
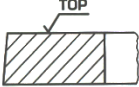
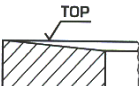
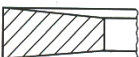
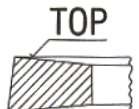

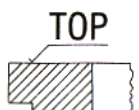

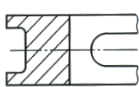
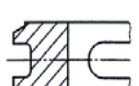


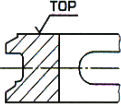
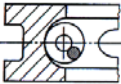
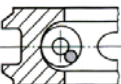
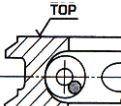
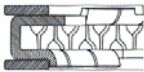

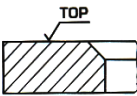
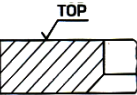
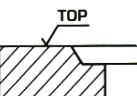
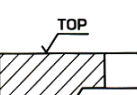
INTRODUCTION

qpr Piston rings are being manufactured under Quality System ISO 9002. Quality is main target for **qpr** always. New technologies are being used in checking material and sizes. Quality is assured at every stage from the raw material to after sale service. The customer satisfaction is in the center in our production mentality.

The performance of piston rings in material and the other specifications is based on the original equipment of engine manufacturers (O.E.M.). We ensures the high performance for **qpr** rings by using modern casting, heat treatment, machining, surface coating and quality control facilities.

PISTON RING TYPES

Cross Sections of Piston Ring	Types and Codes of Piston Rings	Description of Piston Rings
	512	Plain Compression Ring
	522	Tapered Ring
	532	Half-Keystone Ring
	533	Keystone Ring
	536	Taper-Faced Keystone Ring
	537	Taper-Faced Half-Keystone Ring
	542	Napier Ring
	543	Taper-Faced Napier Ring
	552	Slotted Oil Control Ring
	553	Bevel-Edged Oil Control Ring

Cross Sections of Piston Ring	Types and Codes of Piston Rings	Description of Piston Rings
	554	Double Bevelled Oil Control Ring
	562	Slotted Oil Control Ring With Coil Spring
	563	Bevel-Edged Oil Control Ring With Coil Spring
	564	Double Bevelled Oil Control Ring With Coil Spring
	610	Steel Rail Three Pieces Oil Control Ring
	710	Slotted Oil Control Ring With Leaf Spring
	IF	Inside Bevel (Top Side)
	IFU	Inside Bevel (Bottom Side)
	IW	Inside Step (Top Side)
	IWU	Inside Step (Bottom Side)

PISTON RING MATERIAL SPECIFICATIONS

Standard (Non Heat-Treated Grey Cast Iron)

CHEMICAL COMPOSITION (%)

C	:	3,5 – 3,9	Si	:	2,4 – 3,1
Mn	:	0,5 – 0,9	P	:	0,3 – 0,6
S	:	< 0,15	Cr	:	< 0,4
Cu	:	< 0,5			

Other elements may present as impurities.

MICROSTRUCTURE

Graphite	:	Predominantly flaky and uniformly distributed
Matrix	:	Pearlite, Ferrite not exceeding 5%
Phosphide Eutectic	:	Predominantly non-continuous network

MECHANICAL PROPERTIES

Hardness	:	96 – 106 HRB (210 – 290 HB)
Bending Strength	:	min 350 N/mm ²
Modulus of elasticity:		85000 – 115000 N/mm ²

IKA / (Heat Treated Grey Cast Iron)

CHEMICAL COMPOSITION (%)

C	:	3,1 – 3,7	Si	:	2,3 – 3,1
Mn	:	0,5 – 0,8	P	:	< 0,4
S	:	< 0,1	Cr	:	0,3 – 0,7
V	:	< 0,3	Mo	:	0,7 – 1,2
Ni	:	0,4 – 0,9	Cu	:	0,7 – 1,3

Other elements may present as impurities.

MICROSTRUCTURE

Graphite	:	Predominantly fine flaked
Matrix	:	Tempered martensite
Phosphide Eutectic	:	Predominantly non-continuous network

MECHANICAL PROPERTIES

Hardness	:	108 – 114 HRB (340 – 440 HB)
Bending Strength	:	min 500 N/mm ²
Modulus of elasticity:		100000 – 130000 N/mm ²

KV1 (Spheroidal Cast Iron)

CHEMICAL COMPOSITION (%)

C	:	3,7 – 4,2	Si	:	2,4 – 3,2
Mn	:	< 0,5	P	:	< 0,3
S	:	< 0,05	Cr	:	< 0,2
Mg	:	< 0,1			

Other elements may present as impurities.

MICRO STRUCTURE

Graphite	:	Predominantly Spheroidal
Matrix	:	Tempered martensite, isolated carbide particles are acceptable.

MECHANICAL PROPERTIES

Hardness	:	104 – 112 HRB (310 – 430 HB)
Bending Strength	:	min 1300 N/mm ²
Modulus of elasticity:		min 150000 N/mm ²

COATING

CR	Chrome Plated
MO	Molybdenum Plated
NT	Nitrited
P	Phosphated
FE	Ferroxided
SN	Tin-Plated
CU	Copper Plated