

# FV520B

## Forged Steel — Technical Datasheet

Standard: AMS 5773E | Jiangsu Liangyi | www.jnmtforgedparts.com

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#### Standard

AMS 5773E

#### Tensile Strength (Rm)

925 – 1090 MPa

#### Min. Yield (Rp0.2)

800 MPa min

#### Brinell Hardness

274 – 341 HBW

#### Elongation (A)

15% min

#### Charpy Impact (RT)

55 J min

#### Corrosion Resistance

Comparable to 304 SS

#### Better Than

17-4PH (pitting & intergranular)

## 1. Material Overview

FV520B is a martensitic precipitation hardening stainless steel, hardened by low-temperature heat treatment. It delivers high performance in harsh operating environments with strict quality control on chemical composition and heat treatment processes according to AMS 5773E standards. Jiangsu Liangyi specialises in FV520B open die forgings and seamless rolled rings for steam and gas turbines, pumps, valve components and more.

<b>Superior corrosion resistance</b>	Comparable to 304 stainless steel – best choice for oil & gas industry components.
<b>Enhanced intergranular &amp; pitting resistance</b>	Better than 17-4PH – ideal for marine and aerospace applications.
<b>Excellent weldability</b>	Compatible with matching consumables – easy to process for custom forging parts.
<b>Optimal marine atmosphere performance</b>	Minimal rusting – suitable for marine and offshore components.
<b>High mechanical strength</b>	For high-pressure and high-temperature conditions – suitable for power generation equipment.

## 2. Chemical Composition (Max / Range %) — AMS 5773E

Element	Content	Element	Content
Carbon (C)	0.07 max	Molybdenum (Mo)	1.20 – 2.00
Chromium (Cr)	13.20 – 14.70	Phosphorus (P)	0.035 max
Manganese (Mn)	1.00 max	Niobium (Nb)	0.20 – 0.70
Nickel (Ni)	5.00 – 6.00	Sulfur (S)	0.025 max
Silicon (Si)	0.70 max	Copper (Cu)	1.20 – 2.00

## 3. Heat Treatment Process — AMS 5773E Compliant

Step 1 — Solution Treatment		
Temperature / Duration	Cooling Method	Purpose
Heat to 1050°C	Air cooling	Dissolves alloying elements into matrix; produces soft martensitic structure.

Step 2 — First Stage Precipitation Treatment		
Temperature / Duration	Cooling Method	Purpose
750°C x 2 hours	Air cooling	Conditions the martensite matrix and begins initial precipitation of strengthening phases.

Step 3 — Final Stage Precipitation Treatment		
Temperature / Duration	Cooling Method	Purpose
550°C x 2 hours	Air cooling	Precipitates fine strengthening phases; achieves final mechanical properties per AMS 5773E.

## 4. Room Temperature Mechanical Properties

All FV520B forged steel round bars are tested for mechanical properties at room temperature ( $23 \pm 5^\circ\text{C}$ , Longitudinal direction), with the following minimum requirements:

Property	Symbol	Value	Unit
Ultimate Tensile Strength	Rm	925 – 1090	MPa
Conventional Yield Strength	Rp0.2	800 min	MPa
Elongation	A	15 min	%
Brinell Hardness	HBW	274 – 341	HBW
Charpy Impact Value (RT)	AKv	55 min	J

## 5. Melting Process — AMS 5773E Standard

### Basic Electric Arc Furnace (EAF) melting + Electro-Slag Remelting (ESR) or Vacuum Arc Remelting (VAR)

Advanced melting processes ensure high purity and consistent quality for all FV520B forged steel and custom components, meeting full AMS 5773E alloy requirements.

## 6. FV520B Forged Steel Product Range

Bar Stock	Round, square, flat, rectangular bars, solid rods and hollow bars
Seamless Rolled Rings	Guide rings, seal rings, labyrinth rings, casing rings (mainly for power generation)

<b>Hollow Shapes</b>	Hubs, housing shells, sleeves, bushes, bushing cases (custom open die forgings)
<b>Flat &amp; Solid Parts</b>	Discs, blocks, plates, tube sheets, nozzles, channel flanges
<b>Hollow Cylinders</b>	Pipes, tubes, tubings, piping shells, pressure casings and housings
<b>Turbine Components</b>	Turbine blades, impellers, blisks, turbine disks, double-headed studs, fasteners and bolts
<b>Pump Components</b>	Pump bodies, impellers, wear rings, pump shafts
<b>Valve Components</b>	Valve bodies, bonnets, closures, valve stems, seat rings
<b>Boiler &amp; Pressure Vessel</b>	Piping, barrels, tube sheets, nozzles, flanges for heat exchangers, reactors and heaters

## 7. Industrial Applications

<b>Power Generation</b>	Steam and gas turbines (turbine blades, impellers, discs, blisks), guide rings, seal rings, rotor end rings (FV520B seamless rolled rings)
<b>Fluid Handling</b>	Industrial pumps (pump bodies, impellers, shafts, wear rings), industrial valves (valve bodies, bonnets, stems, seat rings)
<b>Compressor</b>	Gas compressor turbine blades, flat and rectangular FV520B forged bars
<b>Boilers &amp; Pressure Vessels</b>	Heat exchangers, reactors, industrial heaters (tube sheets, nozzles, flanges, piping)
<b>Aerospace &amp; Defence</b>	Aerospace equipment, missile components, high-strength fasteners (precision FV520B aerospace forgings)
<b>Oil &amp; Gas Industry</b>	Downhole and surface equipment, high-pressure components, fasteners (corrosion-resistant FV520B forgings)
<b>Marine &amp; Offshore</b>	Shipbuilding components, offshore platform equipment, marine propeller shafts (rust-resistant FV520B forged steel)

## 8. Successful Project Cases

<b>Power Generation</b>	Supplied FV520B turbine blades and seamless rolled rings for 600 MW steam turbines to a European thermal power plant — 3 years of stable operation without wear, deformation or corrosion.
<b>Oil &amp; Gas</b>	Provided FV520B pump parts and valve components to a Middle East offshore oilfield company — excellent seawater and crude oil corrosion resistance with zero failure rate in 2 years of operation.
<b>Marine</b>	Delivered corrosion-resistant FV520B seamless rolled rings and high-strength fasteners to a Japanese marine engineering company for offshore drilling platforms — minimal rusting and 4 years of reliable performance.
<b>Aerospace</b>	Supplied FV520B aerospace forging parts (high-strength fasteners, small turbine components) to a Southeast Asian aerospace maintenance company — meeting strict aerospace quality requirements with high tensile strength and fatigue resistance.

## 9. Production Capabilities

Melting Equipment	Forging & Heat Treatment Equipment
<ul style="list-style-type: none"> <li>• 60 t Electric Arc Furnace (EAF) — 40 MVA power</li> </ul>	<ul style="list-style-type: none"> <li>• Open die hydraulic presses: 3200 t / 4200 t / 6000 t</li> </ul>
<ul style="list-style-type: none"> <li>• 2 x Ladle Furnace (LF) for secondary refining</li> </ul>	<ul style="list-style-type: none"> <li>• Hydraulic manipulators — max lifting capacity 60 t</li> </ul>
<ul style="list-style-type: none"> <li>• 2 x Tank Degassing Equipment (VD - VOD type)</li> </ul>	<ul style="list-style-type: none"> <li>• Industrial heating furnaces — max capacity 150 t</li> </ul>
<ul style="list-style-type: none"> <li>• Bottom pouring pits for ingot casting</li> </ul>	<ul style="list-style-type: none"> <li>• Hydrogen Bake-Out Furnaces — max length 14 m</li> </ul>
<ul style="list-style-type: none"> <li>• ESR Melting Furnace — max weight 32 t</li> </ul>	<ul style="list-style-type: none"> <li>• Semi-automatic heat treatment system (turbine blades)</li> </ul>
	<ul style="list-style-type: none"> <li>• Heat treatment furnaces — max length 18 m</li> </ul>
	<ul style="list-style-type: none"> <li>• Quenching tanks — max capacity 16 m</li> </ul>

## 10. Global Delivery & Service

<b>Covered Regions</b>	Europe, Middle East, Japan, Southeast Asia, North America, Australia
<b>Delivery Terms</b>	FOB, CIF, EXW (All International Commercial Terms Available)
<b>Pricing Currencies</b>	USD, EUR, GBP, CNY (Custom currency available for bulk orders)
<b>Regional Support</b>	Local after-sales service in Europe (Rotterdam), Middle East (Dubai) and Japan (Tokyo)
<b>Custom Forging</b>	100% customised production according to client technical drawings & AMS 5773E standards

### Contact Jiangsu Liangyi for FV520B Forged Steel Quotation

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