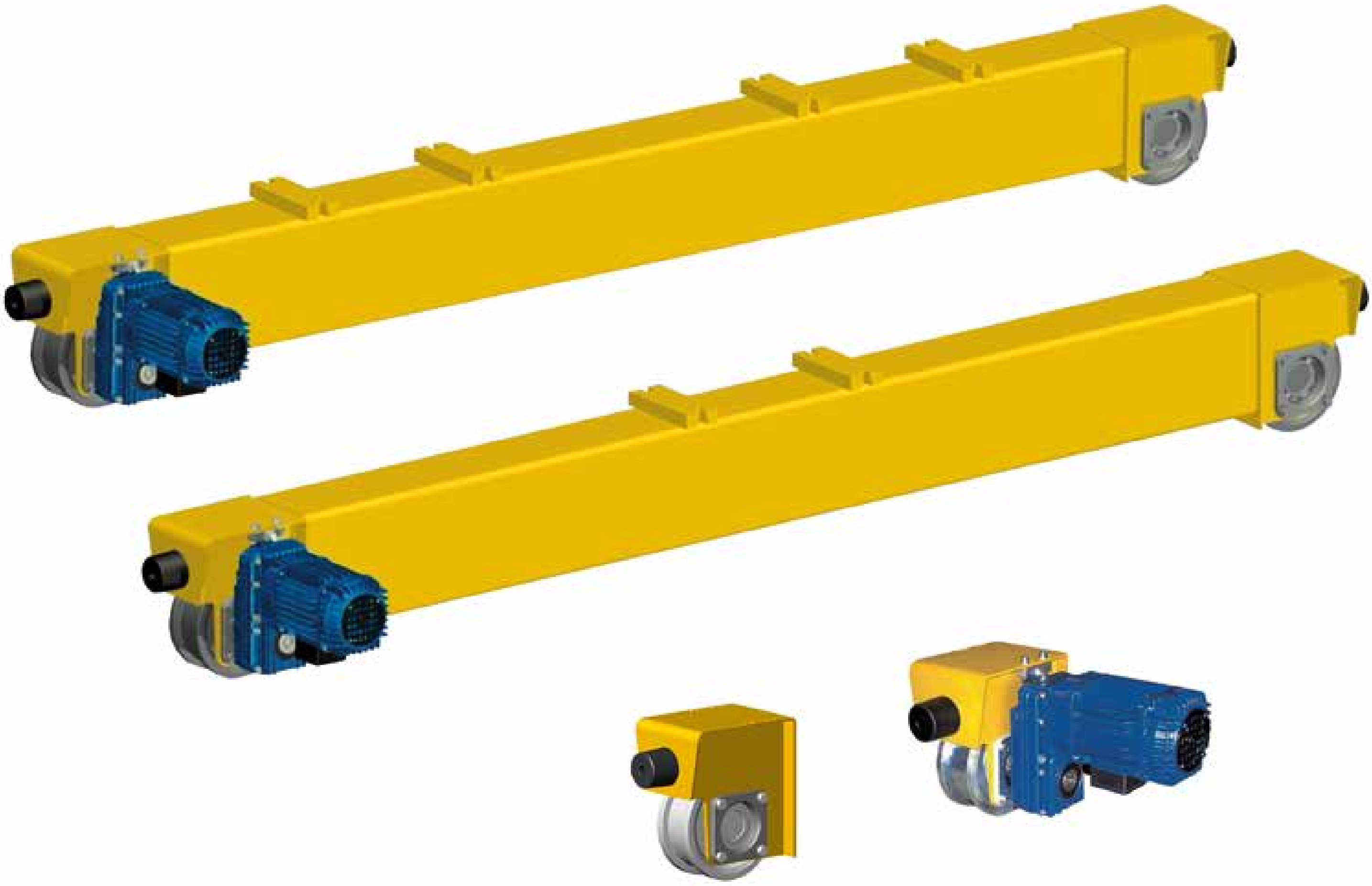
donati

END-CARRIAGES FOR BRIDGE CRANES

DGT WHEEL GROUPS SERIES

DGP OFFSET GEARED-MOTORS SERIES



DONATI SOLLEVAMENTI S.r.l.

safe and modern drive units for handling on rails

The bridge crane end-carriages, equipped with "DGT" series wheel groups, coupled with "DGP" series offset geared motors, represent the most convenient offer for worldwide market requirements for handling masses up to 62,000 kg.
The bridge crane end-carriages, a completion of the range of DRH series electric wire rope hoists and DMK electric chain hoists, appreciated worldwide by sector professionals, are part of the range of products manufactured by DONATI SOLLEVAMENTI S.r.l. a leading Italian company, and one of the largest in the world, in the field of design and manufacture of standard lifting equipment.

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Established in Italy in 1930, with growing success Donati Sollevamenti S.r.l. has gained a leading position on the international industrial lifting and handling market, with an export share equal to approx. two-thirds of total turnover. The advanced design and construction features of all Donati products are the basis of the competitiveness and reliability of the entire range offered, which can be applied to all manufacturing and tertiary distribution sectors. Donati designs and manufactures its products in Italy, thus emphasising its own marketing mix in terms of product range (special and standard solutions), excellent quality:price ratio, response and delivery speed; with regard to this, it is the ideal partner for the manufacturers of bridge cranes, integrators and distributors of "material handling" and also service companies specialised in retrofitting/modernisation. If Donati is characterised on the market for its constant attention to customer satisfaction, internally maximum attention is paid to process quality and safety in the factory and environment (Donati is ISO 9001 - ISO 14001 - OHSAS 18001 certified). Donati also adheres to the provisions of Italian Decree Law 231/01 concerning the administrative liability of legal entities and companies (discipline regarding Compliance but also Safety and the Environment).

CONFORMITY TO NORMS AND REGULATIONS

APPLICABLE LEGISLATION

The bridge crane end-carriages are designed and produced by DONATI SOLLEVAMENTI S.r.l. in compliance with the **"Essential Safety Requirements" stated in Attachment I of the Machinery Directive 2006/42/CE and are introduced onto the market accompanied by the Declaration of incorporation found in Attachment II B of the Directive**

APPLICABLE NORMS AND REGULATIONS

The following norms and technical principles have also been taken into consideration in the design and manufacturing of the **end-carriages for bridge cranes**:

- EN ISO 12100/2010 "Fundamental concepts on general engineering principles"
- EN ISO 13849-1/2008 "General principles for design"
- EN 60529/97 "Degrees of protection for casings (IP Codes)"
- ISO 4301-1/88 "Classifications for lifting equipment"
- ISO 8306/85 "Tolerances for cranes and tracks"
- FEM 1.001/98 "Calculations for lifting equipment"
- FEM 9.511/86 "Classification of mechanisms"
- 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 **end-carriages for bridge cranes** are classified in various service groups, in conformity with specifications stipulated under 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, which can be supplied on request.

ELECTRICAL POWER:

- The **end-carriages 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 can be supplied 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 **end-carriages for bridge cranes** must be installed in a well-ventilated 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 end-carriages 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, is not taken into consideration in the value indicated.
- Vibrations produced by the **end-carriages** during running operations are not considered dangerous for the health and wellbeing of personnel operating the lifting equipment on which the units are installed.

END-CARRIAGES FOR BRIDGE CRANES

DONATI **end-carriages** are designed for handling operations on **bridge crane rails**:

- **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.**

Designed and built on the principle of modular components assembled together in relation to their specific use, they are equipped with **drive units** comprising **“DGT” series wheel groups**, which are combined with **“DGP” series offset geared motors**.

They are configured in 6 sizes, where the basic components are:

- **6 “DGT” series drive wheel group sizes**
  (Ø 125, Ø 160, Ø 200, Ø 250, Ø 315 e Ø 400/400 R)
- **4 “DGP” series offset reducers sizes**
  (DGP 0, DGP 1, DGP 2 e DGP 3)
- **4 self-braking motors sizes**
  (motor 71, motor 80, motor 100 and motor 112)

Operating limitations for end-carriages on SINGLE GIRDER or DOUBLE GIRDER bridge cranes, in relation to span

END-CARRIAGES TYPE			SPAN (m) SINGLE GIRDER M OR DOUBLE GIRDER B BRIDGE CRANE.																					
SIZE “DGT”	WHEEL Ø R (mm)	WHEEL BASIS PR (mm)	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	M	M	M	M	M	M	M														
		2400	B	B	B	B	B	B	B	B	M B	M B	M B	M B										
		3300													M B	M B	M B	M B	M B	M B				
2	160	1800	M	M	M	M	M	M	M	M														
		2400	B	B	B	B	B	B	B	B	M B	M B	M B	M B										
		3300													M B	M B	M B	M B	M B	M B				
3	200	2100	M	M	M	M	M	M	M	M	M	M												
		2700	B	B	B	B	B	B	B	B	B	B	M B	M B	M B	M B								
		3600															M B	M B	M B	M B	M B	M B		
4	250	2100	M	M	M	M	M	M	M	M	M	M												
		2700	M B	M B	M B	B	B	B	B	B	B	B	M B	M B	M B	M B								
		3600															M B	M B	M B	M B	M B	M B		
		3600 R															M	M	M	M	M	M		
5	315	2400	M	M	M	M	M	M	M	M	M	M	M	M										
		3900	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
6	400	3900	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
	400R	3900 R		B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B

“DGT” WHEELS		“DGP” SERIES OFFSET GEARED MOTORS					
SIZE	Ø (mm)	“DGP” REDUCERS SIZE 0	“DGP” REDUCERS SIZE 1		“DGP” REDUCERS SIZE 2		“DGP” REDUCERS SIZE 3
1	125	Motors size 71	Motors size 71	Motors size 80	=		=
2	160				=		=
3	200	=			Motors size 80	Motors size 100	=
4	250	=					=
5	315	=	=				Motors size 112
6	400	=	=				
	400R	=	=		=		

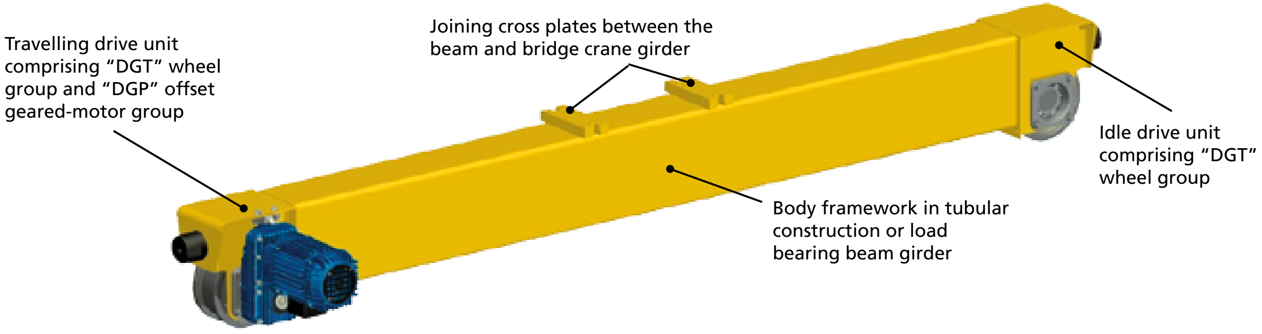
COMPONENTS ON END-CARRIAGES FOR BRIDGE CRANES

The main components on end-carriages for bridge cranes are the:

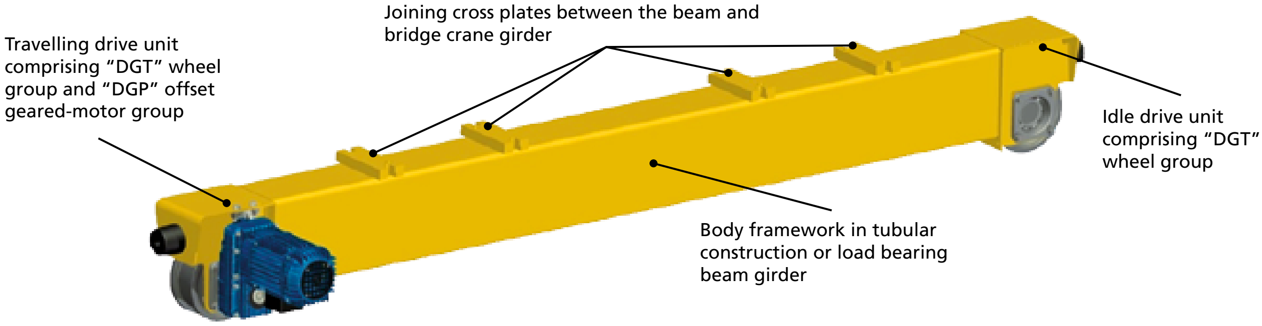
END-CARRIAGE FRAMEWORK:

- The load-bearing structure is made from a rectangular tubular section.
- The bridge crane girders are fixed to the end-carriage structure using a system of high-resistance bolts and a pin centring system.

END-CARRIAGE FOR SINGLE GIRDER BRIDGE CRANE

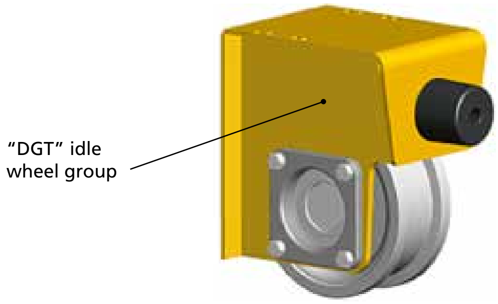


END-CARRIAGE FOR DOUBLE GIRDER BRIDGE CRANE



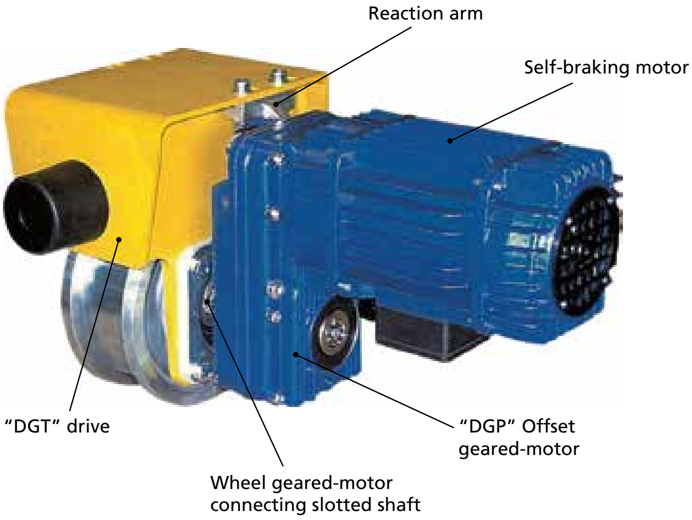
“DGT” SERIES WHEEL GROUPS

- 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 spheroidal 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 an offset geared-motor.
- In drive operation, the direct connection is coaxial between the offset geared-motor output shaft and the grooved hub on the drive wheel ensures a high level of operating safety and reliability.
- The wheel group is available as 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 end-carriage frame on which the wheel group is assembled.



“DGP” SERIES OFFSET GEARED-MOTORS

- **Reducers** are designed as an “offset geared-motor” type with a concave shaft, featuring parallel axes with two or three stages of reduction, and permanent oil-bath lubrication.
- Engineered with cylindrical high resistance steel gears, featuring spiral teething, heat-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 geared-motor and drive wheel is guaranteed by a slotted shaft connecting the holes on both parts, while the geared-motor 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 geared-motor-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 progressive start-up, with standard ventilation, self-braking with axial shifting of the rotor guaranteeing fast, reliable mechanical braking.
- Conical brakes are fitted with asbestos-free brake lining, 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 offset geared-motor features a joint contained within a coupling housing.



THE CONNECTION PLATE (SINGLE GIRDER) OR PLATES (DOUBLE GIRDER) FIX THE END-CARRIAGE TO THE CRANE’S GIRDER OR GIRDERS :

Specially designed connection plates fix the end-carriages 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 end-carriages, 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 END-CARRIAGES FOR BRIDGE CRANES

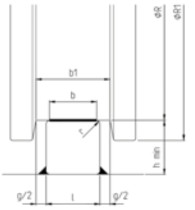
For complete technical specifications on the **end-carriages for bridge cranes**, in relation to their intended operation, check and match the parameters limiting their operation.

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

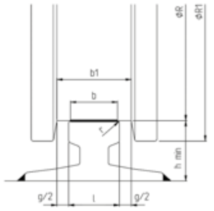
Operating parameters required for selecting end-carriages:

- 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.

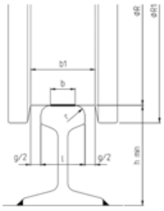
SPECIFICATIONS FOR RAILS AND MAXIMUM CONTACT AREA



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			TYPE OF RUNNING RAIL AND MAXIMUM OPERATING CONTACT SURFACE - b (mm)								
TYPE Ø Ø R (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 k	standard	85	75	70	40	70	**68**	A 75	75	**59**	50 60	67 (1) 72	**48** **55**
400R	**30.580** (2) 300 kN	maximum	95	85	80	40	80	**78**	=	=	=	=	=	=
		special	115	100	95	40	100	**98**	A 100	100	**80**	=	=	=

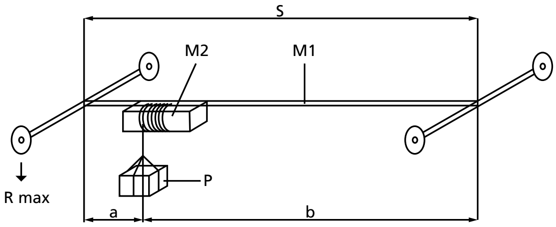
The clearance between the internal width of the wheel and the maximum rail width must be contained within: slack ≥ 10 mm and ≤ 15 mm

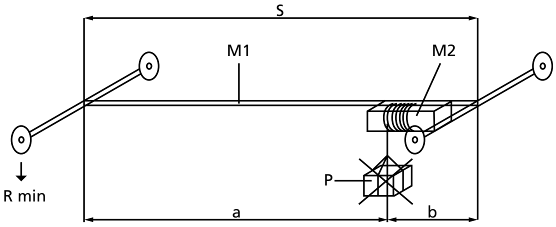
(1) wheel with increased clearance =18 mm

(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 8, 9 and 10) 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 7.
The correct choice of wheel is based on the average effective reaction **R ave. effettiva**, exerted on the wheel.

This value is derived from the following equation:

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

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

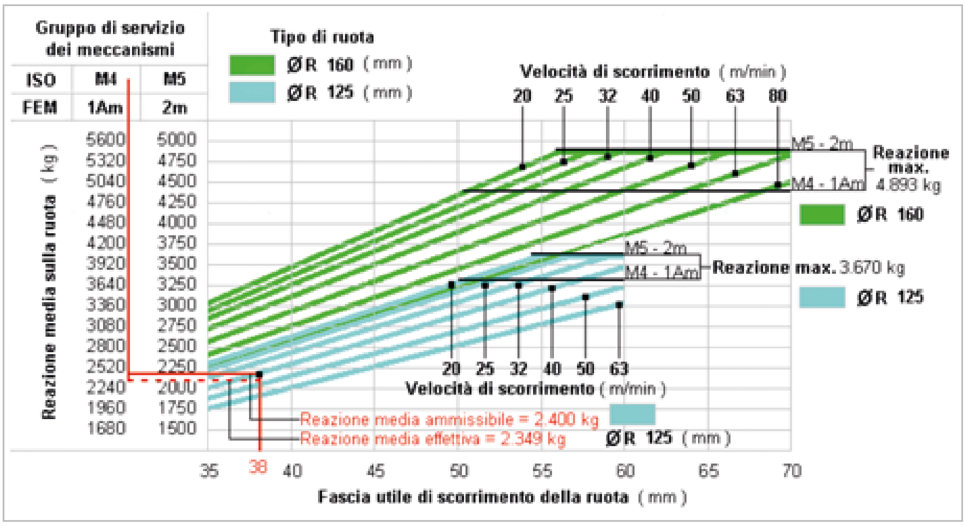
$$\text{R max.} = \frac{M1}{4} + \left(\frac{M2+P}{2}\right) \bullet \left(1 - \frac{a}{s}\right)$$

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

$$\text{R. min.} = \frac{M1}{4} + \frac{M2}{2} + \frac{a}{s}$$

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



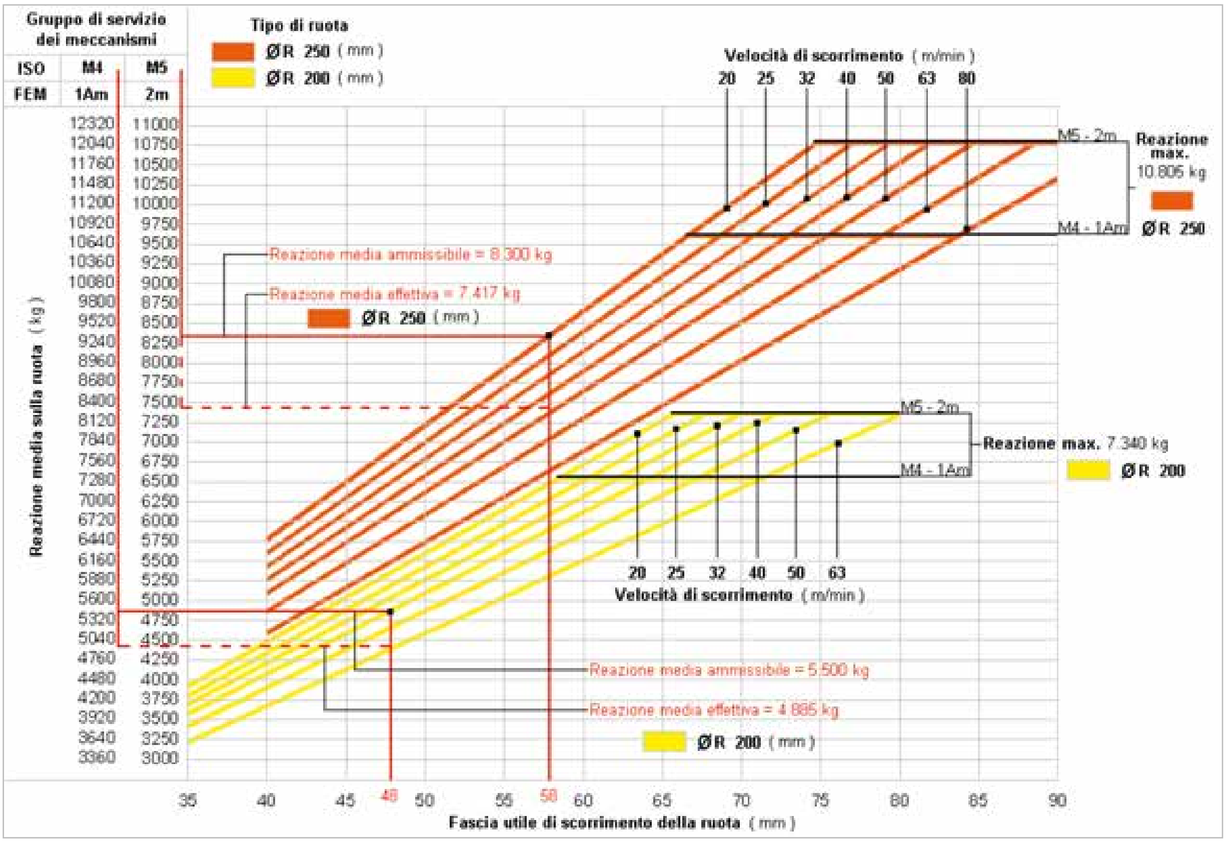
Example of verification of suitability for a Ø 125 wheel (see example 1 on page 32)

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. = 2.349 kg
■ Maximum effective reaction	: R max. eff. = 3.203 kg

The average admissible reaction is ≅ 2.400 kg > than the average effective reaction of 2.349 kg the wheel is subjected to;
The maximum admissible reaction is = 3.670 kg > than the maximum effective reaction of 3.203 kg

AVERAGE ADMISSIBLE REACTIONS FROM WHEELS Ø 200 AND 250, IN RELATION TO THE OPERATING WIDTH AND TRAVELLING SPEED



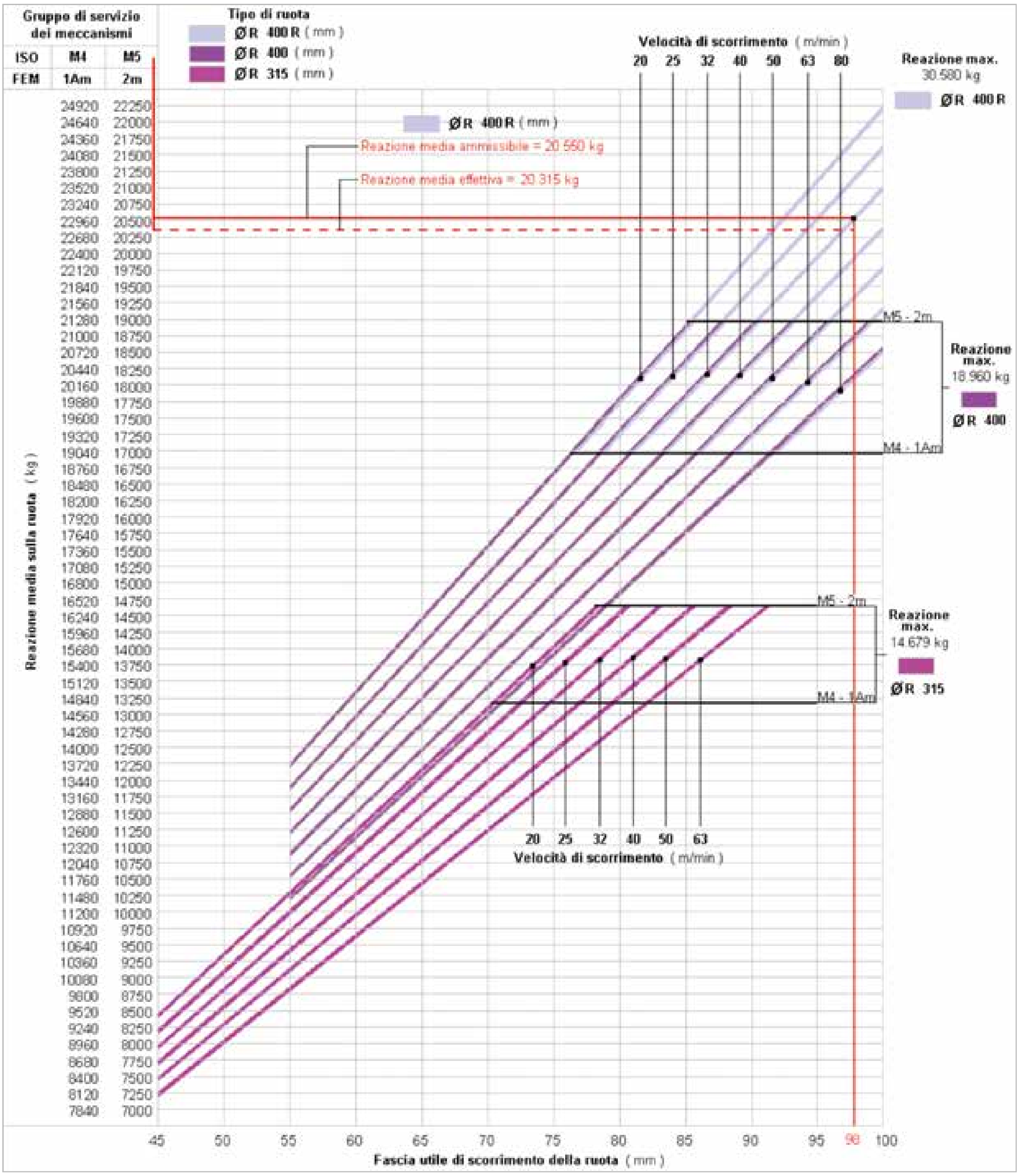
Example of verification of suitability for a Ø 200 wheel (see example 2 on page 22)

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. = 4.885 kg
- Maximum effective reaction : R max. eff. = 6.581 kg

The average admissible reaction is ≅ 5.500 kg > than the average effective reaction of 4.885 kg the wheel is subjected to;
The maximum admissible reaction is = 7.340 kg > than the maximum effective reaction of 6.581 kg

AVERAGE ADMISSIBLE REACTIONS FROM WHEELS Ø 315 AND 400, IN RELATION TO THE RAIL WIDTH AND TRAVELLING SPEED



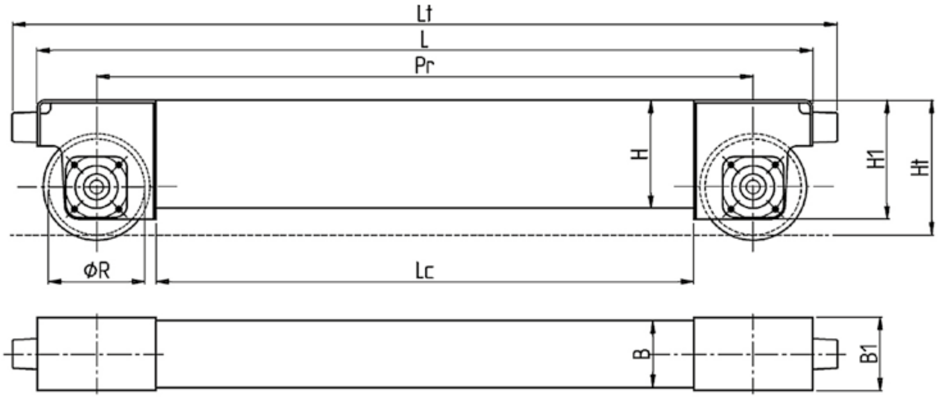
Example of verification of suitability for a Ø 315 wheel (see example 1 on page 22)

Data calculated:

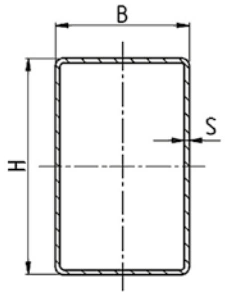
- Rail operating width : b = 58 mm
- Travelling speed : 40/10 m/min;
- Service group : ISO M5 (FEM 2m)
- Average effective reaction : R ave. = 9.202 kg
- Maximum effective reaction : R max. eff. = 11.963 kg

The average admissible reaction is ≅ 9.900 kg > than the average effective reaction of 9.202 kg the wheel is subjected to;
The maximum admissible reaction is = 14.679 kg > than the maximum effective reaction of 11.963 kg

GEOMETRICAL SPECIFICATIONS BASED ON END-CARRIAGE FOR SINGLE OR DOUBLE GIRDER BRIDGE CRANES



End-carriage construction



Tubular end-carriage section

END-CARRIAGE TYPE			END-CARRIAGE DIMENSIONAL DATA (mm)									INERTIAL DATA ON TUBULAR SECTION						
	WHEEL																	
SIZE "DGT"	Ø R (mm)	BASIS PR (mm)	Lc	L	Lt	S	B	H	B1	H1	Ht	WT cm^3	JX cm^4	WX cm^3	JY cm^4	WY cm^3	AREA cm^2	WEIGHT Kg/m
1	125	1800	1630	1970	2030	5	120	220	160	225	233	231.8	2067.0	187.9	811.7	135.3	32.23	25.3
		2400	2230	2570	2630	8						343.0	3200.0	291.0	1230.0	205.0	51.2	40.2
		3300	3130	3470	3530													
2	160	1800	1590	2010	2110	6.3	180	260	180	260	275	524.0	5170.0	397.0	2930.0	325.0	53.4	41.9
		2400	2190	2610	2710													
		3300	3090	3510	3610													
3	200	2100	1840	2360	2490	6.3	180	260	200	290	315	524.0	5170.0	397.0	2930.0	325.0	53.4	41.9
		2700	2440	2960	3090	10						775.0	7740.0	595.0	4350.0	483.0	82.9	65.1
		3600	3340	3860	3990													
4	250	2100	1790	2410	2540	6.3	200	300	230	335	370	681.0	7830.0	522.0	4190.0	419.0	61.0	47.9
		2700	2390	3010	3140	10						1020.0	11820.0	788.0	6280.0	628.0	94.9	74.5
		3600	3290	3910	4040													
		3600 R	3290	3910	4040	16	200	300	230	335	370	1470.0	17390.0	1160.0	9110.0	911.0	147.0	115
5	315	2400	2010	2790	2950	8	250	350	260	385	437	1250.0	16450.0	940.0	9800.0	784.0	92.8	72.8
		3900	3510	4290	4450	12.5						1840.0	24420.0	1400.0	14440.0	1160.0	142.0	112.0
6	400	3900	3430	4370	4570	12.5	300	400	290	440	495	2590.0	38450.0	1920.0	24610.0	1640.0	167.0	131.0
	400R	3900 R	3430	4370	4570	16	300	*410	290	440	495	3180.0	56183.4	3015.0	31187.5	2079.0	234.2	183.8

* Reinforced tubular

END-CARRIAGES FOR SINGLE GIRDER CRANES

OPERATING LIMITATIONS FOR END-CARRIAGES ON SINGLE GIRDER BRIDGE CRANES BASED ON: CAPACITY - ISO/FEM GROUP - SPAN

CAPACITY (kg)	ISO/FEM GROUP	SPAN (m) 6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
1000	M4/1Am	1 – 125 – 1800	1 – 125 – 1800	1 – 125 – 1800	1 – 125 – 1800	1 – 125 – 1800	1 – 125 – 1800	1 – 125 – 1800	1 – 125 – 1800	1 – 125 – 2400	1 – 125 – 2400	1 – 125 – 2400	1 – 125 – 2400	1 – 125 – 3300	1 – 125 – 3300	1 – 125 – 3300	1 – 125 – 3300	1 – 125 – 3300	1 – 125 – 3300	3 – 200 – 3600	3 – 200 – 3600
	M5/2m	1 – 125 – 1800	1 – 125 – 1800	1 – 125 – 1800	1 – 125 – 1800	1 – 125 – 1800	1 – 125 – 1800	1 – 125 – 1800	1 – 125 – 1800	1 – 125 – 2400	1 – 125 – 2400	1 – 125 – 2400	1 – 125 – 2400	1 – 125 – 3300	1 – 125 – 3300	1 – 125 – 3300	1 – 125 – 3300	1 – 125 – 3300	1 – 125 – 3300	3 – 200 – 3600	3 – 200 – 3600
1250	M4/1Am	1 – 125 – 1800	1 – 125 – 1800	1 – 125 – 1800	1 – 125 – 1800	1 – 125 – 1800	1 – 125 – 1800	1 – 125 – 1800	1 – 125 – 1800	1 – 125 – 2400	1 – 125 – 2400	1 – 125 – 2400	1 – 125 – 2400	1 – 125 – 3300	1 – 125 – 3300	1 – 125 – 3300	1 – 125 – 3300	1 – 125 – 3300	1 – 125 – 3300	3 – 200 – 3600	3 – 200 – 3600
	M5/2m	1 – 125 – 1800	1 – 125 – 1800	1 – 125 – 1800	1 – 125 – 1800	1 – 125 – 1800	1 – 125 – 1800	1 – 125 – 1800	1 – 125 – 1800	1 – 125 – 2400	1 – 125 – 2400	1 – 125 – 2400	1 – 125 – 2400	1 – 125 – 3300	1 – 125 – 3300	1 – 125 – 3300	1 – 125 – 3300	1 – 125 – 3300	1 – 125 – 3300	3 – 200 – 3600	3 – 200 – 3600
1600	M4/1Am	1 – 125 – 1800	1 – 125 – 1800	1 – 125 – 1800	1 – 125 – 1800	1 – 125 – 1800	1 – 125 – 1800	1 – 125 – 1800	1 – 125 – 1800	1 – 125 – 2400	1 – 125 – 2400	1 – 125 – 2400	1 – 125 – 2400	1 – 125 – 3300	1 – 125 – 3300	1 – 125 – 3300	1 – 125 – 3300	1 – 125 – 3300	1 – 125 – 3300	3 – 200 – 3600	3 – 200 – 3600
	M5/2m	1 – 125 – 1800	1 – 125 – 1800	1 – 125 – 1800	1 – 125 – 1800	1 – 125 – 1800	1 – 125 – 1800	1 – 125 – 1800	1 – 125 – 1800	1 – 125 – 2400	1 – 125 – 2400	1 – 125 – 2400	1 – 125 – 2400	1 – 125 – 3300	1 – 125 – 3300	1 – 125 – 3300	1 – 125 – 3300	1 – 125 – 3300	1 – 125 – 3300	3 – 200 – 3600	3 – 200 – 3600
2000	M4/1Am	1 – 125 – 1800	1 – 125 – 1800	1 – 125 – 1800	1 – 125 – 1800	1 – 125 – 1800	1 – 125 – 1800	1 – 125 – 1800	1 – 125 – 1800	1 – 125 – 2400	1 – 125 – 2400	1 – 125 – 2400	1 – 125 – 2400	1 – 125 – 3300	1 – 125 – 3300	1 – 125 – 3300	1 – 125 – 3300	1 – 125 – 3300	1 – 125 – 3300	3 – 200 – 3600	3 – 200 – 3600
	M5/2m	1 – 125 – 1800	1 – 125 – 1800	1 – 125 – 1800	1 – 125 – 1800	1 – 125 – 1800	1 – 125 – 1800	1 – 125 – 1800	1 – 125 – 1800	1 – 125 – 2400	1 – 125 – 2400	1 – 125 – 2400	1 – 125 – 2400	1 – 125 – 3300	1 – 125 – 3300	1 – 125 – 3300	1 – 125 – 3300	1 – 125 – 3300	1 – 125 – 3300	3 – 200 – 3600	3 – 200 – 3600
2500	M4/1Am	1 – 125 – 1800	1 – 125 – 1800	1 – 125 – 1800	1 – 125 – 1800	1 – 125 – 1800	1 – 125 – 1800	1 – 125 – 1800	1 – 125 – 1800	1 – 125 – 2400	1 – 125 – 2400	1 – 125 – 2400	1 – 125 – 2400	1 – 125 – 3300	1 – 125 – 3300	1 – 125 – 3300	1 – 125 – 3300	1 – 125 – 3300	1 – 125 – 3300	3 – 200 – 3600	3 – 200 – 3600
	M5/2m	1 – 125 – 1800	1 – 125 – 1800	1 – 125 – 1800	1 – 125 – 1800	1 – 125 – 1800	1 – 125 – 1800	1 – 125 – 1800	1 – 125 – 1800	1 – 125 – 2400	1 – 125 – 2400	1 – 125 – 2400	1 – 125 – 2400	1 – 125 – 3300	1 – 125 – 3300	1 – 125 – 3300	1 – 125 – 3300	1 – 125 – 3300	1 – 125 – 3300	3 – 200 – 3600	3 – 200 – 3600
3200	M4/1Am	1 – 125 – 1800	1 – 125 – 1800	1 – 125 – 1800	1 – 125 – 1800	1 – 125 – 1800	1 – 125 – 1800	1 – 125 – 1800	1 – 125 – 1800	1 – 125 – 2400	1 – 125 – 2400	1 – 125 – 2400	1 – 125 – 2400	1 – 125 – 3300	1 – 125 – 3300	1 – 125 – 3300	1 – 125 – 3300	1 – 125 – 3300	1 – 125 – 3300	3 – 200 – 3600	3 – 200 – 3600
	M5/2m	1 – 125 – 1800	1 – 125 – 1800	1 – 125 – 1800	1 – 125 – 1800	1 – 125 – 1800	1 – 125 – 1800	1 – 125 – 1800	1 – 125 – 1800	1 – 125 – 2400	1 – 125 – 2400	1 – 125 – 2400	1 – 125 – 2400	1 – 125 – 3300	1 – 125 – 3300	1 – 125 – 3300	1 – 125 – 3300	1 – 125 – 3300	1 – 125 – 3300	3 – 200 – 3600	3 – 200 – 3600
4000	M4/1Am	1 – 125 – 1800	1 – 125 – 1800	1 – 125 – 1800	1 – 125 – 1800	1 – 125 – 1800	1 – 125 – 1800	1 – 125 – 1800	1 – 125 – 1800	1 – 125 – 2400	1 – 125 – 2400	1 – 125 – 2400	1 – 125 – 2400	2 – 160 – 3300	2 – 160 – 3300	2 – 160 – 3300	2 – 160 – 3300	2 – 160 – 3300	2 – 160 – 3300	3 – 200 – 3600	3 – 200 – 3600
	M5/2m	1 – 125 – 1800	1 – 125 – 1800	1 – 125 – 1800	1 – 125 – 1800	1 – 125 – 1800	1 – 125 – 1800	1 – 125 – 1800	1 – 125 – 1800	1 – 125 – 2400	1 – 125 – 2400	1 – 125 – 2400	1 – 125 – 2400	2 – 160 – 3300	2 – 160 – 3300	2 – 160 – 3300	2 – 160 – 3300	2 – 160 – 3300	2 – 160 – 3300	3 – 200 – 3600	3 – 200 – 3600
5000	M4/1Am	1 – 125 – 1800	1 – 125 – 1800	1 – 125 – 1800	1 – 125 – 1800	1 – 125 – 1800	1 – 125 – 1800	1 – 125 – 1800	1 – 125 – 1800	1 – 125 – 2400	1 – 125 – 2400	1 – 125 – 2400	1 – 125 – 2400	2 – 160 – 3300	2 – 160 – 3300	2 – 160 – 3300	2 – 160 – 3300	2 – 160 – 3300	3 – 200 – 3600	3 – 200 – 3600	3 – 200 – 3600
	M5/2m	1 – 125 – 1800	1 – 125 – 1800	1 – 125 – 1800	1 – 125 – 1800	1 – 125 – 1800	1 – 125 – 1800	1 – 125 – 1800	1 – 125 – 1800	1 – 125 – 2400	1 – 125 – 2400	1 – 125 – 2400	1 – 125 – 2400	2 – 160 – 3300	2 – 160 – 3300	2 – 160 – 3300	2 – 160 – 3300	2 – 160 – 3300	3 – 200 – 3600	3 – 200 – 3600	3 – 200 – 3600
6300	M4/1Am	1 – 125 – 1800	1 – 125 – 1800	1 – 125 – 1800	1 – 125 – 1800	1 – 125 – 1800	1 – 125 – 1800	2 – 160 – 1800	2 – 160 – 1800	2 – 160 – 2400	2 – 160 – 2400	2 – 160 – 2400	2 – 160 – 2400	3 – 200 – 2700	3 – 200 – 2700	3 – 200 – 3600	3 – 200 – 3600	3 – 200 – 3600	3 – 200 – 3600	3 – 200 – 3600	3 – 200 – 3600
	M5/2m	1 – 125 – 1800	1 – 125 – 1800	2 – 160 – 1800	2 – 160 – 1800	2 – 160 – 1800	2 – 160 – 1800	2 – 160 – 1800	2 – 160 – 1800	2 – 160 – 2400	2 – 160 – 2400	2 – 160 – 2400	2 – 160 – 2400	3 – 200 – 2700	3 – 200 – 2700	3 – 200 – 3600	3 – 200 – 3600	3 – 200 – 3600	3 – 200 – 3600	3 – 200 – 3600	3 – 200 – 3600
8000	M4/1Am	2 – 160 – 1800	2 – 160 – 1800	2 – 160 – 1800	2 – 160 – 1800	2 – 160 – 1800	2 – 160 – 1800	2 – 160 – 1800	3 – 200 – 2100	3 – 200 – 2100	3 – 200 – 2100	3 – 200 – 2700	3 – 200 – 2700	3 – 200 – 2700	3 – 200 – 2700	3 – 200 – 3600	3 – 200 – 3600	3 – 200 – 3600	3 – 200 – 3600	4 – 250 – 3600	4 – 250 – 3600
	M5/2m	2 – 160 – 1800	2 – 160 – 1800	2 – 160 – 1800	2 – 160 – 1800	2 – 160 – 1800	2 – 160 – 1800	2 – 160 – 1800	3 – 200 – 2100	3 – 200 – 2100	3 – 200 – 2100	3 – 200 – 2700	3 – 200 – 2700	3 – 200 – 2700	3 – 200 – 2700	3 – 200 – 3600	3 – 200 – 3600	3 – 200 – 3600	3 – 200 – 3600	4 – 250 – 3600	4 – 250 – 3600
10000	M4/1Am	3 – 200 – 2100	3 – 200 – 2100	3 – 200 – 2100	3 – 200 – 2100	3 – 200 – 2100	3 – 200 – 2100	3 – 200 – 2100	3 – 200 – 2100	3 – 200 – 2100	3 – 200 – 2100	3 – 200 – 2700	3 – 200 – 2700	3 – 200 – 2700	3 – 200 – 2700	4 – 250 – 3600	4 – 250 – 3600	4 – 250 – 3600	4 – 250 – 3600	4 – 250 – 3600	4 – 250 – 3600
	M5/2m	3 – 200 – 2100	3 – 200 – 2100	3 – 200 – 2100	3 – 200 – 2100	3 – 200 – 2100	3 – 200 – 2100	3 – 200 – 2100	3 – 200 – 2100	3 – 200 – 2100	3 – 200 – 2100	3 – 200 – 2700	3 – 200 – 2700	3 – 200 – 2700	3 – 200 – 2700	4 – 250 – 3600	4 – 250 – 3600	4 – 250 – 3600	4 – 250 – 3600	4 – 250 – 3600	4 – 250 – 3600
12500	M4/1Am	3 – 200 – 2100	3 – 200 – 2100	3 – 200 – 2100	3 – 200 – 2100	3 – 200 – 2100	4 – 250 – 2100	4 – 250 – 2100	4 – 250 – 2100	4 – 250 – 2100	4 – 250 – 2100	4 – 250 – 2700	4 – 250 – 2700	4 – 250 – 2700	4 – 250 – 2700	4 – 250 – 3600 R	4 – 250 – 3600 R	4 – 250 – 3600 R	4 – 250 – 3600 R	4 – 250 – 3600 R	4 – 250 – 3600 R
	M5/2m	3 – 200 – 2100	3 – 200 – 2100	4 – 250 – 2100	4 – 250 – 2100	4 – 250 – 2100	4 – 250 – 2100	4 – 250 – 2100	4 – 250 – 2100	4 – 250 – 2100	4 – 250 – 2100	4 – 250 – 2700	4 – 250 – 2700	4 – 250 – 2700	4 – 250 – 2700	4 – 250 – 3600 R	4 – 250 – 3600 R	4 – 250 – 3600 R	4 – 250 – 3600 R	4 – 250 – 3600 R	4 – 250 – 3600 R
16000	M4/1Am	4 – 250 – 2100	4 – 250 – 2100	4 – 250 – 2100	4 – 250 – 2100	4 – 250 – 2100	4 – 250 – 2100	4 – 250 – 2100	4 – 250 – 2100	4 – 250 – 2100	4 – 250 – 2700	4 – 250 – 2700	4 – 250 – 2700	4 – 250 – 2700	4 – 250 – 2700	4 – 250 – 3600 R	4 – 250 – 3600 R				
	M5/2m	4 – 250 – 2100	4 – 250 – 2100	4 – 250 – 2100	4 – 250 – 2100	4 – 250 – 2100	4 – 250 – 2100	4 – 250 – 2100	4 – 250 – 2100	4 – 250 – 2100	4 – 250 – 2700	4 – 250 – 2700	4 – 250 – 2700	4 – 250 – 2700	4 – 250 – 2700	4 – 250 – 3600 R	4 – 250 – 3600 R				
20000	M4/1Am	4 – 250 – 2700	4 – 250 – 2700	4 – 250 – 2700	5 – 315 – 2400	5 – 315 – 2400	5 – 315 – 2400	5 – 315 – 2400	5 – 315 – 2400	5 – 315 – 2400	5 – 315 – 2400	5 – 315 – 2400	5 – 315 – 2400								

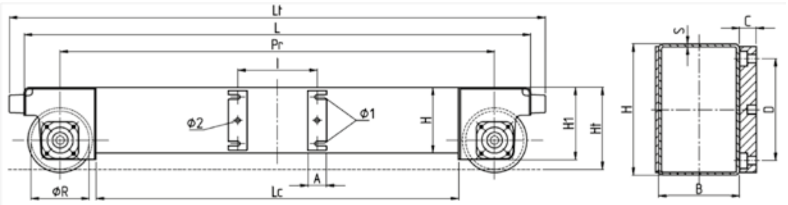
Admissible travelling mass for end-carriages on SINGLE GIRDER bridge crane [Travelling mass (kg) = capacity + crane weight + weight of trolley/hoist]

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

END-CARRIAGES FOR SINGLE GIRDER CRANES WITH CONNECTION PLATES TO "BRIDGE GIRDER"

Connection of beam-girder "Lateral" configuration

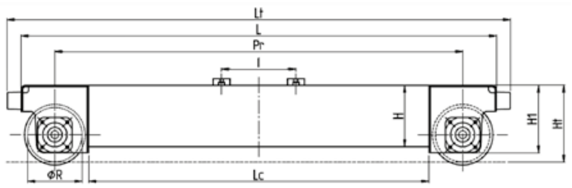


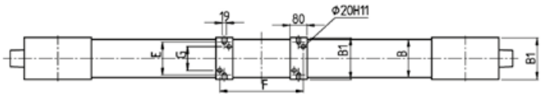
END-CARRIAGE TYPE	BEAM CODES IN RELATION TO MAX. WIDTH SPAN(mm) OF BRIDGE GIRDER									QUOTAS (mm) (FOR OTHER QUOTAS SEE PAGE 11)					WEIGHT
	WIDTH MAX.	QUOTA I	BEAM CODE	WIDTH MAX.	QUOTA I	BEAM CODE	WIDTH MAX.	QUOTA I	BEAM CODE	A	C	D	Ø1	Ø2	(kg)
1 – 125 – 1800	**305**	360	**S118H1..**	**370**	430	**S118H2..**	**450**	510	=	60	25	165	17	20	78
1 – 125 – 2400			**S124H1..**			**S124H2..**			**S124H3..**						126
1 – 125 – 3300			**S133H1..**			**S133H2..**			**S133H3..**						163
2 – 160 – 1800	**305**	360	**S218H1..**	**370**	430	**S218H2..**	**450**	510	=	60	25	190	19	20	120
2 – 160 – 2400			**S224H1..**			**S224H2..**			**S224H3..**						146
2 – 160 – 3300			**S233H1..**			**S233H2..**			**S233H3..**						185
3 – 200 – 2100	**360**	420	**S321H1..**	**410**	480	**S321H2..**	**500**	560	**S321H3..**	80	30	195	21	25	162
3 – 200 – 2700			**S327H1..**			**S327H2..**			**S327H3..**						235
3 – 200 – 3600			**S336H1..**			**S336H2..**			**S336H3..**						308
4 – 250 – 2100	**410**	480	**S421H1..**	**490**	560	**S421H2..**	**565**	640	**S421H3..**	80	30	235	25	25	210
4 – 250 – 2700			**S427H1..**			**S427H2..**			**S427H3..**						305
4 – 250 – 3600			**S436H1..**			**S436H2..**			**S436H3..**						373
4 – 250 – 3600 R			**S437H1..**			**S437H2..**			**S437H3..**						507
5 – 315 – 2400	**410**	500	**S524H1..**	**490**	580	**S524H2..**	**615**	710	**S524H3..**	100	40	270	29	32	340

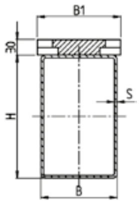
Referred partial codes are applied to couples of end-carriages without counterplates. In case of couples of end-carriages with counterplates, replace letter **H**, in fifth position, with letter **G**. The weights given in the table refer to the individual end-carriage.

END-CARRIAGES FOR SINGLE GIRDER CRANES WITH CONNECTION PLATES TO “BRIDGE GIRDER”

Joining of beam girder in “Supported” configuration





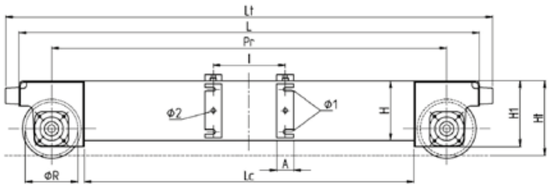


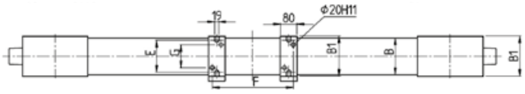
END-CARRIAGE TYPE	BEAM CODES IN RELATION TO MAX. WIDTH SPAN (mm) OF BRIDGE GIRDER												QUOTA (mm) (FOR OTHER QUOTAS SEE PAGE 11)			WEIGHT
	WIDTH MAX.	QUOTA I	QUOTA F	BEAM CODE	WIDTH MAX.	QUOTA I	QUOTA F	BEAM CODE	WIDTH MAX.	QUOTA I	QUOTA F	BEAM CODE	A	E	G	(kg)
1 – 125 – 1800	**305**	360	402	**S118V1..**	**370**	430	472	**S118V2..**	**450**	510	552	=	60	120	78	79
1 – 125 – 2400				**S124V1..**				**S124V2..**				**S124V3..**				129
1 – 125 – 3300				**S133V1..**				**S133V2..**				**S133V3..**				165
2 – 160 – 1800	**305**	360	402	**S218V1..**	**370**	430	472	**S218V2..**	**450**	510	552	=	60	140	98	124
2 – 160 – 2400				**S224V1..**				**S224V2..**				**S224V3..**				150
2 – 160 – 3300				**S233V1..**				**S233V2..**				**S233V3..**				187
3 – 200 – 2100	**360**	420	462	**S321V1..**	**410**	480	522	**S321V2..**	**500**	560	602	**S321V3..**	80	160	118	162
3 – 200 – 2700				**S327V1..**				**S327V2..**				**S327V3..**				232
3 – 200 – 3600				**S336V1..**				**S336V2..**				**S336V3..**				300
4 – 250 – 2100	**410**	480	522	**S421V1..**	**490**	560	602	**S421V2..**	**565**	640	682	**S421V3..**	80	190	148	215
4 – 250 – 2700				**S427V1..**				**S427V2..**				**S427V3..**				305
4 – 250 – 3600				**S436V1..**				**S436V2..**				**S436V3..**				375
4 – 250 – 3600 R				**S437V1..**				**S437V2..**				**S437V3..**				507
5 – 315 – 2400	**410**	500	542	**S524V1..**	**490**	580	622	**S524V2..**	**615**	710	752	**S524V3..**	100	220	178	337

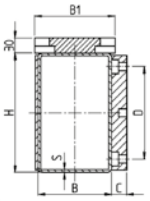
Referred partial codes are applied to couples of end-carriages without counterplates. In case of couples of end-carriages with counterplates, replace letter **V**, in fifth position, with letter **T**. The weights given in the table refer to the individual end-carriage.

END-CARRIAGES FOR SINGLE GIRDER CRANES WITH CONNECTION PLATES TO “BRIDGE GIRDER”

Joining of beam girder in “Lateral + Supported” configuration





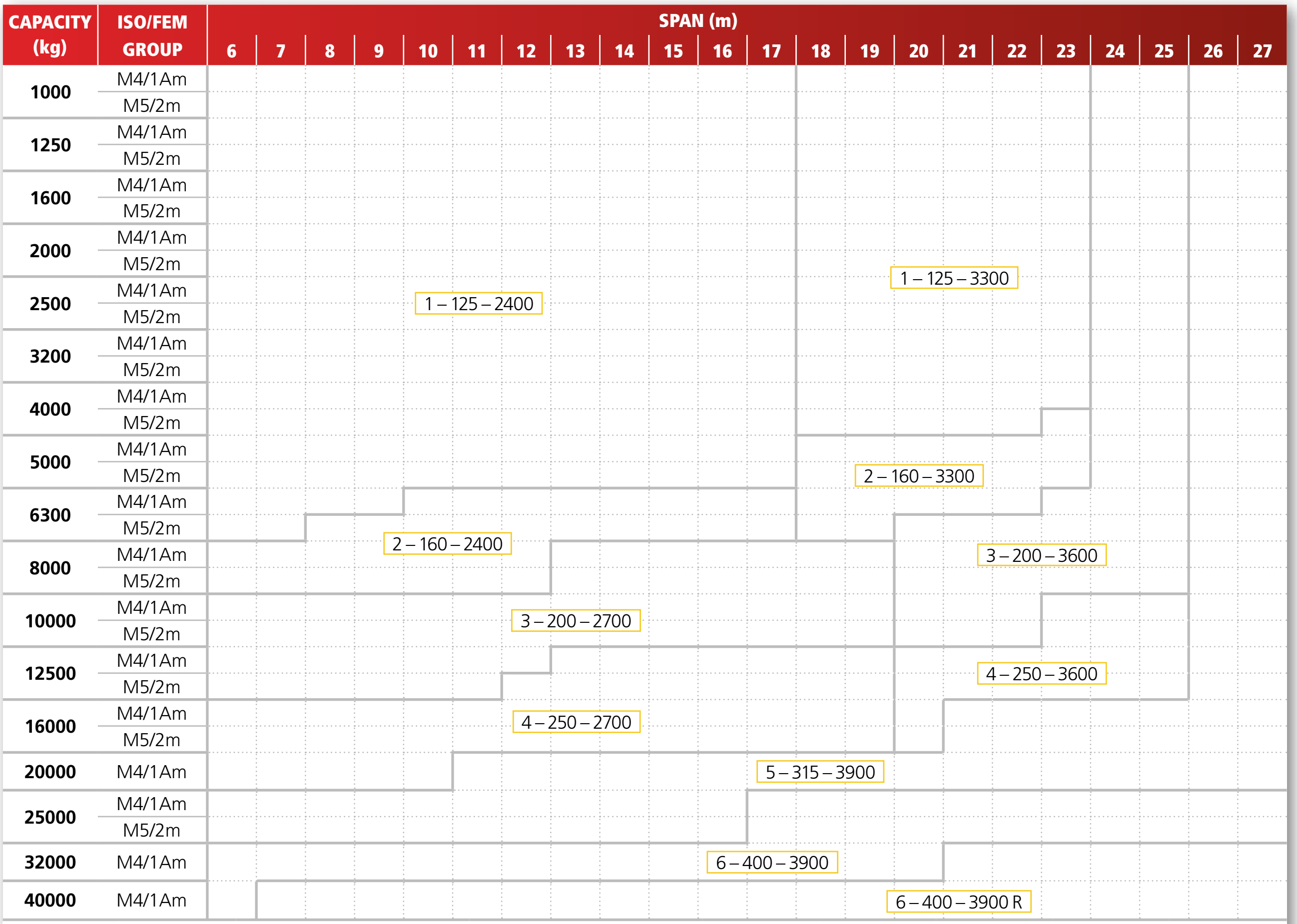


END-CARRIAGE TYPE	BEAM CODES IN RELATION TO MAX. WIDTH SPAN (mm) OF BRIDGE GIRDER												QUOTA (mm) (FOR OTHER QUOTAS SEE PAGE 11)							WEIGHT
	WIDTH MAX.	QUOTA I	QUOTA F	BEAM CODE	WIDTH MAX.	QUOTA I	QUOTA F	BEAM CODE	WIDTH MAX.	QUOTA I	QUOTA F	BEAM CODE	A	C	D	E	G	Ø1	Ø2	(kg)
1 – 125 – 1800	**305**	360	402	**S118N1..**	**370**	430	472	**S118N2..**	**450**	510	552	=	60	25	165	120	78	17	20	84
1 – 125 – 2400				**S124N1..**				**S124N2..**				**S124N3..**								132
1 – 125 – 3300				**S133N1..**				**S133N2..**				**S133N3..**								169
2 – 160 – 1800	**305**	360	402	**S218N1..**	**370**	430	472	**S218N2..**	**450**	510	552	=	60	25	190	140	98	19	20	126
2 – 160 – 2400				**S224N1..**				**S224N2..**				**S224N3..**								152
2 – 160 – 3300				**S233N1..**				**S233N2..**				**S233N3..**								190
3 – 200 – 2100	**360**	420	462	**S321N1..**	**410**	480	522	**S321N2..**	**500**	560	602	**S321N3..**	80	30	195	160	118	21	25	170
3 – 200 – 2700				**S327N1..**				**S327N2..**				**S327N3..**								242
3 – 200 – 3600				**S336N1..**				**S336N2..**				**S336N3..**								312
4 – 250 – 2100	**410**	480	522	**S421N1..**	**490**	560	602	**S421N2..**	**565**	640	682	**S421N3..**	80	30	235	190	148	25	25	220
4 – 250 – 2700				**S427N1..**				**S427N2..**				**S427N3..**								313
4 – 250 – 3600				**S436N1..**				**S436N2..**				**S436N3..**								382
4 – 250 – 3600 R				**S437N1..**				**S437N2..**				**S437N3..**								515
5 – 315 – 2400	**410**	500	542	**S524N1..**	**490**	580	622	**S524N2..**	**615**	710	752	**S524N3..**	100	40	270	220	178	29	32	350

Referred partial codes are applied to couples of end-carriages without counterplates. In case of couples of end-carriages with counterplates, replace letter **N**, in fifth position, with letter **M**. The weights given in the table refer to the individual end-carriage.

END-CARRIAGES FOR DOUBLE GIRDER CRANES

OPERATING LIMITATIONS FOR END-CARRIAGES ON DOUBLE GIRDER BRIDGE CRANES BASED ON: CAPACITY - ISO/FEM GROUP - SPAN



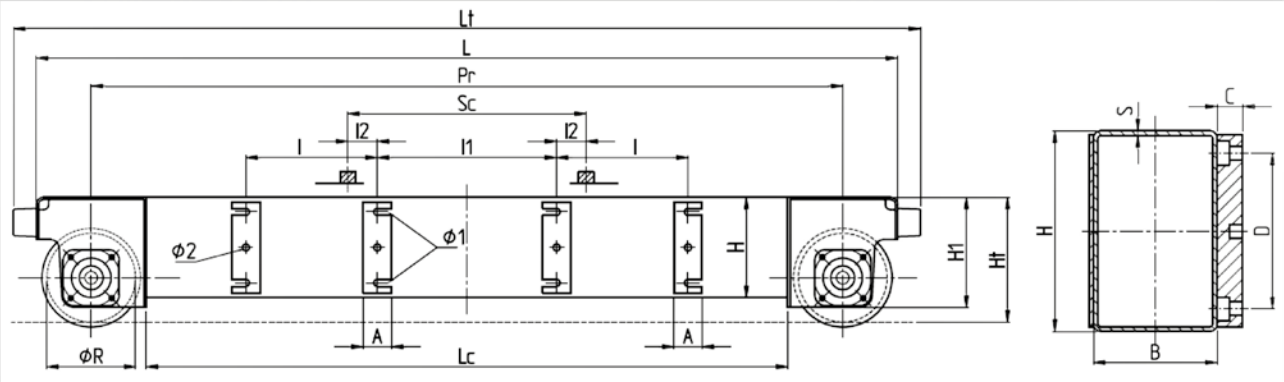
Admissible travelling mass from beams on DOUBLE GIRDER bridge crane [Travelling mass (kg) = capacity + crane weight + weight of trolley/hoist]

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	46.000	62.000

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

END-CARRIAGES FOR DOUBLE GIRDER CRANES WITH CONNECTION PLATES TO “BRIDGE GIRDERS” - “LATERAL” EXECUTION

Joining of beam girders in “Lateral” configuration



Beam connection area section

END-CARRIAGES TYPE	BEAM CODES BASED ON THE GAUGE OF THE DOUBLE GIRDER TROLLEY, TYPE OF GIRDERS ON THE BRIDGE CRANE AND MAX. GIRDER SPAN					QUOTA (mm) (FOR OTHER QUOTAS SEE PAGE 11)								WEIGHT
	DOUBLE GIRDER TROLLEY GAUGE Sc (mm)	BRIDGE CRANE GIRDERS TYPE		MAX. SPAN (mm)	BEAM CODE	I	I1	I2	A	C	D	Ø1	Ø2	(kg)
1 – 125 – 2400	1000	▯	Cassone	305	W124H1..	360	870	65	60	25	165	17	20	132
				370	W124H2..	430	865	67.5						
		⌶	HE	300	W124HA..	360	640	180						
	1200	▯	Cassone	305	W124H4..	360	1070	65						
				370	W124H5..	430	1065	67.5						
		⌶	HE	300	W124HD..	360	840	180						
1 – 125 – 3300	1000	▯	Cassone	305	W133H1..	360	870	65	60	25	165	17	20	170
				370	W133H2..	430	865	67.5						
				450	W133H3..	510	805	97.5						
		⌶	HE	300	W133HA..	360	640	180						
	1200	▯	Cassone	305	W133H4..	360	1070	65						
				370	W133H5..	430	1065	67.5						
				450	W133H6..	510	1005	97.5						
		⌶	HE	300	W133HD..	360	840	180						
	1400	▯	Cassone	305	W133H7..	360	1270	65						
				370	W133H8..	430	1265	67.5						
				450	W133H9..	510	1205	97.5						
		⌶	HE	300	W133HG..	360	1040	180						
2 – 160 – 2400	1000	▯	Cassone	305	W224H1..	360	870	65	60	25	190	19	20	152
				370	W224H2..	430	865	67.5						
		⌶	HE	300	W224HA..	360	640	180						
	1200	▯	Cassone	305	W224H4..	360	1070	65						
				370	W224H5..	430	1065	67.5						
		⌶	HE	300	W224HD..	360	840	180						
2 – 160 – 3300	1000	▯	Cassone	370	W233H2..	430	865	67.5						190
				450	W233H3..	510	816	92						
		⌶	HE	300	W233HA..	360	640	180						
	1200	▯	Cassone	370	W233H5..	430	1065	67.5						
				450	W233H6..	510	1016	92						
		⌶	HE	300	W233HD..	360	840	180						
	1400	▯	Cassone	370	W233H8..	430	1265	67.5						
				450	W233H9..	510	1216	92						
		⌶	HE	300	W233HG..	360	1040	180						
3 – 200 – 2700	1000	▯	Cassone	360	W327H1..	420	830	85	80	30	195	21	25	243
				410	W327H2..	480	846	77						
		⌶	HE	300	W327HA..	420	580	210						
	1200	▯	Cassone	360	W327H4..	420	1030	85						
				410	W327H5..	480	1046	77						
		⌶	HE	300	W327HD..	420	780	210						
	1400	▯	Cassone	360	W327H7..	420	1230	85						
				410	W327H8..	480	1246	77						
		⌶	HE	300	W327HG..	420	980	210						

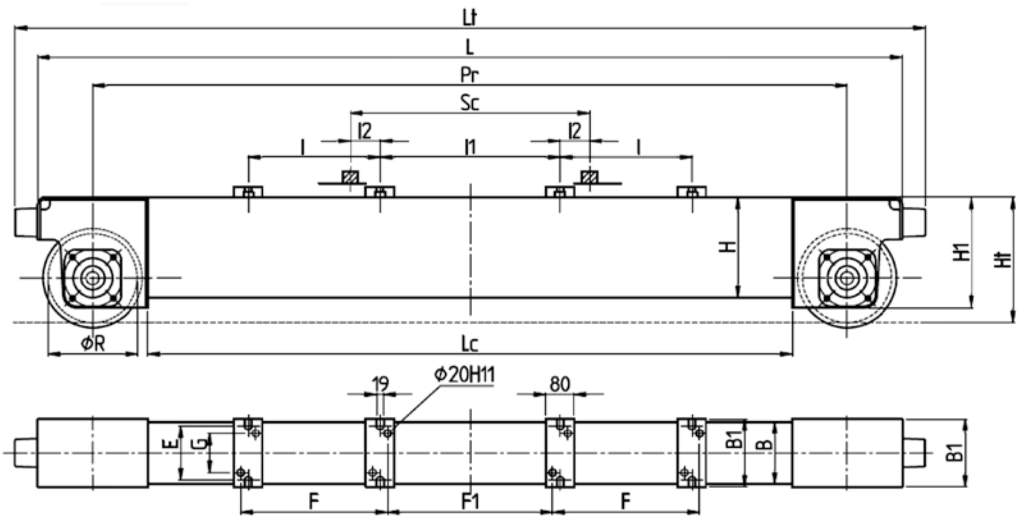
END-CARRIAGES FOR DOUBLE GIRDER CRANES WITH CONNECTION PLATES TO "BRIDGE GIRDERS" - "LATERAL" EXECUTION

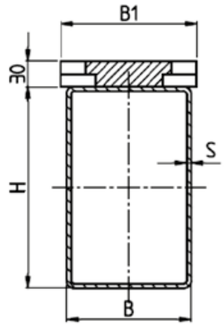
END-CARRIAGES TYPE	BEAM CODES BASED ON THE GAUGE OF THE DOUBLE GIRDER TROLLEY, TYPE OF GIRDERS ON THE BRIDGE CRANE AND MAX. GIRDER SPAN				QUOTA (mm) (FOR OTHER QUOTAS SEE PAGE 11)								WEIGHT
	DOUBLE GIRDER TROLLEY GAUGE	BRIDGE CRANE GIRDERS		BEAM CODE									
	Sc (mm)	TYPE	MAX. SPAN (mm)		I	I1	I2	A	C	D	Ø1	Ø2	(kg)
3 – 200 – 3600	1000	Cassone	360	W336H1..	420	830	85	80	30	195	21	25	310
			410	W336H2..	480	846	77						
			500	W336H3..	560	846	77						
		HE	300	W336HA..	420	580	210						
	1200	Cassone	360	W336H4..	420	1030	85						
			410	W336H5..	480	1046	77						
			500	W336H6..	560	1046	77						
		HE	300	W336HD..	420	780	210						
	1400	Cassone	360	W336H..	420	1230	85						
			410	W336H8..	480	1246	77						
			500	W336H9..	560	1246	77						
		HE	300	W336HG..	420	980	210						
4 – 250 – 2700	1000	Cassone	410	W427H1..	480	846	77	80	30	235	25	25	312
			490	W427H2..	560	846	77						
		HE	300	W427HA..	480	520	240						
	1200	Cassone	410	W427H4..	480	1046	77						
			490	W427H5..	560	1046	77						
		HE	300	W427HD..	480	720	240						
4 – 250 – 3600	1000	Cassone	490	W436H2..	560	846	77						383
			565	W436H3..	640	841	79.5						
		HE	300	W436HA..	480	520	240						
	1200	Cassone	490	W436H5..	560	1046	77						
			565	W436H6..	640	1041	79.5						
		HE	300	W436HD..	480	720	240						
	1400	Cassone	490	W436H8..	560	1246	77						
			565	W436H9..	640	1241	79.5						
		HE	300	W436HG..	480	920	240						
5 – 315 – 3900	1000	Cassone	410	W539H1..	500	826	87	100	40	270	29	32	607
			490	W539H2..	580	826	87						
			615	W539H3..	710	805	97.5						
		HE	300	W539HA..	500	500	250						
	1200	Cassone	410	W539H4..	500	1026	87						
			490	W539H5..	580	1026	87						
			615	W539H6..	710	1005	97.5						
		HE	300	W539HD..	500	700	250						
	1400	Cassone	410	W539H7..	500	1226	87						
			490	W539H8..	580	1226	87						
			615	W539H9..	710	1205	97.5						
		HE	300	W539HG..	500	900	250						
6 – 400 – 3900	1000	Cassone	410	W639H1..	500	826	87	100	40	310	34	32	790
			490	W639H2..	580	826	87						
			615	W639H3..	710	805	97.5						
		HE	300	W639HA..	500	500	250						
	1200	Cassone	410	W639H4..	500	1026	87						
			490	W639H5..	580	1026	87						
			615	W639H6..	710	1005	97.5						
		HE	300	W639HD..	500	700	250						
	1400	Cassone	410	W639H7..	500	1226	87						
			490	W639H8..	580	1226	87						
			615	W639H9..	710	1205	97.5						
		HE	300	W639HG..	500	900	250						
6 – 400 – 3900 R	1400	Cassone	410	W640H7..	500	1226	87						975
			490	W640H8..	580	1226	87						
			615	W640H9..	710	1205	97.5						
		HE	300	W640HG..	500	900	250						

Referred partial codes are applied to couples of end-carriages without counterplates. In case of couples of end-carriages with counterplates, replace letter **H**, in fifth position, with letter **G**. The weights given in the table refer to the individual end-carriage.

END-CARRIAGES 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

END-CARRIAGES TYPE	BEAM CODES BASED ON THE GAUGE OF THE DOUBLE GIRDER TROLLEY, TYPE OF GIRDERS ON THE BRIDGE CRANE AND MAX. GIRDER SPAN				QUOTA (mm) (FOR OTHER QUOTAS SEE PAGE 11)								WEIGHT (kg)
	DOUBLE GIRDER TROLLEY GAUGE Sc (mm)	BRIDGE CRANE GIRDERS TYPE	MAX. SPAN (mm)	BEAM CODE	I	I1	I2	F	F1	A	E	G	
1 – 125 – 2400	1000	□ Cassone	305	W124V1..	360	870	65	402	828	60	120	78	138
			370	W124V2..	430	865	67.5	472	823				
		⌶ HE	300	W124VA..	360	640	180	402	598				
	1200	□ Cassone	305	W124V4..	360	1070	65	402	1028				
			370	W124V5..	430	1065	67.5	472	1023				
		⌶ HE	300	W124VD..	360	840	180	402	798				
1 – 125 – 3300	1000	□ Cassone	305	W133V1..	360	870	65	402	828				175
			370	W133V2..	430	865	67.5	472	823				
			450	W133V3..	510	805	97.5	552	763				
		⌶ HE	300	W133VA..	360	640	180	402	598				
	1200	□ Cassone	305	W133V4..	360	1070	65	402	1028				
			370	W133V5..	430	1065	67.5	472	1023				
			450	W133V6..	510	1005	97.5	552	963				
		⌶ HE	300	W133VD..	360	840	180	402	798				
	1400	□ Cassone	305	W133V7..	360	1270	65	402	1228				
			370	W133V8..	430	1265	67.5	472	1223				
			450	W133V9..	510	1205	97.5	552	1163				
		⌶ HE	300	W133VG..	360	1040	180	402	998				
2 – 160 – 2400	1000	□ Cassone	305	W224V1..	360	870	65	402	828	60	140	98	158
			370	W224V2..	430	865	67.5	472	823				
		⌶ HE	300	W224VA..	360	640	180	402	598				
	1200	□ Cassone	305	W224V4..	360	1070	65	402	1028				
			370	W224V5..	430	1065	67.5	472	1023				
		⌶ HE	300	W224VD..	360	840	180	402	798				
2 – 160 – 3300	1000	□ Cassone	370	W233V2..	430	865	67.5	472	823				196
			450	W233V3..	510	816	92	552	774				
		⌶ HE	300	W233VA..	360	640	180	402	598				
	1200	□ Cassone	370	W233V5..	430	1065	67.5	472	1023				
			450	W233V6..	510	1016	92	552	974				
		⌶ HE	300	W233VD..	360	840	180	402	798				
	1400	□ Cassone	370	W233V8..	430	1265	67.5	472	1223				
			450	W233V9..	510	1216	92	552	1174				
		⌶ HE	300	W233VG..	360	1040	180	402	998				
3 – 200 – 2700	1000	□ Cassone	360	W327V1..	420	830	85	462	788	80	160	118	238
			410	W327V2..	480	846	77	522	804				
		⌶ HE	300	W327VA..	420	580	210	462	538				
	1200	□ Cassone	360	W327V4..	420	1030	85	462	988				
			410	W327V5..	480	1046	77	522	1004				
		⌶ HE	300	W327VD..	420	780	210	462	738				

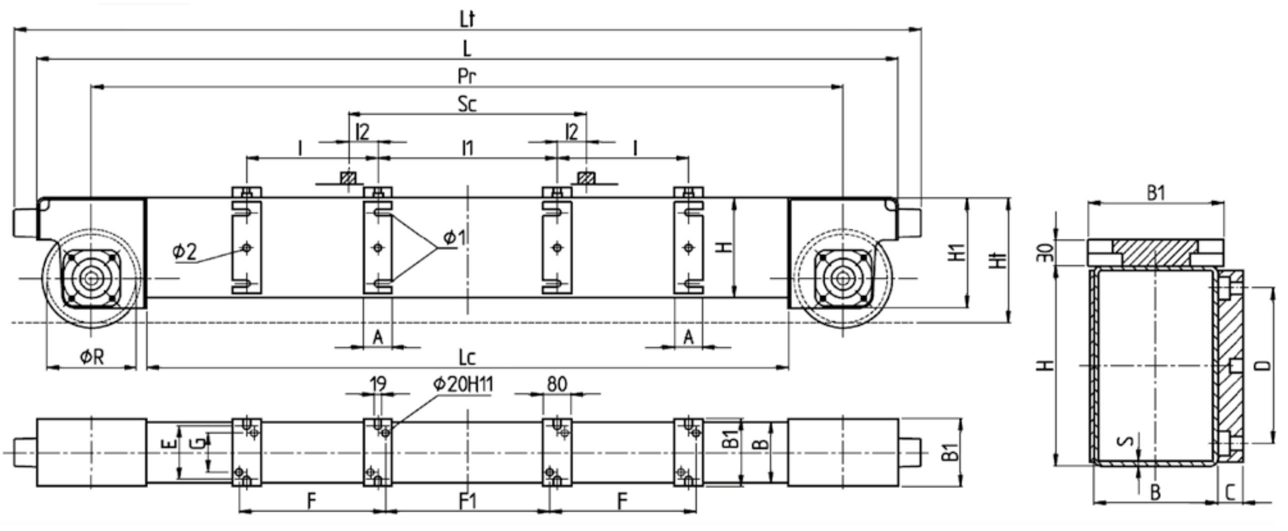
END-CARRIAGES FOR DOUBLE GIRDER CRANES WITH CONNECTION PLATES TO "BRIDGE GIRDERS" - "ON THE TOP" EXECUTION

END-CARRIAGES TYPE	BEAM CODES BASED ON THE GAUGE OF THE DOUBLE GIRDER TROLLEY, TYPE OF GIRDERS ON THE BRIDGE CRANE AND MAX. GIRDER SPAN				QUOTA (mm) (FOR OTHER QUOTAS SEE PAGE 11)								WEIGHT
	DOUBLE GIRDER TROLLEY GAUGE	BRIDGE CRANE GIRDERS		BEAM CODE									
	Sc (mm)	TYPE	MAX. SPAN (mm)		I	I1	I2	F	F1	A	E	G	(kg)
3 – 200 – 2700	1400	Cassone	360	W327V7..	420	1230	85	462	1188	80	160	118	238
			410	W327V8..	480	1246	77	522	1204				
		HE	300	W327VG..	420	980	210	462	938				
3 – 200 – 3600	1000	Cassone	360	W336V1..	420	830	85	462	788	80	160	118	306
			410	W336V2..	480	846	77	522	804				
			500	W336V3..	560	846	77	602	804				
		HE	300	W336VA..	420	580	210	462	538				
	1200	Cassone	360	W336V4..	420	1030	85	462	988				
			410	W336V5..	480	1046	77	522	1004				
			500	W336V6..	560	1046	77	602	1004				
		HE	300	W336VD..	420	780	210	462	738				
	1400	Cassone	360	W336V7..	420	1230	85	462	1188				
			410	W336V8..	480	1246	77	522	1204				
			500	W336V9..	560	1246	77	602	1204				
		HE	300	W336VG..	420	980	210	462	938				
4 – 250 – 2700	1000	Cassone	410	W427V1..	480	846	77	522	804	80	190	148	320
			490	W427V2..	560	846	77	602	804				
		HE	410	W427VA..	480	520	240	522	478				
	1200	Cassone	410	W427V4..	480	1046	77	522	1004				
			490	W427V5..	560	1046	77	602	1004				
		HE	300	W427VD..	480	720	240	522	678				
4 – 250 – 3600	1000	Cassone	490	W436V2..	560	846	77	602	804				386
			565	W436V3..	640	841	79.5	682	799				
		HE	410	W436VA..	480	520	240	522	478				
	1200	Cassone	490	W436V5..	560	1046	77	602	1004				
			565	W436V6..	640	1041	79.5	682	999				
		HE	410	W436VD..	480	720	240	522	678				
	1400	Cassone	490	W436V8..	560	1246	77	602	1204				
			565	W436V9..	640	1241	79.5	682	1199				
		HE	300	W436VG..	480	920	240	522	878				
5 – 315 – 3900	1000	Cassone	410	W539V1..	500	826	87	542	784	100	220	178	600
			490	W539V2..	580	826	87	622	784				
			615	W539V3..	710	805	97.5	752	763				
		HE	300	W539VA..	500	500	250	542	458				
	1200	Cassone	410	W539V4..	500	1026	87	542	984				
			490	W539V5..	580	1026	87	622	984				
			615	W539V6..	710	1005	97.5	752	963				
		HE	300	W539VD..	500	700	250	542	658				
	1400	Cassone	410	W539V7..	500	1226	87	542	1184				
			490	W539V8..	580	1226	87	622	1184				
			615	W539V9..	710	1205	97.5	752	1163				
		HE	300	W539VG..	500	900	250	542	858				
6 – 400 – 3900	1000	Cassone	410	W639V1..	500	826	87	542	784	100	250	208	787
			490	W639V2..	580	826	87	622	784				
			615	W639V3..	710	805	97.5	752	763				
		HE	300	W639VA..	500	500	250	542	458				
	1200	Cassone	410	W639V4..	500	1026	87	542	984				
			490	W639V5..	580	1026	87	622	984				
			615	W639V6..	710	1005	97.5	752	963				
		HE	300	W639VD..	500	700	250	542	658				
	1400	Cassone	410	W639V7..	500	1226	87	542	1184				
			490	W639V8..	580	1226	87	622	1184				
			615	W639V9..	710	1205	97.5	752	1163				
		HE	300	W639VG..	500	900	250	542	858				
6 – 400 – 3900 R	1400	Cassone	410	W640V7..	500	1226	87	542	1184				975
			490	W640V8..	580	1226	87	622	1184				
			615	W640V9..	710	1205	97.5	752	1163				
		HE	300	W640VG..	500	900	250	542	858				

Referred partial codes are applied to couples of end-carriages without counterplates. In case of couples of end-carriages with counterplates, replace letter **V**, in fifth position, with letter **T**. The weights given in the table refer to the individual end-carriage.

END-CARRIAGES FOR DOUBLE GIRDER CRANES WITH CONNECTION PLATES TO "BRIDGE GIRDERS" - "LATERAL + ON THE TOP" EXECUTION

Girder-end-carriage joining in "Lateral+On the top"execution



Girder joining area section

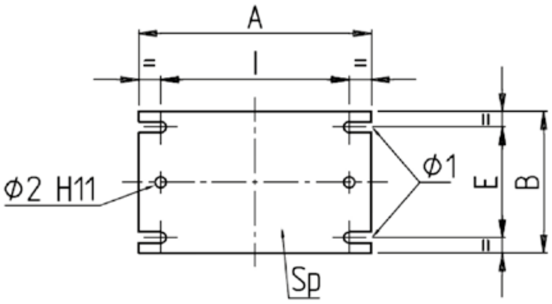
END-CARRIAGES TYPE	BEAM CODES BASED ON THE GAUGE OF THE DOUBLE GIRDER TROLLEY, TYPE OF GIRDERS ON THE BRIDGE CRANE AND MAX. GIRDER SPAN			QUOTA (mm) (FOR OTHER QUOTAS SEE PAGE 11)												WEIGHT
	DOUBLE GIRDER TROLLEY GAUGE Sc (mm)	BRIDGE CRANE GIRDERS MAX. SPAN CASSONE (mm)	BEAM CODE	I	I1	I2	F	F1	A	C	D	E	G	Ø1	Ø2	(kg)
1 – 125 – 2400	1000	305	W124N1..	360	870	65	402	828	60	25	165	120	78	17	20	145
		370	W124N2..	430	865	67.5	472	823								
	1200	305	W124N4..	360	1070	65	402	1028								
		370	W124N5..	430	1065	67.5	472	1023								
1 – 125 – 3300	1000	305	W133N1..	360	870	65	402	828								182
		370	W133N2..	430	865	67.5	472	823								
		450	W133N3..	510	805	97.5	552	763								
	1200	305	W133N4..	360	1070	65	402	1028								
		370	W133N5..	430	1065	67.5	472	1023								
		450	W133N6..	510	1005	97.5	552	963								
	1400	305	W133N7..	360	1270	65	402	1228								
		370	W133N8..	430	1265	67.5	472	1223								
		450	W133N9..	510	1205	97.5	552	1163								
2 – 160 – 2400	1000	305	W224N1..	360	870	65	402	828	60	25	190	140	98	19	20	165
		370	W224N2..	430	865	67.5	472	823								
	1200	305	W224N4..	360	1070	65	402	1028								
		370	W224N5..	430	1065	67.5	472	1023								
2 – 160 – 3300	1000	370	W233N2..	430	865	67.5	472	823								202
		450	W233N3..	510	816	92	552	774								
	1200	370	W233N5..	430	1065	67.5	472	1023								
		450	W233N6..	510	1016	92	552	974								
	1400	370	W233N8..	430	1265	67.5	472	1223								
		450	W233N9..	510	1216	92	552	1174								
3 – 200 – 2700	1000	360	W327N1..	420	830	85	462	788	80	30	195	160	118	21	25	257
		410	W327N2..	480	846	77	522	804								
	1200	360	W327N4..	420	1030	85	462	988								
		410	W327N5..	480	1046	77	522	1004								
	1400	360	W327N7..	420	1230	85	462	1188								
		410	W327N8..	480	1246	77	522	1204								
3 – 200 – 3600	1000	360	W336N1..	420	830	85	462	788								325
		410	W336N2..	480	846	77	522	804								
		500	W336N3..	560	846	77	602	804								
	1200	360	W336N4..	420	1030	85	462	988								
		410	W336N5..	480	1046	77	522	1004								
		500	W336N6..	560	1046	77	602	1004								
	1400	360	W336N7..	420	1230	85	462	1188								
		410	W336N8..	480	1246	77	522	1204								
		500	W336N9..	560	1246	77	602	1204								

END-CARRIAGES FOR DOUBLE GIRDER CRANES WITH CONNECTION PLATES TO “BRIDGE GIRDERS” - “LATERAL + ON THE TOP” EXECUTION

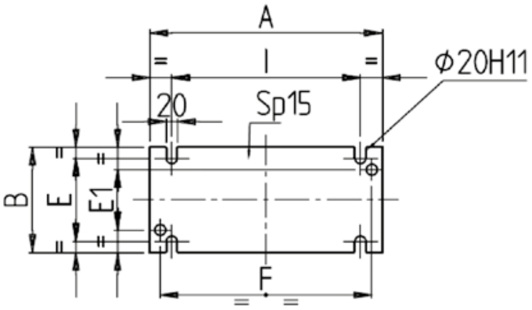
END-CARRIAGES TYPE	BEAM CODES BASED ON THE GAUGE OF THE DOUBLE GIRDER TROLLEY, TYPE OF GIRDERS ON THE BRIDGE CRANE AND MAX. GIRDER SPAN			QUOTA (mm) (FOR OTHER QUOTAS SEE PAGE 11)												WEIGHT
	DOUBLE GIRDER TROLLEY GAUGE Sc (mm)	BRIDGE CRANE GIRDERS MAX. SPAN CASSONE (mm)	BEAM CODE	I	I1	I2	F	F1	A	C	D	E	G	Ø1	Ø2	(kg)
4 – 250 – 2700	**1000**	**410**	**W427N1..**	480	846	77	522	804	80	30	235	190	148	25	25	330
		490	**W427N2..**	560	846	77	602	804								
	1200	**410**	**W427N4..**	480	1046	77	522	1004								
		490	**W427N5..**	560	1046	77	602	1004								
4 – 250 – 3600	**1000**	**490**	**W436N2..**	560	846	77	602	804								400
		565	**W436N3..**	640	841	79.5	682	799								
	1200	**490**	**W436N5..**	560	1046	77	602	1004								
		565	**W436N6..**	640	1041	79.5	682	999								
	1400	**490**	**W436N8..**	560	1246	77	602	1204								
		565	**W436N9..**	640	1241	79.5	682	1199								
5 – 315 – 3900	**1000**	**410**	**W539N1..**	500	826	87	542	784	100	40	270	220	178	29	32	630
		490	**W539N2..**	580	826	87	622	784								
		615	**W539N3..**	710	805	97.5	752	763								
	1200	**410**	**W539N4..**	500	1026	87	542	984								
		490	**W539N5..**	580	1026	87	622	984								
		615	**W539N6..**	710	1005	97.5	752	963								
	1400	**410**	**W539N7..**	500	1226	87	542	1184								
		490	**W539N8..**	580	1226	87	622	1184								
		615	**W539N9..**	710	1205	97.5	752	1163								
6 – 400 – 3900	**1000**	**410**	**W639N1..**	500	826	87	542	784	100	40	310	250	208	34	32	810
		490	**W639N2..**	580	826	87	622	784								
		615	**W639N3..**	710	805	97.5	752	763								
	1200	**410**	**W639N4..**	500	1026	87	542	984								
		490	**W639N5..**	580	1026	87	622	984								
		615	**W639N6..**	710	1005	97.5	752	963								
	1400	**410**	**W639N7..**	500	1226	87	542	1184								
		490	**W639N8..**	580	1226	87	622	1184								
		615	**W639N9..**	710	1205	97.5	752	1163								
6 – 400 – 3900 R	**1400**	**410**	**W640N7..**	500	1226	87	542	1184								937
		490	**W640N8..**	580	1226	87	622	1184								
		615	**W640N9..**	710	1205	97.5	752	1163								

Referred partial codes are applied to couples of end-carriages without counterplates. In case of couples of end-carriages with counterplates, replace letter **N**, in fifth position, with letter **M**. The weights given in the table refer to the individual end-carriage.

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

END-CARRIAGE TYPE		MAX. BEAM WIDTH	PLATE POSITIONED LATERALLY TO THE BEAM									PLATE SUPPORTED ON THE TOP OF THE BEAM							
SIZE "DGT"	Ø WHEEL (mm)	L (mm)	TYPE	DIMENSIONS (mm)							WEIGHT (Kg)	TYPE	DIMENSIONS (mm)						WEIGHT (Kg)
				A	I	B	Ø 1	E	Ø 2	Sp			F	A	I	B	E	E 1	
1	125	**305**	**L 11**	420	360	220	18	165	20	12	8.4	**A 11**	402	440	360	160	120	78	8.0
		370	**L 12**	490	430						9.9	**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	9.6	**A 21**	402	440	360	180	140	98	9.0
		370	**L 22**	490	430						11.2	**A 22**	472	510	430				10.5
		450	**L 23**	570	510						13.1	**A 23**	552	590	510				12.2
3	200	**360**	**L 31**	500	420	260	22	195	25	15	14.7	**A 31**	462	500	420	200	160	118	11.5
		410	**L 32**	560	480						16.5	**A 32**	522	560	480				13.0
		500	**L 33**	640	560						19.0	**A 33**	602	640	560				14.7
4	250	**410**	**L 41**	560	480	300	26	235	25	15	19.1	**A 41**	522	560	480	230	190	148	14.8
		490	**L 42**	640	560						21.9	**A 42**	602	640	560				17.0
		565	**L 43**	720	640						24.7	**A 43**	682	720	640				19.2
5	315	**410**	**L 51**	600	500	350	30	270	32	20	31.6	**A 51**	542	580	500	260	220	178	17.4
		490	**L 52**	680	580						36.0	**A 52**	622	660	580				20.0
		615	**L 53**	810	710						43.2	**A 53**	752	790	710				23.8
6	400 400R	**410**	**L 61**	600	500	400	36	310	32	20	36.0	**A 61**	542	580	500	290	250	208	19.5
		490	**L 62**	680	580						41.1	**A 62**	622	660	580				22.2
		615	**L 63**	810	710						49.2	**A 63**	752	790	710				26.6

SAMPLE GUIDELINES FOR SELECTING END-CARRIAGES FOR BRIDGE CRANES

To make the correct choice of overhead travelling units, firstly establish all operating parameters which determine 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 on pages 12 and 14, 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" on pages 12 and 14;
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 geared-motor group) from the tables on pages 23 to 31.
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 on pages 12 - 13, and for a DOUBLE GIRDER crane, the tables on pages 14 to 20;
11. Determine:, the type of "girder- beam" joining cross plates using the "Geometric specifications" table on page 21.

1st 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 ≅ 1.400 kg
4. total travelling mass: 16.000 + 14.600 + 1.400 = 32.000 kg
5. from the diagram on page 14, 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 on page 14, 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 suitability of the wheel Ø 315 for the selected beams, in relation to its admissible reactions and the type of rail, calculated as illustrated on page 8 for span "S" = 27.000 mm and supposing a juxtaposition "a" = 1.200 mm:
   - R max. = 14.600/4 + [(1.400 + 16.000)/2] • (1 – 1.200/27.000) ≅ 11.963 kg
   - R min. = 14.600/4 + 1.400/2 • 1.200/27.000 ≅ 3.681 kg
   - R ave. = (2 • R max. + R min.)/3 = (2 • 11.963 + 3.681)/3 ≅ 9.202 kg < 14.679 kg, corresponding to the admissible R max.
8. supposing a flat laminated rail, with l = 60 and operating band b = 58 (see table on page 7), from the diagram on page 10 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 ≅ 9.900 kg > of the ~ 9.202 kg the wheel is subject to (example on page 10).
9. based on the selected speed and calculation of mass to be travelled for each drive wheel, derive the following components from the table on page 29:

NOMINAL SPEED (m/min)	THE TRAVELLING MASS (kg) FROM EACH GEARED-MOTOR IN THE SERVICE GROUP ISO M5 (FEM 2M) IS IN kg	"DGT" WHEEL GROUP Ø (mm)	"DGP" GEARED-MOTOR		SELF-BRAKING MOTOR SPECS		"DGP" GEARED-MOTOR CODE
			GEARED-MOTOR TYPE	MOTOR TYPE	POLES (N°)	POWER (kW)	
40/10	18.400 > 16.000 to be hauled	315	234	100K3C	2/8	1.25 / 0.31	P2M5B43AA0

10. supposing a "Supported" connected girder-beam configuration with a double girder trolley gauge of 1.200 mm and a girder span width > 410 and ≤ 490, from the table on page 18, we can deduce that the beams type 5 – 315 – 3900 have a code: W539V5..
11. from the "Geometric specifications" table on page 21, we can deduce that, for the beams in question with a " Supported" connected girder-beam configuration and a girder span width > t 410 and ≤ 490, the type of "girder-beam" joining cross plates is: A52

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)); gauge 20 m; 2 crane running speeds = 40/10 m/min
2. weight of crane + accessories: M1 ≅ 5.900 kg
3. weight of hoist + trolley: M2 ≅ 750 kg
4. total travelling mass: 10.000 + 5.900 + 750 = 16.650 kg
5. from the diagram on page 14, with a capacity of 10.000 kg; ISO group M4 (FEM 1Am) and gauge 20 m, select the end-carriages:

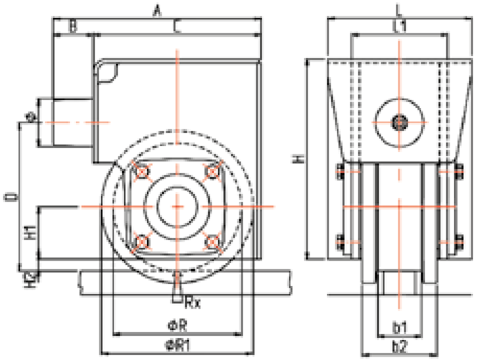
Type 3 – 200 – 3600 or: DGT size 3 Wheel Ø (mm) 200 Wheel basis (mm) 3600

6. from the diagram on page 14, we can deduce that the beams 3 – 200 – 3600 admit masses of up to 18.800 kg > the 16.650 kg to haul.
7. at this point, check 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 on page 9 for span "S" = 20.000 mm and supposing a juxtaposition "a" = 1.000 mm:
   - R max. = 5.900/4 + [(750 + 10.000)/2] • (1 – 1.000/20.000) ≅ 6.581 kg
   - R min. = 5.900/4 + 750/2 • 1.000/20.000 ≅ 1.494 kg
   - R ave. = (2 • R max. + R min.)/3 = (2 • 6.581 + 1.494)/3 ≅ 4.885 kg < 7.340 kg, corresponding to the admissible R max.
8. supposing a flat laminated rail, with l = 50 and operating band b = 48 (see table on page 7), from the diagram on page 9 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 ≅ 5.500 kg > of the ~ 4.885 kg the wheel is subject to (example on page 9)
9. based on the selected speed and calculation of mass to be travelled for each drive wheel, derive the following components from the table on page 29:

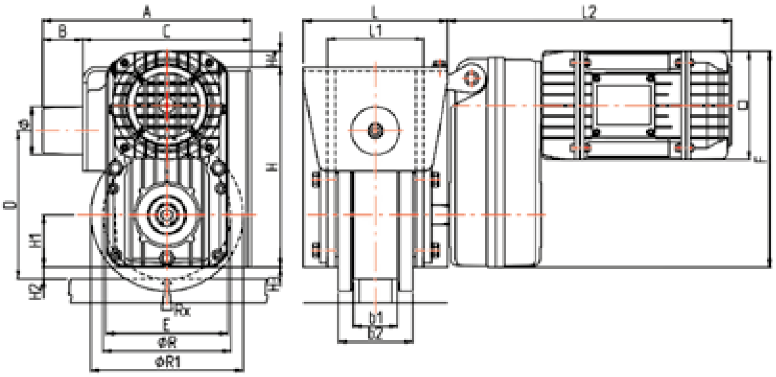
NOMINAL SPEED (m/min)	THE TRAVELLING MASS (kg) FROM EACH GEARED-MOTOR IN THE SERVICE GROUP ISO M5 (FEM 2M) IS IN kg	"DGT" WHEEL GROUP Ø (mm)	"DGP" GEARED-MOTOR		SELF-BRAKING MOTOR SPECS		"DGP" GEARED-MOTOR CODE
			GEARED-MOTOR TYPE	MOTOR TYPE	POLES (N°)	POWER (kW)	
40/10	9.400 > 8.325 to be hauled	200	134	80K3C	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 > 360 and ≤ 410, from the table on page 19, we can deduce that the beams type 3 – 200 – 3600 have a code: W336N5..
11. from the "Geometric specifications" table on page 21, we can deduce that, for the beams in question with a "Lateral + Supported" connected girder-beam configuration and a girder span width > 360 and > 410, the type of "girder-beam" joining cross plates are: L32 + A32

CLEARANCE REQUIREMENTS FOR WHEEL GROUPS BASED ON COMBINATIONS WITH RELATED OFFSET GEARED-MOTORS



Idler drive units



Driven units

WHEEL SPECIFICATIONS			WHEEL GROUP CLEARANCE (mm)													SIZE		GEARED-MOTOR CLEARANCE (mm)					
TYPE Ø ØR (mm)	MAX. RX (kg)	INTERNAL WIDTH	b1	b2	L1	L	Ø R1	A	B	C	D	Ø	H	H1	H2	GEARED-MOTOR	MOTOR	L2	☐	E	F	H3	H4
125	**3.670** 36 kN	standard maximum special	50 60 70	80 90	100 110	160	150	200	30	170	145	50	220	55	7.5	0 1 1	71 71 80	332 368 383	135 135 150	138 152 152	223 270 278	0 10.5 10.5	3 39.5 47.5
160	**4.893** 48 kN	standard maximum special	55 65 80	93 105	120 130	180	190	260	50	210	185	60	250	65	15	0 1 1	71 71 80	332 368 383	135 135 150	138 152 152	223 270 278	-10 0.5 0.5	-17 19.5 27.5
200	**7.340** 72 kN	standard maximum special	60 70 90	100 120	135 145	200	230	325	65	260	230	80	290	75	25	1 1 2 2	71 80 80 100	356 372 398 436	135 150 150 190	152 152 227 227	270 278 357 376	-9.5 -9.5 26 26	-10.5 -2.5 41 60
250	**10.805** 106 kN	standard maximum special	70 80 100	110 135	149 165	230	280	375	65	310	275	80	335	90	35	1 1 2 2	71 80 80 100	356 372 398 436	135 150 150 190	152 152 227 227	270 278 357 376	-24.5 -24.5 11 11	-40.5 -32.5 11 30
315	**14.679** 144 kN	standard maximum special	75 85 110	120 150	159 180	260	350	470	80	390	335	100	385	105	52.5	2 2 3	80 100 112	368 406 500	150 190 225	227 227 265	357 376 456	-4 -4 15	-24 -5 56
400	**18.960** 186 kN	standard maximum special	85 95 115	135 155	170 190	290	440	570	100	470	385	125	440	145	55	2 2 3	80 100 112	362 400 500	150 190 225	227 227 265	357 376 456	-44 -44 -25	-39 -20 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 GEARED-MOTORS

“DGP” OFFSET GEARED-MOTORS		3 REDUCTION STAGES (TORQUES)				A 2 STADI (COPPIE) DI RIDUZIONE			
Size 0	Type	**031**	**032**	**033**	**034**	**021**	**022**	**023**	**024**
	Reduction ratio	87.85	70.35	57.61	45.20	34.49	28.10	23.46	18.94
Size 1	Type	**131**	**132**	**133**	**134**	**121**	**122**	**123**	**124**
	Reduction ratio	89.45	69.98	56.35	44.35	35.10	28.87	22.77	18.50
Size 2	Type	**231**	**232**	**233**	**234**	**221**	**222**	**223**	**224**
	Reduction ratio	140.65	109.45	88.10	72.57	55.42	43.24	35.66	29.50
Size 3	Type	**331**	**332**	**333**	**334**	=			
	Reduction ratio	88.67	70.36	56.65	44.33				

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

SPECIFICATIONS AND CODES FOR SELF-BRAKING MOTORS WHICH CAN BE COMBINED WITH "DGP" OFFSET GEARED-MOTORS

MOTOR SIZE	TYPE	POLES (n°)	RPM (g/min)	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
	71K4CB	4	1370	0.20	1.36	2.70	1.00	0.55	M21AP40051
	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
	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**	**80K8L**	8	630	0.16	2.18	2.20	1.30	0.48	M31AP80051
	80K4CB	4	1370	0.32	2.18	3.90	1.10	0.65	M31AP40051
	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**	**100K8L**	8	670	0.40	5.46	5.40	2.50	0.45	M51AP80051
	100K4CB	4	1390	0.80	5.46	8.90	2.00	0.80	M51AP40051
	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 4 0% – Power voltage 400 V

CODES FOR "DGT" DRIVE WHEEL GROUPS READY FOR MATCHING WITH "DGP" OFFSET GEARED-MOTORS

"DGP" OFFSET GEARED-MOTORS	"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 (rh) DGT5A0M22 (lh)	DGT6A0M12 (rh) DGT6A0M22 (lh)	DGT6A0M62 (rh) DGT6A0M72 (lh)
Size 3	=	=	=	=	DGT5A0M32 (rh) DGT5A0M42 (lh)	DGT6A0M32 (rh) DGT6A0M42 (lh)	DGT6A0M82 (rh) DGT6A0M92 (lh)

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 GEARED-MOTORS

"DGT" DRIVE WHEEL GROUP Ø (mm)	"DGP" OFFSET GEARED-MOTORS					
	"DGP" GEARED-MOTORS SIZE 0	"DGP" GEARED-MOTORS SIZE 1		"DGP" GEARED-MOTORS SIZE 2		"DGP" GEARED-MOTORS SIZE 3
	"DGP" MOTORS SIZE 71	"DGP" MOTORS SIZE 71	"DGP" MOTORS SIZE 80	"DGP" MOTORS SIZE 80	"DGP" MOTORS SIZE 100	"DGP" MOTORS SIZE 112
125	max. 32 kg	max. 36 kg	max. 38 kg	=	=	=
160	max. 40 kg	max. 44 kg	max. 48 kg	=	=	=
200	=	max. 54 kg	max. 58 kg	max. 75 kg	max. 83 kg	=
250	=	max. 73 kg	max. 75 kg	max. 94 kg	max. 102 kg	=
315	=	=	=	max. 125 kg	max. 133 kg	max. 172 kg
400	=	=	=	max. 197 kg	max. 205 kg	max. 236 kg
400 R	=	=	=	max. 197 kg	max. 205 kg	max. 236 kg

CODES AND WEIGHTS FOR "DGT" IDLER WHEEL UNITS

"DGT" IDLE WHEEL GROUP Ø (mm)	CODE	WEIGHT (kg)
125	DGT1A0M00	15.5
160	DGT2A0M00	23.5
200	DGT3A0M00	37.5
250	DGT4A0M00	57.0
315	DGT5A0M00	88.0
400	DGT6A0M00	152.0
400 R	DGT6A0M50	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)		"DGT" WHEEL GROUP	"DGP" GEARED-MOTORS		SELF-BRAKING MOTOR SPECS		CODES FOR COMPONENTS	
	M4 (1Am)	M5 (2m)	Ø (mm)	REDUCER TYPE	MOTOR TYPE	POLES (N°)	POWER (kW)	"DGT" DRIVE WHEEL GROUP	"DGP" GEARED-MOTOR
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**	**80K8L**	8	0.16	DGT3A0M30	P2M3B28KA0
	21.600	21.600	250	**231**	**80K8L**	8	0.16	DGT4A0M32	P2M3B18KA0
5	6.700	5.360	125	**033**	**71K8C**	8	0.08	DGT1A0M10	P0M2B38AA0
	7.400	7.400		**133**	**80K8L**	8	0.16	DGT1A0M30	P1M3B38KA0
	8.000	6.400	160	**032**	**71K8C**	8	0.08	DGT2A0M10	P0M2B28AA0
	9.800	9.800		**132**	**80K8L**	8	0.16	DGT2A0M30	P1M3B28KA0
	9.600	7.600	200	**131**	**71K8C**	8	0.08	DGT3A0M10	P1M2B18AA0
	14.700	14.700			**80K8L**	8	0.16		P1M3B18KA0
	21.600	18.000	250	**232**	**80K8L**	8	0.16	DGT4A0M32	P2M3B28KA0
	21.600	21.600			**100K8L**	8	0.40		P2M5B28KA0
	23.300	18.600	315	**231**	**80K8L**	8	0.16	DGT5A0M12 (rh) DGT5A0M22 (lh)	P2M3B18KA0
	29.400	29.400			**100K8L**	8	0.40		P2M5B18KA0
6.3	7.400	7.400	125	**031**	**71K4CB**	4	0.20	DGT1A0M10	P0M2B14KA0
	6.400	5.100	160	**033**	**71K8C**	8	0.08	DGT2A0M10	P0M2B38AA0
	9.800	8.000		**133**	**80K8L**	8	0.16	DGT2A0M30	P1M3B38KA0
	14.700	14.700	200	**231**	**80K4CB**	4	0.32	DGT3A0M30	P2M3B14KA0
	9.000	7.200	250	**131**	**71K8C**	8	0.08	DGT4A0M12	P1M2B18AA0
	18.000	14.400			**80K8L**	8	0.16		P1M3B18KA0
	21.600	21.600		**233**	**100K8L**	8	0.40	DGT4A0M32	P2M5B38KA0
	18.600	14.900	315	**232**	**80K8L**	8	0.16	DGT5A0M12 (rh) DGT5A0M22 (lh)	P2M3B28KA0
	29.400	29.400			**100K8L**	8	0.40		P2M5B28KA0
	20.800	16.600	400	**231**	**80K8L**	8	0.16	DGT6A0M12 (rh) DGT6A0M22 (lh)	P2M3B18KA0
	41.400	33.100			**100K8L**	8	0.40		P2M5B18KA0
	41.400	33.100	400 R	**231**	**100K8L**	8	0.40	DGT6A0M62 (rh) DGT6A0M72 (lh)	P2M5B18KA0
	51 700	41 400							
8	7.400	6.658	125	**032**	**71K4CB**	4	0.20	DGT1A0M10	P0M2B24KA0
	9.800	8.000	160	**031**	**71K4CB**	4	0.20	DGT2A0M10	P0M2B14KA0
	9.800	9.800		**131**				DGT2A0M30	P1M2B14KA0
	6.000	4.800	200	**133**	**71K8C**	8	0.08	DGT3A0M10	P1M2B38AA0
	12.000	9.600			**80K8L**	8	0.16		P1M3B38KA0
	14.700	14.700		**232**	**80K4CB**	4	0.32	DGT3A0M30	P2M3B24KA0
	13.800	11.000	250	**132**	**80K8L**	8	0.16	DGT4A0M12	P1M3B28KA0
	21.600	21.600		**231**	**80K4CB**	4	0.32	DGT4A0M32	P2M3B14KA0
	14.600	11.700	315	**233**	**80K8L**	8	0.16	DGT5A0M12 (rh) DGT5A0M22 (lh)	P2M3B38KA0
	29.400	29.400			**100K8L**	8	0.40		P2M5B38KA0
	16.300	13.000	400	**232**	**80K8L**	8	0.16	DGT6A0M12 (rh) DGT6A0M22 (lh)	P2M3B28KA0
	41.400	33.100			**100K8L**	8	0.40		P2M5B28KA0
	41.400	33.100	400 R	**232**	**100K8L**	8	0.40	DGT6A0M62 (rh) DGT6A0M72 (lh)	P2M5B28KA0

The specifications refer to a single geared-motor; in case of two or more geared-motors, multiply the travelling mass by the number of geared-motors 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 8, 9 and 10. 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.	R ave. ≤ Rx max.	R ave. ≤ Rx max.	R ave. ≤ Rx max.	R ave. ≤ Rx max.	R ave. ≤ Rx max.	R ave. ≤ Rx max.
≤ 3.670 kg	≤ 4.893 kg	≤ 7.340 kg	≤ 10.805 kg	≤ 14.679 kg	≤ 18.960 kg	≤ 30.580 kg
(36 kN)	(48 kN)	(72 kN)	(106 kN)	(144 kN)	(186 kN)	(300 kN)

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

NOMINAL SPEED (m/min)	TRAVELLING MASS (kg)		"DGT" WHEEL GROUP	"DGP" GEARED-MOTORS		SELF-BRAKING MOTOR SPECS		CODES FOR COMPONENTS	
	ISO SERVICE GROUP (FEM)			REDUCER	MOTOR	POLES	POWER	"DGT" DRIVE WHEEL GROUP	"DGP" GEARED-MOTOR
	M4 (1Am)	M5 (2m)	Ø (mm)	TYPE	TYPE	(N°)	(kW)		
10	7.400	6.720	125	**033**	**71K4CB**	4	0.20	DGT1A0M10	P0M2B34KA0
	9.800	8.000	160	**032**	**71K4CB**	4	0.20	DGT2A0M10	P0M2B24KA0
	9.800	9.800		**132**	**80K4CB**	4	0.32	DGT2A0M30	P1M3B24KA0
	12.000	9.600	200	**131**	**71K4CB**	4	0.20	DGT3A0M10	P1M2B14KA0
	14.700	14.700			**80K4CB**	4	0.32		P1M3B14KA0
	11.200	8.900	250	**133**	**80K8L**	8	0.16	DGT4A0M12	P1M3B38KA0
	21.600	18.000		**232**	**80K4CB**	4	0.32	DGT4A0M32	P2M3B24KA0
	21.600	21.600			**100K4CB**	4	0.80		P2M5B24KA0
	23.300	18.600	315	**231**	**80K4CB**	4	0.32	DGT5A0M12 (rh) DGT5A0M22 (lh)	P2M3B14KA0
	29.400	29.400			**100K4CB**	4	0.80		P2M5B14KA0
	33.100	26.500	400	**233**	**100K8L**	8	0.40	DGT6A0M12 (rh) DGT6A0M22 (lh)	P2M5B38KA0
	42.800	41.300		**331**	**112K8L**	8	0.63	DGT6A0M32 (rh) DGT6A0M42 (lh)	P3M6B18AA0
	33.100	=	400 R	**233**	**100K8L**	8	0.40	DGT6A0M62 (rh) DGT6A0M72 (lh)	P2M5B38KA0
	51.600	41.300		**331**	**112K8L**	8	0.63	DGT6A0M82 (rh) DGT6A0M92 (lh)	P3M6B18AA0
12.5	7.400	7.400	125	**031**	**71K2CB**	2	0.40	DGT1A0M10	P0M2B12KA0
	8.000	6.400	160	**033**	**71K4CB**	4	0.20	DGT2A0M10	P0M2B34KA0
	9.800	9.800		**133**	**80K4CB**	4	0.32	DGT2A0M30	P1M3B34KA0
	9.600	7.600	200	**132**	**71K4CB**	4	0.20	DGT3A0M10	P1M2B24KA0
	14.700	12.200			**80K4CB**	4	0.32		P1M3B24KA0
	14.700	14.700		**231**	**80K2CB**	2	0.63	DGT3A0M30	P2M3B12KA0
	11.200	9.000	250	**131**	**71K4CB**	4	0.20	DGT4A0M12	P1M2B14KA0
	18.000	14.400			**80K4CB**	4	0.32		P1M3B14KA0
	21.600	21.600		**233**	**100K4CB**	4	0.80	DGT4A0M32	P2M5B34KA0
	18.600	14.900	315	**232**	**80K4CB**	4	0.32	DGT5A0M12 (rh) DGT5A0M22 (lh)	P2M3B24KA0
	29.400	29.400			**100K4CB**	4	0.80		P2M5B24KA0
	20.800	16.600	400	**231**	**80K4CB**	4	0.32	DGT6A0M12 (rh) DGT6A0M22 (lh)	P2M3B14KA0
	41400	33 100			**100K4CB**	4	0.80		P2M5B14KA0
	52 600	42 100	400 R	**231**	**100K4CB**	4	0.80	DGT6A0M62 (rh) DGT6A0M72 (lh)	P2M5B14KA0
16	7.400	6.656	125	**032**	**71K2CB**	2	0.40	DGT1A0M10	P0M2B22KA0
	9.800	8.000	160	**031**	**71K2CB**	2	0.40	DGT2A0M10	P0M2B12KA0
	9.800	9.800		**131**				DGT2A0M30	P1M2B12KA0
	7.500	6.000	200	**133**	**71K4CB**	4	0.20	DGT3A0M10	P1M2B34KA0
	12.000	9.600			**80K4CB**	4	0.32		P1M3B34KA0
	14.700	14.700		**232**	**80K2CB**	2	0.63	DGT3A0M30	P2M3B22KA0
	13.800	11.000	250	**132**	**80K4CB**	4	0.32	DGT4A0M12	P1M3B24KA0
	21.600	21.600		**231**	**80K2CB**	2	0.63	DGT4A0M32	P2M3B12KA0
	14.600	11.600	315	**233**	**80K4CB**	4	0.32	DGT5A0M12 (rh) DGT5A0M22 (lh)	P2M3B34KA0
	29.400	29.400			**100K4CB**	4	0.80		P2M5B34KA0
	16.300	13.000	400	**232**	**80K4CB**	4	0.32	DGT6A0M12 (rh) DGT6A0M22 (lh)	P2M3B24KA0
	41.400	33.100			**100K4CB**	4	0.80		P2M5B24KA0
	41.400	33.100	400 R	**232**	**100K4CB**	4	0.80	DGT6A0M62 (rh) DGT6A0M72 (lh)	P2M5B24KA0

The specifications refer to a single geared-motor; in case of two or more geared-motors, multiply the travelling mass by the number of geared-motors 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 8, 9 and 10.
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.	R ave. ≤ Rx max.	R ave. ≤ Rx max.	R ave. ≤ Rx max.	R ave. ≤ Rx max.	R ave. ≤ Rx max.	R ave. ≤ Rx max.
≤ 3.670 kg	≤ 4.893 kg	≤ 7.340 kg	≤ 10.805 kg	≤ 14.679 kg	≤ 18.960 kg	≤ 30.580 kg
(36 kN)	(48 kN)	(72 kN)	(106 kN)	(144 kN)	(186 kN)	(300 kN)

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

NOMINAL SPEED (m/min)	TRAVELLING MASS (kg) ISO SERVICE GROUP (FEM)		"DGT" WHEEL GROUP	"DGP" GEARED-MOTORS		SELF-BRAKING MOTOR SPECS		CODES FOR COMPONENTS	
	M4 (1Am)	M5 (2m)	Ø (mm)	REDUCER TYPE	MOTOR TYPE	POLES (N°)	POWER (kW)	"DGT" DRIVE WHEEL GROUP	"DGP" GEARED-MOTOR
20	7.400	6.720	125	033	71K2CB	2	0.40	DGT1A0M10	P0M2B32KA0
	9.800	8.000	160	032	71K2CB	2	0.40	DGT2A0M10	P0M2B22KA0
	9.800	9.800		132	71K2L	2 with inv.	0.50	DGT2A0M30	P1M2B2IKA0
	12.000	9.600	200	131	71K2CB	2	0.40	DGT3A0M10	P1M2B12KA0
	14.700	12.200			71K2L	2 with inv.	0.50		P1M2B1IKA0
	14.700	14.700			80K2CB	2	0.63		P1M3B12KA0
	11.200	8.900	250	133	80K4CB	4	0.32	DGT4A0M12	P1M3B34KA0
	21.600	17.200		232	80K2CB	2	0.63	DGT4A0M32	P2M3B22KA0
	21.600	21.600			80K2L	2 with inv.	0.80		P2M3B2IKA0
	23.300	18.600	315	231	80K2CB	2	0.63	DGT5A0M12 (rh) DGT5A0M22 (lh)	P2M3B12KA0
	29.400	23.700			80K2L	2 with inv.	0.80		P2M3B1IKA0
	29.400	29.400			100K2CB	2	1.60		P2M5B12KA0
	33.100	26.500	400	233	100K4CB	4	0.80	DGT6A0M12 (rh) DGT6A0M22 (lh)	P2M5B34KA0
	42.800	41.300		331	112K4C	4	1.25	DGT6A0M32 (rh) DGT6A0M42 (lh)	P3M6B14AA0
	33.100	26.500	400 R	233	100K4CB	4	0.80	DGT6A0M62 (rh) DGT6A0M72 (lh)	P2M5B34KA0
	51 700	41 300		331	112K4C	4	1.25	DGT6A0M82 (rh) DGT6A0M92 (lh)	P3M6B14AA0
25	6.700	5.360	125	034	71K2CB	2	0.40	DGT1A0M10	P0M2B42KA0
	7.400	6.700			71K2L	2 with inv.	0.50		P0M2B4IKA0
	7.400	6.700		134	80K2CB	2	0.63	DGT1A0M30	P1M3B42KA0
	8.000	6.400	160	033	71K2CB	2	0.40	DGT2A0M10	P0M2B32KA0
	9.800	8.000			71K2L	2 with inv.	0.50		P0M2B3IKA0
	9.800	9.800		133	80K2CB	2	0.63	DGT2A0M30	P1M3B32KA0
	9.600	7.600	200	132	71K2CB	2	0.40	DGT3A0M10	P1M2B22KA0
	12.000	9.600			71K2L	2 with inv.	0.50		P1M2B2IKA0
	14.700	12.000			80K2CB	2	0.63		P1M3B22KA0
	14.700	14.700			80K2L	2 with inv.	0.80		P1M3B2IKA0
	11.200	8.900	250	131	71K2CB	2	0.40	DGT4A0M12	P1M2B12KA0
	13.800	11.000			71K2L	2 with inv.	0.50		P1M2B1IKA0
	17.200	13.800			80K2CB	2	0.63		P1M3B12KA0
	21.600	21.600		233	100K2CB	2	1.60	DGT4A0M32	P2M5B32KA0
	18.600	14.900	315	232	80K2CB	2	0.63	DGT5A0M12 (rh) DGT5A0M22 (lh)	P2M3B22KA0
	23.700	18.900			80K2L	2 with inv.	0.80		P2M3B2IKA0
	29.400	29.400			100K2CB	2	1.60		P2M5B22KA0
	20.800	16.600	400	231	80K2CB	2	0.63	DGT6A0M12 (rh) DGT6A0M22 (lh)	P2M3B12KA0
	26.500	21.200			80K2L	2 with inv.	0.80		P2M3B1IKA0
	41.400	33.100			100K2CB	2	1.60		P2M5B12KA0
	53 000	42 400	400 R	231	100K2CB	2	1.60	DGT6A0M62 (rh) DGT6A0M72 (lh)	P2M5B12KA0
	66 200	53 000			100K2L	2 with inv.	2.00		P2M5B1IKA0

The specifications refer to a single geared-motor; in case of two or more geared-motors, multiply the travelling mass by the number of geared-motors 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 8, 9 and 10.
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.	R ave. ≤ Rx max.	R ave. ≤ Rx max.	R ave. ≤ Rx max.	R ave. ≤ Rx max.	R ave. ≤ Rx max.	R ave. ≤ Rx max.
≤ 3.670 kg	≤ 4.893 kg	≤ 7.340 kg	≤ 10.805 kg	≤ 14.679 kg	≤ 18.960 kg	≤ 30.580 kg
(36 kN)	(48 kN)	(72 kN)	(106 kN)	(144 kN)	(186 kN)	(300 kN)

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

NOMINAL SPEED (m/min)	TRAVELLING MASS (kg) ISO SERVICE GROUP (FEM)		"DGT" WHEEL GROUP	"DGP" GEARED-MOTOR		SELF-BRAKING MOTOR SPECS		CODES FOR COMPONENTS	
	M4 (1Am)	M5 (2m)	Ø (mm)	GEARED-MOTOR TYPE	MOTOR TYPE	POLES (N°)	POWER (kW)	"DGT" DRIVE WHEEL GROUP	"DGP" GEARED-MOTOR
12.5/3.2	7.400	7.400	125	031	71K3L	2/8	0.40/0.09	DGT1A0M10	P0M2B13KA0
	7.400	7.400			71K2L	2 with inv.	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	71K3L	2/8	0.40/0.09	DGT1A0M10	P0M2B23KA0
	7.400	6.656			71K2L	2 with inv.	0.50		P0M2B2IKA0
	9.800	8.000	160	031	71K3L	2/8	0.40/0.09	DGT2A0M10	P0M2B13KA0
	9.800	9.800		131				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	7.400	6.720	125	033	71K3L	2/8	0.40/0.09	DGT1A0M10	P0M2B33KA0
	7.400	6.720			71K2L	2 with inv.	0.50		P0M2B3IKA0
	9.800	8.000	160	032	71K3L	2/8	0.40/0.09	DGT2A0M10	P0M2B23KA0
	9.800	9.800		132	71K2L	2 with inv.	0.50	DGT2A0M30	P1M2B2IKA0
	12.000	9.600	200	131	71K3L	2/8	0.40/0.09	DGT3A0M10	P1M2B13KA0
	14.700	12.000			71K2L	2 with inv.	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 inv.	0.80		P2M3B2IKA0
	18.500	14.800	315	231	80K3C	2/8	0.50/0.12	DGT5A0M12 (rh) DGT5A0M22 (lh)	P2M3B13AA0
	23.300	18.600			80K3L	2/8	0.63/0.15		P2M3B13KA0
	29.400	23.700			80K2L	2 with inv.	0.80		P2M3B1IKA0
	29.400	29.400			100K3C	2/8	1.25/0.31		P2M5B13AA0
25/6.3	6.700	5.360	125	034	71K3L	2/8	0.40/0.09	DGT1A0M10	P0M2B43KA0
	7.400	6.700			71K2L	2 with inv.	0.50		P0M2B4IKA0
	7.400	6.700		134	80K3C	2/8	0.50/0.12	DGT1A0M30	P1M3B43AA0
	8.000	6.400	160	033	71K3L	2/8	0.40/0.09	DGT2A0M10	P0M2B33KA0
	9.800	8.000			71K2L	2 with inv.	0.50		P0M2B3IKA0
	9.800	9.800		133	80K3C	2/8	0.50/0.12	DGT2A0M30	P1M3B33AA0
	9.600	7.600	200	132	71K3L	2/8	0.40/0.09	DGT3A0M10	P1M2B23KA0
	12.000	9.600			71K2L	2 with inv.	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 inv.	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 inv.	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 (rh) DGT5A0M22 (lh)	P2M3B23AA0
	18.600	14.900			80K3L	2/8	0.63/0.15		P2M3B23KA0
	23.700	18.900			80K2L	2 with inv.	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 (rh) DGT6A0M22 (lh)	P2M3B13KA0
	26.500	21.200			80K2L	2 with inv.	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 (rh) DGT6A0M72 (lh)	P2M5B13AA0
	53 000	42 400			100K3L	2/8	1.60/0.39		P2M5B13KA0
	66 200	53 000			100K2L	2 with inv.	2.00		P2M5B1IKA0

The specifications refer to a single geared-motor; in case of two or more geared-motors, multiply the travelling mass by the number of geared-motors 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 8, 9 and 10.
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.	R ave. ≤ Rx max.	R ave. ≤ Rx max.	R ave. ≤ Rx max.	R ave. ≤ Rx max.	R ave. ≤ Rx max.	R ave. ≤ Rx max.
≤ 3.670 kg	≤ 4.893 kg	≤ 7.340 kg	≤ 10.805 kg	≤ 14.679 kg	≤ 18.960 kg	≤ 30.580 kg
(36 kN)	(48 kN)	(72 kN)	(106 kN)	(144 kN)	(186 kN)	(300 kN)

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

NOMINAL SPEED	TRAVELLING MASS (kg)		"DGT" WHEEL GROUP	"DGP" GEARED-MOTOR		SELF-BRAKING MOTOR SPECS		CODES FOR COMPONENTS	
	ISO SERVICE GROUP (FEM)			GEARED-MOTOR	MOTOR	POLES	POWER	"DGT" DRIVE WHEEL GROUP	"DGP" GEARED-MOTOR
(m/min)	M4 (1Am)	M5 (2m)	Ø (mm)	TYPE	TYPE	(N°)	(kW)		
32/8	5.200	4.160	125	**021**	**71K3L**	2/8	0.40/0.09	DGT1A0M10	P0M2A13KA0
	6.500	5.200		**121**	**71K2L**	2 with inv.	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 inv.	0.80		P1M3A1IKA0
	6.300	5.000	160	**034**	**71K3L**	2/8	0.40/0.09	DGT2A0M10	P0M2B43KA0
	7.900	6.300			**71K2L**	2 with inv.	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 inv.	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 inv.	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 inv.	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 inv.	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 inv.	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 (rh) DGT5A0M22 (lh)	P2M3B33KA0
	18.500	14.800			**80K2L**	2 with inv.	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 inv.	0.80	DGT6A0M12 (rh) DGT6A0M22 (lh)	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 (rh) DGT6A0M72 (lh)	P2M5B23AA0
	41.400	33.100			**100K3L**	2/8	1.60/0.39		P2M5B23KA0
	51 700	41 300			**100K2L**	2 with inv.	2.00		P2M5B2IKA0
40/10	4.200	3.360	125	**022**	**71K3L**	2/8	0.40/0.09	DGT1A0M10	P0M2A23KA0
	5.250	4.200			**71K2L**	2 with inv.	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 inv.	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 inv.	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 inv.	0.80		P1M3A1IKA0
	7.600	6.000	200	**134**	**71K2L**	2 with inv.	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 inv.	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 inv.	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 (rh) DGT5A0M22 (lh)	P2M3B43KA0
	14.800	11.900			**80K2L**	2 with inv.	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 inv.	2.00		P2M5B4IKA0
	13.000	10.400	400	**233**	**80K3L**	2/8	0.63/0.15	DGT6A0M12 (rh) DGT6A0M22 (lh)	P2M3B33KA0
	16.500	13.200			**80K2L**	2 with inv.	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 inv.	2.00		P2M5B3IKA0
	42.800	41.300		**331**	**112K3L**	2/8	2.50/0.62	DGT6A0M32 (rh) DGT6A0M42 (lh)	P3M6B13KA0
	33.100	26.400	400 R	**233**	**100K3L**	2/8	1.60/0.39	DGT6A0M62 (rh)	P2M5B33KA0
	41.300	33.100			**100K2L**	2 with inv.	2.00	DGT6A0M72 (lh)	P2M5B3IKA0
	51 600	41 300		**331**	**112K3L**	2/8	2.50/0.62	DGT6A0M82 (rh)	P3M6B13KA0
	66 000	52 800			**112K2L**	2 with inv.	3.20	DGT6A0M92 (lh)	P3M6B1IKA0

The specifications refer to a single geared-motor; in case of two or more geared-motors, multiply the travelling mass by the number of geared-motors 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 8, 9 and 10.
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.	R ave. ≤ Rx max.	R ave. ≤ Rx max.	R ave. ≤ Rx max.	R ave. ≤ Rx max.	R ave. ≤ Rx max.	R ave. ≤ Rx max.
≤ 3.670 kg	≤ 4.893 kg	≤ 7.340 kg	≤ 10.805 kg	≤ 14.679 kg	≤ 18.960 kg	≤ 30.580 kg
(36 kN)	(48 kN)	(72 kN)	(106 kN)	(144 kN)	(186 kN)	(300 kN)

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

NOMINAL SPEED	TRAVELLING MASS (kg)		“DGT” WHEEL GROUP	“DGP” GEARED-MOTOR		SELF-BRAKING MOTOR SPECS		CODES FOR COMPONENTS	
	ISO SERVICE GROUP (FEM)			GEARED-MOTOR	MOTOR	POLES	POWER	“DGT” DRIVE WHEEL GROUP	“DGP” GEARED-MOTOR
(m/min)	M4 (1Am)	M5 (2m)	Ø (mm)	TYPE	TYPE	(N°)	(kW)		
50/12.5	3.300	2.640	125	**023**	**71K3L**	2/8	0.40/0.09	DGT1A0M10	P0M2A33KA0
	4.125	3.300			**71K2L**	2 with inv.	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 inv.	0.80		P1M3A3IKA0
	5.000	4.000	160	**022**	**71K2L**	2 with inv.	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 inv.	0.80		P1M3A2IKA0
	6.000	4.800	200	**121**	**71K2L**	2 with inv.	0.50	DGT3A0M10	P1M2A1IKA0
	7.600	6.000			**80K3L**	2/8	0.63/0.15		P1M3A13KA0
	9.400	7.600			**80K2L**	2 with inv.	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 inv.	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 inv.	2.00		P2M5A2IKA0
	9.200	7.400	315	**221**	**80K3L**	2/8	0.63/0.15	DGT5A0M12 (rh) DGT5A0M22 (lh)	P2M3A13KA0
	11.800	9.400			**80K2L**	2 with inv.	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 (rh) DGT5A0M42 (lh)	P3M6B33KA0
	20.700	16.600	400	**234**	**100K3C**	2/8	1.25/0.31	DGT6A0M12 (rh) DGT6A0M22 (lh)	P2M5B43AA0
	26.500	21.200			**100K3L**	2/8	1.60/0.39		P2M5B43KA0
	33.000	26.400			**100K2L**	2 with inv.	2.00		P2M5B4IKA0
	41.200	33.000		**332**	**112K3L**	2/8	2.50/0.62	DGT6A0M32 (rh) DGT6A0M42 (lh)	P3M6B23KA0
	42.800	42.200			**112K2L**	2 with inv.	3.20		P3M6B2IKA0
	33.000	26.400	400 R	**234**	**100K2L**	2 with inv.	2.00	DGT6A0M62 (rh) DGT6A0M72 (lh)	P2M5B4IKA0
	41.200	33.000		**332**	**112K3L**	2/8	2.50/0.62	DGT6A0M82 (rh) DGT6A0M92 (lh)	P3M6B23KA0
	52.700	42.100			**112K2L**	2 with inv.	3.20		P3M6B2IKA0
63/16	2.600	2.080	125	**024**	**71K3L**	2/8	0.40/0.09	DGT1A0M10	P0M2A43KA0
	3.250	2.600			**71K2L**	2 with inv.	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 inv.	0.80		P1M3A4IKA0
	5.000	4.000	160	**123**	**80K3L**	2/8	0.63/0.15	DGT2A0M30	P1M3A33KA0
	6.300	5.000			**80K2L**	2 with inv.	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 inv.	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 inv.	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 inv.	2.00		P2M5A3IKA0
	14.600	11.700	315	**222**	**100K3C**	2/8	1.25/0.31	DGT5A0M12 (rh) DGT5A0M22 (lh)	P2M5A23AA0
	18.700	14.900			**100K3L**	2/8	1.60/0.39		P2M5A23KA0
	23.400	18.700			**100K2L**	2 with inv.	2.00		P2M5A2IKA0
	29.300	23.500		**334**	**112K3L**	2/8	2.50/0.62	DGT5A0M32 (rh) DGT5A0M42 (lh)	P3M6B43KA0
	29.400	29.400			**112K2L**	2 with inv.	3.20		P3M6B4IKA0
	16.400	13.100	400	**221**	**100K3C**	2/8	1.25/0.31	DGT6A0M12 (rh) DGT6A0M22 (lh)	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 (rh) DGT6A0M42 (lh)	P3M6B33KA0
	42.000	33.600			**112K2L**	2 with inv.	3.20		P3M6B3IKA0
	32.800	26.200	400 R	**333**	**112K3L**	2/8	2.50/0.62	DGT6A0M82 (rh) DGT6A0M92 (lh)	P3M6B33KA0
	42.000	33.600			**112K2L**	2 with inv.	3.20		P3M6B3IKA0

The specifications refer to a single geared-motor; in case of two or more geared-motors, multiply the travelling mass by the number of geared-motors 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 8, 9 and 10. 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.	R ave. ≤ Rx max.	R ave. ≤ Rx max.	R ave. ≤ Rx max.	R ave. ≤ Rx max.	R ave. ≤ Rx max.	R ave. ≤ Rx max.
≤ 3.670 kg	≤ 4.893 kg	≤ 7.340 kg	≤ 10.805 kg	≤ 14.679 kg	≤ 18.960 kg	≤ 30.580 kg
(36 kN)	(48 kN)	(72 kN)	(106 kN)	(144 kN)	(186 kN)	(300 kN)

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

NOMINAL SPEED	TRAVELLING MASS (kg)		"DGT" WHEEL GROUP	"DGP" GEARED-MOTOR		SELF-BRAKING MOTOR SPECS		CODES FOR COMPONENTS	
	ISO SERVICE GROUP (FEM)			GEARED-MOTOR	MOTOR	POLES	POWER	"DGT" DRIVE WHEEL GROUP	"DGP" GEARED-MOTOR
(m/min)	M4 (1Am)	M5 (2m)	Ø (mm)	TYPE	TYPE	(N°)	(kW)		
80/20	2.500	2.000	160	**024**	**71K3L**	2/8	0.40/0.09	DGT2A0M10	P0M2A43KA0
	3.200	2.500			**71K2L**	2 with inv.	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 inv.	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 inv.	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 inv.	2.00		
	16.500	13.200	400	**222**	**100K3L**	2/8	1.60/0.39	DGT6A0M12 (rh) DGT6A0M22 (lh)	P2M5A23KA0
	20.600	16.500			**100K2L**	2 with inv.	2.00		P2M5A2IKA0
	25.800	20.600		**334**	**112K3L**	2/8	2.50/0.62	DGT6A0M32 (rh) DGT6A0M42 (lh)	P3M6B43KA0
	33.000	26.400			**112K2L**	2 with inv.	3.20		P3M6B4IKA0
	33.600	26.900	400 R	**334**	**112K2L**	2 with inv.	3.20	DGT6A0M82 (rh) DGT6A0M92 (lh)	P3M6B4IKA0

The specifications refer to a single geared-motor; in case of two or more geared-motors, multiply the travelling mass by the number of geared-motors 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 8, 9 and 10.

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.	R ave. ≤ Rx max.	R ave. ≤ Rx max.	R ave. ≤ Rx max.	R ave. ≤ Rx max.	R ave. ≤ Rx max.	R ave. ≤ Rx max.
≤ 3.670 kg	≤ 4.893 kg	≤ 7.340 kg	≤ 10.805 kg	≤ 14.679 kg	≤ 18.960 kg	≤ 30.580 kg
(36 kN)	(48 kN)	(72 kN)	(106 kN)	(144 kN)	(186 kN)	(300 kN)

SAMPLE GUIDELINES FOR SELECTING DRIVE UNITS FOR CRANES

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

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

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

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

Based on the selected speed and calculation of mass to be travelled for each drive wheel, derive the following components from the table on page 29:

NOMINAL SPEED (m/min)	TRAVELLING MASS (kg) IN SERVICE GROUP ISO M4 (FEM 1Am) IS IN kg	"DGT" WHEEL GROUP Ø (mm)	"DGP" GEARED-MOTOR		SELF-BRAKING MOTOR SPECS		CODES FOR COMPONENTS	
			GEARED-MOTOR TYPE	MOTOR TYPE	POLES (N°)	POWER (kW)	"DGT" DRIVE WHEEL GROUP	"DGP" GEARED-MOTOR
40/10	4.200 > 4.000 to be traversed	125	022	71K3L	2/8	0.40/0.09	DGT1A0M10	P0M2A23KA0

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

7. reactions on the wheels, calculated as illustrated on page 8, for gauge "S" = 16,000 mm and supposing an approach "a" = 1000 mm:
   R max. = 2.500/4 + [(500 + 5.000)/2] • (1 – 1.000/16.000) ≅ 3.203 kg
   R min. = 2.500/4 + 500/2 • 1.000/16.000 ≅ 641 kg
   R ave. = (2 • R max. + R min.)/3 = (2 • 3.203 + 641)/3 ≅ 2.349 kg < 3.670 kg, corresponding to max. R admissible
8. supposing a flat laminated rail, with l = 40 and a running surface b = 38 (see table on page 7), from the diagram on page 8 we can deduce that, for a Ø 125 wheel with a **standard sheave** width, considering the factors (speed and rail running surface), the average admissible reaction for service group M4 (1Am) is: R ave. admissible ≅ 2400 kg > of the 2349 kg the wheel is subject to.

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

1. nominal load P = 10.000 kg; 2 crane sliding speeds = 40/10 m/min; ISO service group M4 (FEM 1Am)
2. weight of crane + accessories : M1 ≅ 5,900 kg
3. weight of hoist + trolley : M2 ≅ 750 kg
4. total mass to travel : 10,000 + 5,900 + 750 = 16,650 kg
5. Motor drive units : no. 2
6. mass to travel for each motor drive wheel : 16,650 / 2 = 8325 kg

Based on the selected speed and calculation of mass to be traversed for each drive wheel, derive the following components from the table on page 29:

NOMINAL SPEED (m/min)	TRAVELLING MASS (kg) IN SERVICE GROUP ISO M4 (FEM 1Am) IS IN kg	"DGT" WHEEL GROUP Ø (mm)	"DGP" GEARED-MOTOR		SELF-BRAKING MOTOR SPECS		CODES FOR COMPONENTS	
			GEARED-MOTOR TYPE	MOTOR TYPE	POLES (N°)	POWER (kW)	"DGT" DRIVE WHEEL GROUP	"DGP" GEARED-MOTOR
40/10	9.400 > 8.325 to be traversed	200	134	80K3L	2/8	0.63/0.15	DGT3A0M10	P1M3B43KA0

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

7. reactions on the wheels, calculated as illustrated on page 9, for gauge "S" = 20000 mm and supposing a juxtaposition "a" = 1000 mm:
   R max. = 5.900/4 + [(750 + 10.000)/2] • (1 – 1.000/20.000) ≅ 6.581 kg
   R min. = 5.900/4 + 750/2 • 1.000/20.000 ≅ 1.494 kg
   R ave. = (2 • R max. + R min.)/3 = (2 • 6.581 + 1.494)/3 ≅ 4.885 kg < 7.340 kg, corresponding to the admissible R max.
8. supposing a flat laminated rail, with l = 50 and operating band b = 48 (see table on page 7), from the diagram on page 9 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 ≅ 5.500 kg > of the 4.885 kg the wheel is subject to.

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

1. nominal load P = 40.000 kg; 2 trolley running speeds = 20/5 m/min; ISO service group M5 (FEM 2m)
2. weight of crane + accessories : M1 ≅ 2.600 kg
3. weight of block + ropes : M2 ≅ 400 kg
4. total mass to travel : 40.000 + 2.600 + 400 = 43.000 kg
5. motor drive units : n° 2
6. mass to travel for each drive wheel : 43.000 / 2 = 21.500 kg

Based on the selected speed and calculation of mass to be travelled for each drive wheel, derive the following components from the table on page 28:

NOMINAL SPEED (m/min)	TRAVELLING MASS (kg) IN SERVICE GROUP ISO M5 (FEM 2m) IS IN kg	"DGT" WHEEL GROUP Ø (mm)	"DGP" GEARED-MOTOR		SELF-BRAKING MOTOR SPECS		CODES FOR COMPONENTS	
			GEARED-MOTOR TYPE	MOTOR TYPE	POLES (N°)	POWER (kW)	"DGT" DRIVE WHEEL GROUP	"DGP" GEARED-MOTOR
20/5	21.600 > 21.500 to be traversed	250	232	80K2L	2 with inv.	0.80	DGT4A0M32	P2M3B2IKA0

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

7. reactions on the wheels, calculated as illustrated on page 8, for gauge "S" = 2.400 mm and supposing the centred hook "a"= 1.200 mm:
   R max. = 2.600/4 + [(400 + 40.000)/2] • (1 – 1.200/2.400) ≅ 10.750 kg
   R min. = 2.600/4 + 400/2 • 1.200/2.400 ≅ 750 kg
   R ave. = (2 • R max. + R min.)/3 = (2 • 10.750 + 750)/3 ≅ 7.417 kg < 10.805 kg, corresponding to max. R admissible
8. supposing a flat laminated rail, with l = 60 and operating band b = 58 (see table on page 7), from the diagram on page 9 we can deduce that, for a Ø 250 wheel with a **standard sheave** width, considering the factors (speed and rail running surface), the average admissible reaction for the service group M5 (2m) is:
   R ave. admissible ≅ 8.300 kg > of the 7.417 the wheel is subject to.

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

1. nominal load P = 40.000 kg; 2 crane running speeds = 32/8 m/min; service group ISO M5 (FEM 2m)
2. weight of crane + accessories : M1 ≅ 27.000 kg
3. Weight of trolley + hoist : M2 ≅ 3.000 kg
4. total mass to travel : 40.000 + 27.000 + 3.000 = 70.000 kg
5. motor drive units : no. 2
6. mass to travel for each drive wheel : 70.000 / 2 = 35.000 kg

Based on the selected speed and calculation of mass to be travelled for each drive wheel, derive the following components from the table on page 29:

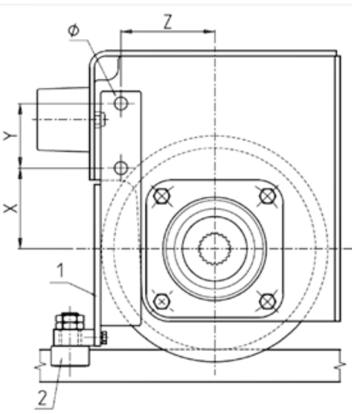
NOMINAL SPEED (m/min)	TRAVELLING MASS (kg) IN SERVICE GROUP ISO M5 (FEM 2m) IS IN kg	"DGT" WHEEL GROUP Ø (mm)	"DGP" GEARED-MOTOR		SELF-BRAKING MOTOR SPECS		CODES FOR COMPONENTS	
			GEARED-MOTOR TYPE	MOTOR TYPE	POLES (N°)	POWER (kW)	"DGT" DRIVE WHEEL GROUP	"DGP" GEARED-MOTOR
32/8	41.300 > 35.000 to be traslated	400 R	232	100K2L	2 with inv.	2.00	DGT6A0M62 (rh) DGT6A0M72 (lh)	P2M5B2IKA0

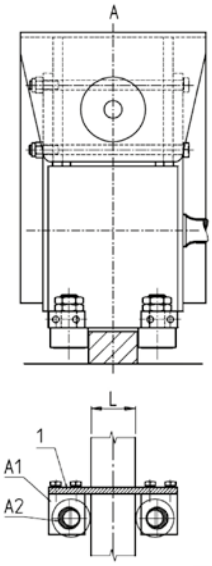
At this point, verify the suitability of the Ø 400 wheel selected, in relation to its admissible reactions and type of rail:

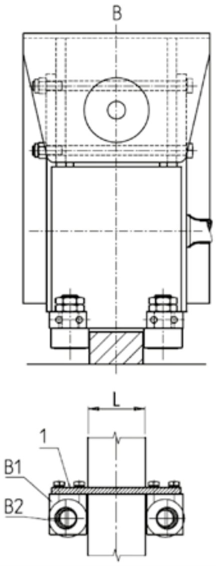
7. reactions on the wheels, calculated as illustrated on page. 10, for span "S"= 27.000 mm nd supposing a position "a" = 1.500 mm:
   R max. = 27.000/4 + [(3.000 + 40.000)/2] • (1 – 1.500/27.000) ≅ 27.056 kg
   R min. = 27.000/4 + 3.000/2 • 1.500/27.000 ≅ 6.834 kg
   R ave. = (2 • R max. + R min.)/3 = (2 • 27.056 + 6.834)/3 ≅ 20.315 kg < 30.580 kg, corresponding to max R admissible
8. supposing a flat laminated rail, with l = 100 and operating band b = 98 (see table on page 7), from the diagram on page 10 we can deduce that, for a Ø 400 R with **special sheave** width, considering the factors (speed and rail running surface), the average admissible reaction for the service group M5 (2m), is: R ave. admissible ≅ 20.550 kg > of the 20.315 kg the wheel is subject to.

ACCESSORY COMPONENT OF THE BRIDGE CRANE END-CARRIAGES

Guide rolls







1: Load-bearing frame
2: Idle pin bearing

Layout A:
A1: Idle pin bearing support
A2: Idle pin eccentric

Layout B:
B1: Idle pin bearing support
B2: Idle pin eccentric

DGT	CODE	WHEEL BOX PERFORATION (mm)				TRACK WIDTH L (mm)			
						LAYOUT A		LAYOUT B	
		X	Y	Z	Ø	MIN	MAX	MIN	MAX
1	DGT1A0F10	52	50	63	9	35	45	50	60
2	DGT2A0F10	70	50	77	11	40	50	55	65
3	DGT3A0F10	85	60	96	13	45	55	60	70
4	DGT4A0F10	100	80	116	13	55	65	70	80
5	DGT5A0F10	122,5	75	141	17	60	70	75	85
6	DGT6A0F10	152	80	178	21	70	80	85	95

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