

# EMERGENCY SHUT OFF VALVE

## FOR EMERGENCY SERVICE TANK

## Foreword

Pishgam Energy Khavar has designed and manufactured emergency shut off valves and actuator since 2007 based on up to dated technical knowledge and standards, having professional academic staff. After joining Khorasan science and technology park, studying and developing of non-domestic samples continues, pinpointing limitations of foreign products, now PEKCO designs and manufactures optimized high quality products.

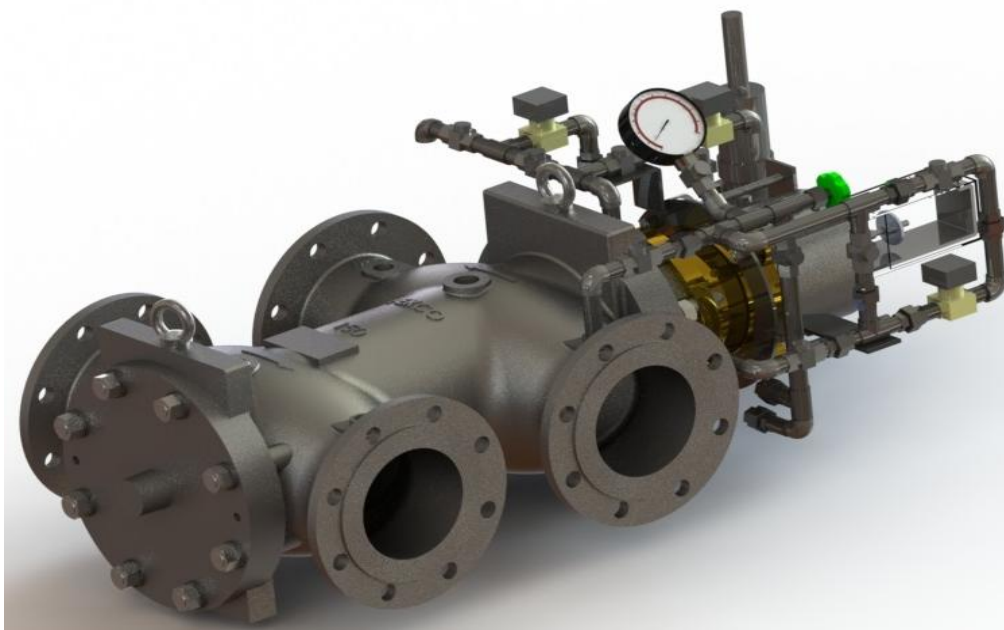


## Classification and Operating range

Emergency shut off valves are cut off devices suitable for use on water distribution network when high performance on isolating service tank after possible damage to water lines due to earthquake and low pressure drop are required.

The main specifications of these valves are:

- Ductile cast iron body with flanged coupling Acc.to Iso 7005
- Parts in contact with fluid made of stainless steel and bushings made of Phosphor-Bronze
- Soft elastomer seat for a better tightness
- Automatic operation by mechanical pilot or programmable logic controller
- Manual operation on site or from control room
- Permanent control of main line water quality by TDS, PH and Cl sensors
- Compatible with supervision control and data acquisition and earthquake early warning system



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## Reference Standards

- Din EN 1092-2: Flanges and their joints- part 2: cast iron flanges
- Din En 558: Face to face valve dimension
- Iso 1083: Ductile cast iron
- MSS-SP-55: Quality Standard for Steel Castings for Valves, Flanges, Fittings, and Other Piping Components
- ASTM A 276m: Standard Specification for Stainless Steel Bars and Shapes
- ASTM A 227m: Standard Specification for Steel Wire, Cold-Drawn for Mechanical Springs
- ISO 4633: Rubber seals Joint rings for water supply, drainage and sewerage pipelines
- Din 3476-1: Valves Requirements and tests -Part 1: Protection against corrosion by epoxy coating of powders (P) or liquid Varnishes (F)
- BS 6920: Suitability of non-metallic products for use in contact with Water intended for human consumption
- BS EN 736: Valves – Terminology
- Iso 5208: Industrial valves - Pressure testing of metallic valves
- INSO 3644: Industrial valves – Pressure testing of metallic valves
- API 598: Tight shut off test

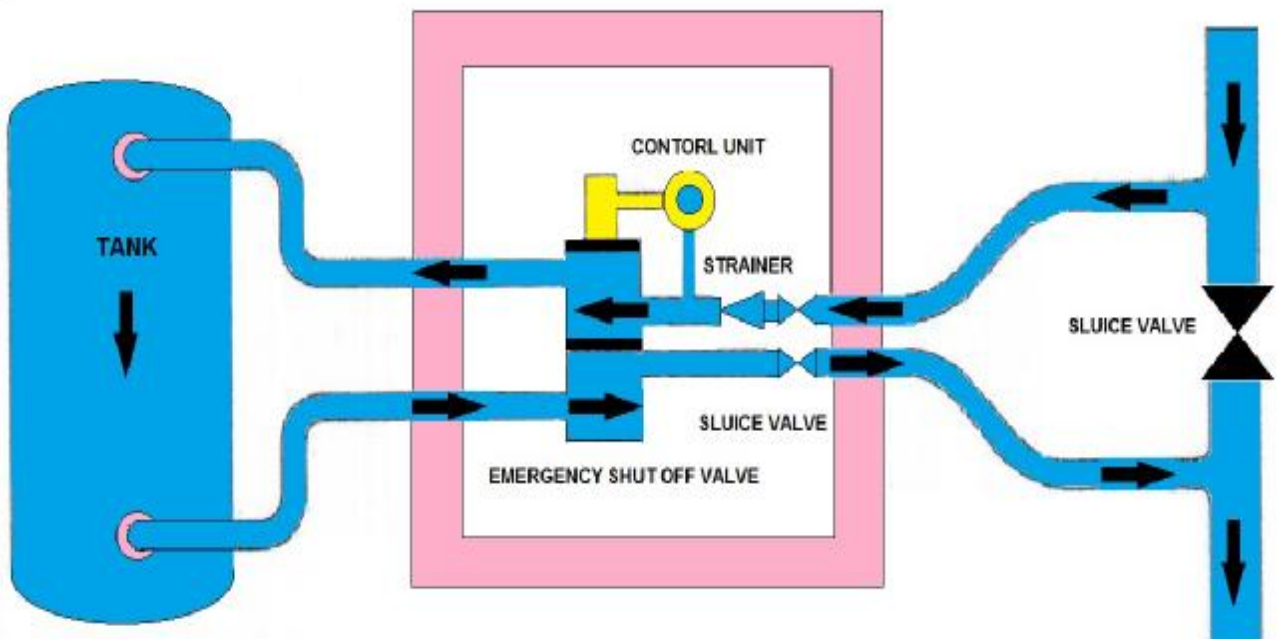
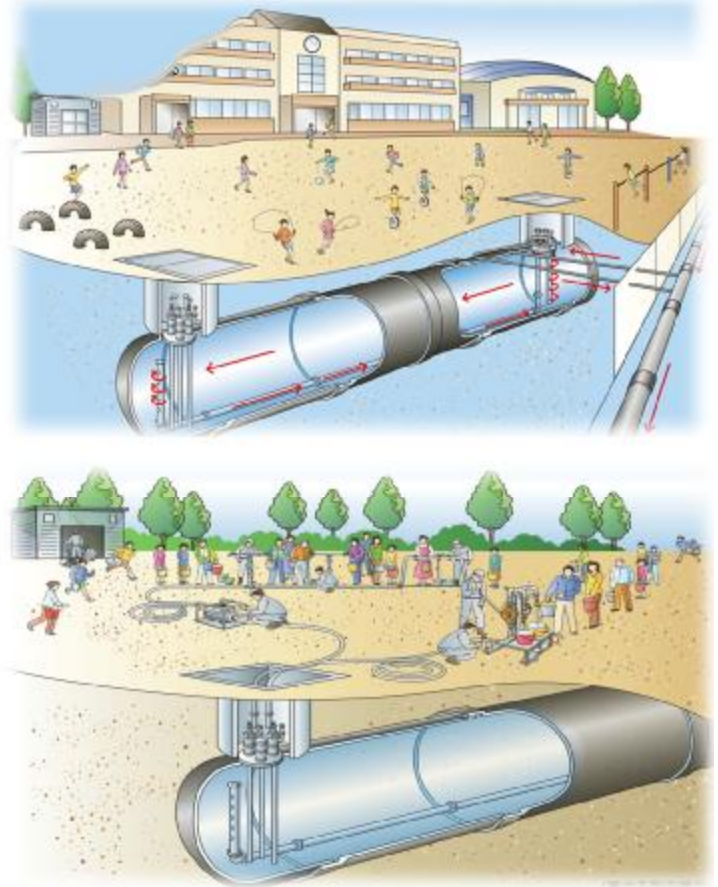
## Specification

- Nominal Diameter: 75, 100,150, 200, 250, 300 mm
- Face to Face dimension: Acc. to manufacture standard
- Maximum Operating pressure: 10 bar
- Maximum Flow Velocity: 3 m/s
- Fluid: Tap Water
- Shell test pressure: 17.5 bar
- External Painting: Epoxy Resin powder coating gray 150  $\mu m$
- Internal Painting: Epoxy Resin powder coating blue 300  $\mu m$

## EMERGENCY SHUT OFF VALVE

## Introduction

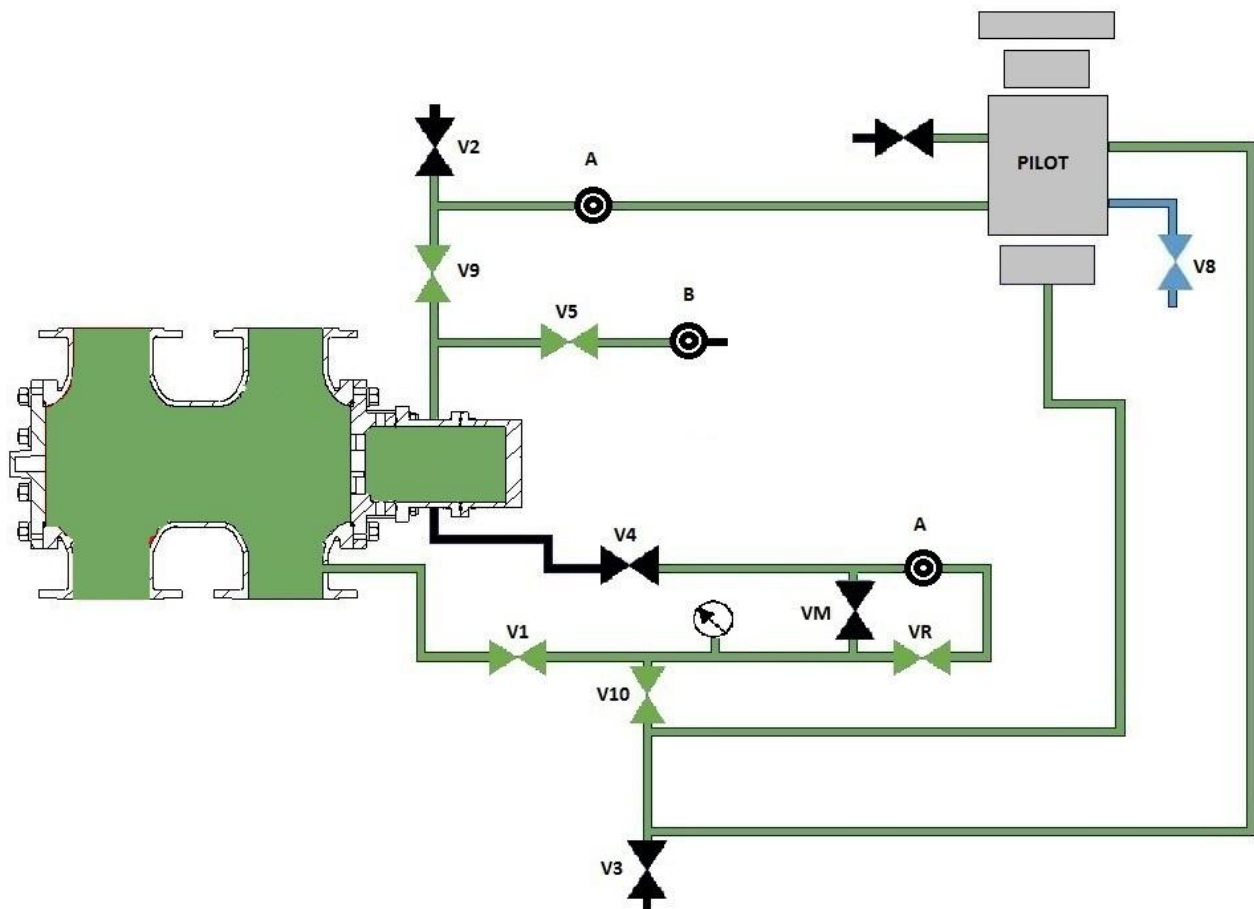
After earthquake fatal damages to main water lines are possible. Providing fresh drinking water by installing a safety shut off valve and an emergency service tank is assured. During normal operation water will be circulated in the tank and always will be fresh. After damage to main line or water quality factors decrease, shut off valve automatically detects that and isolate service tank. In the case water will bypass to the downstream line.



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## Process and Instrument Diagram



## Automatic & Manual Operation

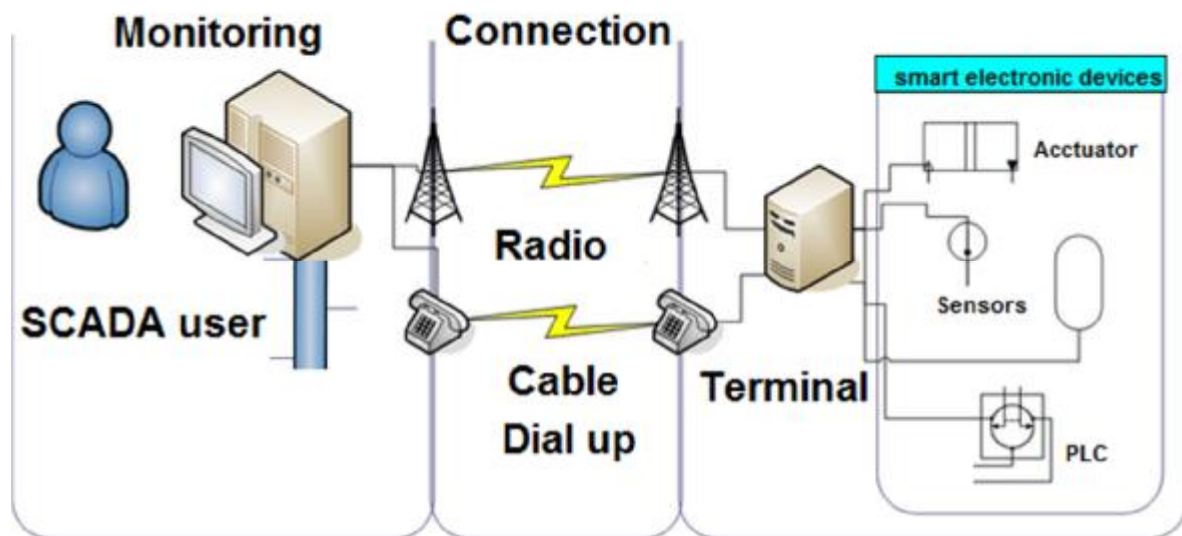
The valve can be controlled either by mechanical pilot or programmable logic controller by means of pressure transmitter, PH electrode, TDS sensor, etc. Values of these sensors can be transmitted to monitoring center assuring main line water quality. It is also compatible to SCADA and EEWs. Manual operation on site can be performed by instrumentation staff.

## Fail Safe Operation

The valve will be in close position in the event of pilot malfunction or feeding line failure without auxiliary power. This feature guaranties proper operation of the valve in all cases.

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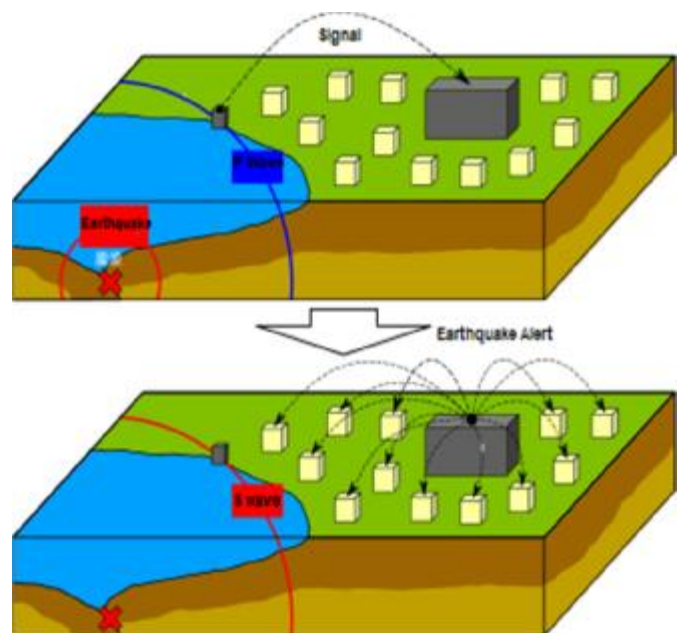
## SCADA



- Supervisory control and data acquisition system monitor and control data and assures main line functionality.

## EEWS

Earthquake early warning system detects earthquake P waves caused by earthquake and transmit signal to compatible devices. Due to higher velocity of electromagnetic waves, smart devices compatible with EEWS will perform proper action before shear waves cause damages.

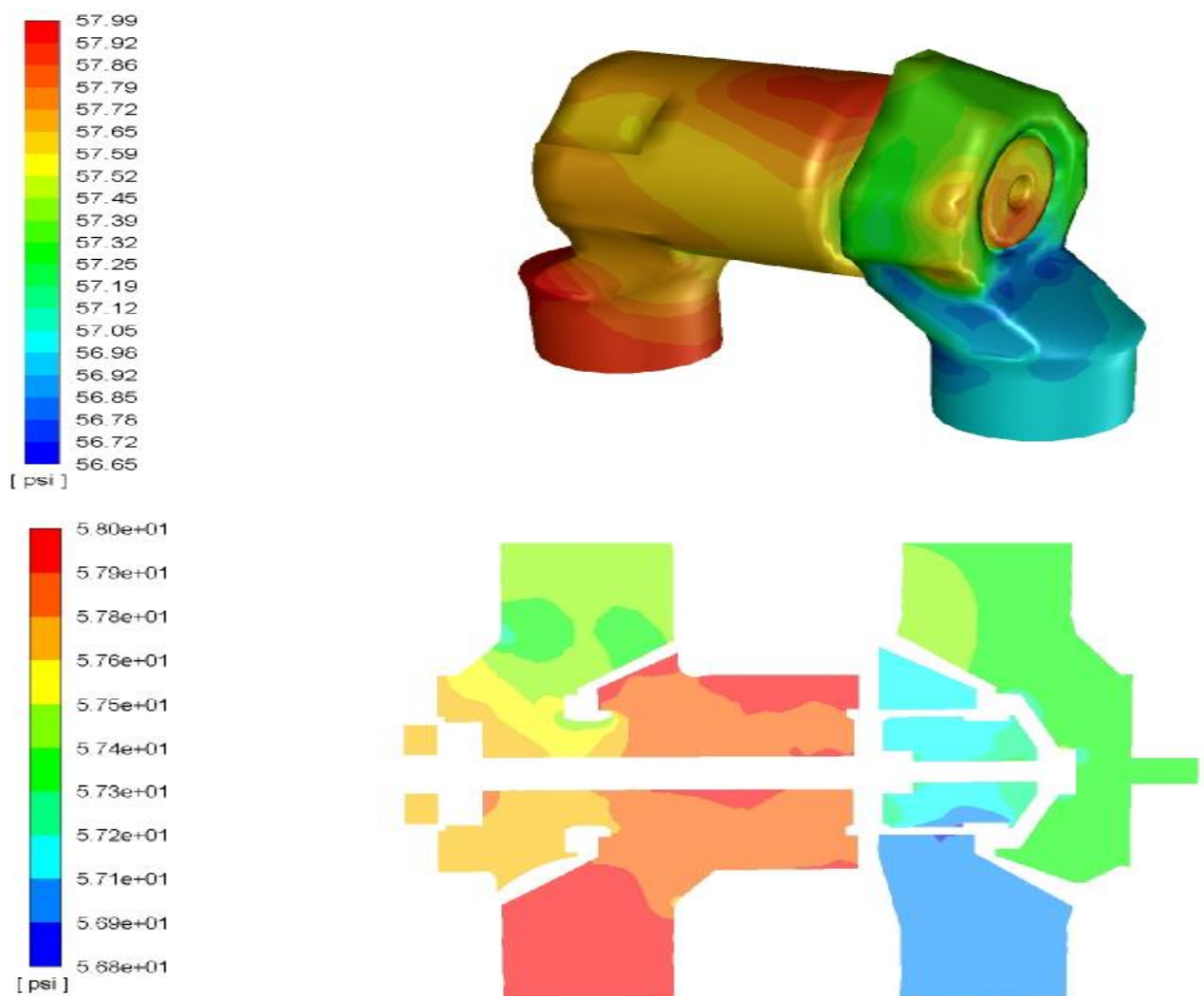


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## Low pressure drop

Flow calculations and functional tests show minimum pressure drop across the valve in normal and shut off position of the valve.

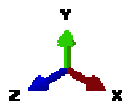
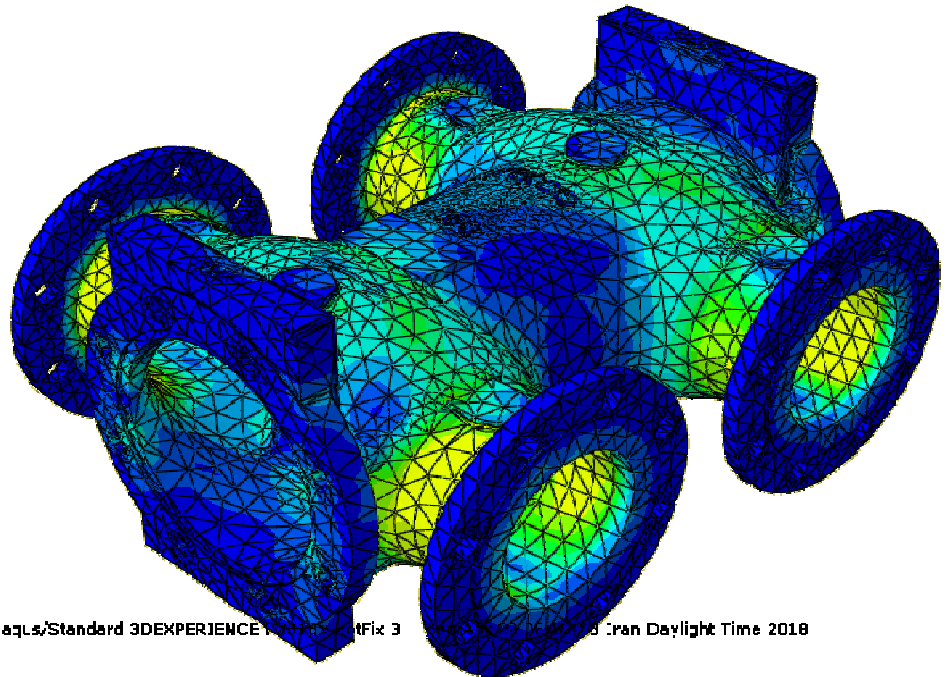
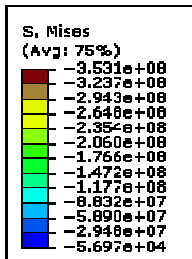
## Fluent Analyze



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# Finite Element Method Analyze



OCB Job-1.odb Abaq/Standard 3DEXPERIENCE CAE 2018-08-14 10:00:00 Iran Daylight Time 2018

Step Step-1  
 Increment 10; Step Time = 0.9250  
 Primary var: S, Mises  
 Deformed Var: L Deformation Scale Factor: +1.000e+00

# Pishgam Energy Khavar

[www.PEKCO.co](http://www.PEKCO.co)

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We reserve the right to change without  
Prior notice.

July 2018