

PROTON

METAL DÖKÜM TALAŞLI İMALATI SAN VE TİC. LTD.ŞTİ.

PR
METAL

www.protonmetal.com

2017 CATALOG

PISTON & CONNECTING ROD

TÜV
CERT
DIN EN ISO 9001





**PR
METAL**

***we are
producing the world
piston & connecting rod***



Quality First

*Quality production with professional
laboratory equipments*



+90 332 342 44 01

info@protonmetal.com

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Hakkımızda

Proton Metal Döküm Talaşlı İmalatı San ve Tic Ltd Şti 2006 yılından bu yana içten yanmalı motorlar, kompresörler, klima ve soğutma sistemleri için piston ve biyel kolu imalatı yapmaktadır.

Üretim tesisimizde 30-220 mm çaplarında değişen pistonlar için piston ve biyel kolları imalatı yapılmaktadır. Bitzer, Bock, Carrier, Copeland, Dorin, Frascold, Refcomp gibi tüm gruplarda hizmet vermekteyiz.

Ürettiğimiz ürünler iç ve dış piyasalarda müşterilerimizin beğenisine sunulmaktadır.

Deneyimli bilgi birikimimiz, uzman ve tecrübeli kadromuz , gelişmiş üretim teknolojimiz ile müşterilerimize ISO 9001:2008 ulusal ve uluslararası standartların öngördüğü kalite standartlarında ürünler sunmanın gururunu yaşamaktayız.

Kalite sistemimizin uygulanması ve sürekli iyileştirilmesi ile müşteri ihtiyaç ve beklentileri daha iyi şekilde karşılanacak ve müşteri memnuniyetinin artırılması sağlanacaktır.

Vizyonumuz

Toplam kalite yönetimi felsefesi ile kurumsallaşarak gelişmiş rekabet gücünü arttırmak, sürekli istikrar ve iyi bir istihdam anlayışını destekleyen yatırımlarla satış ve satış sonrası hizmetlerimizi yüksek kalite standartlarında sunarak dünyanın öncü üreticileri arasında yer almaktır.

Misyonumuz

Kaliteden ve yüksek verimliliğimizden ödün vermeden daima yaratıcı ve yenilikçi düşünceler doğrultusunda sektör standartlarının yükselmesine katkıda bulunarak müşteri beklentilerini en iyi şekilde karşılayan tüm dünyanın tanıdığı güvenilir bir marka olmak.

ABOUT US

PROTON METAL DÖKÜM TALASLI İMALATI SAN.VE TİC.LTD.ŞTİ Since 2006, internal combustion engines, compressors, air conditioning and refrigeration systems has been manufacturing pistons and connecting rods.

Ranging from 30-220 mm diameter pistons and connecting rods production facility manufacturing is done. Bitzer, Bock, Carrier, Copeland, Dorin, Frascold, Refcomp serve all groups.Our products are offered to customers domestic and international markets.

Knowledge of experienced, qualified and experienced staff, advanced production technology to our customers with the quality standards required by national and international standards ISO 9001:2008 are proud to offer products.

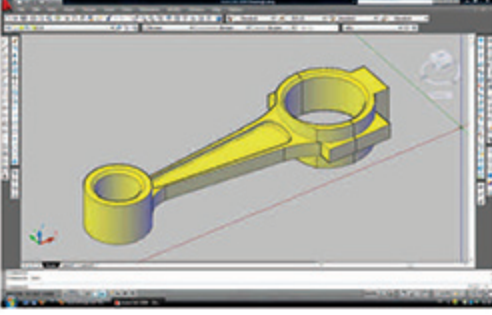
Implementation and continuous improvement of our quality system and customer needs plus expectations will be meet the customer satisfaction that will be increased and better ways.

Our vision is

Enhance the competitiveness of institutionalized and developed with the philosophy of total quality management, with continuous employment stability and a good understanding of investments, sales and after sales support services by offering high quality standards to be among the world's leading manufacturers.

Our mission is

Without compromising on quality and high efficiency always in line with the creative and innovative ideas contributing to the rising standards of the industry that best meets the customer's expectations to be a reliable brand in all the world has ever known.



Tasarım ve Kalıp / Mold

Tasarımı yapılacak numune incelendikten sonra belirlenen ölçülerde tam boy, strok, krank ve perno ölçüleri Auto Cad programı ile ölçülendirilerek çizim yapılır. Daha sonra Cad Cam programı ile üç boyutlu ölçüler çıkarılarak modelleme yapıldıktan sonra ısı işleme dayanıklı çelik malzeme ile Cnc işleme merkezinde kalıp yapılır.

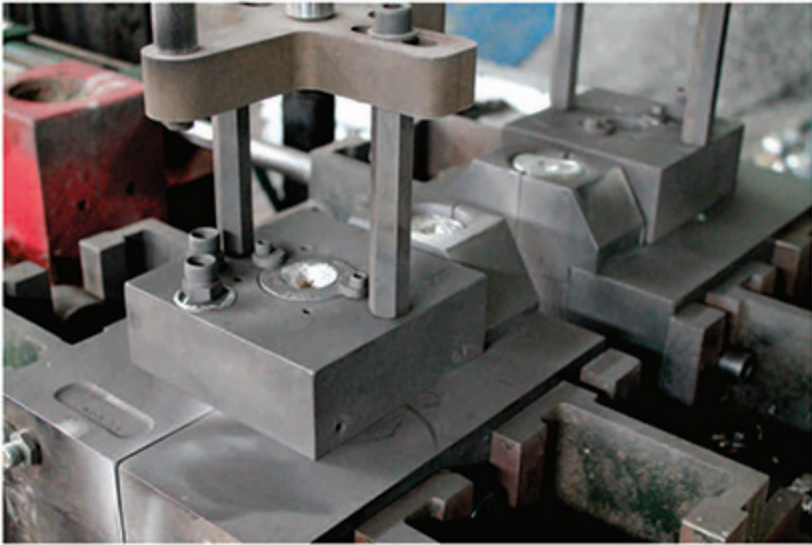
Determined after examination of sample sizes to design full-length, stroke, crank and pin dimensions ölçülendirilerek drawing with Auto Cad program is done. Cad Cam program and then subtracting the three-dimensional measurements with modeling material after the heat treatment, CNC processing center, mold-resistant steel is made.

Döküm Aşaması / Casting



Ham madde olarak alaşımlı alüminyum külçe kullanılır. Alüminyum külçeler döküm ocaklarında eritilerek kokil pres yada alüminyum enjeksiyon makinalarında kalıba dökülür.

Alloyed aluminum ingots as raw material is used. Aluminium ingots or injection molding machines, die casting mold melting furnace is poured into the mold.





İşleme / Machining Center

Dökümü yapılan malzemeler gerekli işlemler yapıldıktan sonra işlemek için hazırlanır. Daha sonra Cnc makinalarında programı yapıldıktan sonra işleme alınır. Malzeme istenen ölçülerde yapılır.

After the materials are prepared to handle the necessary procedures after the program CNC machines made after the product desired dimensions.



Kalite Kontrol / Quality Control

Hammaddeler spektrometrede ölçülerek içerisindeki alaşım miktarları kontrol edilir. Kontrol den geçen hammaddeler imalata alınır. Döküm işlemi yapılır. Döküm hataları kontrol edilir. Döküm den çıkan malzemeler işleme alınır. Ölçü aletleriyle hassas ölçümler yapıldıktan sonra sertlik ölçümleri yapılır. Kalite kontrol den geçen ürünler sevk edilmek üzere hazırlanır.

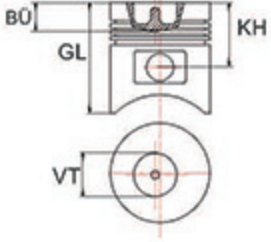


Control in the alloy is made by measuring the amount of raw spectrometer. Manufacturing raw materials are passed to the control. Casting operation is performed. Casting defects are controlled. The casting materials are processed. Measuring instruments are made precise measurements of hardness measurements after. Quality control is prepared to be shipped from the previous products.



PİSTON

Motorlarda piston devri hareket mekanizmasının ilk parçasıdır. Silindir içinde yanan yakıtın yanmasıyla kimyasal enerjiyi mekanik enerjiye çevirirler. Piston başı, silindir çeperleriyle birlikte karışım ve gazları kaçırmayan bir yer teşkil eder ve genişleme zamanında yanan gazların basıncı altında aldığı hareketi biyel küçük ucu yardımıyla biyeye ve oradan krank miline iletir. Bundan başka piston, silindir çeperlerinin yağlanması sağlamakla beraber, bu yağın piston yüzüne çıkıp orada yanmasını önlemelidir. Pistonlar genellikle, piston başı, segman yuvalarının bulunduğu kısım, piston gövdesi, piston pim yuvasının bulunduğu kısım ve piston eteği gibi kısımlardan meydana gelmiştir.

The first part of the transfer mechanism of action of the piston engines. Convert chemical energy into mechanical energy by combustion of the fuel burning in the cylinder. The piston head, cylinder represents a place with that carry-over expansion of gases in the mixture and the burning of gases under pressure of time, with the help of the connecting rod small end connecting rod movement, and then transmits it to the crankshaft. Furthermore, the piston, the cylinder along the walls provide a lubrication, prevent burning of the oil piston face out there. Pistons usually piston, piston ring slot portion where the piston body, piston pin and piston skirt portion, such as housing parts has occurred where.

| | | | |
|---------------|---|----------|---|
| Piston |  | KH 18.32 | Strok / Stroke |
| | | BÜ | Hücre Derinliği / Combustion bowl depth |
| | | GL 32.32 | Tam Boy / Full Length |
| | | VT | Hücre Çapı / Combustion bowl diameter |
| Pim - Pin |  | Q 15.00 | Pim Çapı / Pin diameter |
| | | L 33.00 | Pim Boyu / Pin length |
| Segman - Ring |  | R 1.5 | Segman Kalınlığı / Ring thickness |
| | | | |

PİSTON KOLU / CONNECTING ROD

Biyel kolu, pistonla krank milini birbirine bağlayan parçadır. Bir ucu perno yardımıyla pistonla ve diğer ucu veya büyük tarafı ise krank pimi ile krank miline bağlanan biyel kolları, pistonun silindir içinde yaptığı aksel hareketi, dönme hareketine çevirerek krank milinin dönmelerini sağlar. Motorun piston pernosu ile birlikte mekanik olarak en çok yüklenen parçalarındandır.

Connecting rod, piston and crank shaft of the piston and the other end connects with the help of bolt end .the larger side connected to the crankshaft and the crank pin connecting rods, the axial movement of the piston in the cylinder converted to the rotary movement of the crankshaft to rotate. The most commonly installed with a mechanical motor are part of the piston bolt.

| | | |
|---|---------------|-----------------------------|
|  | KH 46.40 +/-2 | Strok / Strok |
| | GL 129.80 | Tam Boy / Full size |
| | CQ 58.00 +/-2 | Krank Çapı / Crank diameter |
| | PQ 15.00 | Pim Çapı / Pin diameter |



BITZER

PISTON ÇAPI

41.00 mm

PR

120041

PISTON ÇAPI

46.00 mm

PR

120046

TEKNİK RESİM
MECHANICAL DRAWING

KH 18.25

BÜ -0.40

GL 34.30

VT 19.00

TEKNİK RESİM
MECHANICAL DRAWING

KH 18.25

BÜ -0.40

GL 34.30

VT 19.00

PISTON ÖLÇÜLERİ
PISTON DIMENSIONS

Q 15.00

L 33.00



R 1.5

PISTON ÖLÇÜLERİ
PISTON DIMENSIONS

Q 15.00

L 38.00



R 1.5

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BITZER

PISTON ÇAPI

50.00 mm

PR

120050

PISTON ÇAPI

55.00 mm

PR

120055



KH 18.30

BÜ -0.40

GL 34.30

VT 38.50



Q 15.00

L 42.00



R 1.5

TEKNİK RESİM
MECHANICAL DRAWING

PISTON ÖLÇÜLERİ
PISTON DIMENSIONS



KH 18.30

BÜ -0.45

GL 34.25

VT 39.00



Q 15.00

L 46.00



R 1.5

TEKNİK RESİM
MECHANICAL DRAWING

PISTON ÖLÇÜLERİ
PISTON DIMENSIONS

PISTON



BITZER

PISTON ÇAPI

60.00 mm

PR

120060

PISTON ÇAPI

65.00 mm

PR

120065

TEKNİK RESİM
MECHANICAL DRAWING

KH 20.50

BÜ -0.50

GL 39.00

VT

TEKNİK RESİM
MECHANICAL DRAWING

KH 20.50

BÜ -0.70

GL 41.50

VT

PISTON ÖLÇÜLERİ
PISTON DIMENSIONS

Q 16.00

L 52.00



R 1.5

R 1.5

PISTON ÖLÇÜLERİ
PISTON DIMENSIONS

Q 16.00

L 55.00



R 1.5

R 1.5

PISTON

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BITZER

PR
METAL



PISTON ÇAPI

65.00 mm

PR

120066



KH 28.30

BÜ

GL 47.50

VT



Q 20.00

L 56.00



R 1.5

R 1.5

TEKNİK RESİM
MECHANICAL DRAWING

PISTON ÖLÇÜLERİ
PISTON DIMENSIONS

PISTON ÇAPI

65.00 mm

PR

120067



KH 20.60

BÜ

GL 40.90

VT



Q 16.00

L 55.00



R 1.5

R 1.5

TEKNİK RESİM
MECHANICAL DRAWING

PISTON ÖLÇÜLERİ
PISTON DIMENSIONS

PISTON

pr 04

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BITZER

PISTON ÇAPI

65.00 mm

PR

120068

PISTON ÇAPI

70.00 mm

PR

120070

TEKNİK RESİM
MECHANICAL DRAWING

KH 20.50

BÜ

GL 41.00

VT

TEKNİK RESİM
MECHANICAL DRAWING

20.56

42.50

PISTON ÖLÇÜLERİ
PISTON DIMENSIONS

Q 16.00

L 49.00

R 1.5

R 1.5

PISTON ÖLÇÜLERİ
PISTON DIMENSIONS

Q 16.00

L 55.00

R 1,5

R 1,5

PISTON

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PR
METAL



BITZER

PISTON ÇAPI

70.00 mm

PR

120071

PISTON ÇAPI

70.00 mm

PR

120072



KH 20.45

BÜ

GL 42.40

VT



Q 16.00

L 55.00



R 1,5

R 1,5

TEKNİK RESİM
MECHANICAL DRAWING

PISTON ÖLÇÜLERİ
PISTON DIMENSIONS



KH 28.10

BÜ -0.5

GL 47.10

VT



Q 20.00

L 55.00



R 1,5

R 1,5

TEKNİK RESİM
MECHANICAL DRAWING

PISTON ÖLÇÜLERİ
PISTON DIMENSIONS

PISTON

pr 06

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BITZER

PISTON ÇAPI

75.00 mm

PR

120075

PISTON ÇAPI

82.00 mm

PR

120082



TEKNİK RESİM
MECHANICAL DRAWING



KH 28.15

BÜ -0.60

GL 47.15

VT

TEKNİK RESİM
MECHANICAL DRAWING



KH 28.15

BÜ -0.70

GL 47.20

VT

PISTON ÖLÇÜLERİ
PISTON DIMENSIONS



Q 20.00

L 56.00



R 2

R 2

PISTON ÖLÇÜLERİ
PISTON DIMENSIONS



Q 20.00

L 59.00



R 1.5

R 1.5

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pr 07

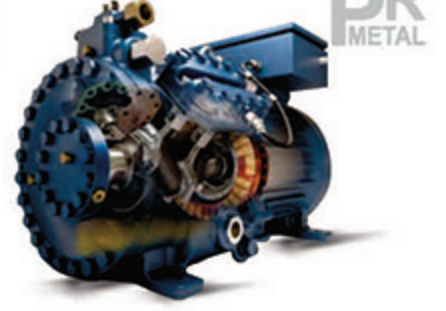
PISTON

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BOCK



PISTON ÇAPI

55.00 mm

PR

130055

PISTON ÇAPI

60.00 mm

PR

130060



KH 21.80

BÜ

GL 40.25

VT



Q 15.00

L 46.00



R 2.5

R 2.5

TEKNİK RESİM
MECHANICAL DRAWING

PISTON ÖLÇÜLERİ
PISTON DIMENSIONS



KH 21.80

BÜ

GL 41.00

VT



Q 15.00

L 50.00



R 2.5

R 2.5

PISTON



BOCK

PISTON ÇAPI

60.00 mm

PR

130061

PISTON ÇAPI

65.00 mm

PR

130065



KH 21.80

BÜ -0.60

GL 41.40

VT



Q 15.00

L 50.00



R 2.5

R 2.5

TEKNİK RESİM

MECHANICAL DRAWING

PISTON ÖLÇÜLERİ

PISTON DIMENSIONS

TEKNİK RESİM

MECHANICAL DRAWING

PISTON ÖLÇÜLERİ

PISTON DIMENSIONS



KH 21.70

BÜ

GL 41.00

VT



Q 15.00

L 50.00



R 2.5

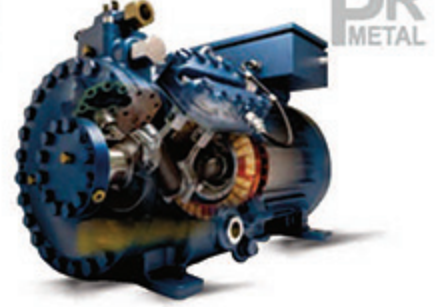
R 2.5

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BOCK



PR
METAL

PISTON ÇAPI

70.00 mm

PR

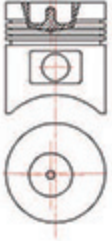
130070

PISTON ÇAPI

75.00 mm

PR

130075



KH 30.00

BÜ +0.60

GL 54.00

VT



Q 20.00

L 60.00



R 2.5

R 2.5

TEKNİK RESİM
MECHANICAL DRAWING

PISTON ÖLÇÜLERİ
PISTON DIMENSIONS



KH 30.00

BÜ

GL 55.00

VT



Q 20.00

L 60.00



R 2

R 2

R 3

PISTON

**BOCK**

PISTON ÇAPI

80.00 mm

PR

130080

PISTON ÇAPI

PR



TEKNİK RESİM

MECHANICAL DRAWING



KH 28.00

BÜ +0.60

GL 49.00

VT

PISTON ÖLÇÜLERİ

PISTON DIMENSIONS



Q 20.00

L 65.00

R 2

R 2

R 3

TEKNİK RESİM

MECHANICAL DRAWING

PISTON ÖLÇÜLERİ

PISTON DIMENSIONS

PISTON

PROTON

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PR
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CARRIER

PISTON ÇAPI

50.75 mm

PR

155050

PISTON ÇAPI

50.75 mm

PR

155051



KH 21.35

BÜ

GL 40.00

VT



Q 17.50

L 40.00



R 1.5

R 1.5

TEKNİK RESİM
MECHANICAL DRAWING

PISTON ÖLÇÜLERİ
PISTON DIMENSIONS



KH 18.75

BÜ

GL 38.00

VT



Q 17.50

L 40.00



R 1.5

R 1.5

PISTON



CARRIER

PISTON ÇAPI

50.75 mm

PR

155052

PISTON ÇAPI

68.26 mm

PR

155068



KH 21.35

BÜ

GL 40.00

VT



Q 17.50

L 40.00



R 1.5



KH 28.60

BÜ -0.85/-1.60

GL 51.75

VT



Q 22.22

L 54.00



R 2.38

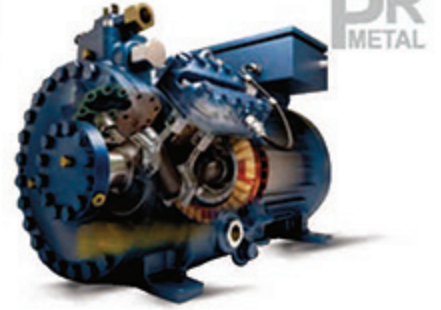
R 1.6

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COPELAND



PR
METAL

PISTON ÇAPI

68.26 mm

PR

160068

PISTON ÇAPI

74.60 mm

PR

160074



KH 27.62

BÜ

GL 45.10

VT



Q 19.05

L 57.00



R 1.6

R 1.6

TEKNİK RESİM
MECHANICAL DRAWING

PISTON ÖLÇÜLERİ
PISTON DIMENSIONS



KH 27.18

BÜ

GL 44.76

VT



Q 19.05

L 60.00



R 2

R 2

TEKNİK RESİM
MECHANICAL DRAWING

PISTON ÖLÇÜLERİ
PISTON DIMENSIONS

PISTON



DORIN

PISTON ÇAPI

54.00 mm

PR

165054



PISTON ÇAPI

59.00 mm

PR

165059

TEKNİK RESİM
MECHANICAL DRAWING

KH 23.40

BÜ -0.50

GL 41.00

VT

TEKNİK RESİM
MECHANICAL DRAWING

KH 22.65

BÜ

GL 41.70

VT

PISTON ÖLÇÜLERİ
PISTON DIMENSIONS

Q 18.00

L 44.00



R 1.5

R 1.5

PISTON ÖLÇÜLERİ
PISTON DIMENSIONS

Q 18.00

L 46.00



R 1.5

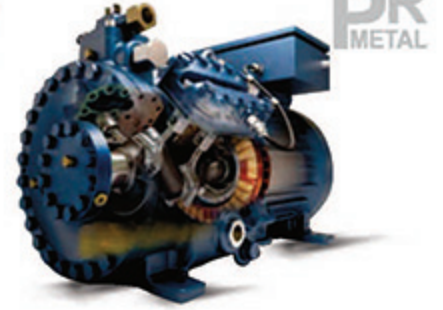
R 1.5

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DORIN



PR
METAL

PISTON ÇAPI

61.00 mm

PR

165061

PISTON ÇAPI

63.00 mm

PR

165063



KH 22.40

BÜ

GL 41.50

VT



Q 18.00

L 52.00



R 1.5

R 1.5

TEKNİK RESİM
MECHANICAL DRAWING

PISTON ÖLÇÜLERİ
PISTON DIMENSIONS



KH 23.30

BÜ -0.55

GL 41.50

VT



Q 18.00

L 52.00



R 1.5

R 1.5

PISTON



DORIN

PISTON ÇAPI

68.00 mm

PR

165068



PISTON ÇAPI

72.00 mm

PR

165072

TEKNİK RESİM
MECHANICAL DRAWING

KH 23.10

BÜ -0.50

GL 41.80

VT

TEKNİK RESİM
MECHANICAL DRAWING

KH 29.15

BÜ -0.70

GL 49.25

VT

PISTON ÖLÇÜLERİ
PISTON DIMENSIONS

Q 18.00

L 55.00

R 1.5

R 1.5

PISTON ÖLÇÜLERİ
PISTON DIMENSIONS

Q 22.00

L 55.00

R 1.5

R 1.5

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DORIN

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PISTON ÇAPI

79.00 mm

PR

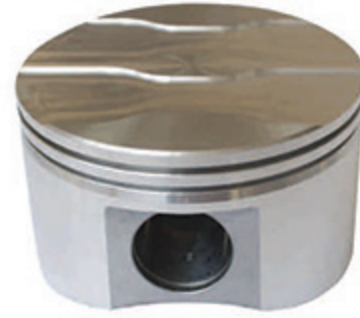
165079

PISTON ÇAPI

83.00 mm

PR

165083



KH 29.20

BÜ -0.75

GL 49.25

VT



Q 22.00

L 55.00



R 1.5

R 1.5

TEKNİK RESİM
MECHANICAL DRAWING

PISTON ÖLÇÜLERİ
PISTON DIMENSIONS



KH 26.65

BÜ -0.80

GL 48.10

VT



Q 22.00

L 69.00



R 1.5

R 1.5

PISTON



FRASCOLD

PISTON ÇAPI

50.00 mm

PR

180050

PISTON ÇAPI

54.00 mm

PR

180054

TEKNİK RESİM
MECHANICAL DRAWING

KH 18.50

BÜ -0.50

GL 32.50

VT

TEKNİK RESİM
MECHANICAL DRAWING

KH 25.85

BÜ -0.55

GL 43.95

VT

PISTON ÖLÇÜLERİ
PISTON DIMENSIONS

Q 14.00

L 40.00



R 1.5

PISTON ÖLÇÜLERİ
PISTON DIMENSIONS

Q 18.00

L 40.00



R 2

R 2

PROTON

METAL DÖKÜM TALAŞLI İMALAT SAN. VE TİC.LTD.ŞTİ.

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FRASCOLD

PR
METAL



PISTON ÇAPI

54.00 mm

PR

180055

PISTON ÇAPI

54.00 mm

PR

180056



KH 18.50

BÜ -0.55

GL 32.50

VT



Q 14.00

L 44.00



R 1.5

TEKNİK RESİM
MECHANICAL DRAWING

PISTON ÖLÇÜLERİ
PISTON DIMENSIONS



KH 18.50

BÜ -0.55

GL 32.50

VT



Q 14.00

L 44.00



R 1.5

R 1.5

TEKNİK RESİM
MECHANICAL DRAWING

PISTON ÖLÇÜLERİ
PISTON DIMENSIONS

PISTON



FRASCOLD

PISTON ÇAPI

62.00 mm

PR

180062

PISTON ÇAPI

64.00 mm

PR

180064

TEKNİK RESİM
MECHANICAL DRAWING

KH 26.00

BÜ -0.70

GL 44.10

VT

TEKNİK RESİM
MECHANICAL DRAWING

KH 26.95

BÜ -0.50

GL 44.00

VT

PISTON ÖLÇÜLERİ
PISTON DIMENSIONS

Q 18.00

L 52.00



R 2

R 2

PISTON ÖLÇÜLERİ
PISTON DIMENSIONS

Q 18.00

L 50.00



R 2

R 2

PISTON



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**BİYEL KOLU
CONNECTING ROD**



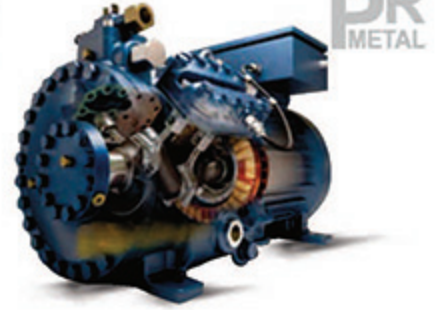
**QUALITY
FOR YOU**

PROTON

METAL DÖKÜM TALAŞLI İMALAT SAN. VE TİC.LTD.ŞTİ.

www.protonmetal.com

BITZER



PR
METAL

PROTON NO

PR 502131

ORJINAL NO

502131

PROTON NO

PR 502131

ORJINAL NO

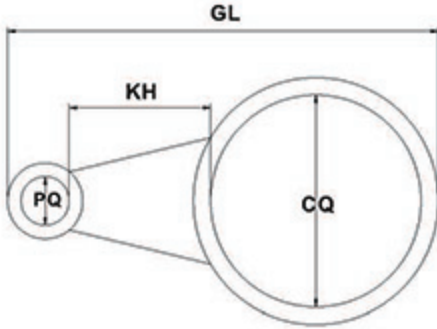
502131



Kalınlık 19.80



Kalınlık 17.80



KH 47.10 +/-2

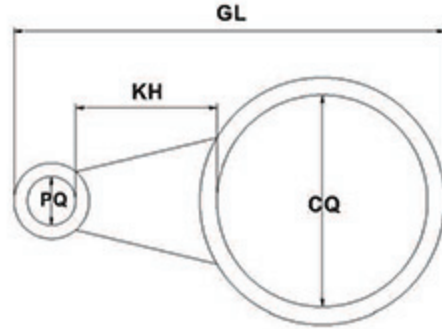
GL 143.65

CQ 70.00 +/-2

PQ 16.00

TEKNİK RESİM
MECHANICAL DRAWING

BİEL ÖLÇÜLERİ
CONNECTING DIMENSIONS



KH 47.10 +/-2

GL 143.65

CQ 70.00 +/-2

PQ 16.00

TEKNİK RESİM
MECHANICAL DRAWING

BİEL ÖLÇÜLERİ
CONNECTING DIMENSIONS

Connecting Rod

PR
METAL



PROTON

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BITZER

PROTON NO

PR 200408

ORJINAL NO

502 134

PROTON NO

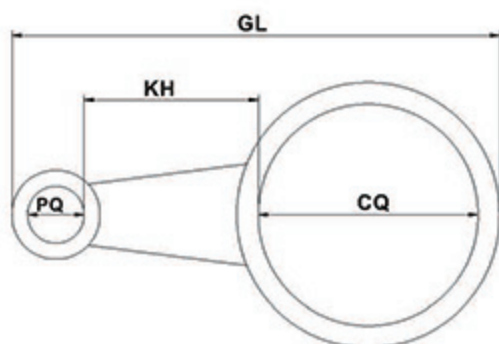
PR 502115

ORJINAL NO

502 115



TEKNİK RESİM
MECHANICAL DRAWING



BİEL ÖLÇÜLERİ
CONNECTING DIMENSIONS

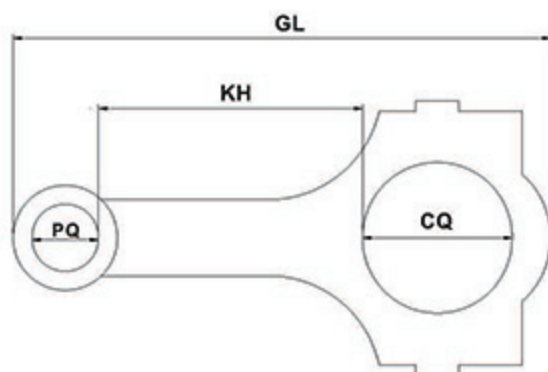
KH 46.40 +/-2

GL 129.80

CQ 58.30 +/-2

PQ 15.00

TEKNİK RESİM
MECHANICAL DRAWING



BİEL ÖLÇÜLERİ
CONNECTING DIMENSIONS

KH 79.40 +/-2

GL 162.15

CQ 45.00 +/-2

PQ 20.00

PROTON
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Connecting Rod

PROTON

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BOCK



PR
METAL

PROTON NO

PR 200458

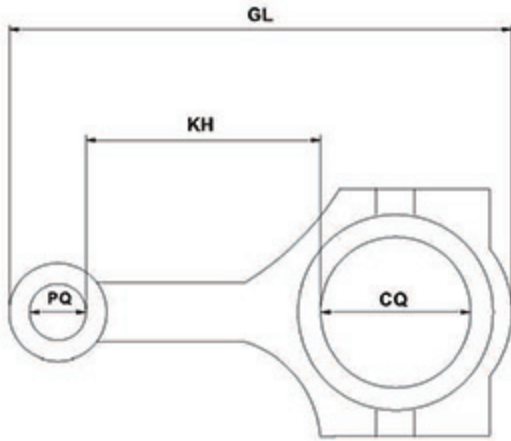
ORJINAL NO

B311

PROTON NO

PR 200488

ORJINAL NO



KH 62.60 +/-2

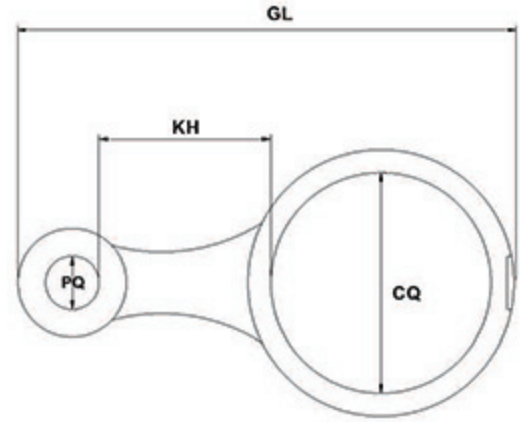
GL 133.32

CQ 40.00 +/-2

PQ 15.00

TEKNİK RESİM
MECHANICAL DRAWING

BİEL ÖLÇÜLERİ
CONNECTING DIMENSIONS



KH 48.65 +/-2

GL 163.34

CQ 60.00 +/-2

PQ 15.00

TEKNİK RESİM
MECHANICAL DRAWING

BİEL ÖLÇÜLERİ
CONNECTING DIMENSIONS

Connecting Rod

PR
METAL



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BOCK

PROTON NO

PR 200498

ORJINAL NO

B324

PROTON NO

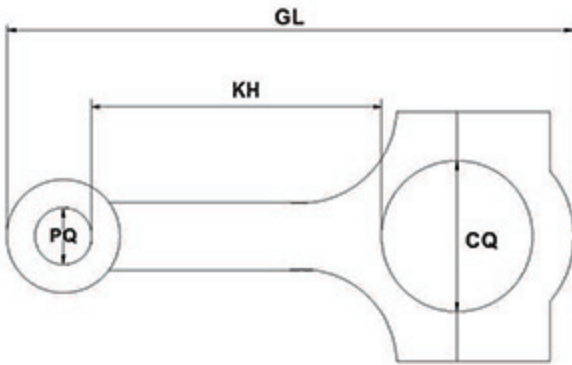
PR 502120

ORJINAL NO

-



TEKNİK RESİM
MECHANICAL DRAWING

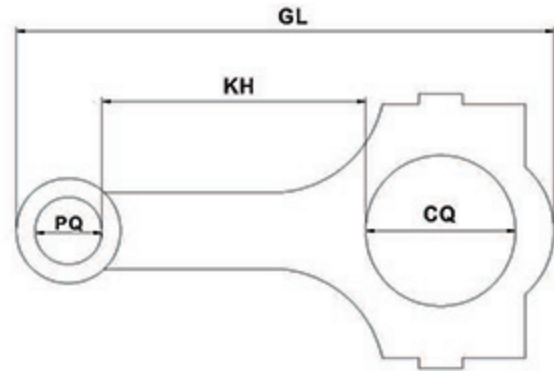


KH 76.85 +/-2

GL 151.00

CQ 40.00 +/-2

PQ 15.00



KH 88.17 +/-2

GL 172.71

CQ 45.00 +/-2

PQ 20.00

BİEL ÖLÇÜLERİ
CONNECTING DIMENSIONS

PROTON
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Connecting Rod

PROTON

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CARRIER



PR
METAL

PROTON NO

PR 400110

ORJINAL NO

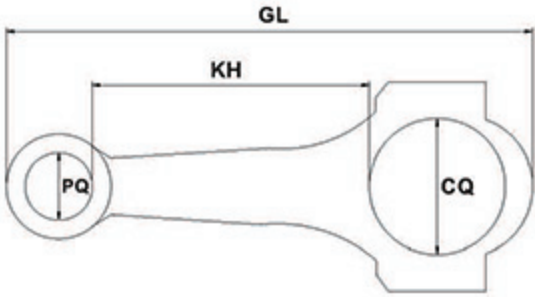
06EA500723

PROTON NO

PR 400120

ORJINAL NO

06EA505674



KH 91.00 +/-2

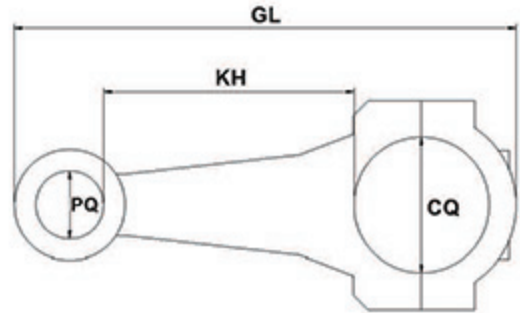
GL 172.20

CQ 44.40 +/-2

PQ 22.22

TEKNİK RESİM
MECHANICAL DRAWING

BİEL ÖLÇÜLERİ
CONNECTING DIMENSIONS



KH 81.50 +/-2

GL 162.52

CQ 44.40 +/-2

PQ 22.22

TEKNİK RESİM
MECHANICAL DRAWING

BİEL ÖLÇÜLERİ
CONNECTING DIMENSIONS

Connecting Rod

PR
METAL



PROTON

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COPELAND

PROTON NO

PR 300508

ORJINAL NO

8007199

PROTON NO

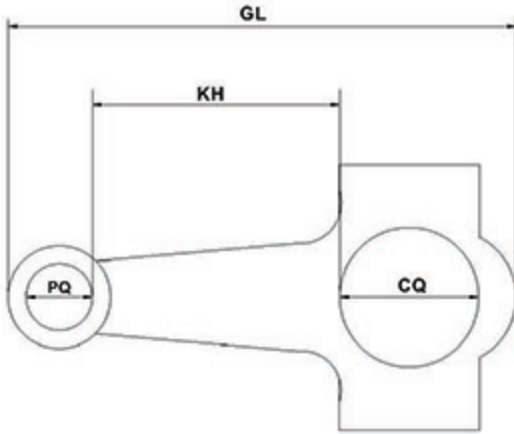
PR 300555

ORJINAL NO

8030699



TEKNİK RESİM
MECHANICAL DRAWING



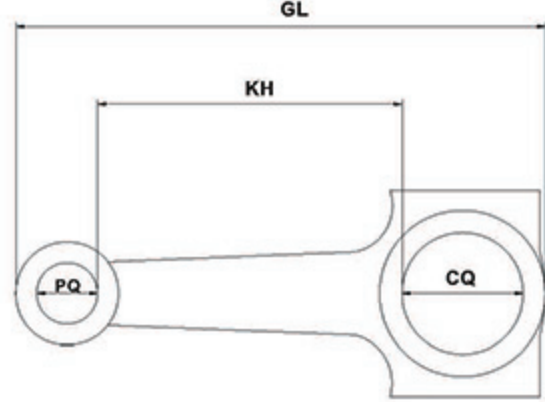
KH 82.00 +/-2

GL 160.75

CQ 44.00 +/-2

PQ 19.05

TEKNİK RESİM
MECHANICAL DRAWING



KH 95.50 +/-2

GL 166.80

CQ 38.00 +/-2

PQ 19.05

BİEL ÖLÇÜLERİ
CONNECTING DIMENSIONS

BİEL ÖLÇÜLERİ
CONNECTING DIMENSIONS

Connecting Rod

PROTON
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PROTON

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COPELAND



PR
METAL

PROTON NO

PR 300565

ORJINAL NO

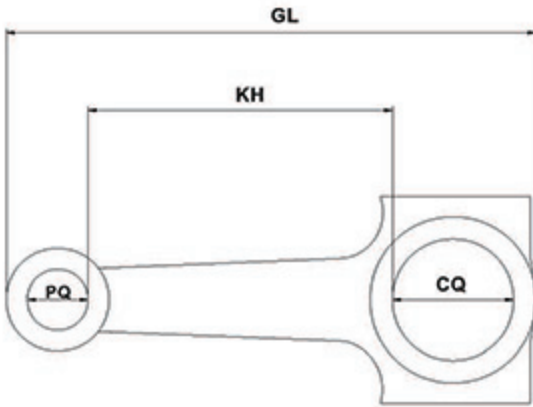
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PROTON NO

PR 300585

ORJINAL NO

6707581



KH 92.30 +/-2

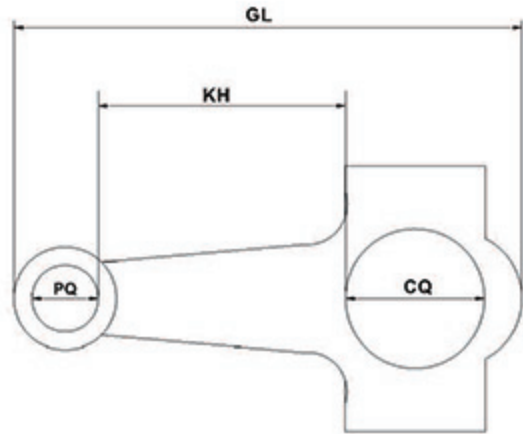
GL 171.00

CQ 44.40 +/-2

PQ 19.05

TEKNİK RESİM
MECHANICAL DRAWING

BİEL ÖLÇÜLERİ
CONNECTING DIMENSIONS



KH 71.30 +/-2

GL 145.00

CQ 40.00 +/-2

PQ 19.05

TEKNİK RESİM
MECHANICAL DRAWING

BİEL ÖLÇÜLERİ
CONNECTING DIMENSIONS

Connecting Rod

PR
METAL



PROTON

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COPELAND

PROTON NO

PR 200418

ORJINAL NO

0025

PROTON NO

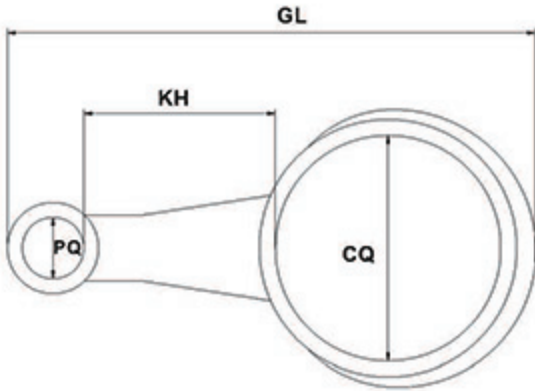
PR 200428

ORJINAL NO

0024



TEKNİK RESİM
MECHANICAL DRAWING



BİEL ÖLÇÜLERİ
CONNECTING DIMENSIONS

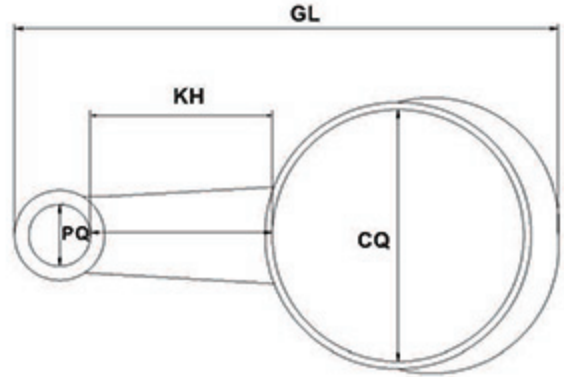
KH 59.50 +/-2

GL 165

CQ 70.00 +/-2

PQ 19.05

TEKNİK RESİM
MECHANICAL DRAWING



BİEL ÖLÇÜLERİ
CONNECTING DIMENSIONS

KH 56.34 +/-2

GL 168.50

CQ 78.00 +/-2

PQ 19.05

PROTON
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Connecting Rod

PROTON

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DORIN



PR
METAL

PROTON NO

PR 200438

ORJINAL NO

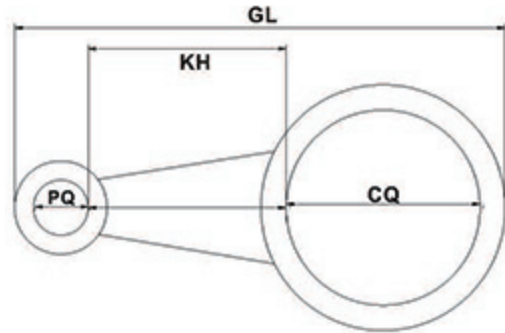
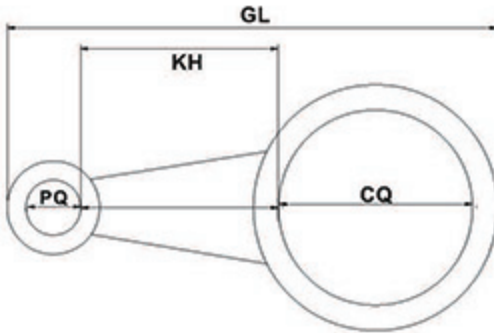
18

PROTON NO

PR 200439

ORJINAL NO

18



KH 65.40 +/-2

GL 162.50

CQ 68.00 +/-2

PQ 18.00

KH 65.40 +/-2

GL 162.50

CQ 67.50 +/-2

PQ 18.00

TEKNİK RESİM
MECHANICAL DRAWING

BİEL ÖLÇÜLERİ
CONNECTING DIMENSIONS

TEKNİK RESİM
MECHANICAL DRAWING

BİEL ÖLÇÜLERİ
CONNECTING DIMENSIONS

Connecting Rod

PR
METAL



PROTON

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DORIN

PROTON NO

PR 200448

ORJINAL NO

20

PROTON NO

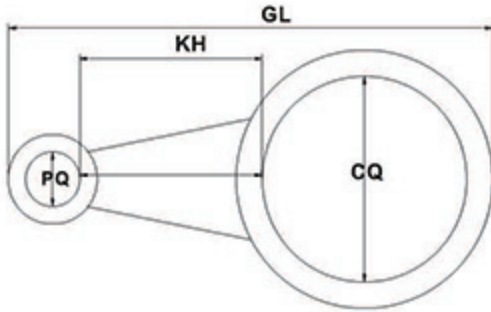
PR 200449

ORJINAL NO

20



TEKNİK RESİM
MECHANICAL DRAWING



BİEL ÖLÇÜLERİ
CONNECTING DIMENSIONS

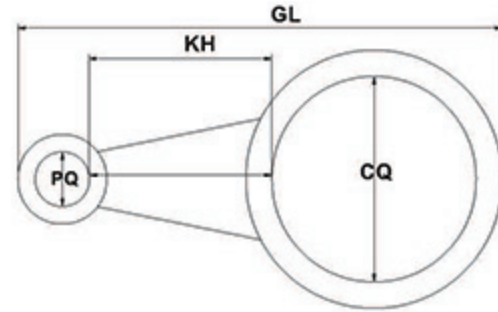
KH 60.80 +/-2

GL 160.88

CQ 67.50 +/-2

PQ 18.00

TEKNİK RESİM
MECHANICAL DRAWING



BİEL ÖLÇÜLERİ
CONNECTING DIMENSIONS

KH 60.80 +/-2

GL 160.88

CQ 68.00 +/-2

PQ 18.00

Connecting Rod

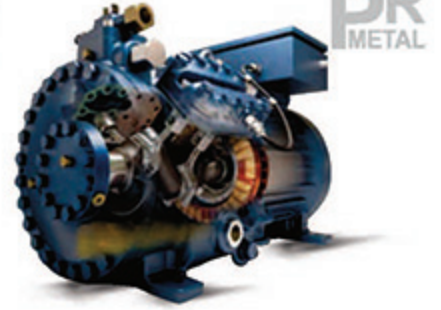
PROTON
METAL DÖKÜM TALAŞLI İMALAT SAN. VE TİC.LTD.ŞTİ.

PROTON

METAL DÖKÜM TALAŞLI İMALAT SAN. VE TİC.LTD.ŞTİ.

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DORIN



PR
METAL

PROTON NO

PR 200484

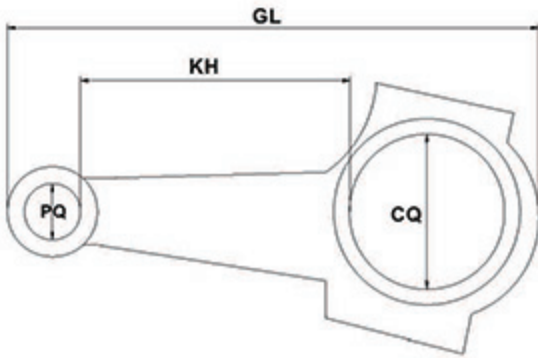
ORJINAL NO

PROTON NO

PR 200416

ORJINAL NO

16



KH 86.50

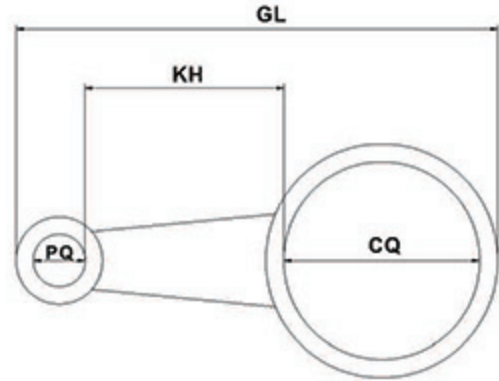
GL 180.00

CQ 55.00

PQ 22.00

TEKNİK RESİM
MECHANICAL DRAWING

BİEL ÖLÇÜLERİ
CONNECTING DIMENSIONS



KH 69.00 +/-2

GL 165.10

CQ 68.00 +/-2

PQ 18.00

TEKNİK RESİM
MECHANICAL DRAWING

BİEL ÖLÇÜLERİ
CONNECTING DIMENSIONS

Connecting Rod



DORIN

PROTON NO

PR 200468

ORJINAL NO

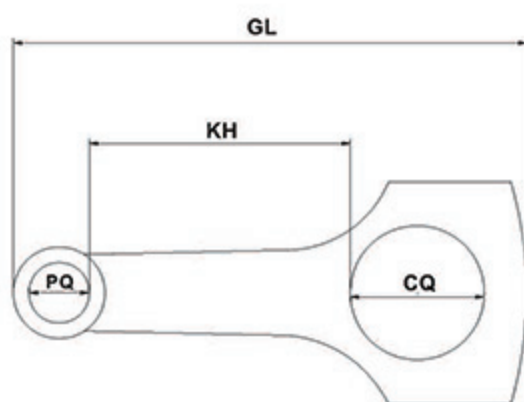
25

PROTON NO

PR 200469

ORJINAL NO

67

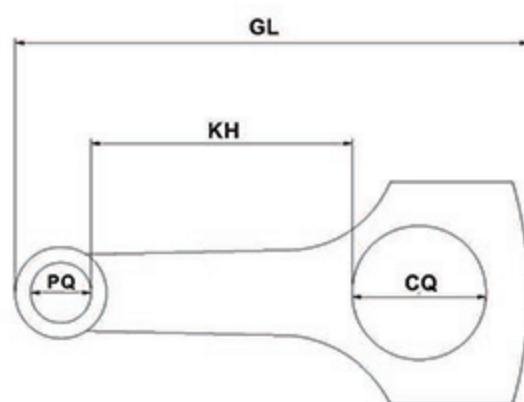
TEKNİK RESİM
MECHANICAL DRAWINGBİEL ÖLÇÜLERİ
CONNECTING DIMENSIONS

KH 78.00 +/-2

GL 154.00

CQ 40.00 +/-2

PQ 18.00

TEKNİK RESİM
MECHANICAL DRAWINGBİEL ÖLÇÜLERİ
CONNECTING DIMENSIONS

KH 78.00 +/-2

GL 148.50

CQ 40.00 +/-2

PQ 18.00

PROTON

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DORIN



PR
METAL

PROTON NO

PR 200486

ORJINAL NO

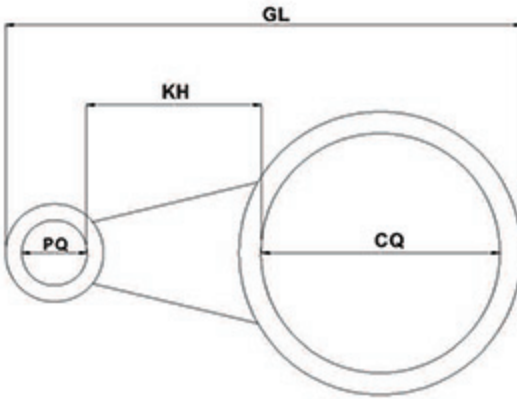
86

PROTON NO

PR 200476

ORJINAL NO

76



KH 51.00 +/-2

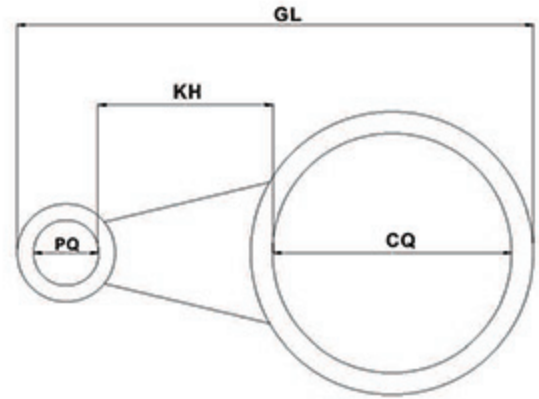
GL 152.20

CQ 70.00 +/-2

PQ 18.00

TEKNİK RESİM
MECHANICAL DRAWING

BİEL ÖLÇÜLERİ
CONNECTING DIMENSIONS



KH 58.00

GL 153.50

CQ 66.00

PQ 18.00

TEKNİK RESİM
MECHANICAL DRAWING

BİEL ÖLÇÜLERİ
CONNECTING DIMENSIONS

Connecting Rod

PR
METAL



PROTON

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DORIN

PROTON NO

PR 200490

ORJINAL NO

74

PROTON NO

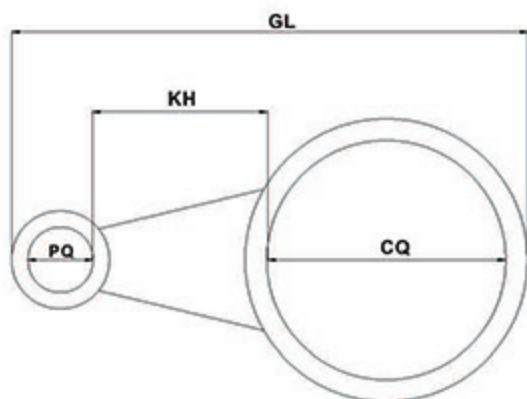
PR 200497

ORJINAL NO

97



TEKNİK RESİM
MECHANICAL DRAWING



BİEL ÖLÇÜLERİ
CONNECTING DIMENSIONS

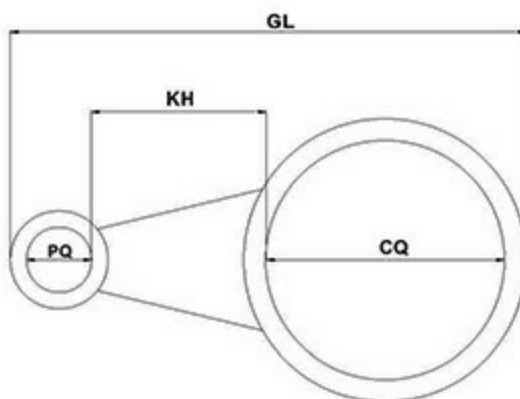
KH 58.15

GL 155.50

CQ 68.00

PQ 18.00

TEKNİK RESİM
MECHANICAL DRAWING



BİEL ÖLÇÜLERİ
CONNECTING DIMENSIONS

KH 43.15

GL 140.00

CQ 66.00

PQ 18.00

PROTON
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Connecting Rod

PROTON

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DORIN



PR
METAL

PROTON NO

PR 200472

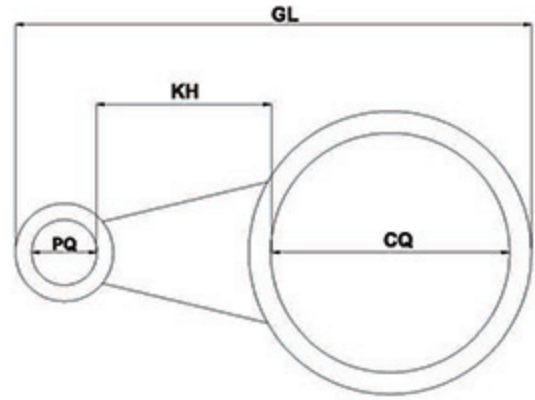
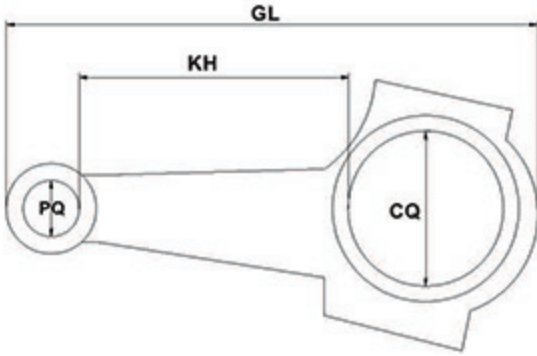
ORJINAL NO

PROTON NO

PR 200474

ORJINAL NO

73



KH 86.70 +/-2

GL 167.50

CQ 50.00 +/-2

PQ 18.00

TEKNİK RESİM
MECHANICAL DRAWING

BİEL ÖLÇÜLERİ
CONNECTING DIMENSIONS

KH 48.00 +/-2

GL 141.80

CQ 66.00 +/-2

PQ 18.00

TEKNİK RESİM
MECHANICAL DRAWING

BİEL ÖLÇÜLERİ
CONNECTING DIMENSIONS

Connecting Rod



DORIN

PROTON NO

PR 200478

ORJINAL NO

15

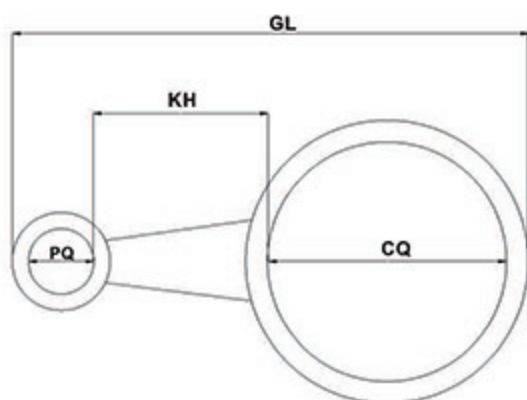
PROTON NO

PR 200480

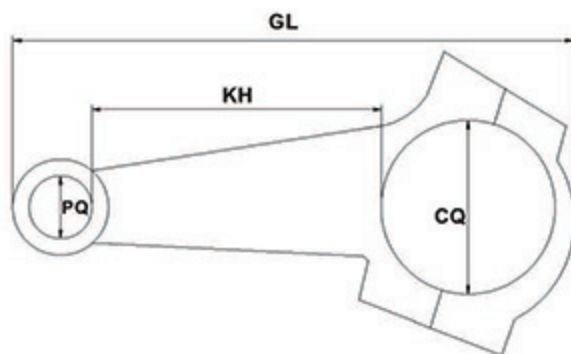
ORJINAL NO



TEKNİK RESİM
MECHANICAL DRAWING



TEKNİK RESİM
MECHANICAL DRAWING



BİEL ÖLÇÜLERİ
CONNECTING DIMENSIONS

KH 49.00 +/-2

GL 136.50

CQ 60.00 +/-2

PQ 18.00

BİEL ÖLÇÜLERİ
CONNECTING DIMENSIONS

KH 83.20 +/-2

GL 164.00

CQ 50.00 +/-2

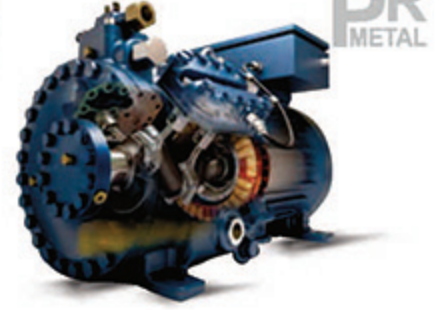
PQ 18.00

PROTON

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DORIN



PR
METAL

PROTON NO

PR 200470

ORJINAL NO

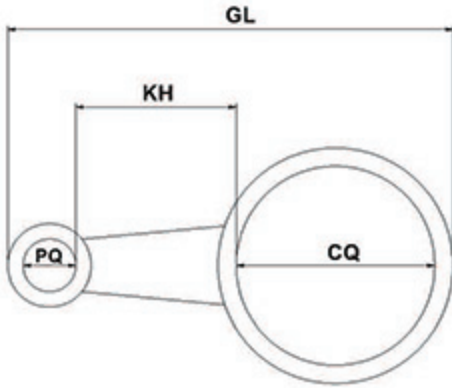
8

PROTON NO

PR 200471

ORJINAL NO

8



KH 55.00 +/-2

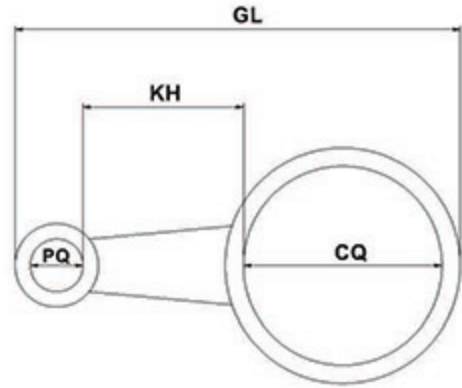
GL 151.90

CQ 68.00 +/-2

PQ 18.00

TEKNİK RESİM
MECHANICAL DRAWING

BİEL ÖLÇÜLERİ
CONNECTING DIMENSIONS



KH 55.00 +/-2

GL 151.90

CQ 70.00 +/-2

PQ 18.00

Connecting Rod

PR
METAL



PROTON

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FRASCOLD

PROTON NO

PR 300247

ORJINAL NO

S247

PROTON NO

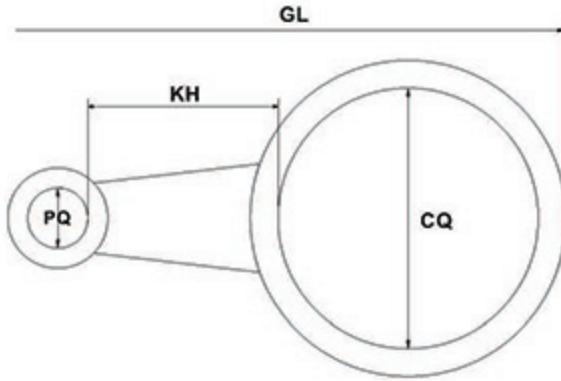
PR 300244

ORJINAL NO

S244



TEKNİK RESİM
MECHANICAL DRAWING



BİEL ÖLÇÜLERİ
CONNECTING DIMENSIONS

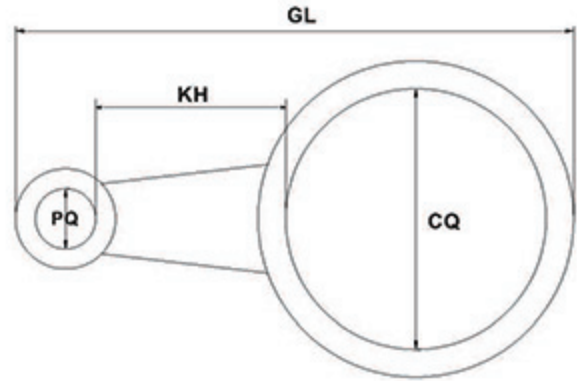
KH 55.00 +/-2

GL 148.00

CQ 68.00 +/-2

PQ 14.00

TEKNİK RESİM
MECHANICAL DRAWING



BİEL ÖLÇÜLERİ
CONNECTING DIMENSIONS

KH 57.00 +/-2

GL 150.00

CQ 68.00 +/-2

PQ 14.00

Connecting Rod

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pr 41

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PROTON NO

PR 300518

ORJINAL NO

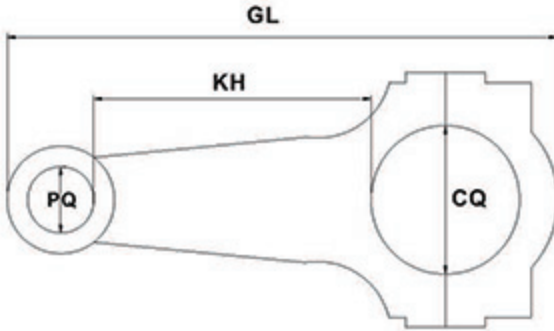
S65001003

PROTON NO

PR 300528

ORJINAL NO

S449



KH 84.00 +/-2

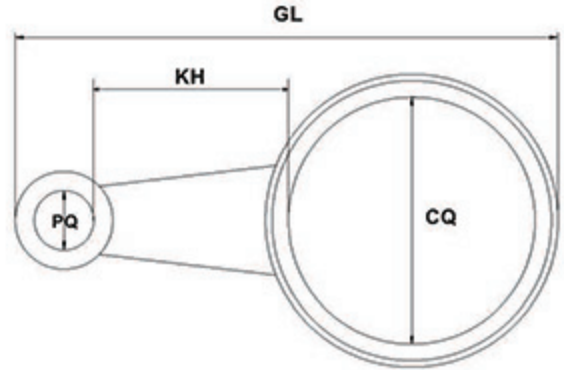
GL 164.00

CQ 45.00 +/-2

PQ 20.00

TEKNİK RESİM
MECHANICAL DRAWING

BİEL ÖLÇÜLERİ
CONNECTING DIMENSIONS



KH 59.30 +/-2

GL 165.00

CQ 75.00 +/-2

PQ 18.00

TEKNİK RESİM
MECHANICAL DRAWING

BİEL ÖLÇÜLERİ
CONNECTING DIMENSIONS

Connecting Rod

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PROTON NO

PR 300538

ORJINAL NO

S402

PROTON NO

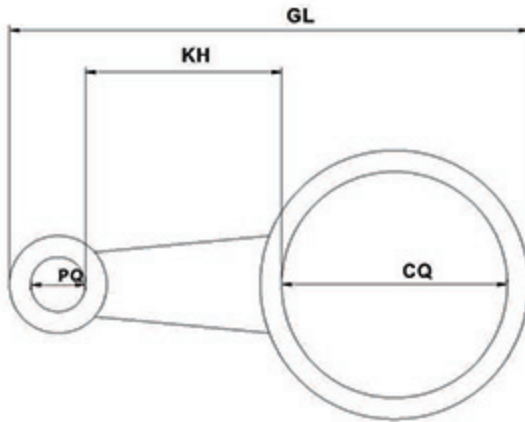
PR 300548

ORJINAL NO

S403



TEKNİK RESİM
MECHANICAL DRAWING



KH 50.50 +/-2

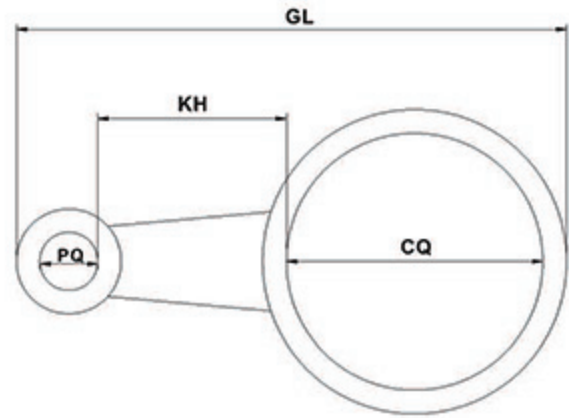
GL 133.17

CQ 58.00 +/-2

PQ 14.00

BİEL ÖLÇÜLERİ
CONNECTING DIMENSIONS

TEKNİK RESİM
MECHANICAL DRAWING



KH 45.65 +/-2

GL 132.30

CQ 62.00 +/-2

PQ 14.00

BİEL ÖLÇÜLERİ
CONNECTING DIMENSIONS

Connecting Rod

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pr 43

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PROTON NO

PR 300549

ORJINAL NO

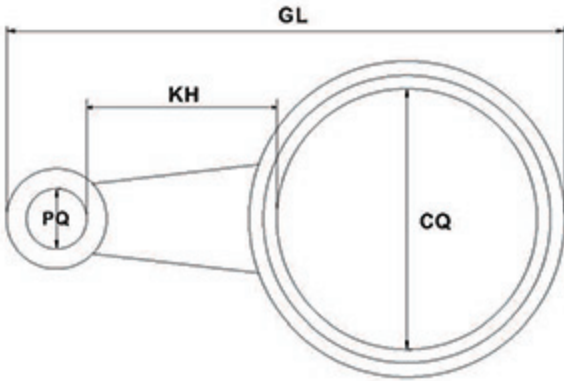
S445

PROTON NO

PR 300448

ORJINAL NO

S448



KH 57.00 +/-2

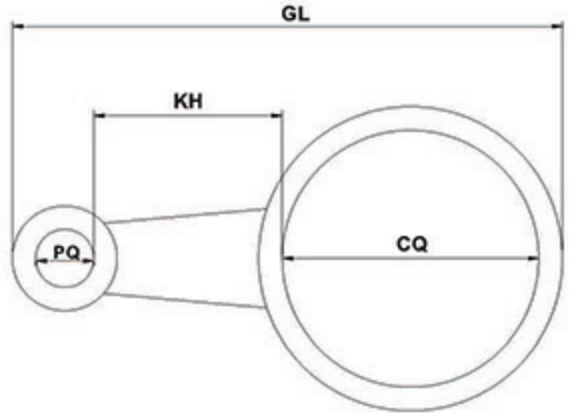
GL 166.20

CQ 78.00 +/-2

PQ 18.00

TEKNİK RESİM
MECHANICAL DRAWING

BİEL ÖLÇÜLERİ
CONNECTING DIMENSIONS



KH 69.00 +/-2

GL 170.00

CQ 75.00 +/-2

PQ 14.00

TEKNİK RESİM
MECHANICAL DRAWING

BİEL ÖLÇÜLERİ
CONNECTING DIMENSIONS

Connecting Rod

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REFCOMP

PROTON NO

PR 502430

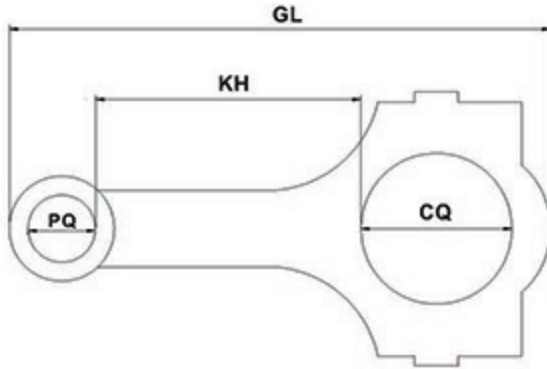
ORJINAL NO

PROTON NO

ORJINAL NO



TEKNİK RESİM
MECHANICAL DRAWING



BİEL ÖLÇÜLERİ
CONNECTING DIMENSIONS

KH 81.00 +/-2

GL 162.15

CQ 45.00 +/-2

PQ 20.00

TEKNİK RESİM
MECHANICAL DRAWING

BİEL ÖLÇÜLERİ
CONNECTING DIMENSIONS

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Connecting Rod

pr 45

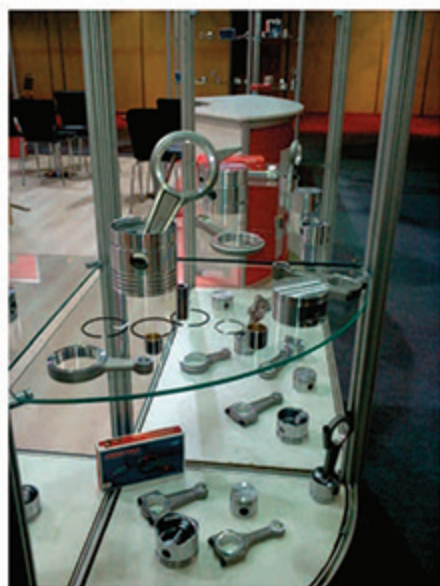
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T.C.
TÜRK PATENT ENSTİTÜSÜ

MARKA TESCİL BELGESİ

Marka No : 2007 02068 - Ticaret - Hizmet

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Marka Sahibi : PROTON METAL DÖKÜM TALAŞLI İMALATI
SANAYİ VE TİCARET LİMİTED ŞİRKETİ
TÜRKİYE CUMHURİYETİ
Hamidiye Mah. Dökümcüler San. Sit. Efediyarı Sk.
No.7 KONYA

Emtiası : 06 , 40
İlişiktir.

Markaların Korunması Hakkında 556 Sayılı Kanun Hükmünde
Kararınameye göre 22/01/2007 tarihinden itibaren ON YIL müddetle
tescil edilmiştir.



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Enstitü Başkanı a.
Markalar Dairesi Başkanı

TÜRK PATENT [●] ENSTİTÜSÜ



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