

DAEKWANG OFFSHORE

Industry Leader

Factory : 79-8, Seokgyebyeongri-gil, Oedong-eup, Gyeongju, Gyeongsangbuk-do TEL:82-52-744-5400 FAX:82-54-744-5411
E-mail:dk@daekwang.net SITE:www.daekwang.net

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Factory / Yard View

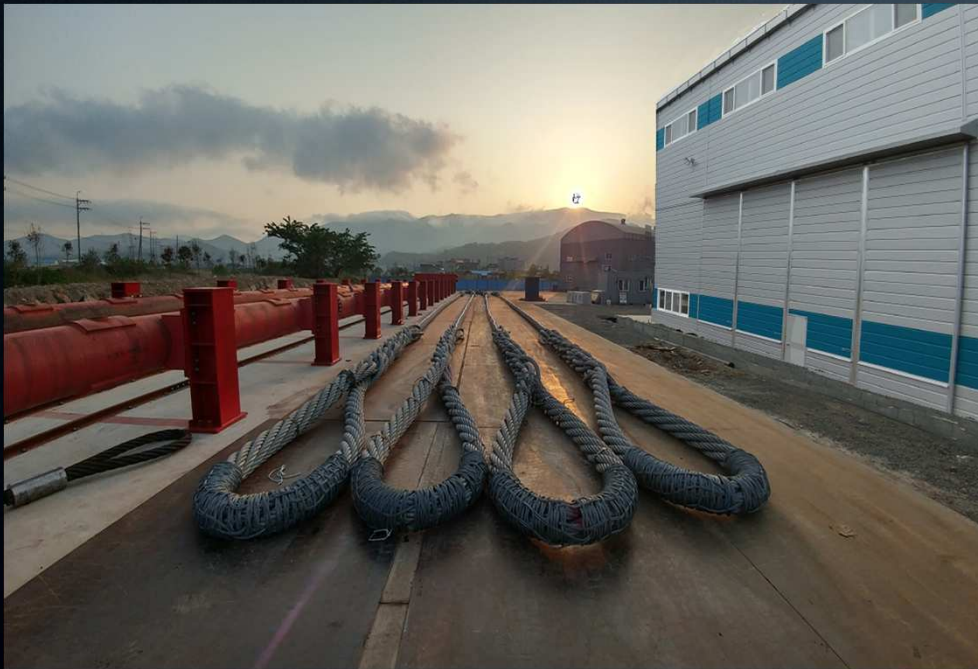


Factory / Yard View



1. Heavy Lifting Products

– Cable Laid Slings & Grommets –



DAEKWANG Offshore products the domestic's biggest and best heavy lifts slings and grommets.

All Cable Laid Slings & Grommets are made & tested according to IMCA M179 & EN13414-3

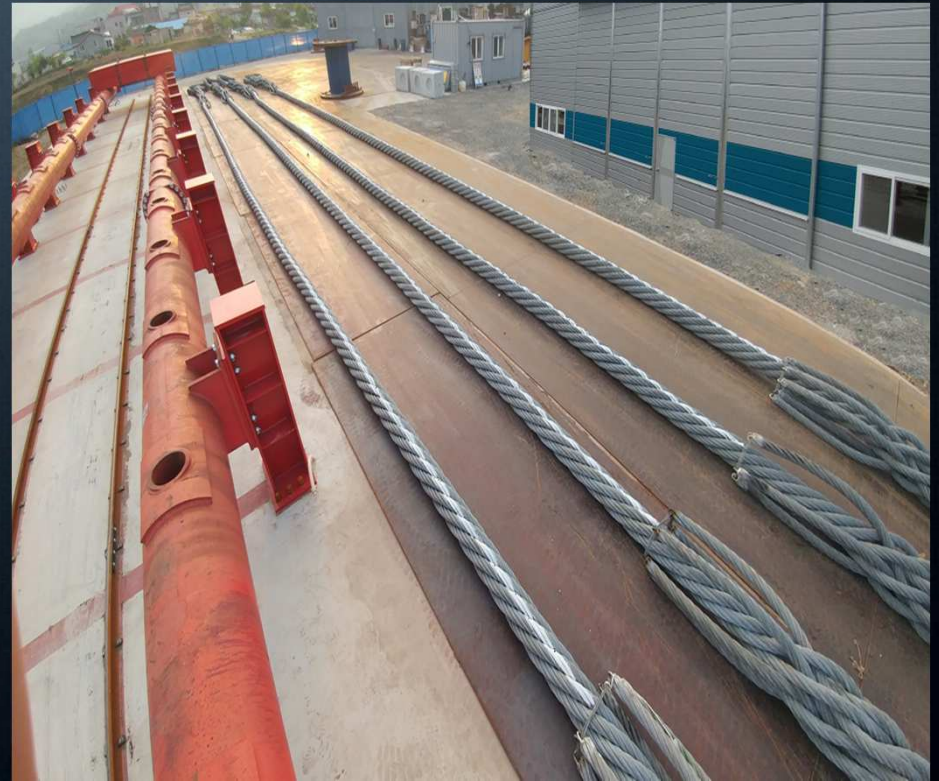
1. Heavy Lifting Products

– Cable Laid Slings & Grommets –



1. Heavy Lifting Products

– Cable Laid Slings & Grommets –



1. Heavy Lifting Products

– Cable Laid Slings & Grommets –



Aasta Hansteen Project
Cable Laid Sling

242MM X 48.1MR MBL : 3042Ton



1. Heavy Lifting Products

– DK Flex –



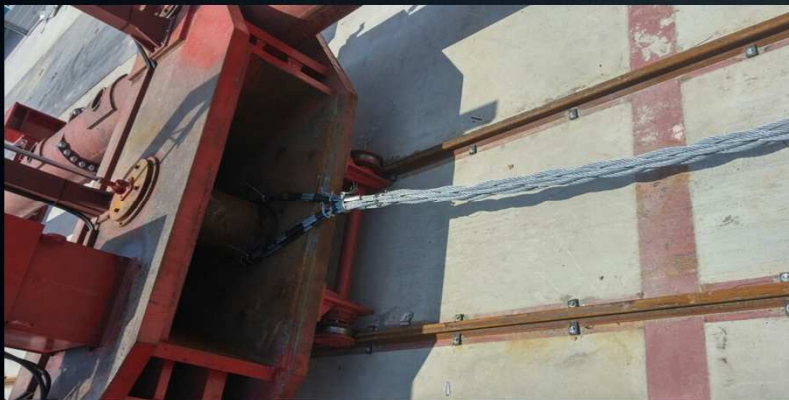
Flexible Multi Part Sling Production Technique Possession

Consisting of nine strands, Heavy Lift Sling

9 X (6 X 36 IWRC)

89.6mm X 8MR

MBL : 259 Ton

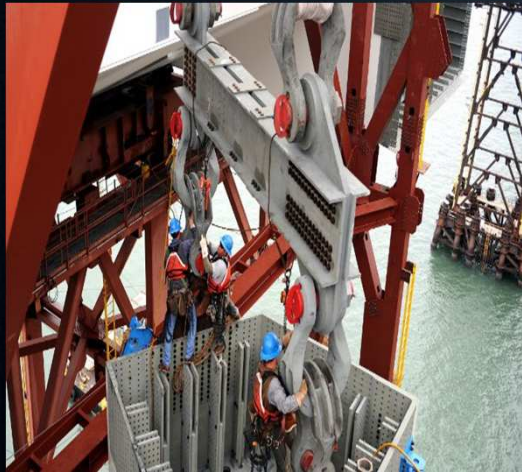


Advantages of DK FLEX

- Flexible Sling & Easy Handling
- Narrow Gap eye dimension
- Reduced Weigh
- Reduced Rotation

1. Heavy Lifting Products

– Big Shackles –



2. Spooling Winch

– 35 I , 35II, 70, 90, 150, 250, 600Ton Spooler equipments –



2. Spooling Winch – Commissioning Test –



2. Spooling Winch – Subsea7 Project –



Seven Arctic – A new generation vessel

subsea 7

2. Spooling Winch

– Subsea7 Project 1st (MAY , 2016) –
(ROV Umbilical Spooling job–35.5mm X 3500MR)



2. Spooling Winch

– Subsea7 Project 1st (MAY , 2016) –
(HCV–Test Umbilical job–128mm X 500MR)



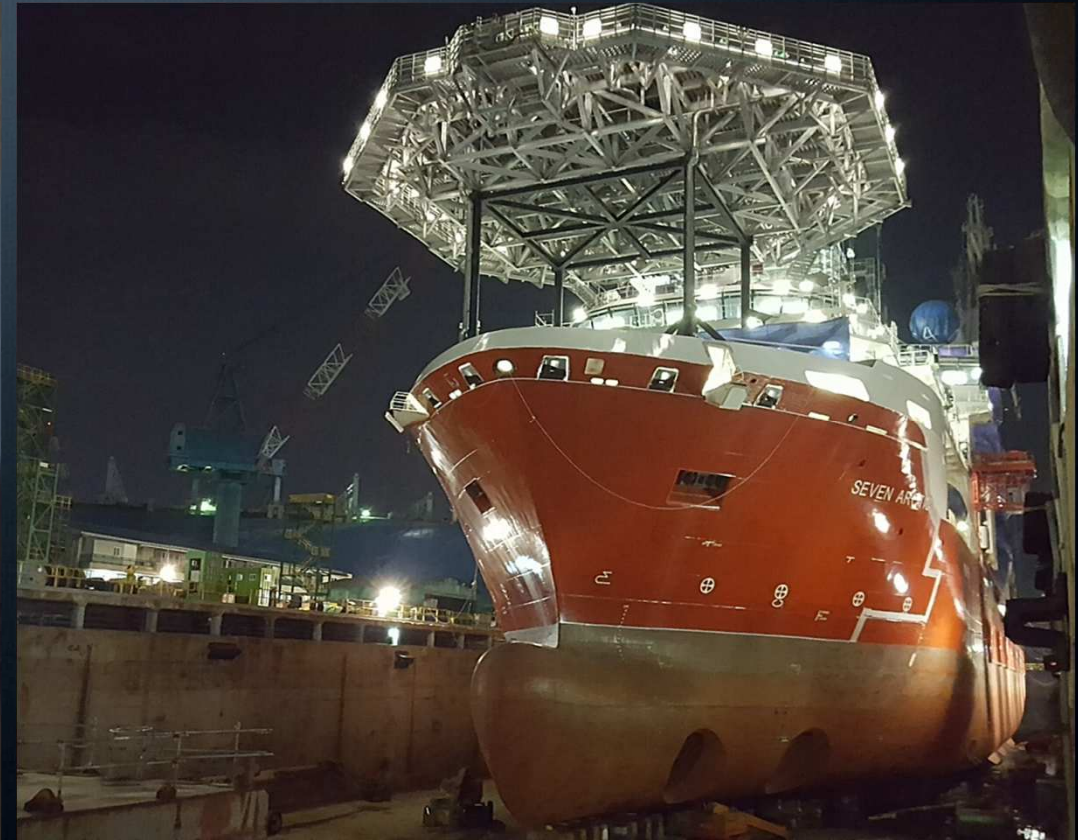
2. Spooling Winch

– Subsea7 Project 1st (MAY , 2016) –



2. Spooling Winch

– Subsea7 Project 2nd (DEC., 2016) –
(ROV Umbilical Spooling job–35.5mm X 3500MR 2REEL)



2. Spooling Winch – Allseas Project –



2. Spooling Winch – Allseas Project –



Pioneering Spirit
New era in the heavy lifting industry

500Ton Mooring System,
Winch Wire Rope 135MM x 5000MR



2. Spooling Winch – R/V ISABU Project – Korea's latest research vessel



2. Spooling Winch – R/V ISABU Project –



3. Maintenance & Services

– Tension Test bed –



The nation's greatest capacity Test bed
(DNV Certificate of Calibration)

2000Ton X 90MR (Straight Test)

180MR (U-Type Test)

Proof Load → 80Ton ~ 2000Ton

Breaking Load → Maximum 1200Ton



500Ton X 30MR

Test Load → Maximum 500Ton

3. Maintenance & Services

– Tension Test bed –



3. Maintenance & Services

– Bollard Load Test System –



The newly launched bollard load test system is a fully calibrated, easy-to-use solution to safely test the strength of marine mooring bollards.



3. Maintenance & Services

– Examples of Failed Bollards –



Cruise Ship Damages Quay



Why The Bollard Load Test Rig (BLT®) Was Designed



Moored Cruise Ship – Bollard Failure

Watch this video clip from about the 30 second mark to see a bollard failing whilst being recorded by a tourist!



MARS Report – Failure of Shore Bollards

Carnival Triumph – Bollard Failure

Someone was killed in an accident in which cruise ship Carnival Triumph broke free from its moorings.



OSHA fines BAE for negligence in the Carnival accident.

3. Maintenance & Services

– Potable Wire Rope NDT –



TCK•W portable wire rope testers have been used widely in many industries, such as mining, petroleum, steel plants, heavy equipment manufacturing, ports, transportation, construction, water conservancy, resort, aerospace, and the military.



3. Maintenance Equipments – Wire Rope Lubrication System–



TKG Wire Rope Lubrication Systems are designed so that in only one application wire rope can have its surface and grooves scraped clean of product build-up and grit while at the same time any new lubricant is uniformly applied to the newly cleaned surface and injected into the very core.



3. Maintenance & Services

– Spreader Beam –



Unique modular spreader beam in 9 thoughtfully planned sizes from 12 Ton to 400 Ton that permits variable length to suit the load requirement, with no possibility of incorrect assembly.



3. Maintenance & Services

– load measuring and monitoring solutions –



Scotload's reputation is built on the delivery of quality load monitoring products and services, engineered to the highest international standards.



4. Rental Services

– Cable Laid Slings & Grommets –



4. Rental Services

- Big Shackles & Slings-



Heavy Lift Shackles - up to 1550t WLL



Heavy Lift Slings up to 20" Diameter

DAEKWANG Offshores sling and shackle rental service solves the operators problem of storage and maintenance after the project is complete.

4. Rental Services

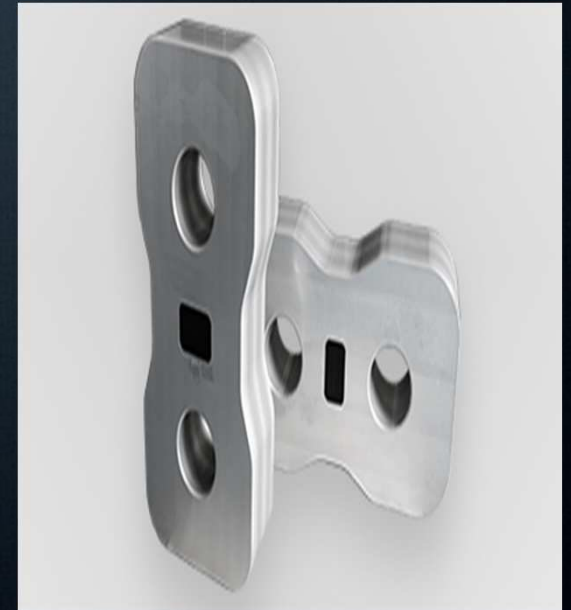
– Load Cells & Links –



Load Cells



Load Shackles



Load Links

5. Bollard Pulling Test



6. Wire Rope & Synthetic Rope

– Daekwang is the greatest wire rope & Synthetic Rope agency. –
Daekwang supplies wire rope to the shipyards, heavy industry, steel mill.
Wire rope stock are always kept to 6,000tons.

The logo for Kiswire features a blue silhouette of an elephant on the left, followed by the word "Kiswire" in a bold, blue, sans-serif font.The logo for CASAR consists of three red horizontal bars of varying lengths above the word "CASAR" in a bold, blue, sans-serif font.The logo for BRIDON is the word "BRIDON" in a bold, blue, sans-serif font.The logo for MANHO ROPE & WIRE features a blue circular icon with a white stylized mountain or 'M' shape on the left, followed by the text "MANHO ROPE & WIRE" in a black, sans-serif font.The logo for D|S|R consists of the letters "D", "S", and "R" in a bold, blue, sans-serif font, separated by vertical bars.The logo for usha martin features a stylized "u" and "m" in red and yellow on the left, followed by the text "usha martin" in a blue, sans-serif font.The logo for BEXCO consists of the letters "B", "E", "X", "C", and "O" in a bold, black, sans-serif font, with the "X" in blue.The logo for WireCo WorldGroup features a black square icon with a white and red stylized shape on the left, followed by the text "WireCo" in a bold, black, sans-serif font and "WorldGroup" in a smaller, black, sans-serif font below it.The logo for Diepa features the word "Diepa" in a red, cursive script font, enclosed within a grey oval border.

7. Certifications

- ABS Certification(MA, DA, PTA) -



CERTIFICATE NUMBER: UL2574757-X
PORT OFFICE: ULSAN, KOREA

Certificate of MANUFACTURING ASSESSMENT

This is to certify that: The Undersigned did evaluate the relevant manufacturing quality procedures for the type of products of the manufacturer.

DAE KWANG CO., LTD. Plant at **KYUNGJU, KOREA**

The methods of assuring and controlling quality during production as required by the ABS Rules or Guides for the product and the associated specifications or standard were verified to reflect the specific surveys, required by the Rules and Standards for the manufacture of

WIRE ROPE SLINGS AND CABLE LAID GROMMET

The manufacturer presented a sample or specimen of representative of the "type" approved, to the undersigned, for the purpose of verifying that the "type" has been manufactured in conformance with the Manufacturer's Product Design Assessments.

This Certificate of Manufacturing Assessment is an evaluation of the manufacturer alone and is neither an approval nor a rejection of the product described above. Unless cancelled, expired or revoked, this certificate remains valid subject to annual audits.

Consult the ABS Type Approval website to confirm the continued validity of this certificate and the status of the particular products being manufactured.

ISSUE DATE	19 March 2014	EXPIRATION DATE	18 March 2019
SURVEYOR	Yoon, Seok Beom		
FIRST ANNUAL ENDORSEMENT			
SECOND ANNUAL ENDORSEMENT			
THIRD ANNUAL ENDORSEMENT			
FOURTH ANNUAL ENDORSEMENT			

Note: This Certificate evidences compliance with one or more of the Rules, Guides, standards or other criteria of American Bureau of Shipping and is issued solely for the use of the Bureau, its subsidiaries, its clients or other authorized entities. This Certificate is a representation only that the structure, use of material, equipment, machinery, or any other item covered by this Certificate has met one or more of the Rules, Guides, standards or other criteria of American Bureau of Shipping as of the date of issue. Parties are advised to review the Rules for the scope and conditions of classification and to review the survey reports for a full description of any restrictions or limitations. This validity, applicability and interpretation of this Certificate is governed by the Rules and standards of American Bureau of Shipping and other criteria to the same extent thereof. Nothing contained in this Certificate or any related matter is to be construed as an endorsement, approval, opinion, warranty, insurance, or other form of financial or other service or product.

AB 257 (09/11) Rev 5 Page 1 of 1



CERTIFICATE NUMBER: 14BKT-1158296-PDA
DATE: 17 March 2014
ABS TECHNICAL OFFICE
Busan Ship Engineering

CERTIFICATE OF DESIGN ASSESSMENT

This is to Certify that a representative of this Bureau did, at the request of **DAE KWANG CO., LTD. - KYUNGJU**

assess design plans and data for the below listed product. This assessment is a representation by the Bureau as to the degree of compliance the design exhibits with applicable sections of the Rules. This assessment does not waive unit certification or classification procedures required by ABS Rules for products to be installed in ABS classed vessels or facilities. This certificate, by itself, does not reflect that the product is Type Approved. The scope and limitations of this assessment are detailed on the pages attached to this certificate.

PRODUCT: **Wire Rope**

MODEL: **DKS12FC-DKS85RC (Splicing), DKC12FC-DKC90RC (Locking), DKF18RC-DKF102RC (Swaging), DKR20RC-DKR77RC (Socketing), DKCG36RC-DKCG102RC (Cable-Laid Grommet)**

This Product Design Assessment (PDA) Certificate 14BKT-1158296-PDA, dated 17/Mar/2014 remains valid until 16/Mar/2019 or until the Rules or specifications used in the assessment are revised (whichever occurs first).

This PDA is intended for a product to be installed on an ABS classed vessel, MODU, or facility which is in existence or under contract for construction on the date of the ABS Rules or specifications used to evaluate the Product.


Use of the Product on an ABS classed vessel, MODU or facility which is constructed after the validity date of the ABS Rules and specifications used to evaluate the Product, will require re-evaluation of the PDA.

Use of the Product for non-ABS classed vessels, MODUs or facilities is to be an agreement between the manufacturer and intended client.

AMERICAN BUREAU OF SHIPPING
Kosaku Sano
Engineer

NOTE: This certificate evidences compliance with one or more of the Rules, Guides, standards or other criteria of ABS or a subsidiary, industrial or manufacturer's requirements. It is issued solely for the use of ABS, its subsidiaries, its clients or other authorized entities. Any significant changes to the aforementioned manufacturing processes without our approval from ABS will result in this certificate becoming null and void. This certificate is governed by the terms and conditions as contained in ABS Rule 11-A.223.9 Terms and Conditions of the License for Product Type Approval Agreement (2010).

Certificate Number: 14-BKT1158296-PDA
08/APR/2014



Confirmation of Product Type Approval

Please refer to the "Service Restrictions" shown below to determine if Unit Certification is required for this product. This certificate reflects the information on the product in the ABS Records as of the date and time the certificate is printed.

Pursuant to the Rules of the American Bureau of Shipping (ABS), the manufacturer of the below listed product held a valid Manufacturing Assessment (MA) with expiration date of 18/MAR/2019. The continued validity of the Manufacturing Assessment is dependent on completion of satisfactory audits as required by the ABS Rules.

And, a Product Design Assessment (PDA) valid until 16/MAR/2019 subject to continued compliance with the Rules or standards used in the evaluation of the product.

The above entitles the product to be called Product Type Approved.

The Product Design Assessment is valid for products intended for use on ABS classed vessels, MODUs or facilities which are in existence or under contract for construction on the date of the ABS Rules used to evaluate the Product.

ABS makes no representations regarding Type Approval of the Product for use on vessels, MODUs or facilities built after the date of the ABS Rules used for this evaluation.

Due to wide variety of specifications used in the products ABS has evaluated for Type Approval, it is part of our contract that, whether the standard is an ABS Rule or a non-ABS Rule, the Client has full responsibility for continued compliance with the standard.

Product Name: **Wire Rope**
Model Name(s): **DKS12FC-DKS85RC (Splicing), DKC12FC-DKC90RC (Locking), DKF18RC-DKF102RC (Swaging), DKR20RC-DKR77RC (Socketing), DKCG36RC-DKCG102RC (Cable-Laid Grommet)**

Presented to:
DAE KWANG CO., LTD.
1880-129, SEOKGEY-RI
WEDONG-EUB
KYUNGJU
Korea, Republic of

Intended Service: For use on Ships and Offshore Installations (General purpose wire rope used for all Ships and MODUs)

Description: Not Applicable

Tier: 2

Ratings:

- Wire Rope Sling (Splicing): DKS12FC: 12mm Dia. Tested Breaking Load: 5.5 ton (Actual BL: 6.697 ton) / DKF18FC: 18mm Dia. TBL: 12.6 ton / DKC24FC: 24mm Dia. TBL: 23.8 ton / DKC30FC: 30mm Dia. TBL: 37.6 ton / DKC32FC: 32mm Dia. TBL: 48.2 ton / DKC42FC: 42mm Dia. TBL: 84.0 ton / DKC50RC: 50mm Dia. TBL: 136.6 ton / DKC60FC: 60mm Dia. TBL: 168.0 ton / DKC75RC: 75mm Dia. TBL: 312.0 ton / DKC85RC: 85mm Dia. TBL: 401.6 ton (Actual BL: 502.0 ton) -
- Wire Rope Sling (Locking): DKC12FC: 12mm Dia. Tested Breaking Load: 6.2 ton (Actual BL: 6.92 ton) / DKC18FC: 18mm Dia. TBL: 14.2 ton / DKC22FC: 22mm Dia. TBL: 23.3 ton / DKC24RC: 24mm Dia. TBL: 64.3 ton / DKC40FC: 40mm Dia. TBL: 92.7 ton / DKC50RC: 50mm Dia. TBL: 155.9 ton (Actual BL: 173.2 ton) / DKC60RC: 60mm Dia. TBL: 223.9 ton / DKC70RC: 70mm Dia. TBL: 297.0 ton / DKC80RC: 80mm Dia. TBL: 395.6 ton / DKC90RC: 90mm Dia. TBL: 514.8 ton (Actual BL: 572.0 ton) -

04/05/2014 6:57:42 PM Copyright 2001 American Bureau of Shipping. All rights reserved. Page 1 of 3

7. Certifications

- Patent Application(type18), Design Registration (type16) -

특 허 (PATENT NUM)
발명의명칭 (PATENT NUMBER)
특허권자 (PATENT NUMBER)
발명자 (PATENT NUMBER)
발명자 (INVENTOR)
위의 발명되었음을 (THIS IS TO CERTIFY THAT THE PATENT IS REGISTERED ON THE REGISTER OF THE KOREAN INTELLECTUAL PROPERTY OFFICE.)

특 허 증
CERTIFICATE OF PATENT

특 허 제 10-1062788 호 출원번호 제 2010-0067965 호
(PATENT NUMBER) (APPLICATION NUMBER)
출원일 2010년 07월 14일
등록일 2011년 08월 31일
(REGISTRATION DATE:YYMMDD)

발명의명칭 (TITLE OF THE INVENTION)
케이블 레이드 슬빙 및 그 제조방법

특허권자 (PATENTEE)
대광기업 주식회사(230111-0*****)
울산광역시 남구 삼산동 1631-1

발명자 (INVENTOR)
임갑식(610101-1*****)
울산광역시 중구 성안동 370-1번지 13/9 청구타운 111동 405호

위의 발명은 「특허법」에 의하여 특허등록원부에 등록되었음을 증명합니다.
(THIS IS TO CERTIFY THAT THE PATENT IS REGISTERED ON THE REGISTER OF THE KOREAN INTELLECTUAL PROPERTY OFFICE.)

2011년 08월 31일

특 허 청 장 김 영
COMMISSIONER, THE KOREAN INTELLECTUAL PROPERTY OFFICE

연차등록료 납부일은 출원등록일 이후 4년차부터 매년 08월 31일까지이며 등록원부호 권리관계를 확인하십시오.

등록제 유사제 (SIMILAR DESIGN REG)
디자인의 대상 (REGISTRATION N)
디자인권자 (OWN)
디자인권자 (CREATOR)
창작자 (CREATOR)
위의 창작되었음을 (THIS IS TO CERTIFY THAT THE DESIGN IS REGISTERED ON THE REGISTER OF THE KOREAN INTELLECTUAL PROPERTY OFFICE.)

디자인등록증
CERTIFICATE OF DESIGN REGISTRATION

등록제 30-0724003 호 출원번호 제 2012-0039531 호
(REGISTRATION NUMBER) (APPLICATION NUMBER)
출원일 2012년 08월 21일
등록일 2014년 01월 02일
(REGISTRATION DATE:YYMMDD)
등록의 구분 심사 등록 (TYPE OF REGISTRATION) (EXAMINED REGISTRATION)

디자인의 대상이 되는 품목 (ARTICLE THAT IS THE OBJECT OF THE DESIGN)
중량물 하역 작업용 와이어로프 연결고리

디자인권자 (OWNER OF THE DESIGN RIGHT)
대광기업 주식회사(230111-0*****)
울산광역시 남구 정동로 40 (삼산동)

창작자 (CREATOR)
임갑식(610101-1*****)
울산광역시 중구 성안동 370-1번지 13/9 청구타운 111동 405호

위의 디자인은 「디자인보호법」에 따라 디자인등록원부에 등록되었음을 증명합니다.
(THIS IS TO CERTIFY THAT THE DESIGN IS REGISTERED ON THE REGISTER OF THE KOREAN INTELLECTUAL PROPERTY OFFICE.)

2014년 01월 02일

특 허 청 장 김 영
COMMISSIONER, THE KOREAN INTELLECTUAL PROPERTY OFFICE

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The World Best, DAEKWANG