Performance table

POWER GEAR

		Abbr.	Unit	P54	P75	P90	P110	P140	P170	P210	P240	P280
Output torque	i=1:1	T_{2N}	Nm	15	45	78	150	360	585	1300	2150	3200
		T_{2B}	Nm	23	68	117	225	540	878	1950	3225	4800
		T_{2Not}	Nm	30	90	156	300	720	1170	2600	4300	6400
	i=1.5:1	T_{2N}	Nm	15	45	78	150	360	585	1300	2150	3200
		T_{2B}	Nm	23	68	117	225	540	878	1950	3225	4800
		T_{2Not}	Nm	30	90	156	300	720	1170	2600	4300	6400
	i=2:1	T_{2N}	Nm	12	42	68	150	330	544	1220	2010	3050
		T_{2B}	Nm	18	63	102	225	495	816	1830	3015	4575
		T_{2Not}	Nm	24	84	136	300	660	1088	2440	4020	6100
	i=3:1	T_{2N}	Nm	12	33	54	120	270	450	1020	1650	2850
		T_{2B}	Nm	18	50	81	180	405	675	1530	2475	4275
		T_{2Not}	Nm	24	66	108	240	540	900	2040	3300	5700
	i=4:1	T_{2N}	Nm	–	28	52	100	224	376	860	1410	2300
		T_{2B}	Nm	–	42	78	150	336	564	1290	2115	3450
		T_{2Not}	Nm	–	56	104	200	448	752	1720	2820	4600
	i=5:1	T_{2N}	Nm	–	25	40	85	196	320	740	1210	2000
		T_{2B}	Nm	–	38	60	128	294	480	1110	1815	3000
		T_{2Not}	Nm	–	50	80	170	392	640	1480	2420	4000
Input speed	i= 1:1	$n1_{Standard}$	min^{-1}	2500	2000	1700	1400	1100	1000	800	700	650
	i= 1.5:1 ; 2:1	$n1_{Standard}$	min^{-1}	3000	2500	2000	1600	1400	1300	1050	950	850
	i= 3:1 ; 4:1 ; 5:1	$n1_{Standard}$	min^{-1}	3500	3000	2500	2100	2000	1800	1600	1350	1200
		$n1_{max}$ **	min^{-1}	7500	6500	5500	4500	3500	3000	2200	2000	1700
		**On request, special measures required										
Output backlash	Standard		arcmin	≤ 18	≤ 15	≤ 14	≤ 13	≤ 12	≤ 12	≤ 11	≤ 11	≤ 11
	Reduced		arcmin	≤ 12	≤ 9	≤ 8	≤ 8	≤ 7	≤ 6	≤ 6	≤ 6	≤ 6
Permissible radial load		F_{R1max*}	N	300	900	1300	2000	3500	5000	8500	11000	15000
		F_{R2max*}	N	400	1100	1600	2500	4500	6000	10500	15000	18000
Permissible axial load		F_{A1max*}	N	150	450	650	1000	1750	2500	4250	5500	7500
		F_{A2max*}	N	200	550	800	1250	2250	3000	5250	7500	9000
Efficiency at max load		n	%	> 98	> 98	> 98	> 98	> 98	> 98	> 98	> 98	> 98
Running noise at 1500 min^{-1}, partial load		Lpa	db(A)	70	70	74	76	77	78	80	82	83
Weight		m	kg	1.8	4.5	8.0	13.0	22.0	38.5	71.0	103.5	155.0
Service life		Lh	h	>15000	>15000	>15000	>15000	>15000	>15000	>15000	>15000	>15000
Lubrication				Synthetic oil, ISO VG 150, up to size P140 inclusive								
Average oil quantity			ltr.	0.05	0.10	0.20	0.30	0.40	1.00	2.20	2.60	3.00
Operating temperature			°C	-30 bis 90								
Paint				Primary coated RAL 9005 – black								
Mass moments of inertia	i=1.0:1	I_1	kgcm²	0.28	1.79	4.93	12.5	36.8	85.9	287	592	1190
related to input	i=1.5:1	I_1	kgcm²	0.15	1.22	3.45	9.17	22.4	54.6	179	373	762
for shaft arrangement 13	i=2.0:1	I_1	kgcm²	0.11	0.95	2.78	7.41	15.6	39.3	123	253	506
	i=3.0:1	I_1	kgcm²	0.09	0.78	2.34	6.18	10.9	28.5	84.1	167	328
	i=4.0:1	I_1	kgcm²	–	0.72	2.18	5.71	9.19	24.5	69.9	136	263
	i=5.0:1	I_1	kgcm²	–	0.69	2.10	5.48	8.32	22.6	62.7	120	230

* Centre of shaft

Thermal performance limit

	P54	P75	P90	P110	P140	P170	P210	P240	P280
Thermal performance limit P_{therm} (KW) at 20 °C and duty cycle of 100%	1.6	2.9	4.1	5.7	9.2	13.2	21.2	28.4	38.4

The gearbox performance is limited by the maximum permissible oil bath temperature. The actual effective performance must not exceed the permissible limit when in continuous operation.

For intermittent operation or in the event of increased ambient temperatures, the following factors can be applied as guide values for determining the permissible thermal performance limit.

Duty cycle (dc) in %	100	80	60	40	20
Factor	1.00	1.20	1.40	1.60	1.80

Ambient temperature °C	10	20	30	40	50
Factor	1.20	1.00	0.87	0.75	0.62

Example	Gearbox		dc		Ambient Temperature		
P_{therm}	P140		80 %		30 °C		
Thermal performance limit P_{therm} =	9.2	x	1.20	x	0.87	=	9.6 KW

Applicable is: $P_{exist.} \leq P_{therm}$

Please see gearbox selection and installation on page 16+17!

Performance table

POWER GEAR

		Abbr.	Unit	P360	P450
Output torque	i=1:1	T_{2N}	Nm	3750	6600
		T_{2B}	Nm	5625	9900
		T_{2Not}	Nm	7500	13200
	i=1.5:1	T_{2N}	Nm	3550	7000
		T_{2B}	Nm	5325	10500
		T_{2Not}	Nm	7100	14000
	i=2:1	T_{2N}	Nm	3500	7000
		T_{2B}	Nm	5250	10500
		T_{2Not}	Nm	7000	14000
	i=3:1	T_{2N}	Nm	3350	7000
		T_{2B}	Nm	5025	10500
		T_{2Not}	Nm	6700	14000
	i=4:1	T_{2N}	Nm	2900	6600
		T_{2B}	Nm	4350	9900
		T_{2Not}	Nm	5800	13200
	i=5:1	T_{2N}	Nm	2600	6000
		T_{2B}	Nm	3900	9000
		T_{2Not}	Nm	5200	12000
Input speed	i= 1:1	$n1_{Standard}$	min^{-1}	650	550
	i= 1.5:1 ; 2:1	$n1_{Standard}$	min^{-1}	850	800
	i= 3:1 ; 4:1 ; 5:1	$n1_{Standard}$	min^{-1}	1200	1100
		$n1_{max}$ **	min^{-1}	1400	1300
		**On request, special measures required			
Output backlash	Standard		arcmin	≤ 11	≤ 10
at 2 % max load	Reduced		arcmin	≤ 6	≤ 5
Permissible radial load	i=1:1 – 2:1	F_{R1max*}	N	18000	22000
	i=3:1	F_{R1max*}	N	15000	18000
	i=4:1	F_{R1max*}	N	11000	15000
	i=5:1	F_{R1max*}	N	9000	11000
	i=1:1 – 5:1	F_{R2max*}	N	24000	34000
Permissible axial load	i=1:1 – 2:1	F_{A1max}	N	9000	11000
	i=3:1	F_{A1max}	N	7500	9000
	i=4:1	F_{A1max}	N	5500	7500
	i=5:1	F_{A1max}	N	4500	5500
	i=1:1 – 5:1	F_{A2max}	N	12000	17000
Efficiency at max load		n	%	> 98	> 98
Running noise at 1500 min^{-1}, partial load		Lpa	db(A)	85	85
Weight		m	kg	240.0	400.0
Service life		Lh	h	>15000	>15000
Lubrication					
Average oil quantity			ltr.	9.00	22.00
Operating temperature			°C	-30 bis 90	-30 bis 90
Paint					
Mass moments of inertia	i=1.0:1	I1	kgcm²	2314	7632
related to input	i=1.5:1	I1	kgcm²	1270	4152
for shaft arrangement 13	i=2.0:1	I1	kgcm²	877	2764
	i=3.0:1	I1	kgcm²	467	1596
	i=4.0:1	I1	kgcm²	316	1077
	i=5.0:1	I1	kgcm²	219	750

* Centre of shaft

Thermal performance limit

	P360	P450
Thermal performance limit P_{therm} (KW) at 20 °C and duty cycle of 100 %	60	93.4

The gearbox performance is limited by the maximum permissible oil bath temperature. The actual effective performance must not exceed the permissible limit when in continuous operation.

Duty cycle (dc) in %	100	80	60	40	20
Factor	1.00	1.20	1.40	1.60	1.80

For intermittent operation or in the event of increased ambient temperatures, the following factors can be applied as guide values for determining the permissible thermal performance limit.

Ambient temperature °C	10	20	30	40	50
Factor	1.20	1.00	0.87	0.75	0.62

Example:	Gearbox		dc		Ambient Temperature		
P_{therm}	P140		80 %		30 °C		
Thermal performance limit P_{therm} =	9.2	x	1.20	x	0.87	=	9.6 KW

Applicable is: $P_{exist.} \leq P_{therm}$

Please see gearbox selection and installation on page 16+17!

Performance table reinforced design

POWER GEAR

		Abbr.	Unit	X54	X75	X90	X110	X140	X170	X210	X240	X280
Output torque	i=1:1	T_{2N}	Nm	24	87	135	290	625	1020	2050	3350	5200
		T_{2B}	Nm	36	131	203	435	938	1530	3075	5025	7800
		T_{2Not}	Nm	48	174	270	580	1250	2040	4100	6700	10400
Input speed		$n1_{Standard}$	min^{-1}	2200	1800	1500	1100	900	850	700	600	500
		$n1_{max}$ **	min^{-1}	4000	3000	2500	2000	2000	150	1200	1200	1000
		**On request. special measures required										
Output backlash	Standard		arcmin	≤ 18	≤ 15	≤ 14	≤ 13	≤ 12	≤ 12	≤ 11	≤ 11	≤ 11
	Reduced		arcmin	≤ 12	≤ 9	≤ 8	≤ 8	≤ 7	≤ 6	≤ 6	≤ 6	≤ 6
Permissible radial load	Centre d1	F_{1Rmax}	N	400	1500	2000	3500	5500	7800	12000	16000	20000
	Centre d2	F_{2Rmax}	N	600	2000	2700	4500	7500	11000	16000	21000	30000
Permissible axial load	Centre d1	F_{1Amax}	N	200	750	1000	1750	2750	3900	6000	8000	10000
	Centre d2	F_{2Amax}	N	300	1000	1350	2250	3750	5500	8000	10500	15000
Efficiency at max load		n	%	> 98	> 98	> 98	> 98	> 98	> 98	> 98	> 98	> 98
Running noise at 1500 min^{-1}, partial load		Lpa	db(A)	70	70	74	76	77	78	80	82	83
Weight		m	kg	1.9	5.0	8.5	13.5	22.5	39.0	71.5	104.0	155.5
Service life		Lh	h	>15000	>15000	>15000	>15000	>15000	>15000	>15000	>15000	>15000
Lubrication				Synthetic oil, ISO VG 150, up to size P140 inclusive								
Average oil quantity			ltr.	0.1	0.1	0.2	0.3	0.4	1.0	2.2	2.6	3.0
Operating temperature			°C	-30 bis 90								
Paint				Primary coated RAL 9005 – black								
Mass moments of inertia related to input	shaft arrangement 13		$kgcm^2$	0.34	2.26	5.99	21.4	61.3	142	485	987	2150

Thermal performance limit

	X54	X75	X90	X110	X140	X170	X210	X240	X280
Thermal performance limit P_{therm} (KW) at 20 °C and duty cycle of 100 %	1.6	2.9	4.1	5.7	9.2	13.2	21.2	28.4	38.4

The gearbox performance is limited by the maximum permissible oil bath temperature. The actual effective performance must not exceed the permissible limit when in continuous operation.

For intermittent operation or in the event of increased ambient temperatures, the following factors can be applied as guide values for determining the permissible thermal performance limit.

Duty cycle (dc) in %	100	80	60	40	20
Factor	1.00	1.20	1.40	1.60	1.80

Ambient temperature °C	10	20	30	40	50
Factor	1.20	1.00	0.87	0.75	0.62

Example:	Gearbox	dc	Ambient Temperature		
P_{therm}	X140	80 %	30 °C		
Thermal performance limit P_{therm} =	9.2 x	1.20 x	0.87 =	9.6 KW	

Applicable is: $P_{exist.} \leq P_{therm}$

Please see gearbox selection and installation on page 16+17!