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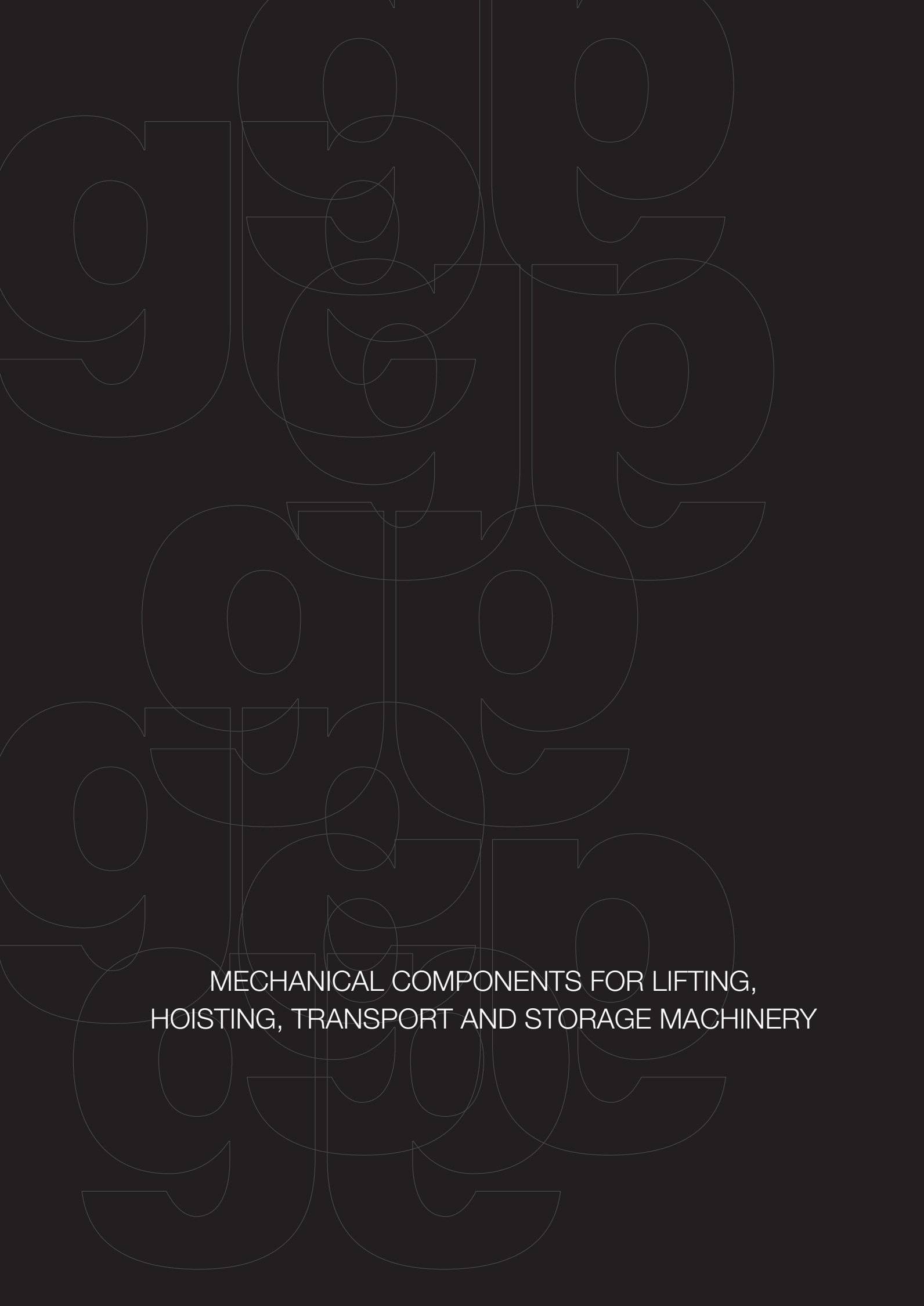
MECHANICAL COMPONENTS FOR LIFTING, HOISTING, TRANSPORT AND STORAGE MACHINERY

MECHANICAL
COMPONENTS
FOR LIFTING,
HOISTING,
TRANSPORT AND
STORAGE
MACHINERY

g**san**



g^{go}san

The background of the page is a dark gray color. It features a complex, abstract pattern of overlapping circles and lines in a lighter gray shade. These shapes are arranged in a way that creates a sense of depth and movement, resembling a stylized, geometric representation of mechanical components or a network of connections. The pattern is dense and covers the entire area of the page.

MECHANICAL COMPONENTS FOR LIFTING,
HOISTING, TRANSPORT AND STORAGE MACHINERY



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company



Gosan

Located in one of the most important metal-working centres in Europe, we are **leaders in the manufacture of custom-made welded machined sheaves**.

Our Research & Development + Innovation (R&D+I) department, with over 35 years **experience and know-how** in calculation methods, ensures the reliability and safety of the mechanical components in our product range, which also includes hook blocks and couplings.

Our Company



History

The constructive solutions developed by our engineering department will adapt to the demands of all sectors that use any kind of lifting machinery: MARITIME, PORTS, HEAVY INDUSTRY, MOBILE CRANES, CONSTRUCTION sectors and other lifting and hoisting equipment for the mining sector, and entertainment equipment.....etc

Right from the start in 1971, the aim was to make innovative products for these sectors, with particular attention to the international market.

We started to export in Europe in 1975 and moved on to include the rest of the world in 1990.

Gosan has grown constantly during these years, to become leading world supplier of its product: welded machined steel sheaves.

Gosan has also invested constantly in production resources.

This investment has taken a qualitative and quantitative leap forward with the inauguration of our new plant in Ortuella at the start of 2002, which provides us with the latest technology in design and manufacturing.

The synergy produced in Gosan is more apparent in one of the features that best defines its identity: innovation.

Gosan applies this innovation attitude to all areas of the company.

It is constantly incorporating the most up-to-date technology. Considerable time and effort are devoted to research program in the design of new products and to improve those it already manufactures. It has a wide-ranging, highly qualified team who are fully committed to the growth and development of their company.

Thanks to all this, Gosan is today a solid industrial organization, present on the five continents and is capable to develop and carry out any project to its manufacturing range in any country in the world

KeyFactors



CUSTOM MADE SOLUTIONS

The **flexibility** offered by our structure and our R&D department makes us leaders in the market for custom-designs, based for example, on customer's projects. We offer our clients a complete service, from initial **design and calculation** to completion, with **competitive delivery times**.

It goes without saying that this capacity also makes us **more efficient when manufacturing larger series products**.

R&D AND OUR OWN TECHNOLOGY

Gosan was a **pioneer** in the manufacture of welded machined sheaves.

For this reason, we view the **development of our own technology** as being of vital importance, with continuous improvements in calculation methods, machinery of our own design and **innovations** in many details that, accumulated over more than 35 years, make our products **safe and reliable**.

DEDICATIONS TO EXPORTS

Our **global view of the market** has allowed **Gosan** to offer its products throughout the world.

As a result, we have become familiarised with forms of construction, regulations, etc., that have increased our experience and know-how, which translates into **cost benefits** for all of our clients. **Gosan** has always aimed to be a **world-wide point of reference** in the lifting and hoisting-components market.

The means at our disposal allows us to be flexible, and to offer our custom made solutions and products in **more than 35 countries worldwide**. Exports represent more than **80% of our sales**, and our products comply with the very demanding international regulations and standards.

Countries to which **Gosan** exports its products:

Argentina, Australia, Austria, Belgium, Brazil, Canada, Chile, China, (Taiwan), The Czech Republic, Denmark, Finland, France, Germany, Greece, Holland, India, Indonesia, Italy, Korea, Luxembourg, Malaysia, Mexico, New Zealand, Norway, Pakistan, Poland, Portugal, Russia, Singapore, Slovenia, South Africa, Sweden, Switzerland, Thailand, Turkey, the United Arab Emirates (UAE), the United Kingdom, USA, Venezuela.

International Presence



QUALITY

CERTIFICATES



GOSAN IS ASSESSED AND RECOGNISED BY THE MOST EXACTING CERTIFICATION AGENCIES:

- 1.- API 8C CERTIFICATION
- 2.- API Q1 CERTIFICATION
- 3.- ISO 9001:2015 BY API
- 4.- ISO 9001:2015 BY LLOYD'S REGISTER
- 5.- ISO 3834/2

FEAVES



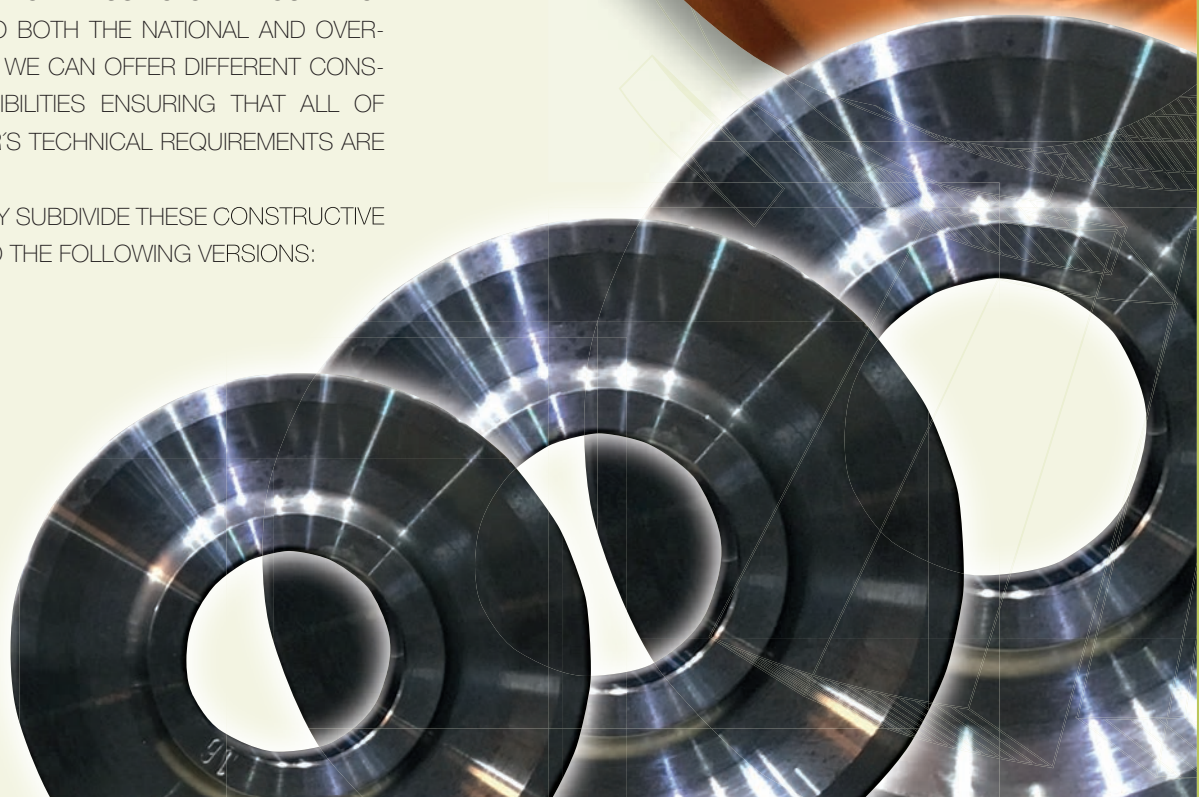
GOSAN PRODUCES OVER 25.000 SHEAVES EACH YEAR WITH AN AVERAGE DIAMETER OF 1.000 MM. THE MAJORITY ARE WELDED **MACHINED TYPES**, I.E., MANUFACTURED FROM ROLLED STEEL (OR FORGED STEEL) AND THEN WELDED AND FINISHED. WE ALSO MAKE **OTHER TYPES OF SHEAVES** SUCH AS PLASTIC SHEAVES AND SOLID OR CAST SHEAVES, ALTHOUGH IN SMALLER NUMBERS.

OUR RANGE OF WELDED MACHINED SHEAVES INCLUDES DIFFERENT **CONSTRUCTIONAL DESIGNS** THAT ADAPT PERFECTLY TO THE DEMANDS OF THE DIFFERENT SECTORS OF THE MARKET FOR HOISTING, TRANSPORT AND MAINTENANCE MACHINERY IN WHICH **GOSAN** IS PRESENT.

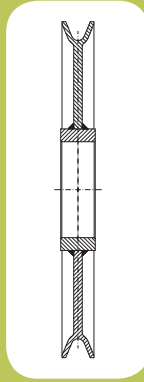
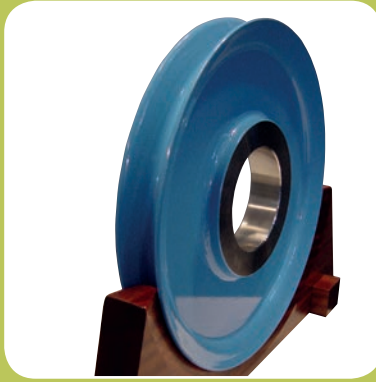
description

OUR EXPERTISE IN THE MANUFACTURE OF WELDED SHEAVES HAS ALLOWED US TO OFFER OUR PRODUCT RANGE TO BOTH THE NATIONAL AND OVERSEAS MARKETS. WE CAN OFFER DIFFERENT CONSTRUCTIVE POSSIBILITIES ENSURING THAT ALL OF OUR COSTUMER'S TECHNICAL REQUIREMENTS ARE SATISFIED.

WE CAN USUALLY SUBDIVIDE THESE CONSTRUCTIVE SOLUTIONS INTO THE FOLLOWING VERSIONS:

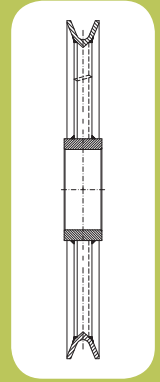


MODEL **A**



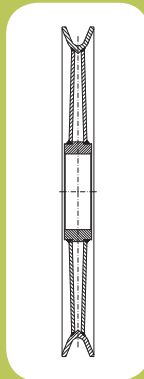
Sheaves made from a plate opened down from the centre with the throat formed by cold forming. Due to their design and construction, they are normally used for small diameters.

MODEL **B**



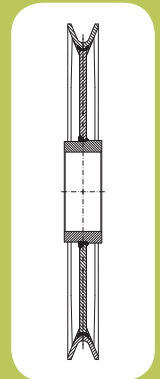
Sheaves produced with a 30% inclination, radii are in an even number and of alternating variable sections according to the diameter. Chosen generally by the group of the machine they are destined for.

MODEL **C**



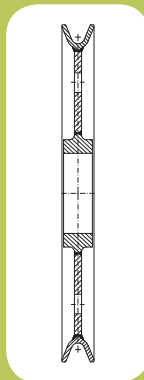
Sheaves made with two convex plates with which a more even stress distribution is achieved. They are of great practical use when dealing with very high starting torques.

MODEL **D**



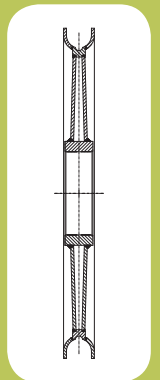
Sheaves made with a lightened central core and lateral stiffeners, mounted in a radial pattern. They are typically used on high responsibility machines.

MODEL **E**



Sheaves made with a central plate and X-form welding between plate and hub.

MODEL **PEAR**



These are sheaves that have their throat designed for the passage of hoisting cable connected with a linking pear. They are formed by two lateral elements welded to a central machined ring for cable passage. The remaining construction features of the sheave are as normal and they can also be produced with radii similar to those of **Model B** or **Model C**.

SPECIAL MODEL



Any type of sheave to suit customer's requirements.

advantages and features

- The sheaves are manufactured according with our customer's requirements and also to the DIN and FEM standards.
- Suppression of casting models with control maintenance, restoration setbacks etc.
- Delivery time is greatly reduced.
- All sheaves are provided completely finished and therefore can be used immediately.
- There is a considerable reduction of weight under equal conditions and depending upon the size, a 30% decrease in weight over a similar cast sheave can be achieved.
- There is a low inertia torque and consequently, a low PD2 with the subsequent advantage of avoiding slippage between sheave and rope, thus reducing sheave throat wear.
- High economic advantages.
- The ring forming the throat is laminated and cold formed. The hardness detailed in figure 1 below, is achieved by this method, using S355J2 material.
- Should a higher groove hardness be required, the figures detailed in figure 2 can be achieved by quenching/tempering.
- With our new carburized process, groove hardness values detailed in figure 3, over 60 HRC, can be obtained.
- Upon request, sheaves can also be produced in stainless steel, aluminium, etc.
- The usual sheave is constructed using the following materials:

Rim	S355J2
Plates, radii, sheave or core	S355J2
Hub	E355

STANDARD GROOVE

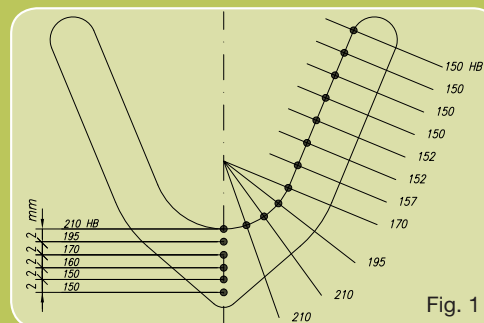


Fig. 1

HARDENED GROOVE

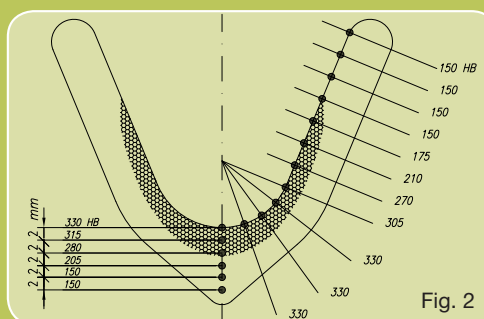


Fig. 2

CARBURIZED AND HARDENED GROOVE

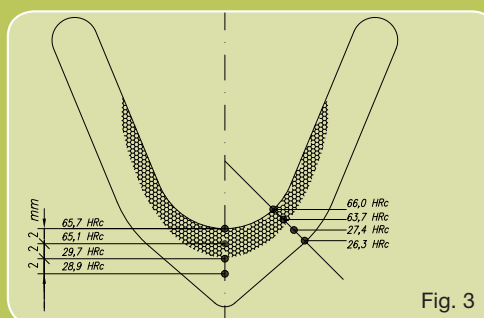


Fig. 3

THE WELDING PROCESS ADDS VALUE TO OUR PRODUCT AND IS ONE OF THE CHARACTERISTICS THAT DIFFERENTIATE TO US WITH OUR COMPETITION.

We are certified according to: - EN 729/ISO 3834 Part. 2.

for the design and manufacture of mechanical components for elevation machinery, transport and maintaining, the enterprise has employed two International welding engineers: - IWE-ES-451.
- IWE-ES-458.

Like aspects to emphasize of our procedures, all of them are qualified ones, are the use of the process of the mechanized SAW, from which we obtain the following advantages:

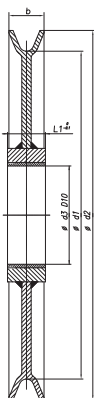
- Superior penetration to other processes, obtaining healthy unions.
- High speed of welding and deposition with a uniform thermic contribution.
- Repetition uniform in the execution, and the perfect adjustment for the parameters of welding.
- Smooth and clean surface finish welds.

Similarly, we understand the Control of Quality as the set of operative actions to the aims proposed by the system of securing of the quality accuracy to satisfy the necessities of our clients.

By starting off with this premise, we made the following controls according to requirements:

- Revision of contract and design before the manufacture.
- Control of the provisions and processes.
- Non-destructive testing.
- Verification of equipment.
- Qualification of all our soldering irons.

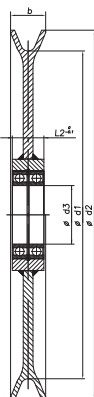
Always, we have understood the importance that the technology of welding components in our products, so we have required the specialized advising of important Centers and Foundations, all is directed to obtain processes with a greater resistance, durability and more goods finished, these being the identity that we have marked for ourselves.



REF.: 030.101 - With bronze bushing

TECHNICAL DATA	SHEAVE N°	Ø WIRE	d1	d2	d3	L1	b
	1	9	225	260	45	78	30
	2	11	280	320	55	88	35
	3	13	315	360	60	88	39
	4	14	355	405	70	88	44
	5	16	400	455	75	108	47
	6	18	450	510	80	108	54
	7	20	500	570	90	118	59

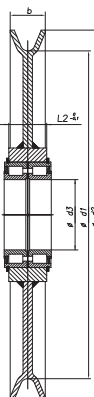
* Under special order, we will be able to produce other measures.



REF.: 030.102 - With ball bearings, form Z1

TECHNICAL DATA	SHEAVE N°	Ø WIRE	d1	d2	d3	BEARING	L2	b
	1	6-7	125	150	25	6205	32	23
	2	7-8	150	175	30	6206	34	24
	3	9-10	180	215	40	6208	38,5	30
	4	11-12	200	240	50	6210	43	34
	5	13	240	285	60	6212	48	39
	6	14-15	280	330	70	6214	52	42
	7	16	290	345	80	6216	56	45
	8	17-18	355	415	80	6216	56	51
	9	20-21	400	460	90	6218	64	66

* Under special order, we will be able to produce other measures.



REF.: 030.103 - With roller bearing, form Y

TECHNICAL DATA	SHEAVE N°	Ø WIRE	d1	d2	d3	BEARING	L2	b
	1	24	430	505	100	5020	54	65
	2	26	470	550	100	5020	54	71

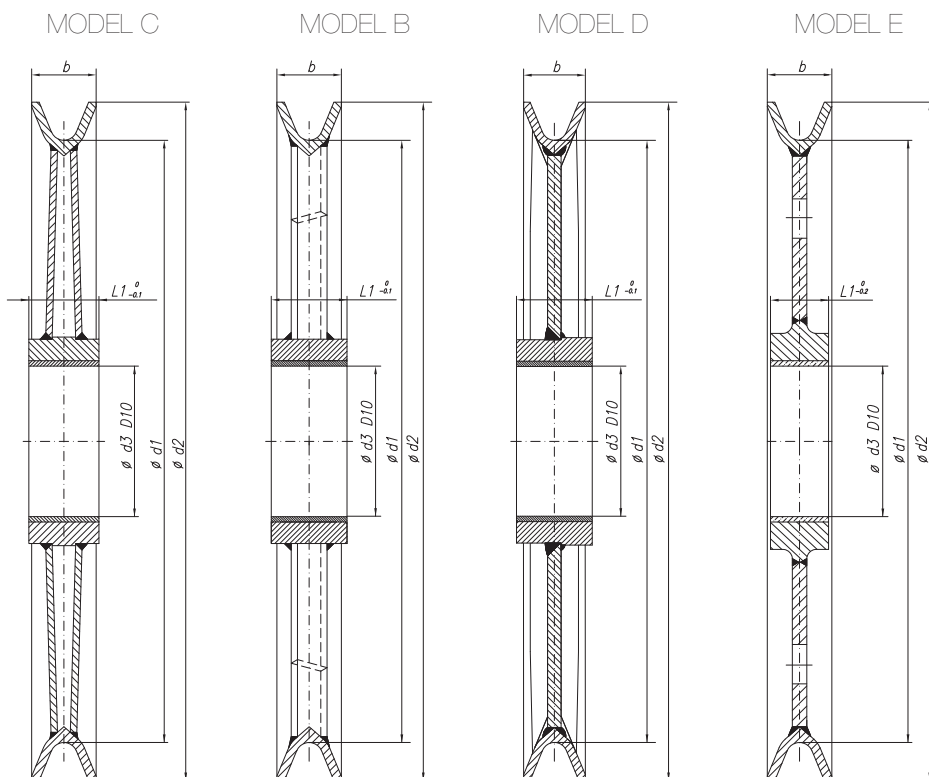
* Under special order, we will be able to produce other measures.

- It complies with the International Standards
- Material (steel):
 - Rim and plates: S355J2
 - Hub: E355
- Standard hardness: 200-250 HB (higher if requested)
- Default final protection: RAL 9005 (other final coatings by request)

DESCRIPTION

შეავე მოდელი C, B, D და E

SHEAVE MODEL C, B, D and E "With bronze bushing"



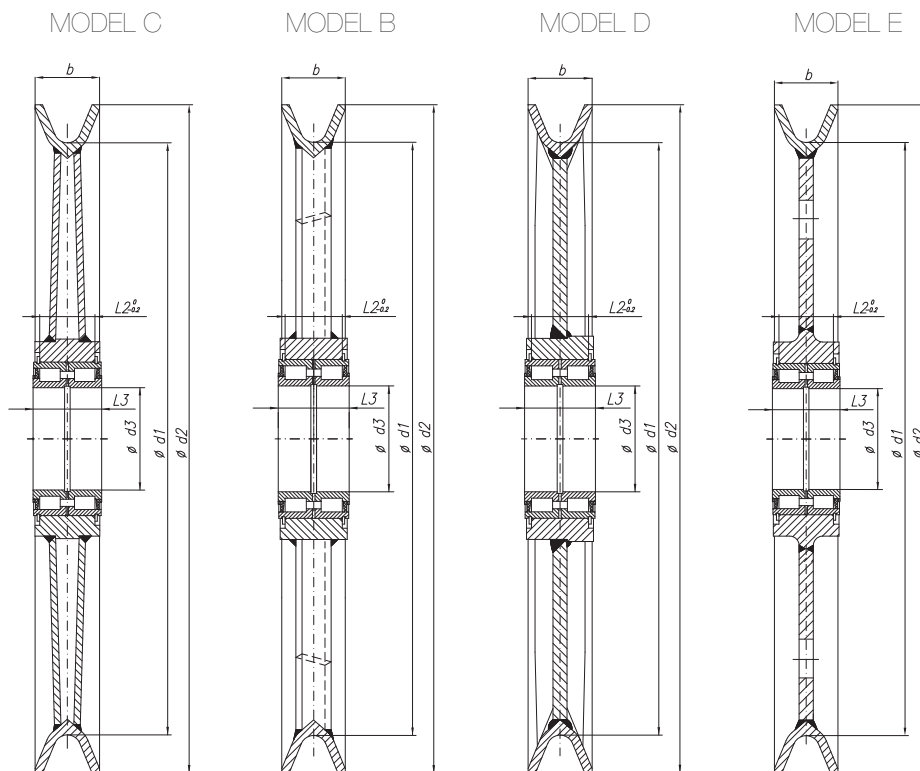
- It complies with the International Standards
- Material (steel):
 - Rim and plates: S355J2
 - Hub: E355
- Standard hardness: 200-250 HB (higher if requested)
- Default final protection: Primer layer (Other final coatings by request)
- Relation: D1 approx. 23-28 x wire diameter
- Bronze bushing material: CuSn12

DESCRIPTION

REF.: 030.104

SHEAVE N°	d1	Ø WIRE	d2	d3	b	L1
1	400	16	455	75	46	108
2	450	18	510	80	51	108
3	500	20	570	90	56	118
4	560	22	630	100	58	128
5	560	20	630	140	56	120
6	630	26	710	110	67	138
7	630	22	700	150	58	130
8	710	28	790	120	68	138
9	710	26	790	170	67	140
10	800	32	890	130	77	138
11	800	28	880	180	68	150
12	900	36	1.010	140	89	138
13	900	32	990	200	77	160
14	1.000	36	1.110	220	89	160
15	1.120	40	1.240	240	98	190
16	1.250	44	1.380	260	106	190

* Under special order, we will be able to produce other measures.



- It complies with the International Standards
- Material (steel):
 - Rim and plates: S355J2
 - Hub: E355

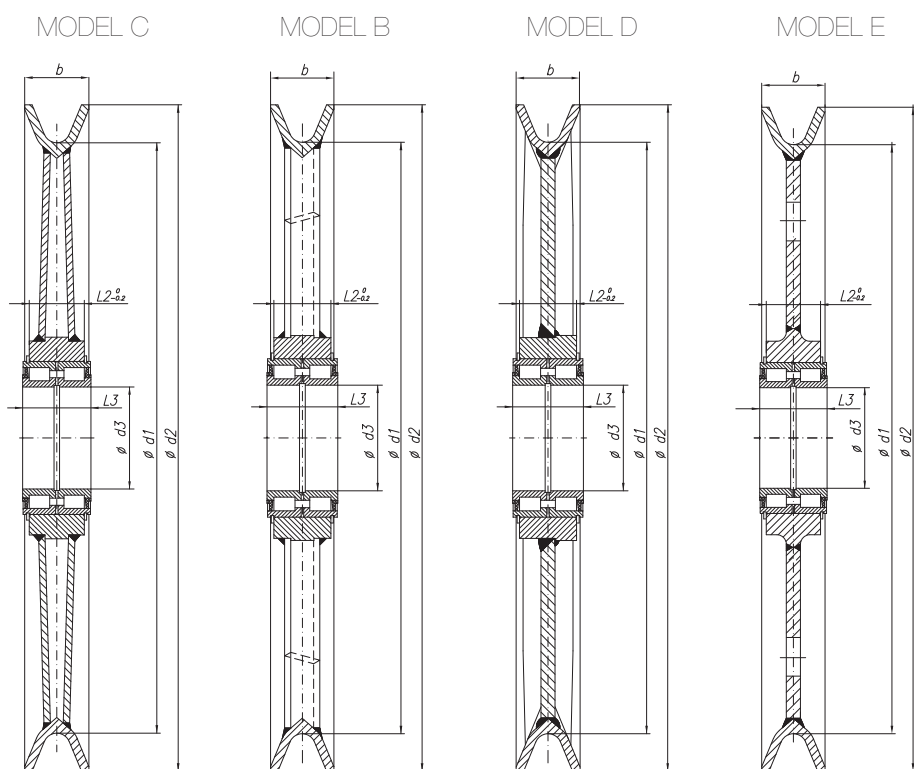
- Standard hardness: 200-250 HB (higher if requested)
- Default final protection: Primer layer (Other final coatings by request)
- Relation: D1 approx. 23-28 x wire diameter
- Roller bearing NNF serial (SL04)

DESCRIPTION

REF.: 030.105

SHEAVE N°	d1	Ø WIRE	d2	d3	b	L2	L3
1	400	16	455	80	46	49	60
2	450	18	510	80	51	49	60
3	500	20	570	90	56	54	67
4	560	22	630	100	58	54	67
5	560	20	630	140	56	77	95
6	630	26	710	110	67	65	80
7	630	22	700	150	58	81	100
8	710	28	790	120	68	65	80
9	710	26	790	170	67	99	122
10	800	32	890	130	77	77	95
11	800	28	880	180	68	110	136
12	900	36	1.010	140	89	77	95
13	900	32	990	200	77	120	150
14	1.000	36	1.110	220	89	134	160
15	1.120	40	1.240	240	98	134	160
16	1.250	44	1.380	260	106	154	190

* Under special order, we will be able to produce other measures.



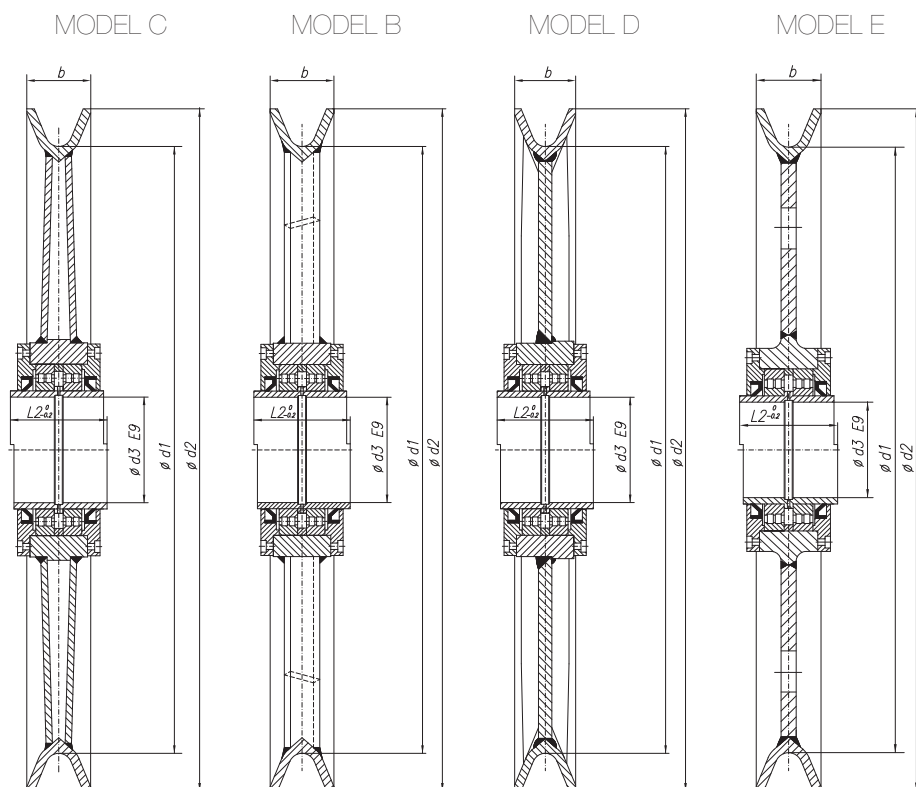
- It complies with the International Standards
- Material (steel):
 - Rim and plates: S355J2
 - Hub: E355
- Standard hardness: 200-250 HB (higher if requested)
- Default final protection: Primer layer (Other final coatings by request)
- Relation: D1 approx. 23-28 x wire diameter
- Roller bearing NNF serial (SL04)

DESCRIPTION

REF.: 030.106

TECHNICAL DATA	SHEAVE N°	d1	Ø WIRE	d2	d3	b	L2	L3
	1	400	16	455	80	46	49	60
	2	450	18	510	80	51	49	60
	3	500	20	570	90	56	54	67
	4	560	22	630	100	58	54	67
	5	560	20	630	140	56	77	95
	6	630	26	710	110	67	65	80
	7	630	22	700	150	58	81	100
	8	710	28	790	120	68	65	80
	9	710	26	790	170	67	99	122
	10	800	32	890	130	77	77	95
	11	800	28	880	180	68	110	136
	12	900	36	1.010	140	89	77	95
	13	900	32	990	200	77	120	150
	14	1.000	36	1.110	220	89	134	160
	15	1.120	40	1.240	240	98	134	160
	16	1.250	44	1.380	260	106	154	190

* Under special order, we will be able to produce other measures.



- It complies with the International Standards
- Material (steel):
 - Rim and plates: S355J2
 - Hub: E355
- Standard hardness: 200-250 HB (higher if requested)
- Default final protection: Primer layer (Other final coatings by request)
- Relation: D1 approx. 23-28 x wire diameter
- Roller bearing NNC-V serial

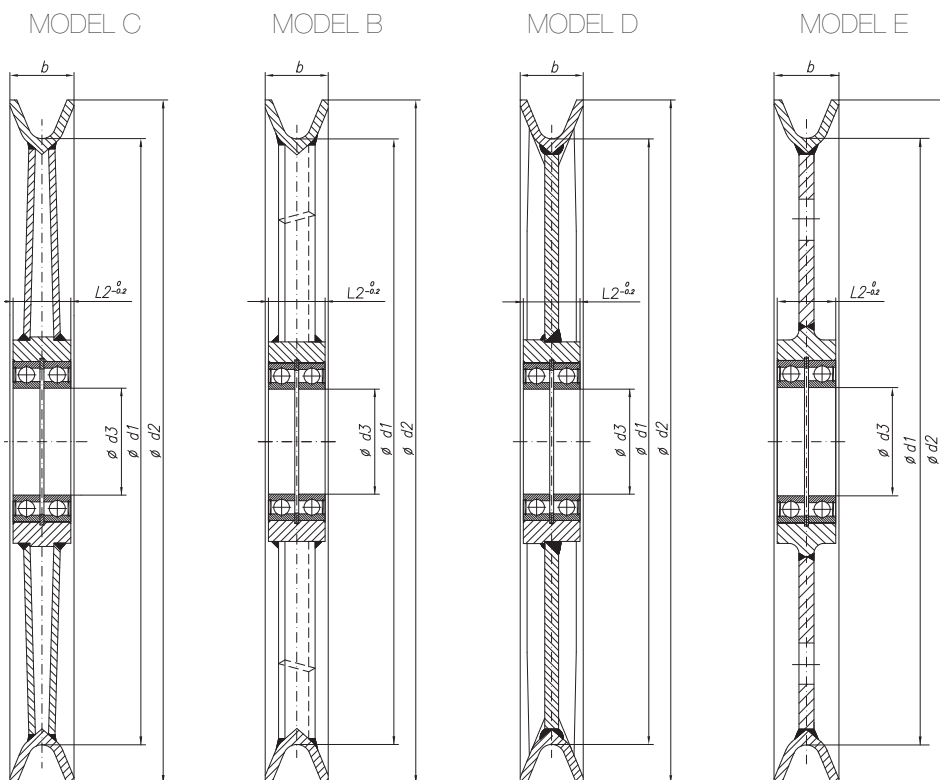
DESCRIPTION

REF.: 030.107

SHEAVE N°	d1	Ø WIRE	d2	d3	b	L2
1	400	16	455	75	46	130
2	450	18	510	80	51	130
3	500	20	570	90	56	140
4	560	22	630	100	58	150
5	560	20	630	140	56	140
6	630	26	710	110	67	160
7	630	22	700	150	58	150
8	710	28	790	120	68	160
9	710	26	790	170	72	160
10	800	32	890	130	90	160
11	800	28	880	180	80	170
12	900	36	1010	140	100	160
13	900	32	990	200	90	180
14	1.000	36	1.110	220	100	180
15	1.120	40	1.240	240	112	210
16	1.250	44	1.380	260	125	210

* Under special order, we will be able to produce other measures.

SHEAVE MODEL C, B, D and E "With ball bearings, form Z1"



- It complies with the International Standards
- Material (steel):
 - Rim and plates: S355J2
 - Hub: E355
- Standard hardness: 200-250 HB (higher if requested)
- Default final protection: Primer layer (Other final coatings by request)
- Relation: D1 approx. 23-28 x wire diameter
- Ball bearings 6 serial with sealing

DESCRIPTION

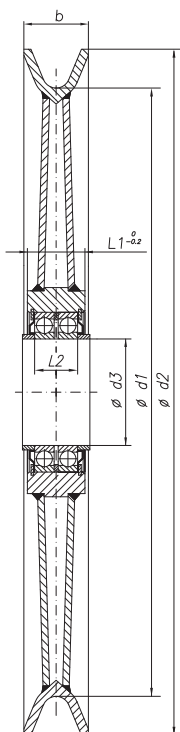
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TECHNICAL DATA

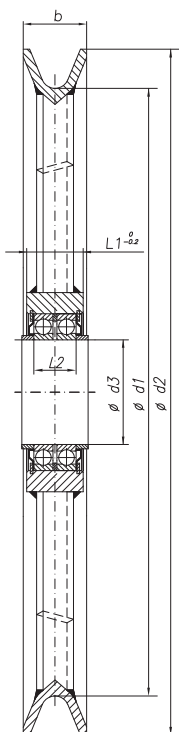
SHEAVE N°	d1	Ø WIRE	d2	d3	b	L2
1	400	16	455	75	46	54
2	450	18	510	80	51	56
3	500	20	570	90	56	64
4	560	22	630	100	58	72
5	630	26	710	110	67	80

* Under special order, we will be able to produce other measures.

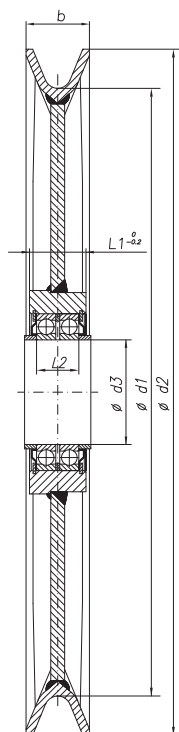
MODEL C



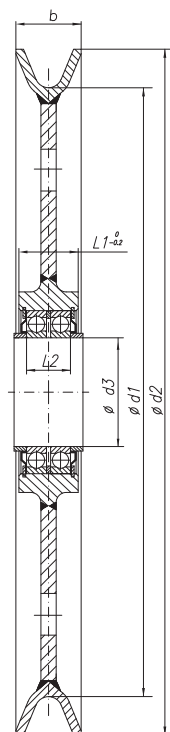
MODEL B



MODEL D



MODEL E



- It complies with the International Standards
- Material (steel):
 - Rim and plates: S355J2
 - Hub: E355
- Standard hardness: 200-250 HB (higher if requested)
- Default final protection: Primer layer (Other final coatings by request)
- Relation: D1 approx. 23-28 x wire diameter
- Ball bearings 6 serial

DESCRIPTION

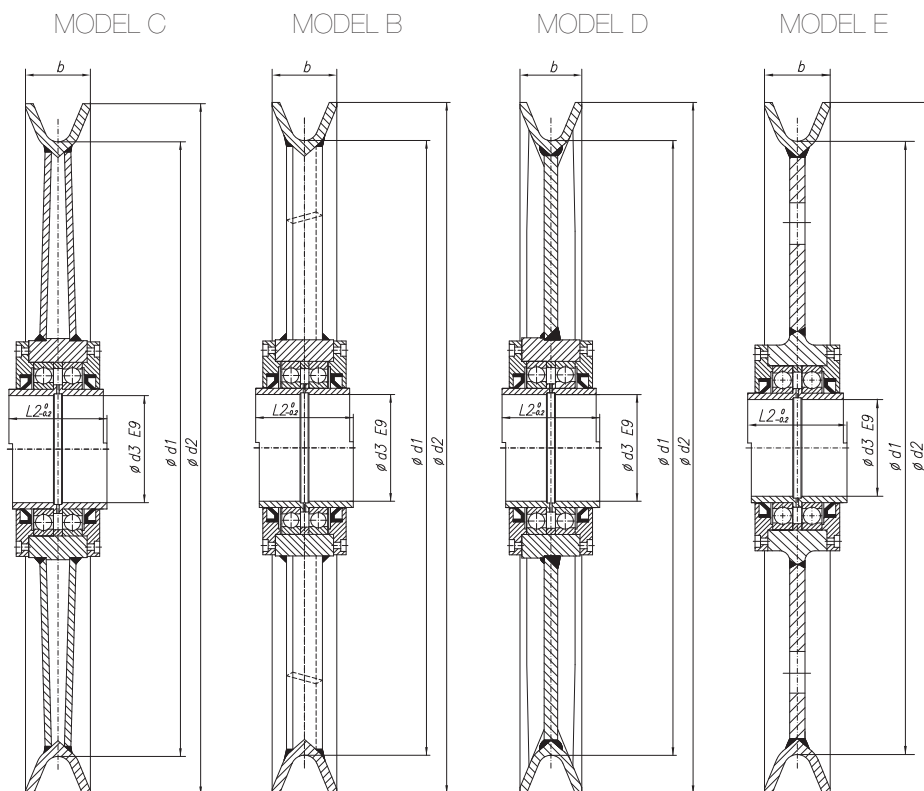
REF.: 030.109

TECHNICAL DATA	SHEAVE N°	d1	Ø WIRE	d2	d3	b	L1	L2
	5	560	20	630	140	56	100	80
	6	630	26	710	110	67	100	80
	7	630	22	700	150	58	100	80
	8	710	28	790	120	68	110	90
	9	710	26	790	170	67	110	90
	10	800	32	890	130	77	110	90
	11	800	28	880	180	68	120	100
	12	900	36	1010	140	89	120	100
	13	900	32	990	200	77	130	110
	14	1.000	36	1.110	220	89	140	120
	15	1.120	40	1.240	240	98	140	120
	16	1.250	44	1.380	260	106	170	140

* Under special order, we will be able to produce other measures.

SHEAVE MODEL C, B, D and E

"With ball bearings, covers and axle bushing"



- It complies with the International Standards
- Material (steel):
 - Rim and plates: S355J2
 - Hub: E355
- Standard hardness: 200-250 HB (higher if requested)
- Default final protection: Primer layer (Other final coatings by request)
- Relation: D1 approx. 23-28 x wire diameter
- Ball bearings 6 serial

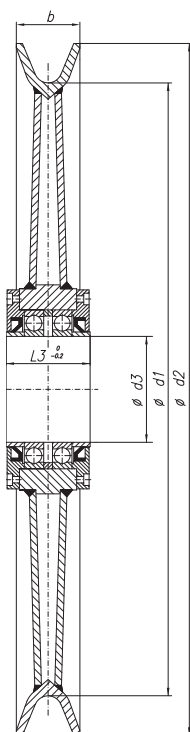
DESCRIPTION

REF.: 030.110

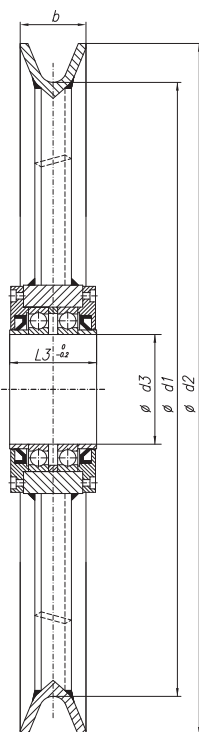
TECHNICAL DATA	SHEAVE N°	d1	Ø WIRE	d2	d3	b	L2
	1	400	16	455	75	52	130
	2	450	18	510	80	60	130
	3	500	20	570	90	62	140
	4	560	22	630	100	70	150
	5	560	20	630	140	62	140
	6	630	26	710	110	72	160
	7	630	22	700	150	70	150
	8	710	28	790	120	80	160
	9	710	26	790	170	72	160
	10	800	32	890	130	90	160
	11	800	28	880	180	80	170
	12	900	36	1.010	140	100	160
	13	900	32	990	200	90	180
	14	1.000	36	1.110	220	100	180
	15	1.120	40	1.240	240	112	210
	16	1.250	44	1.380	260	125	210

* Under special order, we will be able to produce other measures.

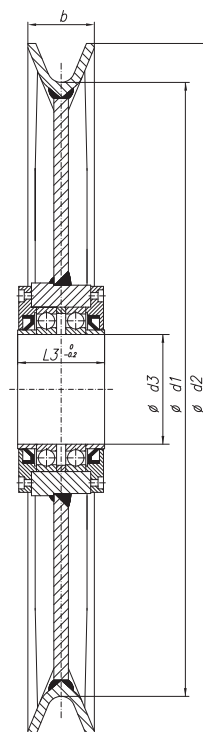
MODEL C



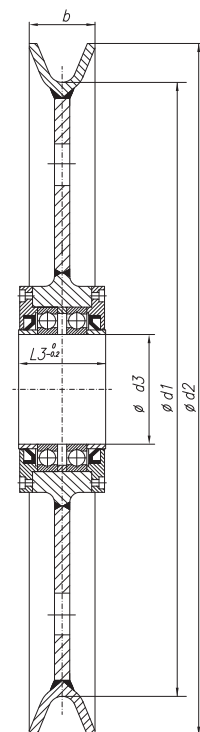
MODEL B



MODEL D



MODEL E



- It complies with the International Standards
- Material (steel):
 - Rim and plates: S355J2
 - Hub: E355

- Standard hardness: 200-250 HB (higher if requested)
- Default final protection: Primer layer (Other final coatings by request)
- Relation: D1 approx. 23-28 x wire diameter
- Ball bearings 6 series

DESCRIPTION

REF.: 030.111

TECHNICAL DATA

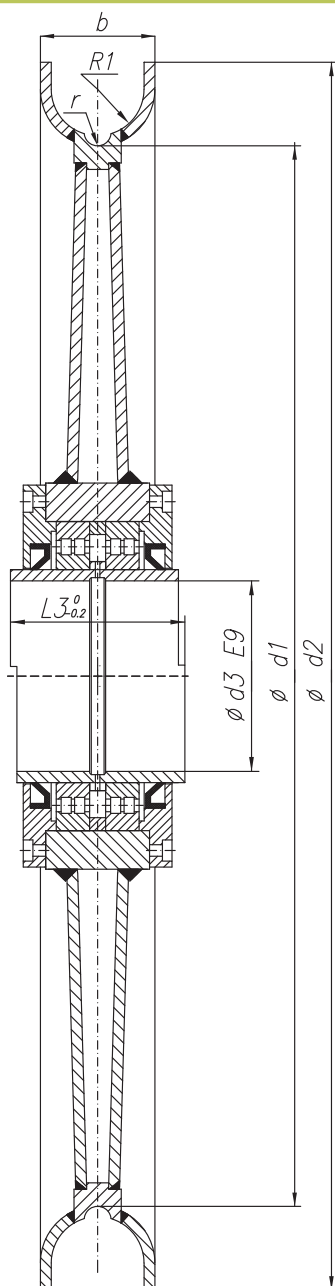
SHEAVE N°	d1	Ø WIRE	d2	d3	b	L3
1	400	16	455	75	52	130
2	450	18	510	80	60	130
3	500	20	570	90	62	140
4	560	22	630	100	70	150
5	560	20	630	140	62	140
6	630	26	710	110	72	160
7	630	22	700	150	70	150
8	710	28	790	120	80	160
9	710	26	790	170	72	160
10	800	32	890	130	90	160
11	800	28	880	180	80	170
12	900	36	1.010	140	100	160
13	900	32	990	200	90	180
14	1.000	36	1.110	220	100	180
15	1.120	40	1.240	240	112	210
16	1.250	44	1.380	260	125	210

* Under special order, we will be able to produce other measures.

შეღებ ნოდელი

SHEAVE MODEL PEAR

"With roller bearings, covers and axle bushing"



- It complies with the International Standards.
- Material (steel):
 - Rim and plates (or spokes) -S355J2
 - Hub: E355
- Default final protection: primer layer.
(Other final coatings by request).
- Relation: D1 approx. 23-28 x wire diameter.
- Roller bearing NNC-V serial.

DESCRIPTION

REF.: 030.150

SHEAVE N°	d1	Ø WIRE	d2	r	R1	b	L3	d3
1	450	10-12	580	7	40	100	115	80
2	500	13-18	680	10	55	130	135	90
3	630	19-22	850	12,5	65	150	155	100
4	710	22-26	970	14	80	180	185	110
5	800	26-28	1.060	16	80	180	185	120
6	900	28-32	1.210	18	90	210	215	140
7	1.000	32-36	1.360	20	105	240	245	150
8	1.120	37-40	1.480	22	105	240	245	160
9	1.250	40-48	1.610	25	105	240	245	180

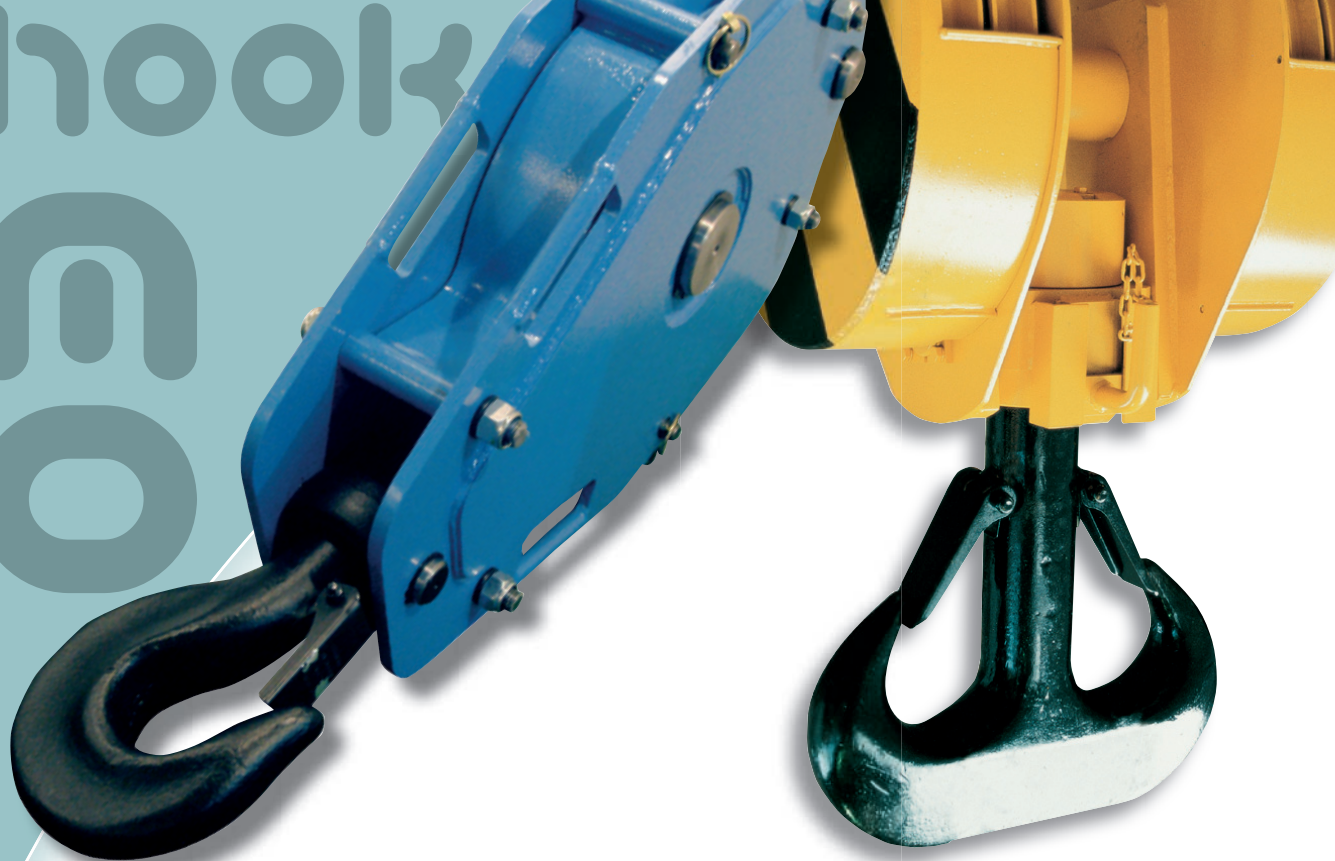
* Under special order, we will be able to produce other measures.



WARNING
DO NOT TOUCH
THIS AREA
IS HOT
DANGER

CONFINED SPACE

PROHIBITED
ENTRY AREA
DANGER



Gosan has developed a new series of blocks and tracks in accordance with the latest requirements and techniques FEM 1001 and DIN STANDARD 15020.

Safety when faced with breakage is in all cases greater than that required by FEM standards.

The suspensions (hook, cross-axle, nut) correspond to DIN standards 15411.

The hooks correspond to DIN standards 15401 and 15402 and are made of forged steel, grade StE355 (class P, regulation DIN STANDARD 15400). Alloy 34CrMo4, 34CrNiMo6 and 30CrNiMo8 (classes S, T, V) can be used if required.

All the hooks are equipped with a safety bolt to prevent their escaping from the sling.

They can be fitted with an anti-spinnig system which is easily attached without the use of tools; this keeps the hook steady. The pulleys are made of rolled steel, designed and built by **GOSAN**, and are fitted with double cylindrical roller bearings, perfectly located with special retainers. These bearings are greased by means of lubricating points, one for every pulley, located on the end of the axle and duly protected from any possible knocks.

Special attention is paid to the shape of the throat when constructing the pulley. The bottom radius (DIN 15601 ($r=0.525 d$)) greatly extend the life of the cable, which will reach its maximum if the cable is properly placed in the pulley throat. Pulleys with the throat tempered will give an additional life extension to the cable and are available upon request.

The distance between pulleys (blocks and tackles of four or more pulleys) is very small due to the type of bearings used.

When calculating the diameter of the compensating pulley and the location of the return-pulleys, one must take into account the fact that the lateral deviation of the cable must be no greater than 4° . The diameter of the cable, as indicated in the tables, has been determined in terms of the composition WS. 6 x 36 + 1 and single resistance 180° kg/mm².

The present tendency to use cables with a greater metallic section and resistance of 200 and 220 kg/mm² can reduce the diameter of the cable and consequently that of the pulleys. This aspect is of particular interest for large loads as it implies a more compact and, therefore, more economic block and tackle.

The pulleys are protected by easily removable safety guards which can be removed even if the block and tackle is suspended from the cables. The output windows for the cables are reinforced and rounded on the edges in order not to damage the cable. The axle of the pulleys may be either grade F.1252 (42CrMo4).

The support mats are very thick and have an outside diameter greater than that of the pulleys. They are reinforced with vertical flatbars between the axle of the pulleys and the cross-axle. They are normally built of rolled steel S355J2.

The blocks and tackles undergo rigorous quality control during the manufacturing process. Certificates of receipt and supervision of the use of hooks, DIN 15404 and 15405, and manufacturing, DIN 50049-3.1, are delivered with the hook block.

The standards which determine the components of the snatch block are indicated below, as a reminder.

CLASSIFICATION OF THE LIFTING DEVICE - FEM 1.001

STATE OF LOAD		LIFE IN REAL WORKING HOURS OF THE DEVICE													
Factor K	SERVICE	800		1.600		3.200		6.300		12.500		25.000		50.000	
0,125	very low frequency of maximum load.					M3	1 Bm	M4	1 Am	M5	2 m	M6	3 m	M7	4 m
0,250	low frequency of maximum load.			M3	1 Bm	M4	1 Am	M5	2 m	M6	3 m	M7	4 m	M8	5 m
0,500	approx same frequency of off-peak, med. & max loads.	M3	1 Bm	M4	1 Am	M5	2 m	M6	3 m	M7	4 m	M8	5 m	M8	5 m
1,000	high frequency of maximum load.	M4	1 Am	M5	2 m	M6	3 m	M7	4 m	M8	5 m	M8	5 m	M8	5 m

DEFINING THE CABLE.

The maximum pull S in the lifting cable is obtained by considering.

P = Maximum nominal load of the device.

Q = Weight of the block and tackle itself of the supporting element of the load.

i = Block and tagle ratio.

η = Block and tagle capacity. (T.2.2).

Fa = Accelerating force if greater than 10% of the load.

α_m = Inclination of the cable at the end of a run if it is greater than 22.5°.

Therefore:

$$S = \frac{P + Q}{i \cdot \eta}$$

$$S = \frac{P + Q}{i \cdot \eta \cdot \cos \alpha_m}$$

$$S = \frac{P + Q + Fa}{i \cdot \eta}$$

In the special case of self-gripping ladles, two cases are considered:

1. A system of elevation that assures load spreading.

Locking lines, S= 66% of the weight of the ladle divided by number of cables.

Stay ropes, S= 66% of the total weight of the ladle divided by number of cables.

2. A system of elevation that does not assure load spreading.

Locking lines, S=100% of the total weight of the ladle divided by number of cables.

Stay ropes, S=66% of the total weight of the ladle divided by number of cables.

Diameter of the cable.

$$\text{FEM safety } Z_p \geq \frac{F_o \text{ (cable breaking stress)}}{S \text{ (maximum pull of the rope)}}$$

$$\text{DIN } d_{\min} = C \sqrt{S} \quad C = \text{coef. Indicated in T-2-1}$$

COEFFICIENTS ZP AND C

TABLE T - 2 - 1

FEM 1001			DIN 15020				
GROUP	MINIMUM SAFETY Zp		GROUP	COEFFICIENT C mm / √ KP			
	CONVEN- TIONAL WIRE ROPE	NON ROTATION WIRE ROPE		CONVENTIONAL WIRE ROPE		NON ROTATION WIRE ROPE	
				180	200	180	200
M3	3,55	4	1 Bm	0,265	0,250	0,250	0,236
M4	4	4,5	1Am	0,300	0,280	0,265	0,265
M5	4,5	5,6	2 m	0,335	0,335	0,300	0,300
M6	5,6	7,1	3 m	0,375	0,375	0,335	0,335
M7	7,1	9	4 m	0,425	0,425	0,375	0,375
M8	9	11,2	5 m	0,475	0,475	0,425	0,425

BLOCK AND TACKLE CAPACITY - DIN 15020

TABLE T - 2 - 2

No of strands		2	3	4	5	6	7	8	9	10	11	12	13	14
pulleys with bearing	η	0,99	0,98	0,97	0,96	0,95	0,94	0,93	0,92	0,91	0,91	0,90	0,89	0,88

PULLEY CABLES

Determining the minimum original diameter in the cable.

$$D \geq d_1 \cdot h_1 \cdot h_2$$

If:

d_1 = diameter of the cable.

h_1 = coefficient depending on the group where the lifting device is classified. This coefficient defined by DIN 15020.

h_2 = increase factor of h_1 , balances the number of bendings in a cable on passing through the pulleys and the drum.

COEFFICIENT H1

GROUP		NORMAL CABLE		NONROTATING CABLE	
FEM	DIN	CABLE PULLEY	COMPENSAT. PULLEY	CABLE PULLEY	COMPENSAT. PULLEY
M3	1 Bm	16	12,5	18	14
M4	1 Am	18	14	20	16
M5	2 m	20	14	22,4	16
M6	3 m	22,4	16	25	18
M7	4 m	25	16	28	18
M8	5 m	28	18	31,5	20

COEFFICIENT H2

Disposition of the equipment								
FEM	1		1,12				1,25	

Determining h_2 .

W = Bending coefficient on passing through a pulley or drum.

$W = 1$ –Cable drum.

$W = 2$ –Cable pulley with bending in the same direction.

$W = 4$ –Cable pulley with bending in opposite direction.

$h_2 = 1$ –For W_{tot} equal to or lower than 5.

$h_2 = 1,12$ –for W_{tot} between 6 and 9.

$h_2 = 1,25$ –for W_{tot} greater than 10.

CONSULTING DATA.

With an aim to providing a hook block appropriate for the service required, the following information should accompany any enquiry:

1. FEM/DIN group of lifting gear or description of the work of the crane of lifting device.
2. Maximum load to be lifted.
3. Diameter of the cable.
4. Number of strands of the block and tackle.
5. Lifting speed.
6. Diameter of the compensating pulley.
7. Arrangement of the upper pulleys.

PROGRAM OF HOOK BLOCKS.

The blocks and tackles listed are the so-called short ones with outside plate pulleys.

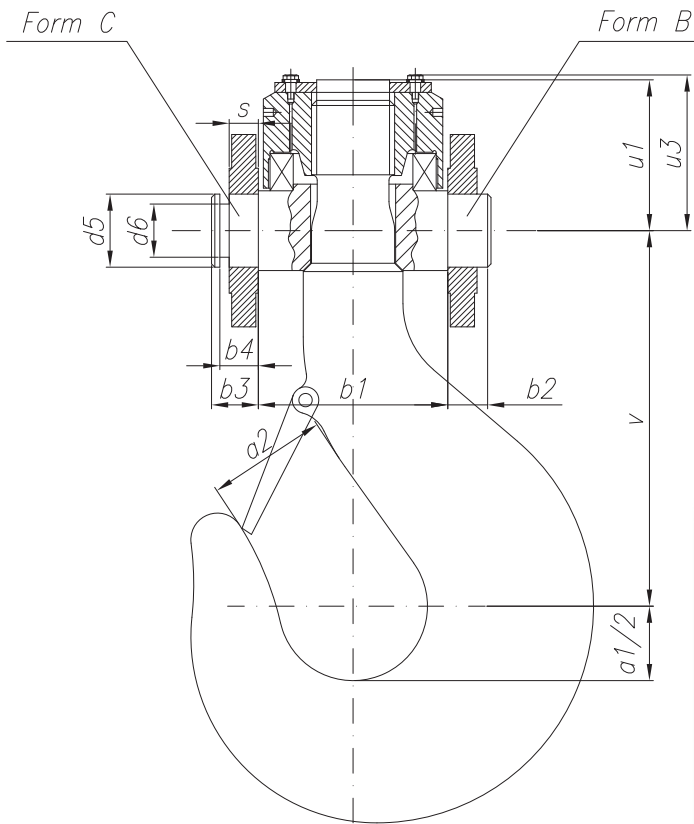
GOSAN designs and builds large blocks and tackles with pulleys arranged on the outside of the plates or some inside and others outside the plates.

We also build blocks and tackles without a hook, with swivel eyes or another system suitable for lifting devices.



hook blocks-suspensions

SUSPENSIONS WITH SINGLE HOOK FOR CRANES



Hooks in accordance with DIN15411 standards (with DIN15401 hooks).

Material:

The hooks are made of forged steel, (class P).

We can use alloy steel if required (class V).

All the hooks are equipped with a safety latch to prevent their escaping from the sling.

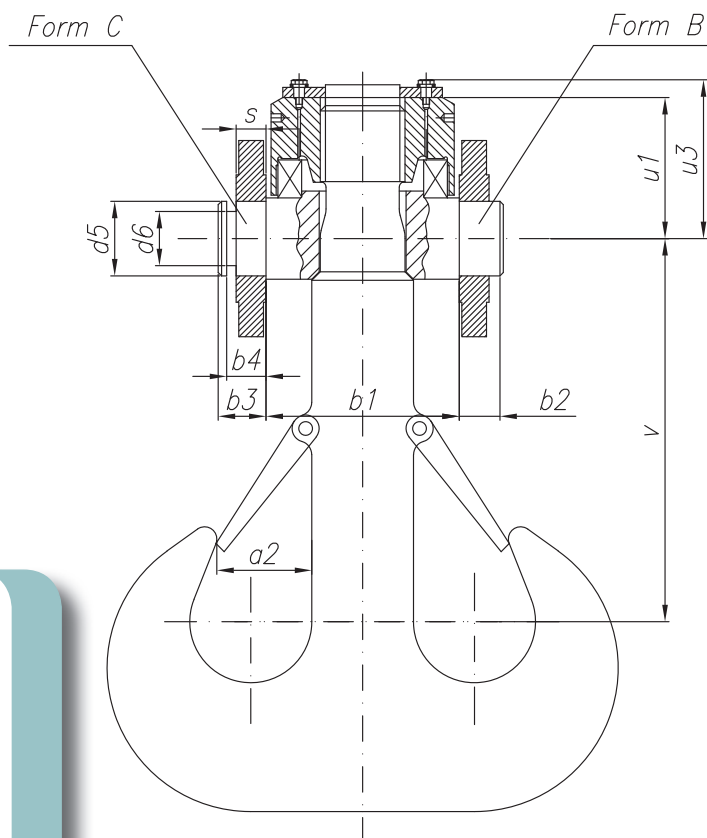
They can be fitted with an anti-turning system which is easily attached without the use of tools, this keeps the hook steady.

DESCRIPTION

REF.: 020.101

Nº HOOK	a1	a2	b1	b2	b3	b4	d5	d6	s	u1	u3	v	BEARING
1	50	40	50	17,5	-	-	25	-	10	39	-	130	51.106
1,6	56	45	65	17,5	-	-	25	-	10	53	-	140	51.107
2,5	63	50	80	20	22,5	17	30	19	10	63,5	-	155	51.108
4	71	56	90	22,5	25	19	35	23	12	71	-	175	51.110
5	80	63	100	25	27,5	22	40	27	15	79,5	-	195	51.112
6	90	71	125	27,5	30	24	45	32	15	90	95	240	51.214
8	100	80	140	30	35	29	50	36	20	98	104	265	51.216
10	112	90	160	30	35	29	55	40	20	110	116	280	51.218
12	125	100	180	35	42,5	34	60	42	25	127	133	315	51.220
16	140	112	190	35	42,5	36	70	50	25	136	143	370	51.222
20	160	175	200	-	47,5	41	80	56	30	150	157	415	51.224
25	180	140	220	-	49	41	90	64	30	166	173	460	51.226
32	200	160	260	-	59	51	100	72	40	188	195	500	51.232
40	224	180	285	-	65	58	110	80	45	208	215	565	51.236
50	250	200	335	-	65	58	125	92	45	224	232	620	51.244
63	280	224	380	-	71	63	140	104	50	260	267	700	51.248
80	315	250	420	-	72,5	63	160	120	50	287	294	800	51.256
100	355	280	470	-	87,5	77	180	136	60	326	333	885	51.260
125	400	315	510	-	87,5	77	200	150	60	365	374	1.000	51.268
160	450	355	550	-	100	87	220	164	70	406	416	1.130	51.272
200	500	400	610	-	100	87	240	184	70	492	501	1.270	51.372
250	560	450	700	-	110	97	260	200	80	552	561	1.440	51.384

TECHNICAL DATA



Hooks in accordance with DIN15411 standards (with DIN15402 hooks)

Material:

The hooks are made of forged steel, (class P). We can use alloy steel if required (class V).

All the hooks are equipped with a safety latch to prevent their escaping from the sling.

They can be fitted with an anti-turning system which is easily attached without the use of tools, this keeps the hook steady.

DESCRIPTION

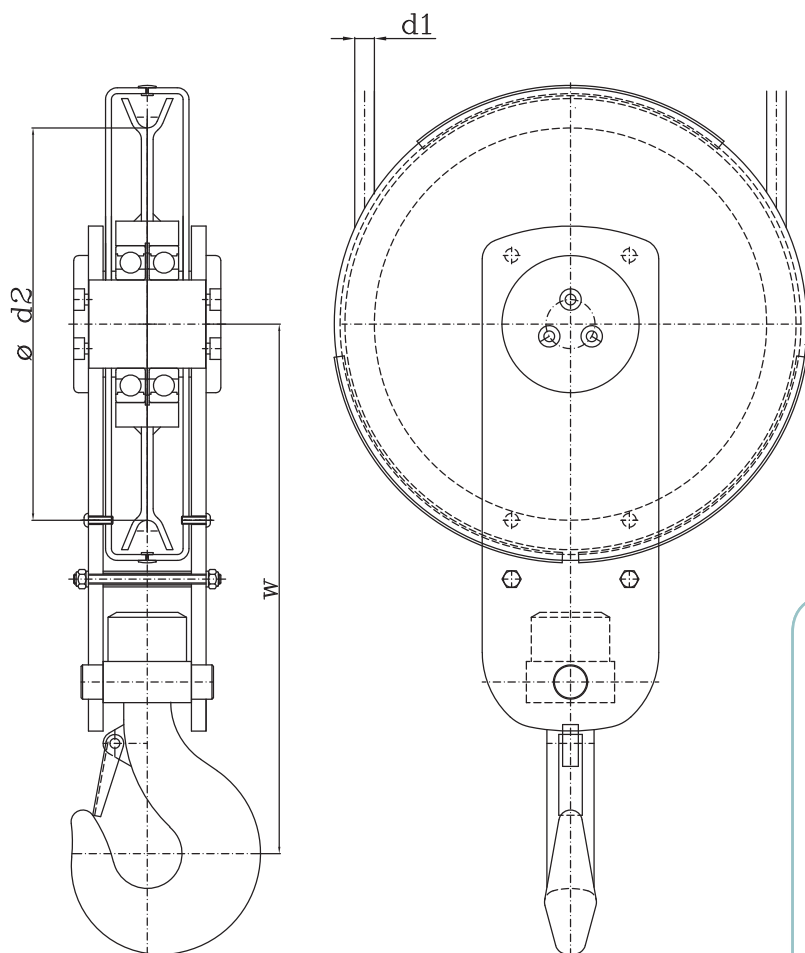
REF.: 020.102

Nº HOOK	a2	b1	b2	b3	b4	d5	d6	s	u1	u3	v	BEARING
1	32	50	17,5	-	-	25	-	10	39	-	130	51.106
1,6	36	65	17,5	-	-	25	-	10	53	-	140	51.107
2,5	40	80	20	22,5	17	30	19	10	63,5	-	155	51.108
4	45	90	22,5	25	19	35	23	12	71	-	175	51.110
5	50	100	25	27,5	22	40	27	15	79,5	-	195	51.112
6	56	125	27,5	30	24	45	32	15	90	95	240	51.214
8	63	140	30	35	29	50	36	20	98	104	265	51.216
10	71	160	30	35	29	55	40	20	110	116	280	51.218
12	80	180	35	42,5	34	60	42	25	127	133	315	51.220
16	90	190	35	42,5	36	70	50	25	136	143	370	51.222
20	100	200	-	47,5	41	80	56	30	150	157	415	51.224
25	112	220	-	49	41	90	64	30	166	173	460	51.226
32	125	260	-	59	51	100	72	40	188	195	500	51.232
40	140	285	-	65	58	110	80	45	208	215	565	51.236
50	160	335	-	65	58	125	92	45	224	232	620	51.244
63	180	380	-	71	63	140	104	50	260	267	700	51.248
80	200	420	-	72,5	63	160	120	50	287	294	800	51.256
100	224	470	-	87,5	77	180	136	60	326	333	885	51.260
125	250	510	-	87,5	77	200	150	60	365	374	1.000	51.268
160	280	550	-	100	87	220	164	70	406	416	1.130	51.272
200	315	610	-	100	87	240	184	70	492	501	1.270	51.372
250	355	700	-	110	97	260	200	80	552	561	1.440	51.384

TECHNICAL DATA

hook blocks-for hoist

HOOK BLOCKS FOR HOIST "1 Sheave"



State-of-the-art hook block, designed for very demanding conditions.

It complies with the FEM/DIN standards.

Suspensions follow DIN15411 and they are supplied with safety latch.

Material:

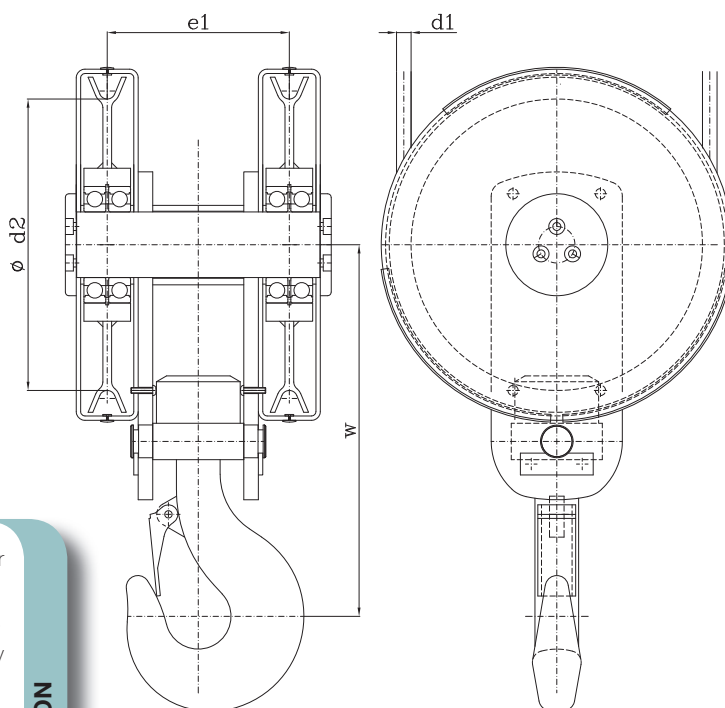
- suspension: class V (other qualities if requested)
- shaft: 42CrMo4.
- supports: S355J2.

DESCRIPTION

REF.: 021.111

Nº	GROUP	LOAD	d1	d2	w	WEIGHT	REFERENCES
1	M4	3,2	9-10	180	320	16	011.1.M456
1	M5	2,5	9-10	180	320	16	011.1.M456
1	M6	2	9-10	180	320	16	011.1.M456
1,6	M4	5	13	240	390	29	011.1,6.M456
1,6	M5	4	13	240	390	29	011.1,6.M456
1,6	M6	3,2	13	240	390	29	011.1,6.M456
2,5	M4	8	16	290	450	45	011.2,5.M456
2,5	M5	6,3	16	290	450	45	011.2,5.M456
2,5	M6	---	16	290	450	45	011.2,5.M456
4	M4	12,5	20-21-22	400	560	90	011.4.M456
4	M5	10	20-21-22	400	560	90	011.4.M456
4	M6	8	20-21-22	400	560	90	011.4.M456
5	M4	16	24	430	600	115	011.5.M456
5	M5	12,5	24	430	600	115	011.5.M456
5	M6	10	24	430	600	115	011.5.M456
6	M4	20	26	470	680	142	011.6.M456
6	M5	16	26	470	680	142	011.6.M456
6	M6	12,5	26	470	680	142	011.6.M456
8	M4	25	29	520	750	192	011.8.M456
8	M5	20	29	520	750	192	011.8.M456
8	M6	16	29	520	750	192	011.8.M456

TECHNICAL DATA



State-of-the-art hook block, designed for very demanding conditions.

It complies with the FEM/DIN standards.

Suspensions follow DIN15411 and they are supplied with safety latch.

Material:

- suspension: class V (other qualities if requested)
- shaft: 42CrMo4
- supports: S355J2.

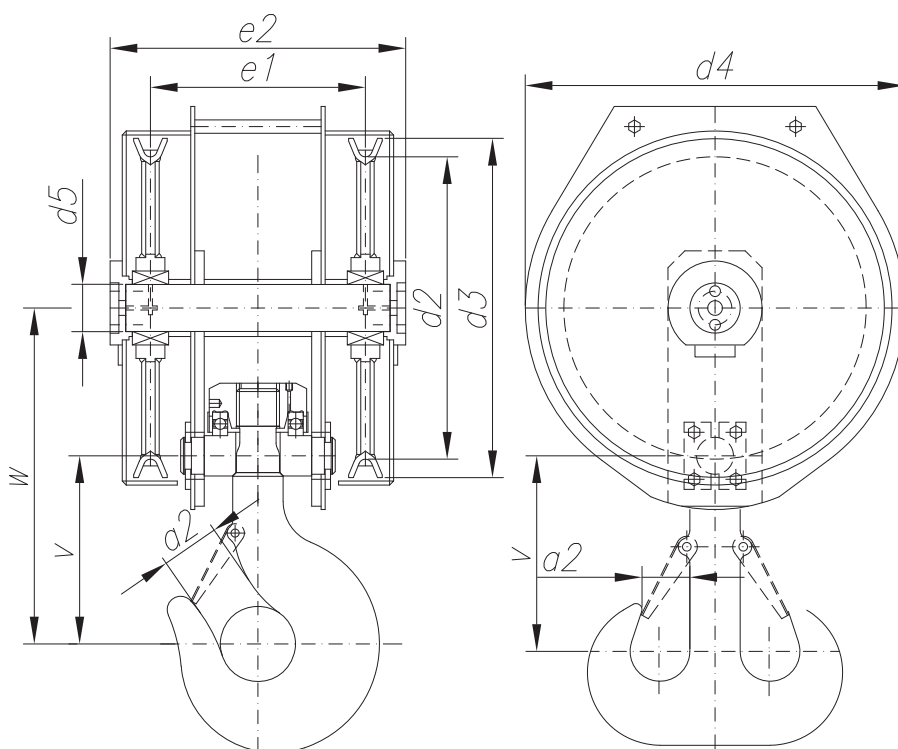
DESCRIPTION

REF.: 021.023

TECHNICAL DATA

Nº	GROUP	LOAD	d1	d2	e1	W	WEIGHT	REF.
1,6	M4	5	9-10	180	135	280	26	023.1.6.M456
1,6	M5	4	9-10	180	135	280	26	023.1.6.M456
1,6	M6	3,2	9-10	180	135	280	26	023.1.6.M456
2,5	M4	8	13	240	165	335	47	023.2.5.M456
2,5	M5	6,3	13	240	165	335	47	023.2.5.M456
2,5	M6	5	13	240	165	335	47	023.2.5.M456
4	M4	10	13	240	185	350	56	023.4.M456-1
4	M5	8	13	240	185	350	56	023.4.M456-1
4	M6	6,3	13	240	185	350	56	023.4.M456-1
4	M4	12,5	16	290	200	380	81	023.4.M456-2
4	M5	10	16	290	200	380	81	023.4.M456-2
4	M6	8	16	290	200	380	81	023.4.M456-2
5	M4	16	16	290	210	405	87	023.5.M456
5	M5	12,5	16	290	210	405	87	023.5.M456
5	M6	10	16	290	210	405	87	023.5.M456
6	M4	20	20-21-22	400	250	510	170	023.6.M456
6	M5	16	20-21-22	400	250	510	170	023.6.M456
6	M6	12,5	20-21-22	400	250	510	170	023.6.M456
8	M4	25	20-21-22	400	265	535	181	023.8.M456
8	M5	20	20-21-22	400	265	535	181	023.8.M456
8	M6	16	20-21-22	400	265	535	181	023.8.M456
10	M4	32	24	430	300	580	240	023.10.M456
10	M5	25	24	430	300	580	240	023.10.M456
10	M6	20	24	430	300	580	240	023.10.M456
12	M4	40	26	470	355	655	312	023.12.M456
12	M5	32	26	470	355	655	312	023.12.M456
12	M6	25	26	470	355	655	312	023.12.M456
16	M4	50	29	520	380	750	407	023.16.M456
16	M5	40	29	520	380	750	407	023.16.M456
16	M6	32	29	520	380	750	407	023.16.M456

HOOK BLOCK AND TACKLE "2 Sheaves"



State-of-the-art hook block, designed for very demanding conditions.

It complies with the FEM/DIN standards.

Suspensions follow DIN15411 and they are supplied with safety latch.

Material:

- Suspension: class P.
(other qualities if requested)
- Shaft: 42CrMo4.
- Supports: S355J2.

Distance between sheaves is very small, due to the bearing used.

DESCRIPTION

REF.: 020.022

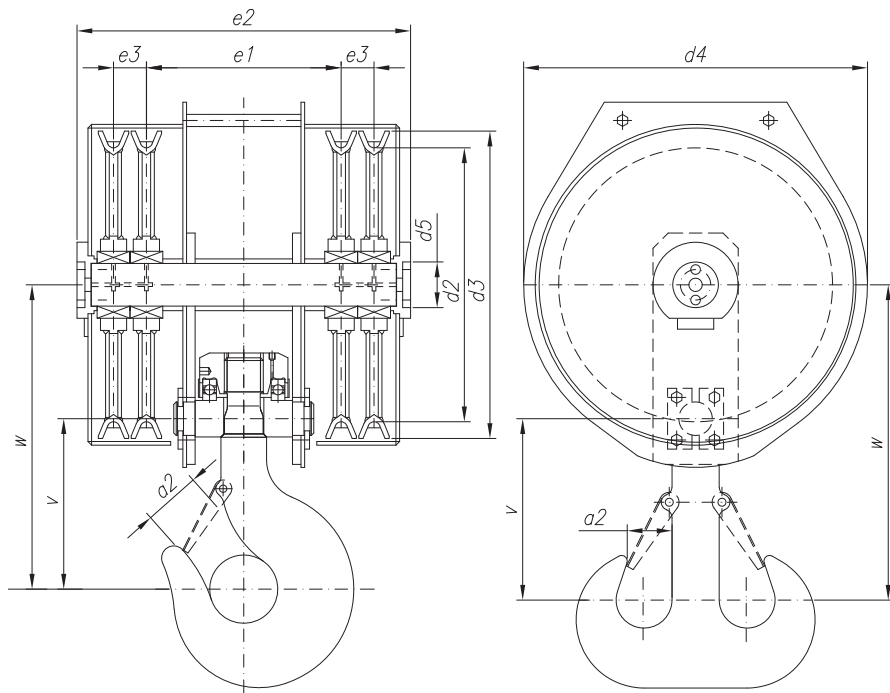
N°	Group		Load	Life	Wire	Dimensions										Weight kgs.	REF.
	ISO FEM	DIN	t	h	d1	d2	d3	d4	d5	e1	e2	v	w	Single a2	Doub.		
2,5	M3	1 Bm	6,3	1.600	10	180	210	255	40	160	250	170	285	50	40	40	022.2.5.M3
2,5	M4	1 Am	5	3.200	10	180	210	255	40	160	250	170	285	50	40	40	022.2.5.M4
2,5	M5	2 m	4	6.300	9	180	210	255	40	160	250	170	285	50	40	40	022.2.5.M5
2,5	M6	3 m	3,2	12.500	9	200	230	275	40	160	250	170	285	50	40	40	022.2.5.M6
2,5	M7	4 m	2,5	25.000	9	250	280	325	40	160	250	170	285	50	40	44	022.2.5.M7
2,5	M8	5 m	2	50.000	9	250	280	325	40	160	250	170	285	50	40	44	022.2.5.M8
4	M3	1 Bm	10	1.600	12	190	230	280	50	180	280	190	320	56	45	55	022.4.M3
4	M4	1 Am	8	3.200	12	190	230	280	50	180	280	190	320	56	45	55	022.4.M4
4	M5	2 m	6,3	6.300	11	225	260	310	50	180	280	190	320	56	45	58	022.4.M5
4	M6	3 m	5	12.500	11	245	280	330	50	180	280	190	320	56	45	58	022.4.M6
4	M7	4 m	4	25.000	11	280	315	365	40	190	280	190	320	56	45	62	022.4.M7
4	M8	5 m	3,2	50.000	11	280	315	365	40	190	280	190	320	56	45	62	022.4.M8

TECHNICAL DATA

N°	Group		Load	Life	Wire	Dimensions										Weight kgs.	REF.
	ISO FEM	DIN				t	h	d1	d2	d3	d4	d5	e1	e2	v		
5	M3	1 Bm	12,5	1.600	14	235	280	335	60	200	310	210	360	63	50	75	022.5.M3
5	M4	1 Am	10	3.200	14	235	280	335	60	200	310	210	360	63	50	75	022.5.M4
5	M5	2 m	8	6.300	12	240	280	335	50	200	297	210	360	63	50	75	022.5.M5
5	M6	3 m	6,3	12.500	12	275	315	370	50	200	297	210	360	63	50	75	022.5.M6
5	M7	4 m	5	25.000	12	315	355	410	50	210	307	210	360	63	50	80	022.5.M7
5	M8	5 m	4	50.000	12	315	355	410	50	210	307	210	360	63	50	80	022.5.M8
6	M3	1 Bm	16	1.600	16	265	315	370	60	240	350	240	420	71	56	102	022.6.M3
6	M4	1 Am	12,5	3.200	16	265	315	370	60	240	350	240	420	71	56	102	022.6.M4
6	M5	2 m	10	6.300	14	270	315	370	60	240	350	240	420	71	56	106	022.6.M5
6	M6	3 m	8	12.500	14	310	355	410	60	240	350	240	420	71	56	106	022.6.M6
6	M7	4 m	6,3	25.000	14	360	405	460	50	250	350	240	410	71	56	110	022.6.M7
6	M8	5 m	5	50.000	14	360	405	460	50	250	350	240	410	71	56	110	022.6.M8
8	M3	1 Bm	20	1.600	18	300	355	410	70	270	400	265	465	80	63	150	022.8.M3
8	M4	1 Am	16	3.200	18	300	355	410	70	270	400	265	465	80	63	150	022.8.M4
8	M5	2 m	12,5	6.300	16	305	355	410	60	270	380	265	465	80	63	152	022.8.M5
8	M6	3 m	10	12.500	16	355	405	460	60	270	380	265	465	80	63	152	022.8.M6
8	M7	4 m	8	25.000	16	405	455	510	60	280	390	265	455	80	63	155	022.8.M7
8	M8	5 m	6,3	50.000	16	405	455	510	60	280	390	265	455	80	63	155	022.8.M8
10	M3	1 Bm	25	1.600	20	295	355	565	80	290	430	280	500	90	71	178	022.10.M3
10	M4	1 Am	20	3.200	20	295	355	565	80	290	430	280	500	90	71	178	022.10.M4
10	M5	2 m	16	6.300	18	350	405	460	70	290	410	280	500	90	71	180	022.10.M5
10	M6	3 m	12,5	12.500	18	400	455	510	70	290	410	280	500	90	71	180	022.10.M6
10	M7	4 m	10	25.000	18	455	510	565	70	320	440	280	500	90	71	185	022.10.M7
10	M8	5 m	8	50.000	18	455	510	565	70	320	440	280	500	90	71	185	022.10.M8
12	M3	1 Bm	32	1.600	22	340	405	460	80	330	470	315	565	100	80	230	022.12.M3
12	M4	1 Am	25	3.200	22	340	405	460	80	330	470	315	565	100	80	230	022.12.M4
12	M5	2 m	20	6.300	20	395	455	510	80	330	470	315	565	100	80	235	022.12.M5
12	M6	3 m	16	12.500	20	450	510	570	80	330	470	315	565	100	80	235	022.12.M6
12	M7	4 m	12,5	25.000	20	500	570	630	80	360	500	315	565	100	80	240	022.12.M7
12	M8	5 m	10	50.000	20	500	570	630	80	360	500	315	565	100	80	240	022.12.M8
16	M3	1 Bm	40	1.600	24	380	455	510	90	350	500	370	645	112	90	335	022.16.M3
16	M4	1 Am	32	3.200	24	380	455	510	90	350	500	370	645	112	90	335	022.16.M4
16	M5	2 m	25	6.300	22	445	510	565	80	350	490	370	635	112	90	340	022.16.M5
16	M6	3 m	20	12.500	22	505	570	625	80	350	490	370	635	112	90	340	022.16.M6
16	M7	4 m	16	25.000	22	560	630	685	80	390	530	370	635	112	90	345	022.16.M7
16	M8	5 m	12,5	50.000	22	560	630	685	80	390	530	370	635	112	90	345	022.16.M8
20	M3	1 Bm	50	1.600	28	425	510	575	100	380	530	415	710	125	100	480	022.20.M3
20	M4	1 Am	40	3.200	28	425	510	575	100	380	530	415	710	125	100	480	022.20.M4
20	M5	2 m	32	6.300	26	490	570	635	90	380	530	415	700	125	100	485	022.20.M5
20	M6	3 m	25	12.500	26	550	630	695	90	380	530	415	700	125	100	485	022.20.M6
20	M7	4 m	20	25.000	26	630	710	775	90	420	570	415	705	125	100	490	022.20.M7
20	M8	5 m	16	50.000	26	630	710	775	90	420	570	415	705	125	100	490	022.20.M8
25	M3	1 Bm	63	1.600	30	480	570	635	110	420	590	460	775	140	112	635	022.25.M3
25	M4	1 Am	50	3.200	30	480	570	635	110	420	590	460	775	140	112	635	022.25.M4
25	M5	2 m	40	6.300	28	545	630	695	100	420	570	460	770	140	112	640	022.25.M5
25	M6	3 m	32	12.500	28	625	710	775	100	420	570	460	770	140	112	640	022.25.M6
25	M7	4 m	25	25.000	28	710	795	860	100	440	590	460	770	140	112	645	022.25.M7
25	M8	5 m	20	50.000	28	710	795	860	100	440	590	460	770	140	112	645	022.25.M8
32	M3	1 Bm	80	1600	34	525	630	695	120	480	660	500	850	160	125	800	022.32.M3
32	M4	1 Am	63	3.200	34	525	630	695	120	480	660	500	850	160	125	800	022.32.M4
32	M5	2 m	50	6.300	32	610	710	775	110	470	640	500	845	160	125	805	022.32.M5
32	M6	3 m	40	12.500	32	695	795	860	110	470	640	500	845	160	125	805	022.32.M6
32	M7	4 m	32	25.000	32	800	900	965	110	480	650	500	840	160	125	810	022.32.M7
32	M8	5 m	25	50.000	32	800	900	965	110	480	650	500	840	160	125	810	022.32.M8
40	M3	1 Bm	100	1.600	38	595	710	775	130	530	740	565	935	180	140	975	022.40.M3
40	M4	1 Am	80	3.200	38	595	710	775	130	530	740	565	935	180	140	975	022.40.M4
40	M5	2 m	63	6.300	36	685	795	860	120	520	700	565	930	180	140	985	022.40.M5
40	M6	3 m	50	12.500	36	790	900	965	120	520	700	565	930	180	140	985	022.40.M6
40	M7	4 m	40	25.000	36	900	1.010	1.075	120	520	700	565	930	180	140	990	022.40.M7
40	M8	5 m	32	50.000	36	900	1.010	1.075	120	520	700	565	930	180	140	990	022.40.M8

hook block and tackle

HOOK BLOCK AND TACKLE "4 Sheaves"



State-of-the-art hook block, designed for very demanding conditions.

It complies with the FEM/DIN standards.

Suspensions follow DIN15411 and they are supplied with safety latch.

Material:

- Suspension: class P.
(other qualities if requested)
- Shaft: 42CrMo4.
- Supports: S355J2.

Distance between sheaves is very small, due to the bearing used.

DESCRIPTION

REF.: 020.041

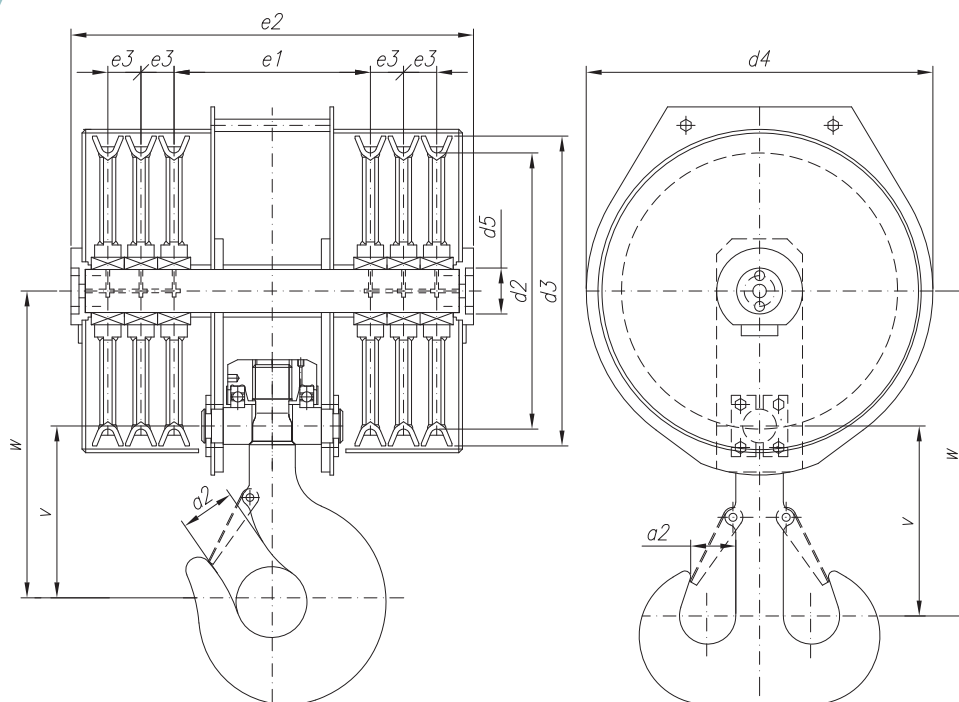
N°	Group		Load	Life	Wire	Dimensions										Single a2	Doub.	Weight kgs.	REF.
	ISO FEM	DIN	t	h	d1	d2	d3	d4	d5	e1	e2	e3	v	w					
TECHNICAL DATA	12	M3	1 Bm	32	1.600	16	305	355	410	80	320	580	60	315	565	100	80	300	041.12.M3
	12	M4	1 Am	25	3.200	16	305	355	410	80	320	580	60	315	565	100	80	300	041.12.M4
	12	M5	2 m	20	6.300	14	310	355	410	80	310	570	60	315	565	100	80	305	041.12.M5
	12	M6	3 m	16	12.500	14	360	405	460	80	310	570	60	315	565	100	80	305	041.12.M6
	12	M7	4 m	12,5	25.000	14	410	455	510	70	310	538	54	315	565	100	80	310	041.12.M7
	12	M8	5 m	10	50.000	14	410	455	510	70	310	538	54	315	565	100	80	310	041.12.M8
	16	M3	1 Bm	40	1.600	18	300	355	410	90	340	624	67	370	640	112	90	435	041.16.M3
	16	M4	1 Am	32	3.200	18	300	355	410	90	340	624	67	370	640	112	90	435	041.16.M4
	16	M5	2 m	25	6.300	16	355	405	460	80	330	590	60	370	640	112	90	440	041.16.M5
	16	M6	3 m	20	12.500	16	405	455	510	80	330	590	60	370	640	112	90	440	041.16.M6
	16	M7	4 m	16	25.000	16	460	510	565	80	330	590	60	370	640	112	90	445	041.16.M7
	16	M8	5 m	12,5	50.000	16	460	510	565	80	330	590	60	370	640	112	90	445	041.16.M8

TECHNICAL DATA

N°	Group		Load	Life	Wire	Dimensions											Weight kgs.	REF.
	ISO FEM	DIN				t	h	d1	d2	d3	d4	d5	e1	e2	e3	v		
			a2															
20	M3	1 Bm	50	1.600	20	345	405	470	100	360	644	67	415	710	125	100	640	041.20.M3
20	M4	1 Am	40	3.200	20	345	405	470	100	360	644	67	415	710	125	100	640	041.20.M4
20	M5	2 m	32	6.300	18	400	455	520	90	350	634	67	415	710	125	100	645	041.20.M5
20	M6	3 m	25	12.500	18	455	510	575	90	350	634	67	415	710	125	100	645	041.20.M6
20	M7	4 m	20	25.000	18	515	570	635	80	350	610	60	415	700	125	100	650	041.20.M7
20	M8	5 m	16	50.000	18	515	570	635	80	350	610	60	415	700	125	100	650	041.20.M8
25	M3	1 Bm	63	1.600	22	385	455	520	110	390	720	80	460	775	140	112	810	041.25.M3
25	M4	1 Am	50	3.200	22	385	455	520	110	390	720	80	460	775	140	112	810	041.25.M4
25	M5	2 m	40	6.300	20	450	510	575	100	380	665	67	460	775	140	112	815	041.25.M5
25	M6	3 m	32	12.500	20	510	570	635	100	380	665	67	460	785	140	112	815	041.25.M6
25	M7	4 m	25	25.000	20	570	630	695	90	380	665	67	460	765	140	112	820	041.25.M7
25	M8	5 m	20	50.000	20	570	630	695	90	380	665	67	460	765	140	112	820	041.25.M8
32	M3	1 Bm	80	1.600	24	435	510	575	120	450	790	80	500	850	160	125	1.050	041.32.M3
32	M4	1 Am	63	3.200	24	435	510	575	120	450	790	80	500	850	160	125	1.050	041.32.M4
32	M5	2 m	50	6.300	22	500	570	635	110	450	780	80	500	840	160	125	1.060	041.32.M5
32	M6	3 m	40	12.500	22	560	630	695	110	450	780	80	500	840	160	125	1.060	041.32.M6
32	M7	4 m	32	25.000	22	640	710	775	100	450	734	67	500	840	160	125	1.070	041.32.M7
32	M8	5 m	25	50.000	22	640	710	775	100	450	734	67	500	840	160	125	1.070	041.32.M8
40	M3	1 Bm	100	1.600	28	485	570	635	130	500	850	95	565	940	180	140	1.260	041.40.M3
40	M4	1 Am	80	3.200	28	485	570	635	130	500	850	95	565	940	180	140	1.260	041.40.M4
40	M5	2 m	63	6.300	26	550	630	695	120	490	830	80	565	940	180	140	1.270	041.40.M5
40	M6	3 m	50	12.500	26	630	710	775	120	490	830	80	565	940	180	140	1.270	041.40.M6
40	M7	4 m	40	25.000	26	715	795	860	110	490	820	80	565	930	180	140	1.280	041.40.M7
40	M8	5 m	32	50.000	26	715	795	860	110	490	820	80	565	930	180	140	1.280	041.40.M8
50	M3	1 Bm	125	1.600	30	540	630	695	150	560	930	100	620	1.035	200	160	1.640	041.50.M3
50	M4	1 Am	100	3.200	30	540	630	695	150	560	930	100	620	1.035	200	160	1.640	041.50.M4
50	M5	2 m	80	6.300	28	625	710	775	130	550	890	95	620	1.035	200	160	1.650	041.50.M5
50	M6	3 m	63	12.500	28	710	795	860	130	550	890	95	620	1.035	200	160	1.650	041.50.M6
50	M7	4 m	50	25.000	28	815	900	965	120	550	890	80	620	1.020	200	160	1.660	041.50.M7
50	M8	5 m	40	50.000	28	815	900	965	120	550	890	80	620	1.020	200	160	1.660	041.50.M8
63	M3	1 Bm	160	1.600	34	605	710	780	160	620	1.067	109	700	1.160	224	180	2.180	041.63.M3
63	M4	1 Am	125	3.200	34	605	710	780	160	620	1.067	109	700	1.160	224	180	2.180	041.63.M4
63	M5	2 m	100	6.300	32	695	795	865	140	620	980	95	700	1.150	224	180	2.190	041.63.M5
63	M6	3 m	80	12.500	32	800	900	970	140	620	980	95	700	1.150	224	180	2.190	041.63.M6
63	M7	4 m	63	25.000	32	910	1.010	1.080	130	620	995	95	700	1.140	224	180	2.200	041.63.M7
63	M8	5 m	50	50.000	32	910	1.010	1.080	130	620	995	95	700	1.140	224	180	2.200	041.63.M8
80	M3	1 Bm	200	1.600	38	680	795	875	180	680	1.178	136	800	1.300	250	200	2.890	041.80.M3
80	M4	1 Am	160	3.200	38	680	795	875	180	680	1.178	136	800	1.300	250	200	2.890	041.80.M4
80	M5	2 m	125	6.300	36	790	900	980	160	670	1.080	109	800	1.290	250	200	2.900	041.80.M5
80	M6	3 m	100	12.500	36	900	1.010	1.090	160	670	1.080	109	800	1.290	250	200	2.900	041.80.M6
80	M7	4 m	80	25.000	36	1.000	1.110	1.190	150	670	1.070	100	800	1.280	250	200	2.910	041.80.M7
80	M8	5 m	63	50.000	36	1.000	1.110	1.190	150	670	1.070	100	800	1.280	250	200	2.910	041.80.M8
100	M3	1 Bm	250	1.600	42	770	900	955	200	770	1.270	150	885	1.435	280	224	3.810	041.100.M3
100	M4	1 Am	200	3.200	42	770	900	955	200	770	1.270	150	885	1.435	280	224	3.810	041.100.M4
100	M5	2 m	160	6.300	40	890	1.010	1.080	180	760	1.240	136	885	1.425	280	224	3.830	041.100.M5
100	M6	3 m	125	12.500	40	990	1.110	1.180	180	760	1.240	136	885	1.425	280	224	3.830	041.100.M6
100	M7	4 m	100	25.000	40	1.120	1.240	1.310	160	760	1.180	109	885	1.410	280	224	3.850	041.100.M7
100	M8	5 m	80	50.000	40	1.120	1.240	1.310	160	760	1.180	109	885	1.410	280	224	3.850	041.100.M8
125	M3	1 Bm	320	1.600	46	870	1.010	1.080	220	810	1.340	160	1.000	1.625	315	250	4.860	041.125.M3
125	M4	1 Am	250	3.200	46	870	1.010	1.080	220	810	1.340	160	1.000	1.625	315	250	4.860	041.125.M4
125	M5	2 m	200	6.300	44	970	1.110	1.180	200	800	1.320	150	1.000	1.610	315	250	4.880	041.125.M5
125	M6	3 m	160	12.500	44	1.100	1.240	1.310	200	800	1.320	150	1.000	1.610	315	250	4.880	041.125.M6
125	M7	4 m	125	25.000	44	1.240	1.380	1.470	180	800	1.280	136	1.000	1.590	315	250	4.900	041.125.M7
125	M8	5 m	100	50.000	44	1.240	1.380	1.470	180	800	1.280	136	1.000	1.590	315	250	4.900	041.125.M8
160	M3	1 Bm	400	1.600	52	950	1.110	1.180	240	900	1.440	160	1.130	1.790	355	280	6.520	041.160.M3
160	M4	1 Am	320	3.200	52	950	1.110	1.180	240	900	1.440	160	1.130	1.790	355	280	6.520	041.160.M4
160	M5	2 m	250	6.300	50	1.090	1.240	1.310	220	880	1.420	160	1.130	1.780	355	280	6.560	041.160.M5
160	M6	3 m	200	12.500	50	1.230	1.380	1.470	220	880	1.420	160	1.130	1.780	355	280	6.560	041.160.M6
160	M7	4 m	160	25.000	50	1.400	1.550	1.640	200	880	1.420	150	1.130	1.780	355	280	6.580	041.160.M7
160	M8	5 m	125	50.000	50	1.400	1.550	1.640	200	880	1.420	150	1.130	1.780	355	280	6.580	041.160.M8

hook block and tackle

HOOK BLOCK AND TACKLE "6 Sheaves"



State-of-the-art hook block, designed for very demanding conditions.

It complies with the FEM/DIN standards.

Suspensions follow DIN15411 and they are supplied with safety latch.

Material:

- Suspension: class P.
(other qualities if requested)
- Shaft: 42CrMo4.
- Supports: S355J2.

Distance between sheaves is very small, due to the bearing used.

DESCRIPTION

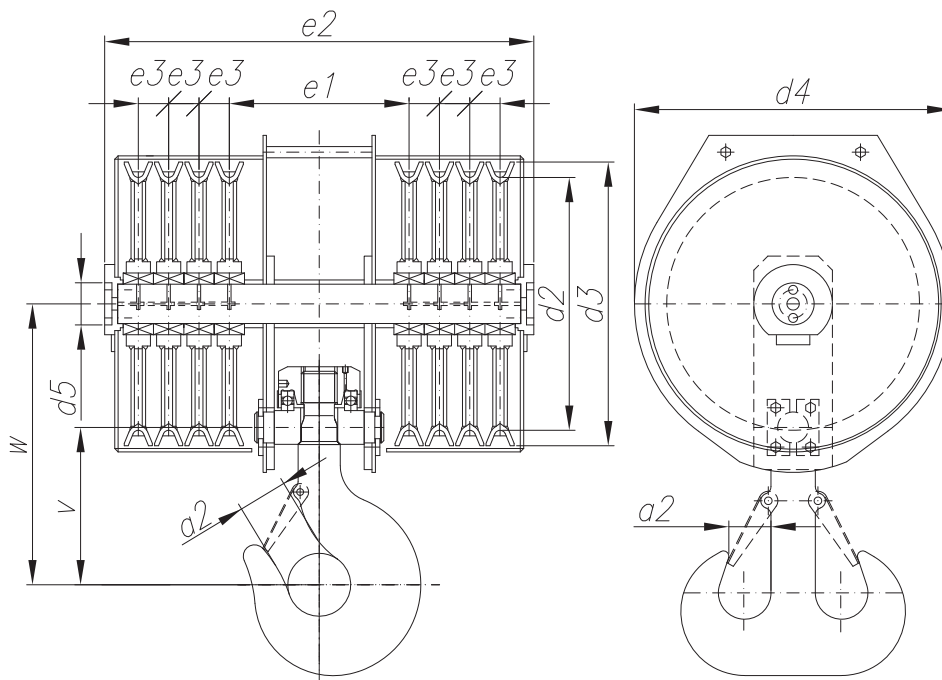
REF.: 020.060

N°	Group		Load	Life	Wire	Dimensions											Weight kgs.	REF.
	ISO FEM	DIN	t	h	d1	d2	d3	d4	d5	e1	e2	e3	v	w	Single	Doub.		
															a2			
20	M3	1 Bm	50	1.600	16	355	405	450	110	360	843	80	415	720	125	100	830	060.20.M3
20	M4	1 Am	40	3.200	16	355	405	450	110	360	843	80	415	720	125	100	830	060.20.M4
20	M5	2 m	32	6.300	15	360	405	450	100	360	778	67	415	720	125	100	840	060.20.M5
20	M6	3 m	25	12.500	15	410	455	500	100	360	778	67	415	720	125	100	840	060.20.M6
20	M7	4 m	20	25.000	15	465	510	555	90	360	778	67	415	720	125	100	850	060.20.M7
20	M8	5 m	16	50.000	15	465	510	555	90	360	778	67	415	720	125	100	850	060.20.M8
25	M3	1 Bm	63	1.600	18	400	455	500	120	390	890	80	460	775	140	112	1.040	060.25.M3
25	M4	1 Am	50	3.200	18	400	455	500	120	390	890	80	460	775	140	112	1.040	060.25.M4
25	M5	2 m	40	6.300	16	405	455	500	110	390	880	80	460	775	140	112	1.050	060.25.M5
25	M6	3 m	32	12.500	16	460	510	555	110	390	880	80	460	775	140	112	1.050	060.25.M6
25	M7	4 m	25	25.000	16	520	570	620	100	390	808	67	460	775	140	112	1.060	060.25.M7
25	M8	5 m	20	50.000	16	520	570	620	100	390	808	67	460	775	140	112	1.060	060.25.M8

TECHNICAL DATA

N°	Group		Load	Life	Wire	Dimensions											Weight kgs.	REF.
	ISO FEM	DIN	t	h	d1	d2	d3	d4	d5	e1	e2	e3	v	w	Single	Doub.		
															a2			
32	M3	1 Bm	80	1.600	21	445	510	555	140	450	1.020	95	500	860	160	125	1.350	060.32.M3
32	M4	1 Am	63	3.200	21	445	510	555	140	450	1.020	95	500	860	160	125	1.350	060.32.M4
32	M5	2 m	50	6.300	19	450	510	555	120	450	950	80	500	845	160	125	1.360	060.32.M5
32	M6	3 m	40	12.500	19	510	570	620	120	450	950	80	500	845	160	125	1.360	060.32.M6
32	M7	4 m	32	25.000	19	570	630	680	110	450	940	80	500	845	160	125	1.370	060.32.M7
32	M8	5 m	25	50.000	19	570	630	680	110	450	940	80	500	845	160	125	1.370	060.32.M8
40	M3	1 Bm	100	1.600	22	440	510	555	150	500	1.080	100	565	945	180	140	1.610	060.40.M3
40	M4	1 Am	80	3.200	22	440	510	555	150	500	1.080	100	565	945	180	140	1.610	060.40.M4
40	M5	2 m	63	6.300	21	505	570	620	130	500	1.050	95	565	935	180	140	1.620	060.40.M5
40	M6	3 m	50	12.500	21	565	630	680	130	500	1.050	95	565	935	180	140	1.620	060.40.M6
40	M7	4 m	40	25.000	21	645	710	765	120	500	1.000	80	565	935	180	140	1.630	060.40.M7
40	M8	5 m	32	50.000	21	645	710	765	120	500	1.000	80	565	935	180	140	1.630	060.40.M8
50	M3	1 Bm	125	1.600	26	550	630	680	160	570	1.180	109	620	1.030	200	160	2.040	060.50.M3
50	M4	1 Am	100	3.200	26	550	630	680	160	570	1.180	109	620	1.030	200	160	2.040	060.50.M4
50	M5	2 m	80	6.300	24	635	710	765	140	570	1.120	95	620	1.020	200	160	2.060	060.50.M5
50	M6	3 m	63	12.500	24	635	710	765	140	570	1.120	95	620	1.020	200	160	2.060	060.50.M6
50	M7	4 m	50	25.000	24	720	795	850	130	570	1.120	95	620	1.020	200	160	2.080	060.50.M7
50	M8	5 m	40	50.000	24	720	795	850	130	570	1.120	95	620	1.020	200	160	2.080	060.50.M8
63	M3	1 Bm	160	1.600	28	625	710	765	180	640	1.380	136	700	1.170	224	180	2.680	060.63.M3
63	M4	1 Am	125	3.200	28	625	710	765	180	640	1.380	136	700	1.170	224	180	2.680	060.63.M4
63	M5	2 m	100	6.300	26	630	710	765	160	620	1.230	109	700	1.160	224	180	2.695	060.63.M5
63	M6	3 m	80	12.500	26	715	795	850	160	620	1.230	109	700	1.160	224	180	2.695	060.63.M6
63	M7	4 m	63	25.000	26	820	900	955	150	620	1.180	100	700	1.160	224	180	2.710	060.63.M7
63	M8	5 m	50	50.000	26	820	900	955	150	620	1.180	100	700	1.160	224	180	2.710	060.63.M8
80	M3	1 Bm	200	1.600	32	695	795	850	200	690	1.520	150	800	1.320	250	200	3.390	060.80.M3
80	M4	1 Am	160	3.200	32	695	795	850	200	690	1.520	150	800	1.320	250	200	3.390	060.80.M4
80	M5	2 m	125	6.300	30	705	795	850	180	670	1.440	136	800	1.320	250	200	3.410	060.80.M5
80	M6	3 m	100	12.500	30	810	900	955	180	670	1.440	136	800	1.320	250	200	3.410	060.80.M6
80	M7	4 m	80	25.000	30	920	1.010	1.080	160	670	1.300	109	800	1.300	250	200	3.430	060.80.M7
80	M8	5 m	63	50.000	30	920	1.010	1.080	160	670	1.300	109	800	1.300	250	200	3.430	060.80.M8
100	M3	1 Bm	250	1.600	36	790	900	955	240	770	1.650	160	885	1.430	280	224	4.400	060.100.M3
100	M4	1 Am	200	3.200	36	790	900	955	240	770	1.650	160	885	1.430	280	224	4.400	060.100.M4
100	M5	2 m	160	6.300	34	795	900	955	200	750	1.580	150	885	1.410	280	224	4.420	060.100.M5
100	M6	3 m	125	12.500	34	905	1.010	1.080	200	750	1.580	150	885	1.410	280	224	4.420	060.100.M6
100	M7	4 m	100	25.000	34	1.005	1.110	1.180	180	750	1.510	136	885	1.410	280	224	4.440	060.100.M7
100	M8	5 m	80	50.000	34	1.005	1.110	1.180	180	750	1.510	136	885	1.410	280	224	4.440	060.100.M8
125	M3	1 Bm	320	1.600	40	780	900	955	260	840	1.870	190	1.000	1.650	315	250	5.440	060.125.M3
125	M4	1 Am	250	3.200	40	780	900	955	260	840	1.870	190	1.000	1.650	315	250	5.440	060.125.M4
125	M5	2 m	200	6.300	38	895	1.010	1.080	220	820	1.690	160	1.000	1.620	315	250	5.470	060.125.M5
125	M6	3 m	160	12.500	38	995	1.110	1.180	220	820	1.690	160	1.000	1.620	315	250	5.470	060.125.M6
125	M7	4 m	125	25.000	38	1.125	1.240	1.310	200	820	1.640	150	1.000	1.620	315	250	5.490	060.125.M7
125	M8	5 m	100	50.000	38	1.125	1.240	1.310	200	820	1.640	150	1.000	1.620	315	250	5.490	060.125.M8
160	M3	1 Bm	400	1.600	44	875	1.010	1.080	280	900	1.930	190	1.130	1.810	355	280	7.250	060.160.M3
160	M4	1 Am	320	3.200	44	875	1.010	1.080	280	900	1.930	190	1.130	1.810	355	280	7.250	060.160.M4
160	M5	2 m	250	6.300	42	980	1.110	1.180	240	870	1.760	160	1.130	1.780	355	280	7.270	060.160.M5
160	M6	3 m	200	12.500	42	1.110	1.240	1.310	240	870	1.760	160	1.130	1.780	355	280	7.270	060.160.M6
160	M7	4 m	160	25.000	42	1.250	1.380	1.470	220	870	1.760	160	1.130	1.780	355	280	7.290	060.160.M7
160	M8	5 m	125	50.000	42	1.250	1.380	1.470	220	870	1.760	160	1.130	1.780	355	280	7.290	060.160.M8

HOOK BLOCK AND TACKLE "8 Sheaves"



State-of-the-art hook block, designed for very demanding conditions.

It complies with the FEM/DIN standards.

Suspensions follow DIN15411 and they are supplied with safety latch.

Material:

- Suspension: class P.
(other qualities if requested)
- Shaft: 42CrMo4.
- Supports: S355J2.

Distance between sheaves is very small, due to the bearing used.

DESCRIPTION

REF.: 020.080

TECHNICAL DATA	Nº	Group		Load	Life	Wire	Dimensions										Weight		REF.
		ISO FEM	DIN	t	h	d1	d2	d3	d4	d5	e1	e2	e3	v	w	Single	Doub.		
																a2			
40	M3	1 Bm	100	1.600	20	450	510	555	160	500	1.330	109	565	950	180	140	1.950	080.40.M3	
40	M4	1 Am	80	3.200	20	450	510	555	160	500	1.330	109	565	950	180	140	1.950	080.40.M4	
40	M5	2 m	63	6.300	18	455	510	555	140	500	1.230	95	565	950	180	140	1.970	080.40.M5	
40	M6	3 m	50	12.500	18	455	510	555	140	500	1.230	95	565	950	180	140	1.970	080.40.M6	
40	M7	4 m	40	25.000	18	515	570	620	130	500	1.230	95	565	950	180	140	1.990	080.40.M7	
40	M8	5 m	32	50.000	18	515	570	620	130	500	1.230	95	565	950	180	140	1.990	080.40.M8	
50	M3	1 Bm	125	1.600	22	440	510	555	180	580	1.600	136	620	1.050	200	160	2.620	080.50.M3	
50	M4	1 Am	100	3.200	22	440	510	555	180	580	1.600	136	620	1.050	200	160	2.620	080.50.M4	
50	M5	2 m	80	6.300	20	510	570	620	160	560	1.400	109	620	1.050	200	160	2.640	080.50.M5	
50	M6	3 m	63	12.500	20	510	570	620	160	560	1.400	109	620	1.050	200	160	2.640	080.50.M6	
50	M7	4 m	50	25.000	20	570	630	680	140	560	1.310	95	620	1.050	200	160	2.660	080.50.M7	
50	M8	5 m	40	50.000	20	570	630	680	140	560	1.310	95	620	1.050	200	160	2.660	080.50.M8	

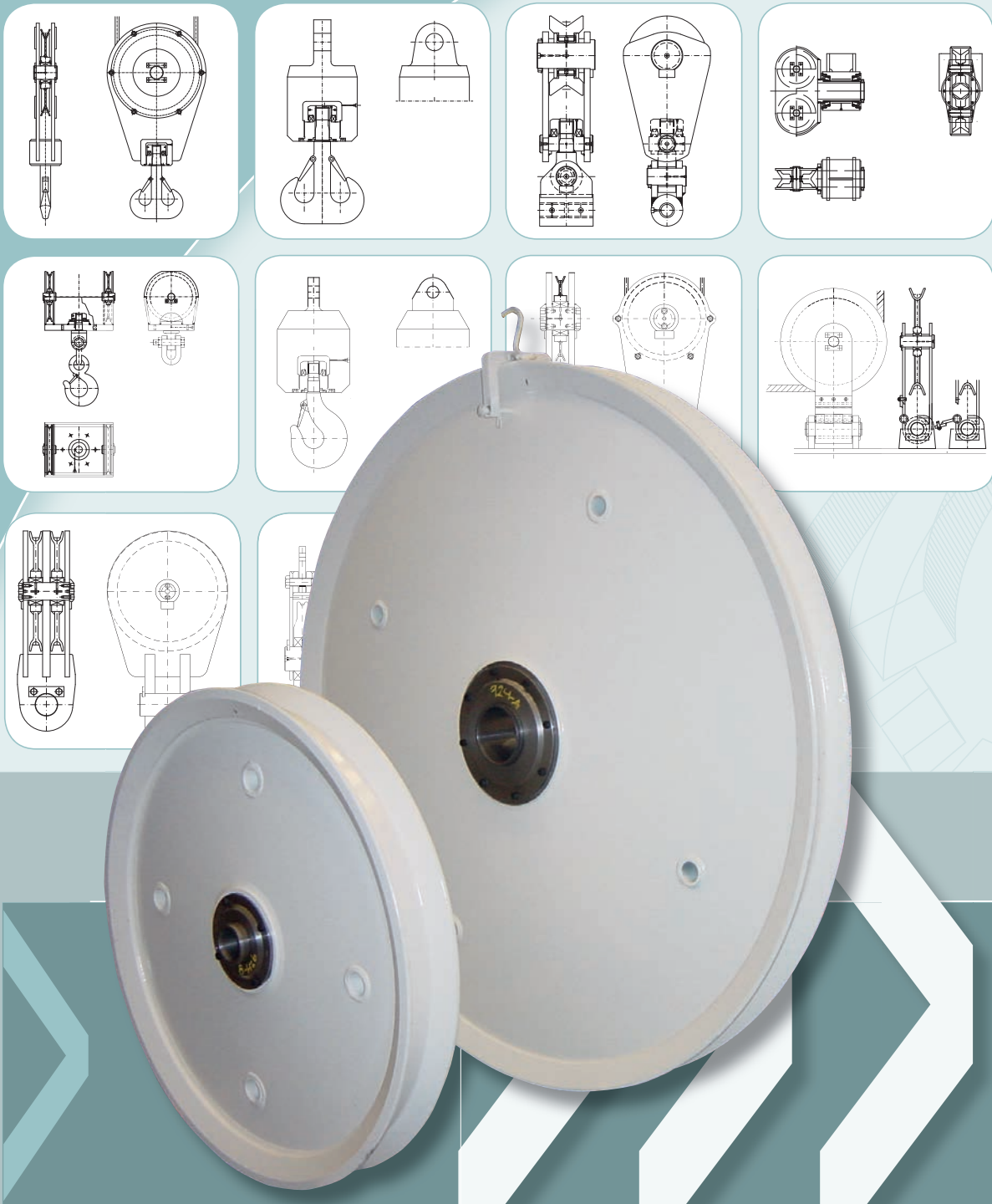
TECHNICAL DATA

TECHNICAL DATA

N°	Group		Load	Life	Wire	Dimensions											Weight kgs.	REF.
	ISO FEM	DIN	t	h	d1	d2	d3	d4	d5	e1	e2	e3	v	w	Single	Doub.		
															a2			
63	M3	1 Bm	160	1.600	24	495	570	620	220	660	1.850	160	700	1.200	224	180	3.180	080.63.M3
63	M4	1 Am	125	3.200	24	495	570	620	220	660	1.850	160	700	1.200	224	180	3.180	080.63.M4
63	M5	2 m	100	6.300	22	560	630	680	180	640	1.660	136	700	1.200	224	180	3.195	080.63.M5
63	M6	3 m	80	12.500	22	560	630	680	180	640	1.660	136	700	1.200	224	180	3.195	080.63.M6
63	M7	4 m	63	25.000	22	640	710	765	160	610	1.450	109	700	1.200	224	180	3.210	080.63.M7
63	M8	5 m	50	50.000	22	640	710	795	160	610	1.450	109	700	1.200	224	180	3.210	080.63.M8
80	M3	1 Bm	200	1.600	28	545	630	680	240	700	1.890	160	800	1.330	250	200	3.940	080.80.M3
80	M4	1 Am	160	3.200	28	545	630	680	240	700	1.890	160	800	1.330	250	200	3.940	080.80.M4
80	M5	2 m	125	6.300	26	715	795	850	200	690	1.810	150	800	1.330	250	200	3.960	080.80.M5
80	M6	3 m	100	12.500	26	715	795	850	200	690	1.810	150	800	1.330	250	200	3.960	080.80.M6
80	M7	4 m	80	25.000	26	820	900	955	180	680	1.710	136	800	1.330	250	200	3.990	080.80.M7
80	M8	5 m	63	50.000	26	820	900	955	180	680	1.710	136	800	1.330	250	200	3.990	080.80.M8
100	M3	1 Bm	250	1.600	32	695	795	850	260	800	2.200	190	885	1.440	280	224	5.200	080.100.M3
100	M4	1 Am	200	3.200	32	695	795	850	260	800	2.200	190	885	1.440	280	224	5.200	080.100.M4
100	M5	2 m	160	6.300	30	810	900	955	220	770	1.960	160	885	1.440	280	224	5.230	080.100.M5
100	M6	3 m	125	12.500	30	810	900	955	220	770	1.960	160	885	1.440	280	224	5.230	080.100.M6
100	M7	4 m	100	25.000	30	920	1.010	1.080	200	760	1.880	150	885	1.440	280	224	5.260	080.100.M7
100	M8	5 m	80	50.000	30	920	1.010	1.080	200	760	1.880	150	885	1.440	280	224	5.260	080.100.M8
125	M3	1 Bm	320	1.600	34	690	795	850	280	840	2.240	190	1.000	1.660	315	250	6.240	080.125.M3
125	M4	1 Am	250	3.200	34	690	795	850	280	840	2.240	190	1.000	1.660	315	250	6.240	080.125.M4
125	M5	2 m	200	6.300	32	800	900	955	240	810	2.000	160	1.000	1.660	315	250	6.260	080.125.M5
125	M6	3 m	160	12.500	32	800	900	955	240	810	2.000	160	1.000	1.660	315	250	6.260	080.125.M6
125	M7	4 m	125	25.000	32	1.010	1.110	1.180	220	810	2.000	160	1.000	1.660	315	250	6.290	080.125.M7
125	M8	5 m	100	50.000	32	1.010	1.110	1.180	220	810	2.000	160	1.000	1.660	315	250	6.290	080.125.M8
160	M3	1 Bm	400	1.600	38	785	900	955	300	930	2.550	218	1.130	1.820	355	280	7.910	080.160.M3
160	M4	1 Am	320	3.200	38	785	900	955	300	930	2.550	218	1.130	1.820	355	280	7.910	080.160.M4
160	M5	2 m	250	6.300	36	900	1.010	1.080	280	900	2.320	190	1.130	1.820	355	280	7.940	080.160.M5
160	M6	3 m	200	12.500	36	1.000	1.110	1.180	260	900	2.320	190	1.130	1.820	355	280	7.940	080.160.M6
160	M7	4 m	160	25.000	36	1.130	1.240	1.310	240	870	2.080	160	1.130	1.820	355	280	7.980	080.160.M7
160	M8	5 m	125	50.000	36	1.130	1.240	1.310	240	870	2.080	160	1.130	1.820	355	280	7.980	080.160.M8
200	M3	1 Bm	500	1.600	44	870	1.010	1.080	*200	940	2.150	150	1.270	1.960	400	315	9.710	080.200.M3
200	M4	1 Am	400	3.200	44	870	1.010	1.080	*180	940	2.050	136	1.270	1.960	400	315	9.710	080.200.M4
200	M5	2 m	320	6.300	42	985	1.110	1.180	300	990	2.620	218	1.270	1.960	400	315	9.810	080.200.M5
200	M6	3 m	250	12.500	42	1.115	1.240	1.310	280	960	2.390	190	1.270	1.960	400	315	9.810	080.200.M6
200	M7	4 m	200	25.000	42	1.255	1.380	1.470	280	960	2.390	190	1.270	1.960	400	315	9.850	080.200.M7
200	M8	5 m	160	50.000	42	1.255	1.380	1.470	260	960	2.390	190	1.270	1.960	400	315	9.850	080.200.M8
250	M3	1 Bm	500	1.600	48	965	1.110	1.180	*200	1.050	2.230	150	1.440	2.130	450	355	11.700	080.250.M3
250	M4	1 Am	500	3.200	48	965	1.110	1.180	*200	1.050	2.230	150	1.440	2.130	450	355	11.700	080.250.M4
250	M5	2 m	400	6.300	46	1.100	1.240	1.310	*180	1.050	2.130	136	1.440	2.130	450	355	11.740	080.250.M5
250	M6	3 m	320	12.500	46	1.240	1.380	1.470	*160	1.050	1.940	109	1.440	2.130	450	355	11.740	080.250.M6
250	M7	4 m	250	25.000	46	1.410	1.550	1.640	300	1.100	2.750	218	1.440	2.130	450	355	11.920	080.250.M7
250	M8	5 m	200	50.000	46	1.410	1.550	1.640	280	1.080	2.560	190	1.440	2.130	450	355	11.920	080.250.M8

OTHER PRODUCTS

offshore



We at Gosan have gone beyond our historical markets and now we have a presence in offshore projects within the North Sea, where a large and complex offshore industry is located, as well as, in the Rest of the World.

Gosan has invested in R&D projects so as to manufacture products economically and in the most expeditious manner. Due to the nature of the oil industry, optimum delivery is critical.

To this end Gosan has developed a system to make sure orders are ready on time. We have an excellent team of Highly Qualified Engineers who work to make continuous improvements using CAD/CAM systems.

At Gosan we manufacture a wide range of;

Sheaves, Hook blocks, Wheels for Offshore applications suitable for:

Oil and Gas Platforms, Cargo Handling, Pipe Laying and Supply Vessels, ROV operations, Sub-sea Operations, etc.

- According to International Design and Quality Standards.

- According to Customer Designs, we manufacture any lifting element according to customer specifications thanks to the Know –How which we have developed as a competitive advantage over decades of service

- Using Gosan's Application Engineering team, applying the latest and most advanced hardware systems and calculation software.

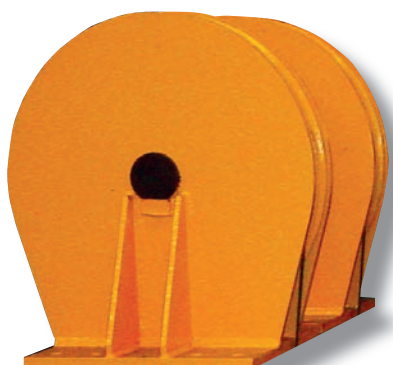
All Gosan production is submitted to rigorous and exhaustive Quality Assurance procedures and to customer's individual requirements:

- Standard Testing according to International Standards including ultrasonic, magnetic particle, Charpy impact, mechanical properties, proof load...

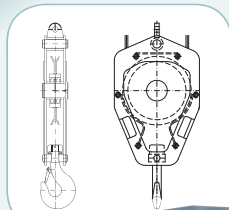
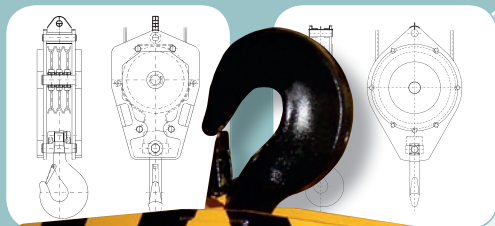
- Custom Testing according to customer specifications.

With the option, in all cases, of product being inspected by internationally recognized Certifying Organizations or by the customer's quality assurance personnel.

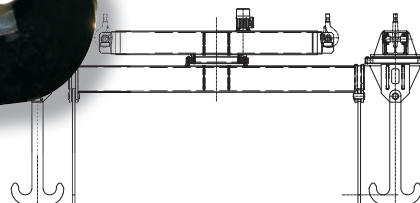
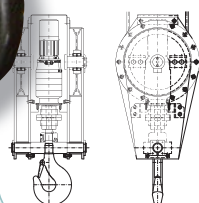
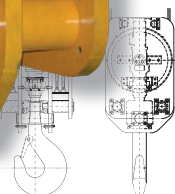
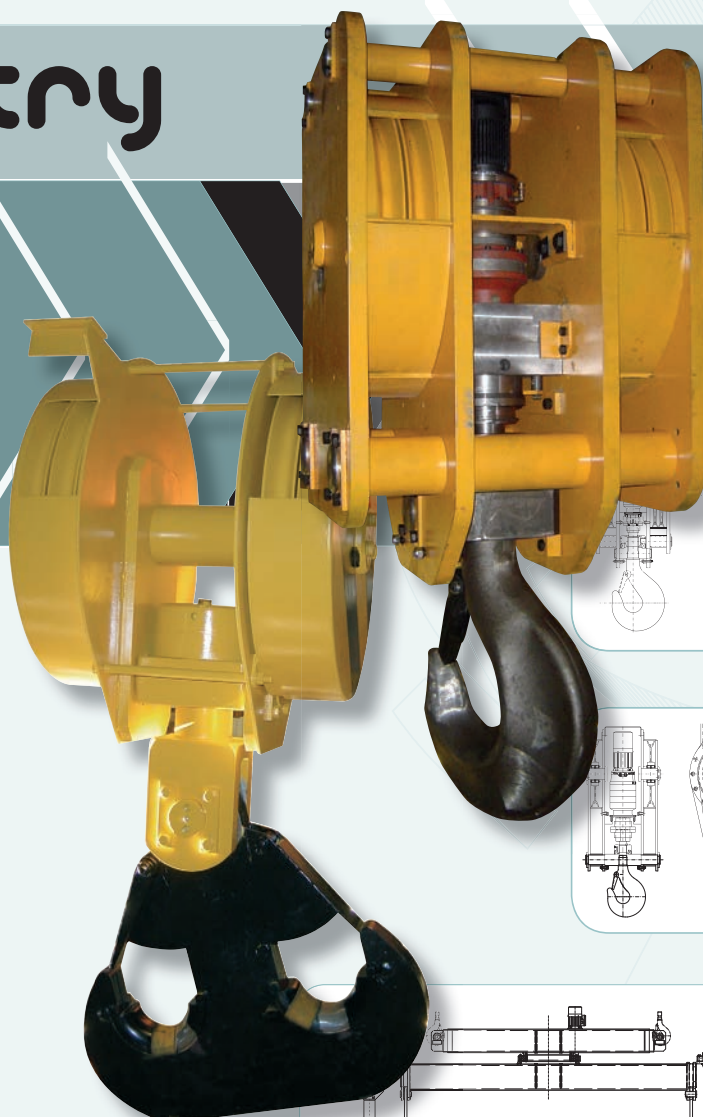
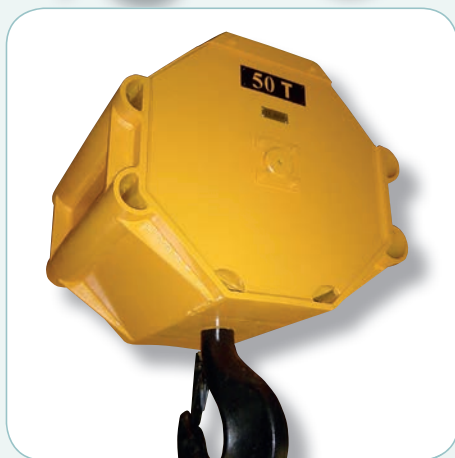
offshore



mobile crane



industry

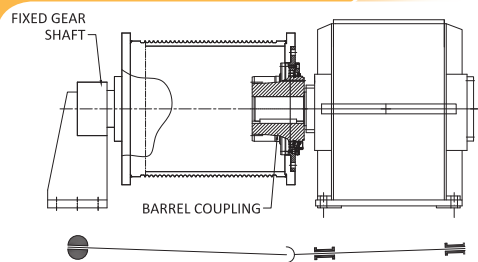


MECHANICAL COMPONENTS FOR LIFTING,
HOISTING, TRANSPORT AND STORAGE MACHINERY

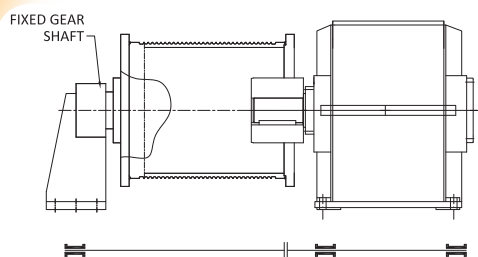


COUPLINGS

FOR DRUMS MODEL **AGBS**



ASSEMBLY USING BARREL COUPLINGS



RIGID ASSEMBLY BETWEEN THE GEARBOX DRUM

DESCRIPTION AND CHARACTERISTICS:

The AGBS barrel coupling must be supplied as an entire set, the sleeve and hub cannot be supplied separately.

The AGBS barrel coupling is delivered fully assembled (unless specified to the contrary the holes and keyways are completely machined).

The AGBS barrel couplings are supplied without grease although delivered with sufficient protection against corrosion under normal storage conditions.

The barrel coupling consists of a sleeve and hub fitted with semi-circular cogs, with a series of cylindrical hardened steel barrels sandwiched into the cog housings.

The covers with their respective special retainers and spring lock washers are useful in obtaining perfect airtight integrity inside the coupling, thus preventing foreign bodies from getting in and ensuring the continuity of the necessary lubrication. Spring lock washers axially guide the barrels within the coupling. The re-greasing can be carried out without removing the sealing elements.

The barrel couplings have a crown, which allows the hub to oscillate with respect to the sleeve, compensating angular misalignments of $\pm 1^\circ$. Depending on the size of the selected coupling, axial displacements can be absorbed from $\pm 3\text{mm}$ up to $\pm 8\text{mm}$. Such couplings are not suitable for the absorption and transmission of axial forces.

The torque moment in the coupling is transmitted through the two drag faces of the sleeve which are housed in the drum and a series of bolts which at the same time serve as fixing to the drum. The fastening screws of the AGBS barrel couplings for drums, which should be of a high wear resistance class (10.9) are not included in the supply.

The following figure shows the assembly of a barrel coupling in a hoisting gear. The coupling's hub is positioned on the end of the driveshaft of the wire drum. The bearing bracket must be configured as a fixed bracket.

There is an indicator on the outer cover of the coupling allowing the regulation of the wear and axial positioning of the sleeve with respect to the hub, without disassembling the coupling. The same indicator regulates the axial position of the sleeve with respect to the hub.

The barrels are elements for the transmission of forces and due to their large supporting area they absorb the stresses caused by the torque moment and the radial load.

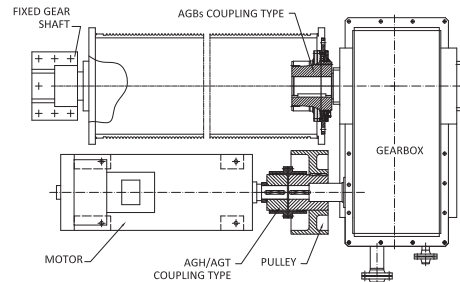
The use of this construction will exclude the risk of breakage of the teeth caused by bending stresses.

APPLICATION:

The AGBS barrel couplings for drums, designed by GOSAN, are used in hoisting gear of cranes to join the wire drum and the output shaft of the gearbox.

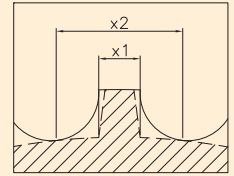
When the output shaft of the gearbox is rigidly fixed to the cable drum a statically indeterminate situation is produced, thus making it difficult to obtain perfect alignment and levelling in assembly. Assemblies of this type require to carry out major adjustments, since the lack of alignment would induce the transmission elements to malfunction. Possible errors and inaccuracies in the assembly and balancing of the coupling, as well as the distortions in the structure, wear in the bearings etc, all create additional forces which, jointly with alternating forces, produce breakages due to fatigue and damage in the bearings and gears.

The barrel couplings for drums are designed to avoid the presence of high bending moments and to compensate for misalignments, and also to absorb axial displacement. It is equipped with a self-aligning bearing on the other end of the drum shaft which is fitted to withstand the axial forces.



The barrel coupling has several advantages as compared to toothed couplings, such as:

- Due to the profile of the barrels and teeth, the barrel couplings are subjected to much lower bending stresses at the bottom of the teeth. Reason why a greater safety factor is obtained against bending and the maximum radial loads.
- The larger contact surface between the barrels and teeth allows a better distribution of the radial load, thus significantly increasing the useful life of the coupling. The radial load is even better distributed with the wear of the coupling.
- The transmission of forces produces a hardening by tooling of the barrels in their housings, thus causing an increase in the wear resistance of the barrels.



DETERMINATION OF THE SIZE OF THE COUPLING:

The coupling size required depends on the turning moment of the drum (M), the diameter of the shaft and the radial load acting on the coupling:

1. Turning moment in the coupling:

The formulae used are:

$$M = \frac{N (Kw)}{n (rpm)} \times 955 \times k$$

Where:

M max: Max. turning moment in the coupling (daNm).

N (Kw): Max. coupling power (Kw).

n: Nº. drum r.p.m.

K: Service factor.

Table Nº. 1 Service factor K.

DIN GROUP	1Bm	1AM	2m	3m	4m	5m
FEM GROUP	M3	M4	M5	M6	M7	M8
K	1,25	1,25	1,4	1,6	1,8	2

Having determined the Mmax. data of the maximum turning moment that the coupling must withstand, one must then select the required coupling from Table Nº 4.

Having determined the size of the coupling by its maximum turning moment, it can be checked as to whether the radial load is lower than that specified in Table Nº. 4.

2. Verification of the radial load:

When preselecting the coupling size by its maximum turning moment (Mmax), the radial load obtained in the calculations shall be verified as to whether they are lower than those shown in Table Nº. 4 for the selection of the couplings.

In the event that the radial load is greater than the admissible load and turning moment is lower than the capacity of the chosen coupling, a higher radial load than that specified in the catalogue may be admitted, according to the formulae:

$$F_{adm} = F_r + \left(\frac{M - M_{max}}{k} \right)$$

Where:

F_{adm}.= Corrected radial load.

F_r= Permissible radial force according to coupling chosen from Table Nº. 4.

M= Turning moment according to coupling chosen from Table Nº. 4.

M_{max}.= Turning moment in the coupling.

K= value from Table Nº. 1

Reverse processing cannot be carried out to increase the maximum admissible torque if the radial load is not used.

3. Verification of the gear box shaft/hub coupling union:

Finally, it must be verified that the diameter of the gear box shaft is less than the maximum admissible diameter that may be carried out for the coupling chosen from Table Nº. 4.

Calculation example:

Preliminary data:

N = 56.1 Kw (Engine power)

n = 9 (rpm)

Radial load= 9750 daN

k = 1.6 (service factor)

d = 220 mm (output shaft of the gearbox)

1.1. Calculation of the turning moment in the coupling:

$$M = \frac{N}{n} \times 955 \times k = \frac{56,1}{9} \times 955 \times 1,6 = 9525 \text{ daNm}$$

The AGBS-230 couplings chosen in terms of the shaft diameter.

$$AGBS = M_{max} = 17850 > 9525$$

1.2. Verification of the radial load:

The coupling chosen by calculating the turning moment (AGBS-230) withstands a maximum radial load of 14,700 daN according to Table Nº. 4 reason why the choice would be correct.

$$AGBS F_{max} = 14700 \text{ daNm} > 9750 \text{ daNm}$$

In the event that the calculated F_{max}. were greater (e.g. 15000 daN) than the data in the coupling data, it must be verified as to whether the size of the coupling chosen would be sufficient with the corrected radial load.

$$F_{adm} = 15000 + \left(\frac{17850 - 9525}{1,6} \right) = 20203,13 \text{ daN}$$

Therefore, it would be sufficient given that the

$$F_{adm} = 20203,13 \text{ daN} > 15000 \text{ daN}$$

1.3. Geometric verification of the gear box shaft:

According to Table Nº. 4 on the selection of couplings, the d_{max}.=245mm > 220mm (shaft diameter).

barrel couplings

BARREL COUPLINGS "For drums model AGBS"

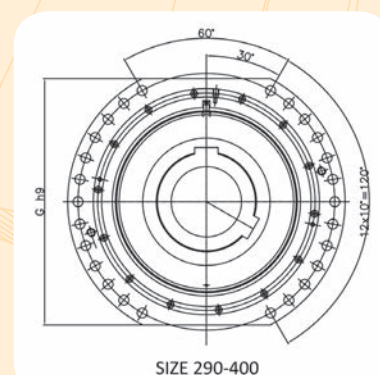
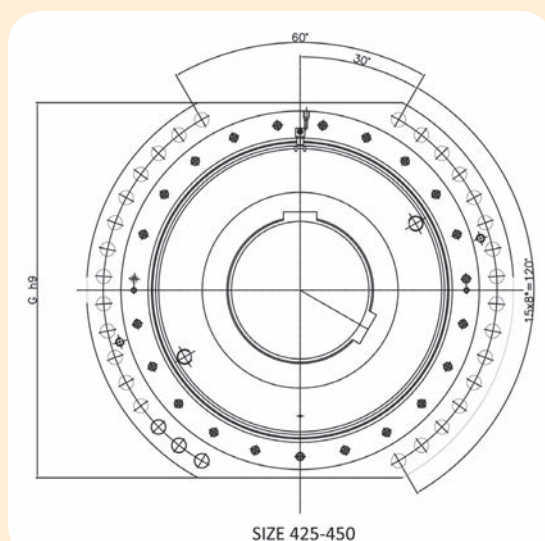
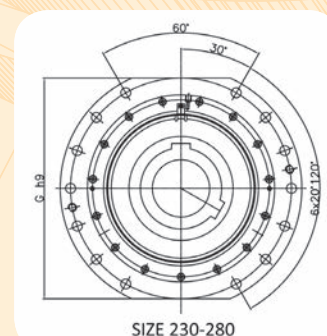
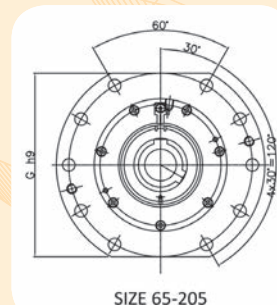
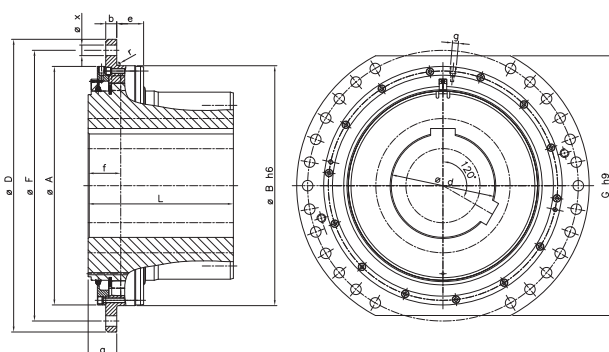


gosan

DIMENSIONAL DRAWINGS FOR AGBS BARREL COUPLINGS:

Diam. Ø Size	Mmax. daNm	Radial load Fr daN	ø d H7 min. (mm)	ø d H7 max. (mm)	D	L max.	L min.	A	B h6	F	G h9	a	b	e	f	g	x	r	Axial displ. max	Wgt kg. (**)	J kgm ² (**)
65	640	1750	40	65	250	95	85	159	160	220	220	42	12	31	44	1/8	15	2,5	3	10	0,06
75	800	1950	50	75	280	100	85	179	180	250	250	42	12	31	44	1/8	15	2,5	3	13	0,09
85	950	2100	60	85	320	110	95	199	200	280	280	45	15	32	46	1/8	19	2,5	4	18	0,18
95	1600	2600	60	95	340	125	95	219	220	300	300	45	15	32	46	1/8	19	2,5	4	24	0,25
105	2050	3700	80	110	360	130	95	239	240	320	320	45	15	34	47	1/8	19	2,5	4	28	0,33
120	2550	4060	80	125	380	145	95	259	260	340	340	45	15	34	47	1/8	19	2,5	4	33	0,45
135	3000	4400	100	140	400	170	95	279	280	360	360	45	15	34	47	1/8	19	2,5	4	42	0,65
145	4050	5150	100	155	420	175	95	309	310	380	380	45	15	34	47	1/8	19	2,5	4	54	0,89
175	5300	7350	100	180	450	185	120	339	340	400	400	60	20	40	61	1/4	24	2,5	4	72	1,5
190	7700	11500	120	210	510	220	125	399	400	460	460	60	20	48	65	1/4	24	2,5	6	112	3,1
205	11700	12600	120	215	550	240	125	419	420	500	500	60	20	48	65	1/4	24	2,5	6	139	4
230	17850	14700	140	245	580	260	130	449	450	530	530	60	20	48	65	1/4	24	2,5	6	158	5,6
280	23950	17850	160	290	650	315	140	529	530	600	580	65	25	48	67,5	1/4	24	2,5	6	270	11,8
290	32250	26500	170	300	665	330	145	542	545	615	590	65	25	61	74	1/4	24	4	6	291	14,3
300	40550	31500	170	310	680	350	145	559	560	630	600	65	25	61	74	1/4	24	4	6	320	16,8
315	52000	35700	200	330	710	380	165	599	600	660	640	81	35	64	87,5	1/4	28	4	8	424	24,3
355	65000	39900	230	370	780	410	165	669	670	730	700	81	35	64	87,5	1/4	28	4	8	542	39,8
400	76750	46500	260	420	850	450	165	729	730	800	760	81	35	64	87,5	1/4	28	4	8	717	61,4
425	92700	50500	290	450	940	500	175	800	800	875	830	86	40	64	92	1/4	28	4	10	988	99,3
450	108150	52500	330	470	1025	500	175	860	860	945	900	86	40	64	92	1/4	34	4	10	1115	128

**Weight and J with maximum diameter d.

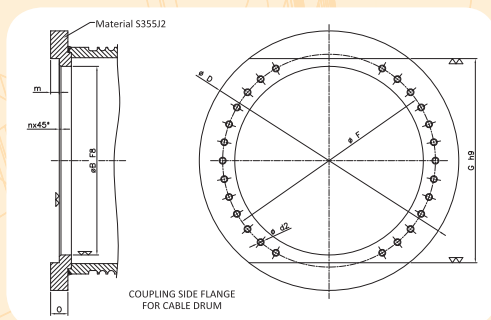




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DIMENSIONAL DRAWINGS FOR AGBS DRUMS:

The running of the winding drum flange is carried out according to the following table and drawings. The quality of the flange material shall be as a minimum S355. Fastening bolts strength class 10.9 according to the DIN 931, DIN 933 and DIN 6914 and washers according to the DIN 6916 Standards.



Type AGBS Size	D	F	G h9/ F8	X	Thread d2	B h6/F8	N° of holes	m min.	n	O min.
65	250	220	220	15	M12	160	10	12	3	27
75	280	250	250	15	M12	180	10	12	5	27
85	320	280	280	19	M16	200	10	15	3	30
95	340	300	300	19	M16	220	10	15	3	30
105	360	320	320	19	M16	240	10	15	3	30
120	380	340	340	19	M16	260	10	15	3	30
135	400	360	360	19	M16	280	10	15	3	30
145	420	380	380	19	M16	310	10	15	3	30
175	450	400	400	24	M20	340	10	20	3	40
190	510	460	460	24	M20	400	10	20	3	40
205	550	500	500	24	M20	420	10	20	3	40
230	580	530	530	24	M20	450	14	20	3	40
280	650	600	580	24	M20	530	14	25	3	50
290	665	615	590	24	M20	545	26	25	5	50
300	680	630	600	24	M20	560	26	25	5	50
315	710	660	640	28	M24	600	26	35	5	60
355	780	730	700	28	M24	670	26	35	5	60
400	850	800	760	28	M24	730	26	35	5	60
425	940	875	830	28	M24	800	32	40	5	70
450	1025	945	900	34	M30	860	32	40	5	70

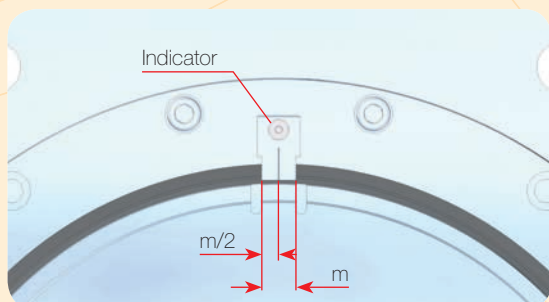
The X value corresponds to the diameter of the holes in the coupling for its fastening to the drum.

WEAR INDICATOR:

So as to verify wear, the position of the wear indicator relative to the slots in the hub should be noted, since the relative position between both parts indicates the wear of the coupling. This coupling is originally supplied with the indicator centred relative to the slots (Position A). When the indicator mark reaches the limit of one of the slots, it is necessary to replace the entire coupling (Position B).

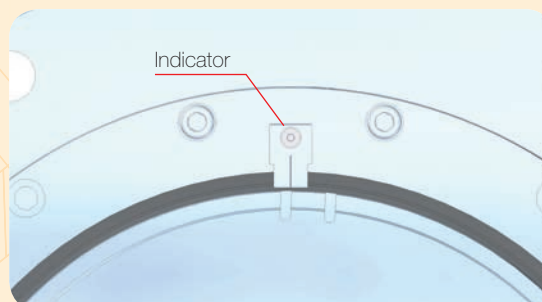
When the coupling is being used in two load directions, the maximum admissible wear values must be divided by two m/2. It should be specified when making the purchase order, so as to have the corresponding wear notch.

Position A



Coupling without wear

Position B



Maximum wear

Coupling size	Max. permissible wear m/2
65 - 95	4 mm
105 - 190	6 mm
205 - 450	8 mm

barrel couplings

BARREL COUPLINGS
"For drums model AGBS"

The AGBS barrel couplings for drums, designed by **gosan**, are used in hoisting gear of cranes to join the cable drum and the output shaft of the gearbox.



COUPLINGS

WITH CONVEX TEETH



INTRODUCTION

Great attention is not normally paid to the problem of coupling together shafts. Very often the coupling element chosen is the simplest and, hence, the cheapest; it is deemed adequate for the job at hand, and no one thinks about impairment to the life and quality of the machines thus connected. Frequently the choice is based on the simplistic principle according to which the connecting element must have torsional elasticity and great flexibility.

Toothed couplings are indeed flexible, but they lack torsional elasticity.

Currently, there are many applications in which the torque to be transmitted, high rotational speeds, misalignment value and reduced maintenance costs call for the use of toothed couplings. In order to understand and appreciate the many advantages of the flexible tooth couplings we must first look at its most general uses.

GENERAL USES OF THE FLEXIBLE COUPLING

Flexible couplings are used to connect a revolving shaft, they transmit torque from the drive shaft to the driven shaft, compensate for misalignment, and absorb the axial movements of the shafts.

It is a known fact that perfect alignment, difficult enough to achieve in machine assembly, is even more difficult to maintain during operation. Misalignment, normal or accidental, is often the result of:

- Thermal expansion (in the case of steam turbines, metallurgical or chemical processes, etc.)
- Settling in the floors or foundations (as in the case of mines)
- Frame deformation (gantry cranes, ships, etc.)
- Displacement of the receptor shaft (rolling-cylinders, levelling rollers, winding machines, etc.)
- Vibration, bearing wear, etc.

Hence, a flexible coupling must have three main functions:

- a. To transmit torque from one shaft to another without variation in their relative rotational speed
- b. To compensate for any misalignments between the shafts without causing abnormal reactions or stresses in the machinery and without appreciable power loss.
- c. To compensate for axial movements in the shafts, to ensure that neither exerts pressure on the other and always to allow each to revolve in its normal position.

Misalignments that must similarly be compensated for are of three types :

1. Angular defect in one shaft or both.
2. Radial defect in both shaft.
3. Defect both radial and angular in both shafts.

FLEXIBLE TOOTH COUPLINGS MEET ALL THESE NEEDS

In these tooth couplings, with curved dentation, the load is distributed over a surface of the side of the tooth far from the extremities of the dentation.

An exterior curved tooth form acts like a walking shoe and can slide freely without scratching embedding itself in the interior tooth form.

Lubrication is thus assured and the upper part of the spherical teeth of the hubs will facilitate centring in the bottom of the grooves of the housing's interior tooth form.

Couplings with curved teeth will accommodate a large torque, their life is longer, and they do not cause abnormal stresses on the machinery.

Flexible couplings with teeth offer these advantages:

Small robust, made entirely of steel, without elastic elements susceptible to wear, they can transmit heavy forces and high rotational speeds.

They are currently used in diverse branches of Industry. In each case their superiority in meeting the following is confirmed:

- Power: Continuous and heavy running in mines-iron and steel works-oil tankers and other high tonnage ships, etc.
- Speed: Feed pumps in steam power stations-centrifugal compressors and turbines-aviational test beds, etc.
- Safety: Gantry cranes in iron and steel works-hoist or elevators in mines and aircraft carriers-rolling stock, etc.

TORQUE CAPACITY OF TOOTH COUPLINGS

When the couplings is perfectly aligned, i.e. when the tooth forms are coaxial, each tooth contributes equally to load transmission. Furthermore the torque that can be thus transmitted is greater than the torque transmissible by the shaft.

When misalignment reaches a certain angle ΔC , it is no longer the case that all teeth contribute equally to load transmission. The greater misalignment, the more unfavorable the conditions. Torque capacity diminishes as misalignment increases.

Torque has been calculated for:

a) A misalignment angle smaller than $\Delta C = 0^\circ 30'$.

It has been estimated that accidental or functional stresses in structures and foundations, along with land settling, can in the long run produce misalignment of $0^\circ 30'$ or so (especially if the installation has not been properly maintained).

For orientative purposes one may construct a statistical curve showing how torque diminishes as misalignment increases.

It may seem, for example, if the gearing works accidentally with a misalignment of 1° its capacity for transmitting torque is no more than 45% of the ideal.

Coupling life varies with the cube of the ratio of allowable torque and torque applied.

If in the preceding example the coupling must support the maximum normal torque under a misalignment of 1° , it will wear 11 times more rapidly than with correct alignment.

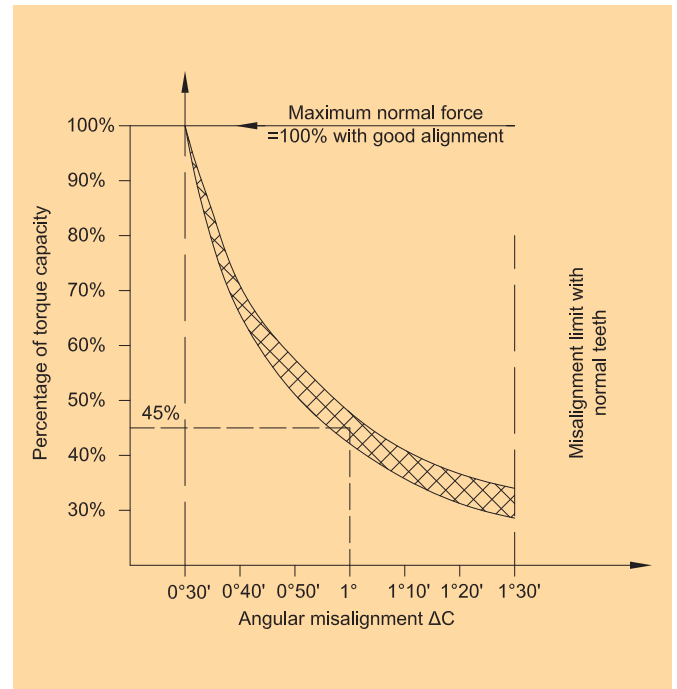
Insisting that the value $\Delta C = 0^\circ 30'$ taken for calculation is a SAFETY LIMIT FOR UNFORESEEN CONDITIONS, we would advise the user to note that tooth couplings must be carefully aligned if their useful life is to be long, the more so as rotational speed increases.

This law is general for all coupling types. It is furthermore necessary to check alignment periodically.

b) A service factor $C_s=1$.

For an application and given the work conditions, the selection factor is determined according to:

- Shock level of receptor I, II or III and
- Type of motor unit, (A, B or C) and period of daily use.



Shock level	Driven equipments
I Operation with virtually no shock.	Continuous - running electric generators - continuous - running blowers - ventilators in everyday use - continuous - running centrifugal pumps - centrifugal compressors - conveyor belts or chains - light lifts - shakers and mixers for homogenizing liquids.
II Operation with moderate shocks.	Centrifugal pumps for hot oils, hydrocarbons, etc. - gear pumps - vane compressors - heavy - duty lifts - winding drums in cranes - heavy - duty elevators - gantry cranes in machine shops or assembly shops - shakers and mixers for heterogenous liquids - pulp mills - sieves - shaft lines containing gears - propellor shafts in boats.
III Operation with major shocks or cyclical irregularities.	Heavy - duty centrifuges - alternative apparatus: piston pumps for decarbonizers - mechanical shovels and diggers - traction vehicles - gantry cranes in steelworks shops - rubber mills - rod and ball mills - cuppling presses - shearing machines - rolling mills.

Motor	Service factor	Hours continuous running		
		3	8 to 11	24
A Electric and turbine	I	1	1,25	1,5
	II	1,25	1,5	1,75
	III	1,75	2,25	2,5
B Gear box	I	1,25	1,5	2
	II	1,5	2	2,25
	III	2,25	2,5	3
C Piston	I	1,5	2	2,25
	II	2	2,25	2,5
	III	2,5	3	3,5

If the motor part of the receptor part is not listed here, proceed by analogy.

Example: Coupling between mechanical variator (B) and shaker for homogenous liquid (I), running for 24 hours a day. $K = 2$.

Transmission torques, shown in the tables with various couplings, are calculated from the following data:

- Misalignment of teeth, below $0^{\circ} 30'$.
- Service factor.
- Running duration: 50.000 hours.

The selected torque will be $C_s = C_n \times K$, where C_n = maximum force in normal running to be transmitted in decanewtons and K = selection factor as per table.

- Select the coupling that has a transmission force superior to or equal to C_s .
- Check that it is the right one for the shaft diameters and speeds involved. In the case of the speeds higher than those shown in the table, they will have to be dynamically balanced.
- When running period is 24 hours and work conditions are not known, take minimum factor $K = 2,5$

c) A running time of 50.000 hours.

This period is always sufficient and in some cases, excessive. In practice, however, there is little reason economically to reduce it, for in general the shaft diameter will determine the type of coupling.

SELECTION OF TOOTHED COUPLINGS

1. Union on shaft and toothed hub.

This can be realized by:

- keying or grooving, or
- hot pressure assembly without key

When there is a keyway whose groove weakens the hub and creates heavy localized stresses, or when assembly is hot and under pressure

without key, which introduces heavy traditional stresses to the whole hub mass, it is necessary to examine the shaft-hub connection very carefully. If it is badly designed or made it may have a weak point. Flexible gear couplings have, from the point of view of the gearform, a torque capacity generally superior to that of the shaft of greatest diameter they can accommodate.

We recommend the following allowances when fitting the hubs on keyed shafts.

2. Union between semi-housings.

This union indented as an effective counter to radial separation forces an axial separation forces:

• Radial separation forces.

Due to the fit between the shear-holes in two semihousings together with a common ring which fits into both, centring precision is guaranteed by the tolerance H6/h6. its effectiveness frees the securing bolts from shear stress caused by exterior radial separation forces.

Shaft diameter		ALLOWANCES			
From	To	Hub	Shaft	Hub	Shaft
-	100	H7	m6	H7	m6
100	200	H7	n6	J7	m6
200	500	H7	p6	K7	m6

• Axial separation forces.

The bolt assembly is designed, with a high safety coefficient, when the screws are tightened normally, the tangential force that can be transmitted by friction between the flanges is sufficient for normal torque. The bolts do not suffer shear stress because of this tangential force.

Toothed washers or locking washers for the large couplings are provided both in the head and in the nut of each securing bolt. Hence constant bolt tightness is guaranteed, however frequent the shocks or intense the vibrations.

The bolts are ground and are carefully adjusted in insertion into the flange holes. Hence the flexible halves may be interchanged very easily and safely.

3. Meshing between internal and external gear elements.

Effected by the toothing.

Our toothed couplings are not intended for considerable misalignments. The teeth are cut with the material already treated so that it has the necessary hardness.

- To allow for wear and fracture, the internal gearings of the housing are more amply dimensioned than the external gearing of the hub.
- The external gearing of the hub is designed more to accommodate wear than to accommodate fracture.

Note that resistance of the external hub tooth form to fracture is what determines torque capacity of the coupling.

4. Torque details.

- Maximum normal torque.
- Peak torque.
- Accidental torque.

Maximum normal torque: C_n is the torque given in the tables of characteristics. It is calculated from the data dealt with above.

For a given application it is deduced from power absorbed in normal running.

Peak maximum power: $C_p = 1,5 C_n$.

For a given application it is deduced from the power transmitted, generally during a short interval such as in the following cases:

- motor starting
- rolling points
- shearing operation.

Critical accidental torque: $C_a = 2 C_n$.

For a given application this is deduced from power transmitted instantaneously, as when a shaft at high speed is suddenly jammed.

5. Selecting a toothed coupling. Examples.

- A Coupling between steel convertor and reducer in rolling mill diameter of the shafts 600 mm.

Normal maximum force 110.000 da N.m.

Daily running time can be estimated only as being a few hours and under maximum force.

Misalignment angle less $0^\circ 30'$.

Service factor 1.

Very high work level $K=1.75$.

Corrected maximum force = $110.000 \times 1.75 = 192.500$ da N.m.

Accidental critical torque= $110.000 \times 2 = 220.000$ da N.m.

Gear coupling size 680 with nominal torque of 210.000 da N.m.

- Coupling between reducer and pulley of a tape feed:

Motor power $P_m = 60$ K.w

Pulley speed $n = 65$ r.p.m.

Pulley axle $d_p = 100$ mm.

Reducer axle $d_r = 135$ mm.

Service factor 1. Selection factor $k = 1.5$

Elected torque = $(956 \times 60 / 65) \times 1.5 = 1.324$ da N.m.

Calculation leads to a choice of size 125.

Axle size chosen is 145.

- Coupling between reducer and pulley of a tape feed:

Motor power $P_m = 60$ K.w

Pulley speed $n = 65$ r.p.m.

Pulley axle $d_p = 100$ mm.

Reducer axle $d_r = 135$ mm.

Service factor 1.

Selection factor $k = 1.5$

Elected torque = $(956 \times 60 / 65) \times 1.5 = 1.324$ da N.m.

Calculation leads to a choice of size 125.

Axle size chosen is 145.

- Coupling between reducer and drive shaft of a trolley:

Motor power 9 CV.

Drive shaft speed 60 r.p.m.

Reducer axle 60 mm.

Drive shaft 65 mm.

Misalignment angle 1°

Service factor 1.

Selection factor $K = 1.5$

Capacity reduced factor $1^\circ = 45\%$

Machine torque = $716.2 \times 9 / 60 = 108$ da N.m.

Selection torque = $108 \times 1.5 / 0.45 = 360$ da N.m.

Gear coupling size 90 will accommodate up to 580 da N.m. and axles of 90 mm.

MAINTENANCE AND LUBRICATION

Once the coupling has been installed in the machine, lubricate as per quantity shown in the dimension tables.

Lubricant should be replaced at intervals between 2.500 and 3.000 hours of running.

Greases for temperatures from -10°C to 80°C .

DOMESTIC		FOREIGN	
Manufactur.	Grease type	Manufacturer.	Grease type
Brugarolas	Aguila N°. 80 EP-00	Socony mobil oil Co.	Mobiplex EP-0
Verkol, S.A.	Kalor Verkol EP-00		
Kraff	KEP-00	Klüber	KR29 BHD
Gabin Soprogresa, S.A.	MGL-00 Supergras 712 Ep-00	BP	BP Energ grease
Repsa	Repsol EP-0	Chevron	Chevron Dura-Lith Grease EP-0
GPM	GPM Lithium AV (EP-0)	Esso	PEN-0-LED EP 360
Cepsa	EP-024	Shell	Shell Simnia Grease 0
		Texaco	Texaco Multifak EP-0
		Aral	Aral Fett FDP-0

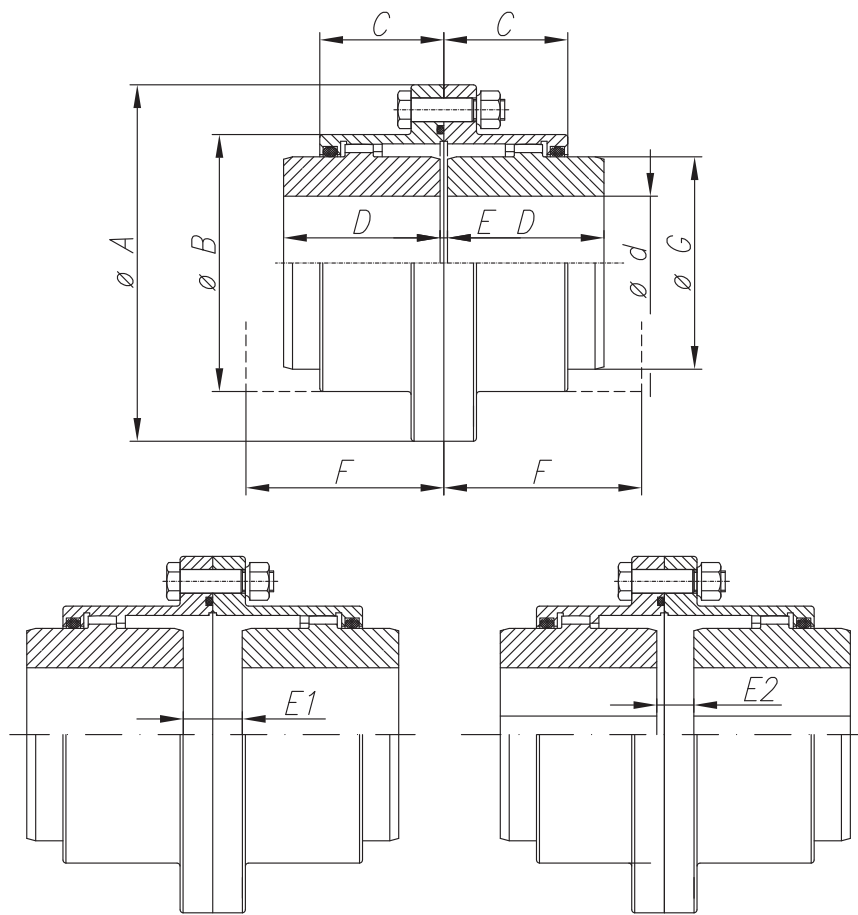
For higher temperatures consult us.

A coupling needs to be periodically checked, with attention to whether the outer housings are free to move axially.

If the housings do not move then the couplings elements should be aligned and the coupling centred.

couplings with teeth

COUPLINGS WITH CONVEX TEETH "Model AGH 10"



- Couplings based on AGMA standard.
- Material:
 - High stress steel or alloy steel.
- Especial executions.

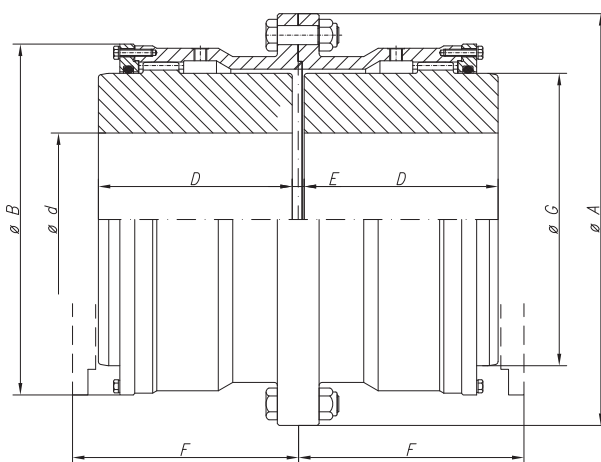
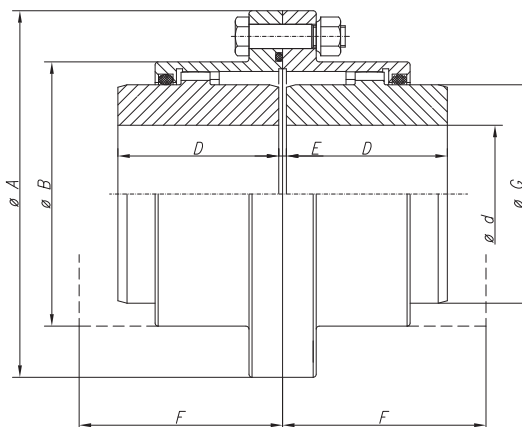
DESCRIPTION

REF.: 012.030

TECHNICAL DATA	N°	PN (kw) n	Nominal torque da N.m	Max. Speed rpm	DIMENSIONS											PD ² kgm ² .	Weight kg.	LUBRIC kg.
					d		A	B	D	E	E1	E2	C	F	G			
	max.	min.																
	42	0,09	90	8.600	42	13	116	80	43	3	5	7	39	59,9	60	0,0216	4	0,06
	55	0,19	180	6.600	55	16	152	100	49	3	8	13	45	65,5	79	0,08	9	0,09
	70	0,36	350	5.600	70	20	178	125	62	3	14	25	59,5	77,5	101	0,184	15	0,15
	90	0,6	580	4.700	90	25	213	148	77	5	12	19	68,5	94,5	124	0,48	26	0,25
	100	1	965	4.200	100	30	240	173	91	5	23	41	83,5	110,5	143	0,76	40	0,5
	125	1,6	1.570	3.600	125	35	279	204	106	6	27	48	97,5	128	170	1,84	64	0,7
	145	2,64	2.600	3.150	145	45	318	242	121	6	32	58	111	143	205	3,44	95	0,9
165	3,5	3.450	2.860	165	55	346	268	135	8	37	66	123	166	216	5,6	126	1,5	
185	5,1	5.000	2.580	185	60	389	302	153	8	49	90	140,5	184	250	10,4	180	2,3	
205	6,7	6.500	2.320	205	70	425	327	175	8	52	96	158	209	275	16	245	2,85	
230	8,7	8.500	2.200	230	100	457	354	188	8	60	112	170	222	300	21,6	271	3,25	
260	13	13.000	2.000	260	115	527	410	221	10	72	134	196	257	340	36	400	4,5	

- Couplings based on AGMA standard.
- Material:
 - High stress steel or alloy steel.
- Especial executions.

DESCRIPTION



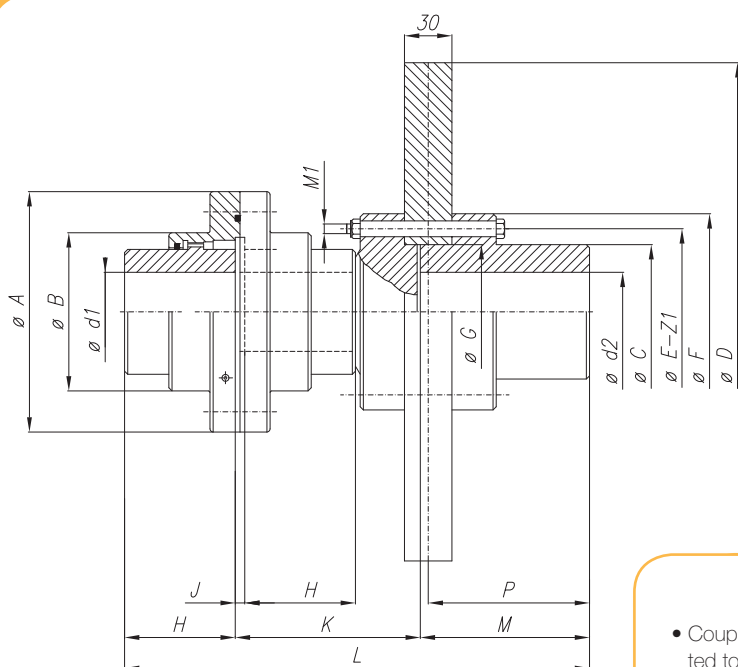
REF.: 012.040

N°	PN (kw) n	Nominal torque da Nm.	Max. vel. rpm	DIMENSIONS								PD² kgm².	Weight kg.	LUBRIC kg.
				d		A	B	D	E	F	G			
				max.	min.									
42	0,09	90	8.600	42	13	116	80	55	6	78	60	0,022	5	0,05
55	0,19	180	6.600	55	16	152	100	70	6	93	79	0,084	10	0,08
70	0,36	350	5.600	70	20	178	125	80	6	111	101	0,192	17	0,23
90	0,6	580	4.700	90	25	213	148	95	8	128	124	0,5	28	0,32
100	1	965	4.200	100	30	240	173	105	8	140	143	1	40	0,44
125	1,6	1.570	3.600	125	35	279	204	120	8	162	170	1,92	65	0,64
145	2,64	2.600	3.150	145	45	318	242	135	10	177	205	3,72	95	0,9
165	3,5	3.450	2.860	165	55	346	268	150	10	197	216	6,2	134	1,5
185	5,1	5.000	2.580	185	60	389	302	170	10	215	250	10,8	185	2,2
205	6,7	6.500	2.320	205	70	425	327	185	12	236	275	16,4	240	2,5
230	8,7	8.500	2.200	230	100	457	354	200	12	256	300	22,2	273	3,2
260	13	13.000	2.000	260	115	527	410	230	12	286	340	36,6	412	4,5
280	16,4	16.000	1.800	280	140	540	465	250	16	308	370	59,32	525	3,1
310	22,6	22.000	1.600	310	160	585	505	270	16	328	410	89,2	750	3,7
345	28,8	28.000	1.500	345	180	650	548	290	16	348	450	147,1	890	4,5
370	37	36.000	1.400	370	210	690	588	325	20	380	490	210,4	1.275	6
390	45	44.000	1.300	390	230	760	640	345	20	410	520	315,2	1.390	7,6
420	55	54.000	1.200	420	250	805	690	365	20	430	560	443,2	1.660	11,3
460	68	66.000	1.100	460	275	850	730	400	20	460	600	609,6	2.010	14
500	84	82.000	1.050	500	300	930	780	410	25	503	650	855,2	2.460	15
550	110	107.000	950	550	325	995	850	430	25	533	710	1.239	3.070	16
590	139	135.000	900	590	350	1.055	910	470	25	563	760	1.688	3.410	23
620	164	160.000	850	620	375	1.140	970	500	30	615	810	2.708	4.550	25
650	185	180.000	800	650	400	1.190	1.020	520	30	645	840	3.048	5.035	28
680	216	210.000	750	680	425	1.250	1.080	540	30	665	890	3.400	6.270	35
730	267	260.000	700	730	450	1.300	1.150	570	30	695	950	4.840	6.910	40
800	339	330.000	660	800	475	1.420	1.270	600	30	740	1.050	6.480	9.750	45

TECHNICAL DATA

couplings with teeth

COUPLINGS WITH CONVEX TEETH "Model AGT 10 with brake disk"

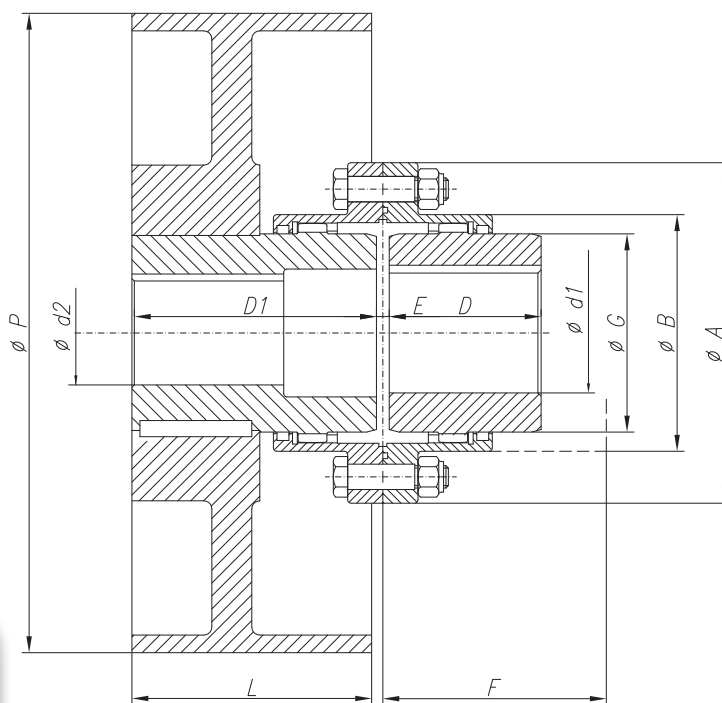


- Couplings based on AGMA standard and adapted to longer shafts.
- Material:
 - High stress steel or alloy steel.
 - Carbon steel
- Especial executions.
- Solid brake disk made in S355J2.
- Balanced as an option, following customer specifications.

DESCRIPTION

REF.: 012.043

D Disc	Nominal torque da N.m.	Max. Vel. rpm	Coupl. type AGT10	DIMENSIONS																PD ² kgm ²	Weight KG.	LU- BRIC. KG.
				d1 max.	d2 min.	A	B	C	E	F	G	H	J	K	L	M	P	Z1	M1			
315	150	3.000	55	55	55	152	100	82	105	124	85	70	6	117	294	107	102	9	M10	0,88	34	0,08
355	180	2.700	55	55	70	152	100	100	125	145	105	70	6	117	294	107	102	9	M12	1,36	41	0,08
395	180	2.400	55	55	75	152	100	110	140	165	115	70	6	117	294	107	102	9	M14	2,22	49	0,08
400	220	2.400	70	70	75	178	125	110	140	165	115	80	6	117	304	107	102	9	M14	2,32	56	0,23
445	180	2.100	55	55	80	152	100	112	146	175	120	70	6	117	327	140	135	12	M16	3,55	58	0,08
ó	300	2.100	70	70	80	178	125	112	146	175	120	80	6	130	350	140	135	12	M16	3,66	66	0,23
450	580	2.100	90	90	80	213	148	112	146	175	120	95	8	150	385	140	135	12	M16	3,97	77	0,32
495	300	1.900	70	70	110	178	125	155	190	218	160	80	6	145	365	140	135	12	M18	5,46	90	0,23
ó	580	1.900	90	90	110	213	148	155	190	218	160	95	8	169	404	140	135	12	M18	5,81	101	0,32
500	940	1.900	100	100	110	240	173	155	190	218	160	105	8	185	430	140	135	12	M18	6,31	114	0,44
550	300	1.800	70	70	110	178	125	155	190	218	160	80	6	145	365	140	135	12	M18	8,39	101	0,23
ó	580	1.800	90	90	110	213	148	155	190	218	160	95	8	169	404	140	135	12	M18	8,7	112	0,32
560	940	1.800	100	100	110	240	173	155	190	218	160	105	8	185	430	140	135	12	M18	9,23	126	0,44
TECHNICAL DATA	580	1.500	90	90	120	213	148	168	205	238	170	95	8	169	404	140	135	12	M20	14,24	129	0,32
	625	940	100	100	120	240	173	168	205	238	170	105	8	185	430	140	135	12	M20	14,81	149	0,44
	630	1.380	125	125	120	279	204	168	205	238	170	120	8	206	466	140	135	12	M20	15,68	173	0,64
	2.070	1.500	145	145	120	318	242	168	205	238	170	135	10	238	513	140	135	12	M20	17,48	204	0,9
705	940	1.300	100	100	135	240	173	190	230	268	195	105	8	185	430	140	135	12	M22	22,51	176	0,44
	1.380	1.300	125	125	135	279	204	190	230	268	195	120	8	206	466	140	135	12	M22	23,38	199	0,64
	710	2.530	145	145	135	318	242	190	230	268	195	135	10	238	513	140	135	12	M22	25,28	236	0,9
	2.920	1.300	165	165	135	346	268	190	230	268	195	150	10	258	548	140	135	12	M22	27,76	276	1,5
795	1.380	1.200	125	125	150	279	204	216	260	300	220	120	8	206	466	140	135	12	M24	36,84	245	0,64
	ó	2.530	145	145	150	318	242	216	260	300	220	135	10	238	513	140	135	12	M24	38,74	276	0,9
800	3.450	1.200	165	165	150	346	268	216	260	300	220	150	10	258	548	140	135	12	M24	41,22	314	1,5



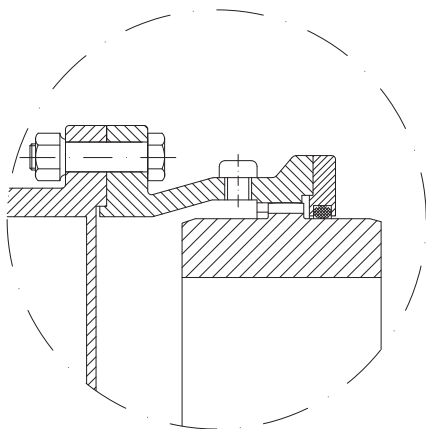
- Couplings based on AGMA standard and adapted to longer shafts.
- Material:
 - High stress steel or alloy steel.
 - Carbon steel.
- Especial executions.
- Brake drum made in S355J2
- Balanced as an option, following customer specifications.

DESCRIPTION

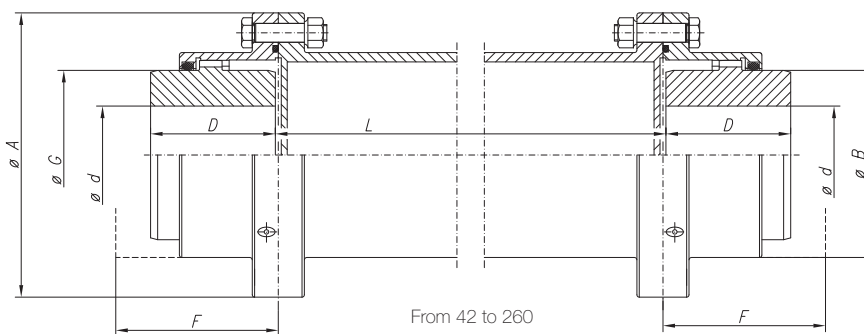
REF.: 012.044

	DIAM. P	Nom. Torque da Nm.	Veloc. Vel. rpm.	Coupl. type. AGT10	DIMENSIONS										PD² kgm².	Weight KG. kg.	LUBRIC
					d1 max.	d2 min	A	B	D	E	D1	L	F	G			
TECHNICAL DATA	200	90	2.850	42	42	13	116	80	55	6	88	75	60	78	0,18	12	0,05
	200	180	2.850	55	55	16	152	100	70	6	105	75	79	93	0,22	17	0,08
	250	180	2.300	55	55	16	152	100	70	6	115	95	79	93	0,45	22	0,08
	250	350	2.300	70	70	20	178	125	80	6	115	95	101	111	0,56	28	0,23
	315	180	1.800	55	55	16	152	100	70	6	130	118	79	93	1,41	35	0,08
	315	350	1.800	70	70	20	178	125	80	6	130	118	101	111	1,52	42	0,23
	315	580	1.800	90	90	25	213	148	95	8	145	118	124	128	1,76	53	0,32
	315	965	1.800	100	100	30	240	173	105	8	145	118	143	140	2,04	65	0,44
	350	350	1.650	70	70	20	178	125	80	6	130	130	101	111	2,12	46	0,23
	350	580	1.650	90	90	25	213	148	95	8	145	130	124	128	2,40	57	0,32
	350	965	1.650	100	100	30	240	173	105	8	145	130	143	140	2,64	69	0,44
	400	350	1.450	70	70	20	178	125	80	6	145	150	101	111	4,05	57	0,23
	400	580	1.450	90	90	25	213	148	95	8	160	150	124	128	4,28	71	0,32
	400	965	1.450	100	100	30	240	173	105	8	160	150	143	140	4,52	84	0,44
	400	1.570	1.450	125	125	35	279	204	120	8	160	150	170	162	5,82	108	0,64
	450	965	1.300	100	100	30	240	173	105	8	166	170	143	140	6,43	94	0,44
	450	1.570	1.300	125	125	35	279	204	120	8	166	170	170	162	8,12	119	0,64
	500	1.570	1.150	125	125	35	279	204	120	8	180	190	170	162	12,05	129	0,64
	500	2.600	1.150	145	145	45	318	242	135	10	195	190	205	177	14,21	159	0,9
	500	3.450	1.150	165	165	55	346	268	150	10	195	190	216	197	17,22	198	1,5
	530	2.600	1.100	145	145	45	318	242	135	10	195	195	205	177	17,41	171	0,9
	530	3.450	1.100	165	165	55	346	268	150	10	195	195	216	197	20,41	211	1,5
	630	2.600	1.000	145	145	45	318	242	135	10	225	236	205	177	35,08	221	0,9
	630	3.450	1.000	165	165	55	346	268	150	10	225	236	216	197	38,12	260	1,5
	710	3.450	800	165	165	55	346	268	150	10	240	265	216	197	66,34	312	1,5

COUPLINGS WITH CONVEX TEETH "Model AGT 11"



From 280 to 800



From 42 to 260

- Couplings based on AGMA standard and adapted to longer shafts.
- Material:
 - High stress steel or alloy steel.
 - Carbon steel.
- Especial executions.
- Floating spacer length according with customer specification.

DESCRIPTION

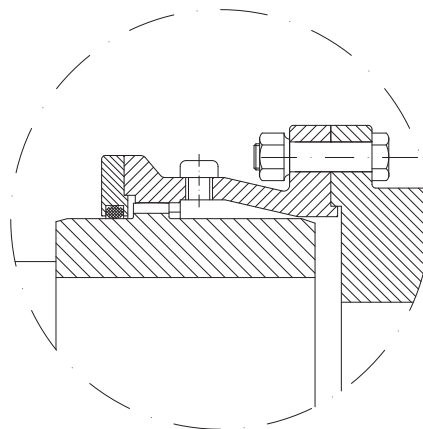
REF.: 012.041

Size No.	PN (kw) n	Nominal torque da Nm.	Max vel. rpm	DIMENSIONS							PD ² kgm ² .	Weight kg.	LUBRIC kg.
				d		A	B	D	F	G			
				max.	min.								
42	0,09	90	The r.p.m. are limited for the critical velocity.	42	13	116	80	55	78	60	0,022	5	0,05
55	0,19	180		55	16	152	100	70	93	79	0,084	10	0,08
70	0,36	350		70	20	178	125	80	111	101	0,192	17	0,23
90	0,6	580		90	25	213	148	95	128	124	0,5	28	0,32
100	1	965		100	30	240	173	105	140	143	1	40	0,44
125	1,6	1.570		125	35	279	204	120	162	170	1,92	65	0,64
145	2,64	2.600		145	45	318	242	135	177	205	3,72	95	0,9
165	3,5	3.450		165	55	346	268	150	197	216	6,2	134	1,5
185	5,1	5.000		185	60	389	302	170	215	250	10,8	185	2,2
205	6,7	6.500		205	70	425	327	185	236	275	16,4	240	2,5
230	8,7	8.500		230	100	457	354	200	256	300	22,2	273	3,2
260	13	13.000		260	115	527	410	230	286	340	36,6	412	4,5
280	16,4	16.000		280	140	540	465	250	308	370	59,32	525	3,1
310	22,6	22.000		310	160	585	505	270	328	410	89,2	750	3,7
345	28,8	28.000		345	180	650	548	290	348	450	147,1	890	4,5
370	37	36.000		370	210	690	588	325	380	490	210,4	1.275	6
390	45	44.000		390	230	760	640	345	410	520	315,2	1.390	7,6
420	55	54.000		420	250	805	690	365	430	560	443,2	1.660	11,3
460	68	66.000		460	275	850	730	400	460	600	609,6	2.010	14
500	84	82.000		500	300	930	780	410	503	650	855,2	2.460	15
550	110	107.000		550	325	995	850	430	533	710	1.239	3.070	16
590	139	135.000		590	350	1.055	910	470	563	760	1.688	3.410	23
620	164	160.000		620	375	1.140	970	500	615	810	2.708	4.550	25
650	185	180.000		650	400	1.190	1.020	520	645	840	3.048	5.035	28
680	216	210.000		680	425	1.250	1.080	540	665	890	3.400	6.270	35
730	267	260.000		730	450	1.300	1.150	570	695	950	4.840	6.910	40
800	339	330.000		800	475	1.420	1.270	600	740	1.050	6.480	9.750	45

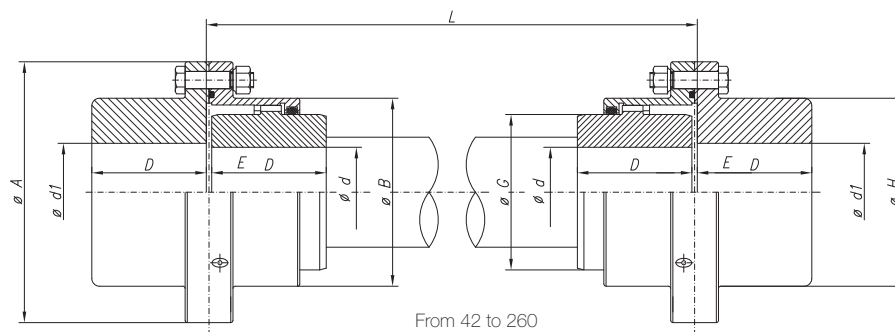
TECHNICAL DATA

- Couplings based on AGMA standard and adapted to longer shafts.
- Material:
 - High stress steel or alloy steel.
 - Carbon steel.
- Especial executions.
- Floating spacer length according with customer specification.

DESCRIPTION



From 280 to 800

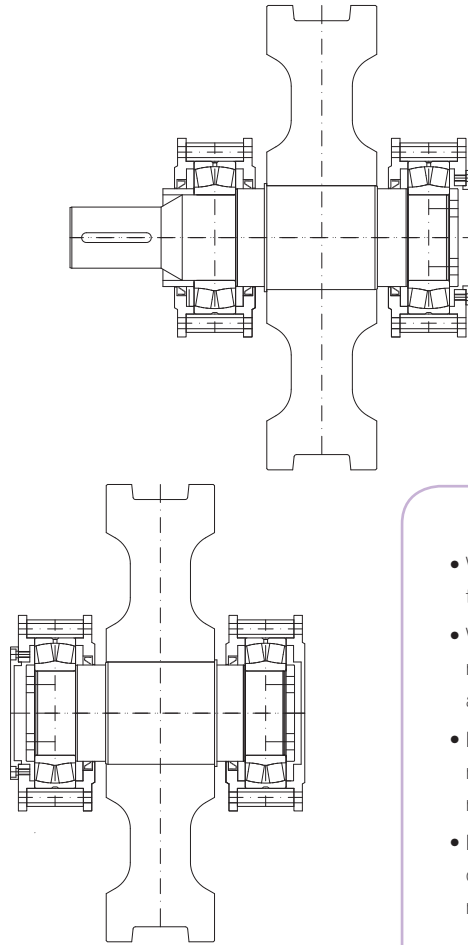


From 42 to 260

REF.: 012.042

TECHNICAL DATA	Size N°	PN (kw) n	Nominal torque da N.m	Max. Vel. rpm	DIMENSIONS								PD ² kgm ² .	Weight kg.	LUBRIC. kg.	
					d		A	B	d1 máx.	D	E	H				G
					max.	min.										
	42	0,09	90	The r.p.m. are limited for the critical velocity.	42	13	116	80	55	55	7	80	60	0,0478	11	0,05
	55	0,19	180		55	16	152	100	70	70	7	100	79	0,1772	22	0,08
	70	0,36	350		70	20	178	125	90	80	7	125	101	0,4	36	0,23
	90	0,6	580		90	25	213	148	105	95	8	148	124	0,992	60	0,32
	100	1	965		100	30	240	173	120	105	8	173	143	1,704	100	0,44
	125	1,6	1.570		125	35	279	204	145	120	8	204	170	4	138	0,64
	145	2,64	2.600		145	45	318	242	170	135	10	242	205	7,76	205	0,9
	165	3,5	3.450		165	55	346	268	190	150	10	268	216	12,56	280	1,5
	185	5,1	5.000		185	60	389	302	215	170	10	302	250	22,8	400	2,2
	205	6,7	6.500		205	70	425	327	230	185	11	327	275	34,24	510	2,5
	230	8,7	8.500		230	100	457	354	250	200	11	354	300	45,8	590	3,2
	260	13	13.000		260	115	527	410	290	230	12	410	340	84,92	890	4,5
	280	16,4	16.000		280	140	540	465	290	250	14	410	370	114,12	1.045	3,1
	310	22,6	22.000		310	160	585	505	350	270	14	460	410	175,76	1.430	3,7
	345	28,8	28.000		345	180	650	548	380	290	16	500	450	284,8	1.770	4,5
	370	37	36.000		370	210	690	588	410	325	18	540	490	413,6	2.390	6
	390	45	44.000		390	230	760	640	450	345	18	590	520	560	2.590	7,6
	420	55	54.000		420	250	805	690	480	365	18	630	560	864	3.344	11,3
	460	68	66.000		460	275	850	730	520	400	18	680	600	1.200	4.075	14
	500	84	82.000		500	300	930	780	560	410	22	730	650	1.680	4.930	15
	550	110	107.000		550	325	995	850	600	430	22	790	710	2.432	6.120	16
	590	139	135.000		590	350	1.055	910	650	470	22	850	760	3.400	7.190	23
	620	164	160.000		620	375	1.140	970	680	500	25	890	810	4.560	9.014	25
	650	185	180.000		650	400	1.190	1.020	710	520	25	930	840	5.880	10.135	28
	680	216	210.000		680	425	1.250	1.080	770	540	25	1.010	890	7.280	12.400	35
	730	267	260.000		730	450	1.300	1.150	810	570	25	1.060	950	9.720	13.960	40
	800	339	330.000		800	475	1.420	1.270	900	600	25	1.170	1050	14.000	18.800	45

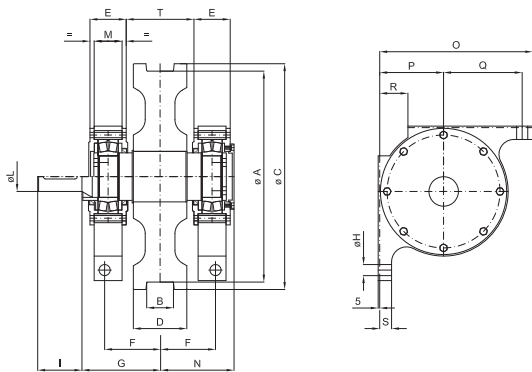
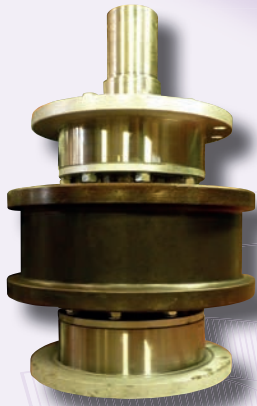
TECHNICAL DATA



- Wheels are generally made of quenched and tempered 42 CrMo4 alloy steel.
- Wheel rolling face is induction-hardened to reach a 400 to 450 HB hardness or higher, and depth higher than 8 mm.
- Hardening treatment is guaranteed to show no discontinuance throughout the wheel rolling surface.
- Motor shaft sizes and rolling surface widths can be modified to suit Customer's requirements.

DESCRIPTION





STANDARD WHEEL SETS

- Max pressure: 0,72 daN/mm².
- Loads determined in accordance with FEM codes.

A	D	Bea- ring	Static load	Burbac	Mass kg.	
					Drive	Idle
250	90	22213	9,3	A 45	70	68
315	120	22216	14,3	A 55	120	115
400	140	22220	23,8	A 75	229	219
500	140	22222	29,7	A 75	257	247
630	140	22226	37,5	A 75	397	379
630	160	22226	37,5	A 75	421	403
630	190	22228	50,8	A 100	510	489
800	190	22232	64,5	A 100	782	749
800	210	23232	80,6	A 120	893	925
1.000	190	22236	80,6	A 100	1.151	1.112
1.000	210	23236	100,8	A 120	1.376	1.337



A	B	C	D	E	F	G	H	I	L	M	N	O	P	Q	R	S	T
250	55	280	90	48	95	150	18	110	45	35	132	225	90	110	45	25	132
315	70	350	120	48	110	180	18	130	60	35	151	255	100	130	50	30	162
400	90	440	140	64	126	200	22	150	80	50	178	310	125	155	60	30	178
500	90	540	140	72	130	214	26	150	90	55	189	340	135	175	65	40	178
630	90	680	140	83	138	240	26	170	110	65	201	375	150	190	70	40	178
630	110	680	160	83	148	250	26	170	110	65	211	375	150	190	70	40	198
630	130	680	190	88	163	250	32	185	120	70	231	395	160	200	80	40	228
800	130	850	190	98	173	270	32	215	140	80	241	470	190	240	95	45	228
800	150	850	210	128	197	300	32	215	140	100	280	470	190	240	95	45	246
1000	130	1050	190	108	183	280	32	215	150	90	256	520	215	265	105	45	238
1000	150	1050	210	138	209	325	38	215	150	100	304	520	215	265	105	45	260

APPLICATIONS

Gosan's mechanical lifting and hoisting components are used in practically **all sectors** involving machinery for lifting, hoisting and transporting materials. Basically, our products are used in **critical machinery** such as that which exists in ports, on ships and off-shore platforms and in heavy industry (e.g., iron and steel industry). The main manufacturers and final users in these sectors trust **Gosan's** sheaves, hook blocks and couplings.

Gosan is also a reliable supplier for manufacturers and users of **more standardised machinery** such as is used in mobile cranes, hoists in industrial premises, construction cranes and automated warehouses.

Our flexibility and experience make **Gosan** a reliable supplier for this wide range of final applications.

CONSTRUCTION TOWER CRANE

Applications

chap. 1 chap. 2 chap. 3 chap. 4 chap. 5 chap. 6

DESCRIPTION

The components supplied by **GOSAN** for this type of cranes are normalized and are based on the demanding specifications of our customers.

The compliance of our components permit to our customers to design their machinery in a modular way, providing the market with solutions to a wide range of applications.

We are able to guarantee safety and reliability due to our long experience (more than 45 years), the proven performance of our components and the development of innovation working closely together with the lifting machinery manufacturers.



TECHNICAL DATA

According FEM standard

GOSAN normally supply:

- Sheaves: Model A & C
- Hook Blocks: Special for construction cranes, with 1 or 2 sheaves

Please enter in 'products' of **www.gosan.net**

To find further information of other products and constructive configurations.



LUFFING JIB TOWER CRANE



TECHNICAL DATA

According FEM standard

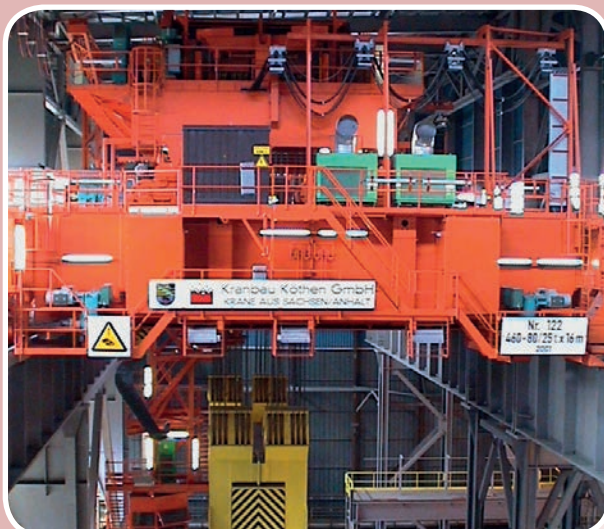
GOSAN normally supply:

- Sheaves: Model A & C
- Hook Blocks: Special for construction cranes, with 1 or 2 sheaves

Please enter in 'products' of **www.gosan.net**

To find further information of other products and constructive configurations.

INDUSTRY LADLE CRANE



DESCRIPTION

This application is very demanding and the components supplied by **GOSAN** are suitable in order to guarantee the reliability of the lifting machinery. Our R&D department develop the components close together with the crane manufacturer to have a first-class response to every project.

The materials used for this application come from first-class suppliers for a better performance and longer life.

We are able to guarantee safety and reliability due to our long experience (more than 45 years) and the proved performance of our components.



TECHNICAL DATA

According FEM standard.

GOSAN normally supply:

- Sheaves: Model C & D, reinforced
- Hook Blocks: Special configurations with several sheaves, special hooks (laminated, etc.), forks, etc.
- Couplings: Barrel (AGBS), Convex teeth (AGT or AGH), with brake pulleys and/or disk.

Please enter in 'products' of **www.gosan.net**

To find further information of other products and constructive configurations.

LADLE CRANE FOR STAINLESS STEEL



TECHNICAL DATA

According FEM standard

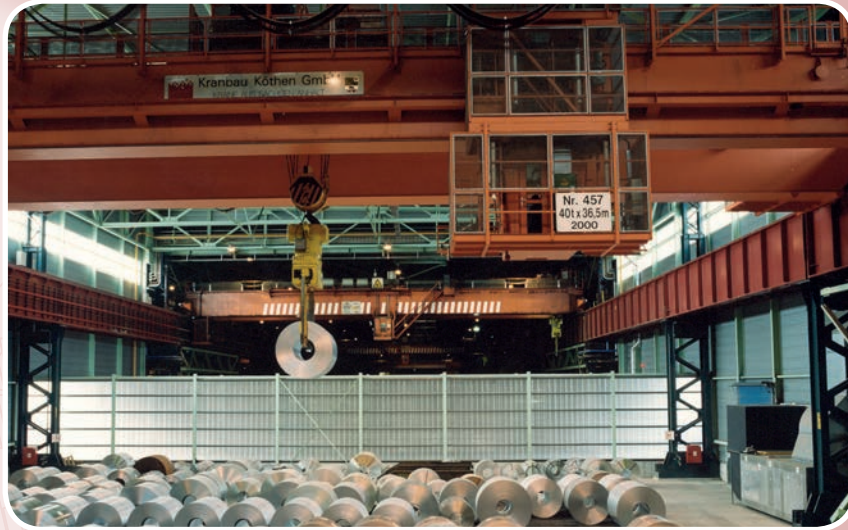
GOSAN normally supply :

- Sheaves: Model C & D, reinforced
- Hook Blocks: Special configurations with several sheaves, special hooks (laminated, etc.), forks, Motorized, etc.
- Couplings: Barrel (AGBS), Convex teeth (AGT or AGH), with brake pulleys and/or disk.

Please enter in 'products' of **www.gosan.net**

To find further information of other products and constructive configurations.





TECHNICAL DATA

According FEM standard.

GOSAN normally supply:

- Sheaves: Model C & D, reinforced.
- Hook Blocks: Special configurations with several sheaves, special hooks (laminated, etc.), forks, etc.
- Couplings: Barrel (AGBS), Convex teeth (AGT or AGH), with brake pulleys and/or disk.

Please enter in 'products' of **www.gosan.net**

To find further information of other products and constructive configurations.

OVERHEAD CRANE



TECHNICAL DATA

According FEM standard.

GOSAN normally supply:

- Sheaves: Model A.
- Hook Blocks: For Hoist, with 1 or 2 sheaves.
- Couplings: Barrel (AGBS), Convex Teeth (AGT or AGH).

Please enter in 'products' of **www.gosan.net**

To find further information of other products and constructive configurations.

OVERHEAD CRANE FOR HEAVY DUTY



TECHNICAL DATA

According FEM standard. **GOSAN** normally supply:

- Sheaves: Model A, Model C
- Hook Blocks: For Hoist, with 2 or more sheaves
- Couplings: Barrel (AGBS), Convex Teeth (AGT or AGH)

Please enter in 'products' of **www.gosan.net**

To find further information of other products and constructive configurations.

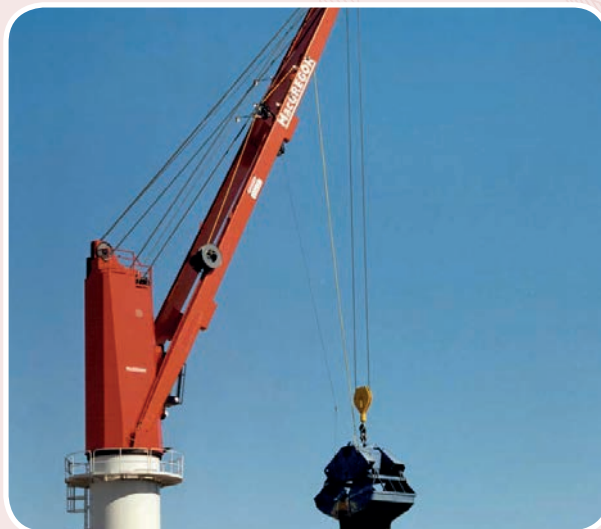
MARINE CRANE FOR BULK CARRIER

DESCRIPTION

This application is determined by the extreme conditions where the crane works. Habitually are with salt and with a wire inclination $> 4^\circ$.

Taking into account that the fabricated steel sheaves are more used due to their lighter weight, the proven experience of **GOSAN** is very important to choose the right calculation method and constructive type of the components.

Also, the materials and the final protection coatings are first-class and suitable for guaranteeing the reliability, longer life and safety of all the components of the lifting machinery.



TECHNICAL DATA

According FEM standard.

GOSAN normally supply:

- Sheaves: Model C, calculated for higher wire angle inclination and special final protection coating.
- Hook Blocks: Special stronger configurations.
- Couplings: Barrel (AGBS).

Please enter in 'products' of **www.gosan.net**

To find further information of other products and constructive configurations.



MOBILE HARBOUR CRANE



TECHNICAL DATA

According FEM standard.

GOSAN normally supply:

- Sheaves: Model C, calculated for higher wire angle inclination and special final protection coating.
- Hook Blocks: Special stronger configurations.
- Couplings: Barrel (AGBS).

Please enter in 'products' of www.gosan.net

To find further information of other products and constructive configurations.

SLEWING CRANE



TECHNICAL DATA

According FEM standard.

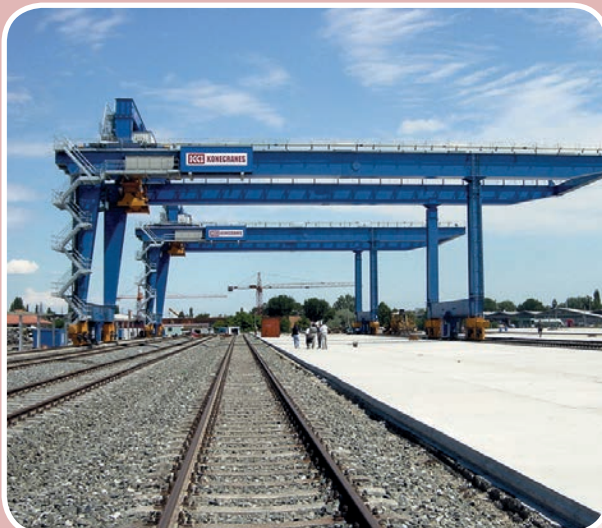
GOSAN normally supply:

- Sheaves: Model C, calculated for higher wire angle inclination and special final protection coating.
- Hook Blocks: Special stronger configurations.
- Couplings: Barrel (AGBS).

Please enter in 'products' of www.gosan.net

To find further information of other products and constructive configurations.

RAIL MOUNTED GANTRY CRANE, RMG



DESCRIPTION

This application requires high speed in all the movements and this fact has a big influence in the used components.

Therefore **GOSAN** R&D department develop the components close together with the crane manufacturer to have a first-class response to this high speed requirements in every project.

We are able to guarantee safety and reliability due to our large experience (more than 45 years) and the proved performance of our components.



TECHNICAL DATA

According FEM standard.

GOSAN normally supply:

- Sheaves: Model A, B & C.
- Hook Blocks: Special configurations, for spreaders, etc.
- Couplings: Barrel (AGBS), Convex teeth (AGT or AGH), with brake pulleys and/or disk.

Please enter in 'products' of **www.gosan.net**

To find further information of other products and constructive configurations.

CONTAINER PORTAL CRANE



TECHNICAL DATA

According FEM standard.

GOSAN normally supply:

- Sheaves: Model A, B & C.
- Hook Blocks: Special configurations, for spreaders, etc.
- Couplings: Barrel (AGBS), Convex teeth (AGT or AGH), with brake pulleys and/or disk.

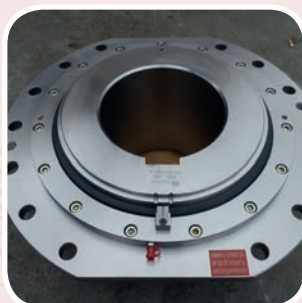
Please enter in 'products' of **www.gosan.net**

To find further information of other products and constructive configurations.

RUBBER TIRED GANTRY CRANE, RTG

Applications

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TECHNICAL DATA

According FEM standard.

GOSAN normally supply:

- Sheaves: Model A, B & C.
- Hook Blocks: Special configurations, for spreaders, etc.
- Couplings: Barrel (AGBS), Convex teeth (AGT or AGH), with brake pulleys and/or disk.

Please enter in 'products' of **www.gosan.net**

To find further information of other products and constructive configurations.

SHIP TO SHORE, STS



TECHNICAL DATA

According FEM standard.

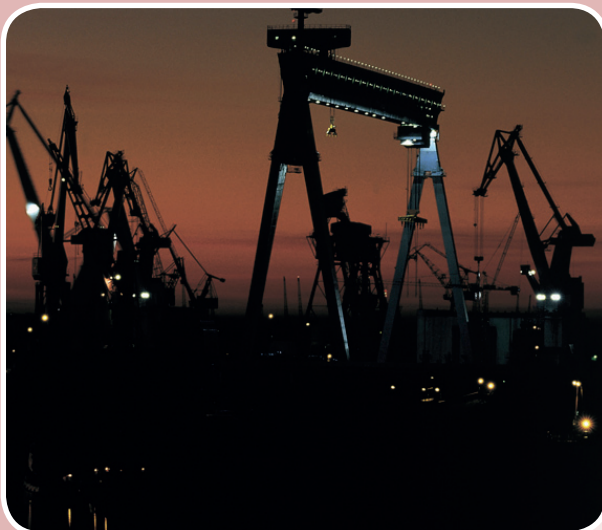
GOSAN normally supply:

- Sheaves: Model A, B & C.
- Hook Blocks: Special configurations, for spreaders, etc.
- Couplings: Barrel (AGBS), Convex teeth (AGT or AGH), with brake pulleys and/or disk.

Please enter in 'products' of **www.gosan.net**

To find further information of other products and constructive configurations.

SHIPYARD GOLIATH CRANE



TECHNICAL DATA

According FEM standard.

GOSAN normally supply:

- Sheaves: Model C.
- Hook Blocks: Very strong, with double hooks.
- Couplings: Barrel (AGBS), Convex teeth (AGT or AGH), with brake pulleys and/or disk

Please enter in **'products'** of **www.gosan.net**

To find further information of other products and constructive configurations.

SHIPYARD CRANE



TECHNICAL DATA

According FEM standard.

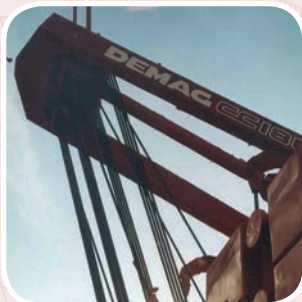
GOSAN normally supply:

- Sheaves: Model C.
- Hook Blocks: Very strong, with double hooks.
- Couplings: Barrel (AGBS), Convex teeth (AGT or AGH), with brake pulleys and/or disk.

Please enter in **'products'** of **www.gosan.net**

To find further information of other products and constructive configurations.

MOBILE MOBILE CRAWLER CRANE



TECHNICAL DATA

According FEM standard.

GOSAN normally supply:

- Sheaves: Model A, E & C.
- Hook Blocks: For mobile crane.

Please enter in 'products' of www.gosan.net

To find further information of other products and constructive configurations.

LATTICE BOOM MOBILE CRANE



DESCRIPTION

The innovation in this market is compulsory to be adapted to the market needs and the new challenges of the industry in general.

Therefore **GOSAN** R&D department develop the components close together with the crane manufacturer to have a first-class response to this improvement in features required by the market.

Also, we are able to guarantee safety and reliability due to our large experience (more than 45 years) and the proved performance of our components.



TECHNICAL DATA

According FEM standard.

GOSAN normally supply:

- Sheaves: Model A & C.
- Hook Blocks: For mobile crane.

Please enter in 'products' of www.gosan.net

To find further information of other products and constructive configurations.

OFFSHORE

OFF-SHORE DRILLING CENTER



DESCRIPTION

The extreme conditions where these components are working make it necessary to comply with very demanding requirements. Habitually, a certification by a third body is required.

GOSAN complies with these requirements from the beginning of the process. We are used to following and complying with all the international norms required by this application. Thus, we guarantee safety and reliability.

Also, the materials and the final protection coatings are first-class and are thought for guaranteeing the reliability, longer life and safety of all the components in the platform.



TECHNICAL DATA

According FEM standard.

GOSAN normally supply:

- Sheaves: Model C and E, special final protection coating, balanced, special, very large and light.

Please enter in 'products' of www.gosan.net

To find further information of other products and constructive configurations.

OFF-SHORE DECK CRANE



TECHNICAL DATA

According FEM standard.

GOSAN normally supply:

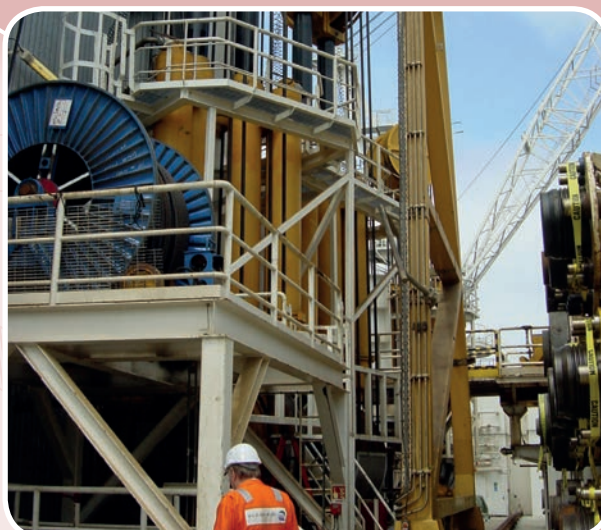
- Sheaves: Model C and E, with special final protection coating.
- Hook Blocks: Special stronger configurations.
- Couplings: Barrel (AGBS).

Please enter in 'products' of www.gosan.net

To find further information of other products and constructive configurations.



OFF-SHORE PLATFORMS



TECHNICAL DATA

According API standards.

GOSAN normally supply:

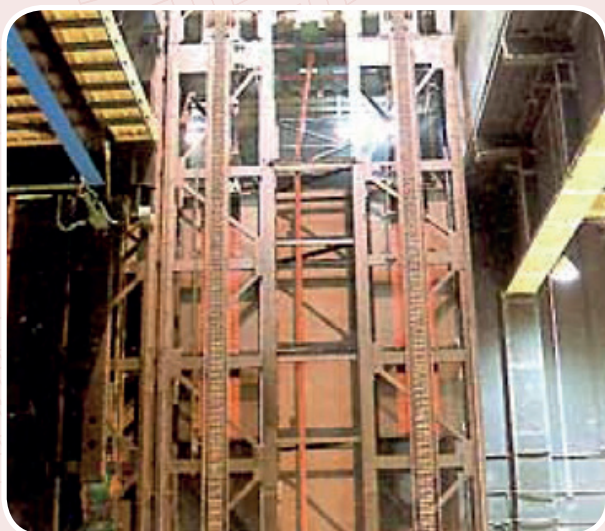
- Sheaves: Model C and E, special final protection coating, Model D, reinforced.

Please enter in 'products' of www.gosan.net

To find further information of other products and constructive configurations.

OTHERS

BACK STAGES



DESCRIPTION

The proven experience of **GOSAN** in the development of applications with cast and fabricated sheaves permit us to guarantee safety and reliability until the curtain falls.

This application requires accurate calculations due to the number of grooves of this kind of sheaves and the high speed demanded.

Therefore, our R&D department develop the components close together with the machinery manufacture to have a first-class response to every project.

Because...the show must go on !

TECHNICAL DATA

According FEM standard.

GOSAN normally supply:

- Sheaves: Special, cast, with several grooves, and Model A & B.

Please enter in 'products' of www.gosan.net

To find further information of other products and constructive configurations.



g**san**