

ALLIS CHALMERS 670T ENGINE SPECIFICATIONS Handbook

Allis Chalmers 670T Engine Specifications

The Allis Chalmers 670T is a renowned piece of agricultural machinery celebrated for its robust performance and durability. Central to its effectiveness is its engine, which powers the tractor through demanding farming tasks. Understanding the Allis Chalmers 670T engine specifications provides valuable insights into its capabilities, maintenance requirements, and suitability for various farming applications. In this comprehensive guide, we delve into every aspect of the engine, from its technical details to its operational features, ensuring enthusiasts and professionals alike have a thorough understanding of this classic machine.

Overview of the Allis Chalmers 670T Tractor

Before exploring the engine specifications, it's essential to understand the context of the Allis Chalmers 670T tractor itself. Manufactured primarily in the late 20th century, the 670T is a versatile, articulated tractor designed for heavy-duty farming tasks such as plowing, hauling, and tilling. Its reputation is built on durability, ease of maintenance, and reliable power output, largely attributed to its engine.

Engine Type and Design

The core of the Allis Chalmers 670T is its diesel engine, which was engineered for high torque and efficiency.

Engine Type

- Model: Typically equipped with a 4-cylinder, 4-stroke diesel engine.
- Configuration: Inline (straight) cylinder layout.
- Cooling System: Water-cooled to maintain optimal operating temperatures.
- Fuel System: Direct injection system for improved combustion efficiency.

Design Features

- Durable cast-iron engine block for longevity.

- Heavy-duty pistons designed to withstand high compression.
- Overhead valve (OHV) configuration to optimize airflow and power.
- Built-in oil filtration system to prolong engine life.

Engine Specifications in Detail

Below is a detailed breakdown of the key specifications for the Allis Chalmers 670T engine:

Displacement and Bore-Stroke

- Engine Displacement: Approximately 3.3 liters (200 cubic inches).
- Bore Diameter: Around 3.375 inches (85.7 mm).
- Stroke Length: Approximately 4.0 inches (101.6 mm).

This displacement provides a good balance between power and fuel efficiency, enabling the tractor to perform heavy-duty tasks without excessive fuel consumption.

Power Output

- Gross Horsepower (HP): Approximately 85-90 HP at rated RPM.
- Net Horsepower: Slightly lower, around 80 HP, accounting for auxiliary components.
- Rated RPM: Typically around 2000 RPM for optimal performance.

Compression Ratio

- Usually set at around 16:1, optimized for diesel fuel combustion, ensuring maximum torque and efficiency.

Lubrication and Cooling

- Lubrication System: Full-pressure lubrication with a splash system supplement.
- Cooling System: Water-cooled with a thermostatically controlled radiator.
- Fan Type: Mechanical belt-driven fan for effective heat dissipation.

Fuel System

- Type: Direct injection.
- Fuel Consumption: Approximately 0.4-0.5 gallons per hour under typical load conditions.
- Fuel Filter: Multiple filtration stages to prevent contaminants.

Engine Performance and Capabilities

The Allis Chalmers 670T engine is designed for durability and consistent performance. Its high torque output at low RPMs makes it suitable for heavy pulling and tillage work. The engine's robust construction ensures longevity even under demanding operational conditions.

Torque Characteristics

- Peak torque occurs at low RPMs, around 1200 RPM.
- Torque output ranges from 200 to 250 lb-ft, depending on specific engine configuration and adjustments.

Operational Efficiency

- The engine's design allows for smooth operation with minimal vibration.
- Its fuel injection system improves combustion efficiency, reducing emissions and fuel costs.
- Easy to start with reliable cold weather operation due to glow plug systems.

Maintenance and Troubleshooting

Proper maintenance is critical to keep the Allis Chalmers 670T engine running optimally. Regular inspections, oil changes, and component checks ensure longevity and performance.

Scheduled Maintenance Tasks

- Oil Changes: Every 100-200 hours of operation.
- Air Filter Replacement: Every 50-100 hours or when dirty.
- Fuel Filter Replacement: Every 150-200 hours.
- Coolant Checks: Regularly verify coolant levels and replace coolant every 2-3 years.
- Valve Adjustments: As specified in the maintenance manual, typically every 1000 hours.

Common Troubleshooting Tips

- Difficulty Starting: Check battery, glow plug operation, and fuel delivery.
- Loss of Power: Inspect air filters, fuel filters, and consider possible injector issues.
- Overheating: Verify coolant levels, radiator cleanliness, and water pump operation.
- Excessive Smoke: Could indicate fuel injection problems or worn piston rings.

Upgrades and Compatibility

While the original engine specifications define the factory setup, some operators choose upgrades or modifications for increased performance or efficiency.

Possible Upgrades

- Aftermarket fuel injectors for better atomization.
- Upgraded cooling systems for prolonged heavy-duty use.
- Electronic engine control modules (ECMs) for precise management.

Compatibility Considerations

- Ensure replacement parts meet OEM specifications.
- Consult with manufacturers or experts for modifications to avoid engine damage.

Conclusion

The Allis Chalmers 670T engine specifications highlight a well-engineered, durable powerplant capable of supporting heavy-duty agricultural operations. Its combination of displacement, horsepower, torque, and reliability makes it a favorite among farmers and machine enthusiasts. Proper understanding of its specifications and maintenance needs ensures the engine continues to operate smoothly, providing years of dependable service. Whether restoring an old tractor or maintaining a working unit, knowing these details is essential for optimal performance and longevity.

Allis Chalmers 670T Engine Specifications: A Comprehensive Breakdown

The Allis Chalmers 670T engine specifications are a topic of significant interest for vintage tractor enthusiasts, collectors, and restoration specialists. As one of the most recognizable engines from the legendary Allis Chalmers lineup, the 670T engine embodies a blend of power, durability, and engineering ingenuity that has stood the test of time. Whether you're restoring a classic tractor, evaluating a potential purchase, or simply seeking a detailed technical understanding, this guide aims to provide an in-depth look into the core specifications, design features, and performance aspects of the Allis Chalmers 670T engine.

Overview of the Allis Chalmers 670T Engine

The Allis Chalmers 670T engine was part of the company's robust lineup of industrial and agricultural power units. Known for its reliability and straightforward design, the 670T was often used in agricultural tractors, combines, and other heavy-duty machinery. Its architecture reflects the engineering standards of the era, focused on durability, ease of maintenance, and efficient power delivery.

Key Features of the Allis Chalmers 670T Engine

- Type: Four-cylinder, in-line diesel engine
- Cooling System: Water-cooled
- Fuel System: Direct injection
- Lubrication: Pressurized lubrication with oil filter
- Aspiration: Naturally aspirated (some variants or modifications might include turbocharging)
- Operational RPM Range: Typically 1800-2000 RPM for optimal performance

Core Technical Specifications

Engine Dimensions and Weight

Understanding the physical size and weight of the 670T engine is crucial for restoration and installation purposes.

- Engine Length: Approximately 50 inches (127 cm)
- Width: Around 24 inches (61 cm)
- Height: About 36 inches (91 cm)
- Dry Weight: Estimated at 1,200-1,400 pounds (544-635 kg)

These dimensions highlight the engine's substantial size, reflecting its heavy-duty design.

Displacement and Bore/Stroke

- Displacement: 4.9 liters (299 cubic inches)
- Bore: 4.25 inches (108 mm)
- Stroke: 5.0 inches (127 mm)

The slightly longer stroke relative to bore emphasizes torque generation, critical for agricultural

applications requiring pulling power.

Power Output and Performance

- Gross Power: Around 70-80 horsepower (varies by model and configuration)
- Net Power: Approximately 65-75 horsepower
- Rated RPM: 1800-2000 RPM

This power range made the 670T suitable for a variety of farming tasks, from plowing fields to hauling heavy loads.

Fuel System and Combustion

The Allis Chalmers 670T engine uses a direct injection system, which improves fuel efficiency and power output. Key aspects include:

- Fuel Injection Pump: Mechanical, with precise control over injection timing
- Fuel Consumption: Approximately 0.4-0.45 gallons per hour at rated load
- Fuel Type: Diesel, with a specific gravity of about 0.85

Efficient combustion is achieved through carefully calibrated injection timing, ensuring optimal power and minimal emissions for its time.

Cooling and Lubrication Systems

- Cooling System: Closed-loop water cooling with a radiator and thermostatic control
- Cooling Capacity: Approximately 10 gallons (38 liters)
- Lubrication System: Pressurized with a mechanical oil pump, equipped with an oil filter
- Oil Capacity: About 10 quarts (9.5 liters)

Proper cooling and lubrication are critical for maintaining engine longevity, especially in demanding agricultural settings.

Intake and Exhaust

- Intake System: Naturally aspirated with a simple air filter
- Exhaust System: Cast iron manifold leading to a silencer or muffler for noise reduction

Some models or modifications may include turbochargers for increased power, but the standard 670T predominantly featured naturally aspirated operation.

Maintenance and Servicing Specifications

Regular maintenance ensures longevity and optimal performance:

- Valve Clearance: 0.010 inches (intake and exhaust)
- Spark Plug Gap: Not applicable (diesel engine)
- Fuel Filter Replacement: Every 250 hours of operation
- Oil Change Interval: Every 100-150 hours
- Cooling System Flush: Annually or as needed

Understanding these specifications facilitates proper upkeep and prevents costly repairs.

Summary of Main Specifications

Specification	Details
Engine Type	4-cylinder, in-line diesel
Displacement	4.9 liters (299 in³)
Bore x Stroke	4.25 in x 5.0 in
Power Output	70-80 HP (gross), 65-75 HP (net)
RPM Range	1800-2000 RPM
Cooling System	Water-cooled
Lubrication System	Pressurized with oil filter
Fuel System	Direct injection
Weight	1,200-1,400 lbs
Dimensions	Approx. 50" L x 24" W x 36" H

Applications and Legacy

The Allis Chalmers 670T engine played a significant role in powering agricultural machinery during its era. Its design influenced subsequent generations of industrial diesel engines, emphasizing durability and ease of maintenance. Today, restored models serve as a testament to mid-20th-century engineering, cherished by collectors and vintage machinery enthusiasts.

Conclusion

Understanding the Allis Chalmers 670T engine specifications provides valuable insights into its design, performance, and historical significance. Whether for restoration, repair, or educational purposes, grasping these technical details enables enthusiasts to appreciate the engineering marvels of the past and ensure their preservation for future generations.

If you're working on a restoration project or simply passionate about vintage engines, mastering the specifications of the 670T will help you keep these powerful and reliable engines running smoothly for years to come.

QuestionAnswer What is the engine type of the Allis Chalmers 670T? The Allis Chalmers 670T is equipped with a turbocharged diesel engine designed for heavy-duty applications. What is the engine horsepower rating of the Allis Chalmers 670T? The engine of the Allis Chalmers 670T typically produces around 250 to 300 horsepower, depending on the specific configuration. What is the displacement of the Allis Chalmers 670T engine? The engine displacement of the Allis Chalmers 670T is approximately 8.3 liters (507 cubic inches). What type of cooling system does the Allis Chalmers 670T engine use? The engine uses a liquid cooling system to maintain optimal operating temperatures. What is the fuel capacity of the Allis Chalmers 670T engine? While specific fuel capacity varies, the engine is designed to operate efficiently with a fuel tank capacity of around 150-200 gallons. What are the key specifications of the Allis Chalmers 670T engine's compression ratio? The compression ratio of the Allis Chalmers 670T engine is approximately 16:1. Does the Allis Chalmers 670T engine meet modern emissions standards? The original 670T engine was designed before modern emissions standards; retrofits or modifications may be necessary for compliance today. What is the typical maintenance schedule for the Allis Chalmers 670T engine? Regular maintenance includes oil changes every 250-300 hours, filter replacements, and cooling system checks to ensure optimal performance. Are spare parts available for the Allis Chalmers 670T engine? Spare parts for the Allis Chalmers 670T engine are available through specialized suppliers and vintage equipment parts dealers. What applications was the Allis Chalmers 670T engine commonly used in? The Allis Chalmers 670T engine was primarily used in agricultural machinery, such as tractors and combines, as well as industrial equipment requiring high power output.

Related keywords: Allis Chalmers, 670T engine, specifications, engine details, horsepower, engine type, diesel engine, model 670T, engine performance, technical data