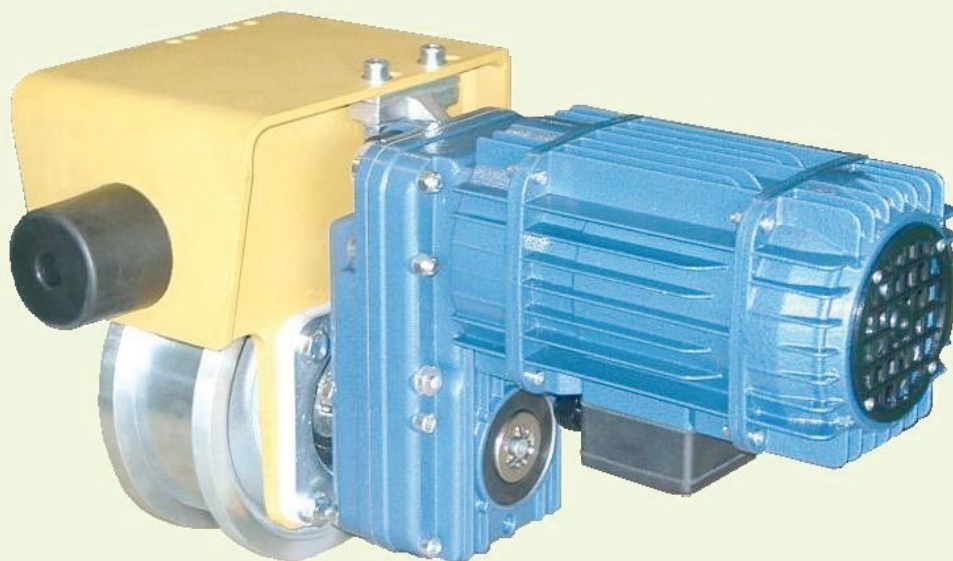




DRIVE UNIT FOR CRANES

comprising
“DGT” series Wheel Groups
in combination with
“DGP” series Offset Geared Motors

IN STEP WITH THE TIMES

Safe, reliable and cost efficient solutions from **DONATI SOLLEVAMENTI S.r.l.**

These **drive units for cranes**, comprising “**DGT**” series wheel groups in combination with “**DGP**” series **Offset geared motors** are “**a modern, safe guide handling system on rails**”, and the most convenient offer available for today's global market, handling up to **30.000 kg** on each wheel group.

Enhancing its range of **DRH series electric wire rope hoists** and **DMK series chain hoists**, trusted by industry professionals worldwide, the **drive units for cranes** complete the range of products built by **DONATI SOLLEVAMENTI S.r.l.** a leading Italian and global manufacturer of lifting systems.



DONATI SOLLEVAMENTI S.r.l.

Via Roma, 55 - 21020 Daverio (Varese) - Italy - tel. +39 0332 942.611 - fax +39 0332 948.597

E-mail: info@donati-europe.com - www.donati-europe.com

DONATI Ltd

Unit 40 - Farriers Way Ind. Est. - NETHERTON - LIVERPOOL L30 4XL

tel. +44 (0)151 530 1139 - fax +44 (0)151 525 6613 - E-mail: sales@donati.co.uk

RIGOROUS QUALITY CONTROL

DONATI SOLLEVAMENTI S.r.l. engineers and designs technically innovative, thoroughly reliable, lifting machinery and components, making use of advanced industrialized production processes which ensure low costs for end-users.

Continuous attention to quality allows **DONATI SOLLEVAMENTI S.r.l.** to consistently manufacture highly engineered, meticulously designed products, using quality control measures on materials throughout the production process, right down to the finished product, involving the company's entire organization, through its **certified quality assurance system** in accordance with **UNI ISO 9001:2000** norms (Certified ICIM N° 0114), regulating and controlling the company's management and production organization since 1993.



ISO 9001:2000
Certificate No. 0114



IN HARMONY WITH EUROPE

The rigorous attention placed on all phases of the engineering and design process for all products at **DONATI** is entirely in line with our diligent consideration for international norms and regulations, a guarantee for our many Customers and end-users, serving as a gateway for the internationalization and diffusion of our products worldwide.

The **drive units for cranes** comprise the “**DGT**” series wheel groups in combination with “**DGP**” series **Offset geared motors**, are designed and manufactured in conformity with legislation in Italy and the following **European Community Directives**:

- **Machinery Directive 98/37/CE** (re-codified from Directive 89/392/CEE and subsequent revisions 91/368/CEE, 93/44/CEE and 93/68/CEE).
- **Low Voltage Directive 73/23/CEE - 93/68/CEE.**
- **Electromagnetic Compatibility Directive 89/336/CEE - 92/31/CEE**

DRIVE UNITS FOR CRANES

- The **drive units for cranes** comprise “DGT” series wheel groups in combination with “DGP” series Offset geared motors, are built specifically for handling lifting systems on rails, such as, for example, travelling cranes, gantry cranes, wall-mounted cranes, etc. and/or related running trolleys, guaranteeing the precise alignment for moving structures, control over high shifting speeds, while facilitating installation and maintenance.
The “DGT” series wheel groups and “DGP” series Offset geared motors are available in a wide range of capacities and speeds; they are highly reliable modular components capable of responding flexibly and efficiently to the needs for operating safety, cost efficiency and the rapid setup of **drive units for cranes** by manufacturers of machinery and industrial lifting and handling installations.

INSTALLATION RESTRICTIONS

- Drive units for cranes** are generally designed to be installed on endtrucks, or onto trolleys, travelling cranes, gantry cranes, etc., travelling loads through horizontal handling operations with the drive units installed on runways' rails.

PRODUCT DESIGN, RANGE AND PRODUCTION

- These **drive units for cranes** are designed and engineered based on the principle of modular components which, in addition to the more common versions commercially available, when assembled to one other in relation to the user's requirements, allow for the fast and economical realization of multiple standard and special configurations.
- DONATI drive units** are configured in **6 sizes**, for which the basic components are:
 - 6 sizes of “DGT” series wheel groups (Ø 125, Ø 160, Ø 200, Ø 250, Ø 315 and Ø 400/400 R)
 - 4 sizes of “DGP” series reducers (DGP 0, DGP 1, DGP 2 and DGP 3)
 - 4 sizes of **self-braking motors** (motor 71, motor 80, motor 100 and motor 112)

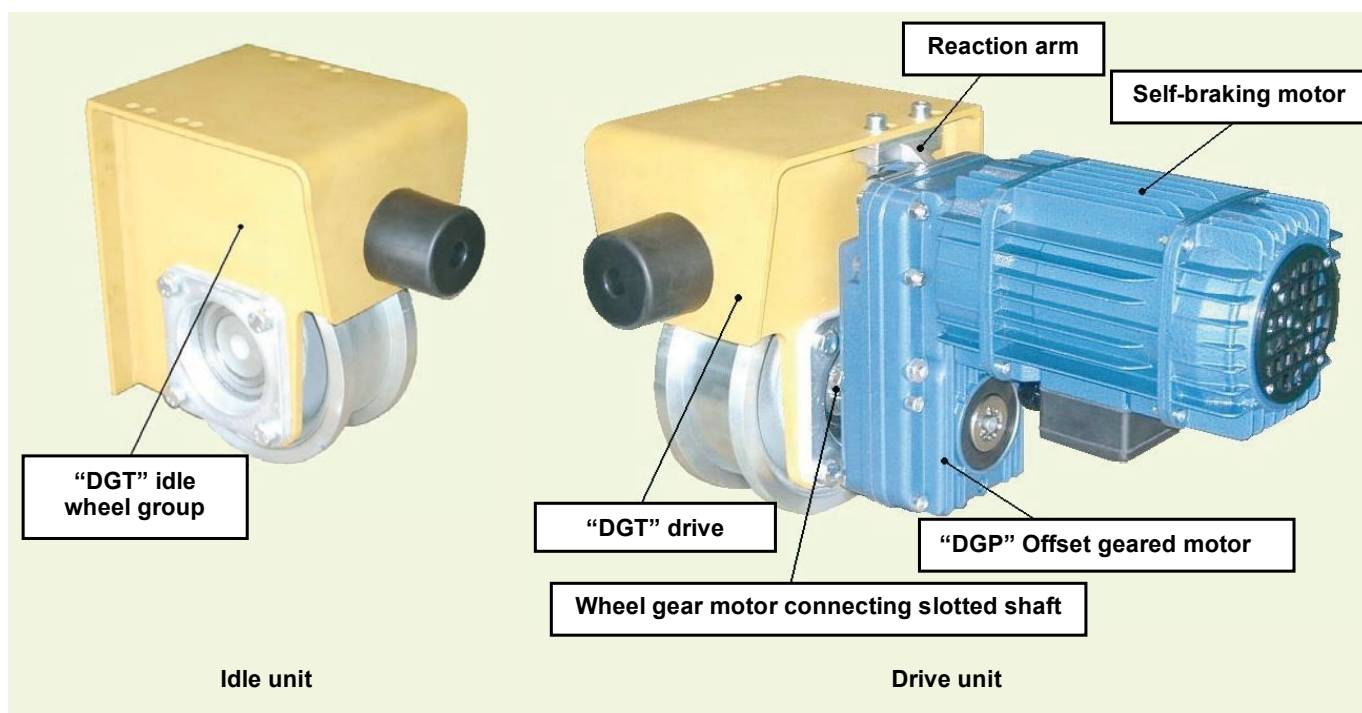
Composition of drive units based on combinations between “DGT” Wheels and “DGP” Gear Motors

“DGT” wheels Ø (mm)	“DGP” swinging gear motors					
	“DGP” reducers size 0	“DGP” reducers size 1		“DGP” reducers size 2		“DGP” reducers size 3
125	Motors size 71	Motors size 71	Motors size 80	=		=
160				=		=
200	=			Motors size 80	Motors size 100	=
250	=					=
315	=	=		Motors size 112		
400	=	=				
400 R						

- The **6 production sizes for drive units** cover the following operating limitations:
 - Capacity** of the lifting and/or traversing equipment: from **1000 to 40,000 kg**
 - Running speed**: single speed, from **3.2 to 25 m/min**; two-speed, from **12.5/3.2 to 80/20 m/min**
- The structure's finishing on the wheel groups and protection from atmospheric and environmental agents (dust, gas, etc.) is guaranteed by the paintwork finish, which features the application of a 40 micron thick base coat of chrome and lead free yellow enamel RAL 1002; surfaces are prepared by grade SA 2 metallic sanding in conformity with SVENSK STANDARD SIS 055900. Oven drying for 40 min. at a temperature of 60-80°C.
- The special waterproof paintwork adopted for the electrical mechanisms (reducer and self-braking motor), obtained through an electrostatic process, and their completely closed execution, guarantee inalterability over time and consistently high performances even in particularly hostile environments.
- The modularity of the basic components (wheels, reducers and motor) allows for the composition of **drive units for cranes** in two configurations: the **drive group** and the **idler group**.
- The flexibility of the numerous fastening solutions adopted allow for assembly on a variety of mechanical frame types, as well as easy integration with a number of accessories available on the market, such as, for example, guide systems, or collision proof systems, whether mechanical, electrical or electronic, or speed control and crane and trolley stop position systems.
- In addition, **DONATI drive units** integrate perfectly with limit switches or cycle counters, whether mechanical (worm screw limit switch), electrical (tachometric dynamo), or electronic (encoders), guaranteeing low cost management.
- Safety is a top priority for **DONATI SOLLEVAMENTI S.r.l.** in its design and manufacturing of all products, aimed at ensuring total reliability during all operative and maintenance phases.
For this reason, **DONATI drive units** are also covered by a **3 year Warranty**, from the date of delivery.

- **Applicable legislation:**
 - **The drive units for cranes** are designed and manufactured by **DONATI SOLLEVAMENTI S.r.l.** in conformity with the “Essential Safety Requirements” outlined in Annex I of the **European Community Machinery Directive 98/37/CE**, and stated in Italian legislation under **DPR No. 459/96**.
 - In relation to the specifications under **Annex II of European Directive 98/37/CE** and **DPR No. 459/96**, the **DGP units** are introduced into the market as incomplete, since they are designed to be incorporated in other machinery (travelling cranes or trolley cranes, etc.). As such, in accordance with Article 4 - paragraph 2 of European Directive 98/37/CE, the **DGP units** are **devoid of CE marking** and are supplied accompanied by a **Manufacturer’s Declaration–Annex II B**.
 - In addition, the **drive units for cranes** conform to the following Directives:
 - **Low Voltage Directive (LVD) 73/23/CEE**, stated in Italian legislation under **Legislation No. 791/77**, modified under **Legislative Decrees No. 626/96** and **No. 277/97**
 - **European Community Electromagnetic Compatibility Directive (EMC) 89/336/CEE**, stated in Italian legislation under **Legislative Decree No. 476/92**, modified under **Legislative Decree No. 615/96**.
- **Applicable norms and regulations:**
 - The following norms and technical principles have also been taken into consideration in the design and manufacturing of the **drive units for cranes**:
 - EN ISO 12100 parts: 1st – 2nd /2005 “Fundamental concepts on general engineering principles”
 - EN 954-1/96 “System control parts linked to safety”
 - EN 60529/92 “Degrees of protection for casings (IP Codes)”
 - ISO 4301/85 “Classifications for lifting equipment”
 - FEM 1.001/98 “Calculations for lifting equipment”
 - UNI 7670/88 “Mechanisms for lifting equipment”
 - FEM 9.683/95 “Choice of for lifting and traversing motors”
 - FEM 9.755/93 “Safety work periods”
- **Service classification:**
 - The structural elements and mechanisms on the **drive units for cranes** are classified in various service groups, in conformity with specifications stipulated under norm ISO 4301.
- **Protection and sheathing of electrical parts:**
 - Drive motors: protection IP55 (motor) - IP23 (brake); class “F” insulation
 - Limit switch: minimum protection IP65; max. insulation voltage 500 V
 - Protections and insulations differing from the standard suppliable on request.
- **Electrical power:**
 - The **drive units for cranes** are designed to be powered through three-phase alternating current: 400 V - 50Hz. in accordance with IEC 38-1.
 - Different voltage and frequency specifications from the standard suppliable on request.
- **Environmental conditions for standard usage:**
 - Operating temperature: minimum - 10° C; maximum + 40°C.
 - Maximum relative humidity: 80% - Maximum altitude 1000 m above sea level.
 - Standard **drive units for cranes** must be installed in a well aerated working environment, free of corrosive steams (acidic steams, saline mists, etc.), and are designed to operate in a covered environment, protected from atmospheric elements.
 - Special machine models designed for non-standard environmental conditions, or for operation outdoors, can be supplied on request.
- **Noise emissions - Vibrations:**
 - Noise emission levels emanating from the **drive units for cranes** during traversing operations, whether empty or fully loaded, are in all cases inferior to a value of **80 dB (A)**, as measured at a distance of 1 m and 1.6 m from the ground. The incidence of environmental characteristics such as the transmission of sound through metallic structures, reflection caused by combined machinery and surrounding walls, are not taken into consideration in the value indicated.
 - Vibrations produced by the **DGP units** during traversing operations are not considered dangerous for the health and wellbeing of personnel operating the lifting equipment on which the units are installed.

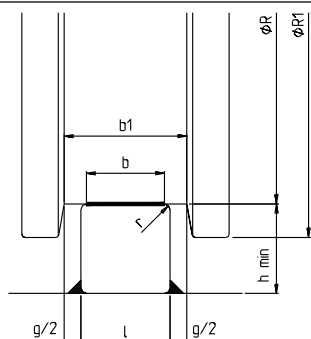
- The **drive units for cranes** comprise “DGT” series wheel groups in combination with “DGP” series Offset geared motors.
- “DGT” series wheel groups:
 - The **drive wheels** Ø 125, Ø 160, Ø 200, Ø 250, Ø 315 are carbon steel moulded, revolving on radial bearings.
 - Ø 400, Ø 400 R wheels are iron casting.
 - They are available in either idler operation or ready to be set up as drive units in combination with an Offset geared motor.
 - In drive execution, the direct coaxial connection between the reducer's exit shaft and the slotted hub on the drive wheel ensures high safety standards and operating reliability.
 - Wheels are available in a standard version with a double flange, and can be supplied, on request, in various sliding band widths in relation to the type of traversing rail they are intended to run on.
 - Whether in idle or drive operation, the wheels are supported and contained within an electro-welded plated frame which acts as a support box for the entire group, and as an joining element between the operating head frame or trolley with which the wheel group is to be assembled.
- “DGP” series swinging gear motors:
 - **Reducers** are designed as an Offset geared motor type with a concave shaft, featuring parallel axes with two or three stages of reduction, and permanent oil-bath lubrication.
 - Engineered with cylindrical high resistance steel gears, featuring spiral toothing, thermically treated, entirely supported on ball bearings.
 - Sized to resist a lifetime of stress and wear, in accordance to the pertinent ISO service group.
 - The connection between the reducer and drive wheel is guaranteed by a slotted shaft connecting the holes on both parts, while the reducer fastened to the wheel group makes use of a system comprising a reaction arm fastened to the wheel group, and an elastic counter bearing with rubber buffers and a setscrew. The entire reducer-wheel connection system guarantees both high quality running operation and maximum duration over time with low maintenance, thanks to the elimination of rigid connections.
 - The **electric motors** are asynchronous, featuring a progressive start-up, with standard ventilation, self-braking with axial shifting of the rotor guaranteeing a fast, reliable mechanical braking.
 - Conical brakes are fitted with asbestos-free braking gaskets, featuring an extended braking surface.
 - The brake block comprises a fan which ensures proper cooling for the brake and motor, shifting axially with the motor shaft; the brake function is activated automatically in the case of a power outage.
 - The connection between the motor and the reducer features a slotted joint contained within a coupling housing, which also comprises, where required, a flywheel transferring progressive start-up and braking drive motion.



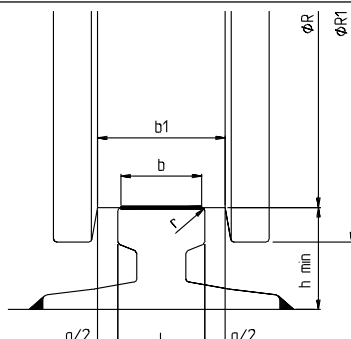
TECHNICAL SPECIFICATIONS AND OPERATING LIMITATIONS FOR DGP SERIES DRIVE UNITS FOR CRANES

- For complete technical specifications on the **drive units for cranes**, in relation to their intended operation, check and match the parameters limiting their operation.
- The tables below provide a suitable means of verifying operating limits for the wheel group in combination with drive reducers and self-braking motors, in relation to the following user specifications:
 - operating loads on the wheels
 - width and shape of the runways rail
 - running speed
 - number of wheel groups and motored reducers employed.

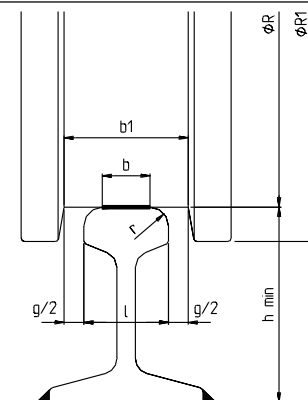
Specifications for runways rails and maximum contact area



Square laminated rail UNI 6013 - DIN 1013
Flat laminated rail UNI 6014 - DIN 1017



Burbak type rail - DIN 536



Vignole type rail - UNI 3141

Wheel specifications				Rail (mm)			Type of running rail and maximum operating contact surface - b (mm)							
Type Ø ØR (mm)	Max Rx (kN)	Wheel internal width (mm)		width b (mm)		h (mm)	 Square laminated UNI 6013 - DIN 1013 Flat laminated UNI 6014 - DIN 1017		 Burbak - DIN 536			 Vignole - UNI 3141		
		type	b1	max.	min.	min.	l	b = l - 2r	type	l	b = l - 2r	type	l	b = l - 4/3r
125	36	standard	50	40	35	30	40	38	=	=	=	=	=	=
		maximum	60	50	45	30	50	48	A 45	45	37	21 - 27	50	34
		special	70	60	55	30	60	58	A 55	55	45	36	60	44
160	48	standard	55	45	40	30	40	38	A 45	45	37	=	=	=
		maximum	65	55	50	30	50	48	A 55	55	45	21 - 27	50	34
		special	80	70	65	30	70	68	A 65	65	53	46 50	65 67	46 49
200	72	standard	60	50	45	30	50	48	A 45	45	37	21 - 27	50	34
		maximum	70	60	55	30	60	58	A 55	55	45	30 36	56 60	40 44
		special	90	80	75	30	80	78	A 75	75	59	60	72 (*)	55
250	106	standard	70	60	55	30	60	58	A 55	55	45	30 36	56 60	40 44
		maximum	80	70	65	30	70	68	A 65	65	53	46 50	65 67	46 49
		special	100	90	85	30	90	88	A 75	75 (*)	59	=	=	=
315	144	standard	75	65	60	40	60	58	A 65	65	53	36 46	60 65	44 47
		maximum	85	75	70	40	70	68	A 75	75	59	50 60	67 (*) 72	48 55
		special	110	100	95	40	100	98	A 100	100	80	=	=	=
400	186	standard	85	75	70	40	70	68	A 75	75	59	50 60	67 (*) 72	48 55
		maximum	95	85	80	40	80	78	=	=	=	=	=	=
		special	115	100	95	40	100	98	A 100	100	80	=	=	=
400 R	300	standard	85	75	70	40	70	68	A 75	75	59	50 60	67 (*) 72	48 55
		maximum	95	85	80	40	80	78	=	=	=	=	=	=
		special	115	100	95	40	100	98	A 100	100	80	=	=	=

- The clearance between the internal width of the wheel and the maximum rail width must be contained within: ≥ 10 mm and ≤ 15 mm
- (*) wheel with increased clearance = 18 mm
- Recommended rails appear in red, together with the operating contact surface values, verified in relation to the maximum static reaction

Operating limits for wheels in relation to the rail's contact surface area and the running speed

- The following diagrams illustrate average admissible reactions on **drive unit wheels**, in relation to the speed and to the operating width "b" of the rail, as specified in the table on page 6.
- The correct choice of the wheel is based on the average reaction, R_{med} . [average R], exercised on the wheel. This value is derived from the following equation:

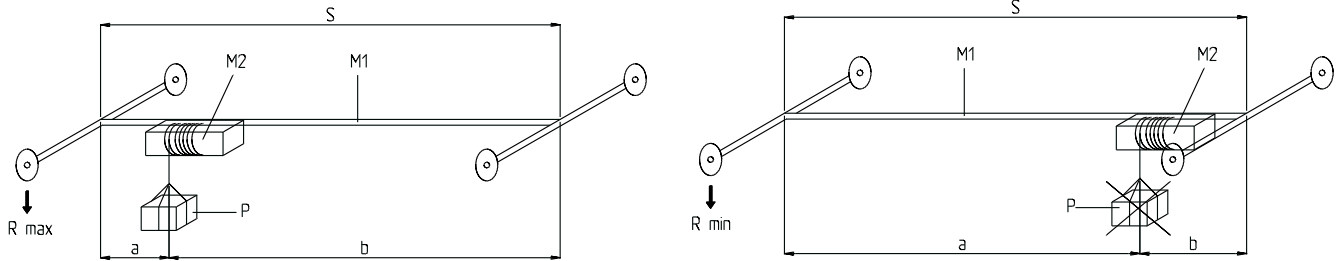
$$R_{med} = \frac{2 \cdot R_{max} + R_{min}}{3}$$

where R_{max} is the most unfavourable load condition, equal to:

$$R_{max} = \frac{M1}{4} + \left(\frac{M2 + P}{2} \right) \cdot \left(1 - \frac{a}{S} \right)$$

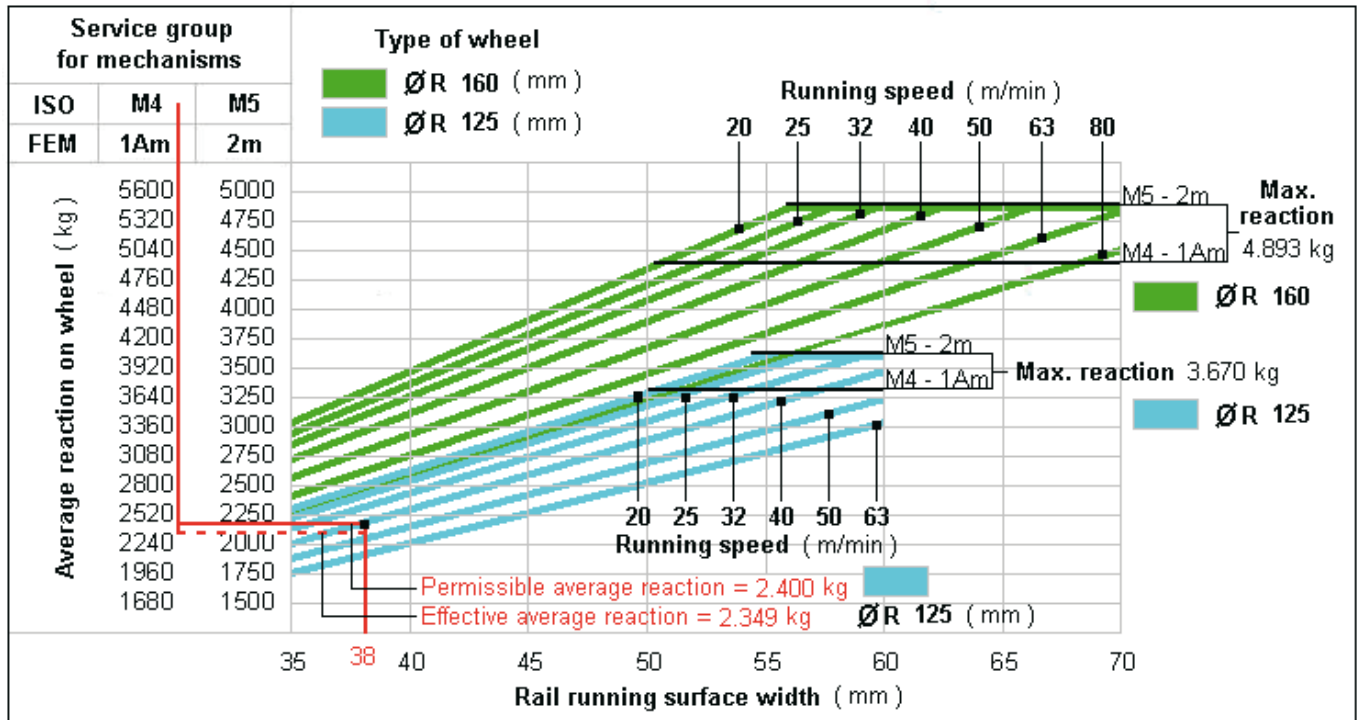
while the minimum reaction R_{min} is:

$$R_{min} = \frac{M1}{4} + \frac{M2}{2} \cdot \frac{a}{S}$$



where: **M1** = crane mass (proper weight of crane's structure & acc.)
M2 = hoist/trolley mass (proper weight of the hoist and trolley)
P = nominal crane capacity

Admissible average reactions of Ø 125 and 160 wheels ,in relation to rail width and running speed

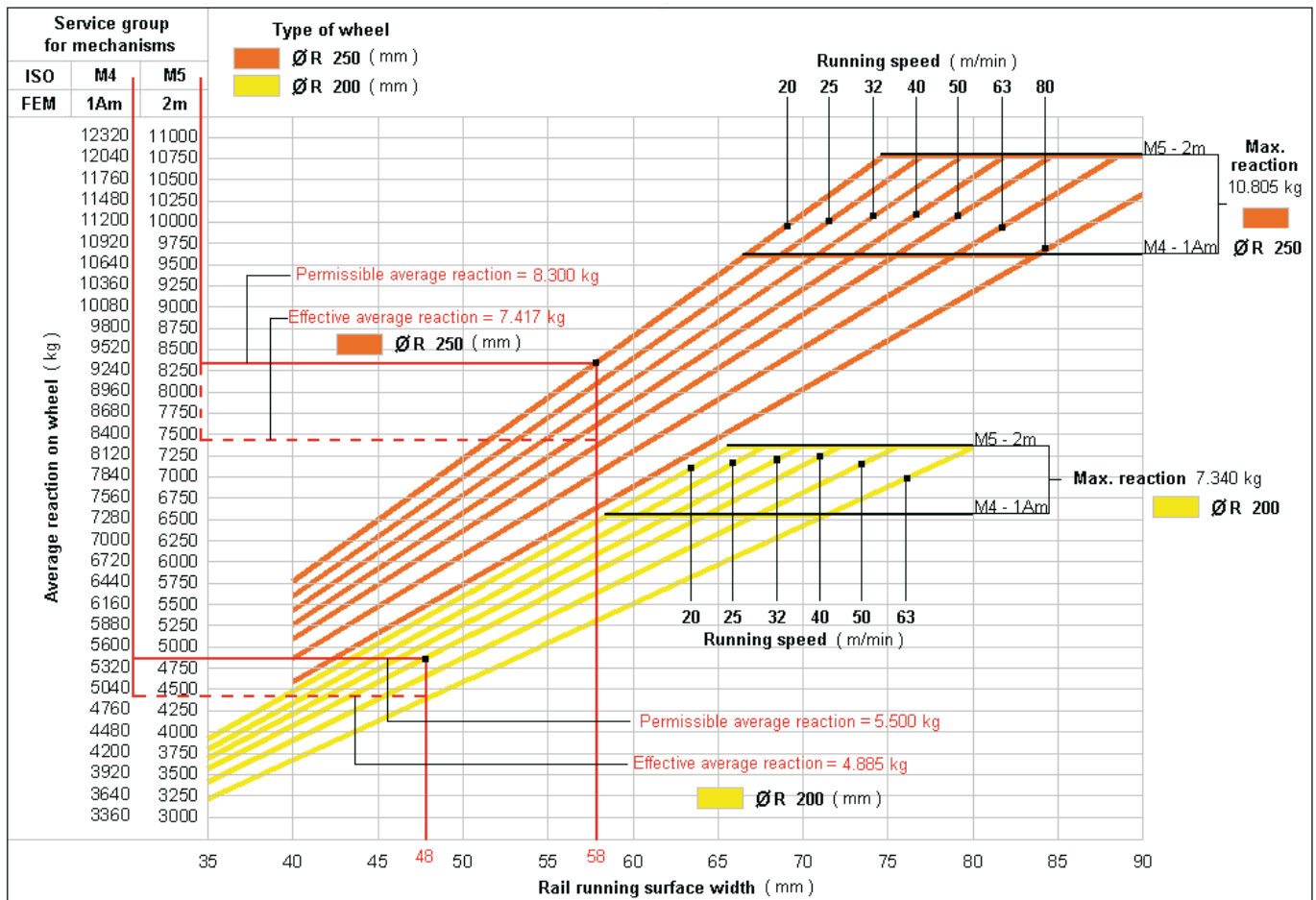


Verification example of Ø 125 wheel fitness to use (first example of page 18)

Data :

- Rail width: $b = 38 \text{ mm}$
- Running speed: $40/10 \text{ m/min}$
- Service group: ISO M4 (FEM 1Am)
- Average effective reaction: $R_{med} = 2.349 \text{ kg}$
- Max reaction: $R_{max} = 3.203 \text{ kg}$

Average admissible reaction is $= 2.400 \text{ kg} > \text{average effective reaction } 2.349 \text{ kg}$ acting on the wheel.



Verification example of Ø 200 wheel fitness to use (2° example of page 19)

Data:

- Rail with: b = 48 mm
- Running speed: 40/10 m/min;
- Service group: ISO M4 (FEM 1Am)
- Effective average reaction: R med. = 4.885 kg
- Maximum reaction: R max. = 6.581 kg

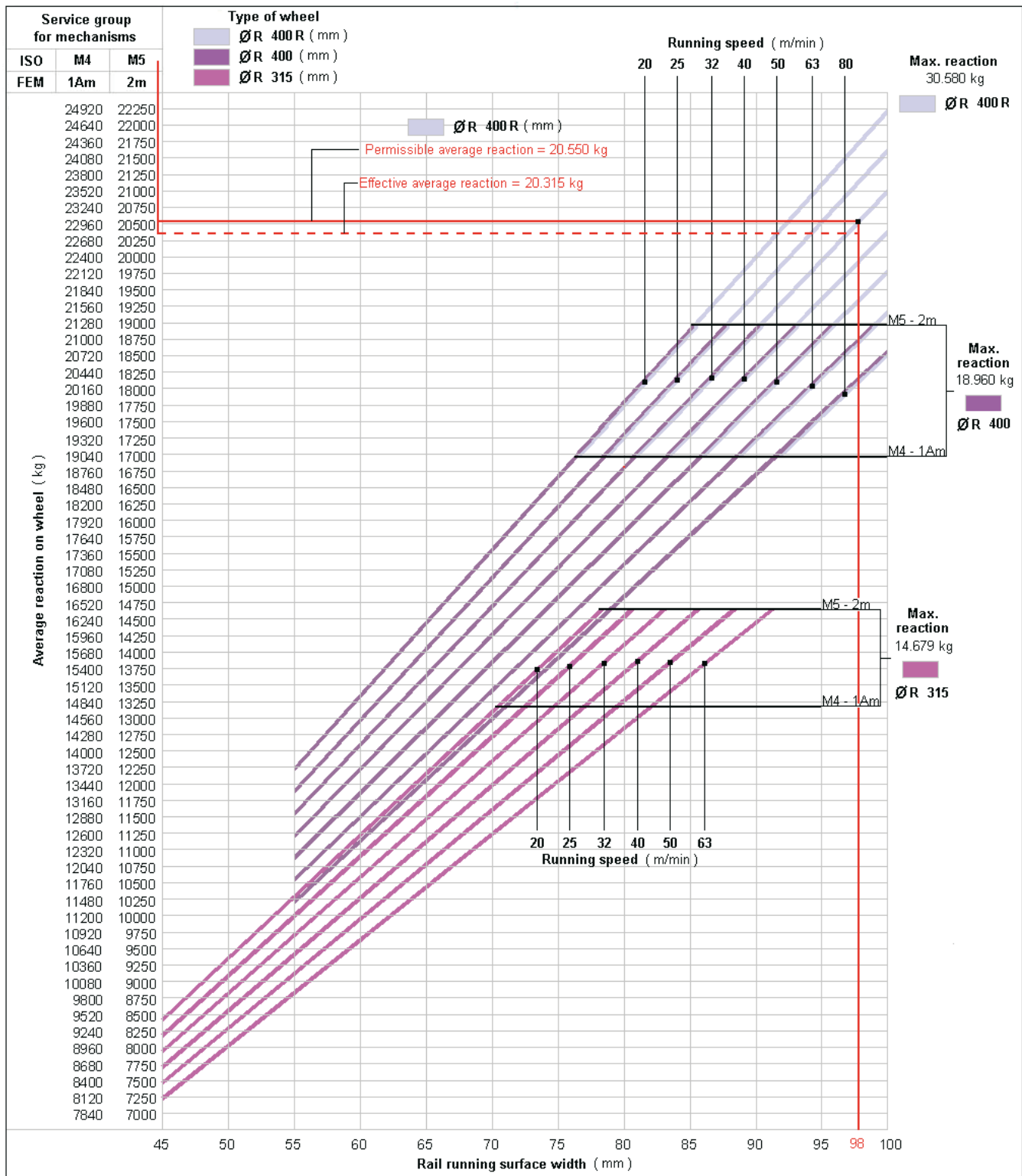
The average admissible reaction is $\sim 5.500 \text{ kg} > \text{effective average reaction } 4.885 \text{ kg}$, acting on the wheel.

Verification example of Ø 250 wheel fitness to use (3° example of page 19)

Data:

- Rail width: b = 58 mm
- Running speed: 20/5 m/min;
- Service group: ISO M5 (FEM 2m)
- Average effective reaction: R med. = 7.417 kg
- Maximum reaction: R max. = 10.750 kg

The average admissible reaction is $\sim 8.300 \text{ kg} > \text{effective average reaction } 7.417 \text{ kg}$, acting on the wheel.



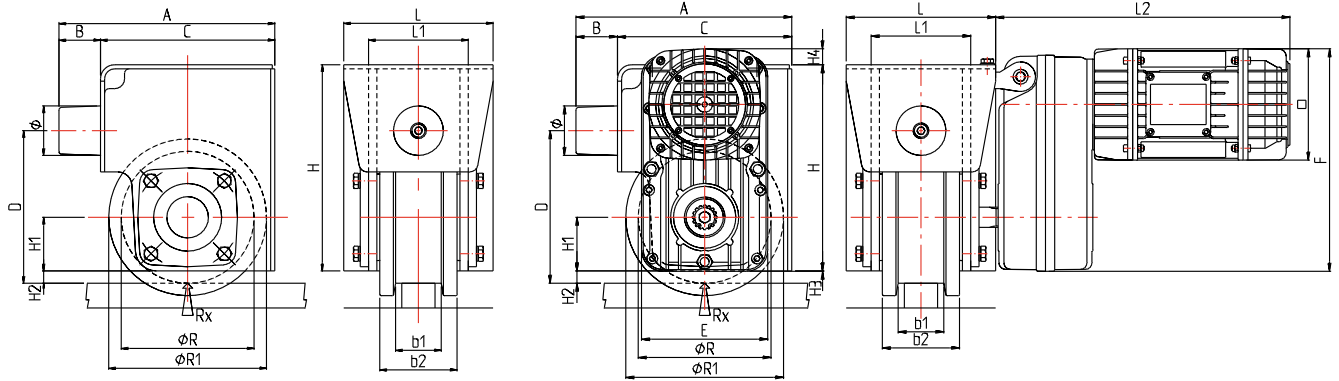
Verification example of Ø 400 R wheel fitness to use (4° example of page. 19)

Data:

- Rail width: b = 98 mm
- Running speed: 32/8 m/min;
- Service group: ISO M5 (FEM 2m)
- Average effective reaction: R med. = 20.315 kg
- Maximum reaction: R max. = 27.056 kg

The average admissible reaction is = ~ 20.550 kg > effective average reaction 20.335 kg, acting on the wheel.

Dimensions and headroom of wheel drive groups based on combinations with the related motoreducers



Idle units

Drive units

Wheel specifications			Wheel group dimensions (mm)													Size		Motoreducers dimensions (mm)						
Type Ø ØR (mm)	Max Rx. (kg)	Sheave width	b1	b2	L1	L	Ø R1	A	B	C	D	Ø	H	H1	H2	R e d u c e r	M o t o r	L2	□	E	F	H3	H4	
125	3.670 36 kN	standard	50	80	100	160	150	200	30	170	145	50	220	55	7.5	0	71	325	135	138	223	0	3	
		maximum	60														1	71	355	135	152	270	10.5	39.5
		special	70	90	110												1	80	375	150	152	278	10.5	47.5
160	4.893 48 kN	standard	55	93	120	180	190	260	50	210	185	60	250	65	15	0	71	325	135	138	223	-10	-17	
		maximum	65														1	71	355	135	152	270	0.5	19.5
		special	80	105	130												1	80	375	150	152	278	0.5	27.5
200	7.340 72 kN	standard	60	100	135	200	230	325	65	260	230	80	290	75	25	1	71	345	135	152	270	-9.5	-10.5	
		maximum	70														1	80	365	150	152	278	-9.5	-2.5
		special	90	120	145												2	80	390	150	227	357	26	41
																	2	100	435	190	227	376	26	60
250	10.805 106 kN	standard	70	110	149	230	280	375	65	310	275	80	335	90	35	1	71	345	135	152	270	-24.5	-40.5	
		maximum	80														1	80	365	150	152	278	-24.5	-32.5
		special	100	135	165												2	80	390	150	227	357	11	11
																	2	100	435	190	227	376	11	30
315	14.679 144 kN	standard	75	120	159	260	350	470	80	390	335	100	385	105	52.5	2	80	370	150	227	357	-4	-24	
		maximum	85														2	100	405	190	227	376	-4	-5
		special	110	150	180												3	112	500	225	265	456	15	56
400	18.960 186 kN	standard	85	135	170	290	440	570	100	470	385	125	440	145	55	2	80	365	150	227	357	-44	-39	
		maximum	95														2	100	400	190	227	376	-44	-20
400 R	30.580 300 kN	special	115	155	190											3	112	500	225	265	456	-25	41	

- Red dimensions L2 are referred to the wheels with "standard" and "maximum" sheave.
- For Ø 315 e Ø 400 wheels with special sheave , L2 dimension increases of 10 mm.

Types and reduction ratios for "DGP" reducers

"DGP" reducers		3 reduction stages (torques)				2 reduction stages (torques)			
Size 0	Type	031	032	033	034	021	022	023	024
	Reduction ratio	87.85	70.35	57.61	45.20	34.49	28.10	23.46	18.94
Size 1	Type	131	132	133	134	121	122	123	124
	Reduction ratio	89.45	69.98	56.35	44.35	35.10	28.87	22.77	18.50
Size 2	Type	231	232	233	234	221	222	223	224
	Reduction ratio	140.65	109.45	88.10	72.57	55.42	43.24	35.66	29.50
Size3	Type	331	332	333	334	=			
	Reduction ratio	88.67	70.36	56.65	44.33				

- Determining the reducer type:
E.g. reducer 132, where:
 - 1 = reducer size 1
 - 3 = No. of reduction stages (torques)
 - 2 = reduction ratio 69.98

Specifications and codes for self-braking motors combinable with "DGP" reducers

Motor size	Type	Poles (no.)	Rpm (rpm)	Power (kW)	Torque (Nm)	Ia (A)	In (A)	cos φ	Motor Code
71 M 20 series	71K8C	8	645	0.08	1.09	1.20	0.90	0.45	M20AP80050
	71K4CA	4	1370	0.16	1.09	2.20	0.80	0.55	M20AP40050
	71K4CB	4	1370	0.20	1.36	2.70	1.00	0.55	M20AP40051
	71K2CA	2	2740	0.32	1.09	3.60	1.00	0.75	M20AP20050
	71K2CB	2	2700	0.40	1.36	4.50	1.30	0.70	M20AP20051
	71K2L	2	2740	0.50	1.70	5.20	1.30	0.72	M20AP21050
	71K3C	2/8	2760/650	0.32/0.07	1.09	3.60/1.10	1.00/0.80	0.70/0.55	M20AP30050
80 M 30 series	80K8C	8	660	0.12	1.70	2.00	1.20	0.45	M30AP80050
	80K8L	8	630	0.16	2.18	2.20	1.30	0.48	M30AP80051
	80K4CA	4	1360	0.25	1.70	3.10	0.90	0.65	M30AP40050
	80K4CB	4	1370	0.32	2.18	3.90	1.10	0.65	M30AP40051
	80K2CA	2	2740	0.50	1.70	5.80	1.30	0.80	M30AP20050
	80K2CB	2	2750	0.63	2.18	7.70	1.70	0.75	M30AP20051
	80K2L	2	2770	0.80	2.73	9.70	1.90	0.80	M30AP21050
100 M 50 series	80K3C	2/8	2740/650	0.50/0.12	1.70	5.20/1.60	1.30/1.10	0.85/0.60	M30AP30050
	80K3L	2/8	2760/650	0.63/0.15	2.18	6.70/1.90	1.60/1.30	0.82/0.57	M30AP30051
	100K8C	8	680	0.32	4.36	4.60	1.7	0.50	M50AP80050
	100K8L	8	670	0.40	5.46	5.40	2.50	0.45	M50AP80051
	100K4CA	4	1390	0.63	4.36	8.50	1.70	0.70	M50AP40050
	100K4CB	4	1390	0.80	5.46	8.90	2.00	0.80	M50AP40051
	100K2CA	2	2820	1.25	4.36	16.50	2.90	0.83	M50AP20050
112 M 60 series	100K2CB	2	2800	1.60	5.46	21.00	3.70	0.80	M50AP20051
	100K2L	2	2780	2.00	6.82	23.00	4.30	0.86	M50AP21050
	100K3C	2/8	2820/680	1.25/0.31	4.36	15.70/3.60	3.10/1.80	0.84/0.60	M50AP30050
	100K3L	2/8	2790/660	1.60/0.39	5.46	21.00/4.00	3.50/2.30	0.86/0.60	M50AP30051
	112K8L	8	690	0.63	8.72	8.60	3.40	0.50	M60AP80050
	112K4C	4	1430	1.25	8.72	20.50	3.60	0.65	M60AP40050
	112K2L	2	2800	3.20	10.92	39.00	6.50	0.88	M60AP21050
112 M 60 series	112K3L	2/8	2850/690	2.50/0.62	8.72	33.00/7.30	5.60/3.40	0.85/0.50	M60AP30050

Specifications for self-braking motors are related to the M4 service group (1Am) – duty factor 40% – Power voltage 400 V

Codes for "DGT" drive wheel groups ready for matching with "DGP" reducers

"DGP" reducers	"DGT" drive wheel group Ø (mm)						
	125	160	200	250	315	400	400 R
size 0	DGT1A0M10	DGT2A0M10	=	=	=	=	=
size 1	DGT1A0M30	DGT2A0M30	DGT3A0M10	DGT4A0M12	=	=	=
size	=	=	DGT3A0M30	DGT4A0M32	DGT5A0M12 (dx) DGT5A0M22 (sx)	DGT6A0M12 (dx) DGT6A0M22 (sx)	DGT6A0M62 (dx) DGT6A0M72 (sx)
size 3	=	=	=	=	DGT5A0M32 (dx) DGT5A0M42 (sx)	DGT6A0M32 (dx) DGT6A0M42 (sx)	DGT6A0M82 (dx) DGT6A0M92 (sx)

- The configuration (r) = right and (l) = left, for wheel groups Ø 315 and Ø 400 refers to the positioning of the welded reaction arm
- The codes refer to drive wheels with a standard sheave width. In the case of wheels with different sheave widths, replace the letter **M** in the code with the letter **P** for wheels with a maximum sheave width, or **S** for wheels with a special sheave width

Max. weights for "DGT" drive wheel groups coupled with "DGP" reducers

"DGT" drive wheel group Ø (mm)		125	160	200	250	315	400	400 R
DGP	"DGP" reducers size 0	max. 32 kg	max. 40 kg	=	=	=	=	=
	"DGP" reducers size 1	max. 36 kg	max. 44 kg	max. 54 kg	max. 73 kg	=	=	=
	"DGP" reducers size 2	max. 38 kg	max. 48 kg	max. 58 kg	max. 75 kg	=	=	=
	"DGP" reducers size 3	=	=	max. 75 kg	max. 94 kg	max. 125 kg	max. 197 kg	max. 197 kg
	"DGP" reducers size 3	=	=	max. 83 kg	max. 102 kg	max. 133 kg	max. 205 kg	max. 205 kg
		=	=	=	=	max. 172 kg	max. 236 kg	max. 236 kg

Codes and weights for "DGT" idle wheel groups

"DGT" idel wheel group Ø (mm)	125	160	200	250	315	400	400 R
Code	DGT1A0M00	DGT2A0M00	DGT3A0M00	DGT4A0M00	DGT5A0M00	DGT6A0M00	DGT6A0M50
Weight (kg)	15.5	23.5	37.5	57.0	88.0	152.0	152.0

- The codes refer to idle wheels with a standard sheave width. In the case of wheels with different sheave widths, replace the letter **M** in the code with the letter **P** for wheels with a maximum sheave width, or **S** for wheels with a special sheave width

TRAVELLING MASSES AT 1 SPEED, BASED ON THE MATCHING OF COMPONENTS

Nominal speed (m/min)	Travelling mass (kg)		Group “DGT” wheel Ø (mm)	“DGP” motoreducer		Self-braking motor specifications		Codes for components	
	ISO service group (FEM)			Reducer Type	Motor Type	Poles (N°)	Power (kW)	Wheel group “DGT” drive	Gear motor “DGP”
	M4 (1Am)	M5 (2m)							
3.2	7.400	7.400	125	031	71K8C	8	0.08	DGT1A0M10	P0M2B18AA0
	14.700	14.700	200	231	80K8C	8	0.12	DGT3A0M30	P2M3B18AA0
4	7.400	7.400	125	032	71K8C	8	0.08	DGT1A0M10	P0M2B28AA0
	9.800	8.000	160	031	71K8C	8	0.08	DGT2A0M10	P0M2B18AA0
	14.700	14.700	200	232	80K8C	8	0.12	DGT3A0M30	P2M3B28AA0
	20.800	16.600			80K8C	8	0.12	DGT4A0M32	
	21.600	21.600	250	231	80K8L	8	0.16		P2M3B18KA0
5	6.700	5.360	25	033	71K8C	8	0.08	DGT1A0M10	P0M2B38AA0
	7.400	7.400		133	80K8C	8	0.12	DGT1A0M30	P1M3B38AA0
	8.000	6.400	160	032	71K8C	8	0.08	DGT2A0M10	P0M2B28AA0
	9.800	9.800		132	80K8C	8	0.12	DGT2A0M30	P1M3B28AA0
	9.600	7.600	200		71K8C	8	0.08	DGT3A0M10	P1M2B18AA0
	14.400	11.500			80K8C	8	0.12		P1M3B18AA0
	14.700	14.700			80K8L	8	0.16		P1M3B18KA0
	16.800	13.400			80K8C	8	0.12	DGT4A0M32	P2M3B28AA0
	21.600	18.000	250	232	80K8L	8	0.16		P2M3B28KA0
	21.600	21.600			100K8C	8	0.32		P2M5B28AA0
	18.400	14.700	315	231	80K8C	8	0.12	DGT5A0M12 (dx)	P2M3B18AA0
	23.300	18.600			80K8L	8	0.16	DGT5A0M22 (sx)	P2M3B18KA0
	29.400	29.400			100K8C	8	0.32		P2M5B18AA0
	6.3	7.400	7.400	125	031	71K4CA	4	0.16	DGT1A0M10
6.400		5.100	160	033	71K8C	8	0.08	DGT2A0M10	P0M2B38AA0
9.800		8.000		133	80K8C	8	0.12	DGT2A0M30	P1M3B38AA0
14.700		14.700	200	231	80K4CA	4	0.25	DGT3A0M30	P2M3B14AA0
9.000		7.200	250	131	71K8C	8	0.08	DGT4A0M12	P1M2B18AA0
13.500		10.800			80K8C	8	0.12		P1M3B18AA0
18.000		14.400			80K8L	8	0.16		P1M3B18KA0
21.600		21.600			233	100K8C	8	0.32	DGT4A0M32
14.600		11.700	315	232	80K8C	8	0.12	DGT5A0M12 (dx)	P2M3B28AA0
18.600		14.900			80K8L	8	0.16	DGT5A0M22 (sx)	P2M3B28KA0
29.400		29.400			100K8C	8	0.32		P2M5B28AA0
20.800		16.600	400	231	80K8L	8	0.16	DGT6A0M12 (dx)	P2M3B18KA0
41.400		33.100			100K8C	8	0.32	DGT6A0M22 (sx)	P2M5B18AA0
41.400		33.100	400 R	231	100K8C	8	0.32	DGT6A0M62 (dx)	P2M5B18AA0
51 700	41 400	100K8L			8	0.40	DGT6A0M72 (sx)	P2M5B18KA0	
8	7.400	6.658	125	032	71K4CA	4	0.16	DGT1A0M10	P0M2B24AA0
	9.800	8.000	160	031	71K4CA	4	0.16	DGT2A0M10	P0M2B14AA0
	9.800	9.800	200	131	71K4CB	4	0.20	DGT2A0M30	P1M2B14KA0
	6.000	4.800		133	71K8C	8	0.08	DGT3A0M10	P1M2B38AA0
	9.400	7.500			80K8C	8	0.12		P1M3B38AA0
	12.000	9.600			80K8L	8	0.16		P1M3B38KA0
	14.700	14.700			232	80K4CA	4	0.25	DGT3A0M30
	10.400	8.300	250	132	80K8C	8	0.12	DGT4A0M12	P1M3B28AA0
	13.800	11.000			80K8L	8	0.16		P1M3B28KA0
	21.600	17.200		231	80K4CA	4	0.25	DGT4A0M32	P2M3B14AA0
	21.600	21.600			80K4CB	4	0.32		P2M3B14KA0
	14.600	11.700	315	233	80K8L	8	0.16	DGT5A0M12 (dx)	P2M3B38KA0
	29.200	23.400			100K8C	8	0.32	DGT5A0M22 (sx)	P2M5B38AA0
	29.400	29.400			100K8L	8	0.40		P2M5B38KA0
	16.300	13.000			400	232	80K8L	8	0.16
	32.600	26.000	100K8C	8			0.32	DGT6A0M22 (sx)	P2M5B28AA0
	41.400	33.100	100K8L	8			0.40		P2M5B28KA0
	32.600	=	400 R	232			100K8C	8	0.32
	41.400	33.100			100K8L	8	0.40	DGT6A0M72 (sx)	P2M5B28KA0

- The specifications refer to a single motoreducer; in the case of two or more motoreducers, multiply the travelling mass by the number of motoreducers used.
- Verify that, in relation to the rail's running surface width (b), the average reaction (R med.) is compatible with the values listed in the diagram at pages 7,8,9.
- The values for travelling mass in red require a verification of average reaction (R med.) on each wheel, which must not exceed the following Rx. max. values.

Ø 125 R med. ≤ Rx max. ≤ 3.670 kg (36 kN)	Ø 160 R med. ≤ Rx max. ≤ 4.893 kg (48 kN)	Ø 200 R med. ≤ Rx max. ≤ 7.340 kg (72 kN)	Ø 250 R med. ≤ Rx max. ≤ 10.805 kg (106 kN)	Ø 315 R med. ≤ Rx max. ≤ 14.679 kg (144 kN)	Ø 400 R med. ≤ Rx max. ≤ 18.960 kg (186 kN)	Ø 400 R R med. ≤ Rx max. 30.580 ≤ kg (300 kN)
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TRAVELLING MASSES AT 1 SPEED, BASED ON THE MATCHING OF COMPONENTS

Nominal speed (m/min)	Travelling mass (kg)		Group “DGT” wheel Ø (mm)	“DGP” motoreducer		Self-braking motor specifications		Codes for components						
	ISO service group (FEM)			Reducer	Motor	Poles	Power	Wheel group	Gear motor					
	M4 (1Am)	M5 (2m)								Type	Type	(N°)	(kW)	“DGT” drive
10	6.700	5.360	125	033	71K4CA	4	0.16	DGT1A0M10	P0M2B34AA0					
	7.400	6.720			71K4CB	4	0.20		P0M2B34KA0					
	8.000	6.400			160	032	71K4CA		4	0.16	DGT2A0M10	P0M2B24AA0		
	9.800	8.000	71K4CB	4			0.20	P0M2B24KA0						
	9.800	9.800	200	131			80K4CA	4	0.25	DGT2A0M30		P1M3B24AA0		
	9.600	7.600			71K4CA	4	0.16	DGT3A0M10	P1M2B14AA0					
	12.000	9.600			71K4CB	4	0.20		P1M2B14KA0					
	14.700	12.200			80K4CA	4	0.25		P1M3B14AA0					
	14.700	14.700			80K4CB	4	0.32	P1M3B14KA0						
	11.200	8.900			250	133	80K8L	8	0.16	DGT4A0M12	P1M3B38KA0			
	17.200	13.700	80K4CA	4			0.25	DGT4A0M32	P2M3B24AA0					
	21.600	18.000	80K4CB	4			0.32		P2M3B24KA0					
	21.600	21.600	231	100K4CA		4	0.63		DGT5A0M12 (dx)	P2M5B24AA0				
	18.500	14.800		80K4CA		4	0.25	DGT5A0M22 (sx)		P2M3B14AA0				
	23.300	18.600		80K4CB		4	0.32	P2M3B14KA0						
	29.400	29.400	400	233	100K4CB	4	0.63	DGT6A0M12 (dx)	P2M5B14AA0					
	26.000	20.800			100K8C	8	0.32		DGT6A0M22 (sx)	P2M5B38AA0				
	33.100	26.500			100K8L	8	0.40		DGT6A0M32 (dx)	P2M5B38KA0				
	42.800	41.300		331	112K8L	8	0.63	DGT6A0M42 (sx)	P3M6B18AA0					
	33.100	=						400 R	233	100K8L	8	0.40	DGT6A0M62 (dx)	P2M5B38KA0
	51.600	41.300								112K8L	8	0.63	DGT6A0M72 (sx)	P2M5B38KA0

- The specifications refer to a single motoreducer; in the case of two or more motoreducers, multiply the travelling mass by the number of motoreducers used.
- Verify that, in relation to the rail's running surface width (b), the average reaction (R med.) is compatible with the values listed in the diagram at pages 7,8,9.
- The values for travelling mass in red require a verification of average reaction (R med.) on each wheel, which must not exceed the following Rx. max. values:

Ø 125 R med. ≤ Rx max. ≤ 3.670 kg (36 kN)	Ø 160 R med. ≤ Rx max. ≤ 4.893 kg (48 kN)	Ø 200 R med. ≤ Rx max. ≤ 7.340 kg (72 kN)	Ø 250 R med. ≤ Rx max. ≤ 10.805 kg (106 kN)	Ø 315 R med. ≤ Rx max. ≤ 14.679 kg (144 kN)	Ø 400 R med. ≤ Rx max. ≤ 18.960 kg (186 kN)	Ø 400 R R med. ≤ Rx max. 30.580 ≤ kg (300 kN)
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TRAVELLING MASSES AT 1 SPEED, BASED ON THE MATCHING OF COMPONENTS

Nominal speed (m/min)	Travelling mass (kg)		Group “DGT” wheel Ø (mm)	“DGP” motoreducer		Self-braking motor specifications		Codes for components					
	ISO service group (FEM)			Reducer	Motor	Poles	Power	Wheel group “DGT” drive	Gear motor “DGP”				
	M4 (1Am)	M5 (2m)								Type	Type	(N°)	(kW)
20	6.720	5.376	125	033	71K2CA	2	0.32	DGT1A0M10	P0M2B32AA0				
	7.400	6.720			71K2CB	2	0.40		P0M2B32KA0				
	8.000	6.400			71K2CA	2	0.32		DGT2A0M10	P0M2B22AA0			
	9.800	8.000	71K2CB	2	0.40	P0M2B22KA0							
	9.800	9.800	160	132	71K2L	2 inverter	0.50	P1M2B21KA0					
	9.600	7.600			71K2CA	2	0.32	DGT3A0M10	P1M2B12AA0				
	12.000	9.600			71K2CB	2	0.40		P1M2B12KA0				
	14.700	12.200	71K2L	2 inverter	0.50	P1M2B11KA0							
	14.700	14.700	80K2CB	2	0.63	P1M3B12KA0							
	11.200	8.900	200	131	80K4CB	4	0.32	DGT4A0M12	P1M3B34KA0				
	17.200	13.700			80K2CA	2	0.50		DGT4A0M32	P2M3B22AA0			
	21.600	17.200			80K2CB	2	0.63			P2M3B22KA0			
	21.600	21.600	80K2L	2 inverter	0.80	P2M3B21KA0							
	18.500	14.800	250	232	80K2CA	2	0.50	DGT5A0M12 (dx) DGT5A0M22 (sx)	P2M3B12AA0				
	23.300	18.600			80K2CB	2	0.63		P2M3B12KA0				
	29.400	23.700			80K2L	2 inverter	0.80		P2M3B11KA0				
	29.400	29.400	315	231	100K2CA	2	1.25	DGT6A0M12 (dx) DGT6A0M22 (sx)	P2M5B12AA0				
	25.800	20.600			100K4CA	4	0.63		P2M5B34AA0				
	33.100	26.500			100K4CB	4	0.80		P2M5B34KA0				
	42.800	41.300	400	331	112K4C	4	1.25	DGT6A0M32 (dx) DGT6A0M42 (sx)	P3M6B14AA0				
	33.100	26.500			100K4CB	4	0.80		DGT6A0M62 (dx) DGT6A0M72 (sx)	P2M5B34KA0			
	51 700	41 300			112K4C	4	1.25			DGT6A0M82 (dx) DGT6A0M92 (sx)	P3M6B14AA0		
25	5.360	4.288	125	034	71K2CA	2	0.32	DGT1A0M10	P0M2B42AA0				
	6.700	5.360			71K2CB	2	0.40		P0M2B42KA0				
	7.400	6.700			71K2L	2 inverter	0.50		P0M2B41KA0				
	7.400	6.700	160	134	80K2CA	2	0.50	DGT1A0M30	P1M3B42AA0				
	6.400	5.100			71K2CA	2	0.32		P0M2B32AA0				
	8.000	6.400			71K2CB	2	0.40	DGT2A0M10	P0M2B32KA0				
	9.800	8.000	71K2L	2 inverter	0.50	P0M2B31KA0							
	9.800	9.800	80K2CB	2	0.63	P1M3B32KA0							
	7.600	6.100	200	132	71K2CA	2	0.32	DGT2A0M30	P1M3B32KA0				
	9.600	7.600			71K2CB	2	0.40		P1M2B22AA0				
	12.000	9.600			71K2L	2 inverter	0.50		P1M2B22KA0				
	12.000	9.600	80K2CA	2	0.50	P1M3B22AA0							
	14.700	12.000	250	133	80K2CB	2	0.63	DGT3A0M10	P1M3B22KA0				
	14.700	14.700			80K2L	2 inverter	0.80		P1M3B21KA0				
	9.000	7.200			71K2CA	2	0.32		DGT4A0M12	P1M2B12AA0			
	11.200	8.900	71K2CB	2	0.40	P1M2B12KA0							
	13.800	11.000	71K2L	2 inverter	0.50	P1M2B11KA0							
	17.200	13.800	315	232	80K2CB	2	0.63	DGT4A0M32	P1M3B12KA0				
	21.600	17.200			100K2CA	2	1.25		P2M5B32AA0				
	21.600	21.600			100K2CB	2	1.60		P2M5B32KA0				
	14.800	11.900	400	231	80K2CA	2	0.50	DGT5A0M12 (dx) DGT5A0M22 (sx)	P2M3B22AA0				
	18.600	14.900			80K2CB	2	0.63		P2M3B22KA0				
	23.700	18.900			80K2L	2 inverter	0.80		P2M3B21KA0				
	29.400	29.400	400	231	100K2CA	2	1.25	DGT6A0M12 DGT6A0M22	P2M5B22AA0				
	16.500	13.200			80K2CA	2	0.50		P2M3B12AA0				
	20.800	16.600			80K2CB	2	0.63		P2M3B12KA0				
	26.500	21.200	400 R	231	80K2L	2 inverter	0.80	DGT6A0M62 (dx) DGT6A0M72 (sx)	P2M3B11KA0				
	41.400	33.100			100K2CA	2	1.25		P2M5B12AA0				
	41.400	33.100			100K2CB	2	1.25		P2M5B12AA0				
	53 000	42 400	400 R	231	100K2CA	2	1.25	DGT6A0M62 (dx) DGT6A0M72 (sx)	P2M5B12AA0				
	66 200	53 000			100K2CB	2	1.60		P2M5B12KA0				
					100K2L	2 inverter	2.00		P2M5B11KA0				
- The specifications refer to a single motoreducer; in the case of two or more motoreducers, multiply the travelling mass by the number of motoreducers used. - Verify that, in relation to the rail's running surface width (b), the average reaction (R med.) is compatible with the values listed in the diagram at pages 7,8,9. - The values for travelling mass in red require a verification of average reaction (R med.) on each wheel, which must not exceed the following Rx. max. values													
Ø 125 R med. ≤ Rx max. ≤ 3.670 kg (36 kN)		Ø 160 R med. ≤ Rx max. ≤ 4.893 kg (48 kN)		Ø 200 R med. ≤ Rx max. ≤ 7.340 kg (72 kN)		Ø 250 R med. ≤ Rx max. ≤ 10.805 kg (106 kN)		Ø 315 R med. ≤ Rx max. ≤ 14.679 kg (144 kN)		Ø 400 R med. ≤ Rx max. ≤ 18.960 kg (186 kN)		Ø 400 R R med. ≤ Rx max. 30.580 ≤ kg (300 kN)	

TRAVELLING MASSES AT 2 SPEEDS, BASED ON THE MATCHING OF COMPONENTS

Nominal speed (m/min)	Travelling mass (kg)		Group “DGT” wheel Ø (mm)	“DGP” motoreducer		Self-braking motor specifications		Codes for components			
	ISO service group (FEM)			Reducer	Motor	Poles	Power	Wheel group	Gear motor		
	M4 (1Am)	M5 (2m)								Type	Type
12.5/3.2	7.400	7.400	125	031	71K3C	2/8	0.32/0.07	DGT1A0M10	P0M2B13AA0		
	7.400	7.400			71K2L	2 inverter	0.50		P0M2B11KA0		
	14.700	14.700	200	231	80K3C	2/8	0.50/0.12	DGT3A0M30	P2M3B13AA0		
16/4	7.400	6.656	125	032	71K3C	2/8	0.32/0.07	DGT1A0M10	P0M2B23AA0		
	7.400	6.656			71K2L	2 inverter	0.50		P0M2B21KA0		
	9.800	8.000	160	031	71K3C	2/8	0.32/0.07	DGT2A0M10	P0M2B13AA0		
	9.800	9.800		131	71K3L	2/8	0.40/0.09	DGT2A0M30	P1M2B13KA0		
	14.700	14.700	200	232	80K3C	2/8	0.50/0.12	DGT3A0M30	P2M3B23AA0		
	21.600	17.200	250	231	80K3C	2/8	0.50/0.12	DGT4A0M32	P2M3B13AA0		
21.600	21.600			80K3L	2/8	0.63/0.15		P2M3B13KA0			
20/5	6.720	5.376	125	033	71K3C	2/8	0.32/0.07	DGT1A0M10	P0M2B33AA0		
	7.400	6.720			71K3L	2/8	0.40/0.09		P0M2B33KA0		
	7.400	6.720			71K2L	2 inverter	0.50		P0M2B31KA0		
	8.000	6.400	160	032	71K3C	2/8	0.32/0.07	DGT2A0M10	P0M2B23AA0		
	9.800	8.000			71K3L	2/8	0.40/0.09		P0M2B23KA0		
	9.800	9.800			132	71K2L	2 inverter		0.50	DGT2A0M30	P1M2B21KA0
	9.600	7.600	200	131	71K3C	2/8	0.32/0.07	DGT3A0M10	P1M2B13AA0		
	12.000	9.600			71K3L	2/8	0.40/0.09		P1M2B13KA0		
	14.700	12.000			71K2L	2 inverter	0.50		P1M2B11KA0		
	14.700	12.000			80K3C	2/8	0.50/0.12		P1M3B13AA0		
	14.700	14.700			80K3L	2/8	0.63/0.15		P1M3B13KA0		
	17.200	13.700			80K3C	2/8	0.50/0.12		DGT4A0M32	P2M3B23AA0	
	21.600	17.200	250	232	80K3L	2/8	0.63/0.15	P2M3B23KA0			
	21.600	21.600			80K2L	2 inverter	0.80	P2M3B21KA0			
	18.500	14.800			80K3C	2/8	0.50/0.12	DGT5A0M12 (dx) DGT5A0M22 (sx)	P2M3B13AA0		
	23.300	18.600	315	231	80K3L	2/8	0.63/0.15		P2M3B13KA0		
	29.400	23.700			80K2L	2 inverter	0.80		P2M3B11KA0		
	29.400	29.400			100K3C	2/8	1.25/0.31		P2M5B13AA0		
25/6.3	5.360	4.288			125	034	71K3C		2/8	0.32/0.07	DGT1A0M10
	6.700	5.360					71K3L	2/8	0.40/0.09	P0M2B43KA0	
	7.400	6.700	71K2L	2 inverter			0.50	P0M2B41KA0			
	7.400	6.700	80K3C	2/8			0.50/0.12	DGT1A0M30	P1M3B43AA0		
	6.400	5.100	160	033	71K3C	2/8	0.32/0.07	DGT2A0M10	P0M2B33AA0		
	8.000	6.400			71K3L	2/8	0.40/0.09		P0M2B33KA0		
	9.800	8.000			71K2L	2 inverter	0.50		P0M2B31KA0		
	9.800	9.800			80K3C	2/8	0.50/0.12		DGT2A0M30	P1M3B33AA0	
	7.600	6.100	200	133	71K3C	2/8	0.32/0.07	DGT3A0M10	P1M2B23AA0		
	9.600	7.600			71K3L	2/8	0.40/0.09		P1M2B23KA0		
	12.000	9.600			71K2L	2 inverter	0.50		P1M2B21KA0		
	12.000	9.600			80K3C	2/8	0.50/0.12		P1M3B23AA0		
	14.700	12.000			80K3L	2/8	0.63/0.15		P1M3B23KA0		
	14.700	14.700			80K2L	2 inverter	0.80		P1M3B21KA0		
	11.200	9.000	250	132	71K3L	2/8	0.40/0.09	DGT4A0M12	P1M2B13KA0		
	13.800	11.000			71K2L	2 inverter	0.50		P1M2B11KA0		
	13.800	11.000			80K3C	2/8	0.50/0.12		P1M3B13AA0		
	17.200	13.800			80K3L	2/8	0.63/0.15		P1M3B13KA0		
	21.600	21.600			100K3C	2/8	1.25/0.31		DGT4A0M32	P2M5B33AA0	
	14.800	11.900			315	232	80K3C		2/8	0.50/0.12	DGT5A0M12 (dx)
	18.600	14.900	80K3L	2/8			0.63/0.15	DGT5A0M22 (sx)	P2M3B23KA0		
	23.700	18.900	80K2L	2 inverter			0.80		P2M3B21KA0		
	29.400	29.400	100K3C	2/8			1.25/0.31	DGT6A0M12 (dx) DGT6A0M22 (sx)	P2M5B23AA0		
	20.800	16.600	400	231			80K3L		2/8	0.63/0.15	P2M3B13KA0
	26.500	21.200					80K2L		2 inverter	0.80	P2M3B11KA0
	41.400	33.100			100K3C	2/8	1.25/0.31		P2M5B13AA0		
	41.400	33.100			100K3C	2/8	1.25/0.31		DGT6A0M62 (dx) DGT6A0M72 (sx)	P2M5B13AA0	
	53 000	42 400			100K3L	2/8	1.60/0.39			P2M5B13KA0	
	66 200	53 000			100K2L	2 inverter	2.00	P2M5B11KA0			

- The specifications refer to a single motoreducer; in the case of two or more motoreducers, multiply the travelling mass by the number of motoreducers used.
- Verify that, in relation to the rail's running surface width (b), the average reaction (R med.) is compatible with the values listed in the diagram at pages 7,8,9.
- The values for travelling mass in red require a verification of average reaction (R med.) on each wheel, which must not exceed the following Rx. max. values:

Ø 125 R med. ≤ Rx max. ≤ 3.670 kg (36 kN)	Ø 160 R med. ≤ Rx max. ≤ 4.893 kg (48 kN)	Ø 200 R med. ≤ Rx max. ≤ 7.340 kg (72 kN)	Ø 250 R med. ≤ Rx max. ≤ 10.805 kg (106 kN)	Ø 315 R med. ≤ Rx max. ≤ 14.679 kg (144 kN)	Ø 400 R med. ≤ Rx max. ≤ 18.960 kg (186 kN)	Ø 400 R R med. ≤ Rx max. 30.580 ≤ kg (300 kN)
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TRAVELLING MASSES AT 2 SPEEDS, BASED ON THE MATCHING OF COMPONENTS

Nominal speed (m/min)	Travelling mass (kg)		Group “DGT” wheel Ø (mm)	“DGP” motoreducer		Self-braking motor specifications		Codes for components		
	ISO service group (FEM)			Reducer	Motor	Poles	Power	Wheel group	Gear motor	
	M4 (1Am)	M5 (2m)								Type
32/8	4.160	3.328	125	021	71K3C	2/8	0.32/0.07	DGT1A0M10	P0M2A13AA0	
	5.200	4.160			71K3L	2/8	0.40/0.09		P0M2A13KA0	
	6.500	5.200			71K2L	2 inverter	0.50		P1M2A11KA0	
	6.500	5.200		121	80K3C	2/8	0.50/0.12	DGT1A0M30	P1M3A13AA0	
	7.400	6.656			80K3L	2/8	0.63/0.15		P1M3A13KA0	
	7.400	6.656			80K2L	2 inverter	0.80		P1M3A11KA0	
	5.000	4.000	160	034	71K3C	2/8	0.32/0.07	DGT2A0M10	P0M2B43AA0	
	6.300	5.000			71K3L	2/8	0.40/0.09		P0M2B43KA0	
	7.900	6.300			71K2L	2 inverter	0.50		P0M2B41KA0	
	7.900	6.300		134	80K3C	2/8	0.50/0.12	DGT2A0M30	P1M3B43AA0	
	9.800	8.000			80K3L	2/8	0.63/0.15		P1M3B43KA0	
	9.800	9.800			80K2L	2 inverter	0.80		P1M3B41KA0	
	7.600	6.000	200	133	71K3L	2/8	0.40/0.09	DGT3A0M10	P1M2B33KA0	
	9.600	7.600			71K2L	2 inverter	0.50		P1M2B31KA0	
	9.600	7.600			80K3C	2/8	0.50/0.12		P1M3B33AA0	
	12.000	9.600			80K3L	2/8	0.63/0.15		P1M3B33KA0	
	14.700	12.000			80K2L	2 inverter	0.80		P1M3B31KA0	
	14.700	14.700		221	100K3C	2/8	1.25/0.31	DGT3A0M30	P2M5A13AA0	
	10.800	8.600	250	132	71K2L	2 inverter	0.50	DGT4A0M12	P1M2B21KA0	
	10.800	8.600			80K3C	2/8	0.50/0.12		P1M3B23AA0	
	13.500	10.800			80K3L	2/8	0.63/0.15		P1M3B23KA0	
	17.200	13.700			80K2L	2 inverter	0.80		P1M3B21KA0	
	21.600	21.600		234	100K3C	2/8	1.25/0.31	DGT4A0M32	P2M5B43AA0	
	14.600	11.600		315	233	80K3L	2/8	0.63/0.15	DGT5A0M12 (dx) DGT5A0M22 (sx)	P2M3B33KA0
	18.500	14.800	80K2L			2 inverter	0.80	P2M3B31KA0		
	28.900	23.100	100K3C			2/8	1.25/0.31	P2M5B33AA0		
	29.400	29.400	100K3L			2/8	1.60/0.39	P2M5B33KA0		
	20.700	16.500	400	232	80K2L	2 inverter	0.80	DGT6A0M12 (dx) DGT6A0M22 (sx)	P2M3B21KA0	
	32.300	25.800			100K3C	2/8	1.25/0.31		P2M5B23AA0	
	41.400	33.100			100K3L	2/8	1.60/0.39		P2M5B23KA0	
	32.300	=			100K3C	2/8	1.25/0.31		P2M5B23AA0	
	41.400	33.100	400 R	232	100K3L	2/8	1.60/0.39	DGT6A0M72 (sx)	P2M5B23KA0	
	51 700	41 300			100K2L	2 inverter	2.00		P2M5B21KA0	
40/10	3.360	2.688	125	022	71K3C	2/8	0.32/0.07	DGT1A0M10	P0M2A23AA0	
	4.200	3.360			71K3L	2/8	0.40/0.09		P0M2A23KA0	
	5.250	4.200			71K2L	2 inverter	0.50		P0M2A21KA0	
	5.250	4.200		122	80K3C	2/8	0.50/0.12	DGT1A0M30	P1M3A23AA0	
	6.695	5.356			80K3L	2/8	0.63/0.15		P1M3A23KA0	
	7.400	6.720			80K2L	2 inverter	0.80		P1M3A21KA0	
	5.000	4.000	160	021	71K3L	2/8	0.40/0.09	DGT2A0M10	P0M2A13KA0	
	6.300	5.000			71K2L	2 inverter	0.50		P1M2A11KA0	
	6.300	5.000		121	80K3C	2/8	0.50/0.12	DGT2A0M30	P1M3A13AA0	
	7.900	6.300			80K3L	2/8	0.63/0.15		P1M3A13KA0	
	10.000	8.000			80K2L	2 inverter	0.80		P1M3A11KA0	
	7.600	6.000		200	134	71K2L	2 inverter	0.50	DGT3A0M10	P1M2B41KA0
	7.600	6.000				80K3C	2/8	0.50/0.12		P1M3B43AA0
	9.400	7.600				80K3L	2/8	0.63/0.15		P1M3B43KA0
	12.000	9.600				80K2L	2 inverter	0.80		P1M3B41KA0
	14.700	14.700	250	222	100K3C	2/8	1.25/0.31	DGT3A0M30	P2M5A23AA0	
	10.800	8.600		133	80K3L	2/8	0.63/0.15	DGT4A0M12	P1M3B33KA0	
	13.500	10.800			80K2L	2 inverter	0.80		P1M3B31KA0	
	21.600	17.200			100K3C	2/8	1.25/0.31		P2M5A13AA0	
	21.600	21.600		221	100K3L	2/8	1.60/0.39		P2M5A13KA0	
	11.600	9.300	315	234	80K3L	2/8	0.63/0.15	DGT5A0M12 (dx) DGT5A0M22 (sx)	P2M3B43KA0	
	14.800	11.900			80K2L	2 inverter	0.80		P2M3B41KA0	
	23.000	18.400			100K3C	2/8	1.25/0.31		P2M5B43AA0	
	29.400	23.700			100K3L	2/8	1.60/0.39		P2M5B43KA0	
	29.400	29.400		233	100K2L	2 inverter	2.00	DGT6A0M12 (dx) DGT6A0M22 (sx)	P2M5B41KA0	
	13.000	10.400			80K3L	2/8	0.63/0.15		P2M3B33KA0	
	16.500	13.200			80K2L	2 inverter	0.80		P2M3B31KA0	
	25.800	20.600			100K3C	2/8	1.25/0.31		P2M5B33AA0	
	33.100	26.400	400		100K3L	2/8	1.60/0.39	DGT6A0M62 (dx) DGT6A0M72 (sx)	P2M5B33KA0	
	41.300	33.100			100K2L	2 inverter	2.00		P2M5B31KA0	
	42.800	41.300	331	331	112K3L	2/8	2.50/0.62		DGT6A0M32 (dx) DGT6A0M42 (sx)	P3M6B13KA0
	33.100	26.400			100K3L	2/8	1.60/0.39	DGT6A0M62 (dx)	P2M5B33KA0	
	41.300	33.100			100K2L	2 inverter	2.00	DGT6A0M72 (sx)	P2M5B31KA0	
51 600	41 300	112K3L			2/8	2.50/0.62	DGT6A0M82 (dx)	P3M6B13KA0		
66 000	52 800	112K2L			2 inverter	3.20	DGT6A0M92 (sx)	P3M6B11AA0		

- The specifications refer to a single motoreducer; in the case of two or more motoreducers, multiply the travelling mass by the number of motoreducers used.
- Verify that, in relation to the rail's running surface width (b), the average reaction (R med.) is compatible with the values listed in the diagram at pages 7,8,9.
- The values for travelling mass in red require a verification of average reaction (R med.) on each wheel, which must not exceed the following Rx. max. values:

Ø 125 R med. ≤ Rx max. ≤ 3.670 kg (36 kN)	Ø 160 R med. ≤ Rx max. ≤ 4.893 kg (48 kN)	Ø 200 R med. ≤ Rx max. ≤ 7.340 kg (72 kN)	Ø 250 R med. ≤ Rx max. ≤ 10.805 kg (106 kN)	Ø 315 R med. ≤ Rx max. ≤ 14.679 kg (144 kN)	Ø 400 R med. ≤ Rx max. ≤ 18.960 kg (186 kN)	Ø 400 R R med. ≤ Rx max. 30.580 ≤ kg (300 kN)
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TRAVELLING MASSES AT 2 SPEEDS, BASED ON THE MATCHING OF COMPONENTS

Nominal speed (m/min)	Travelling mass (kg)		Group “DGT” wheel Ø (mm)	“DGP” motoreducer		Self-braking motor specifications		Codes for components		
	ISO service group (FEM)			Reducer Type	Motor Type	Poles (N°)	Power (kW)	Wheel group “DGT” drive	Gear motor “DGP”	
	M4 (1Am)	M5 (2m)								
50/12.5	2.640	2.112	125	023	71K3C	2/8	0.32/0.07	DGT1A0M10	P0M2A33AA0	
	3.300	2.640			71K3L	2/8	0.40/0.09		P0M2A33KA0	
	4.125	3.300			71K2L	2 inverter	0.50		P0M2A31KA0	
	4.125	3.300		123	80K3C	2/8	0.50/0.12	DGT1A0M30	P1M3A33AA0	
	5.197	4.157			80K3L	2/8	0.63/0.15		P1M3A33KA0	
	6.600	5.280			80K2L	2 inverter	0.80		P1M3A31KA0	
	5 000	4 000	160	022	71K2L	2 inverter	0.50	DGT2A0M10	P0M2A21KA0	
	5 000	4 000		122	80K3C	2/8	0.50/0.12	DGT2A0M30	P1M3A23AA0	
	6 300	5 000			80K3L	2/8	0.63/0.15		P1M3A23KA0	
	8 000	6 300			80K2L	2 inverter	0.80		P1M3A21KA0	
	6 000	4 800	200	121	71K2L	2 inverter	0.50	DGT3A0M10	P1M2A11KA0	
	7 600	6 000			80K3L	2/8	0.63/0.15		P1M3A13KA0	
	9 400	7 600			80K2L	2 inverter	0.80		P1M3A11KA0	
	14 700	12 000		223	100K3C	2/8	1.25/0.31	DGT3A0M30	P2M5A33AA0	
	14 700	14 700			100K3L	2/8	1.60/0.39		P2M5A33KA0	
	8 600	6 900			250	134	80K3L		2/8	0.63/0.15
	10 800	8 600	80K2L	2 inverter			0.80	P1M3B41KA0		
	17 200	13 800	100K3C	2/8			1.25/0.31	DGT4A0M32	P2M5A23AA0	
	21 600	17 200	222	100K3L		2/8	1.60/0.39		P2M5A23KA0	
	21 600	21 600		100K2L		2 inverter	2.00		P2M5A21KA0	
	9 200	7 400	315	221		80K3L	2/8	0.63/0.15	DGT5A0M12 (dx) DGT5A0M22 (sx)	P2M3A13KA0
	11 800	9 400			80K2L	2 inverter	0.80	P2M3A11KA0		
	18 400	14 700			100K3C	2/8	1.25/0.31	P2M5A13AA0		
	23 600	18 900			100K3L	2/8	1.60/0.39	P2M5A13KA0		
	29 400	29 400		333	112K3L	2/8	2.50/0.62	DGT5A0M32 (dx) DGT5A0M42 (sx)	P3M6B33KA0	
	20 700	16 600			400	234	100K3C	2/8	1.25/0.31	DGT6A0M12 (dx)
	26 500	21 200	100K3L	2/8			1.60/0.39	DGT6A0M22 (sx)	P2M5B43KA0	
	33 000	26 400	100K2L	2 inverter			2.00	P2M5B41KA0		
	41 200	33 000	332	112K3L		2/8	2.50/0.62	DGT6A0M32 (dx)	P3M6B23KA0	
	42 800	42 200		112K2L		2 inverter	3.20	DGT6A0M42 (sx)	P3M6B21AA0	
	33 000	26 400		100K2L		2 inverter	2.00	DGT6A0M62 (dx) DGT6A0M72 (sx)	P2M5B41KA0	
	41 200	33 000	400 R	332	112K3L	2/8	2.50/0.62	DGT6A0M82 (dx)	P3M6B23KA0	
	52 700	42 100			112K2L	2 inverter	3.20	DGT6A0M92 (sx)	P3M6B21AA0	
63/16	2.080	1.664	125	024	71K3C	2/8	0.32/0.07	DGT1A0M10	P0M2A43AA0	
	2.600	2.080			71K3L	2/8	0.40/0.09		P0M2A43KA0	
	3.250	2.600			71K2L	2 inverter	0.50		P0M2A41KA0	
	3.250	2.600		124	80K3C	2/8	0.50/0.12	DGT1A0M30	P1M3A43AA0	
	4.095	3.276			80K3L	2/8	0.63/0.15		P1M3A43KA0	
	5.200	4.160			80K2L	2 inverter	0.80		P1M3A41KA0	
	5 000	4 000	160	123	80K3L	2/8	0.63/0.15	DGT2A0M10	P1M3A33KA0	
	6 300	5 000	200	122	80K2L	2 inverter	0.80	DGT3A0M10	P1M3A31KA0	
	6 000	4 800			80K3L	2/8	0.63/0.15		P1M3A23KA0	
	7 600	6 000			80K2L	2 inverter	0.80		P1M3A21KA0	
	12 000	9 600		224	100K3C	2/8	1.25/0.31	DGT3A0M30	P2M5A43AA0	
	14 700	12 000			100K3L	2/8	1.60/0.39		P2M5A43KA0	
	6 900	5 500			250	121	80K3L		2/8	0.63/0.15
	8 600	6 900	80K2L	2 inverter			0.80	P1M3A11KA0		
	13 500	10 800	100K3C	2/8			1.25/0.31	DGT4A0M32	P2M5A33AA0	
	17 200	13 800	100K3L	2/8		1.60/0.39	P2M5A33KA0			
	21 600	17 200	100K2L	2 inverter		2.00	P2M5A31KA0			
	14 600	11 700	315	222		100K3C	2/8	1.25/0.31	DGT5A0M12 (dx) DGT5A0M22 (sx)	P2M5A23AA0
	18 700	14 900			100K3L	2/8	1.60/0.39	P2M5A23KA0		
	23 400	18 700			100K2L	2 inverter	2.00	P2M5A21KA0		
	29 300	23 500		334	112K3L	2/8	2.50/0.62	DGT5A0M32 (dx) DGT5A0M42 (sx)	P3M6B43KA0	
	29 400	29 400			112K2L	2 inverter	3.20		P3M6B41AA0	
	16 400	13 100	400	221	100K3C	2/8	1.25/0.31	DGT6A0M12 (dx) DGT6A0M22 (sx)	P2M5A13AA0	
	21 000	16 800			100K3L	2/8	1.60/0.39		P2M5A13KA0	
	32 800	26 200			333	112K3L	2/8	2.50/0.62	DGT6A0M32 (dx) DGT6A0M42 (sx)	P3M6B33KA0
	42 000	33 600		112K2L		2 inverter	3.20	P3M6B31AA0		
	32 800	26 200		400 R		333	112K3L	2/8		2.50/0.62
	42 000	33 600			112K2L		2 inverter	3.20	DGT6A0M92 (sx)	P3M6B31AA0

- The specifications refer to a single motoreducer; in the case of two or more motoreducers, multiply the travelling mass by the number of motoreducers used.
- Verify that, in relation to the rail's running surface width (b), the average reaction (R med.) is compatible with the values listed in the diagram at pages 7,8,9.
- The values for travelling mass in red require a verification of average reaction (R med.) on each wheel, which must not exceed the following Rx. max. values:

Ø 125 R med. ≤ Rx max. ≤ 3.670 kg (36 kN)	Ø 160 R med. ≤ Rx max. ≤ 4.893 kg (48 kN)	Ø 200 R med. ≤ Rx max. ≤ 7.340 kg (72 kN)	Ø 250 R med. ≤ Rx max. ≤ 10.805 kg (106 kN)	Ø 315 R med. ≤ Rx max. ≤ 14.679 kg (144 kN)	Ø 400 R med. ≤ Rx max. ≤ 18.960 kg (186 kN)	Ø 400 R R med. ≤ Rx max. 30.580 ≤ kg (300 kN)
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TRAVELLING MASSES AT 2 SPEEDS, BASED ON THE MATCHING OF COMPONENTS

Nominal speed (m/min)	Travelling mass (kg)		group wheel “DGT” Ø (mm)	“DGP” Motoreducer		Self-braking motor specifications		Codes for components		
	in service group ISO (FEM)			Reducer Type	Motor Type	Poles (N°)	Power (kW)	Wheel group “DGT” drive	Gear motor “DGP”	
	M4 (1Am)	M5 (2m)								
80/20	2 000	1 600	160	024	71K3C	2/8	0.32/0.07	DGT2A0M10	P0M2A43AA0	
	2 500	2 000			71K3L	2/8	0.40/0.09		P0M2A43KA0	
	3 200	2 500			71K2L	2 inverter	0.50		P0M2A41KA0	
	3 200	2 500		124	80K3C	2/8	0.50/0.12	DGT2A0M30	P1M3A43AA0	
	4 000	3 200			80K3L	2/8	0.63/0.15		P1M3A43KA0	
	5 000	4 000			80K2L	2 inverter	0.80		P1M3A41KA0	
	5 400	4 300	250	122	80K3L	2/8	0.63/0.15	DGT4A0M12	P1M3A23KA0	
	6 900	5 500			80K2L	2 inverter	0.80		P1M3A21KA0	
	10 800	8 600			224	100K3C	2/8	1.25/0.31	DGT4A0M32	P2M5A43AA0
	13 500	10 800		100K3L		2/8	1.60/0.39	P2M5A43KA0		
	17 200	13 800		100K2L		2 inverter	2.00	P2M5A41KA0		
	16 500	13 200	400	222	100K3L	2/8	1.60/0.39	DGT6A0M12 (dx)	P2M5A23KA0	
	20 600	16 500			100K2L	2 inverter	2.00	DGT6A0M22 (sx)	P2M5A21KA0	
	25 800	20 600		334	112K3L	2/8	2.50/0.62	DGT6A0M32 (dx)	P3M6B43KA0	
	33 000	26 400			112K2L	2 inverter	3.20	DGT6A0M42 (sx)	P3M6B41AA0	
	33 600	26 900		400 R	334	112K2L	2 inverter	3.20	DGT6A0M82 (dx)	P3M6B41AA0
									DGT6A0M92 (sx)	

- The specifications refer to a single motoreducer; in the case of two or more motoreducers, multiply the travelling mass by the number of motoreducers used.
- Verify that, in relation to the rail's running surface width (b), the average reaction (R med.) is compatible with the values listed in the diagram at pages 7,8,9.
- The values for travelling mass in red require a verification of average reaction (R med.) on each wheel, which must not exceed the following Rx. max. values:

Ø 125 R med. ≤ Rx max. ≤ 3.670 kg (36 kN)	Ø 160 R med. ≤ Rx max. ≤ 4.893 kg (48 kN)	Ø 200 R med. ≤ Rx max. ≤ 7.340 kg (72 kN)	Ø 250 R med. ≤ Rx max. ≤ 10.805 kg (106 kN)	Ø 315 R med. ≤ Rx max. ≤ 14.679 kg (144 kN)	Ø 400 R med. ≤ Rx max. ≤ 18.960 kg (186 kN)	Ø 400 R R med. ≤ Rx max. 30.580 ≤ kg (300 kN)
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SAMPLE GUIDELINES FOR SELECTING DRIVE UNITS FOR CRANES

To make the correct choice of **drive unit**, firstly establish all operating parameters which determine its operating limitations, defining and/or verifying the following factors (see sample guidelines for various "limit" cases listed below, purely by way of example):

- Define operating data: nominal load, running speed (1 or 2 speed) and ISO service group (FEM);
- Define: the mass (weight) of the crane or trolley in question and any accessories (frame, electrical system, etc.);
- Define: in the case of a crane, the weight of the hoist/trolley or trolley/winch, or any movable masses (blocks, etc.) in the case of trolleys;
- Calculate: the total mass to be traversed, i.e. the nominal load + all equipment masses (weight of crane, trolley, etc.);
- Define: the no. of motor drive units, necessary for the running of the total mass to be travelled;
- Calculate: the mass each drive wheel must travel (i.e. the ratio between the total mass and the no. of wheel drive groups);
- Verify: the maximum, minimum and average reactions on the wheels, considering the load approach/eccentricities;
- Verify: the congruency of the rail running surface width, in relation to the type of rail on which the wheels will run on.

1st Example: Single girder crane - Capacity 5 t - Span 16 m

- nominal load P = 5000 kg; 2 crane running speeds = 40/10 m/min; ISO service group M4 (FEM 1Am)
- weight of crane + accessories : M1 = ~ 2500 kg
- weight of hoist + trolley : M2 = ~ 500 kg
- total mass to travel : 5000 + 2500 + 500 = 8000 kg
- Motor drive units : no. 2
- mass to travel for each motor drive wheel : 8000 / 2 = 4000 kg

Based on the selected speed and calculation of mass to be travelled for each drive wheel, derive the following components from the table at page 16:

Nominal speed (m/min)	Travelling mass (kg) in service group ISO M4 (FEM 1Am) is, in Kg:	"DGT" wheel group Ø (mm)	"DGP" Motoreducer		Self-braking motor specifications		Codes for components	
			Reducer Type	Motor Type	Poles (No.)	Power (kW)	"DGT" drive wheel group	"DGP" motoreducer
40/10	4200 > than 4000 to be traversed	125	022	71K3L	2/8	0.40/0.09	DGT1A0M10	P0M2A23KA0

At this point, verify the suitability of the Ø 125 wheel selected, in relation to its admissible reactions and type of rail:

- reactions on the wheels, calculated as illustrated at page 7, for gauge "S" = 16,000 mm and supposing an approach "a" = 1000 mm:
 $R_{max} = 2500/4 + [(500 + 5000)/2] \cdot (1 - 1000/16,000) = \sim 3203 \text{ kg}$
 $R_{min} = 2500/4 + 500/2 \cdot 1000/16,000 = \sim 641 \text{ kg}$
 $R_{ave} = (2 \cdot R_{max} + R_{min})/3 = (2 \cdot 3203 + 641)/3 = \sim 2349 \text{ kg} < di \text{ 3670 kg, corresponding to max. Rx admissible}$
- supposing a flat laminated rail, with l = 40 and a running surface b = 38 (see table at page 6), from the diagram at page 7 we can deduce that, for a Ø 125 wheel with a **standard sheave** width, considering the factors (speed and rail running surface), the average admissible reaction for service group M4 (1Am) is: R ave. admissible = ~ 2400 kg > of the 2349 kg the wheel is subject to.

SAMPLE GUIDELINES FOR SELECTING DRIVE UNITS FOR CRANES

2nd Example: Double girder crane - Capacity 10 t - Span 20 m

1. nominal load $P = 10.000$ kg; 2 crane sliding speeds = 40/10 m/min; ISO service group M4 (FEM 1Am)
2. weight of crane + accessories : $M1 = \sim 5.900$ kg
3. weight of hoist + trolley : $M2 = \sim 750$ kg
4. total mass to travel : $10.000 + 5900 + 750 = 16.650$ kg
5. Motor drive units : no. 2
6. mass to travel for each motor drive wheel : $16.650 / 2 = 8325$ kg

Based on the selected speed and calculation of mass to be traversed for each drive wheel, derive the following components from the table at page 16::

Nominal speed (m/min)	Travelling mass (kg) in service group ISO M4 (FEM 1Am) is, in Kg:	“DGT” wheel group Ø (mm)	“DGP” Motoreducer		Self-braking motor specifications		Codes for components	
			Reducer Type	Motor Type	Poles (No.)	Power (kW)	“DGT” drive wheel group	“DGP” motoreducer
40/10	9400 > than 8325 to be traversed	200	134	80K3L	2/8	0.63/0.15	DGT3A0M10	P1M3B43KA0

At this point, verify the suitability of the Ø 200 wheel selected, in relation to its admissible reactions and type of rail:

7. reactions on the wheels, calculated as illustrated at page 7, for gauge “S” = 20,000 mm and supposing a juxtaposition “a” = 1000 mm:
 $R_{max.} = 5900/4 + [(750 + 10.000)/2] \cdot (1 - 1000/20.000) = \sim 6581$ kg
 $R_{min.} = 5900/4 + 750/2 \cdot 1000/20.000 = \sim 1494$ kg
 $R_{ave.} = (2 \cdot R_{max.} + R_{min.})/3 = (2 \cdot 6581 + 1494)/3 = 4885$ kN < di 7340 kg, corresponding to max. Rx admissible
8. supposing a flat laminated rail, with $l = 50$ and operating band $b = 48$ (see table at page 6), from the diagram at page 8 we can deduce that, for a Ø 200 wheel with a **standard sheave** width, considering the factors (speed and operating bandwidth), the average admissible reaction for the service group M4 (1Am) is: $R_{ave.}$ admissible = ~ 5500 kg > of the 4855 kg the wheel is subject to.

3rd Example: Trolley for winch - Capacity 40 t – Gauge 2.4 m

1. nominal load $P = 40.000$ kg; 2 trolley running speeds = 20/5 m/min; ISO service group M5 (FEM 2m)
2. weight of crane + accessories : $M1 = \sim 2600$ kg
3. weight of block + ropes : $M2 = \sim 400$ kg
4. total mass to travel : $40.000 + 2600 + 400 = 43.000$ kg
5. motor drive units : no. 2
6. mass to travel for each drive wheel : $43.000 / 2 = 21.500$ kg

Based on the selected speed and calculation of mass to be travelled for each drive wheel, derive the following components from the table at page 15:

Nominal speed (m/min)	Travelling mass (kg) in service group ISO M5 (FEM 2m) is, in Kg:	“DGT” wheel group Ø (mm)	“DGP” Motoreducer		Self-braking motor specifications		Codes for components	
			Reducer Type	Motor Type	Poles (No.)	Power (kW)	“DGT” drive wheel group	“DGP” Gear motor
20/5	21.600 > di 21.500 to be traversed	250	232	80K2L	2 with inverter	0.80	DGT4A0M30	P2M3B21KA0

At this point, verify the suitability of the Ø 250 wheel selected, in relation to its admissible reactions and type of rail:

7. reactions on the wheels, calculated as illustrated at page 7, for gauge “S” = 2400 mm and supposing the centred hook “a” = 1200 mm:
 $R_{max.} = 2600/4 + [(400 + 40.000)/2] \cdot (1 - 1200/2400) = \sim 10.750$ kg
 $R_{min.} = 2600/4 + 400/2 \cdot 1200/2400 = \sim 750$ kg
 $R_{ave.} = (2 \cdot R_{max.} + R_{min.})/3 = (2 \cdot 10750 + 750)/3 = 7417$ kg < di 10805 kg, corresponding to max. Rx admissible
8. supposing a flat laminated rail, with $l = 60$ and operating band $b = 58$ (see table at page 6), from the diagram at page 8 we can deduce that, for a Ø 250 wheel with a **standard sheave** width, considering the factors (speed and rail running surface), the average admissible reaction for the service group M5 (2m) is: $R_{ave.}$ admissible = ~ 8300 kg > of the 7417 kg the wheel is subject to.

4^o Example: Gantry crane - Capacity 40 t - Span 27 m

1. nominal load $P = 40.000$ kg; 2 crane running speeds = 32/8 m/min; service group ISO M5 (FEM 2m)
2. weight of crane + accessories : $M1 = \sim 27.000$ kg
3. Weight of trolley + hoist : $M2 = \sim 3.000$ kg
4. total mass to travel : $40.000 + 27.000 + 3.000 = 70.000$ kg
5. motor drive units : n° 2
6. mass to travel for each drive wheel : $70.000 / 2 = 35.000$ kg

Based on the selected speed and calculation of mass to be travelled for each drive wheel, derive the following components from the table at page 16 :

Nominal speed (m/min)	Travelling mass (kg), in service group ISO M5 (FEM 2m), is in kg:	“DGT” wheel group Ø (mm)	“DGP” Motoreducer		Self-braking motor specifications		Codes for components	
			Reducer Tipo	Motor Tipo	Poles (N°)	Power (kW)	“DGT” drive wheel group	“DGP” motoreducer
32/8	41.300 > di 35.000 to be traslated	400 R	232	100K2L	2 with inverter	2.00	DGT6A0M62 (dx) DGT6A0M72 (sx)	P2M5B21KA0

At this point ,verify the suitability of the Ø 400 wheel selected, in relation to its admissible reactions and type of rail:

7. reactions on the wheels, calculated as illustrated at page. 7, for span “S” 27.000 mm and supposing a position “a” 1.500 mm:
 $R_{max.} = 27.000/4 + [(3.000 + 40.000)/2] \cdot (1 - 1.500/27.000) = \sim 27.056$ kg
 $R_{min.} = 27.000/4 + 3.000/2 \cdot 1.500/27.000 = \sim 6.834$ kg
 $R_{ave.} = (2 \cdot R_{max.} + R_{min.})/3 = (2 \cdot 27.056 + 6.834)/3 = \sim 20.315$ kg < di 30.580 kg, corresponding to max Rx admissible
8. supposing a flat laminated rail, with $l = 100$ and operating band $b = 98$ (see table at page 6), from the diagram at page 9 we can deduce that, for a Ø 400 R with **special sheave width**, considering the factors (speed and rail running surface), the average admissible reaction for the service group M5 (2m), is: $R_{ave.}$ admissible = ~ 20.550 kg > 20.315 kg the wheel is subject to..

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DONATI SOLLEVAMENTI S.r.l.

Via Roma, 55 - 21020 Daverio (Varese) - Italy - tel. +39 0332 942.611 - fax +39 0332 948.597

E-mail: info@donati-europe.com - www.donati-europe.com

DONATI Ltd

Unit 40 - Farriers Way Ind. Est. - NETHERTON - LIVERPOOL L30 4XL

tel. +44 (0)151 530 1139 - fax +44 (0)151 525 6613 - E-mail: sales@donati.co.uk



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