auma®
Solutions for a world in motion

Drives

Life-time graphs

GFC escalator gear units
FTS125.1, FTS160.1, FTS180.1
FTSST158.1, FTSST180.1, FTSST212.1

*Worm toothings according to DIN 3996:**2012***

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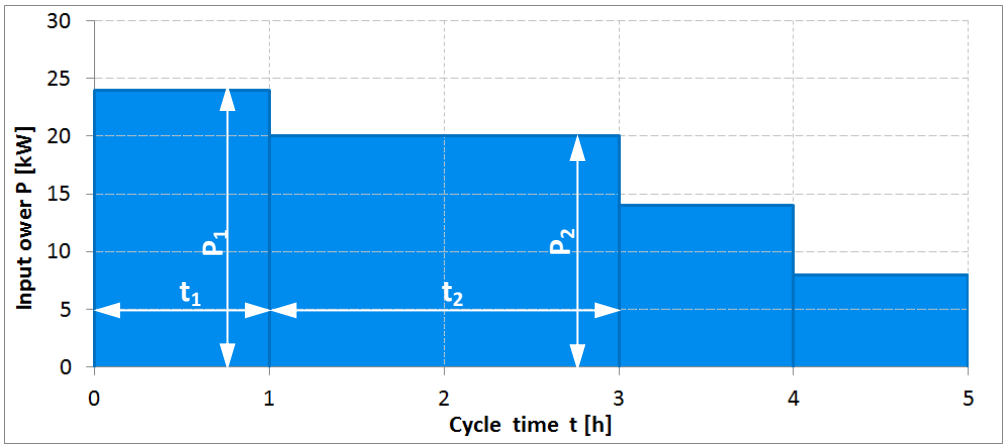
1. Existing load pattern



2. Total cycle time:

$t_{tot} = t_1 + t_2 + t_3 + \cdots t_i$

Example:

$t_{tot} = 5h$

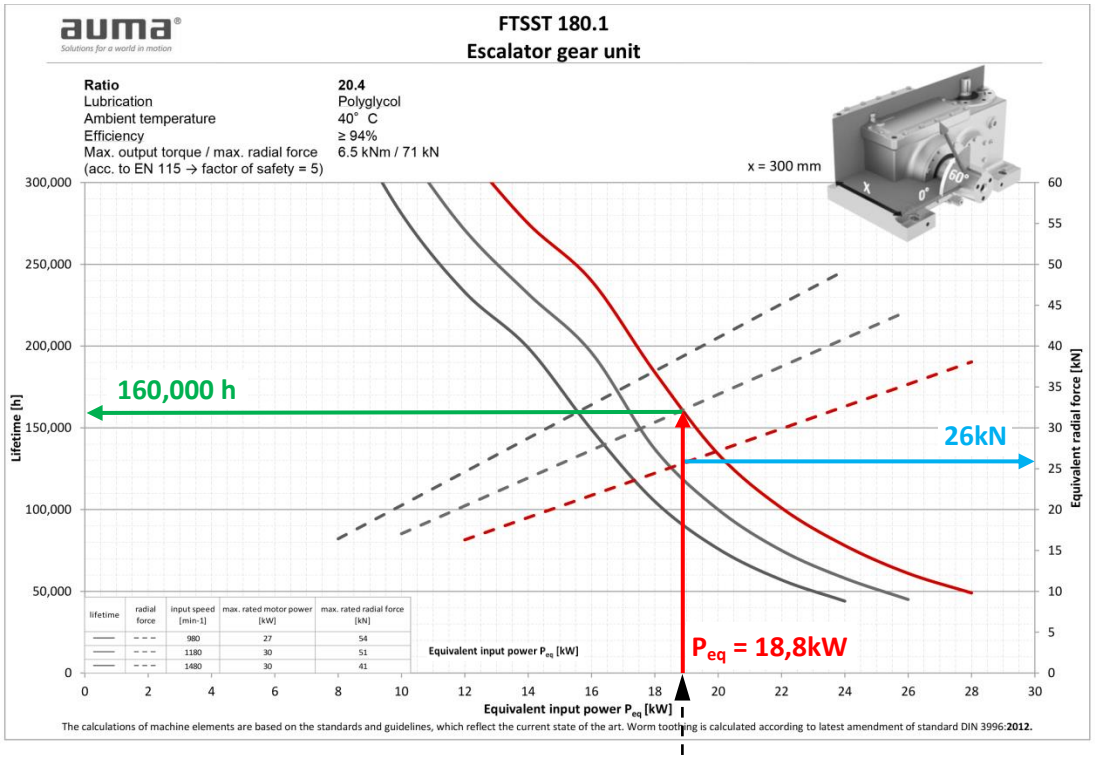
3. Equivalent input power P_{eq}:

$$P_{eq} = \sqrt[3]{P_1^3 * \frac{t_1}{t_{tot}} + P_2^3 * \frac{t_2}{t_{tot}} + P_3^3 * \frac{t_3}{t_{tot}} + \cdots + P_i^3 * \frac{t_i}{t_{tot}}}$$

$P_{eq} = 18{,}8\ kW$

4. Graphical determination of resulting life-time and permissible radial force on output shaft

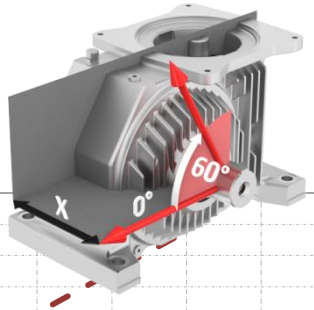
Exemplarily selected drive: FTSST180.1 with ratio i=20.4 and motor speed 1480rpm:

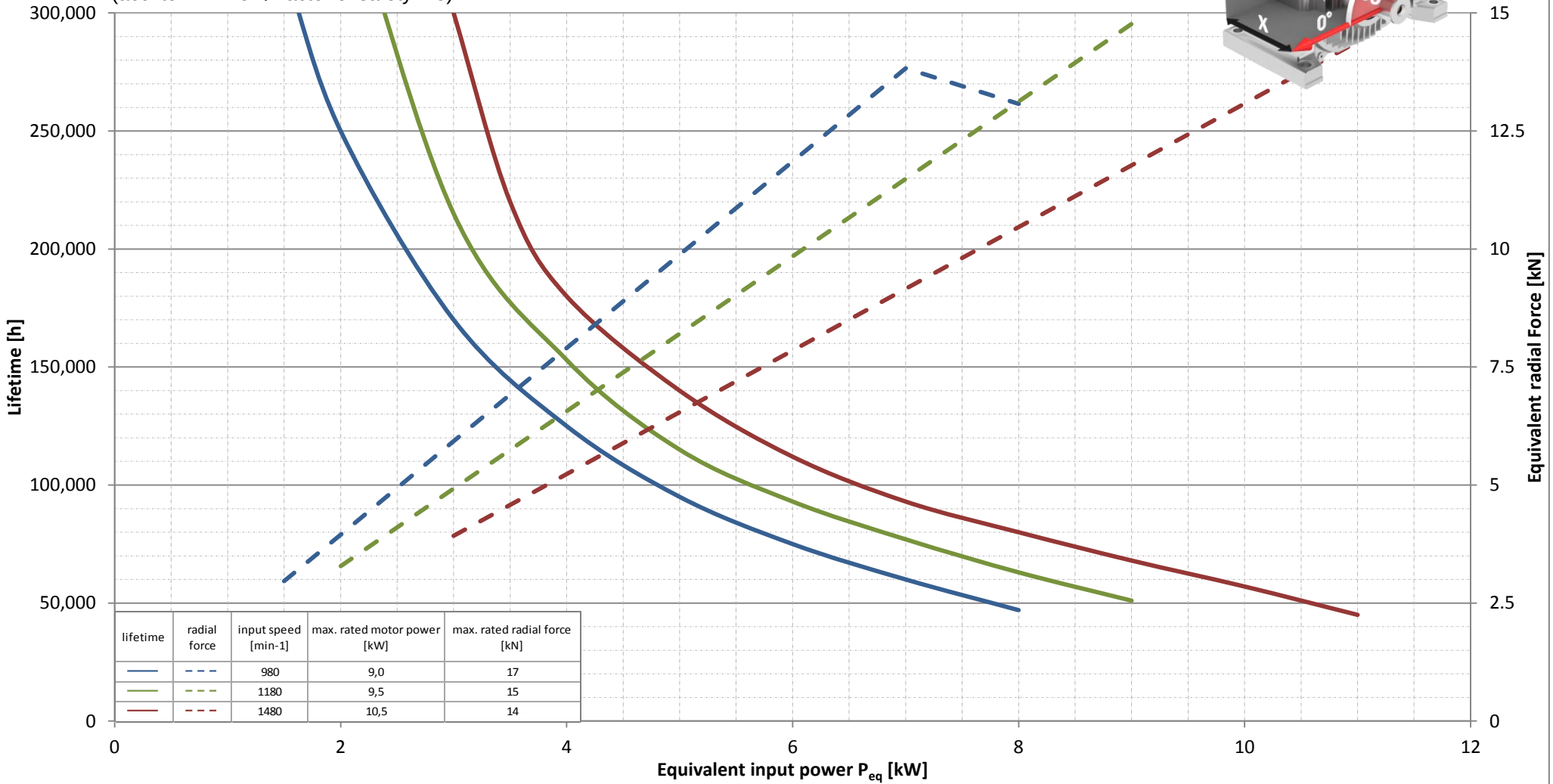


FTS 125.1
Escalator gear unit

Ratio	**20.5**
Lubrication	Polyglycol
Ambient temperature	40° C
Efficiency	≥ 91%
Max. output torque / max. radial force (acc. to EN 115 → factor of safety = 5)	2.0 kNm / 17 kN

x = 183 mm





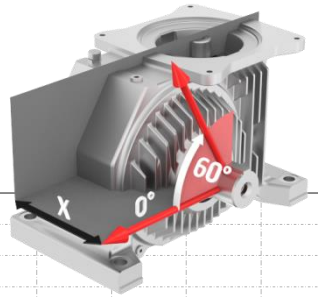
lifetime	radial force	input speed [min-1]	max. rated motor power [kW]	max. rated radial force [kN]
—	- - -	980	9,0	17
—	- - -	1180	9,5	15
—	- - -	1480	10,5	14

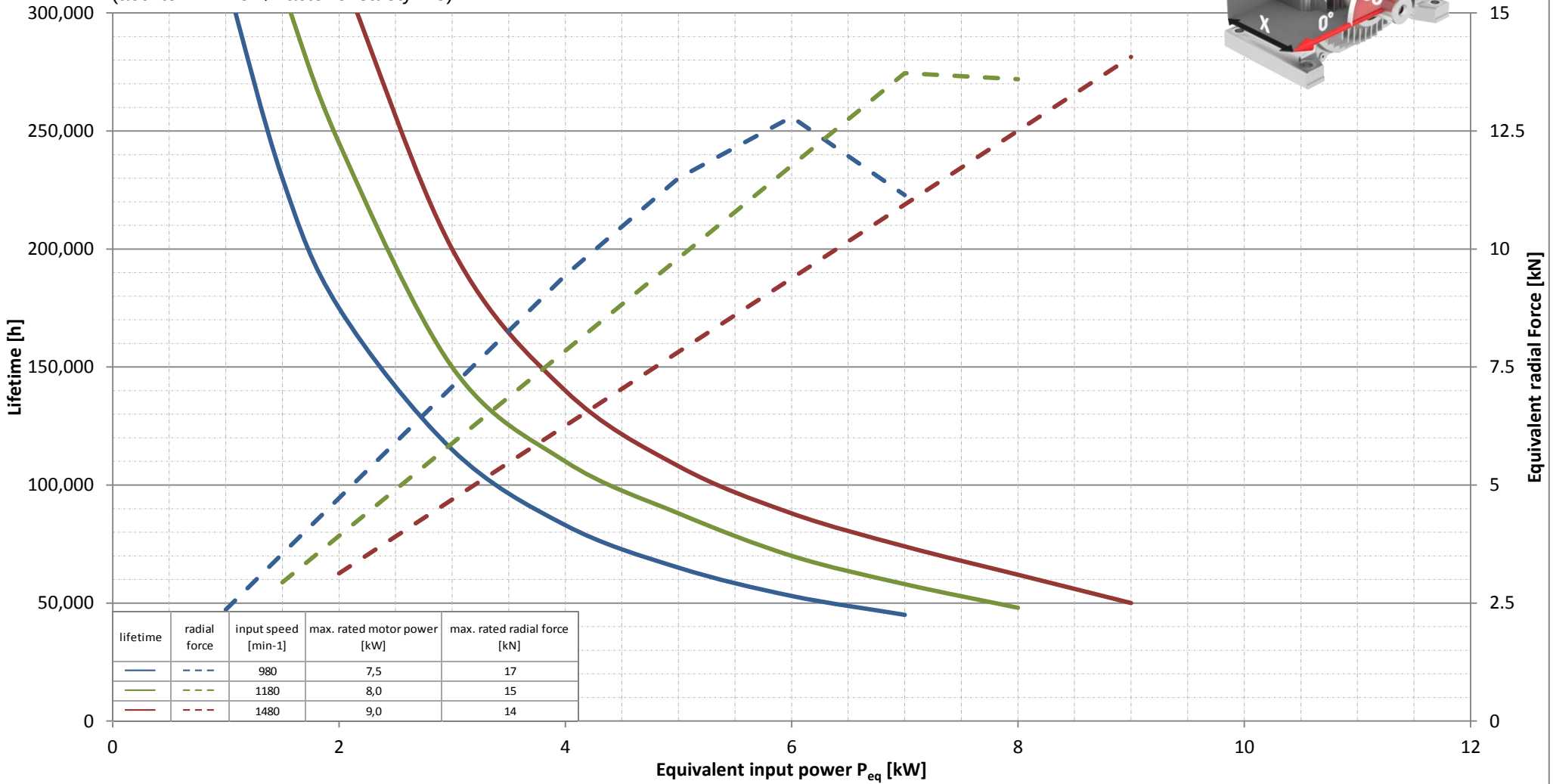
The calculations of machine elements are based on the standards and guidelines, which reflect the current state of the art. Worm toothing is calculated according to latest amendment of standard DIN 3996:**2012.**

FTS 125.1
Escalator gear unit

Ratio	**24.5**
Lubrication	Polyglycol
Ambient temperature	40° C
Efficiency	≥ 91%
Max. output torque / max. radial force (acc. to EN 115 → factor of safety = 5)	2.0 kNm / 17 kN

x = 183 mm





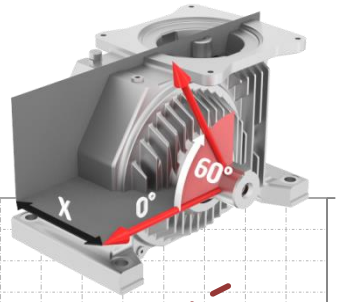
lifetime	radial force	input speed [min-1]	max. rated motor power [kW]	max. rated radial force [kN]
———	- - -	980	7,5	17
———	- - -	1180	8,0	15
———	- - -	1480	9,0	14

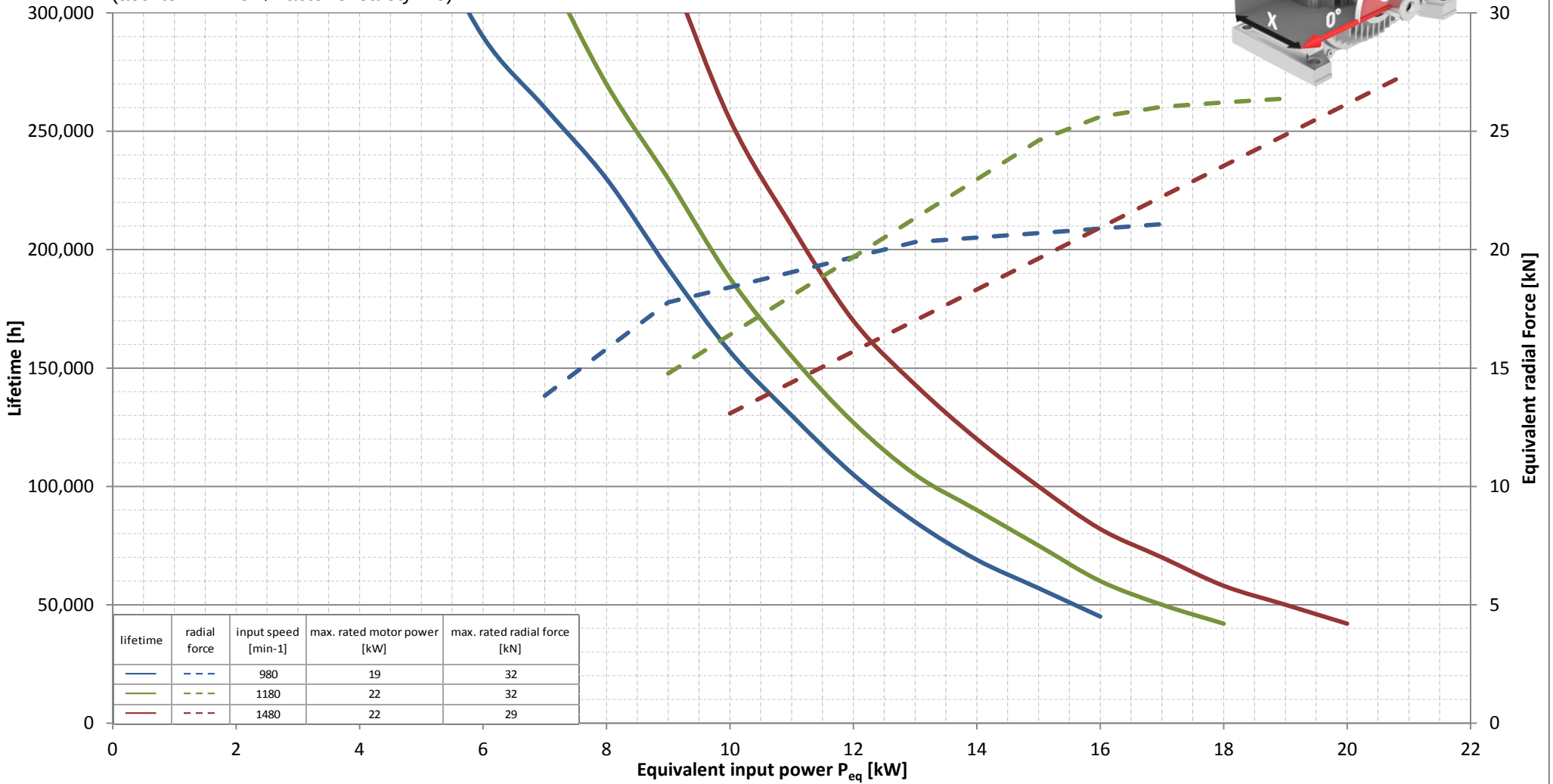
The calculations of machine elements are based on the standards and guidelines, which reflect the current state of the art. Worm toothing is calculated according to latest amendment of standard DIN 3996:**2012.**

FTS 160.1
Escalator gear unit

Ratio	**20.5**
Lubrication	Polyglycol
Ambient temperature	40° C
Efficiency	≥ 91%
Max. output torque / max. radial force (acc. to EN 115 → factor of safety = 5)	4.0 kNm / 32 kN

x = 194.5 mm





lifetime	radial force	input speed [min-1]	max. rated motor power [kW]	max. rated radial force [kN]
—	- - -	980	19	32
—	- - -	1180	22	32
—	- - -	1480	22	29

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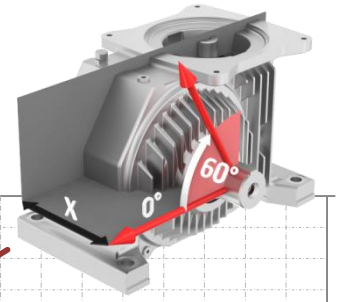
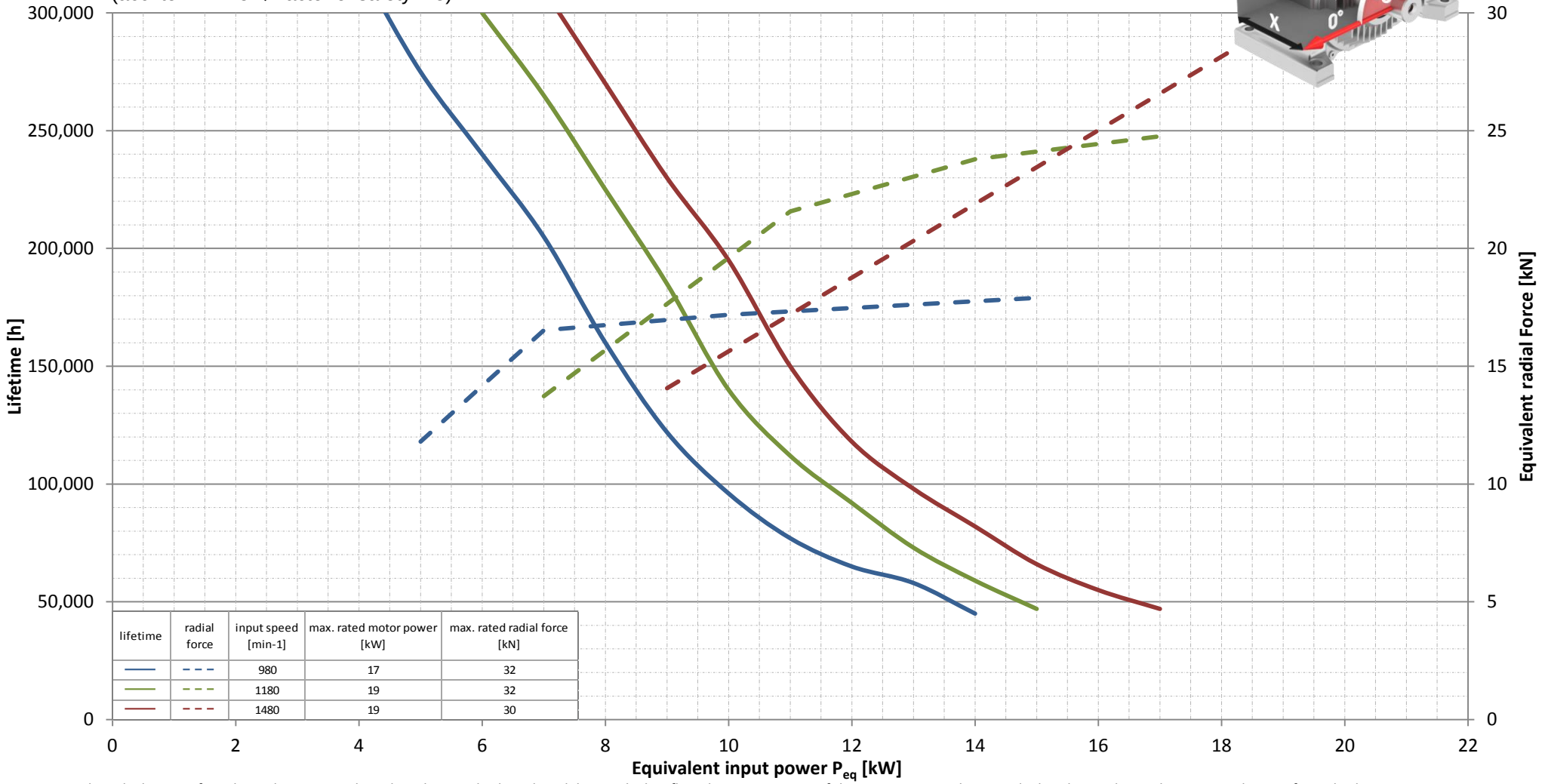
FTS 160.1
Escalator gear unit

Ratio	**24.5**
Lubrication	Polyglycol
Ambient temperature	40° C
Efficiency	≥ 91%
Max. output torque / max. radial force (acc. to EN 115 → factor of safety = 5)	4.0 kNm / 32 kN

x = 194,5 mm





lifetime	radial force	input speed [min-1]	max. rated motor power [kW]	max. rated radial force [kN]
—	- - -	980	17	32
—	- - -	1180	19	32
—	- - -	1480	19	30

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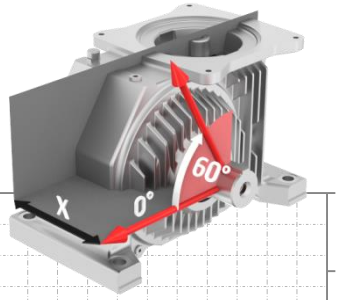
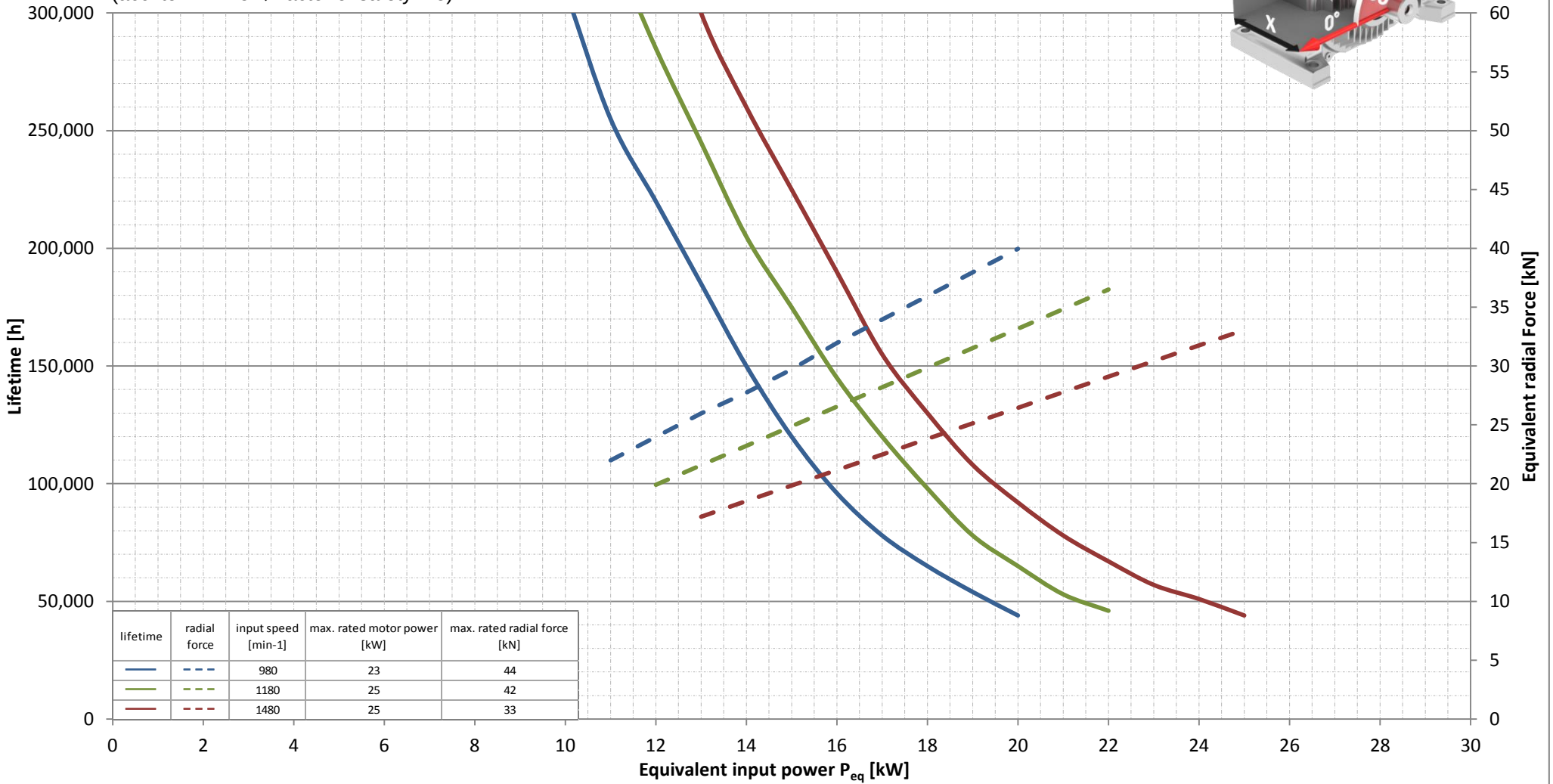
FTS 180.1
Escalator gear unit

Ratio	**20.5**
Lubrication	Polyglycol
Ambient temperature	40° C
Efficiency	≥ 92%
Max. output torque / max. radial force (acc. to EN 115 → factor of safety = 5)	4.4 kNm / 44 kN

x = 252.5 mm





lifetime	radial force	input speed [min-1]	max. rated motor power [kW]	max. rated radial force [kN]
—	- - -	980	23	44
—	- - -	1180	25	42
—	- - -	1480	25	33

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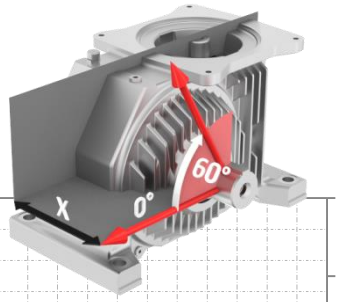
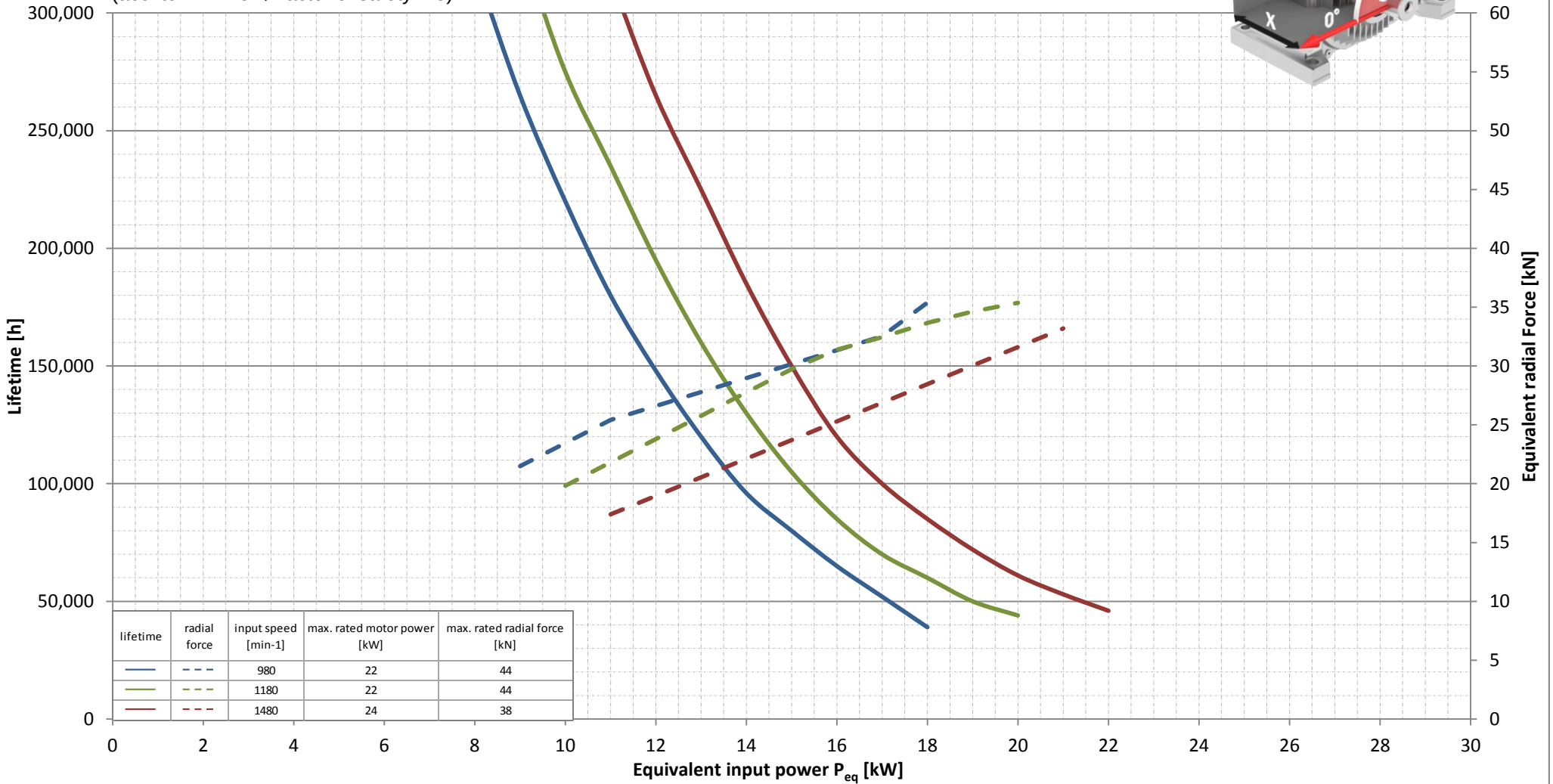
FTS 180.1
Escalator gear unit

Ratio	**24.5**
Lubrication	Polyglycol
Ambient temperature	40° C
Efficiency	≥ 92%
Max. output torque / max. radial force (acc. to EN 115 → factor of safety = 5)	4.4 kNm / 44 kN

x = 252.5 mm





lifetime	radial force	input speed [min-1]	max. rated motor power [kW]	max. rated radial force [kN]
—	- - -	980	22	44
—	- - -	1180	22	44
—	- - -	1480	24	38

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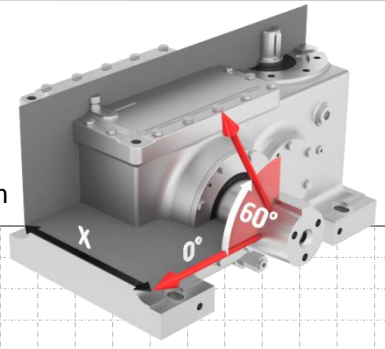
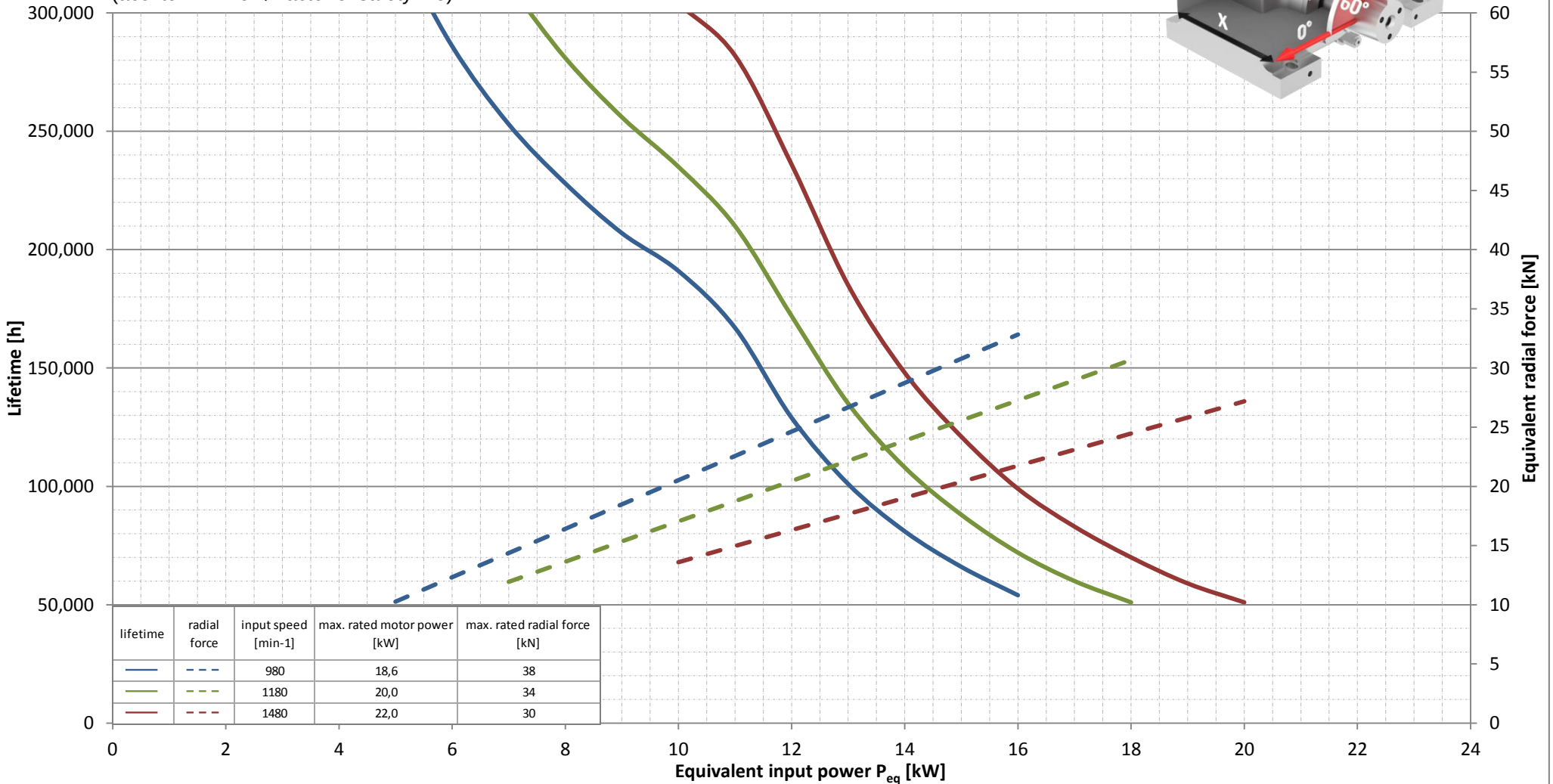
FTSST 158.1
Escalator gear unit

Ratio	**20.4**
Lubrication	Polyglycol
Ambient temperature	40° C
Efficiency	≥ 94%
Max. output torque / max. radial force (acc. to EN 115 → factor of safety = 5)	4.6 kNm / 50 kN

x = 255 mm





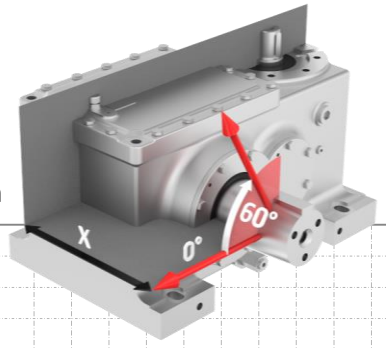
lifetime	radial force	input speed [min-1]	max. rated motor power [kW]	max. rated radial force [kN]
—	- - -	980	18,6	38
—	- - -	1180	20,0	34
—	- - -	1480	22,0	30

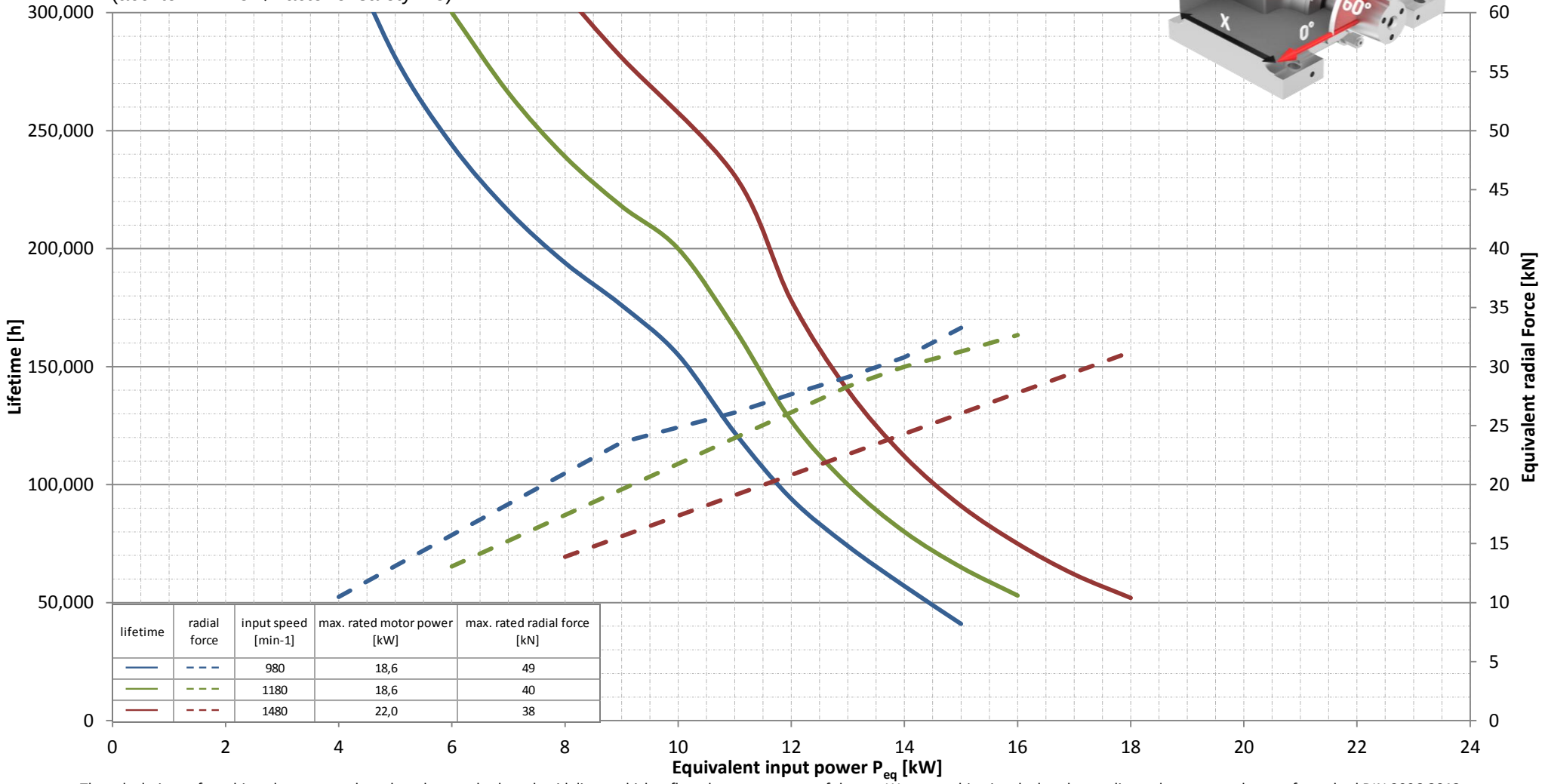
The calculations of machine elements are based on the standards and guidelines, which reflect the current state of the art. Worm toothing is calculated according to latest amendment of standard DIN 3996:**2012.**

FTSST 158.1
Escalator gear unit

Ratio	**26.0**
Lubrication	Polyglycol
Ambient temperature	40° C
Efficiency	≥ 94%
Max. output torque / max. radial force (acc. to EN 115 → factor of safety = 5)	4.6 kNm / 50 kN

x = 255 mm





lifetime	radial force	input speed [min-1]	max. rated motor power [kW]	max. rated radial force [kN]
———	- - -	980	18,6	49
———	- - -	1180	18,6	40
———	- - -	1480	22,0	38

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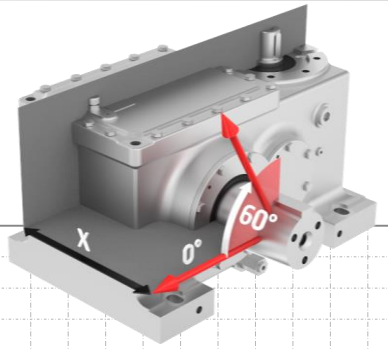
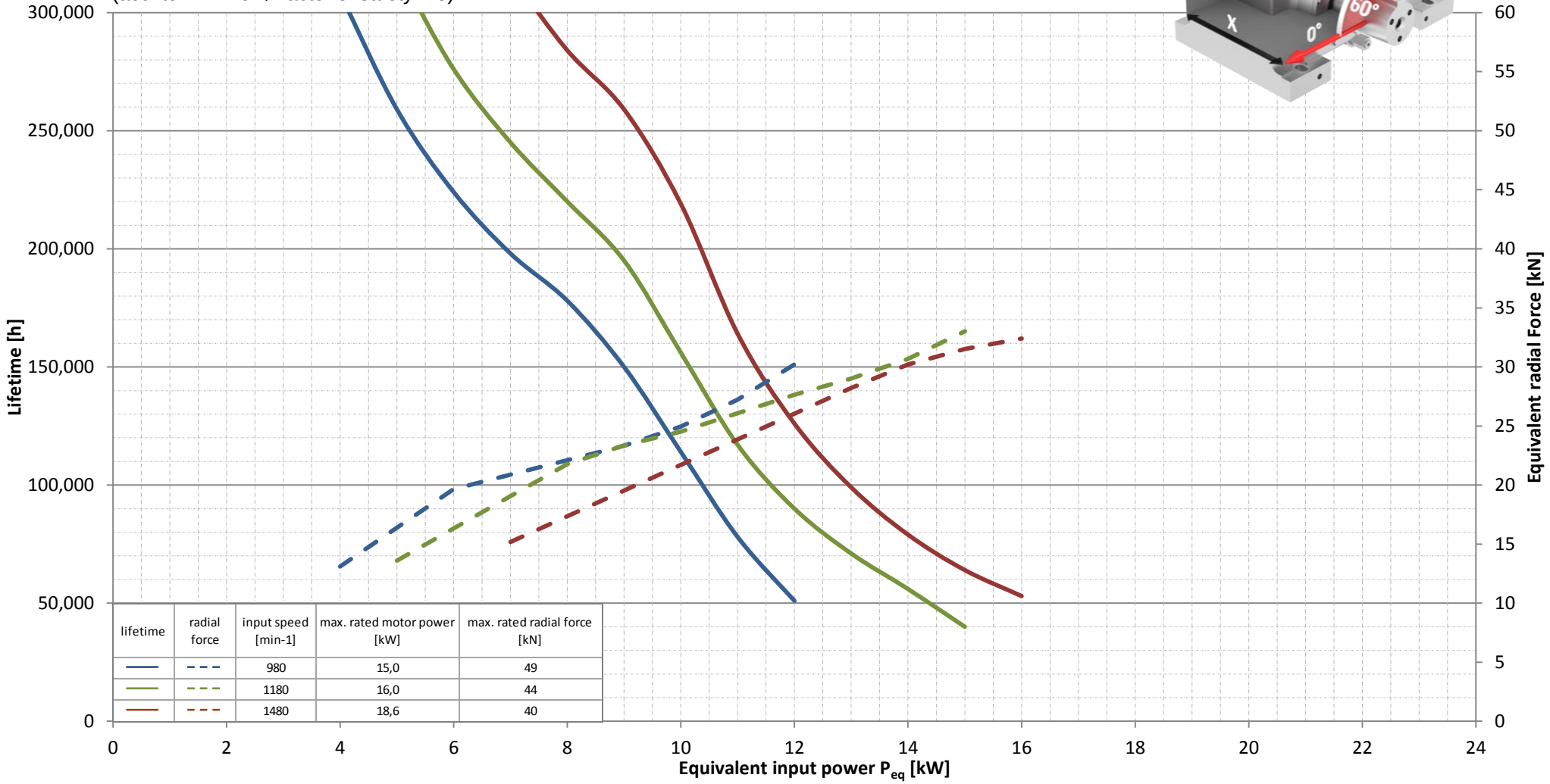
FTSST 158.1
Escalator gear unit

Ratio	**32.5**
Lubrication	Polyglycol
Ambient temperature	40° C
Efficiency	≥ 94%
Max. output torque / max. radial force (acc. to EN 115 → factor of safety = 5)	4.6 kNm / 50 kN

x = 255 mm





lifetime	radial force	input speed [min-1]	max. rated motor power [kW]	max. rated radial force [kN]
		980	15,0	49
		1180	16,0	44
		1480	18,6	40

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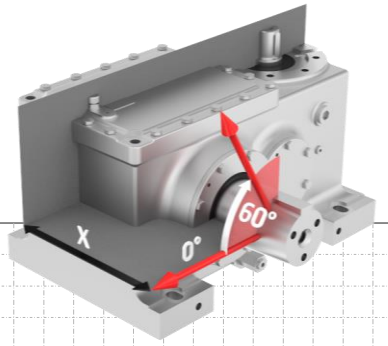
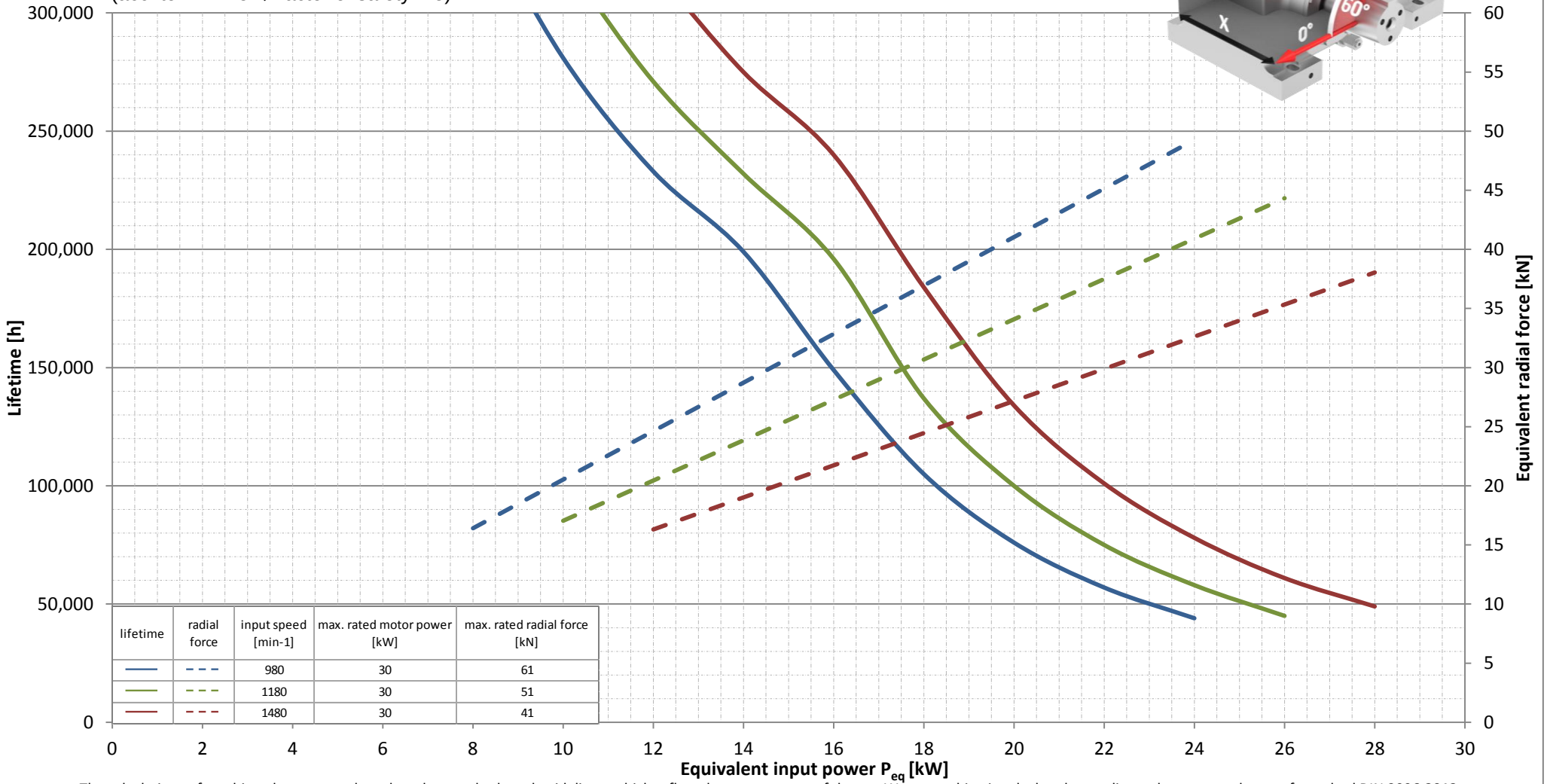
FTSST 180.1
Escalator gear unit

Ratio	**20.4**
Lubrication	Polyglycol
Ambient temperature	40° C
Efficiency	≥ 94%
Max. output torque / max. radial force (acc. to EN 115 → factor of safety = 5)	6.5 kNm / 71 kN

x = 300 mm





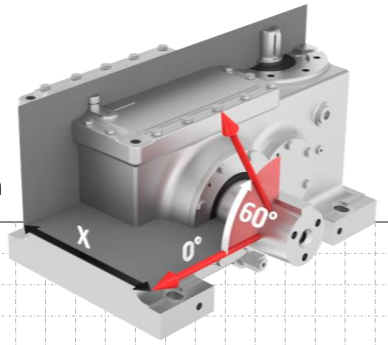
lifetime	radial force	input speed [min-1]	max. rated motor power [kW]	max. rated radial force [kN]
———	- - -	980	30	61
———	- - -	1180	30	51
———	- - -	1480	30	41

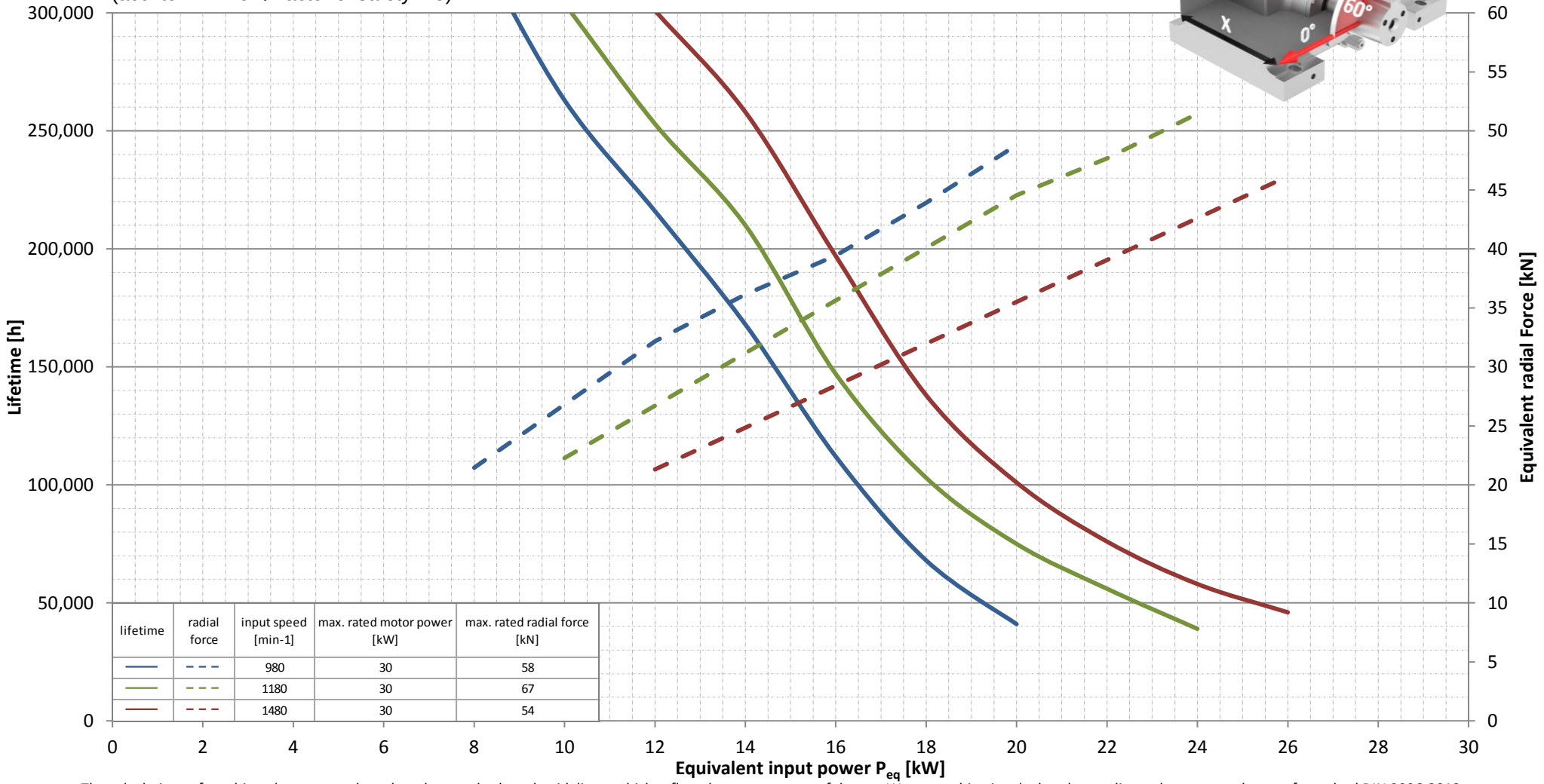
The calculations of machine elements are based on the standards and guidelines, which reflect the current state of the art. Worm toothing is calculated according to latest amendment of standard DIN 3996:**2012.**

FTSST 180.1
Escalator gear unit

Ratio	**26.6**
Lubrication	Polyglycol
Ambient temperature	40° C
Efficiency	≥ 94%
Max. output torque / max. radial force (acc. to EN 115 → factor of safety = 5)	6.5 kNm / 71 kN

x = 300 mm





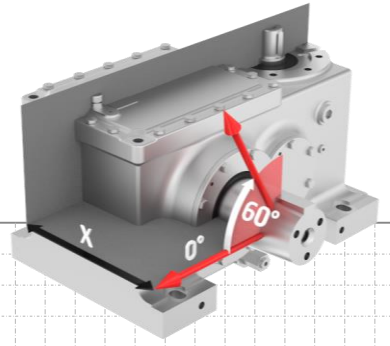
lifetime	radial force	input speed [min-1]	max. rated motor power [kW]	max. rated radial force [kN]
—	- - -	980	30	58
—	- - -	1180	30	67
—	- - -	1480	30	54

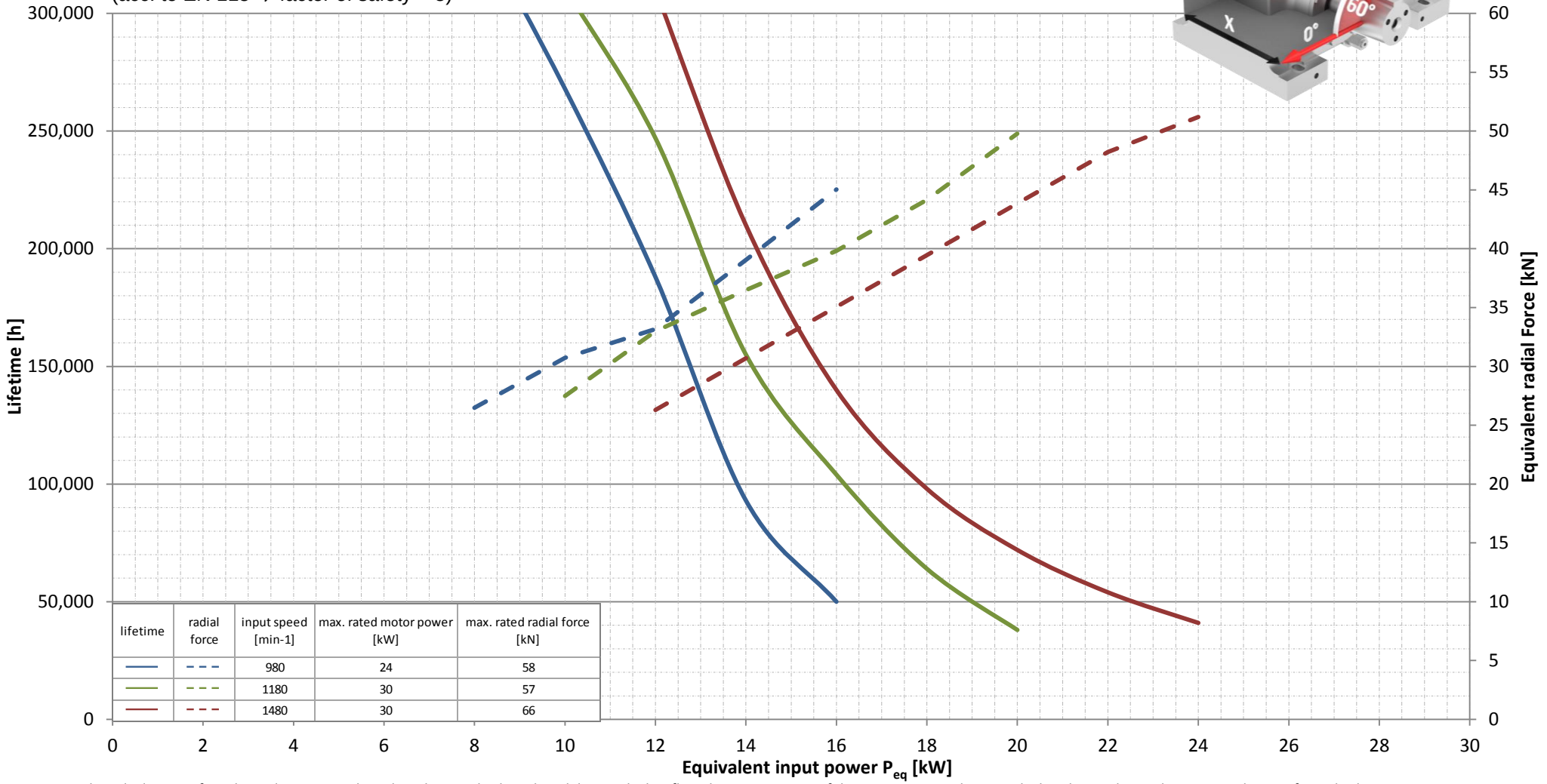
The calculations of machine elements are based on the standards and guidelines, which reflect the current state of the art. Worm toothing is calculated according to latest amendment of standard DIN 3996:**2012.**

FTSST 180.1
Escalator gear unit

Ratio	**32.8**
Lubrication	Polyglycol
Ambient temperature	40° C
Efficiency	≥ 94%
Max. output torque / max. radial force (acc. to EN 115 → factor of safety = 5)	6.5 kNm / 71 kN

x = 300 mm





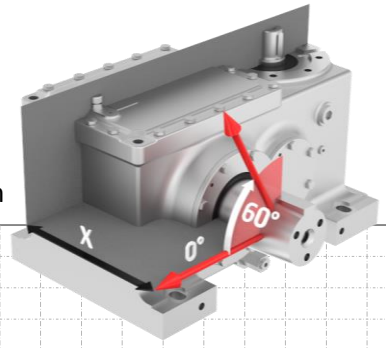
lifetime	radial force	input speed [min-1]	max. rated motor power [kW]	max. rated radial force [kN]
—	- - -	980	24	58
—	- - -	1180	30	57
—	- - -	1480	30	66

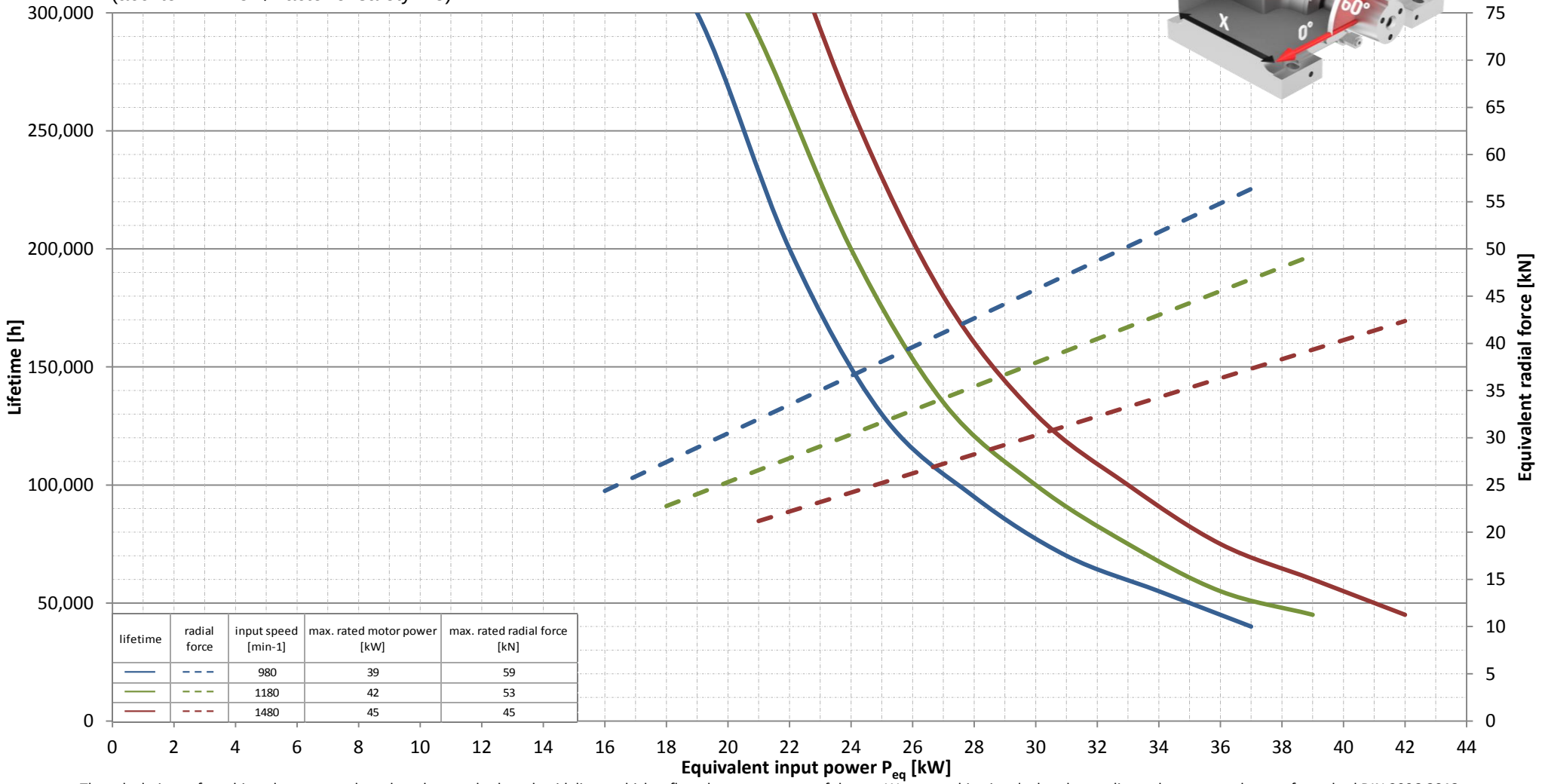
The calculations of machine elements are based on the standards and guidelines, which reflect the current state of the art. Worm toothing is calculated according to latest amendment of standard DIN 3996:**2012.**

FTSST 212.1
Escalator gear unit

Ratio	**20.1**
Lubrication	Polyglycol
Ambient temperature	40° C
Efficiency	≥ 94%
Max. output torque / max. radial force (acc. to EN 115 → factor of safety = 5)	12.2 kNm / 100 kN

x = 305 mm





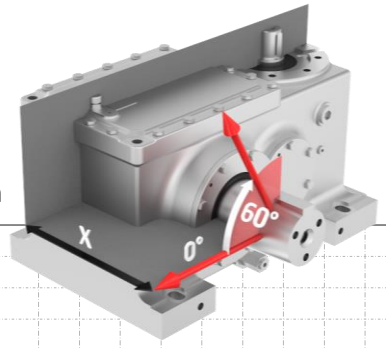
lifetime	radial force	input speed [min-1]	max. rated motor power [kW]	max. rated radial force [kN]
———	- - -	980	39	59
———	- - -	1180	42	53
———	- - -	1480	45	45

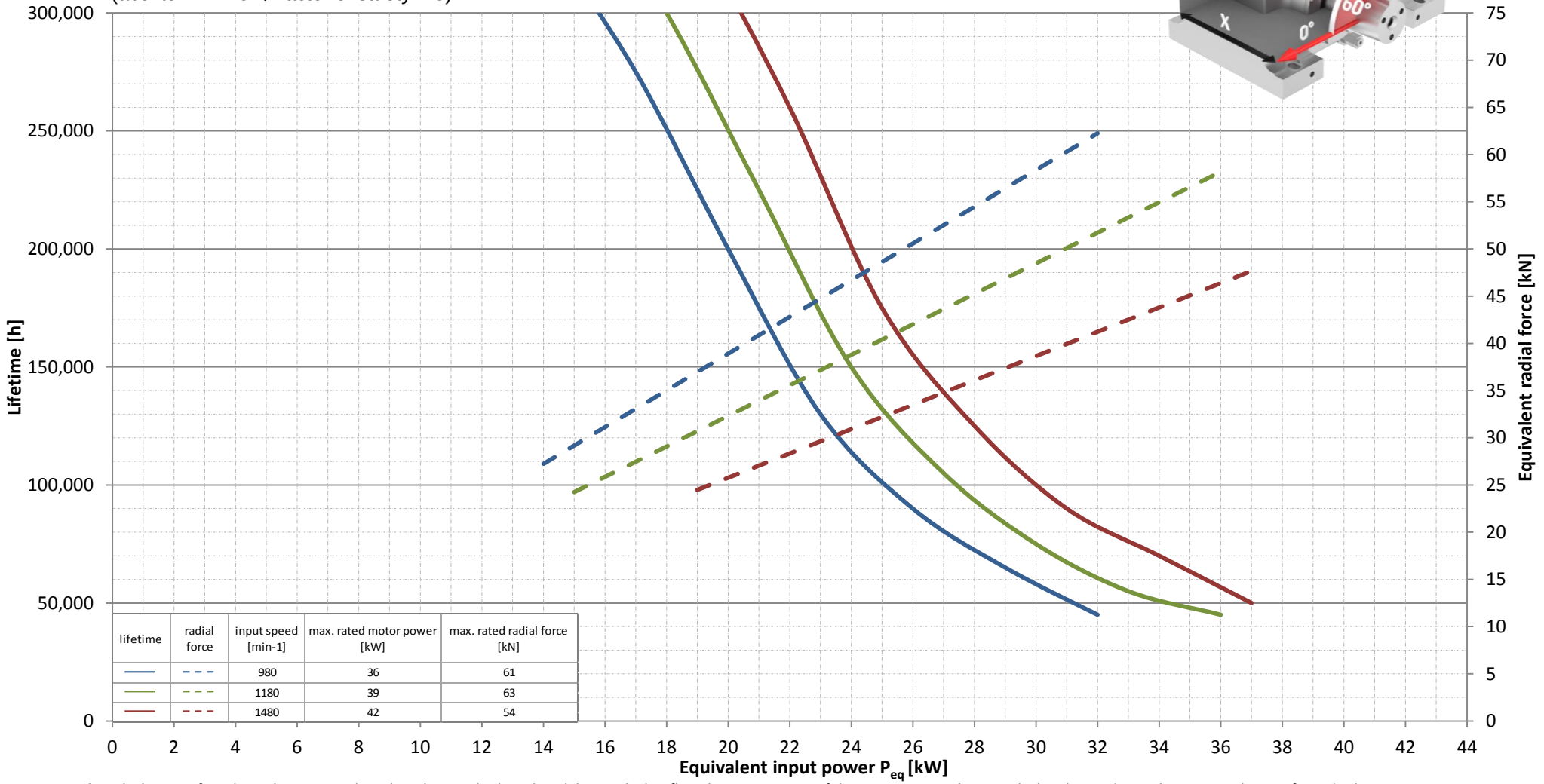
The calculations of machine elements are based on the standards and guidelines, which reflect the current state of the art. Worm toothing is calculated according to latest amendment of standard DIN 3996:**2012.**

FTSST 212.1
Escalator gear unit

Ratio	**25.7**
Lubrication	Polyglycol
Ambient temperature	40° C
Efficiency	≥ 94%
Max. output torque / max. radial force (acc. to EN 115 → factor of safety = 5)	12.2 kNm / 100 kN

x = 305 mm





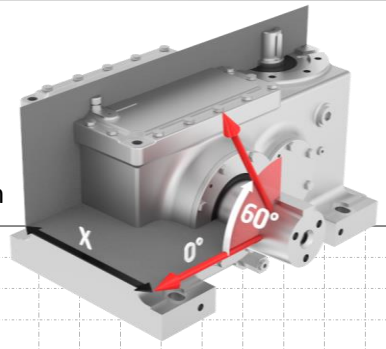
lifetime	radial force	input speed [min-1]	max. rated motor power [kW]	max. rated radial force [kN]
———	- - -	980	36	61
———	- - -	1180	39	63
———	- - -	1480	42	54

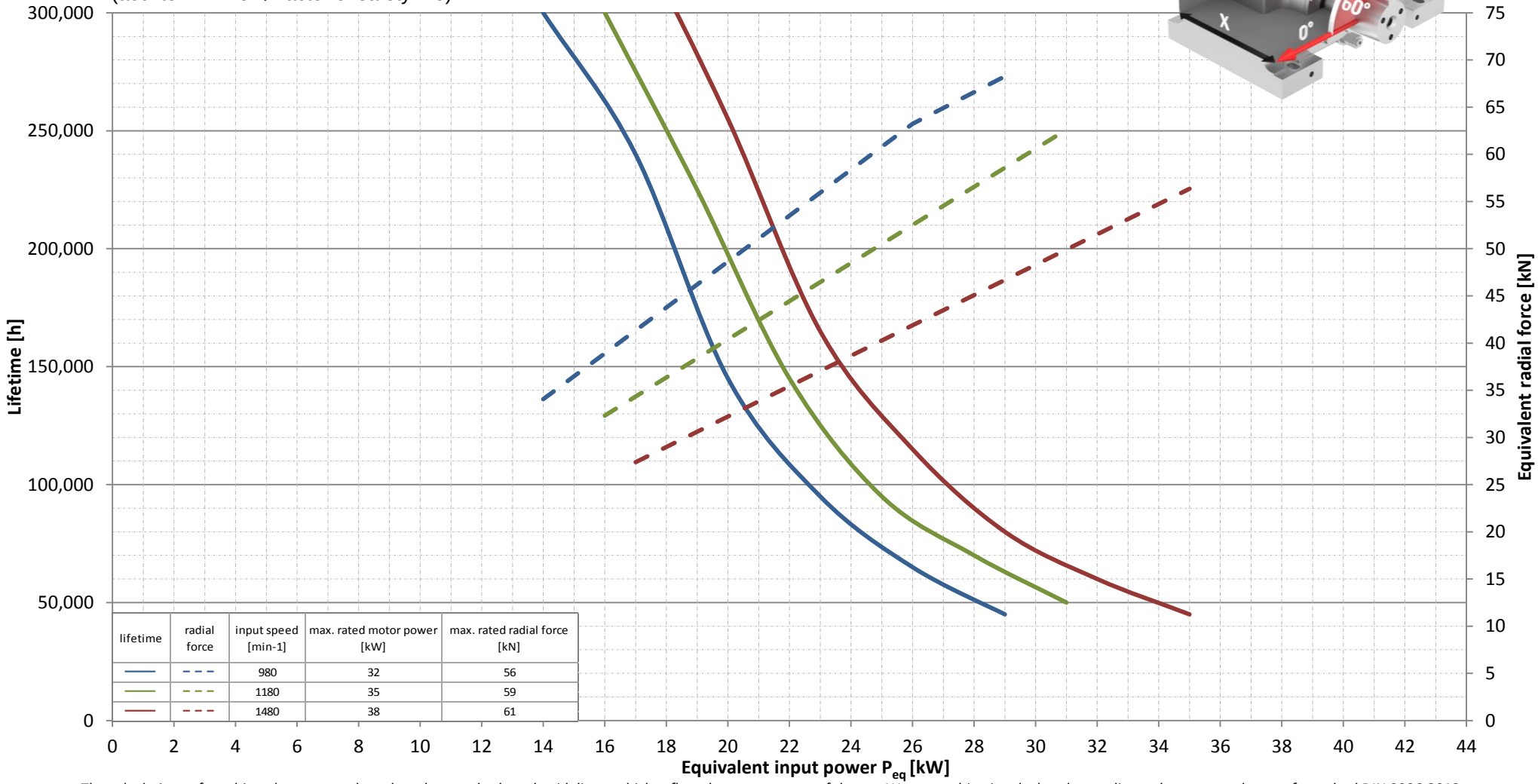
The calculations of machine elements are based on the standards and guidelines, which reflect the current state of the art. Worm toothing is calculated according to latest amendment of standard DIN 3996:**2012.**

FTSST 212.1
Escalator gear unit

Ratio	**32.1**
Lubrication	Polyglycol
Ambient temperature	40° C
Efficiency	≥ 94%
Max. output torque / max. radial force (acc. to EN 115 → factor of safety = 5)	12.2 kNm / 100 kN

x = 305 mm





lifetime	radial force	input speed [min-1]	max. rated motor power [kW]	max. rated radial force [kN]
———	- - -	980	32	56
———	- - -	1180	35	59
———	- - -	1480	38	61

The calculations of machine elements are based on the standards and guidelines, which reflect the current state of the art. Worm toothing is calculated according to latest amendment of standard DIN 3996:**2012.**