

2009 **FOURTRAX RANCHER AT**



PRESSINFORMATION

FOURTRAX RANCHER AT

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Natural Gear Camouflage



Red



White



Olive

FOURTRAX RANCHER AT

The Newest Addition to Honda's ATV Armada: Introducing the 2009 Rancher AT.

THINK OF IT AS A RANCHER THAT LIKES TO PLAY

Honda's FourTrax Rancher® All-Terrain Vehicles (ATVs) have long been the best-selling line of ATVs in America. Ride one and you'll know why; since 1988, Honda has sold well over a million Ranchers and their predecessor models, the TRX300 family. These ATVs have offered a near-perfect blend of features: two- or four-wheel-drive, electric or conventional shifting, solid chassis, dependable engines with wide torque bands, powerplants with longitudinally mounted crankshafts for maximum efficiency, sturdy racks front and rear—the list goes on and on. Best of all, they seem to run forever.

For 2009 though, Honda is elevating the list of Rancher capabilities with the introduction of the new AT. Even among Ranchers, the new AT is a real standout. Why? Because of its exceptional combination of features.

Starting with the rugged and powerful liquid-cooled, fuel-injected 420cc longitudinally mounted engine used throughout the Rancher line, the AT adds an innovative Honda automatic five-speed transmission featuring auto-shifting or push-button manual shifting with Honda's Electric Shift Program (ESP®), Electric Power

Steering (EPS), independent rear suspension and Honda's selectable 4WD/2WD TraxLok® and rugged torque-sensitive front differential. Not only do these features embody the leading-edge of Honda's ATV technology, together they elevate the hard-work ethic Ranchers are known for while also instilling a healthy extra dose of recreational ability in the AT.

There are seven models in the 2009 Honda Rancher line that can be grouped in four ways:

- Rancher 2WD
- Rancher with in/out 4x4 and optional Electric Power Steering (EPS)
- Rancher with in/out 4x4 and Electric Shift Program (ESP) and optional Electric Power Steering (EPS)
- Rancher AT with in/out 4x4, automatic five-speed transmission with Electric Shift Program (ESP), Independent Rear Suspension (IRS) and optional Electric Power Steering (EPS).

All Rancher 4x4 models feature TraxLok, a system that lets riders choose between two- and four-wheel drive. They also offer a torque-sensing front differential. This reduces torque steer in 4WD to yield a lower steering



effort and also provides superior traction compared to the more familiar “limited-slip” front differentials found on competing models.

START WITH THE AT ENGINE

To beef up power production in the new Rancher AT, Honda engineers created an all-new cylinder head that features higher compression and larger valves, both intake and exhaust. The compression ratio is up just a bit, from 9.8:1 to 9.9:1, and the intake valve has grown from 35mm to 38mm, while on the exhaust side a 33mm valve replaces the former 30mm valve. As would be expected, new, stronger valve springs accompany these changes.

The fuel injection system employs a 34mm throttle body that incorporates a 12-hole injector to provide crisp performance over a wide range of temperatures while also automatically compensating for changes in elevation. The AT’s brawny engine features both a semi-dry-sump design and a camshaft that rides beneath the cylinder head. These features serve to shorten the engine top-to-bottom, and that does two things. First, it helps increase ground clearance at the sump. Second, it keeps the Rancher’s center of gravity low, which aids handling.

More important, though, is the way the engine mounts in the chassis. As with all of Honda’s utility ATVs, the AT’s engine is mounted with the crankshaft positioned longitudinally in the frame: the crank runs front-to-back, just as you see in a pickup truck with a V-8 engine. This

means the power flows straight out from the engine through the driveshafts with no unnecessary right-angle changes of power delivery that create frictional losses. Thus, Honda’s 420cc powerplant puts more power to the ground than competing designs with bigger engines.

ALL-NEW HONDA AUTOMATIC FIVE-SPEED TRANSMISSION

Of all the AT’s innovative features, one really stands above the rest: its new Honda automatic five-speed transmission featuring unique dual-clutch technology. The transmission is a first in the world of all-terrain vehicles and offers several distinct advantages. Since it uses conventional transmission gears, it’s as rugged and durable as Honda’s conventional ATV manual transmissions. That construction also makes it efficient. Many competing automatics offer mechanical efficiencies as low as 74 percent: only 74 percent of the power the engine feeds into the transmission actually makes it to the driveshaft. This new Honda automatic five-speed transmission boasts the same high efficiency as Honda’s manual transmissions, a huge advantage over competing automatic transmissions.

The key to this is the transmission’s innovative dual-clutch design. In this system, one clutch controls the gear pairs for first, third, and fifth, while the second clutch controls second, fourth, and Reverse. While different in execution, if you think of two separate transmissions side-by-side with two different clutches, all housed in the same case,





you'd have an idea of how it works. In execution, though, the Honda system is much more elegant, eliminating the duplicate shafts and gears.

In a conventional transmission, a single gear pair is locked together (say, the input and output gears for first) while the rest of the gears are out of engagement. In the AT's transmission, two gear pairs are engaged at the same time, but the clutch controlling one pair of gears is disengaged, while the clutch controlling the second pair is fully engaged. When the rider shifts, the clutch controlling the next set of gears is engaged and the transmission shifts smoothly and quickly into the next gear.

Imagine an Olympic relay race with five runners, each of whom has to hand a baton off to the next runner. If the runners were gears in a conventional transmission, each would slow down dramatically before handing the baton over to the next runner, who starts from a dead stop. Honda's dual-clutch system shifting is more like what we think a relay race should be: runner number two is already in motion when runner number one hands the baton off—a smooth, fast, efficient transition with no wasted time.

One advantage to using this design is extremely quick shifts. With this system there's less driveline lurching between shifts, especially under load, which means the AT's chassis attitude remains more consistent during

shifts. Compared to other ATV automatics, the Honda automatic five-speed transmission's maintenance needs are greatly reduced, while fuel economy and power transfer improve. Like a conventional ATV manual gearbox, there's no handlebar-mounted clutch, so there's no need to worry about stalling—a special centrifugal clutch unit with a low-rpm lockup takes care of that, as on all of Honda's conventional-transmission utility ATVs. Finally, because this transmission is so compact, it takes no more space than a Rancher manual transmission, which means engineers could equip the AT with independent rear suspension without compromising the chassis balance Ranchers are known for.

The Rancher AT offers two shifting modes. The first is fully automatic—the transmission shifts itself much as an automotive transmission shifts. In ESP mode, the rider can shift the gearbox with two handlebar-mounted buttons, just like those found on other ESP-equipped Ranchers.

Some competing automatic transmissions offer no true compression braking when traveling downhill. That's not the case with the AT's design. In automatic mode, all of the shifting is controlled by an Electronic Control Module (ECM) which measures (among other things) throttle opening and driveshaft speed. If the speed drops, the system will downshift itself, maintaining true controlled compression braking.



ELECTRIC POWER STEERING

Another feature that sets the AT apart is its Electric Power Steering, or EPS. Introduced on a few select models in 2007, for 2009 this feature is beginning to spread throughout Honda's ATV lineup. For more details on this innovative system, see the EPS technical feature on page 14 of this press kit.

INDEPENDENCE DAY

While there are plenty of other small updates to the AT's engine and chassis, the big change is the shift to a fully Independent Rear Suspension (IRS) system. This system lets each rear wheel travel independently from the other over uneven ground, which increases both ride quality and traction. The AT's system is unique in that it did not require a total redesign of the existing Rancher chassis. Sure, there are some minor detail changes like mounting tabs, but the IRS was built to minimize engineering changes to this rugged and proven chassis.

In principle the system is similar to that used on the Honda Rincon®, but the rear brake disc is now mounted on the rear driveshaft, so unsprung weight is kept to a

minimum. The system shines during sport riding, or over rock gardens, dry streambeds, or when traversing logs in the trail.

Electric Power Steering. Independent Rear Suspension. Honda's revolutionary automatic five-speed transmission. Any one of these three technologies would have been sufficient to move the AT to the head of its class. Together, they put the Rancher AT in a class of its own. With the same great workhorse capabilities that Ranchers are famous for, plus a whole new dimension of recreational ability, the AT simply doesn't compare—it's miles ahead.





FOURTRAX RANCHER AT

Electric Power Steering: HOW THE SYSTEM WORKS

Many of us are familiar with automotive hydraulic power-steering units that use belts and pumps. With Honda's EPS there's none of that: The Honda system minimizes size and weight—important considerations for ATV design—while simultaneously taking advantage of today's processing power and Honda engineering to custom-tailor the application to an ATV.

The EPS system monitors steering torque and vehicle speed to adjust the levels of steering assist and feel. When stopped or at low speeds, it provides more assistance for a light steering effort. As speed increases, the amount of assistance is reduced to provide the appropriate level of feedback. Perhaps the most significant benefit is the system's ability to provide consistent steering feel in both two- and four-wheel-drive operation. As a secondary benefit, the EPS system reduces fatigue because it greatly reduces kickback through the handlebars in rough or rocky terrain.

Honda's ingenious design utilizes a torsion bar inside the steering shaft that moves a sensor up or down in response to steering torque applied by the rider. The sensor detects the rate of movement and direction and sends the information to an ECM. The ECM, following the preprogrammed parameters of a digital control map, regulates current to the electric-assist motor. By providing more or less output assist torque to the output shaft, the motor effectively helps the rider by augmenting or

minimizing the amount of steering assistance. The Honda EPS system also includes two maps: one for two-wheel-drive and one for four-wheel-drive, so the steering feel the rider perceives is consistent regardless of mode.

To manage kickback and bump-steer, several measures are employed. First, the ECM "reads" countersteer torque that results when terrain-induced forces through the steering shaft counteract rider input. In this instance, the motor's electromagnetic force provides a stabilizing resistance. Even though EPS function may seem unnoticeable at times, the effect is available at all speeds. In addition, rubber dampers on the worm gear shaft, designed to reduce steering free-play, give the system a direct, natural steering feel at all speeds and provide additional cushioning when kickback occurs.

In practice, Honda's EPS reduces rider fatigue when maneuvering through rough terrain, rocks, washes and ruts. Because the system resists deflection, it in turn reduces steering effort.

The Honda EPS system is mounted inline with the steering shaft, and its weight is carried low and close to the AT's center of gravity so handling is not compromised. The lighter steering feel more than makes up for the extra weight. The self-contained ECM is positioned behind the radiator. Adding icing to the cake, Honda's EPS system is also self-contained, totally enclosed and watertight, eliminating the need for any maintenance whatsoever.



FEATURES & BENEFITS





FOURTRAX RANCHER AT

2009 Honda Rancher AT/ Rancher AT with Electric Power Steering

FEATURES & BENEFITS

UNIQUE FEATURES

- New Honda automatic five-speed transmission provides five-speed auto-shifting or push-button manual shifting with Honda's Electric Shift Program (ESP®).
- Rugged OHV liquid-cooled, fuel-injected 420cc longitudinally mounted engine allows direct driveshaft alignment to both front and rear wheels for maximum drivetrain efficiency.
- Revolutionary Electric Power Steering (EPS).
- Double-wishbone Independent Rear Suspension (IRS) contributes to increased ground clearance and responsive, class-leading handling.
- Front and rear disc brakes for phenomenal braking performance.

ENGINE/DRIVETRAIN

- Powerful 420cc longitudinally mounted engine eliminates 90-degree power transfers and boasts exceptional horsepower and torque. Overhead-valve design provides compact engine dimensions for excellent ground clearance.
- Cylinder head redesigned with higher compression, revised camshaft profile and larger intake valves (38 vs. 35mm) and exhaust valves (33 vs. 30mm) to ensure strong mid-range and top-end power.
- Programmed Fuel-Injection (PGM-FI) features a 34mm throttle body, 12-hole Denso injector, and Idle Air Control Valve (IACV) for crisp performance, excellent

economy and trouble-free operation in cold conditions and varying altitudes.

- Large 7.2-liter airbox with washable, reusable foam air filter provides more air to the engine for increased performance.
- New high-capacity oil system features a high-flow filter and a two-rotor pump to provide oil for the engine and the pressurized transmission clutches.
- Rubber-cushion engine mounting and gear-driven counterbalancer reduce vibration.
- Large radiator with cooling fan ensures optimal engine cooling under difficult operating conditions.
- Stainless-steel exhaust header and muffler for superior corrosion resistance.
- Three-chamber muffler baffling uses no packing material that can blow out, providing long-lasting performance.
- New lightweight, automatic transmission offers five-speed auto-shifting or push-button manual shifting with Honda's Electric Shift Program (ESP). After the heavy duty centrifugal clutch engages, two Electronic Control Module (ECM)-controlled clutches mounted in the gearbox upshift/downshift to provide smooth, lurch-free shifts. When descending hills in automatic mode, the transmission downshifts, providing excellent engine braking.
- If the rider forgets to downshift when stopping in ESP mode, the transmission downshifts to third gear to prevent engine lugging.



- Excellent fuel economy results from the transmission's high efficiency.
- TraxLok 4WD/2WD selector lever allows 4WD or 2WD operation.

CHASSIS/SUSPENSION

- Rugged frame and suspension provide an exceptional 9.1 inches of ground clearance.
- Independent double-wishbone front suspension uses premium shock absorbers to provide 6.3 inches of wheel travel for a plush, comfortable ride.
- Honda's double wishbone, Independent Rear Suspension (IRS) provides 6.3 inches of wheel travel and minimizes geometry variations as the suspension travels through its stroke, maintaining rear wheel alignment, contributing to responsive overall handling, and reducing tire wear and maintenance intervals.
- Revolutionary Electric Power Steering (EPS).
- Dual hydraulic front and single rear disc brakes provide exceptional stopping power and feature brake pads that minimize wear from dust and sand.

- Rear center disc brake and self-adjusting mechanical rear parking brake are mounted on the rear driveshaft, contributing to the AT's considerable ground clearance.
- Tough, large-diameter 24x8-12 front, and wide 24x10-11 rear tires provide excellent ground clearance while maintaining precise handling.

ADDITIONAL FEATURES

- Engine design produces low emissions and meets EPA and California Air Resources Board (CARB) off-road emissions standards.
- Convenient electric starting, with optional recoil starter and an automatic internal-decompression system.
- Large, lightweight plastic fuel tank with 3.5-gallon capacity
- Multifunction LCD digital instrumentation is compact, tough and waterproof, featuring large readouts for gear position, speedometer, odometer, resettable tripmeter and hour meter. Instrument housing includes indicator lights for Reverse, Neutral, water-temperature, PGM-FI, 4WD and Power Steering (for EPS model).
- Thickly padded seat provides all-day comfort.

- Large cargo racks front and rear carry payloads of 66 and 133 pounds, respectively.
- Heavy-duty trailer hitch with 850-pound towing capacity.
- Snorkel-type air-intake system is specially designed to resist water.
- Closed crankcase vent system safeguards against engine oil contamination.
- USDA-qualified spark arrester/muffler designed for quiet operation without wool packing for long-lasting performance.
- Powerful 371-watt AC generator.
- Tough 12-amp-hour maintenance-free battery.
- Twin-headlight system with 30-watt bulbs features multireflector lenses for optimal light distribution.
- Combination LED stoplight and taillight.
- Durable, comfortable, easy-to-use controls.
- Keyed ignition switch for added security.
- Large fenders give excellent mud protection.
- Specially designed floorboards allow the rider's feet to grip the footrests while helping to keep mud and debris away.

- Full-length synthetic lower skid plate with integrated front brush guard.
- Constant-velocity-joint boot guards help prevent damage to boot covers.
- Handlebar switches, controls and warning labels use easy-to-understand graphic labels.
- Standard equipment includes a tire-pressure gauge.
- Assembled in Timmons ville, South Carolina.
- Transferable one-year limited warranty; extended coverage available with a Honda Protection Plan.
- Purchase of a new, previously unregistered Honda USA-certified unit by an individual retail user in the United States qualifies the owner for a one-year complimentary membership in the Honda Riders Club of America® (HRCA®). Visit www.hrca.honda.com for details.

AVAILABLE ACCESSORIES

- Flag Kit.
- Recoil Starter.
- 12-Volt Accessory Socket.



FOURTRAX RANCHER AT

2009 Honda Rancher AT/ Rancher AT with Electric Power Steering

SPECIFICATIONS

MODEL: TRX420FA9/TRX420FPA9 (with EPS)

ENGINE TYPE: 420cc liquid-cooled OHV semi-dry-sump
longitudinally mounted single-cylinder four-stroke

BORE AND STROKE: 86.5mm x 71.5mm

INDUCTION: Programmed Fuel Injection (PGM-FI),
34mm throttle body

IGNITION: Full-transistorized type with electronic advance

STARTER: Electric with optional auxiliary recoil

TRANSMISSION: Automatic/ESP five-speed
with Reverse

DRIVELINE: Direct front and rear driveshafts

SUSPENSION

Front: Independent double-wishbone; 6.3 inches travel
Rear: Independent double-wishbone; 6.3 inches travel

BRAKES

Front: Dual hydraulic discs
Rear: Single hydraulic disc

TIRES

Front: 24x8-12
Rear: 24x10-11

LENGTH: 80.9 inches

WIDTH: 46.1 inches

HEIGHT: 45.8 inches

SEAT HEIGHT: 32.4 inches

GROUND CLEARANCE: 9.1 inches

WHEELBASE: 49.4 inches

TURNING RADIUS: 10.5 feet

FUEL CAPACITY: 3.5 gallons (including 1.0 gallon reserve)

COLORS: Black, Red, Olive, Natural Gear Camouflage

CURB WEIGHT*: 623/642 pounds

* Includes all standard equipment, required fluids and a full tank of fuel—
ready to ride.
Recommended for riders 16 years of age and older.