

METALLIC

PRECISE FUEL DYNAMICS FOR VERSATILE ENGINES

Comprehensive valve solutions
for new-age vehicles



PERFORM@CHANGE

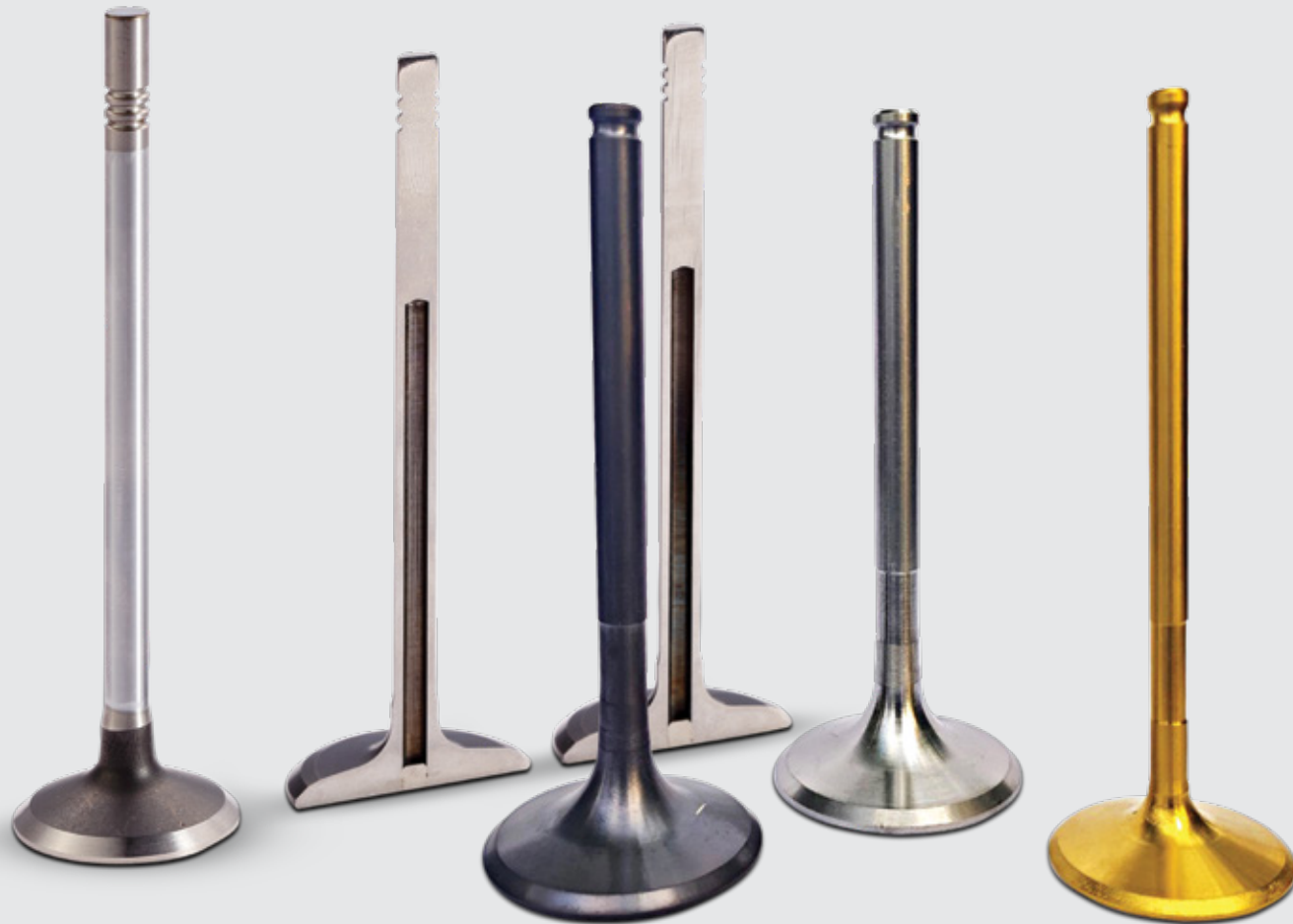


**TOUGH. FLEXIBLE.
LIGHTWEIGHT.
VALVES THAT ARE
A CLASS APART.**

**INTRODUCING OUR
UNIQUE VARIANTS**

Varroc is the most preferred supplier of engine valves in India today, catering across all automotive and non-automotive applications.

Also being a major global engine valve exporter, our division, including Durovalves, constitutes of two manufacturing plants and a state-of-the-art technical centre in India for customer support across the U.S, Europe, and Asia.



ICE-FLEX FUEL APPLICATION

BUILT FOR DUAL-FUEL FLEXIBILITY



Intake & Exhaust Valves with
Seat Deposit



Withstands Temperature
of up to 900°C



Improves Flexible Fuel Engine
Performance & Longevity



FEATURES

Intake Valve:

Bi-metal with austenitic (Ni-Cr steel alloys) & martensitic materials

Tip-end hardening & seat hard facing with wear-resistant cobalt base alloys

Soft nitriding all over the valve except tip end

Exhaust Valve:

Bi-metal with austenitic (Ni-Cr steel & super alloys) & martensitic materials

Tip-end hardening & seat hard facing with wear-resistant cobalt base alloys with high Cr

Soft nitriding all over the valve except seat & tip-end

TYPICAL APPLICATION

Intake Valve:

To control air fuel mixture flow inside the engine in 4W (PV & LCV), 3W & 2W application

Exhaust Valve:

To control exhaust emissions from the engine in 4W (PV & LCV), 3W & 2W application

TECHNICAL SPECIFICATIONS

Stem Diameter: 5.0 to 9.0mm

Head Diameter: 16.0 to 48.0mm

Overall Length: 75.0 to 140.0mm



INTAKE & EXHAUST VALVES FOR CNG APPLICATION IC ENGINES

POWERED BY SUPER-STRONG STEEL ALLOY



Enhanced Corrosion Resistance



Withstands Temperature of up to 900°C



CNG-Gasoline Engine Protection



FEATURES

Intake Valve:

Bi-metal with austenitic (Ni-Cr steel alloys) & martensitic materials

Tip-end hardening & seat hard facing with wear-resistant cobalt base alloys

Soft nitriding all over the valve except seat & tip-end

Exhaust Valve:

Bi-metal with austenitic (Ni-Cr steel & super alloys) & martensitic materials

Tip-end hardening & seat hard facing with wear-resistant cobalt base alloy with high Cr & Mo

Soft nitriding all over the valve except seat & tip-end

TYPICAL APPLICATION

Intake Valve:

To control air-fuel mixture flow inside the engine in 4W (PV & LCV) & 3W application

Exhaust Valve:

To control exhaust emissions from the engine in 4W (PV & LCV) & 3W application

TECHNICAL SPECIFICATIONS

Stem Diameter: 5.0 to 9.0mm

Head Diameter: 16.0 to 48.0mm

Overall Length: 75.0 to 140.0mm



INTAKE & EXHAUST VALVES FOR BI-FUEL APPLICATION IC ENGINES

FIGHTS EXTREME WEAR & TEAR



Enhanced Adhesive
Wear Resistance



Withstands Temperature
of up to 900°C



CNG-Gasoline Engine
Protection



Improves Engine
Performance & Longevity



FEATURES

Intake Valve:

Bi-metal with austenitic (Ni-Cr steel alloys) & martensitic materials

Tip-end hardening & seat hard facing with wear-resistant cobalt base alloys

Soft nitriding all over the valve except seat & tip-end

Exhaust Valve:

Bi-metal with austenitic (Ni-Cr steel & super alloys) & martensitic materials

Tip-end hardening & seat hard facing with wear-resistant cobalt base alloys with high Cr

Soft nitriding all over the valve except seat & tip-end

TYPICAL APPLICATION

Intake Valve:

To control air fuel mixture flow inside the engine in 4W (PV & LCV) & 3W application

Exhaust Valve:

To control exhaust emissions from the engine in 4W (PV & LCV) & 3W application

TECHNICAL SPECIFICATIONS

Stem Diameter: 5.0 to 9.0mm

Head Diameter: 16.0 to 48.0mm

Overall Length: 75.0 to 140.0mm



HOLLOW STEM VALVES

MINIMAL WEIGHT. MAXIMUM POWER.



7 to 8% Lighter Steel



Withstands Extreme Conditions



Guarantees Heavy Duty Engine Performance



Highest RPM Operational Efficiency

FEATURES

Intake Valve:

Bimetal with hollow stem

TYPICAL APPLICATION

Intake Valve:

To control air fuel mixture flow inside the engine in high performance 4W & 2W

TECHNICAL SPECIFICATIONS

Stem Diameter: 5.0 to 8.0mm

Head Diameter: 16.0 to 40.0mm

Overall Length: 75.0 to 120.0mm



SODIUM-FILLED VALVES

ULTRA-COOL UNDER PRESSURE



Internally Cooled
Sodium-filled Valves



Withstands Up To 960°C
Exhaust Gas Temperature



Superior Engine
Performance



Superalloy Configuration

FEATURES

Exhaust Valve:

Bi-metal with austenitic (Ni-Cr steel & super alloys) & martensitic materials

Sodium-filled stem to resist extreme heat

Tip-end hardening & seat hard facing with wear-resistant cobalt base alloys with high Cr

Soft nitriding all over the valve except seat & tip-end or chrome plating on stem area

TYPICAL APPLICATION

Exhaust Valve:

To control exhaust emissions from the engine in high-performance 4W & 2W

TECHNICAL SPECIFICATIONS

Stem Diameter: 5.0 to 8.0mm

Head Diameter: 16.0 to 40.0mm

Overall Length: 75.0 to 120.0mm



TITANIUM VALVES

LIGHTEST METAL FOR PEAK PERFORMANCE



Up To 45%
Lighter
Titanium Body



Withstands
High Speed &
Tough Weather



High RPM
Operational
Efficiency



Reliable
Multi-Layer
Coating



Reduces Inertial
Frictional
Losses

FEATURES

Intake Valve:

Mono-metal with titanium alloys or bi-metal hollow stem

Surface coatings preferable like Cr-N, Ti-N, Al-Ti-N, DLC, etc. for wear resistance

TYPICAL APPLICATION

Intake Valve:

To control air fuel mixture flow inside the engine in 4W high performance engine & 2W racing bikes

TECHNICAL SPECIFICATIONS

Stem Diameter: 5.0 to 7.0mm

Head Diameter: 16.0 to 40.0mm

Overall Length: 75.0 to 120.0mm

Multilayer Coating like Cr-N, Ti-N. Al-Ti-N, DLC etc.

THERMOMETRIC SODIUM FILLED VALVE

WITH TEMPERATURE MAPPING TECHNOLOGY



Temperature Mapping
Technology



Advanced Emission
Control



Superior Engine
Performance

FEATURES

Exhaust Valve:

Bi-metal, low-alloy steel with through hardening has more than 55 HRC Min hardness

These valves are sodium-filled

TYPICAL APPLICATION

Exhaust Valve:

To control exhaust emissions from the engine in high-performance 4W

Thermometric valves are used to map the engine temperature of sodium-filled valves

TECHNICAL SPECIFICATIONS

Stem Diameter: 5.0 to 8.0mm

Head Diameter: 16.0 to 40.0mm

Overall Length: 75.0 to 120.0mm

Body Hardness: 55 HRC Min



CAPABILITIES



Product Design and Development based on engine boundary conditions



Sodium Filled Valves manufacturing facilities



Engine head rig testing facilities and Engine test bed with Dyno



Design and Development of Thermometric Sodium Filled Valves



Well equipped Metallography lab with SEM to analyze tested and failed parts



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