



마 봉 강

COLD DRAWN STEEL BARS



영흥철강주식회사
YOUNG HEUNG IRON & STEEL CO., LTD.

지난 70년대 영흥철강주식회사를 설립한 이후 오늘에 이르기까지 한국의 선재업계를 선도해 온 영흥철강은 정직, 창의, 봉사라는 사훈으로 기업의 자세를 꾸준히 지켜 왔습니다.

당사는 현재 최신식 현대설비와 뛰어난 기술인력, 고도로 축적된 기술을 바탕으로 CD-BAR를 생산, 최상의 품질을 위해 끊임없이 노력하고 있습니다.

이제 고객 여러분들의 이러한 사랑과 지도를 바탕으로 2005년 한국철강(Kisco)의 계열사로 새롭게 거듭난 영흥철강은 국내 철강업계의 선두주자로서 확고한 위치를 굳히고 있으며, 세계 유수의 종합철강회사로 도약하고자 합니다.

밝아오는 21세기를 위한 노력! 그것은 수출 한국의 주도적 역할을 담당하여 국민의 기업으로 거듭나는 약속이며, 보다 윤택한 사회건설의 주역으로서 그동안 많은 격려와 성원을 보내주신 여러분에 대한 보답입니다.

최상의 품질과 서비스로 세계와 겨루는 영흥철강의 노력을 계속 지켜봐 주시길 바랍니다.

YOUNG HEUNG IRON & STEEL CO.,LTD. leading the highest position in the field of steel wire, has been steadily retaining valuable fame under the motto of company is called HONESTY, ORIGINALITY, SERVICE since it was established in 1977.

YOUNG HEUNG IRON & STEEL CO.,LTD. has been taking pains continuously to reach the highest quality on the basis of high-qualified engineers and accumulated prominent technology as it is released new product, CD-BAR.

YOUNG HEUNG IRON & STEEL CO.,LTD. newly revived as a subsidiary company of KISCO in 2005, is trying to take a further step to become an international prominent complex steel company under our valuable customers' encouragement.

Great challenge for coming 21st century that is our promise to reset up the most reliable company as a leader in the field of export. Also, we will contribute the highest quality and the most valuable service to our customers in return for our customers' encouragement.

The highest quality, service and ever-lasting respect are yours.





ISO 9001

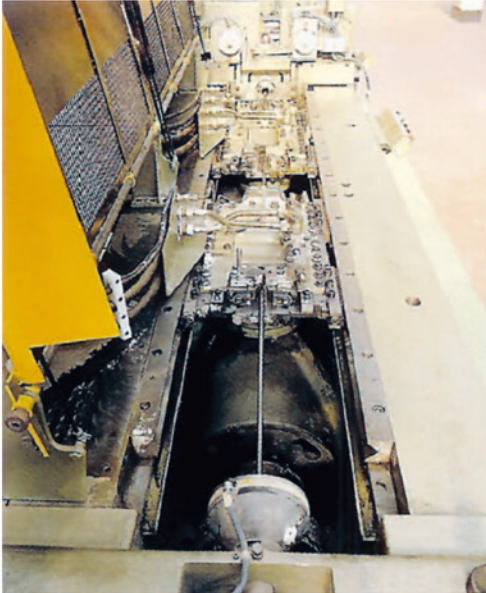
- 1977. 4. 20 제조법인 설립 / The Company was established
- 1979. 9. 01 KS 획득(와이어로프, 경강선) / Approval of Korean Industrial Standard (Wire Rope & Hard Drawn Steel Wire)
- 1983. 12. 27 KS 획득(아연도강연선) / Approval of Korean Industrial Standard (Galv. Steel Wire Strands)
- 1989. 7. 05 JIS 획득(와이어로프) / Approval of Japan Industrial Standard (Wire Rope)
- 1994. 9. 08 ISO 품질시스템 인증 / Approval of ISO 9001(LRQA)
- 1996. 11. 16 KS 획득(이형 PC 강봉) / Approval of Korean Industrial Standard (Steel Bar for Prestressed Concrete)
- 1997. 5. 07 KS 획득(PC 강연선) / Approval of Korean Industrial Standard (7-Wire PC Strand)
- 1999. 3. 06 QS 9000 품질시스템 인증 / Approval of QS 9000(LRQA)
- 2001. 6. 19 KS 획득(PC 이형 3연선) / Approval of Korean Industrial Standard (3-Wire PC Strand)
- 2001. 8. 13 JIS 획득 (PC 강연선) / Approval of Japan Industrial Standard (7-Wire PC Strand)
- 2004. 4. 28 JIS 획득(경강선 및 아연도강연선) / Approval of Japan Industrial Standard (Hard Drawn Steel Wire & Galv. Steel Wire Strands)
- 2008. 3. 07 API 9A 품질시스템 인증 / Approval of API 9A



제조공정

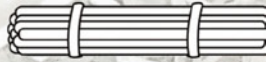
Manufacturing process

Cold Drawn Steel Bar

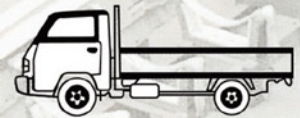


Straightener, Polishing & Oiling/
교정, 연마, 방청

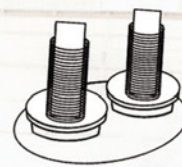
Packing/포장



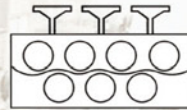
Customer



Wire Rod/원재료



Pre-Straightener/직선교정



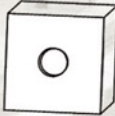
Shot Blasting/디스케일링



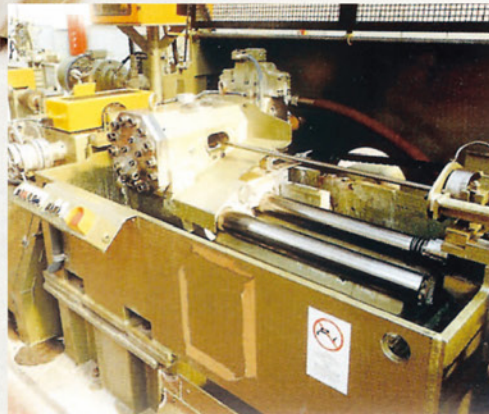
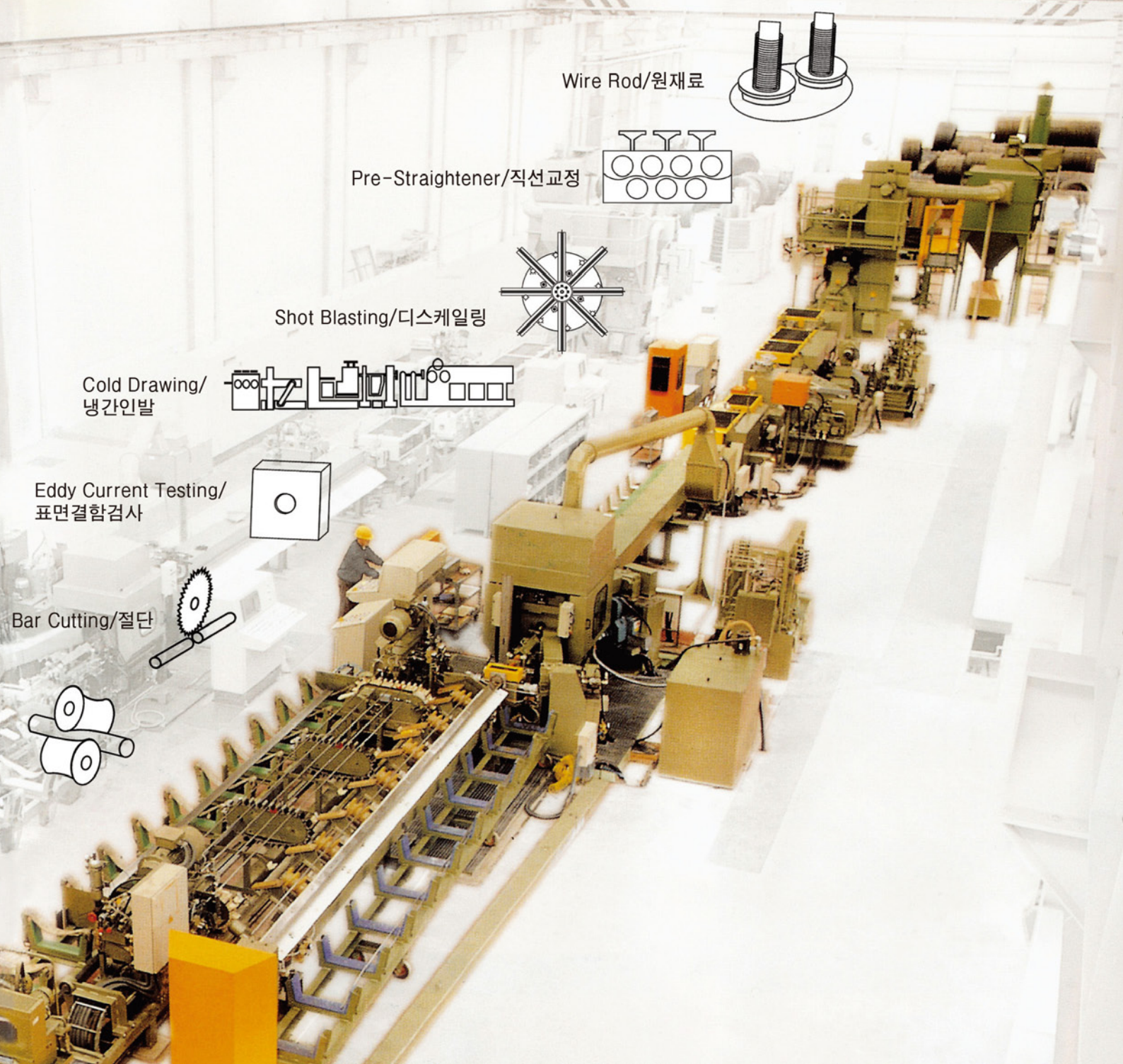
Cold Drawing/
냉간인발



Eddy Current Testing/
표면결함검사



Bar Cutting/절단



The Best Quality

마봉강은 Wire Rod를 기계가공에 적합하도록 원형, 이형(육각, 사각 등)형상으로 냉간 인발하여 절단, 연마, 직진성을 부여한 제품입니다.

Young Heung CD-BAR는 전자동 최신설비(SCHUMAG Combined Drawing Machine), 고품질의 소재, 최고의 기술력을 가지고 고객이 요구하는 완벽한 품질을 창조합니다.

Young Heung's CD-BAR create perfect quality required by customers with the modernest facility "SCHUMAG Combined Drawing Machine", material of high quality and the most prominent technology.

- ▶ 고품질 / Highest Quality ▶ 신뢰할수 있는 납기 / Most Dependable Delivery
- ▶ 적절한 가격 / Best Price ▶ 다품종 / Various Products

◎ 생산범위 / PRODUCTION RANGE

형상 / FORMS OF SUPPLY	규격 / SIZE RANGE	길이 / LENGTH	강종 / MATERIAL
원형 / Rounds	5mm ~ 30mm	2m ~ 6m	쾌삭강 / Free Cutting Steel
육각형 / Hexagons	5mm ~ 27mm	2m ~ 6m	탄소강 / Carbon Steel
사각형 / Squares	5mm ~ 25mm	2m ~ 6m	합금강 / Alloy Steel
이형 / Irregular Shape	-	-	스프링 / Suspension Spring etc.

◎ 치수허용차 / TOLERANCE GRADE

Unit / mm

허용차의 등급(Grade) 지름, 변, 대변거리(Dia)	7급(H7)	8급(H8)	9급(H9)	10급(H10)	11급(H11)	12급(H12)
5.0 - 6.0	0 ~ -0.012	0 ~ -0.018	0 ~ -0.030	0 ~ -0.048	0 ~ -0.075	0 ~ -0.12
6.01 - 10.0	0 ~ -0.015	0 ~ -0.022	0 ~ -0.036	0 ~ -0.058	0 ~ -0.090	0 ~ -0.15
10.01 - 18.0	0 ~ -0.018	0 ~ -0.027	0 ~ -0.043	0 ~ -0.070	0 ~ -0.11	0 ~ -0.18
18.01 - 30.0	0 ~ -0.021	0 ~ -0.033	0 ~ -0.052	0 ~ -0.084	0 ~ -0.13	0 ~ -0.21
BAR단위길이 / LENGTH	2~6m	2 ~ 6m	2~6m	2~6m	2~6m	2~6m
BAR의 형상 / SHAPE	○	○	○	○ □	○ □	○ □





Cold Drawn Steel Bar





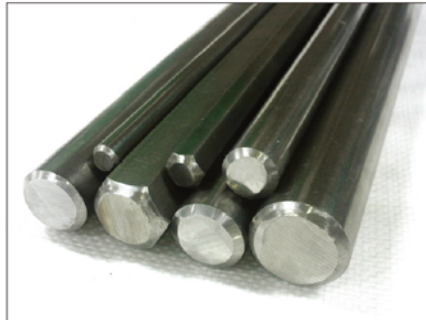
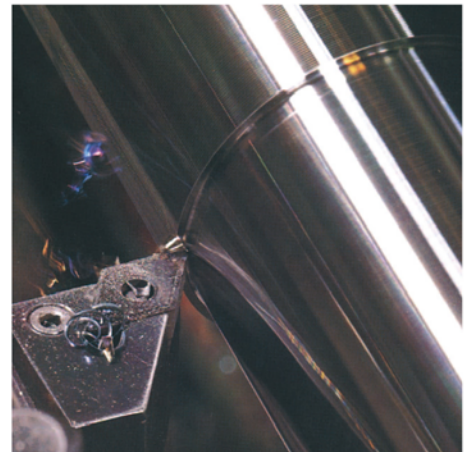
Free Cutting Steel

Young Heung의 쾌삭강(Free Cutting Steel)은 외관 및 내부품질이 균일하고 기계적 성질이 우수합니다. 따라서 당사의 제품은 여러분의 경제성을 보장합니다. 또한 황(S), 납(Pb), 비스무스(Bi) 등을 첨가하여 우수한 절삭가공성으로 가공능률 향상을 가져오며 절삭공구의 수명을 연장시키고 Chip 처리가 우수하여 자동화, 무인화가 가능합니다.

Young Heung's Free-Cutting Steel equal quality of surface and inside, and have an excellent mechanical properties. We guarantee your economical business. Improve the efficiency of manufacture with the excellent machinability / Extend the life of machine tools/Available for the automatism, robotism

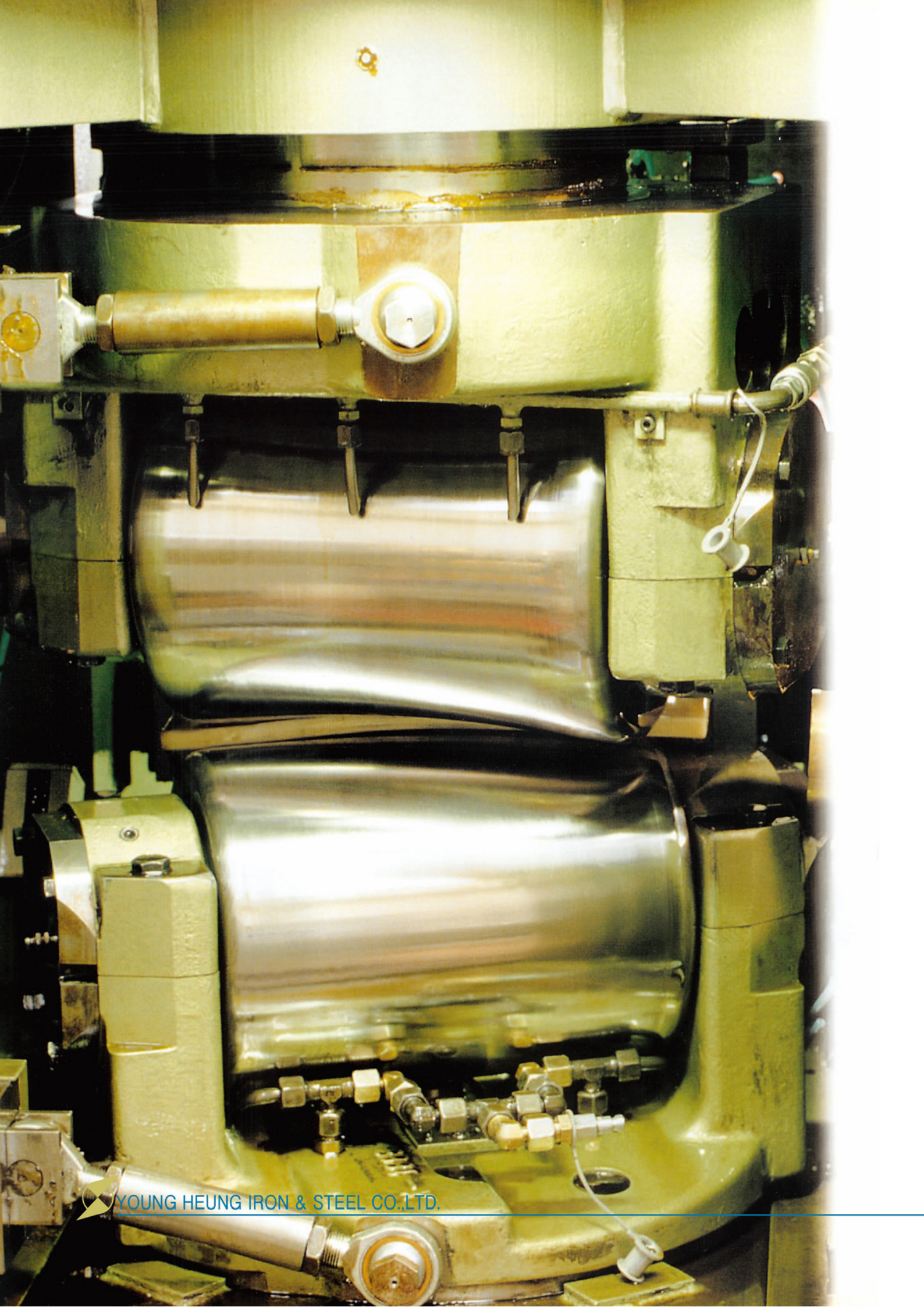
Application

- ▶ 사무용기기 (OA Instruments)
- ▶ 광학기기 (Optical Instruments)
- ▶ 자동차부품 (Automotives)



◎ 쾌삭강 (Free Cutting Steel)

규격 / SPECIFICATION			화학성분 / Chemical Composition(%)					
KS	JIS	SAE No.	C	Si	Mn	P	S	pb
SUM21	SUM21	1212	max 0.13	0.15~0.35	0.70~1.00	0.70~0.12	0.16~0.23	
SUM22	SUM22	1213	max 0.13	0.15~0.35	0.70~1.00	0.70~0.12	0.24~0.33	
SUM22L	SUM22L	12L12	max 0.13	0.15~0.35	0.70~1.00	0.70~0.12	0.24~0.33	0.10~0.35
SUM23	SUM23	1215	max 0.09	0.15~0.35	0.75~1.05	0.04~0.09	0.26~0.35	
SUM24L	SUM24L	12L14	max 0.15	0.15~0.35	0.85~1.15	0.04~0.09	0.26~0.35	0.10~0.35
SUM31	SUM31	1117	0.14~0.20	0.15~0.35	1.00~1.30	max 0.040	0.08~0.13	
SUM41	SUM41	1137	0.32~0.39	0.15~0.35	1.35~1.65	max 0.040	0.08~0.13	
SUM43	SUM43	1144	0.40~0.48	0.15~0.35	1.35~1.65	max 0.040	0.24~0.33	



YOUNG HEUNG IRON & STEEL CO., LTD.

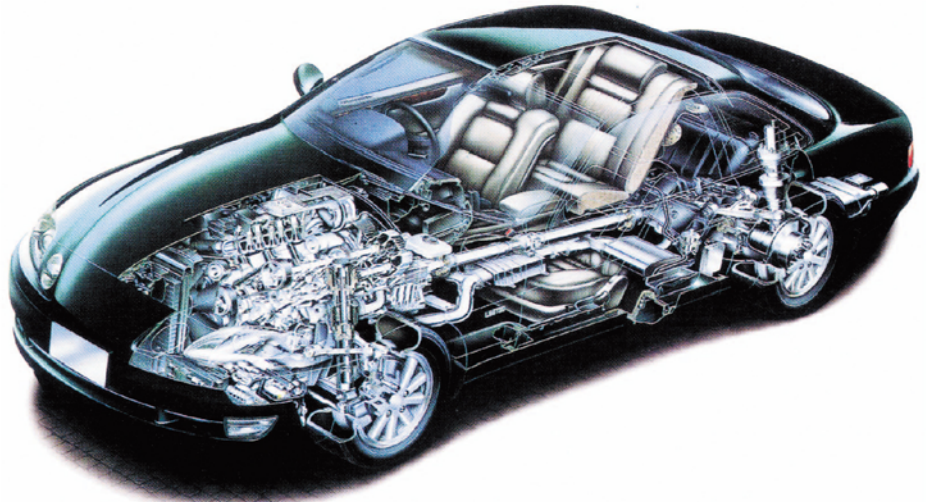
Machine Structural Carbon Steel

Young Heung의 기계구조용 탄소강 (Machine Structural Carbon Steel)은 다양한 소재를 중심으로 최고의 품질을 자랑합니다.

- ▶ 미려한 외관
- ▶ 초정밀 외경공차
- ▶ 전장의 균일한 선경 보장
- ▶ 다양한 Bar 길이

Our Machine Structural Carbon Steel have a pride in the highest quality

- ▶ Good surface condition
- ▶ Uniformity and accuracy of outside diameter
- ▶ Various length of bar

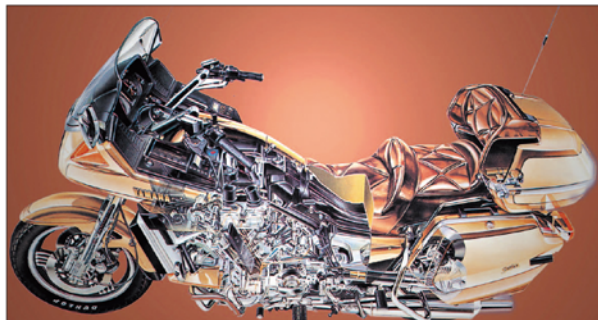
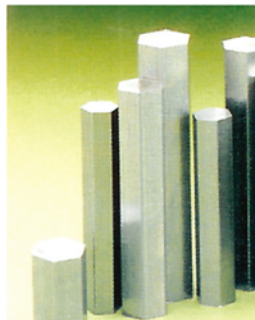


Application

- ▶ 자동차부품
- ▶ 기계부품

◎ 기계구조용탄소강 (Machine Structural Carbon Steel)

규격 / SPECIFICATION			화합성분 / Chemical Composition(%)				
KS	JIS	SAE	C	Si	Mn	P	S
SM10C	S10C	1010	0.08~0.13	0.15~0.35	0.30~0.60	max 0.030	max 0.035
SM15C	S15C	1015	0.13~0.18	0.15~0.35	0.30~0.60	max 0.030	max 0.035
SM20C	S20C	1020	0.18~0.23	0.15~0.35	0.30~0.60	max 0.030	max 0.035
SM25C	S25C	1025	0.22~0.28	0.15~0.35	0.30~0.60	max 0.030	max 0.035
SM30C	S30C	1030	0.27~0.33	0.15~0.35	0.60~0.90	max 0.030	max 0.035
SM38C	S35C	1038	0.35~0.41	0.15~0.35	0.60~0.90	max 0.030	max 0.035
SM40C	S40C	1040	0.37~0.43	0.15~0.35	0.60~0.90	max 0.030	max 0.035
SM45C	S45C	1045	0.42~0.48	0.15~0.35	0.60~0.90	max 0.030	max 0.035
SM50C	S50C	1050	0.47~0.53	0.15~0.35	0.60~0.90	max 0.030	max 0.035
SM55C	S55C	1055	0.55~0.61	0.15~0.35	0.60~0.90	max 0.030	max 0.035



Cold Drawn Steel Bar



Application

- ▶ Bolt
- ▶ Nut
- ▶ Shaft
- ▶ Spring

◎ 기계구조용합금강 (Machine Structural Alloy Steel)

규격 / SPECIFICATION				화합성분 / Chemical Composition(%)						
KS	JIS	AIS/SAE	DIN	C	Si	Mn	P	S	Cr	Mo
SCM1	SCM432	-	-	0.27~0.37	0.15~0.35	0.30~0.60	max0.030	max0.030	1.00~1.50	0.15~0.30
SCM2	SCM430	4130	-	0.28~0.33	0.15~0.35	0.60~0.85	max0.030	max0.030	0.90~1.20	0.15~0.30
SCM3	SCM435	4135/4137	34CrMo4	0.33~0.38	0.15~0.35	0.60~0.85	max0.030	max0.030	0.90~1.20	0.15~0.30
SCM4	SCM440	4140/4142	42CrMo4	0.38~0.43	0.15~0.35	0.60~0.85	max0.030	max0.030	0.90~1.20	0.15~0.30
SCM5	SCM445	4145/4147	-	0.43~0.48	0.15~0.35	0.60~0.85	max0.030	max0.030	0.90~1.20	0.15~0.30
SCM21	SCM415	-	16CrMo4	0.13~0.18	0.15~0.35	0.60~0.85	max0.030	max0.030	0.90~1.20	0.15~0.30
SCM22	SCM420	4148	50CrMo4	0.18~0.23	0.15~0.35	0.60~0.85	max0.030	max0.030	0.90~1.20	0.15~0.30
SCM23	SCM421	-	-	0.17~0.23	0.15~0.35	0.70~1.00	max0.030	max0.030	0.90~1.20	0.15~0.30
SCM24	SCM822	-	22CrMo44	0.20~0.25	0.15~0.35	0.60~0.85	max0.030	max0.030	0.90~1.20	0.35~0.45

Machine Structural Alloy Steels & Spring Steels

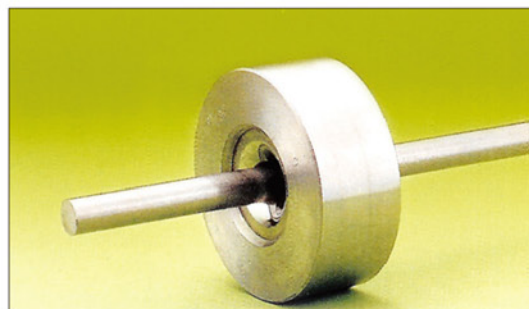
고객이 요구하는 모든 특수강의 개발을 위해 최선의 노력을 다하겠습니다.
We will do our best in order to develop special steel to meet customer requirements at all the time.

◎ 스프링강 (Spring Steel)

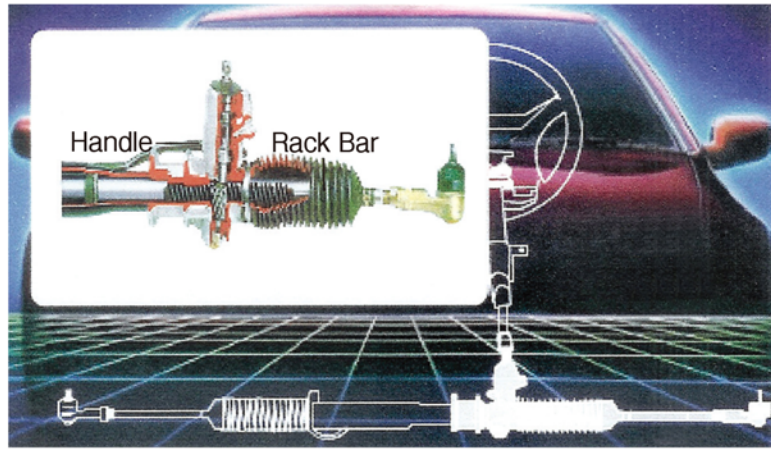
STEEL GRADE	C	Mn	Si	Pmax	Smax	Cr	V
SAE 9260(SUP7)	0.56 0.64	0.70 1.00	1.80 2.20	0.035	0.035	-	-
SAE 9254(SUP12)	0.51 0.59	0.60 0.80	1.20 1.60	0.035	0.035	0.60 0.80	-
SRS 60(KOBE)	0.58 0.63	0.35 0.60	1.35 1.60	0.035	0.035	0.40 0.70	0.15 0.25
SAE 5155(SUP9)	0.52 0.60	0.65 0.95	0.15 0.35	0.035	0.035	0.65 0.95	-
SAE 5160(SUP9A)	0.56 0.64	0.70 1.00	0.15 0.35	0.035	0.035	0.70 1.00	-

Application

- ▶ 현가용 스프링(Suspension-Spring)
- ▶ 토션바 (Torsion-Bar)
- ▶ Stabilized-Bar



Application



● Rack-Bar

⊙ Chemical composition

Elements	C	Si	Mn	P	S	Cr	V	Mo	Ni	Cu	N	Pb
Grade10	0.37~ 0.50	0.15~ 0.35	0.60~ 1.65	Max 0.035	0.015~ 0.045	Max 0.25	—	Max 0.06	Max 0.25	Max 0.30	—	—
Grade20	0.38~ 0.48	0.05~ 0.35	0.60~ 1.20	Max 0.05	0.015~ 0.045	Max 0.30	0.08~ 0.13	Max 0.08	Max 0.30	—	0.0105 0.0125	—
Grade30	0.34~ 0.45	0.05~ 0.35	0.50~ 0.35	Max 0.05	0.015~ 0.050	0.90~ 1.20	—	Max 0.20	—	—	—	0.15 0.35

⊙ Mechanical properties

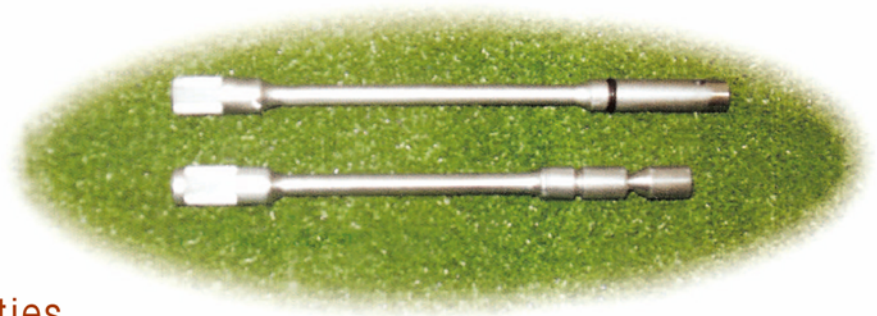
Properties	Grade - 10	Grade - 20	Grade - 30
Ultimate Tensile Strength (MPa)	640 Min	720 Min	775 Min
Yield Strength (2% offset - MPa)	425 ~ 495	495 ~ 620	620 ~ 775
%Elongation in 2" (or 50mm)	19% Min	17% Min	13% Min
Impact Properties (at amb.temp.)	27J Min	23J Min	60J Min
Surface Hardness (HB)	212 ~ 248	217 ~ 262	248 ~ 302

⊙ Material condition / Processing

Grade 10	Grade 20	Grade 30
Cold Drawn Stress-Relieved	Cold Drawn Stress-Relieved	Quenched and Tempered

⊙ Diameter & Bar length

We can make out Dia. 16mm to 30mm and bar length by user' s needs.



● Torsion-Bar

⊙ Mechanical properties

Properties	Specification	Actual Data
Ultimate Tensile Strength (MPa)	Min 1,080	1,170
Yield Strength (2% offset - MPa)	Min 930	1,020
%Elongation	Min 6.0%	8.5%
Hardeness (HRC)	32 ~ 40	34 ~ 37
Straightness	Max 0.3mm/1000	0.1mm

⊙ Diameter & Bar length

We can make out Dia. 8.0mm to 12.5mm and bar length by user' s needs.

Axle-shaft Axle-shaft



⊙ Mechanical properties

Properties	Specification	Actual Data
Ultimate Tensile Strength (kg/mm)	Min 70	87
Yield Strength (2% offset - kg/mm)	Min 50	61
Hardeness (HB)	Max 240	220~235
Straightness	Max 4.0/4000mm	2.5mm
Grain Size (A.S.T.M)	No. 5~8	No. 7

⊙ Diameter & Bar length

We can make out Dia. 20mm to 13mm and bar length by user' s needs.

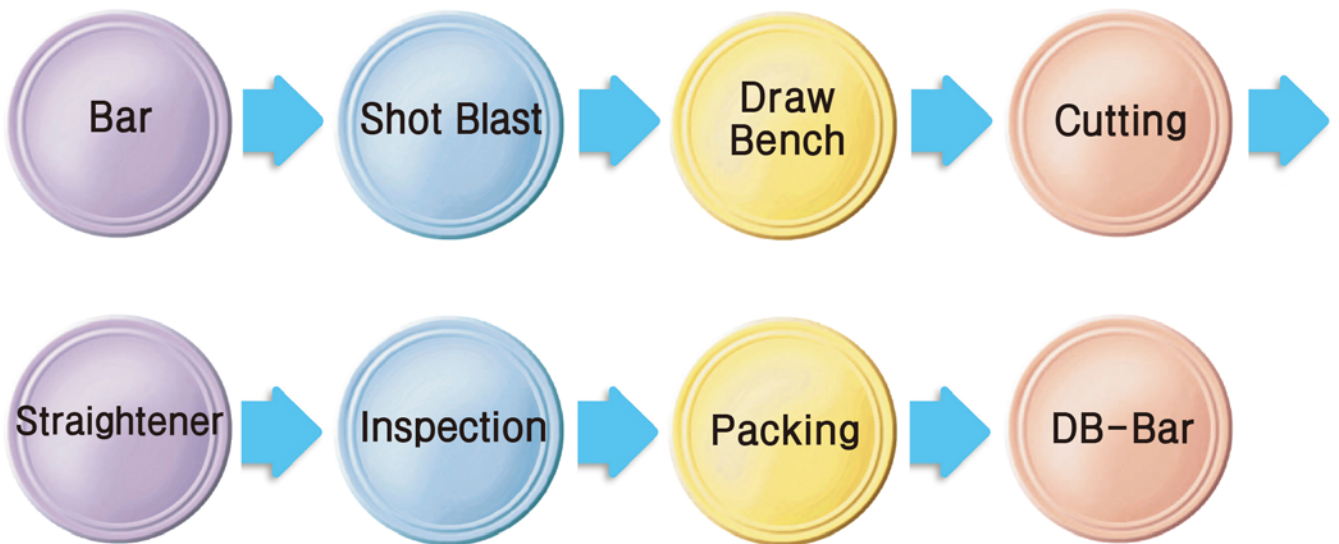
DBM CD-BAR

Draw Bench Machine Cold Finished Carbon & Alloy Steel Bar

DB-BAR는 Coil to Bar 방식과는 달리 Bar to Bar 방식으로 생산하는 제품입니다.
Young Heung의 DB-BAR는 새로운 신규 설비에서 30mm~100mm까지 원하는 치수로 생산되며,
직진도, 표면조도가 뛰어난 양질의 제품으로 생산되고 있습니다.

Manufacturing process for DB-BAR is the type of "Bar to Bar", different from "Coil to Bar"
We are producing DB-BAR on the newly organized facility from 30mm upto 100mm.
Our DB-Bar has the superior quality with highest straightness and great surface Roughness.

⊙ 가공과정 (Manufacturing process)



⊙ 화학성분 (Chemical Composition)

JIS	C	Si	Mn	Pmax	Smax	Cr max	Ni max
S20C	0.18-0.23	0.15-0.35	0.30-0.60	0.03	0.035	0.2	0.2
S45C	0.42-0.48	0.15-0.35	0.60-0.90	0.03	0.035	0.2	0.2
SCM440	0.38-0.43	0.15-0.35	0.60-0.85	0.03	0.03	0.90-1.20	-



사용용도 (Application)

- ▶ 중대형 선반 및 조선용 Shaft for shipbuilding/Large-sized lathe
- ▶ 중장비 설비 유압 Pit용 Oil Press Pit for Heavy equipment
- ▶ 대형 구조물용 Large-sized structure

제품사양 (Production Range)

- ▶ 30mm~100mm Round Bar
- ▶ 제품길이 (Length) 3M~8M
- ▶ U인발본수(Draw Hall) 3Hall

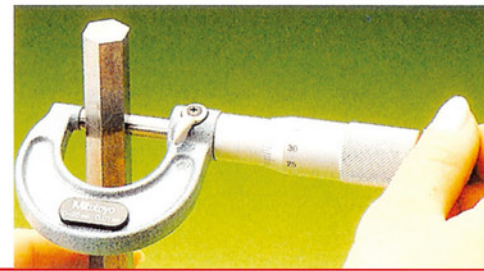


Laboratory/Quality Management

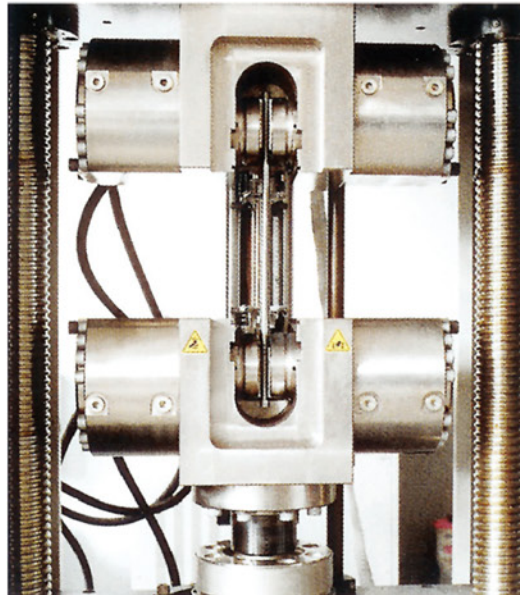
당사 CD-BAR는 In-Line Type의 표면결함 장비 ECT(Eddy current Tester)가 장착되어 자동적으로 모든 CD-BAR의 표면을 전수검사하여 표면결함이 없는 완벽한 제품을 생산합니다.

Young Heung' s CD-BAR guarantee for surface condition, having inline Eddy-current non-destructive tester, by which every one piece of each bar can be ensured as "non surface defect products" automatically.





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모든 당사 제품들은 수요자의 요구를 최대한 만족시킬 수 있도록 특별하게 제조되어 집니다.
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Young Heung

영흥철강(주) 주요생산품목

- 마봉강(KS D 3561)/Cold Drawn Steel Bar
- IT WIRE / Induction Heated, Quenched & Tempered Wire
- 이형 PC강봉(KS D 3505)/Prestressed Concrete Steel Bar
- PC 강연선(KS D 7002)/Strands for Prestressed Concrete
- 와이어로프(KS D 3514)/Wire Rope
- 경강선(KS D 3510)/Hard Drawn Steel Wire
- 아연도강연선(KS D 7007)/Galvanized Steel Wire Strands
- 아연도금강선/Galvanized Steel Wire
- Inner Cable & Control Cable
- 항공기용 와이어로프(KS D 7010)/Galvanized Aircraft Cable



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