



Head to Head Caravan Comparison - Cargo Pod Installed

Honeywell TPE331-12JR vs Pratt & Whitney PT6A-42A

| Performance | Pratt & Whitney PT6A-42A | SuperVan 900 Honeywell TPE331-12JR | % Diff | ADVANTAGE | | Comments |
|---|-----------------------------|--|-------------|-----------|-------|--|
| | | | | -42A | -12JR | |
| Takeoff Distance, Flaps 30, 20C day, S/L GND roll | 1155 ft ⁽¹⁾ | 854 ft ⁽³⁾ | 26% | | ✓ | More horsepower for takeoff shows in the takeoff distance |
| Takeoff Distance, Flaps 30, 20C day, S/L 50' obstacle | 2035 ft ⁽¹⁾ | 1597 ft ⁽³⁾ | 22% | | ✓ | |
| Takeoff Fuel Flow (-42 @ 850 shp and -12JR @ 900 shp) | 82 gal/hr | 77 gal/hr | 6% | | ✓ | Lower fuel flow with more power |
| Max Rate of Climb, Flaps UP, 20C day | 1195 fpm ⁽¹⁾ | 1426 fpm ⁽³⁾ | 19% | | ✓ | More horsepower for climb 900 vs. 850 |
| Cruise- 2,000 feet | | | | | | |
| Maximum Speed (2,000 ft, 20C, 175 KIAS) | 181 ktas ⁽¹⁾ | 181 ktas ⁽³⁾ | Vmo limited | | ✓ | Gearbox allows more power at altitude for higher max cruise speed. |
| Cruise Fuel Flow (2,000 ft, 20C) | 79.9 gph ⁽¹⁾ | 68.7 gph ⁽³⁾ | 14% | | ✓ | 11.2 gal/hr savings at same cruise speed |
| Fuel Cost Savings (@ \$5.00 USD/gal) | | | | | ✓ | \$56/hour fuel savings during low altitude flight |
| Cruise- 10,000 feet | | | | | | |
| Maximum Speed (10,000 ft, 0C, same cruise speed) | 189 ktas ⁽¹⁾ | 189 ktas ⁽³⁾ | Same cruise | | ✓ | Gearbox allows more power at altitude for higher max cruise speed. |
| Cruise Fuel Flow (10,000 ft, 0C) | 67.2 gph ⁽¹⁾ | 59.7 gph ⁽³⁾ | 11% | | ✓ | 7.5 gal/hr savings at same cruise speed |
| Fuel Cost Savings (@ \$5.00 USD/gal) | | | | | ✓ | \$38/hour fuel savings during high altitude flight |
| Other Performance Categories | | | | | | |
| Maximum Cruise Speed (10,000 ft, 0C) | 189 ktas ⁽¹⁾ | 198 ktas ⁽³⁾ | 5% | | ✓ | More power equals faster cruise speeds |
| Power response from idle to max power | 3-5 sec | 1.5 sec | 75% | | ✓ | Fastest acceleration for tight areas |
| Power response idle to reverse on landing | 2 sec | 0.5 sec | 75% | | ✓ | Fastest propeller response for short runways |
| Thermodynamic Horsepower | 1132 eshp ⁽²⁾ | 1200 eshp ⁽⁴⁾ | 6% | | ✓ | Honeywell has more thermodynamic performance |
| Gearbox Rating for Takeoff | 850 shp ⁽²⁾ | 1000 shp ⁽⁴⁾ | 18% | | ✓ | -12JR growth for future and gearbox power to spare |
| Gearbox Rating for Continuous Ops | 850 shp ⁽²⁾ | 970 shp ⁽⁴⁾ | 14% | | ✓ | |
| Propeller RPM | 2000 rpm ⁽²⁾ | 1591 rpm ⁽⁴⁾ | 20% | | ✓ | -12JR Slower turning- less noise with bigger propeller |
| Propeller Idle RPM | 1120 rpm min | 1082 rpm | 4% | | ✓ | Less tip speed for less propeller erosion when sitting static. |
| Specific Fuel Consumption (lbs/eshp/hr) | .601 ⁽²⁾ | .523 ⁽⁴⁾ | 13% | | ✓ | More efficient design |
| FAA Certified Noise Level | 83 dB(A) | 76 dB(A) | 9% | | ✓ | Honeywell is the only one to meet all European noise levels |

(1) PT6A-42A Caravan Flight Manual

(2) Pratt and Whitney PT6A-42A Brochure

(3) Supervan 900 Flight Manual

(4) Honeywell TPE331-12JR Engine Brochure



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| Base TBO (commercial ops- no extensions) | 3600 | 7000 | 100% | | ✓ | -12JR basic TBO almost double the -42A which equals substantially lower per hour operating cost |
|--|-----------------------------|--|-----------|-------|---|--|
| Average Hot Section | \$90,000 | \$75,000 | 17% | | ✓ | Includes parts and labor on an average hot section |
| Average Overhaul Cost | \$300,000+ | \$200,000 | 58% | | ✓ | The Honeywell cost is a good average, while the PT6 cost is where a lot of overhauls start. |
| Cost per hour (based on TBO) | \$108.33 | \$39.28 | 70% | | ✓ | Extra money in your pocket |
| Additional Features | Pratt & Whitney PT6A-42A | SuperVan 900 Honeywell TPE331-12JR | ADVANTAGE | | | Comments |
| | | | -42A | -12JR | | |
| Auto-Start System | PARTIAL | FULL | | | ✓ | One button starting makes pilot work load less |
| Torque and Temperature Limiting System | NO | YES | | | ✓ | Prevents pilot from over-torque or over-temp |
| Compressor wash required | Yes | No | | | ✓ | Centrifugal compressors, as found in the 331-12JR, do not require regular washes to retain efficiency. |
| Gearbox Materials | Magnesium | Aluminum | | | ✓ | Major gearbox construction out of aluminum for better corrosion resistance in corrosive environments. |
| Pilot Training | NO | YES | | | ✓ | Provided free of charge by Honeywell. |
| Starter Panel Modification | NO | YES | | | ✓ | Due to auto start feature on SuperVan 900 which is standard |
| Throttle Quadrant Modification | NO | YES | | | ✓ | Emergency Lever not required with TPE-331-12JR |
| Electrical Junctions Box Redesign | NO | YES | | | ✓ | Easier access to ACU, GCU, FCM, and all circuitry. |
| Prop Diameter | 100" | 110" | | | ✓ | Engines actually sits slightly higher than -114A resulting in more clearance (not less!) between tip and ground. Less tip vortex = less prop FOD. Larger Prop = More thrust |
| Prop Rotation | Right | Left | | | ✓ | You either add left rudder or right rudder – your choice. |
| Noise Level - Ground | Moderate | Exreme* | | | ✓ | High noise level on ground within 20 degrees either side of inlet. Dissipates quickly as angle from inlet increases. |
| Noise Level – climb out & cruise – FAA Certified | 83 dB(A) | 76 dB(A) | | | ✓ | -12JR is EASA certified at 76DB. Less noise complaints filed by those living close to residential communities. |
| Batteries Required | 1 - existing | 2 – | | | ✓ | Over 43 aircraft (our Otter conversion) operating in Canada and Alaska with same battery/engine configuration with zero “cold weather” complaints. They would probably know it to. |
| Engine Trend Monitoring | YES | YES | | | ✓ | Available through Shadin |

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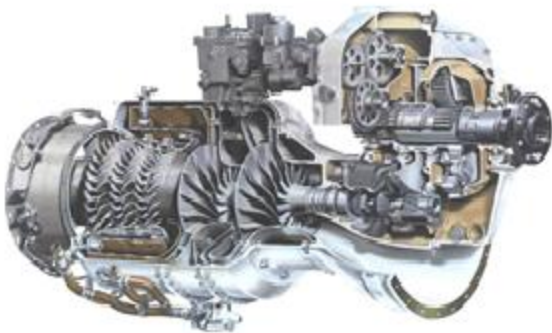


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| Installation information | Pratt & Whitney PT6A-42A | SuperVan 900 Honeywell TPE331-12JR | ADVANTAGE | | Comments |
|---------------------------------------|-----------------------------|--|-----------|-------|---|
| | | | -42A | -12JR | |
| Domestic Installation Facilities | 7 | 7 | ✓ | ✓ | Complete list available at www.texasturbines.com |
| International Installation Facilities | 6 | 8 | | ✓ | |
| Lead-time | 30 days | 30 days | ✓ | ✓ | As of July 2012 |
| Installation time (without paint) | 3 weeks | 4 weeks | ✓ | | Less features installed on -42A at time of conversion. |

| Warranty information | Pratt & Whitney PT6A-42A | SuperVan 900 Honeywell TPE331-12JR | ADVANTAGE | | Comments |
|-------------------------------|-----------------------------|--|-----------|-------|--|
| | | | -42A | -12JR | |
| Engine Warranty Period- Years | 1 year | 5 years | | ✓ | The -12JR warranty is superior because no operator is going to fly 2500 hours in one year and the -42A warranty ends after one year. |
| Engine Warranty Period- Hours | No limit | 2500 hours | ✓ | | |
| Kit Warranty Period | Unknown | 2 yrs/1000 hrs | | ✓ | |



Shutdown Rates (IFSD) on the TPE-331-12 engine as of the May 2012 report the IFSD rates are:

- ✓ -12 fleet (some 900 engines tracked, and 12.8 million hours): 0.0094 per 1000 hours (for a MTBIFSD of 106,421 hrs)
- ✓ -12JR fleet (some 70 engines tracked and 130K hrs): 0.00