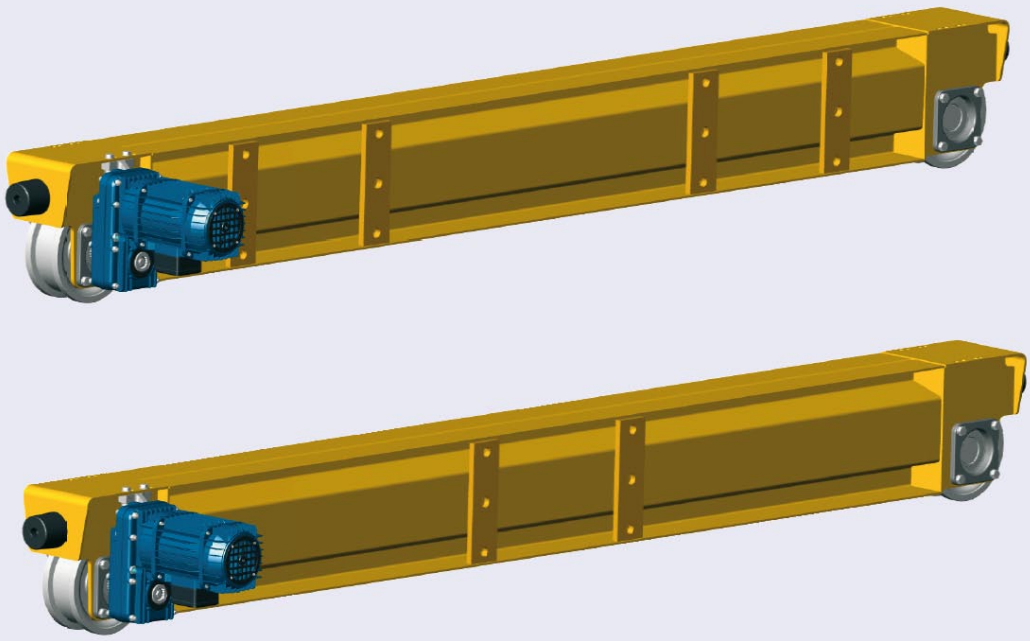

donati

ENDCARRIAGES FOR BRIDGE CRANES

equipped with

“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 **endcarriages for bridge 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 **62,000 kg**.
Enhancing its range of **DRH series electric wire rope hoists** and **DMK series chain hoists**, trusted by industry professionals worldwide, these **endcarriages for bridge cranes** are part of the range of products built by **DONATI SOLLEVAMENTI S.r.l.**, a leading Italian and global manufacturer of lifting systems.

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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 bridge cranes comprising 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 2006/95/CE** (replacing Directives 73/23/CEE and 93/68/CEE).
- **Electromagnetic Compatibility Directive 2004/108/CE** (replacing Directives 89/336/CEE and 92/31/CEE).

ENDCARRIAGES FOR BRIDGE CRANES

- DONATI **endcarriages** are designed for handling operations on rails on **bridge cranes**:
  - **at single running speed from 3.2 to 25 m/min;**
  - **at two running speeds, from 12.5/3.2 to 80/20 m/min;**

  operating on:
  - **single girder, with a capacity of up to 20,000 kg and gauge of up to 25 m**;
  - **double girder, with a capacity of up to 40,000 kg and gauge of up to 27 m**.
- DONATI **endcarriages for bridge cranes**, designed and built on the principle of modular components assembled together in relation to their specific use, are equipped with **drive units** comprising **"DGT" series wheel groups**, which, in combination with **"DGP" series offset geared motors**, guarantee: accurate alignments for moving structures, control over high shifting speeds, while facilitating installation and maintenance.

THE PRODUCT RANGE AND ITS OPERATING LIMITATIONS

- The range of **endcarriages for bridge cranes** are designed in **6 production sizes** corresponding to the dimensions of the respective wheels, in **17 configurations** based on **7 different wheel basis lengths** calibrated in relation to the span and type of bridge crane they are combined with, i.e.:
  - **6 "DGT" series drive wheel group sizes** (Ø 125, Ø 160, Ø 200, Ø 250, Ø 315 and Ø 400/400 R)
  - **17 configurations based on wheel basis** (1800 mm; 2100 mm; 2400 mm; 2700 mm; 3300 mm; 3600 mm; 3900 mm)

Operating limitations for endcarriages on SINGLE GIRDER or DOUBLE GIRDER bridge cranes, in relation to span

Endcarriages type: "DGT" Size	Wheel Ø R mm	Basis mm	Span (m) SINGLE GIRDER [M] or DOUBLE GIRDER [D] bridge crane. 6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
1	125	1800				M																		
		2400				D					M		D											
		3300														M		D						
2	160	1800				M																		
		2400				D					M		D											
		3300														M		D						
3	200	2100					M																	
		2700					D						M		D									
		3600																M		D				
4	250	3600					M																	
		2700	M		D				D				M		D									
		3600																M		D				
		3600 R																	M					
5	315	2400						M																
		3900												D										
6	400	3900												D										
	400 R	3900 R													D									

- The **drive units"** are configured in **6 structural sizes**, with the following basic components:
  - **6 sizes of "DGT" series drive wheel group** (Ø 125, Ø 160, Ø 200, Ø 250, Ø 315 and Ø 400/400 R)
  - **4 sizes of "DGP" series offset 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)

"DGT" wheels Size	Ø (mm)	"DGP" series offset geared motors: "DGP" reducers size 0	"DGP" reducers size 1	"DGP" reducers size 2	"DGP" reducers size 3
1	125	Motors size 71	Motors size 71	=	=
2	160	Motors size 71	Motors size 71	=	=
3	200	=	Motors size 80	Motors size 80	=
4	250	=	Motors size 80	Motors size 80	=
5	315	=	=	Motors size 100	Motors size 112
	400	=	=	Motors size 100	Motors size 112
6	400 R	=	=	=	Motors size 112

CONFORMITY TO NORMS AND REGULATIONS

- **Applicable legislation:**
  - The **travelling endcarriages** 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** (re-codified by Directive 89/392/CEE and subsequent revisions 91/368/CEE, 93/44/CEE and 93/68/CEE).
  - In relation to the specifications under **Annex II of European Directive 98/37/CE**, the **endcarriages** are introduced into the market as incomplete, since they are designed to be incorporated in other machinery (bridge cranes). As such, in accordance with Article 4 - paragraph 2 of European Directive 98/37/CE, the **endcarriages for bridge cranes** are **devoid of CE marking** and are supplied accompanied by a **Manufacturer's Declaration – Annex II D.**
  - In addition, the **endcarriages for bridge cranes** conform to the following Directives:
    - **Low Voltage Directive 2006/95/CE** (replacing Directives 73/23/CEE and 93/68/CEE);
    - **Electromagnetic Compatibility Directive 2004/108/CE** (replacing Directives 89/336/CEE and 92/31/CEE).

- **Applicable norms and regulations:**
  - The following norms and technical principles have also been taken into consideration in the design and manufacturing of the **endcarriages for bridge 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 "Criteria of choice for lifting and travel motors"
    - FEM 9.755/93 "Safety work periods"

- **Service classification:**
  - The structural elements and mechanisms on the **endcarriages for bridge cranes** are classified in various service groups, in conformity with specifications stipulated under norm ISO 4301.

- **Protection and sheathing of electrical parts:**
  - Sliding 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 **endcarriages for bridge 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 **endcarriages for bridge 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.

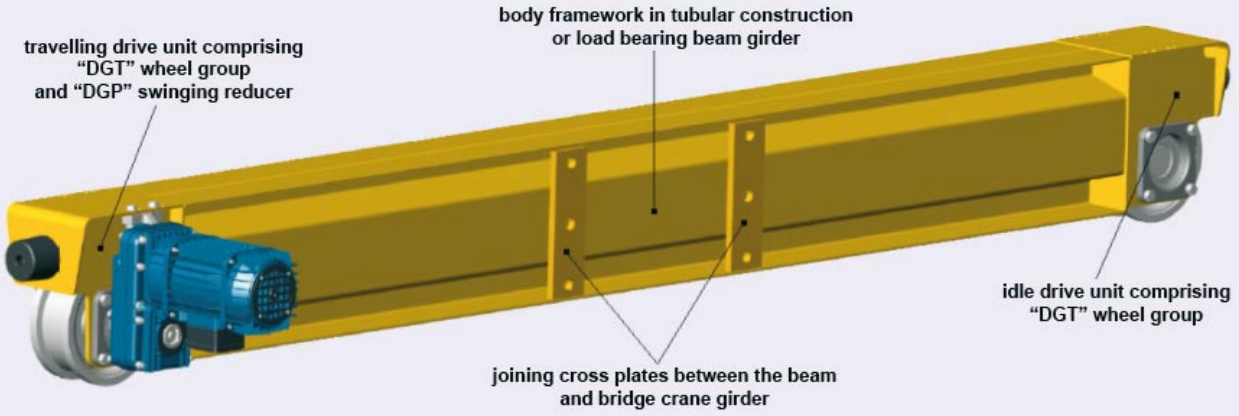
- **Noise emissions - Vibrations:**
  - Noise emission levels emanating from the **endcarriages** during running operations, whether empty or fully loaded, are in all cases inferior to a value of **80 dB (A)**, as measured at a distance of 1 m and 1.6 m from the ground.
    The incidence of environmental 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 **endcarriages** during runing operations are not considered dangerous for the health and wellbeing of personnel operating the lifting equipment on which the units are installed.

DESIGN AND CONSTRUCTION

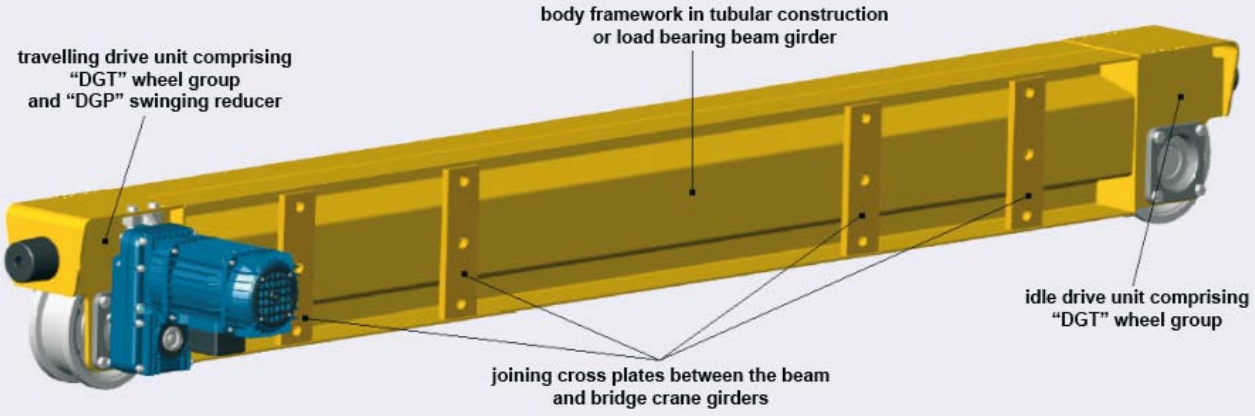
- The **endcarriages** are equipped standard with two **drive units,** of which one is a **drive unit** and the other is **idler**.
- However, their special construction design, due to the use of modular components, allows for flexibility in adapting to different operating needs, with **endcarriages** equipped with **two travelling drive units.**
- The **endcarriages** are also easily integrated and combined with a variety of accessories, such as, for example: mechanical or electrical/electronic anti-collision devices, operating speed and stop position control systems, mechanical type limit stroke or cycle counter, electronic systems (encoders), thereby guaranteeing cost efficient operation.
- Finishing on the bodywork on the **endcarriages** and protection from atmospheric and environmental agents (dust, gas, etc.) is guaranteed by a special paintwork finish which applies a chrome and lead free primer coat of 40 microns in thickness of yellow enamel RAL 1002; surfaces are previously prepared with SA 2 degree metallic sanding in accordance with SVENSK STANDARD SIS 055900. The finish is oven dried for 40 min. at a temperature of 60-80°C.
- The special waterproof paintwork finish adopted for the electro-mechanical parts (offset gearbox and self-braking drive motor), obtained using an electrostatic process and the complete sealing of parts, guarantees their inalterability over time and constant high performance characteristics, even in particularly hostile environments.
- Safety is one of the factors taken most into consideration at **DONATI SOLLEVAMENTI S.r.l.**, in both the design and manufacturing of all our products, guaranteeing their total reliability in all operating conditions and maintenance.
  This is why our **endcarriages** are covered by a **3 year Warranty**, from date of delivery.

COMPONENTS AND EQUIPMENT ON ENDCARRIAGES FOR BRIDGE CRANES

- **Endcarriages for bridge cranes** are generally supplied in pairs, each endcarriage comprising the following parts and components:
  - **tubular design built framework**
  - **"DGT" wheel group idler drive unit;**
  - **"DGT" wheel group driven unit combined with a "DGP" offset geared motor;**
  - **the connection plate/s** (single girder or double girder) **fix the endtruck to the crane's beam;**
  - **accessories** (limit stroke, towing arms, etc.).



Endcarriage for SINGLE GIRDER bridge crane



Endcarriage for DOUBLE GIRDER bridge crane

COMPONENTS ON ENDCARRIAGES FOR BRIDGE CRANES

- The main components on endtrucks **for bridge cranes** are the:

  - **Steel framework in tubular construction:**
    - The endcarriage's structure, in a tubular construction, comprises two semi-frames built in special sectioned steel, joined together by a continuous seam welding process. The special profiled section of the semi-frames allows for easy assembly and maintenance of the bolted joints between the endcarriage and crane's beam.
    - The special construction design also allows the passage of electrical cables, and its closed body design avoids problems due to rusting and internal corrosion, thereby reducing costly maintenance and controls on the beam.
    - The bridge crane beams are securely assembled to the endtrucks' structures by a system of high resistance traction bolts adopting a stress bearing pin system.

  - **"DGT" series wheel groups:**
    - Drive wheels Ø 125, Ø 160, Ø 200, Ø 250 and Ø 315 are carbon steel moulded. Sliding wheels Ø 400 and Ø 400 R are in spheroid cast iron.
    - All wheels groups revolve on permanently lubricated radial bearings, with the exception of the extra load capacity Ø 400 R wheel group, which is fitted with roller bearings.
    - Available in idle operation or ready for drive operation combined with a offset geared motor.
    - In drive operation, the direct connection is coaxial between the offset reducer's output shaft and the grooved hub on the drive wheel ensures a high level of operating safety and reliability.
    - The wheel group is available standard with a double-flange version and can, on request, be supplied with different sliding band widths depending on the type of rail it runs on.
    - Both in idle and drive operation, the wheel groups are supported and contained within an electro-welded steel structure that acts as a support casing for the entire group, and as a joining element between the endtruck frame on which the wheel group is assembled.

  - **"DGP" series offset geared motors:**
    - **Reducers** are designed as a "offset gearbox" 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 swinging 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.

  - **The connection plate** (single girder) **or plates** (double girder) **fix the endcarriage to the crane's girder or girders**
    - Specially designed connection plates fix the endcarriages to the girder/s of the bridge crane. Built in steel plating in different sizes, they are welded to the bridge crane girders, whether tubular or plated sectioned, laterally joined or fixed to the travelling beam structures.

  - **Accessories (limit switches, towing arms, etc.):**
    - The travel limit switch on the endcarriages, when supplied, is a rotating type with a double cross-rod ensuring for two-speed cranes a dual function of pre-deceleration and stopping in both directions, and is housed on the DGT drive unit.

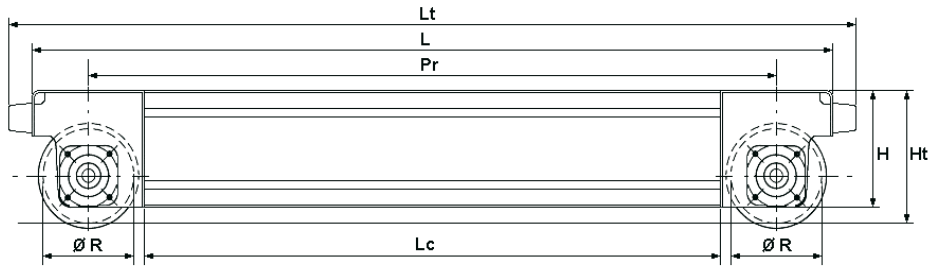
TECHNICAL SPECIFICATIONS AND OPERATING LIMITATIONS FOR ENDCARRIAGES FOR BRIDGE CRANES

- For complete technical specifications on the **endcarriages for bridge cranes**, in relation to their intended operation, check and match the parameters limiting their operation.

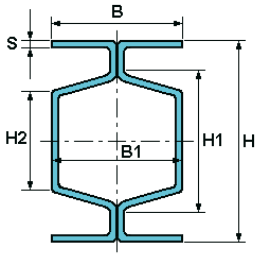
- The tables below provide a suitable means of verifying operating limits and specifications for endcarriages with wheel groups in combination with offset reducers and self-braking motors, in relation to the following user specifications for the bridge crane the endtrucks are installed on.

- Operating parameters required for selecting endcarraiges:
  - type of bridge crane (single girder or double girder);
  - load bearing capacity;
  - span;
  - ISO / FEM service group;
  - inflection point, with a nominal load on the beam's mid-section;
  - loads on the wheels;
  - width and shape of the rail;
  - running speed.

Geometrical specifications based on endcarriage for SINGLE or DOUBLE GIRDER bridge cranes



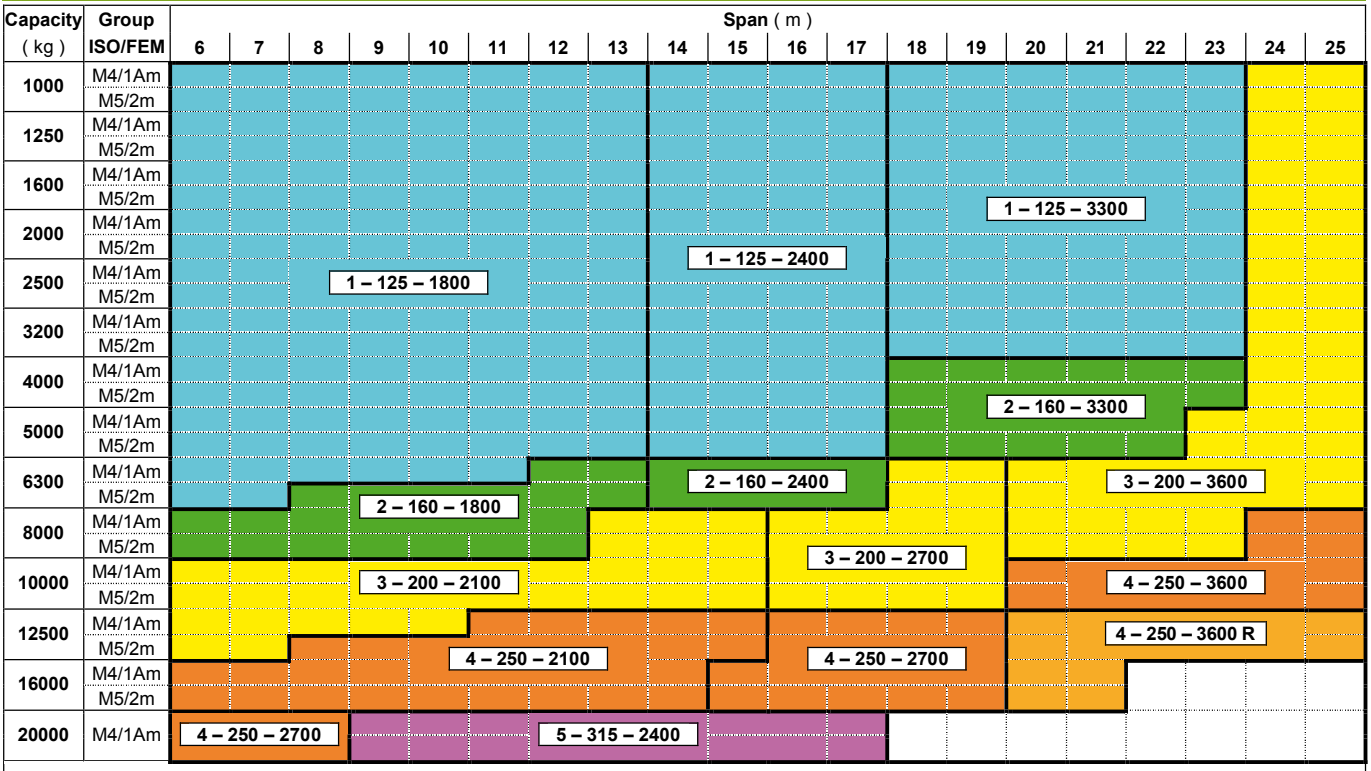
Endcarriage construction



Tubular endcarriage section

Endcarriage type			Endcarriage dimensional data (mm)										Inertial data on tubular section						
"DGT" size	Wheel Ø R (mm)	Basis (mm)	Lc	L	Lt	S	D	H	B1	H1	H2	Ht	Wt cm^3	Jx cm^4	Wx cm^3	Jy cm^4	Wy cm^3	Area (cm^2) At	Ao
1	125	1800	1630	1970	2030	4	160	220	150	138	100	227	120.0	2423.0	220.0	889.0	111.0	17.6	24.8
		2400	2230	2570	2630	6				127	90		162.0	3450.0	313.0	1224.0	153.0	26.4	37.2
		3300	3130	3470	3530														
2	160	1800	1590	2010	2110	4	180	250	170	164	120	265	163.0	3607.0	288.0	1336.0	148.0	20.0	28.0
		2400	2190	2610	2710	6				157	114		233.0	5194.0	415.0	1894.5	210.0	30.0	42.0
		3300	3090	3510	3610														
3	200	2100	1840	2360	2490	5	200	290	188	194	147	315	276.0	6839.0	471.0	2363.0	236.0	29.	38.8
		2700	2440	2960	3090	8				166	120		361.0	10119.0	698.0	3275.0	327.5	46.4	62.0
		3600	3340	3860	3990														
4	250	2100	1790	2410	2540	5	230	335	218	228	180	370	392.0	10772.0	643.0	3803.0	330.	33.5	44.8
		2700	2390	3010	3140	8				211	157		547.0	16135.0	963.0	5462.0	475.0	53.6	71.0
		3600	3290	3910	4040														
		3600 R						345				375		22430.0	1300.0	6326.0	550.0	55.2	93.0
5	315	2400	2010	2790	2950	6	260	385	244	266	204	437	597.0	19214.0	998.0	6467.0	497.0	46.2	60.0
		3900	3510	4290	4450	10				230	170		829.0	29610	1538.0	9397.0	723.0	77.0	101.0
6	400	3900	3430	4370	4570	10	290	440	274	285	217	495	1189.0	44920.0	2042.0	14293.0	986.0	88.0	113.0
	400 R	3900 R						460				505		72260.0	3141.7	17573.0	1211.9	92.0	167.0

Operating limitations for endcarriages on SINGLE GIRDER bridge cranes based on: Capacity - ISO/FEM group - Span

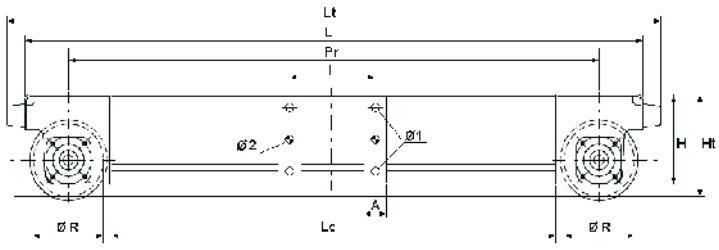


Admissible travelling mass for endcarriages on SINGLE GIRDER bridge crane [Travelling mass (kg) = capacity + crane weight + weight of trolley/hoist]

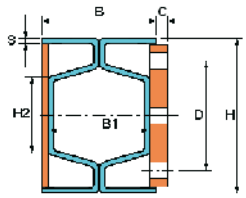
1 - 125			2 - 160			3 - 200			4 - 250				5 - 315
1800	2400	3300	1800	2400	3300	2100	2700	3600	2100	2700	3600	3600 R	2400
8.400		7.400	11.100		9.800	15.800		14.800	22.000	24.400	19.000	24.800	28.600

Note: operating limitations determined using Donati components (hoist, trolley, etc.) and sectioned beams sized as per arrow **a = Span / 750**

Endcarriages for SINGLE GIRDER cranes with connection plates to "bridge girder"



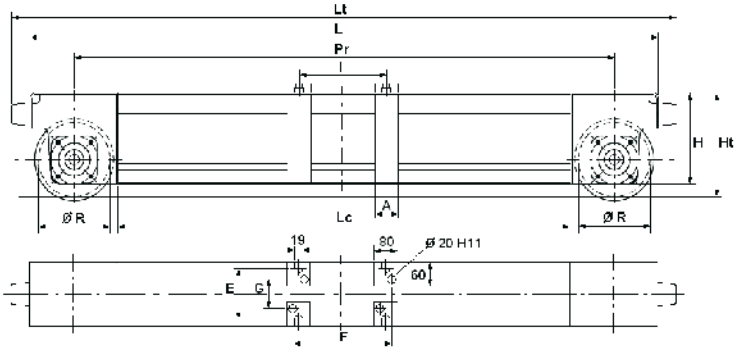
Connection of beam-girder "Lateral" configuration



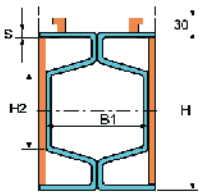
Beam connection area section

Endcarriage type	Beam codes in relation to max. width span (mm) of bridge girder: Max. width	Quota l	Couple beam code	Max. width	Quota l	Couple beam code	Max. width	Quota l	Couple beam code	(for other quotas see page 7) Quotas (mm) A	C	D	Ø1	Ø2	Weight (kg)
1 – 125 – 1800			S118F1..			S118F2..			=						82
1 – 125 – 2400	305	360	S124F1..	370	430	S124F2..	450	510	S124F3..	60	7	165	18	20	128
1 – 125 – 3300			S133F1..			S133F2..			S133F3..						165
2 – 160 – 1800			S218F1..			S218F2..			=						105
2 – 160 – 2400	305	360	S224F1..	370	430	S224F2..	450	510	S224F3..	60	7	190	20	20	160
2 – 160 – 3300			S233F1..			S233F2..			S233F3..						205
3 – 200 – 2100			S321F1..			S321F2..			S321F3..						170
3 – 200 – 2700	360	420	S327F1..	410	480	S327F2..	500	560	S327F3..	80	9	225	22	25	255
3 – 200 – 3600			S336F1..			S336F2..			S336F3..						330
4 – 250 – 2100			S421F1..			S421F2..			S421F3..						220
4 – 250 – 2700	410	480	S427F1..	490	560	S427F2..	565	640	S427F3..	80	9	270	26	25	330
4 – 250 – 3600			S436F1..			S436F2..			S436F3..						410
4 – 250 – 3600 R			S437F1..			S437F2..			S437F3..						428
5 – 315 – 2400	410	500	S524F1..	490	580	S524F2..	615	710	S524F3..	100	12	305	30	32	340

Referred partial codes are applyed to couples of endcarriages without counterplates. In case of couples of endcarriages with counterplates, replace letter F, in fifth position, with letter L.



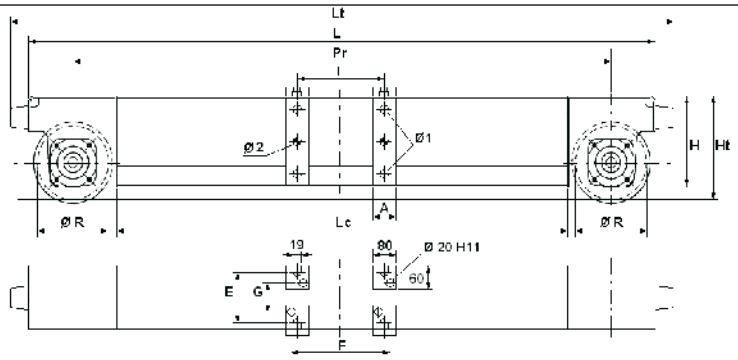
Joining of beam girder in "Supported" configuration



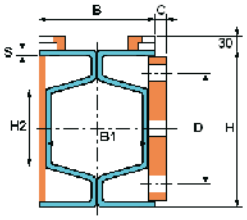
Beam connection area section

Endcarriage type	Beam codes in relation to max. width span (mm) of bridge girder										(for other quotas see page 7) Quota (mm)			Weight (kg)
	Max. width	Quota l	Quota F	Couple beam code	Max. width	Quota l	Quota F	Couple beam code	Max. width	Quota l	Quota F	Couple beam code	A	E	G	
1 – 125 – 1800	305	360	402	S118S1..	370	430	472	S118S2..	450	510	552	=	60	120	78	82
1 – 125 – 2400				S124S1..				S124S2..				S124S3..				128
1 – 125 – 3300				S133S1..				S133S2..				S133S3..				165
2 – 160 – 1800	305	360	402	S218S1..	370	430	472	S218S2..	450	510	552	=	60	140	98	105
2 – 160 – 2400				S224S1..				S224S2..				S224S3..				160
2 – 160 – 3300				S233S1..				S233S2..				S233S3..				205
3 – 200 – 2100	360	420	462	S321S1..	410	480	522	S321S2..	500	560	602	S321S3..	80	160	118	170
3 – 200 – 2700				S327S1..				S327S2..				S327S3..				255
3 – 200 – 3600				S336S1..				S336S2..				S336S3..				330
4 – 250 – 2100	410	480	522	S421S1..	490	560	602	S421S2..	565	640	682	S421S3..	80	190	148	220
4 – 250 – 2700				S427S1..				S427S2..				S427S3..				330
4 – 250 – 3600				S436S1..				S436S2..				S436S3..				410
4 – 250 – 3600 R				S437S1..				S437S2..				S437S3..				428
5 – 315 – 2400	410	500	542	S524S1..	490	580	622	S524S2..	615	710	752	S524S3..	100	220	178	340

Referred partial codes are applyed to couples of endcarriages without counterplates. In case of couples of endcarriages with counterplates, replace letter **S**, in fifth position, with letter **A**.



Joining of beam girder in "Lateral + Supported" configuration

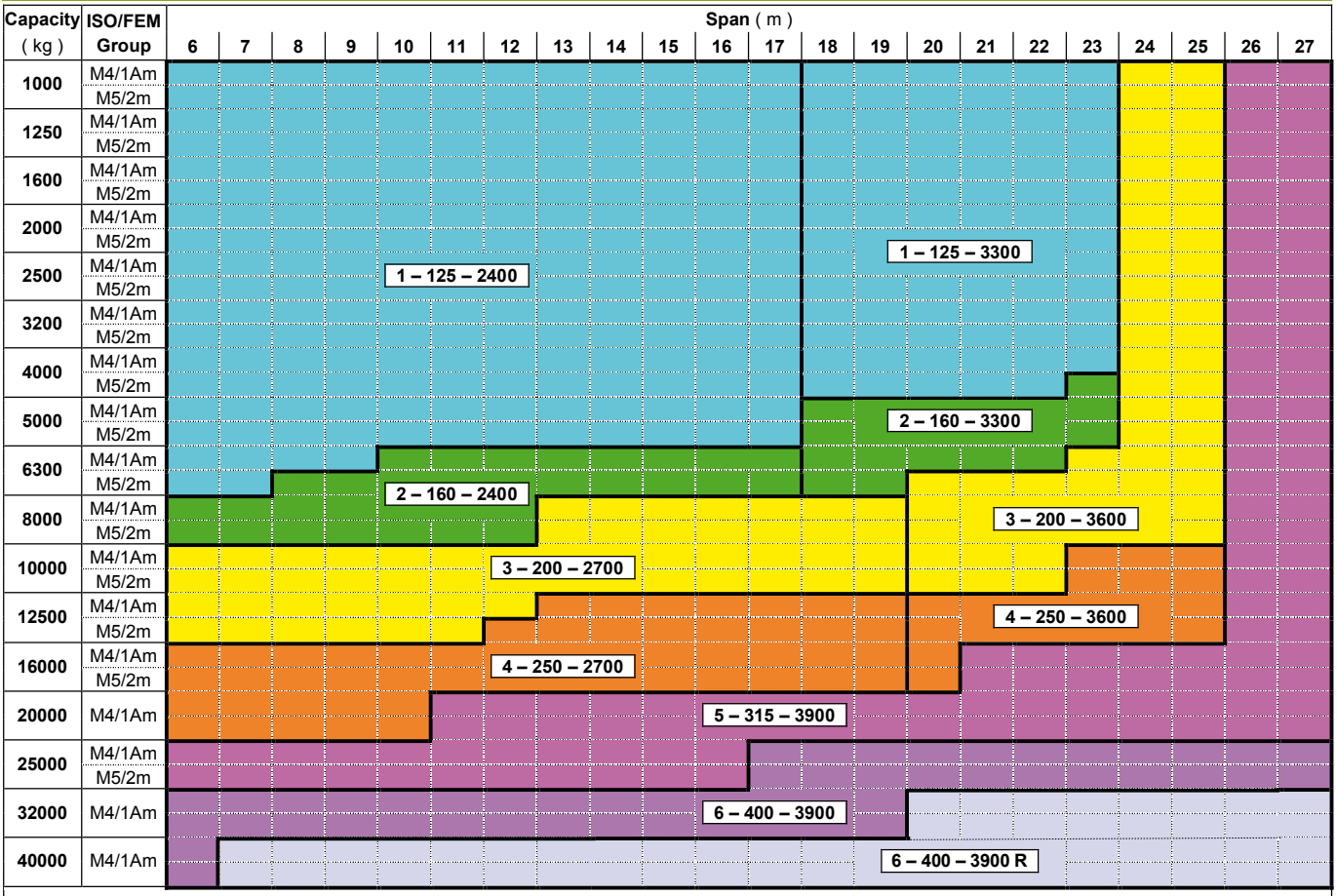


Beam joining area section

Endcarriage type	Beam codes in relation to max. width span (mm) of bridge girder										(for other quotas see page 7) Quota (mm)							Weight (kg)
	Max. width	Quota l	Quota F	Couple beam code	Max. width	Quota l	Quota F	Couple beam code	Max. width	Quota l	Quota F	Couple beam cod	A	C	D	E	G	Ø 1	Ø 2	
1 – 125 – 1800	305	360	402	S118D1..	370	430	472	S118D2..	450	510	552	=	60	7	165	120	78	18	20	82
1 – 125 – 2400				S124D1..				S124D2..				S124D3..								128
1 – 125 – 3300				S133D1..				S133D2..				S133D3..								165
2 – 160 – 1800	305	360	402	S218D1..	370	430	472	S218D2..	450	510	552	=	60	7	190	140	98	20	20	105
2 – 160 – 2400				S224D1..				S224D2..				S224D3..								160
2 – 160 – 3300				S233D1..				S233D2..				S233D3..								205
3 – 200 – 2100	360	420	462	S321D1..	410	480	522	S321D2..	500	560	602	S321D3..	80	9	225	160	118	22	25	170
3 – 200 – 2700				S327D1..				S327D2..				S327D3..								255
3 – 200 – 3600				S336D1..				S336D2..				S336D3..								330
4 – 250 – 2100	410	480	522	S421D1..	490	560	602	S421D2..	565	640	682	S421D3..	80	9	270	190	148	26	25	220
4 – 250 – 2700				S427D1..				S427D2..				S427D3..								330
4 – 250 – 3600				S436D1..				S436D2..				S436D3..								410
4 – 250 – 3600R				S437D1..				S437D2..				S437D3..								428
5 – 315 – 2400	410	500	542	S524D1..	490	580	622	S524D2..	615	710	752	S524D3..	100	12	305	220	178	30	32	340

Referred partial codes are applyed to couples of endcarriages without counterplates. In case of couples of endcarriages with counterplates, replace letter **D**, in fifth position, with letter **C**.

Operating limitations for endcarriages on DOUBLE GIRDER bridge cranes based on: Capacity - ISO/FEM group - Span

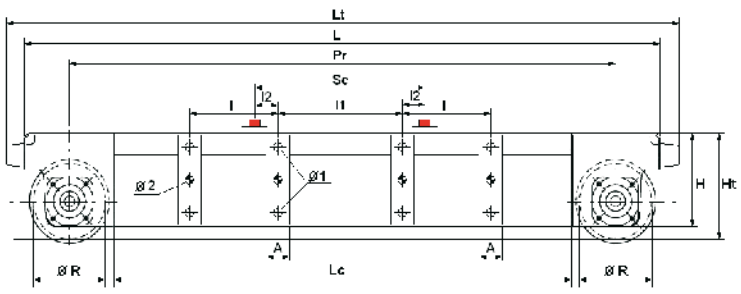


Admissible travelling mass from beams on Double girder bridge crane [Travelling mass (kg) = capacity + crane weight + weight of trolley/hoist]

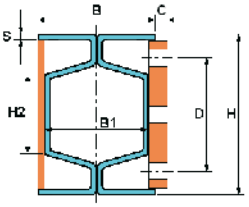
1 - 125		2 - 160		3 - 200		4 - 250		5 - 315	6 - 400	6 - 400 R
2400	3300	2400	3300	2700	3600	2700	3600	3900	3900	3900 R
9.300	10.400	11.500	13.200	17.100	18.800	25.000	25.500	35.900	50.600	62.000

Note: operating limitations determined using Donati components (hoist, trolley, etc.) and sectioned beams sized as per arrow **a = Span / 750**

Endcarriages for DOUBLE GIRDER cranes with connection plates to “bridge girders”



Joining of beam girders in “Lateral” configuration



Beam joining area section

Endcarriages type	Couple beam codes based on the gauge of the double girder trolley, type of girders on the bridge crane and max. girder span				(for other quotas see page 7) Quota (mm)								Weight (kg)
	Double girder trolley gauge (mm)	Bridge crane girders Type	Max. span (mm)	Couple beam code	I	I1	I2	A	C	D	Ø1	Ø2	
1 – 125 – 2400	1000	Beam	305	W124F1..	360	870	65	60	7	165	18	20	130
		Beam	370	W124F2..	430	865	67.5						
		HE	300	W124FA..	360	640	180						
	1200	Beam	305	W124F4..	360	1070	65						
		Beam	370	W124F5..	430	1065	67.5						
		HE	300	W124FD..	360	840	180						

Endcarriages for DOUBLE GIRDER cranes with connection plates to “bridge girders” - “Lateral” execution

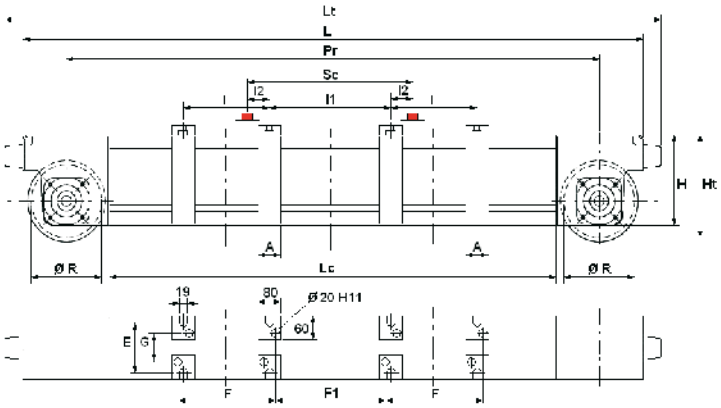
Endcarriage type	Couple beam codes based on the gauge of the double girder trolley, type of girders on the bridge crane and max. girder span				(for other quotas see page 7)								Weight (kg)
	Double girder trolley gauge (mm)	Bridge crane girders Type	Max. span (mm)	Couple beam code	Quota (mm) I	I1	I2	A	C	D	Ø1	Ø2	
1 – 125 – 3300	1000	 Beam	305	W133F1..	360	870	65	60	7	165	18	20	167
			370	W133F2..	430	865	67.5						
			450	W133F3..	510	805	97.5						
		HE	300	W133FA..	360	640	180						
	1200	 Beam	305	W133F4..	360	1070	65						
			370	W133F5..	430	1065	67.5						
			450	W133F6..	510	1005	97.5						
		 HE	300	W133FD..	360	840	180						
	1400	 Beam	305	W133F7..	360	1270	65						
			370	W133F8..	430	1265	67.5						
			450	W133F9..	510	1205	97.5						
		 HE	300	W133FG..	360	1040	180						
2 – 160 – 2400	1000	 Beam	305	W224F1..	360	870	65	60	7	190	20	20	162
			370	W224F2..	430	865	67.5						
		 HE	300	W224FA..	360	640	180						
	1200	 Beam	305	W224F4..	360	1070	65						
			370	W224F5..	430	1065	67.5						
		 HE	300	W224FD..	360	840	180						
2 – 160 – 3300	1000	 Beam	370	W233F2..	430	865	67.5	60	7	190	20	20	207
			450	W233F3..	510	816	92						
		 HE	300	W233FA..	360	640	180						
	1200	 Beam	370	W233F5..	430	1065	67.5						
			450	W233F6..	510	1016	92						
		 HE	300	W233FD..	360	840	180						
	1400	 Beam	370	W233F8..	430	1265	67.5						
			450	W233F9..	510	1216	92						
		 HE	305	W233FG..	360	1040	180						
3 – 200 – 2700	1000	 Beam	360	W327F1..	420	830	85	80	9	225	22	25	260
			410	W327F2..	480	846	77						
		 HE	300	W327FA..	420	580	210						
	1200	 Beam	360	W327F4..	420	1030	85						
			410	W327F5..	480	1046	77						
		 HE	300	W327FD..	420	780	210						
	1400	 Beam	360	W327F7..	420	1230	85						
			410	W327F8..	480	1246	77						
		 HE	300	W327FG..	420	980	210						
3 – 200 – 3600	1000	 Beam	360	W336F1..	420	830	85						335
			410	W336F2..	480	846	77						
			500	W336F3..	560	846	77						
		 HE	300	W336FA..	420	580	210						
	1200	 Beam	360	W336F4..	420	1030	85						
			410	W336F5..	480	1046	77						
			500	W336F6..	560	1046	77						
		 HE	300	W336FD..	420	780	210						
	1400	 Beam	360	W336F7..	420	1230	85						
			410	W336F8..	480	1246	77						
			500	W336F9..	560	1246	77						
		 HE	300	W336FG..	420	980	210						
4 – 250 – 2700	1000	 Beam	410	W427F1..	480	846	77	80	9	270	26	25	335
			490	W427F2..	560	846	77						
		 HE	300	W427FA..	480	520	240						
	1200	 Beam	410	W427F4..	480	1046	77						
			490	W427F5..	560	1046	77						
		 HE	300	W427FD..	480	720	240						

Endtrucks for DOUBLE GIRDER cranes with connection plates to “bridge girders” - “Lateral” execution

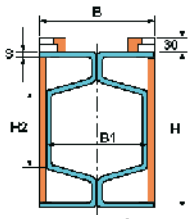
Endcarriage type	Couple beam codes based on the gauge of the double girder trolley, type of girders on the bridge crane and max. girder span				(for other quotas see page 7) Quota (mm)								Weight (kg)
	Double girder trolley gauge (mm)	Bridge crane girders Type	Max. span (mm)	Couple beam code	l	l1	l2	A	C	D	Ø1	Ø2	
4 – 250 – 3600	1000	Beam	490	W436F2..	560	846	77	80	9	270	26	25	415
		Beam	565	W436F3..	640	841	79.5						
		HE	300	W436FA..	480	520	240						
	1200	Beam	490	W436F5..	560	1046	77						
		Beam	565	W436F6..	640	1041	79.5						
		HE	300	W436FD..	480	720	240						
	1400	Beam	490	W436F8..	560	1246	77						
		Beam	565	W436F9..	640	1241	79.5						
		HE	300	W436FG..	480	920	240						
5 – 315 – 3900	1000	Beam	410	W539F1..	500	826	87	100	12	305	30	32	635
		Beam	490	W539F2..	580	826	87						
		Beam	615	W539F3..	710	805	97.5						
		HE	300	W539FA..	500	500	250						
	1200	Beam	410	W539F4..	500	1026	87						
		Beam	490	W539F5..	580	1026	87						
		Beam	615	W539F6..	710	1005	97.5						
		HE	300	W539FD..	500	700	250						
	1400	Beam	410	W539F7..	500	1226	87						
		Beam	490	W539F8..	580	1226	87						
		Beam	615	W539F9..	710	1205	97.5						
		HE	300	W539FG..	500	900	250						
6 – 400 – 3900	1400	Beam	410	W639F7..	500	1226	87	100	12	350	36	32	810
		Beam	490	W639F8..	580	1226	87						
		Beam	615	W639F9..	710	1205	97.5						
		HE	300	W639FG..	500	900	250						
6 – 400 – 3900 R	1400	Beam	410	W640F7..	500	1226	87						940
		Beam	490	W640F8..	580	1226	87						
		Beam	615	W640F9..	710	1205	97.5						
		HE	300	W640FG..	500	900	250						

Referred partial codes are applyed to couples of endcarriages without counterplates. In case of couples of endcarriages with counterplates, replace letter **F**, in fifth position, with letter **L**.

Endcarriages for DOUBLE GIRDER cranes with connection plates to “bridge girders” - “On the top” execution



Joining of beam girders in “On the top” execution



Beam connection area section

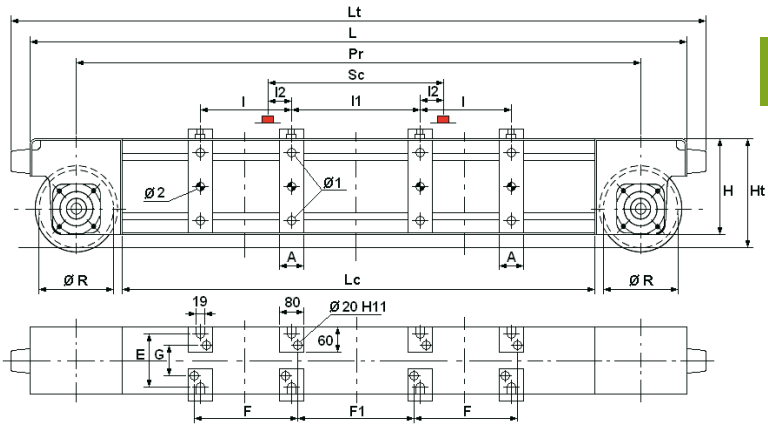
Endcarriage type	Couple beam codes based on the gauge of the double girder trolley, type of girders on the bridge crane and max. girder span				(for other quotas see page 7) Quota (mm)								Weight (kg)
	Double girder trolley gauge (mm)	Bridge crane girders Type	Max. span (mm)	Couple beam code	I	I1	I2	F	F1	A	E	G	
1 – 125 – 2400	1000	Beam	305	W124S1..	360	870	65	402	828	60	120	78	130
		Beam	370	W124S2..	430	865	67.5	472	823				
		HE	300	W124SA..	360	640	180	402	598				
	1200	Beam	305	W124S4..	360	1070	65	402	1028				
		Beam	370	W124S5..	430	1065	67.5	472	1023				
		HE	300	W124SD..	360	840	180	402	798				
1 – 125 – 3300	1000	Beam	305	W133S1..	360	870	65	402	828				167
		Beam	370	W133S2..	430	865	67.5	472	823				
		Beam	450	W133S3..	510	805	97.5	552	763				
		HE	300	W133SA..	360	640	180	402	598				
	1200	Beam	305	W133S4..	360	1070	65	402	1028				
		Beam	370	W133S5..	430	1065	67.5	472	1023				
		Beam	450	W133S6..	510	1005	97.5	552	963				
		HE	300	W133SD..	360	840	180	402	798				
	1400	Beam	305	W133S7..	360	1270	65	402	1228				
		Beam	370	W133S8..	430	1265	67.5	472	1223				
		Beam	450	W133S9..	510	1205	97.5	552	1163				
		HE	300	W133SG..	360	1040	180	402	998				
2 – 160 – 2400	1000	Beam	305	W224S1..	360	870	65	402	828				162
		Beam	370	W224S2..	430	865	67.5	472	823				
		HE	300	W224SA..	360	640	180	402	598				
	1200	Beam	305	W224S4..	360	1070	65	402	1028				
		Beam	370	W224S5..	430	1065	67.5	472	1023				
		HE	300	W224SD..	360	840	180	402	798				
2 – 160 – 3300	1000	Beam	370	W233S2..	430	865	67.5	472	823	60	140	98	207
		Beam	450	W233S3..	510	816	92	552	774				
		HE	300	W233SA..	360	640	180	402	598				
	1200	Beam	370	W233S5..	430	1065	67.5	472	1023				
		Beam	450	W233S6..	510	1016	92	552	974				
		HE	300	W233SD..	360	840	180	402	798				
	1400	Beam	370	W233S8..	430	1265	67.5	472	1223				
		Beam	450	W233S9..	510	1216	92	552	1174				
		HE	300	W233SG..	360	1040	180	402	998				
3 – 200 – 2700	1000	Beam	360	W327S1..	420	830	85	462	788	80	160	118	260
		Beam	410	W327S2..	480	846	77	522	804				
		HE	300	W327SA..	420	580	210	462	538				
	1200	Beam	360	W327S4..	420	1030	85	462	988				
		Beam	410	W327S5..	480	1046	77	522	1004				
		HE	300	W327SD..	420	780	210	462	738				
	1400	Beam	360	W327S7..	420	1230	85	462	1188				
		Beam	410	W327S8..	480	1246	77	522	1204				
		HE	300	W327SG..	420	980	210	462	938				

Endcarriages for DOUBLE GIRDER cranes with connection plates to “bridge girders” - “On the top” execution

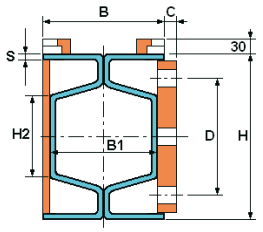
Endcarriage type	Couple beam codes based on the gauge of the double girder trolley, type of girders on the bridge crane and max. girder span				(for other quotas see page 7) Quota (mm)								Weight (kg)
	Double girder trolley gauge (mm)	Bridge crane girders Type	Max. span (mm)	Couple beam code	l	l1	l2	F	F1	A	E	G	
3 – 200 – 3600	1000	Beam	360	W336S1..	420	830	85	462	788	80	160	118	335
			410	W336S2..	480	846	77	522	804				
			500	W336S3..	560	846	77	602	804				
		HE	300	W336SA..	420	580	210	462	538				
	1200	Beam	360	W336S4..	420	1030	85	462	988				
			410	W336S5..	480	1046	77	522	1004				
			500	W336S6..	560	1046	77	602	1004				
		HE	300	W336SD..	420	780	210	462	738				
	1400	Beam	360	W336S7..	420	1230	85	462	1188				
			410	W336S8..	480	1246	77	522	1204				
			500	W336S9..	560	1246	77	602	1204				
		HE	300	W336SG..	420	980	210	462	938				
4 – 250 – 2700	1000	Beam	410	W427S1..	480	846	77	522	804	80	190	148	335
			490	W427S2..	560	846	77	602	804				
		HE	300	W427SA..	480	520	240	522	478				
	1200	Beam	410	W427S4..	480	1046	77	522	1004				
			490	W427S5..	560	1046	77	602	1004				
		HE	300	W427SD..	480	720	240	522	678				
4 – 250 – 3600	1000	Beam	490	W436S2..	560	846	77	602	804				415
			565	W436S3..	640	841	79.5	682	799				
		HE	300	W436SA..	480	520	240	522	478				
	1200	Beam	490	W436S5..	560	1046	77	602	1004				
			565	W436S6..	640	1041	79.5	682	999				
		HE	300	W436SD..	480	720	240	522	678				
	1400	Beam	490	W436S8..	560	1246	77	602	1204				
			565	W436S9..	640	1241	79.5	682	1199				
		HE	300	W436SG..	480	920	240	522	878				
5 – 315 – 3900	1000	Beam	410	W539S1..	500	826	87	542	784	100	220	178	635
			490	W539S2..	580	826	87	622	784				
			615	W539S3..	710	805	97.5	752	763				
		HE	300	W539SA..	500	500	250	542	458				
	1200	Beam	410	W539S4..	500	1026	87	542	984				
			490	W539S5..	580	1026	87	622	984				
			615	W539S6..	710	1005	97.5	752	963				
		HE	300	W539SD..	500	700	250	542	658				
	1400	Beam	410	W539S7..	500	1226	87	542	1184				
			490	W539S8..	580	1226	87	622	1184				
			615	W539S9..	710	1205	97.5	752	1163				
		HE	300	W539SG..	500	900	250	542	858				
6 – 400 – 3900	1400	Beam	410	W639S7..	500	1226	87	542	1184	100	250	208	810
			490	W639S8..	580	1226	87	622	1184				
			615	W639S9..	710	1205	97.5	752	1163				
		HE	300	W639SG..	500	900	250	542	858				
6 – 400 – 3900 R	1400	Beam	410	W640S7..	500	1226	87	542	1184				940
			490	W640S8..	580	1226	87	622	1184				
			615	W640S9..	710	1205	97.5	752	1163				
		HE	300	W640SG..	500	900	250	542	858				

Referred partial codes are applyed to couples of endcarriages without counterplates. In case of couples of endcarriages with counterplates, replace letter **S**, in fifth position, with letter **A**.

Endcarriages for DOUBLE GIRDER cranes with connection plates to “bridge girders” - “Lateral + On the top” execution



Connection of beam girders in “Lateral + On the top” execution



Beam connection area section

Endcarriage type	Couple beam codes based on the gauge of double girder trolley, type of girders on the bridge crane and max. girder span			(for other quotas see page 7) Quota (mm)												Weight (kg)
	Double girder trolley gauge (mm)	Bridge crane girders Max. span (mm)	Couple beam code	I	I1	I2	F	F1	A	C	D	E	G	Ø1	Ø 2	
1 – 125 – 2400	1000	305	W124D1..	360	870	65	402	828								
		370	W124D2..	430	865	67.5	472	823								138
	1200	305	W124D4..	360	1070	65	402	828								
		370	W124D5..	430	1065	67.5	472	823								
1 – 125 – 3300	1000	305	W133D1..	360	870	65	402	828								
		370	W133D2..	430	865	67.5	472	823								
		450	W133D3..	510	805	97.5	552	763	60	7	165	120	78	18	20	
	1200	305	W133D4..	360	1070	65	402	1028								
		370	W133D5..	430	1065	67.5	472	1023								175
		450	W133D6..	510	1005	97.5	552	963								
	1400	305	W133D7..	360	1270	65	402	1228								
		370	W133D8..	430	1265	67.5	472	1223								
		450	W133D9..	510	1205	97.5	552	1163								
2 – 160 – 2400	1000	305	W224D1..	360	870	65	402	828								
		370	W224D2..	430	865	67.5	472	823								170
	1200	305	W224D4..	360	1070	65	402	1028								
		370	W224D5..	430	1065	67.5	472	1023								
2 – 160 – 3300	1000	370	W233D2..	430	865	67.5	472	823								
		450	W233D3..	510	816	92	552	774	60	7	190	140	98	20	20	
	1200	370	W233D5..	430	1065	67.5	472	1023								215
		450	W233D6..	510	1016	92	552	974								
	1400	370	W233D8..	430	1265	67.5	472	1223								
		450	W233D9..	510	1216	92	552	1174								
3 – 200 – 2700	1000	360	W327D1..	420	830	85	462	788								
		410	W327D2..	480	846	77	522	804								
	1200	360	W327D4..	420	1030	85	462	988								268
		410	W327D5..	480	1046	77	522	1004								
	1400	360	W327D7..	420	1230	85	462	1188								
		410	W327D8..	480	1246	77	522	1204								
3 – 200 – 3600	1000	360	W336D1..	420	830	85	462	788								
		410	W336D2..	480	846	77	522	804								
		500	W336D3..	560	846	77	602	804	80	9	225	160	118	22	25	
	1200	360	W336D4..	420	1030	85	462	988								
		410	W336D5..	480	1046	77	522	1004								343
		500	W336D6..	560	1046	77	602	1004								
	1400	360	W336D7..	420	1230	85	462	1188								
		410	W336D8..	480	1246	77	522	1204								
		500	W336D9..	560	1246	77	602	1204								

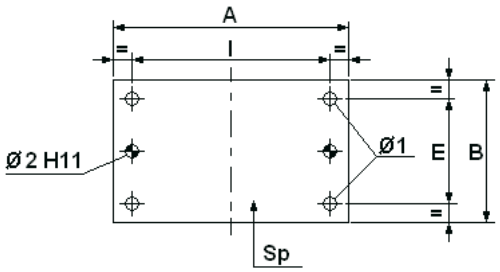
Beams for DOUBLE GIRDER cranes with connection plates to “bridge girders” - “Lateral + On the top” execution

Endcarriage type	Couple beam codes based on the gauge of double girder trolley, type of girders on the bridge crane and max. girder span			(for other quotas see page 7) Quota (mm)												Weight (kg)
	Double girder trolley gauge (mm)	Bridge crane girders Max. span (mm)	Couple beam code	I	I1	I2	F	F1	A	C	D	E	G	Ø1	Ø 2	
4 – 250 – 2700	1000	410	W427D1..	480	846	77	522	804	80	9	270	190	148	26	25	343
		490	W427D2..	560	846	77	602	804								
	1200	410	W427D4..	480	1046	77	522	1004								
		490	W427D5..	560	1046	77	602	1004								
4 – 250 – 3600	1000	490	W436D2..	560	846	77	602	804								423
		565	W436D3..	640	841	79.5	682	799								
	1200	490	W436D5..	560	1046	77	602	1004								
		565	W436D6..	640	1041	79.5	682	999								
	1400	490	W436D8..	560	1246	77	602	1204								
		565	W436D9..	640	1241	79.5	682	1199								
5 – 315 – 3900	1000	410	W539D1..	500	826	87	542	784	100	12	305	220	178	30	32	643
		490	W539D2..	580	826	87	622	784								
		615	W539D3..	710	805	97.5	752	763								
	1200	410	W539D4..	500	1026	87	542	984								
		490	W539D5..	580	1026	87	622	984								
		615	W539D6..	710	1005	97.5	752	963								
	1400	410	W539D7..	500	1226	87	542	1184								
		490	W539D8..	580	1226	87	622	1184								
		615	W539D9..	710	1205	97.5	752	1163								
6 – 400 – 3900	1400	410	W639D7..	500	1226	87	542	1184	100	12	350	250	208	36	32	818
		490	W639D8..	580	1226	87	622	1184								
		615	W639D9..	710	1205	97.5	752	1163								
6 – 400 – 3900 R	1400	410	W640D7..	500	1226	87	542	1184								948
		490	W640D8..	580	1226	87	622	1184								
		615	W640D9..	710	1205	97.5	752	1163								

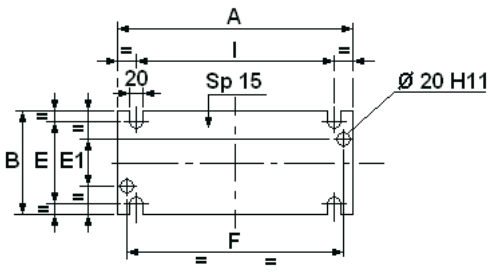
Referred partial codes are applyed to couples of endcarriages without counterplates. In case of couples of endcarriages with counterplates, replace letter **S**, in fifth position, with letter **A**.

Geometric specifications for “girder-beam” connection plates for SINGLE and DOUBLE GIRDER bridge cranes

Connection plate for girder positioned laterally to the beam



Connection plate for girder on the top of the beam



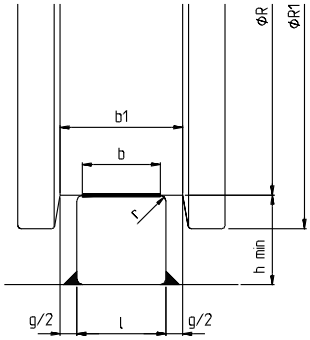
Endcarriage type		Max. beam width	Plate positioned laterally to the beam									Plate supported on the top of the beam							
Size “DGT”	Ø Wheel (mm)	W (mm)	Type	Dimensions (mm) A	I	D	Ø 1	E	Ø 2	Sp	Weight (kg)	Type	Dimensions (mm) F	A	I	D	E	E 1	Weight (kg)
1	125	305	L 11	420	360	220	18	165	20	12	8.6	A 11	402	440	360	160	120	78	8.0
		370	L 12	490	430						10.0	A 12	472	510	430				9.3
		450	L 13	570	510						11.6	A 13	552	590	510				10.8
2	160	305	L 21	420	360	250	20	190	20	12	9.7	A 21	402	440	360	180	140	98	9.0
		370	L 22	490	430						11.5	A 22	472	510	430				10.5
		450	L 23	570	510						13.3	A 23	552	590	510				12.2
3	200	360	L 31	500	420	290	22	225	25	15	16.8	A 31	462	500	420	200	160	118	11.5
		410	L 32	560	480						18.5	A 32	522	560	480				13.0
		500	L 33	640	560						21.6	A 33	602	640	560				14.8
4	250	410	L 41	560	480	335	26	270	25	15	21.8	A 41	522	560	480	230	190	148	14.9
		490	L 42	640	560						24.5	A 42	602	640	560				17.0
		565	L 43	720	640						27.6	A 43	682	720	640				19.2
5	315	410	L 51	600	500	385	30	305	32	20	35.0	A 51	542	580	500	260	220	178	17.4
		490	L 52	680	580						40.4	A 52	622	660	580				20.0
		615	L 53	810	710						47.5	A 53	752	790	710				23.8
6	400	410	L 61	600	500	440	36	350	32	20	40.5	A 61	542	580	500	290	250	208	19.5
		490	L 62	680	580						46.1	A 62	622	660	580				22.2
	400 R	615	L 63	810	710						55.1	A 63	752	790	710				26.6

Field of application for “girder-beam” connection plates for SINGLE M and DOUBLE D GIRDER bridge cranes

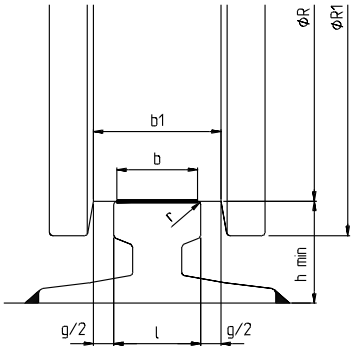
Plate type	Beam type 1 / 125 / 1800	1 / 125 / 2400	1 / 125 / 3300	2 / 160 / 1800	2 / 160 / 2400	2 / 160 / 3300	3 / 200 / 2100	3 / 200 / 2700	3 / 200 / 3600	4 / 250 / 2100	4 / 250 / 2700	4 / 250 / 3600	4 / 250 / 3600 R	5 / 315 / 2400	5 / 315 / 3900	6 / 400 / 3900	6 / 400 R / 3900 R
L 11 A 11	M	M D	M D														
L 12 A 12	M	M D	M D														
L 13 A 13		M	M D														
L 21 A 21				M	M D	M D											
L 22 A 22				M	M D	M D											
L 23 A 23					M	M D											
L 31 A 31							M	M D	M D								
L 32 A 32							M	M D	M D								
L 33 A 33							M	M	M D								
L 41 A 41										M	M D	M D M					
L 42 A 42										M	M D	M D M					
L 43 A 43										M	M	M D M					
L 51 A 51														M D			
L 52 A 52														M D			
L 53 A 53														M D			
L 61 A 61																D	D
L 62 A 62																D	D
L 63 A 63																D	D

- 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 offset reducers and self-braking motors, in relation to the following user specifications:
  - operating loads on the wheels
  - width and shape of the runway's rail
  - running speed
  - number of wheel groups and gear motors employed.

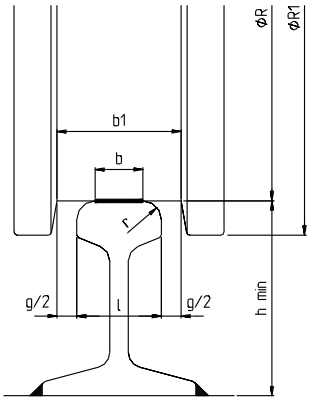
Specifications for rails and maximum contact area



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)	Maximum reaction Rx max. (kg)	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	3.670 36 kN	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	4.893 48 kN	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	7.340 72 kN	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 (1)	**55**
250	10.805 106 kN	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	14.679 144 kN	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 (1) 72	**48** **55**
		special	110	100	95	40	100	**98**	A 100	100	**80**	=	=	=
400	18.960 186 kN	standard	85	75	70	40	**70**	**68**	A 75	75	**59**	50 60	67 (1) 72	**48** **55**
		maximum	95	85	80	40	80	**78**	=	=	=	=	=	=
400 R	30.580 (2) 300 kN	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: slack ≥ 10 mm and ≤ 15 mm
- (1) wheel with increased clearance =18 mm
- (2) the Ø 400 R wheel is sized identical to the Ø 400 wheel but allows for an increased reaction due to its roller bearings
- Recommended rails appear in red, together with operating contact surface values, verified in relation to maximum static reaction

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

- The following diagrams (pages 19, 20 and 21) illustrate average **admissible** reactions **R ave.** (expressed in kg) on **drive unit wheels**, in relation to the running speed and to the operating width "b", as specified in the table on page 6.

- The correct choice of wheel is based on the average effective reaction **R ave**., exercised on the wheel.

  This value is derived from the following equation:

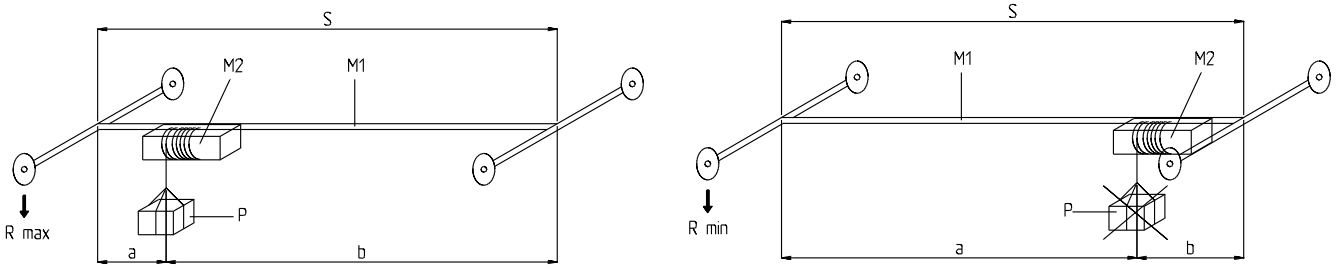
$$R\ ave = \frac{2 \cdot R\ max. + R\ min.}{3}$$

  where **R max.** is the most unfavourable load condition, equal to:

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

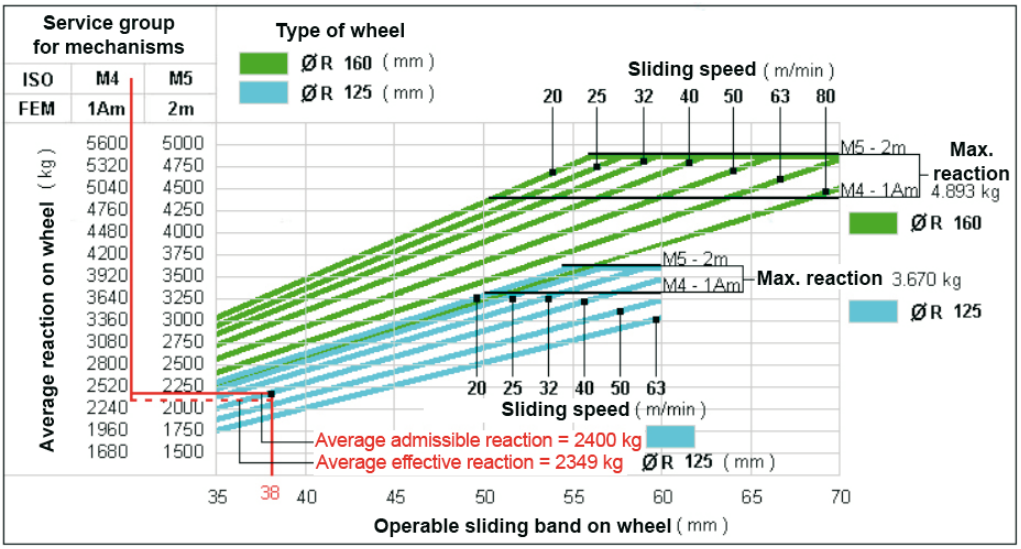
  while the minimum reaction **R min.** is:

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



where: **M1** = crane mass, i.e. its proper weight (crane's weight including accessories), expressed in kg.
M2 = hoist/trolley mass , i.e. their proper weight, expressed in kg
P = nominal crane capacity, expressed in kg

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



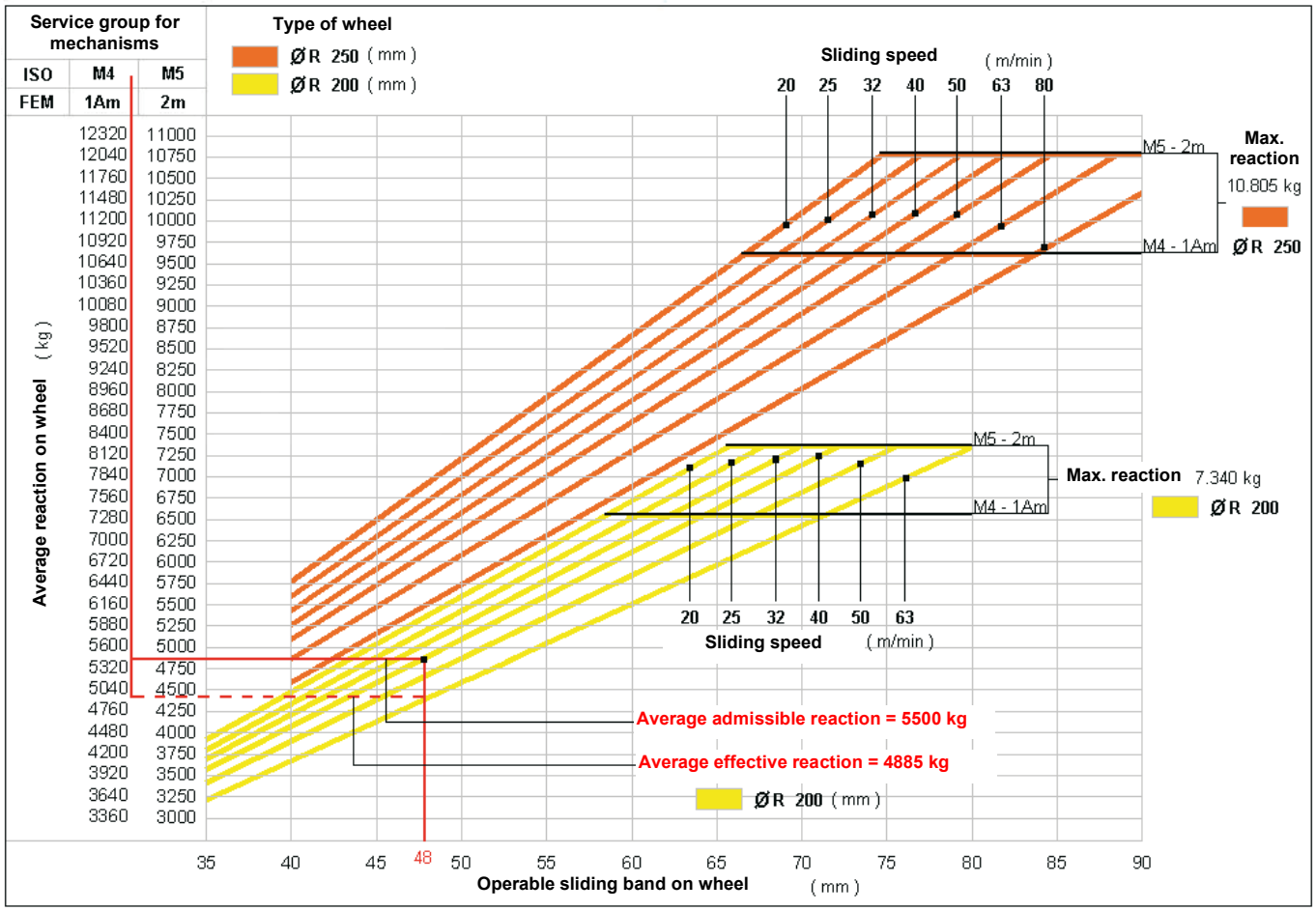
Example of verification of suitability for a Ø 125 wheel (see example 1 at page 30)

Data calculated:

- Rail operating width: b = 38 mm
- Travelling speed: 40/10 m/min;
- Service group: ISO M4 (FEM 1Am)
- Average effective reaction: R ave. = 2349 kg
- Maximum effective reaction: R max. eff. = 3203 kg

The average admissible reaction is = 2400 kg > than the average effective reaction of 2349 kg the wheel is subjected to;
The maximum admissible reaction is = 3670 kg > than the maximum effective reaction of 3203 kg.

Average admissible reactions from wheels Ø 200 and 250, in relation to the operating width and travelling speed



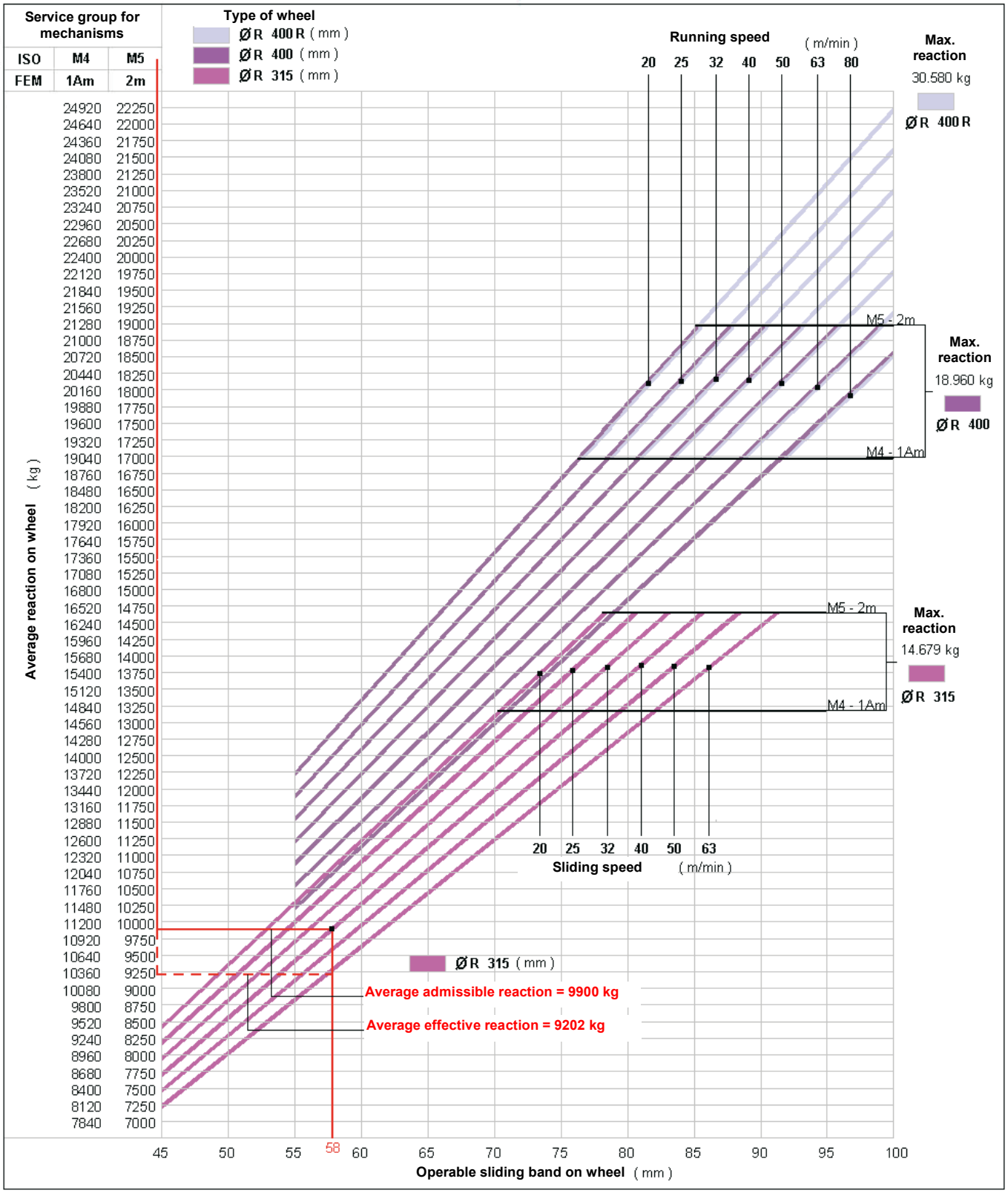
Example of verification of suitability for a Ø 200 wheel (see example 2 at page 31)

Data calculated:

- Rail operating width: b = 48 mm
- Travelling speed: 40/10 m/min;
- Service group: ISO M4 (FEM 1Am)
- Average effective reaction: R ave. = 4885 kg
- Maximum effective reaction: R max. eff.= 6581 kg

The average admissible reaction is ▪ 5500 kg > than the average effective reaction of 4885 kg the wheel is subjected to;
The maximum admissible reaction is = 7340 kg > than the maximum effective reaction of 6581 kg.

Average admissible reactions from wheels Ø 315 and 400, in relation to the rail width and travelling speed



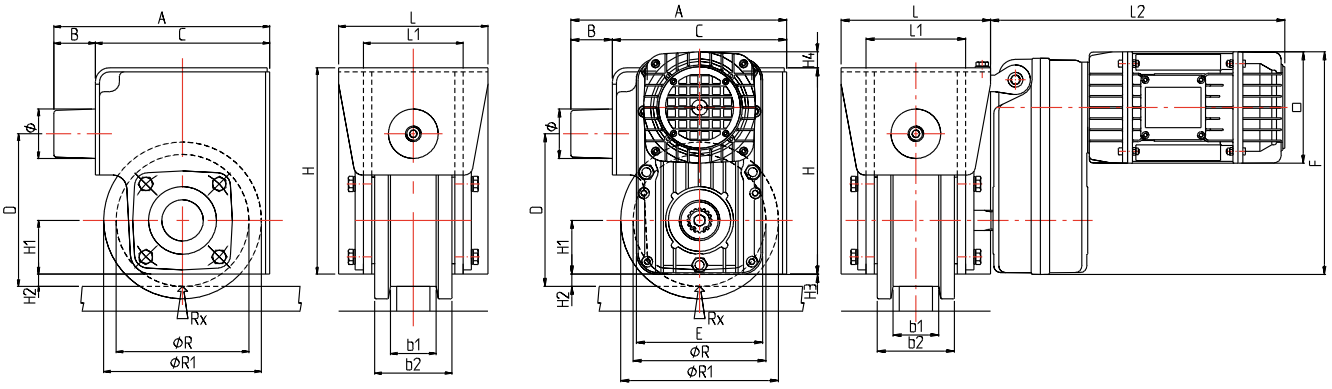
Example of verification of suitability for a Ø 315 wheel (see example 3 at page 31)

Data calculated:

- Rail operating width: b = 58 mm
- Travelling speed: 40/10 m/min;
- Service group: ISO M4 (FEM 1Am)
- Average effective reaction: R ave. = 9202 kg
- Maximum effective reaction: R max. eff.= 11,963 kg

The average admissible reaction is ▪ 9900 kg > than the average effective reaction of 9202 kg the wheel is subjected to;
The maximum admissible reaction is = 14,679 kg > than the maximum effective reaction of 11,963 kg.

Clearance requirements for wheel groups based on combinations with related offset gearmotors



Idler drive units — **Driven units**

Wheel specifications			Wheel group clearance (mm)													Size		Gearmotor clearance (mm)					
Type Ø / ØR (mm)	Max. Rx (kg)	Internal width	b1	b2	L1	L	Ø R1	A	D	C	D	Ø	H	H1	H2	Reducer	Motor	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	333	135	138	223	0	3
		maximum	60													1	71	368	135	152	270	10.5	39.5
		special	70	90	110											1	80	385	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	333	135	138	223	-10	-17
		maximum	65													1	71	368	135	152	270	0.5	19.5
		special	80	105	130											1	80	385	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	358	135	152	270	-9.5	-10.5
		maximum	70													1	80	375	150	152	278	-9.5	-2.5
		special	90	120	145											2	80	400	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	358	135	152	270	-24.5	-40.5
		maximum	80													1	80	375	150	152	278	-24.5	-32.5
		special	100	135	165											2	80	400	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

- Quotes L2 in red refer to wheels operating with a “standard” and “maximum” sheave:
- For Ø 315 and Ø 400 wheels with a “special” sheave, the quota L2 increases by 10 mm, with respect to the values listed in the table

Types and reduction ratios for “DGP” offset reducers

“DGP” offset reducers		3 reduction stages (torques)				2 reduction stages (torques)			
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
Size 3	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" offset 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	M21AP80050
	71K4CA	4	1370	0.16	1.09	2.20	0.80	0.55	M21AP40050
	71K4CB	4	1370	0.20	1.36	2.70	1.00	0.55	M21AP40051
	71K2CA	2	2740	0.32	1.09	3.60	1.00	0.75	M21AP20050
	71K2CB	2	2700	0.40	1.36	4.50	1.30	0.70	M21AP20051
	71K2L	2	2740	0.50	1.70	5.20	1.30	0.72	M21AP2I050
	71K3C	2/8	2760/650	0.32/0.07	1.09	3.60/1.10	1.00/0.80	0.70/0.55	M21AP30050
	71K3L	2/8	2760/630	0.40/0.09	1.36	4.40/1.20	1.20/0.90	0.75/0.60	M21AP30051
80 M 30 series	80K8C	8	660	0.12	1.70	2.00	1.20	0.45	M31AP80050
	80K8L	8	630	0.16	2.18	2.20	1.30	0.48	M31AP80051
	80K4CA	4	1360	0.25	1.70	3.10	0.90	0.65	M31AP40050
	80K4CB	4	1370	0.32	2.18	3.90	1.10	0.65	M31AP40051
	80K2CA	2	2740	0.50	1.70	5.80	1.30	0.80	M31AP20050
	80K2CB	2	2750	0.63	2.18	7.70	1.70	0.75	M31AP20051
	80K2L	2	2770	0.80	2.73	9.70	1.90	0.80	M31AP2I050
	80K3C	2/8	2740/650	0.50/0.12	1.70	5.20/1.60	1.30/1.10	0.85/0.60	M31AP30050
	80K3L	2/8	2760/650	0.63/0.15	2.18	6.70/1.90	1.60/1.30	0.82/0.57	M31AP30051
100 M 50 series	100K8C	8	680	0.32	4.36	4.60	1.7	0.50	M51AP80050
	100K8L	8	670	0.40	5.46	5.40	2.50	0.45	M51AP80051
	100K4CA	4	1390	0.63	4.36	8.50	1.70	0.70	M51AP40050
	100K4CB	4	1390	0.80	5.46	8.90	2.00	0.80	M51AP40051
	100K2CA	2	2820	1.25	4.36	16.50	2.90	0.83	M51AP20050
	100K2CB	2	2800	1.60	5.46	21.00	3.70	0.80	M51AP20051
	100K2L	2	2780	2.00	6.82	23.00	4.30	0.86	M51AP2I050
	100K3C	2/8	2820/680	1.25/0.31	4.36	15.70/3.60	3.10/1.80	0.84/0.60	M51AP30050
	100K3L	2/8	2790/660	1.60/0.39	5.46	21.00/4.00	3.50/2.30	0.86/0.60	M51AP30051
112 M 60 series	112K8L	8	690	0.63	8.72	8.60	3.40	0.50	M61AP80050
	112K4C	4	1430	1.25	8.72	20.50	3.60	0.65	M61AP40050
	112K2L	2	2800	3.20	10.92	39.00	6.50	0.88	M61AP2I050
	112K3L	2/8	2850/690	2.50/0.62	8.72	33.00/7.30	5.60/3.40	0.85/0.50	M61AP30050

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

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

"DGP" offset 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 2	=	=	DGT3A0M30	DGT4A0M32	DGT5A0M12 (r) DGT5A0M22 (l)	DGT6A0M12 (r) DGT6A0M22 (l)	DGT6A0M62 (r) DGT6A0M72 (l)
size 3	=	=	=	=	DGT5A0M32 (r) DGT5A0M42 (l)	DGT6A0M32 (r) DGT6A0M42 (l)	DGT6A0M82 (r) DGT6A0M92 (l)

- 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" driven wheel units coupled with "DGP" offset reducers

"DGP" swinging gearmotors	"DGT" drive wheel group Ø (mm)		125	160	200	250	315	400	400 R
	"DGP" reducers size 0	"DGP" motors size 71	max. 32 kg	max. 40 kg	=	=	=	=	=
	"DGP" reducers size 1		max. 36 kg	max. 44 kg	max. 54 kg	max. 73 kg	=	=	=
		"DGP" motors size 80	max. 38 kg	max. 48 kg	max. 58 kg	max. 75 kg	=	=	=
	"DGP" reducers size 2		=	=	max. 75 kg	max. 94 kg	max. 125 kg	max. 197 kg	max. 197 kg
		"DGP" motors size 100	=	=	max. 83 kg	max. 102 kg	max. 133 kg	max. 205 kg	max. 205 kg
	"DGP" reducers size 3	"DGP" motors size 112	=	=	=	=	max. 172 kg	max. 236 kg	max. 236 kg

Codes and weights for "DGT" idler wheel units

"DGT" idle 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 COMBINATION OF COMPONENTS

Nominal speed (m/min)	Travelling mass (kg) ISO service group (FEM) M4 (1Am)	M5 (2m)	"DGT" wheel group" Ø (mm)	"DGP" motoreducer Reducer Type	Motor Type	Self-braking motor specifications Poles (N°)	Power (kW)	Codes for components "DGT" drive wheel group	"DGP" gearmotor
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	250		80K8C	8	0.12	DGT4A0M32	
	21.600	21.600		231	80K8L	8	0.16		P2M3B18KA0
5	6.700	5.360	125	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	131	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	250	232	80K8C	8	0.12	DGT4A0M32	P2M3B28AA0
	21.600	18.000			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 (r) DGT5A0M22 (l)	P2M3B18AA0
	23.300	18.600			80K8L	8	0.16		P2M3B18KA0
	29.400	29.400			100K8C	8	0.32		P2M5B18AA0
6.3	7.400	7.400	125	031	71K4CA	4	0.16	DGT1A0M10	P0M2B14AA0
	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	P2M5B38AA0
	14.600	11.700	315	232	80K8C	8	0.12	DGT5A0M12 (r) DGT5A0M22 (l)	P2M3B28AA0
	18.600	14.900			80K8L	8	0.16		P2M3B28KA0
	29.400	29.400			100K8C	8	0.32		P2M5B28AA0
	20.800	16.600	400	231	80K8L	8	0.16	DGT6A0M12 (r) DGT6A0M22 (l)	P2M3B18KA0
	41.400	33.100			100K8C	8	0.32		P2M5B18AA0
	41.400	33.100	400 R	231	100K8C	8	0.32	DGT6A0M62 (r) DGT6A0M72 (l)	P2M5B18AA0
	51 700	41 400			100K8L	8	0.40		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		131	71K4CB	4	0.20	DGT2A0M30	P1M2B14KA0
	6.000	4.800	200	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	P2M3B24AA0
	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 (r) DGT5A0M22 (l)	P2M3B38KA0
	29.200	23.400			100K8C	8	0.32		P2M5B38AA0
	29.400	29.400			100K8L	8	0.40		P2M5B38KA0
	16.300	13.000	400	232	80K8L	8	0.16	DGT6A0M12 (r) DGT6A0M22 (l)	P2M3B28KA0
	32.600	26.000			100K8C	8	0.32		P2M5B28AA0
	41.400	33.100			100K8L	8	0.40		P2M5B28KA0
	32.600	=	400 R	232	100K8C	8	0.32	DGT6A0M62 (r) DGT6A0M72 (l)	P2M5B28AA0
	41.400	33.100			100K8L	8	0.40		P2M5B28KA0

- The specifications refer to a single motoreducer; in 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), average reaction (R ave) is compatible with the values listed in diagram pages 19, 20 and 21.
- The values for travelling mass in red require a verification of average reaction (R ave.) on each wheel, which must not exceed the following Rx. max. values:

Ø 125	Ø 160	Ø 200	Ø 250	Ø 315	Ø 400	Ø 400 R
R ave. ≤ Rx max. ≤ **3670 kg** (36 kN)	R ave. ≤ Rx max. ≤ **4893 kg** (48 kN)	R ave. ≤ Rx max. ≤ **7340 kg** (72 kN)	R ave. ≤ Rx max. ≤ **10,805 kg** (106 kN)	R ave. ≤ Rx max. ≤ **14,679 kg** (144 kN)	R ave. ≤ Rx max. ≤ **18,960 kg** (186 kN)	R ave. ≤ Rx max. ≤ **30,580 kg** (300 kN)

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

Nominal speed (m/min)	Travelling mass (kg) ISO service group (FEM) M4 (1Am)	M5 (2m)	"DGT" wheel group" Ø (mm)	"DGP" motoreducer Reducer Type	Motor Type	Self-braking motor specifications Poles (N°)	Power (kW)	Codes for components "DGT" drive wheel group	"DGP" gearmotor
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		132	80K4CA	4	0.25	DGT2A0M30	P1M3B24AA0
	9.600	7.600	200	131	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		232	80K4CA	4	0.25	DGT4A0M32	P2M3B24AA0
	21.600	18.000			80K4CB	4	0.32		P2M3B24KA0
	21.600	21.600			100K4CA	4	0.63		P2M5B24AA0
	18.500	14.800	315	231	80K4CA	4	0.25	DGT5A0M12 (r) DGT5A0M22 (l)	P2M3B14AA0
	23.300	18.600			80K4CB	4	0.32		P2M3B14KA0
	29.400	29.400			100K4CB	4	0.63		P2M5B14AA0
	26.000	20.800	400	233	100K8C	8	0.32	DGT6A0M12 (r) DGT6A0M22 (l)	P2M5B38AA0
	33.100	26.500			100K8L	8	0.40		P2M5B38KA0
	42.800	41.300		331	112K8L	8	0.63	DGT6A0M32 (r) DGT6A0M42 (l)	P3M6B18AA0
	33.100	=	400 R	233	100K8L	8	0.40	DGT6A0M62 (r) DGT6A0M72 (l)	P2M5B38KA0
	51.600	41.300		331	112K8L	8	0.63	DGT6A0M82 (r) DGT6A0M92 (l)	P3M6B18AA0
12.5	7.400	7.400	125	031	71K2CA	2	0.32	DGT1A0M10	P0M2B12AA0
	6.400	5.100	160	033	71K4CA	4	0.16	DGT2A0M10	P0M2B34AA0
	8.000	6.400			71K4CB	4	0.20		P0M2B34KA0
	9.800	8.000		133	80K4CA	4	0.25	DGT2A0M30	P1M3B34AA0
	9.800	9.800			80K4CB	4	0.32		P1M3B34KA0
	7.600	6.000	200	132	71K4CA	4	0.16	DGT3A0M10	P1M2B24AA0
	9.600	7.600			71K4CB	4	0.20		P1M2B24KA0
	12.000	9.600			80K4CA	4	0.25		P1M3B24AA0
	14.700	12.200			80K4CB	4	0.32		P1M3B24KA0
	14.700	14.700		231	80K2CA	2	0.50	DGT3A0M30	P2M3B12AA0
	11.200	9.000	250	131	71K4CB	4	0.20	DGT4A0M12	P1M2B14KA0
	14.000	11.200			80K4CA	4	0.25		P1M3B14AA0
	18.000	14.400			80K4CB	4	0.32		P1M3B14KA0
	21.600	21.600		233	100K4CA	4	0.63	DGT4A0M32	P2M5B34AA0
	14.800	11.900	315	232	80K4CA	4	0.25	DGT5A0M12 (r) DGT5A0M22 (l)	P2M3B24AA0
	18.600	14.900			80K4CB	4	0.32		P2M3B24KA0
	29.400	29.400			100K4CA	4	0.63		P2M5B24AA0
	20.800	16.600	400	231	80K4CB	4	0.32	DGT6A0M12 (r) DGT6A0M22 (l)	P2M3B14KA0
	41400	33 100			100K4CA	4	0.63		P2M5B14AA0
	41400	33 100	400 R	231	100K4CA	4	0.63	DGT6A0M62 (r) DGT6A0M72 (l)	P2M5B14AA0
	52 600	42 100			100K4CB	4	0.80		P2M5B14KA0
16	7.400	6.656	125	032	71K2CA	2	0.32	DGT1A0M10	P0M2B22AA0
	9.800	8.000	160	031	71K2CA	2	0.32	DGT2A0M10	P0M2B12AA0
	9.800	9.800		131	71K2CB	2	0.40	DGT2A0M30	P1M2B12KA0
	6.000	4.800	200	133	71K4CA	4	0.16	DGT3A0M10	P1M2B34AA0
	7.500	6.000			71K4CB	4	0.20		P1M2B34KA0
	9.400	7.500			80K4CA	4	0.25		P1M3B34AA0
	12.000	9.600			80K4CB	4	0.32		P1M3B34KA0
	14.700	14.700		232	80K2CA	2	0.50	DGT3A0M30	P2M3B22AA0
	10.800	8.600	250	132	80K4CA	4	0.25	DGT4A0M12	P1M3B24AA0
	13.800	11.000			80K4CB	4	0.32		P1M3B24KA0
	21.600	17.200		231	80K2CA	2	0.50	DGT4A0M32	P2M3B12AA0
	21.600	21.600			80K2CB	2	0.63		P2M3B12KA0
	14.600	11.600	315	233	80K4CB	4	0.32	DGT5A0M12 (r) DGT5A0M22 (l)	P2M3B34KA0
	28.900	23.100			100K4CA	4	0.63		P2M5B34AA0
	29.400	29.400			100K4CB	4	0.80		P2M5B34KA0
	16.300	13.000	400	232	80K4CB	4	0.32	DGT6A0M12 (r) DGT6A0M22 (l)	P2M3B24KA0
	32.300	25.800			100K4CA	4	0.63		P2M5B24AA0
	41.400	33.100			100K4CB	4	0.80		P2M5B24KA0
	32.300	=	400 R	232	100K4CA	4	0.63	DGT6A0M62 (r) DGT6A0M72 (l)	P2M5B24AA0
	41.400	33.100			100K4CB	4	0.80		P2M5B24KA0

- The specifications refer to a single motoreducer; in 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), average reaction (R ave) is compatible with the values listed in diagram pages 19, 20 and 21.
- The values for travelling mass in red require a verification of average reaction (R ave.) on each wheel, which must not exceed the following Rx. max. values:

Ø 125	Ø 160	Ø 200	Ø 250	Ø 315	Ø 400	Ø 400 R
R ave. ≤ Rx max. ≤ **3670 kg** (36 kN)	R ave. ≤ Rx max. ≤ **4893 kg** (48 kN)	R ave. ≤ Rx max. ≤ **7340 kg** (72 kN)	R ave. ≤ Rx max. ≤ **10,805 kg** (106 kN)	R ave. ≤ Rx max. ≤ **14,679 kg** (144 kN)	R ave. ≤ Rx max. ≤ **18,960 kg** (186 kN)	R ave. ≤ Rx max. ≤ **30,580 kg** (300 kN)

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

Nominal speed (m/min)	Travelling mass (kg) ISO service group (FEM) M4 (1Am)	M5 (2m)	"DGT" wheel group" Ø (mm)	"DGP" motoreducer Reducer Type	Motor Type	Self-braking motor specifications Poles (N°)	Power (kW)	Codes for components "DGT" drive wheel group	"DGP" gearmotor
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**	160	032	71K2CA	2	0.32	DGT2A0M10	P0M2B22AA0
	9.800	8.000			71K2CB	2	0.40		P0M2B22KA0
	9.800	9.800		132	71K2L	2 with inverter	0.50	DGT2A0M30	P1M2B2IKA0
	9.600	**7.600**	200	131	71K2CA	2	0.32	DGT3A0M10	P1M2B12AA0
	12.000	**9.600**			71K2CB	2	0.40		P1M2B12KA0
	14.700	12.200			71K2L	2 with inverter	0.50		P1M2B1IKA0
	14.700	14.700			80K2CB	2	0.63		P1M3B12KA0
	11.200	**8.900**	250	133	80K4CB	4	0.32	DGT4A0M12	P1M3B34KA0
	17.200	**13.700**		232	80K2CA	2	0.50	DGT4A0M32	P2M3B22AA0
	21.600	17.200			80K2CB	2	0.63		P2M3B22KA0
	21.600	21.600			80K2L	2 with inverter	0.80		P2M3B2IKA0
	18.500	**14.800**	315	231	80K2CA	2	0.50	DGT5A0M12 (r) DGT5A0M22 (l)	P2M3B12AA0
	23.300	**18.600**			80K2CB	2	0.63		P2M3B12KA0
	29.400	23.700			80K2L	2 with inverter	0.80		P2M3B1IKA0
	29.400	29.400			100K2CA	2	1.25		P2M5B12AA0
	25.800	**20.600**	400	233	100K4CA	4	0.63	DGT6A0M12 (r) DGT6A0M22 (l)	P2M5B34AA0
	33.100	**26.500**			100K4CB	4	0.80		P2M5B34KA0
	42.800	41.300		331	112K4C	4	1.25	DGT6A0M32 (r) DGT6A0M42 (l)	P3M6B14AA0
	33.100	**26.500**	400 R	233	100K4CB	4	0.80	DGT6A0M62 (r) DGT6A0M72 (l)	P2M5B34KA0
	51 700	**41 300**		331	112K4C	4	1.25	DGT6A0M82 (r) DGT6A0M92 (l)	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 with inverter	0.50		P0M2B4IKA0
	7.400	6.700		134	80K2CA	2	0.50	DGT1A0M30	P1M3B42AA0
	6.400	**5.100**	160	033	71K2CA	2	0.32	DGT2A0M10	P0M2B32AA0
	8.000	**6.400**			71K2CB	2	0.40		P0M2B32KA0
	9.800	8.000			71K2L	2 with inverter	0.50		P0M2B3IKA0
	9.800	9.800		133	80K2CB	2	0.63	DGT2A0M30	P1M3B32KA0
	7.600	**6.100**	200	132	71K2CA	2	0.32	DGT3A0M10	P1M2B22AA0
	9.600	**7.600**			71K2CB	2	0.40		P1M2B22KA0
	12.000	**9.600**			71K2L	2 with inverter	0.50		P1M2B2IKA0
	12.000	**9.600**			80K2CA	2	0.50		P1M3B22AA0
	14.700	12.000			80K2CB	2	0.63		P1M3B22KA0
	14.700	14.700			80K2L	2 with inverter	0.80		P1M3B2IKA0
	9.000	**7.200**	250	131	71K2CA	2	0.32	DGT4A0M12	P1M2B12AA0
	11.200	**8.900**			71K2CB	2	0.40		P1M2B12KA0
	13.800	**11.000**			71K2L	2 with inverter	0.50		P1M2B1IKA0
	17.200	**13.800**			80K2CB	2	0.63		P1M3B12KA0
	21.600	17.200		233	100K2CA	2	1.25	DGT4A0M32	P2M5B32AA0
	21.600	21.600			100K2CB	2	1.60		P2M5B32KA0
	14.800	**11.900**	315	232	80K2CA	2	0.50	DGT5A0M12 (r) DGT5A0M22 (l)	P2M3B22AA0
	18.600	**14.900**			80K2CB	2	0.63		P2M3B22KA0
	23.700	**18.900**			80K2L	2 with inverter	0.80		P2M3B2IKA0
	29.400	29.400			100K2CA	2	1.25		P2M5B22AA0
	16.500	**13.200**	400	231	80K2CA	2	0.50	DGT6A0M12 DGT6A0M22	P2M3B12AA0
	20.800	**16.600**			80K2CB	2	0.63		P2M3B12KA0
	26.500	**21.200**			80K2L	2 with inverter	0.80		P2M3B1IKA0
	41.400	33.100			100K2CA	2	1.25		P2M5B12AA0
	41.400	**33.100**	400 R	231	100K2CA	2	1.25	DGT6A0M62 (r) DGT6A0M72 (l)	P2M5B12AA0
	53 000	**42 400**			100K2CB	2	1.60		P2M5B12KA0
	66 200	**53 000**			100K2L	2 with inverter	2.00		P2M5B1IKA0

- The specifications refer to a single motoreducer; in 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), average reaction (R ave) is compatible with the values listed in diagram pages 19, 20 and 21.
- The values for travelling mass in red require a verification of average reaction (R ave.) on each wheel, which must not exceed the following Rx. max. values:

Ø 125	Ø 160	Ø 200	Ø 250	Ø 315	Ø 400	Ø 400 R
R ave. ≤ Rx max. ≤ **3670 kg** (36 kN)	R ave. ≤ Rx max. ≤ **4893 kg** (48 kN)	R ave. ≤ Rx max. ≤ **7340 kg** (72 kN)	R ave. ≤ Rx max. ≤ **10,805 kg** (106 kN)	R ave. ≤ Rx max. ≤ **14,679 kg** (144 kN)	R ave. ≤ Rx max. ≤ **18,960 kg** (186 kN)	R ave. ≤ Rx max. ≤ **30,580 kg** (300 kN)

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

Nominal speed (m/min)	Travelling mass (kg) ISO service group (FEM) M4 (1Am)	M5 (2m)	"DGT" wheel group" Ø (mm)	"DGP" motoreducer Reducer Type	Motor Type	Self-braking motor specifications Poles (N°)	Power (kW)	Codes for components "DGT" drive wheel group	"DGP" gearmotor
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 with inverter	0.50		P0M2B1IKA0
	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 with inverter	0.50		P0M2B2IKA0
	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 with inverter	0.50		P0M2B3IKA0
	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 with inverter	0.50	DGT2A0M30	P1M2B2IKA0
	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 with inverter	0.50		P1M2B1IKA0
	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**	250	232	80K3C	2/8	0.50/0.12	DGT4A0M32	P2M3B23AA0
	21.600	17.200			80K3L	2/8	0.63/0.15		P2M3B23KA0
	21.600	21.600			80K2L	2 with inverter	0.80		P2M3B2IKA0
	18.500	**14.800**	315	231	80K3C	2/8	0.50/0.12	DGT5A0M12 (r) DGT5A0M22 (l)	P2M3B13AA0
	23.300	**18.600**			80K3L	2/8	0.63/0.15		P2M3B13KA0
	29.400	23.700			80K2L	2 with inverter	0.80		P2M3B1IKA0
	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	P0M2B43AA0
	6.700	5.360			71K3L	2/8	0.40/0.09		P0M2B43KA0
	7.400	6.700			71K2L	2 with inverter	0.50		P0M2B4IKA0
	7.400	6.700		134	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 with inverter	0.50		P0M2B3IKA0
	9.800	9.800		133	80K3C	2/8	0.50/0.12	DGT2A0M30	P1M3B33AA0
	7.600	**6.100**	200	132	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 with inverter	0.50		P1M2B2IKA0
	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 with inverter	0.80		P1M3B2IKA0
	11.200	**9.000**	250	131	71K3L	2/8	0.40/0.09	DGT4A0M12	P1M2B13KA0
	13.800	**11.000**			71K2L	2 with inverter	0.50		P1M2B1IKA0
	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		233	100K3C	2/8	1.25/0.31	DGT4A0M32	P2M5B33AA0
	14.800	**11.900**	315	232	80K3C	2/8	0.50/0.12	DGT5A0M12 (r) DGT5A0M22 (l)	P2M3B23AA0
	18.600	**14.900**			80K3L	2/8	0.63/0.15		P2M3B23KA0
	23.700	**18.900**			80K2L	2 with inverter	0.80		P2M3B2IKA0
	29.400	29.400			100K3C	2/8	1.25/0.31		P2M5B23AA0
	20.800	**16.600**	400	231	80K3L	2/8	0.63/0.15	DGT6A0M12 (r) DGT6A0M22 (l)	P2M3B13KA0
	26.500	**21.200**			80K2L	2 with inverter	0.80		P2M3B1IKA0
	41.400	33.100			100K3C	2/8	1.25/0.31		P2M5B13AA0
	41.400	**33.100**	400 R	231	100K3C	2/8	1.25/0.31	DGT6A0M62 (r) DGT6A0M72 (l)	P2M5B13AA0
	53 000	**42 400**			100K3L	2/8	1.60/0.39		P2M5B13KA0
	66 200	**53 000**			100K2L	2 with inverter	2.00		P2M5B1IKA0

- The specifications refer to a single motoreducer; in 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), average reaction (R ave) is compatible with the values listed in diagram pages 19, 20 and 21.
- The values for travelling mass in red require a verification of average reaction (R ave.) on each wheel, which must not exceed the following Rx. max. values:

Ø 125	Ø 160	Ø 200	Ø 250	Ø 315	Ø 400	Ø 400 R
R ave. ≤ Rx max. ≤ **3670 kg** (36 kN)	R ave. ≤ Rx max. ≤ **4893 kg** (48 kN)	R ave. ≤ Rx max. ≤ **7340 kg** (72 kN)	R ave. ≤ Rx max. ≤ **10,805 kg** (106 kN)	R ave. ≤ Rx max. ≤ **14,679 kg** (144 kN)	R ave. ≤ Rx max. ≤ **18,960 kg** (186 kN)	R ave. ≤ Rx max. ≤ **30,580 kg** (300 kN)

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

Nominal speed (m/min)	Travelling mass (kg) ISO service group (FEM) M4 (1Am)	M5 (2m)	"DGT" wheel group" Ø (mm)	"DGP" motoreducer Reducer Type	Motor Type	Self-braking motor specifications Poles (N°)	Power (kW)	Codes for components "DGT" drive wheel group	"DGP" gearmotor
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		121	71K2L	2 with inverter	0.50	DGT1A0M30	P1M2A1IKA0
	6.500	5.200			80K3C	2/8	0.50/0.12		P1M3A13AA0
	7.400	6.656			80K3L	2/8	0.63/0.15		P1M3A13KA0
	7.400	6.656			80K2L	2 with inverter	0.80		P1M3A1IKA0
	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 with inverter	0.50		P0M2B4IKA0
	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 with inverter	0.80		P1M3B4IKA0
	7.600	**6.000**	200	133	71K3L	2/8	0.40/0.09	DGT3A0M10	P1M2B33KA0
	9.600	**7.600**			71K2L	2 with inverter	0.50		P1M2B3IKA0
	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 with inverter	0.80		P1M3B3IKA0
	14.700	14.700		221	100K3C	2/8	1.25/0.31	DGT3A0M30	P2M5A13AA0
	10.800	**8.600**	250	132	71K2L	2 with inverter	0.50	DGT4A0M12	P1M2B2IKA0
	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 with inverter	0.80		P1M3B2IKA0
	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 (r) DGT5A0M22 (l)	P2M3B33KA0
	18.500	**14.800**			80K2L	2 with inverter	0.80		P2M3B3IKA0
	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 with inverter	0.80	DGT6A0M12 (r) DGT6A0M22 (l)	P2M3B2IKA0
	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	=	400 R	232	100K3C	2/8	1.25/0.31	DGT6A0M62 (r) DGT6A0M72 (l)	P2M5B23AA0
	41.400	**33.100**			100K3L	2/8	1.60/0.39		P2M5B23KA0
	51 700	**41 300**			100K2L	2 with inverter	2.00		P2M5B2IKA0
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 with inverter	0.50		P0M2A2IKA0
	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 with inverter	0.80		P1M3A2IKA0
	5.000	**4.000**	160	021	71K3L	2/8	0.40/0.09	DGT2A0M10	P0M2A13KA0
	6.300	**5.000**		121	71K2L	2 with inverter	0.50	DGT2A0M30	P1M2A1IKA0
	6.300	**5.000**			80K3C	2/8	0.50/0.12		P1M3A13AA0
	7.900	**6.300**			80K3L	2/8	0.63/0.15		P1M3A13KA0
	10.000	8.000			80K2L	2 with inverter	0.80		P1M3A1IKA0
	7.600	**6.000**	200	134	71K2L	2 with inverter	0.50	DGT3A0M10	P1M2B4IKA0
	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 with inverter	0.80		P1M3B4IKA0
	14.700	14.700		222	100K3C	2/8	1.25/0.31	DGT3A0M30	P2M5A23AA0
	10.800	**8.600**	250	133	80K3L	2/8	0.63/0.15	DGT4A0M12	P1M3B33KA0
	13.500	**10.800**			80K2L	2 with inverter	0.80		P1M3B3IKA0
	21.600	17.200		221	100K3C	2/8	1.25/0.31	DGT4A0M32	P2M5A13AA0
	21.600	21.600			100K3L	2/8	1.60/0.39		P2M5A13KA0
	11.600	**9.300**	315	234	80K3L	2/8	0.63/0.15	DGT5A0M12 (r) DGT5A0M22 (l)	P2M3B43KA0
	14.800	**11.900**			80K2L	2 with inverter	0.80		P2M3B4IKA0
	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			100K2L	2 with inverter	2.00		P2M5B4IKA0
	13.000	**10.400**	400	233	80K3L	2/8	0.63/0.15	DGT6A0M12 (r) DGT6A0M22 (l)	P2M3B33KA0
	16.500	**13.200**			80K2L	2 with inverter	0.80		P2M3B3IKA0
	25.800	**20.600**			100K3C	2/8	1.25/0.31		P2M5B33AA0
	33.100	**26.400**			100K3L	2/8	1.60/0.39		P2M5B33KA0
	41.300	33.100			100K2L	2 with inverter	2.00		P2M5B3IKA0
	42.800	41.300		331	112K3L	2/8	2.50/0.62	DGT6A0M32 (r) DGT6A0M42 (l)	P3M6B13KA0
	33.100	**26.400**	400 R	233	100K3L	2/8	1.60/0.39	DGT6A0M62 (r)	P2M5B33KA0
	41.300	**33.100**			100K2L	2 with inverter	2.00	DGT6A0M72 (l)	P2M5B3IKA0
	51 600	**41 300**		331	112K3L	2/8	2.50/0.62	DGT6A0M82 (r)	P3M6B13KA0
	66 000	**52 800**			112K2L	2 with inverter	3.20	DGT6A0M92 (l)	P3M6B1IAA0

- The specifications refer to a single motoreducer; in 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), average reaction (R ave) is compatible with the values listed in diagram pages 19, 20 and 21.
- The values for travelling mass in red require a verification of average reaction (R ave.) on each wheel, which must not exceed the following Rx. max. values:

Ø 125	Ø 160	Ø 200	Ø 250	Ø 315	Ø 400	Ø 400 R
R ave. ≤ Rx max. ≤ **3670 kg** (36 kN)	R ave. ≤ Rx max. ≤ **4893 kg** (48 kN)	R ave. ≤ Rx max. ≤ **7340 kg** (72 kN)	R ave. ≤ Rx max. ≤ **10805 kg** (106 kN)	R ave. ≤ Rx max. ≤ **14679 kg** (144 kN)	R ave. ≤ Rx max. ≤ **18,960 kg** (186 kN)	R ave. ≤ Rx max. ≤ **30,580 kg** (300 kN)

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

Nominal speed (m/min)	Travelling mass (kg) ISO service group (FEM) M4 (1Am)	M5 (2m)	"DGT" wheel group" Ø (mm)	"DGP" motoreducer Reducer Type	Motor Type	Self-braking motor specifications Poles (N°)	Power (kW)	Codes for components "DGT" drive wheel group	"DGP" gearmotor
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 with inverter	0.50		P0M2A3IKA0
	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 with inverter	0.80		P1M3A3IKA0
	5 000	4 000	160	022	71K2L	2 with inverter	0.50	DGT2A0M10	P0M2A2IKA0
	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 with inverter	0.80		P1M3A2IKA0
	6 000	4 800	200	121	71K2L	2 with inverter	0.50	DGT3A0M10	P1M2A1IKA0
	7 600	6 000			80K3L	2/8	0.63/0.15		P1M3A13KA0
	9 400	7 600			80K2L	2 with inverter	0.80		P1M3A1IKA0
	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	DGT4A0M12	P1M3B43KA0
	10 800	8 600			80K2L	2 with inverter	0.80		P1M3B4IKA0
	17 200	13 800		222	100K3C	2/8	1.25/0.31	DGT4A0M32	P2M5A23AA0
	21 600	17 200			100K3L	2/8	1.60/0.39		P2M5A23KA0
	21 600	21 600			100K2L	2 with inverter	2.00		P2M5A2IKA0
	9 200	7 400	315	221	80K3L	2/8	0.63/0.15	DGT5A0M12 (r) DGT5A0M22 (l)	P2M3A13KA0
	11 800	9 400			80K2L	2 with inverter	0.80		P2M3A1IKA0
	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 (r) DGT5A0M42 (l)	P3M6B33KA0
	20 700	16 600	400	234	100K3C	2/8	1.25/0.31	DGT6A0M12 (r) DGT6A0M22 (l)	P2M5B43AA0
	26 500	21 200			100K3L	2/8	1.60/0.39		P2M5B43KA0
	33 000	26 400			100K2L	2 with inverter	2.00		P2M5B4IKA0
	41 200	33 000		332	112K3L	2/8	2.50/0.62	DGT6A0M32 (r) DGT6A0M42 (l)	P3M6B23KA0
	42 800	42 200			112K2L	2 with inverter	3.20		P3M6B2IAA0
	33 000	26 400	400 R	234	100K2L	2 with inverter	2.00	DGT6A0M62 (r) DGT6A0M72 (l)	P2M5B4IKA0
	41 200	33 000		332	112K3L	2/8	2.50/0.62	DGT6A0M82 (r)	P3M6B23KA0
	52 700	42 100			112K2L	2 with inverter	3.20	DGT6A0M92 (l)	P3M6B2IAA0
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 with inverter	0.50		P0M2A4IKA0
	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 with inverter	0.80		P1M3A4IKA0
	5 000	4 000	160	123	80K3L	2/8	0.63/0.15	DGT2A0M10	P1M3A33KA0
	6 300	5 000			80K2L	2 with inverter	0.80		P1M3A3IKA0
	6 000	4 800	200	122	80K3L	2/8	0.63/0.15	DGT3A0M10	P1M3A23KA0
	7 600	6 000			80K2L	2 with inverter	0.80		P1M3A2IKA0
	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	DGT4A0M12	P1M3A13KA0
	8 600	6 900			80K2L	2 with inverter	0.80		P1M3A1IKA0
	13 500	10 800		223	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 with inverter	2.00		P2M5A3IKA0
	14 600	11 700	315	222	100K3C	2/8	1.25/0.31	DGT5A0M12 (r) DGT5A0M22 (l)	P2M5A23AA0
	18 700	14 900			100K3L	2/8	1.60/0.39		P2M5A23KA0
	23 400	18 700			100K2L	2 with inverter	2.00		P2M5A2IKA0
	29 300	23 500		334	112K3L	2/8	2.50/0.62	DGT5A0M32 (r) DGT5A0M42 (l)	P3M6B43KA0
	29 400	29 400			112K2L	2 with inverter	3.20		P3M6B4IKA0
	16 400	13 100	400	221	100K3C	2/8	1.25/0.31	DGT6A0M12 (r) DGT6A0M22 (l)	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 (r)	P3M6B33KA0
	42 000	33 600			112K2L	2 with inverter	3.20	DGT6A0M42 (l)	P3M6B3IAA0
	32 800	26 200	400 R	333	112K3L	2/8	2.50/0.62	DGT6A0M82 (r)	P3M6B33KA0
	42 000	33 600			112K2L	2 with inverter	3.20	DGT6A0M92 (l)	P3M6B3IAA0

- The specifications refer to a single motoreducer; in 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), average reaction (R ave) is compatible with the values listed in diagram pages 19, 20 and 21.
- The values for travelling mass in red require a verification of average reaction (R ave.) on each wheel, which must not exceed the following Rx. max. values:

Ø 125	Ø 160	Ø 200	Ø 250	Ø 315	Ø 400	Ø 400 R
R ave. ≤ Rx max. ≤ **3670 kg** (36 kN)	R ave. ≤ Rx max. ≤ **4893 kg** (48 kN)	R ave. ≤ Rx max. ≤ **7340 kg** (72 kN)	R ave. ≤ Rx max. ≤ **10,805 kg** (106 kN)	R ave. ≤ Rx max. ≤ **14,679 kg** (144 kN)	R ave. ≤ Rx max. ≤ **18,960 kg** (186 kN)	R ave. ≤ Rx max. ≤ **30,580 kg** (300 kN)

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

Nominal speed (m/min)	Travelling mass (kg) ISO service group (FEM) M4 (1Am)	M5 (2m)	"DGT" wheel group" Ø (mm)	"DGP" motoreducer Reducer Type	Motor Type	Self-braking motor specifications Poles (N°)	Power (kW)	Codes for components "DGT" drive wheel group	"DGP" gearmotor
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 with inverter	0.50		P0M2A4IKA0
	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 with inverter	0.80		P1M3A4IKA0
	5 400	4 300	250	122	80K3L	2/8	0.63/0.15	DGT4A0M12	P1M3A23KA0
	6 900	5 500			80K2L	2 with inverter	0.80		P1M3A2IKA0
	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 with inverter	2.00		P2M5A4IKA0
	16 500	13 200	400	222	100K3L	2/8	1.60/0.39	DGT6A0M12 (r)	P2M5A23KA0
	20 600	16 500			100K2L	2 with inverter	2.00	DGT6A0M22 (l)	P2M5A2IKA0
	25 800	20 600		334	112K3L	2/8	2.50/0.62	DGT6A0M32 (r)	P3M6B43KA0
	33 000	26 400			112K2L	2 with inverter	3.20	DGT6A0M42 (l)	P3M6B4IAA0
	33 600	26 900	400 R	334	112K2L	2 with inverter	3.20	DGT6A0M82 (r)	P3M6B4IAA0
								DGT6A0M92 (l)	

- The specifications refer to a single motoreducer; in 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), average reaction (R ave) is compatible with the values listed in diagram pages 19, 20 and 21.
- The values for travelling mass in red require a verification of average reaction (R ave.) on each wheel, which must not exceed the following Rx. max. values:

Ø 125	Ø 160	Ø 200	Ø 250	Ø 315	Ø 400	Ø 400 R
R ave. ≤ Rx max. ≤ 3670 kg (36 kN)	R ave. ≤ Rx max. ≤ 4893 kg (48 kN)	R ave. ≤ Rx max. ≤ 7340 kg (72 kN)	R ave. ≤ Rx max. ≤ 10,805 kg (106 kN)	R ave. ≤ Rx max. ≤ 14,679 kg (144 kN)	R ave. ≤ Rx max. ≤ 18,960 kg (186 kN)	R ave. ≤ Rx max. ≤ 30,580 kg (300 kN)

SAMPLE GUIDELINES FOR SELECTING ENDCARRIAGES FOR BRIDGE CRANES

To make the correct choice of **overhead travelling units**, 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):

1. Define the crane's operating data: load capacity (kg), ISO service group (FEM), span (m) and travelling speed (m/min);
2. Define: the mass (weight = kg) of the crane in question and any accessories (frame, electrical system, etc.);
3. Define: the weight (kg) of the lifting and travel unit, i.e. of the hoist + trolley (or trolley/winch);
4. Calculate: the total mass to be travelled, i.e. the nominal load + the weight of the crane + the weight of trolley/hoist (or trolley/winch);
5. Select: the type of beams from the "Operating limitations" diagrams at pages 8 and 10, based on the: capacity, ISO service group (FEM) and gauge;
6. Verify: that the mass to be travelled is ≤ of the travelling mass, as indicated in the "Operating limitations" at pages 8 and 10;
7. Verify: the maximum, minimum and average reactions on the wheels, considering load juxtapositions/eccentricities;
8. Verify: the congruency of the operating width in contact, in relation to the type of rail on which the wheels slide;
9. Select: the electro-mechanical driving components (choice of offset gearmotor group) from the tables at pages 23 to 30.
10. Determine: the beam code, based on the type selected and construction configuration for the connection with the bridge girder/s, using: for a SINGLE GIRDER crane, the tables at pages 8 - 9, and for a DOUBLE GIRDER crane, the tables at pages 10 to 16;
11. Determine: using the "Geometric specifications" table at page 17, the type of "girder- beam" joining cross plates.

1st Example: SINGLE GIRDER travelling bridge crane - Capacity 5 t - Span 16 m

1. nominal load P = 5000 kg; ISO service group M4 (FEM 1Am); gauge 16 m; 2 crane travelling speeds = 40/10 m/min;
2. weight of crane + accessories : M1 = ~ 2500 kg
3. weight of hoist + trolley : M2 = ~ 500 kg
4. total travelling mass : 5000 + 2500 + 500 = 8000 kg
5. from the diagram at page 8, with a capacity of 5000 kg; ISO group M4 (FEM 1Am) and gauge 16 m, select the endcarriages:

Type	1 – 125 – 2400	or:	DGT size	1	Wheel Ø (mm)	125	Wheel basis (mm)	2400

6. from the diagram at page 8, we can deduce that the beams 1 – 125 – 2400 admit masses of up to 8400 kg > than the 8000 kg to haul:
7. at this point, check the the suitability of the wheel Ø 125 for the selected beams, in relation to its admissible reactions and the type of rail, calculated as illustrated at page 19 for span "S" = 16,000 mm and supposing a juxtaposition "a" = 1000 mm:
   - R max. = 2500/4 + [(500 + 5000)/2] • (1 – 1000/16,000) ≅ 3203 kg
   - R min. = 2500/4 + 500/2 • 1000/16,000 ≅ 641 kg
   - R ave. = (2 • R max. + R min.)/3 = (2 • 3203 + 641)/3 ≅ 2349 kg < than 3670 kg, corresponding to the admissible Rx max.;
8. supposing a flat laminated rail, with I = 40 and operating band b = 38 (see table at page 18), from the diagram at page 19 we can deduce that, for a Ø 125 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 ≅ 2400 kg > of the ~ 2349 kg the wheel is subject to (example at page 19);
9. 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 28:

Nominal speed (m/min)	The travelling mass (kg) from each gearmotor in the service group ISO M4 (FEM 1Am) is in kg:	"DGT" wheel group Ø (mm)	"DGP" motoreducer Reducer Type	Motor Type	Self-braking motor specs Poles (N°)	Power (kW)	"DGP" gearmotor code
40/10	4200 > of 4000 kg to be hauled	125	022	71K3L	2/8	0.40/0.09	P0M2A23KA0

10. supposing a "Lateral" connected girder-beam configuration and a girder span width > than 305 and ≤ than 370, from the table at page 8, we can deduce that the beams type 1 – 125 – 2400 have a code: S124L2..;
11. from the "Geometric specifications" table at page 17, we can deduce that, for the beams in question with a "Lateral" connected girder-beam configuration and a girder span width > than 305 and ≤ than 370, the type of "girder-beam" joining cross plates are: L12.

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

1. nominal load P = 10,000 kg; ISO service group M4 (FEM 1Am); span 20 m; 2 crane running speeds = 40/10 m/minn
2. weight of crane + accessories : M1 ≅ 5.900 kg
3. weight of hoist + trolley : M2 ≅ 750 kg
4. total travelling mass : 10,000 + 5900 + 750 = 16,650 kg
5. from the diagram at page 10, with a capacity of 10,000 kg; ISO group M4 (FEM 1Am) and span 20 m, select the endcarriages:

Type	3 – 200 – 3600	or:	DGT size	3	Wheel Ø (mm)	200	Wheel basis (mm)	3600

6. from the diagram at page 10, we can deduce that the beams 3 – 200 – 3600 admit masses of up to 18,800 kg > than the 16,65000 kg to haul;
7. at this point, check the the suitability of the wheel Ø 200 for the selected beams, in relation to its admissible reactions and the type of rail, calculated as illustrated at page 19 for span "S" = 20,000 mm and supposing a juxtaposition "a" = 1000 mm:
   - R max. = 5900/4 + [(750 + 10,000)/2] • (1 – 1000/20,000) ≅ 6581 kg
   - R min. = 5900/4 + 750/2 • 1000/20,000 ≅ 1494 kg
   - R ave. = (2 • R max. + R min.)/3 = (2 • 6581 + 1494)/3 ≅ 4885 kg < than 7340 kg, corresponding to the admissible Rx max.;
8. supposing a flat laminated rail, with I = 50 and operating band b = 48 (see table at page 18), from the diagram at page 20 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 ~ 4885 kg the wheel is subject to (example at page 21);
9. 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 28:

Nominal speed (m/min)	The travelling mass (kg) from each motoreducer in the service group ISO M4 (FEM 1Am) is in kg:	"DGT" wheel group Ø (mm)	"DGP" motoreducer Reducer Type	"DGP" motoreducer Motor Type	Self-braking motor specs Poles (N°)	Self-braking motor specs Power (kW)	"DGP" gearmotor code
40/10	9.400 > of 8325 kg to be hauled	200	134	80K3L	2/8	0.63/0.15	P1M3B43KA0

10. supposing a "Lateral + Supported" connected girder-beam configuration with a double girder trolley gauge of 1200 mm and a girder span width > than 360 and ≤ than 410, from the table at page 15, we can deduce that the beams type 3 – 200 – 3600 have a code: W336L5..;
11. from the "Geometric specifications" table at page 17, we can deduce that, for the beams in question with a "Lateral + Supported" connected girder-beam configuration and a girder span width > than 360 and ≤ than 410, the type of "girder-beam" joining cross plates are: L32 + A32;

3rd Example: Double girder travelling bridge crane - Capacity 16 t - Span 27 m

1. nominal load P = 16,000 kg; ISO service group M5 (FEM 2m); gauge 27 m; 2 crane running speeds = 40/10 m/min
2. weight of crane + accessories : M1 ≅ 14,600 kg
3. weight of hoist + trolley : M2 ≅ 1400 kg
4. total travelling mass : 16,000 + 14,600 + 1400 = 32,000 kg
5. from the diagram at page 10, with a capacity of 16,000 kg; ISO group M5 (FEM 2m) and gauge 27 m, select the beams:

Type	5 – 315 – 3900	or:	DGT size	5	Wheel Ø (mm)	315	Wheel basis (mm)	3900

6. from the diagram at page 10, we can deduce that the beams 5 – 315 – 3900 admit masses of up to 35,900 kg > of the 32,000 kg to haul:
7. at this point, check the the suitability of the wheel Ø 315 for the selected beams, in relation to its admissible reactions and the type of rail, calculated as illustrated at page 19 for span "S" = 27,000 mm and supposing a juxtaposition "a" = 1200 mm:
   - R max. = 14,600/4 + [(1400 + 16,000)/2] • (1 – 1200/27,000) ≅ 11,963 kg
   - R min. = 14,600/4 + 1400/2 • 1200/27,000 ≅ 3681 kg
   - R ave. = (2 • R max. + R min.)/3 = (2 • 11,963 + 3681)/3 ≅ 9.202 kg < than 14,679 kg, corresponding to the admissible Rx max.;
8. supposing a flat laminated rail, with I = 60 and operating band b = 58 (see table at page 18), from the diagram at page 21 we can deduce that, for a Ø 315 wheel with a standard sheave width, considering the factors (speed and operating bandwidth), the average admissible reaction for the service group M5 (2m) is: R ave. admissible ≅ 9900 kg > of the ~ 9202 kg the wheel is subject to (example at page 21);
9. 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 28:

Nominal speed (m/min)	The travelling mass (kg) from each gearmotor in the service group ISO M5 (FEM 2m) is in kg:	"DGT" wheel group Ø (mm)	"DGP" motoreducer Reducer Type	"DGP" motoreducer Motor Type	Self-braking motor specs Poles (N°)	Self-braking motor specs Power (kW)	"DGP" gearmotor code
40/10	18.400 > of 16,000 kg to be hauled	315	234	100K3C	2/8	1.25/0.31	P2M5B43AA0

10. supposing a "Supported" connected girder-beam configuration with a dual rail trolley gauge of 1200 mm and a girder span width > than 410 and ≤ than 490, from the table at page 14, we can deduce that the beams type 5 – 315 – 3900 codes W539A5..
11. from the "Geometric specifications" table at page 17, we can deduce that, for the beams in question with a "Supported" connected girder-beam configuration and a girder span width > than 410 and ≤ than 490, the type of "girder-beam" joining cross plates arefrom the "Geometric specifications" table at page 17, we can deduce that, for the beams in question with a "Lateral" connected girder-beam configuration and a girder span width > than 305 and ≤ than 370, the type of "girder-beam" joining cross plates are: A52

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