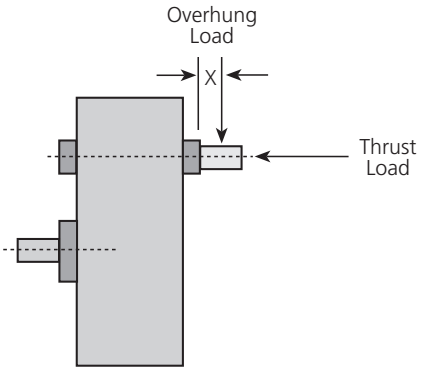
Gearbox Part Number	OUTPUT SHAFT Distance 'X'mm	Overhung Load kg	Thrust Load kg	INPUT Overhung Load kg
PP35	12	12	10	6
PP50	20	30	20	10
PP60	25	45	35	15

E TYPE CROSSED HELICAL GEARBOXES



Gearbox Part Number	THRUST LOADS - KG Distance 'X'mm	Overhung Load kg	Thrust Load kg
E20	6	15	10
E30	10	20	15
E40	12	40	30
E55	20	60	40
E60	25	80	50

FF TYPE SPUR GEAR REDUCTION GEARBOXES



Gearbox Part Number	OUTPUT SHAFT Distance 'X'mm	Overhung Load kg	Thrust Load kg	INPUT Overhung Load kg
FF10	8	10	10	6
FF15	10	20	20	12
FF20	15	40	30	16
FF30	20	60	40	20
FF40	30	80	50	30
FF50	40	100	60	40

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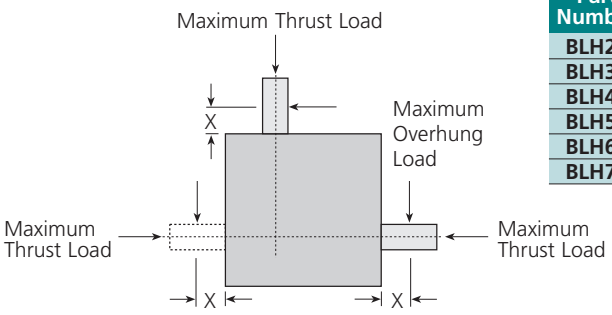
GEARBOXES

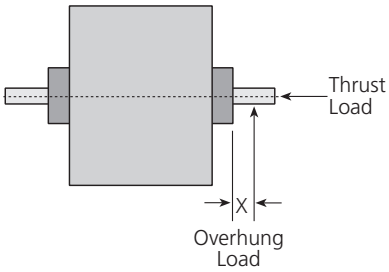
The following tables are based on an input speed of 1000 RPM taking a full load torque plus overhung load and thrust load:-

BLH/ BLHT TYPE BEVEL GEARBOXES



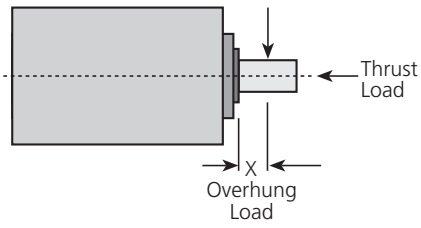
Gearbox Part Number	THRUST LOADS - KG Distance 'X'mm	Overhung Load kg	Thrust Load kg
BLH20	6	4	3
BLH30	10	8	6
BLH40	12	12	10
BLH50	20	20	15
BLH60	25	30	25
BLH70	30	40	35

J/XJ NT/ NH TYPE PLANETARY GEARBOXES



Gearbox Part Number	THRUST LOADS - KG Distance 'X'mm	Overhung Load kg	Thrust Load kg
J & XJ 51-52-53	6	5	5
J & XJ 64-65-66	6	5	5
NT & NH 61-62-63	10	12	10
NT & NH 91-92	15	20	15
NT & NH 121-122	20	25	20

EHD TYPE EPICYCLIC GEARBOXES



Gearbox Part Number	THRUST LOADS - KG Distance 'X'mm	Overhung Load kg	Thrust Load kg
EHD04*	10	20	15
EHD06*	10	25	15
EHD08*	12	30	20
EHD12‡	20	60	60
EHD16‡	30	100	100

* Ball bearings
‡ Taper roller bearings

Putting loading on bearings may reduce the bearing / gearbox life and alter the running quality of the unit.

Material Near Equivalents (to be used as a guide only)

EN24 817 M40: DIN 34CrNiMo6 equiv. - AISI/SAE/ASTM 4337/4340
EN36 655 M13: DIN 15NiCr13/14NiCr14 equiv. - AISI/SAE/ASTM 3310/3415/9314
EN8 080 M40: DIN C40E/Ck40 - AISI/SAE/ASTM 1040
316 S11: DIN X2CrNiMo 17-2-2 - AISI/SAE/ASTM 316L
303 S31/22: DIN X8CrNiS 18-9 equiv. - AISI/SAE/ASTM 303

Aluminium Housings (square design) 6082-T6 Grade (HE30)
Aluminium Housings (round design) 2014A Grade (HE15)

Delrin DE/E 9446 NC-010 (Dupont)

TECHNICAL

GEARBOXES

Mass Moment of Inertia Reflected at Input of Gearboxes

Gearbox Part Number	Mass Moment of Inertia Reflected at Input of Gearbox Kg m²
P20-10	2.04×10^{-7}
P20-12	1.96×10^{-7}
P20-15	1.90×10^{-7}
P20-20	1.85×10^{-7}
P20-30	1.80×10^{-7}
P20-60	1.80×10^{-7}
P20-120	1.79×10^{-7}

Gearbox Part Number	Mass Moment of Inertia Reflected at Input of Gearbox Kg m²
PF20-10	2.51×10^{-7}
PF20-12	2.43×10^{-7}
PF20-15	2.36×10^{-7}
PF20-20	2.32×10^{-7}
PF20-30	2.28×10^{-7}
PF20-60	2.25×10^{-7}
PF20-120	2.25×10^{-7}

Gearbox Part Number	Mass Moment of Inertia Reflected at Input of Gearbox Kg m²
P30-10	7.62×10^{-7}
P30-12	7.13×10^{-7}
P30-15	6.71×10^{-7}
P30-20	6.38×10^{-7}
P30-30	6.14×10^{-7}
P30-60	5.98×10^{-7}
P30-120	5.95×10^{-7}

Gearbox Part Number	Mass Moment of Inertia Reflected at Input of Gearbox Kg m²
PF30-10	9.20×10^{-7}
PF30-12	8.71×10^{-7}
PF30-15	8.30×10^{-7}
PF30-20	7.96×10^{-7}
PF30-30	7.72×10^{-7}
PF30-60	7.56×10^{-7}
PF30-120	7.53×10^{-7}

Gearbox Part Number	Mass Moment of Inertia Reflected at Input of Gearbox Kg m²
P40-10	2.69×10^{-6}
P40-12	2.54×10^{-6}
P40-15	2.42×10^{-6}
P40-20	2.31×10^{-6}
P40-30	2.22×10^{-6}
P40-60	2.20×10^{-6}
P40-120	2.18×10^{-6}

Gearbox Part Number	Mass Moment of Inertia Reflected at Input of Gearbox Kg m²
PF40-10	3.78×10^{-6}
PF40-12	3.62×10^{-6}
PF40-15	3.49×10^{-6}
PF40-20	3.39×10^{-6}
PF40-30	3.32×10^{-6}
PF40-60	3.27×10^{-6}
PF40-120	3.26×10^{-6}

Gearbox Part Number	Mass Moment of Inertia Reflected at Input of Gearbox Kg m²
P45-10	5.20×10^{-6}
P45-12	4.70×10^{-6}
P45-15	4.29×10^{-6}
P45-20	3.95×10^{-6}
P45-30	3.72×10^{-6}
P45-60	3.57×10^{-6}
P45-120	3.53×10^{-6}

Gearbox Part Number	Mass Moment of Inertia Reflected at Input of Gearbox Kg m²
PF45-10	7.34×10^{-6}
PF45-12	6.84×10^{-6}
PF45-15	6.43×10^{-6}
PF45-20	6.09×10^{-6}
PF45-30	5.86×10^{-6}
PF45-60	5.70×10^{-6}
PF45-120	5.66×10^{-6}

Gearbox Part Number	Mass Moment of Inertia Reflected at Input of Gearbox Kg m²
P55-10	1.11×10^{-5}
P55-12	1.00×10^{-5}
P55-15	9.10×10^{-6}
P55-20	8.30×10^{-6}
P55-30	7.80×10^{-6}
P55-60	7.40×10^{-6}
P55-120	7.30×10^{-6}

Gearbox Part Number	Mass Moment of Inertia Reflected at Input of Gearbox Kg m²
PF55-10	1.96×10^{-5}
PF55-12	1.84×10^{-5}
PF55-15	1.75×10^{-5}
PF55-20	1.67×10^{-5}
PF55-30	1.62×10^{-5}
PF55-60	1.58×10^{-5}
PF55-120	1.57×10^{-5}

Gearbox Part Number	Mass Moment of Inertia Reflected at Input of Gearbox Kg m²
P60-10	2.37×10^{-5}
P60-12	2.08×10^{-5}
P60-15	1.85×10^{-5}
P60-20	1.65×10^{-5}
P60-30	1.52×10^{-5}
P60-60	1.42×10^{-5}
P60-120	1.40×10^{-5}

Gearbox Part Number	Mass Moment of Inertia Reflected at Input of Gearbox Kg m²
PF60-10	3.80×10^{-5}
PF60-12	3.68×10^{-5}
PF60-15	3.14×10^{-5}
PF60-20	3.10×10^{-5}
PF60-30	2.88×10^{-5}
PF60-60	2.82×10^{-5}
PF60-120	2.79×10^{-5}

TECHNICAL

GEARBOXES

Mass Moment of Inertia Reflected at Input of Gearboxes

Gearbox Part Number	Mass Moment of Inertia Reflected at Input of Gearbox Kg m²
P70-10	4.81×10^{-5}
P70-12	4.19×10^{-5}
P70-15	3.70×10^{-5}
P70-20	3.28×10^{-5}
P70-30	3.00×10^{-5}
P70-60	2.82×10^{-5}
P70-120	2.76×10^{-5}

Gearbox Part Number	Mass Moment of Inertia Reflected at Input of Gearbox Kg m²
PF70-10	7.09×10^{-5}
PF70-12	6.47×10^{-5}
PF70-15	5.98×10^{-5}
PF70-20	5.57×10^{-5}
PF70-30	5.28×10^{-5}
PF70-60	5.09×10^{-5}
PF70-120	5.04×10^{-5}

Gearbox Part Number	Mass Moment of Inertia Reflected at Input of Gearbox Kg m²
E20-1	3.84×10^{-6}
E20-2	2.21×10^{-6}
E20-3	1.89×10^{-6}
E20-4	1.78×10^{-6}
E20-5	1.73×10^{-6}

Gearbox Part Number	Mass Moment of Inertia Reflected at Input of Gearbox Kg m²
E30-1	2.90×10^{-5}
E30-2	1.42×10^{-5}
E30-3	1.12×10^{-5}
E30-4	1.02×10^{-5}
E30-5	9.72×10^{-6}

Gearbox Part Number	Mass Moment of Inertia Reflected at Input of Gearbox Kg m²
E40-1	1.49×10^{-4}
E40-2	6.99×10^{-5}
E40-3	5.40×10^{-5}
E40-4	4.83×10^{-5}
E40-5	4.62×10^{-5}

Gearbox Part Number	Mass Moment of Inertia Reflected at Input of Gearbox Kg m²
E50-1	4.65×10^{-4}
E50-2	2.39×10^{-4}
E50-3	1.94×10^{-4}
E50-4	1.78×10^{-4}
E50-5	1.72×10^{-5}

Gearbox Part Number	Mass Moment of Inertia Reflected at Input of Gearbox Kg m²
E60-1	1.33×10^{-3}
E60-2	6.79×10^{-4}
E60-3	5.52×10^{-4}
E60-4	5.07×10^{-4}
E60-5	4.90×10^{-4}

Gearbox Part Number	Mass Moment of Inertia Reflected at Input of Gearbox Kg m²
E60B-1	1.25×10^{-3}
E60B-2	6.32×10^{-4}
E60B-3	5.10×10^{-4}
E60B-4	4.67×10^{-4}
E60B-5	4.51×10^{-4}

Gearbox Part Number	Mass Moment of Inertia Reflected at Input of Gearbox Kg m²
BLH20-1	4.67×10^{-7}
BLH30-1	2.26×10^{-6}
BLH40-1	6.83×10^{-6}
BLH50-1	5.10×10^{-5}
BLH60-1	2.04×10^{-4}
BLH70-1	4.49×10^{-4}

Loctite Products & *(Current Food Approvals)*

603* : Retainer for bearings (-40 to +150°C)
(National Sanitary Foundation (NSF) P1 Approval)
567 : Thread sealant (-40 to +200°C)
(WRC potable water Approval Number 9903504)
577 : Thread sealant (-50 to +150°C)
(WRC potable water Approval Number 0302507 & NSF P1)
5367 : Silicone sealant (-40 to +250°C)
641 : Bearing fit (-40 to +150°C)
222* : Thread Lock - used on capscrew/grubscrew to prevent loosening (-40 to +150°C) *(NSF P1)*

*most frequently used by Ondrives - others dependent on design or by request

Note: FDA Approvals are being phased out and replaced by NSF approvals

Material Properties of Wormwheels used in P & PF Range of Gearboxes

Material: Aluminium Bronze (BS/DGS CA104) (ASTM B150: 63200) (DIN Cu Al 10Ni) (UNS C63200)
Tensile Strength: 700-850N/mm², 0.2% proof stress 350-600 N/mm²
Young's Modulus: 125 N/mm² x 10^3
Density: 7.59 g/cm³
Coefficient of Linear Expansion: 17.1°C x 10^{-6}
Electrical Conductivity: %IACS 8
Thermal Conductivity: 80 W/m °C

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