



**SHELL  
LUBRICANT  
SOLUTIONS**

# SHELL GADUS S4 V80XE 00

Next level grease technology for robotic arms

## SUPPORTING INNOVATION FOR INDUSTRIAL AUTOMATION

Shell Gadus S4 V80XE 00 is an exceptional, next generation grease for **RV applications**.

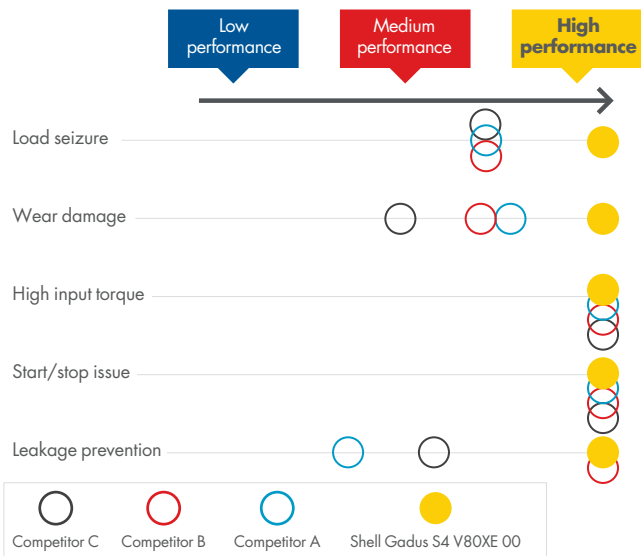
- Designed to improve lubricating performance in industrial robot systems.
- Optimised to sustain precision and enhance reliability.
- Reduced maintenance and extended RV service life.

## STEP CHANGE IN PERFORMANCE

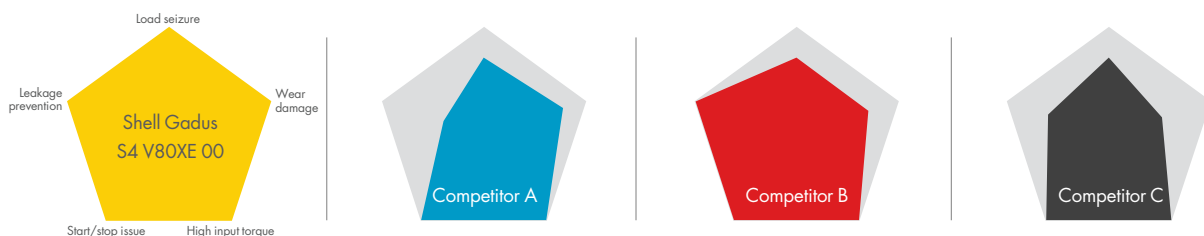
RVs lubricated with Shell Gadus S4 V80XE 00 showed better overall performance under field trials and laboratory tests for typical operating challenges including:



## BENCHMARK FOR FAILURE PREVENTION



The test data has been scaled in a fair and technically relevant way to allow simple comparison. The exact test data is shown in the following sections



## LOAD CARRYING AND WEAR PREVENTION

### Challenge

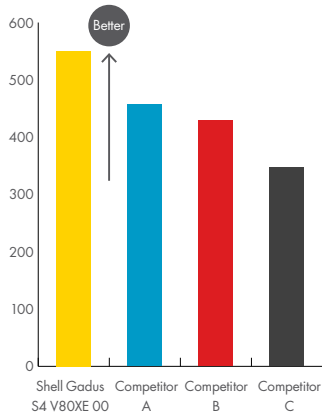
- High loads can cause surface contact leading to wear and eventual grease and surface breakdown.

### Solution

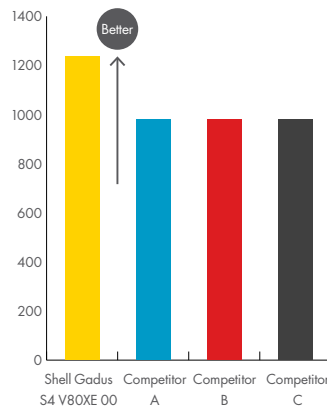
- A good grease lubricates well under high loads, reduces wear and maintains precision.
- Shell Gadus S4 V80XE 00 shows highest load capacity and wear prevention in tests.



PREVENTING WEAR - LOAD/WEAR INDEX



LOAD CARRYING - LAST NON-SEIZURE LOAD (N)



## FOUR BALL WEAR AND LOAD TEST

- Three balls stationary and one rotating.
- Measure wear scar at predefined loads.
- “Seizure load” is when high wear starts.
- Load wear index is calculated based on wear scar results.

## PROTECTION AGAINST VIBRATION DAMAGE

### Challenge

- Frequent start-stop motions generate vibration which is difficult to protect against.
- A standard grease provides adequate protection but not sufficient for RV applications.

### Solution

- High quality greases, like Shell Gadus S4 V80XE 00, protects against such vibration damage.

## FRICITION REDUCTION

### Challenge

- Friction costs energy and creates heat caused by surface contact from poor lubrication.

### Solution

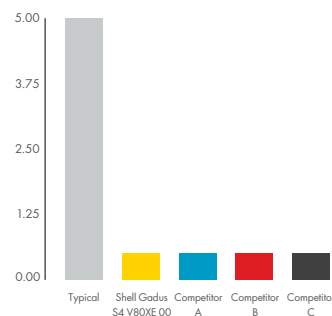
- Robotic arm greases must perform better than normal greases in reducing friction.
- This helps to reduce temperature that positively affects wear, grease aging, and leakage.

Shell Gadus S4 V80XE 00 matches or exceeds the best performing products on the market

## FAFNIR FRETTING TEST

- Greased axial ball bearing oscillated under load.
- Wear from the 22 hour test run is measured.
- “Normal” grease shows around 5 mg wear.

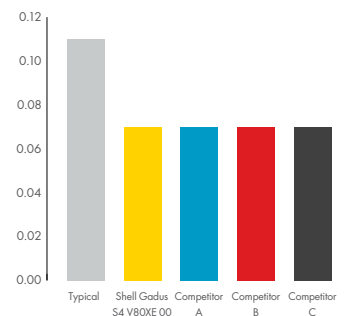
FAFNIR FRETTING - WEAR (MG)



## SRV FRICTION TEST

- One ball oscillates on a steel disc at 50 Hz.
- Load defined at 300 N.
- Measure friction during 2 hours running.
- Graph also shows value for a “typical” grease.

LOW FRICTION - SRV FRICTION COEFFICIENT



## RV TESTING FOR WEAR AND LOAD CARRYING, VIBRATION AND FRICTION

In RV tests, Shell Gadus S4 V80XE 00 lowers the operating temperature by an average 5°C versus competitors, demonstrating the grease’s **excellent anti-wear performance**.

## AVOIDING OIL LEAKAGE

### Challenge

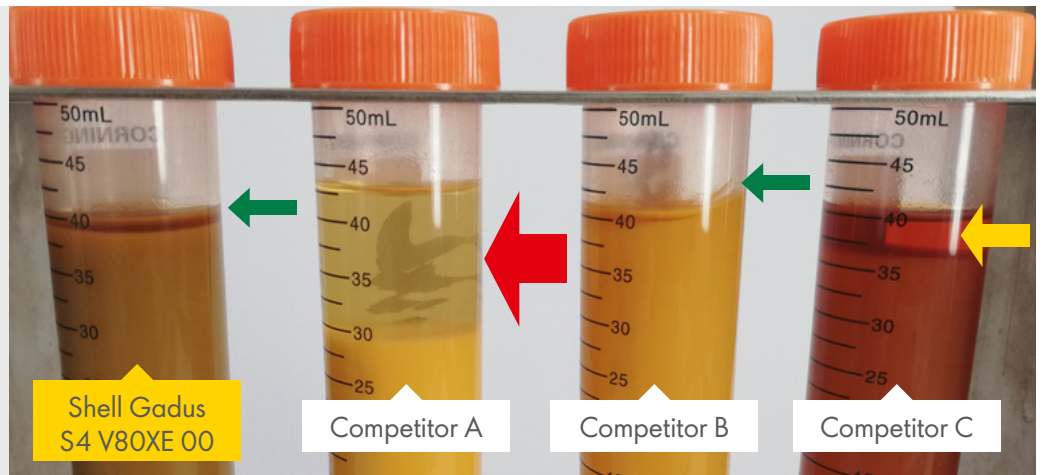
- Oil loss is a serious challenge of oil leakage. Greases thicken and become less mobile, additives dissolved in the oil are also lost thereby reducing the grease's ability to lubricate and causes further damage.

### Solution

- Shell Gadus S4 V80XE 00 has a more stable microfibre structure with anti-leakage properties.
- Competitor B shows similar performance but, at a higher NLGI grade, compromising grease flow behaviour in the reducer.
- Competitors A and C have much higher oil separation and show serious risk of oil leakage.

## CENTRIFUGAL OIL SEPARATION TEST

- Grease centrifuged for 6 hours at 2000 rpm.
- Test temperature was 50°C.
- Oil separation is easily visible.



## ADDITIONAL PERFORMANCE BENEFITS

### HUMID ENVIRONMENTS

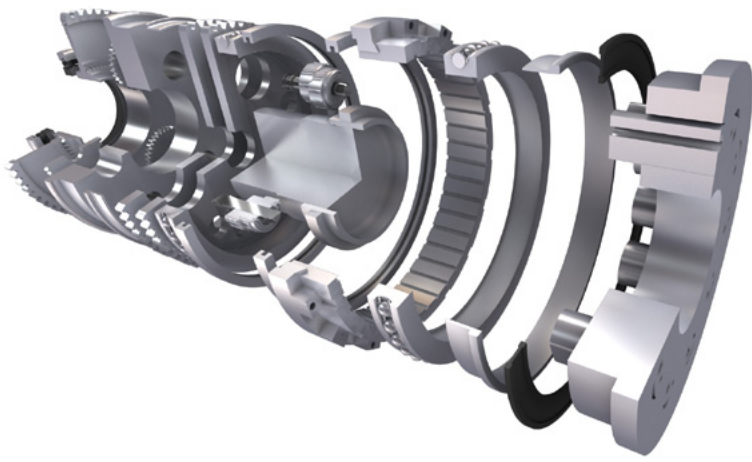
- Wet, humid, and even more corrosive environments are a challenge for some RV applications.
- Shell Gadus S4 V80XE 00 provides superior rust prevention performance.



### EXTREME WEATHER CONDITIONS

- Shell Gadus S4 V80XE 00 lubricates many RV applications with a wide operating temperature range of -40°C to 130°C.





## RV TRIAL

In partnership with a leading RV OEM, Shell conducted a complex testing programme under real-life operating conditions. This test compared Shell Gadus S4 V80XE 00 with Competitor A, a well-recognised grease that performed the strongest in Shell's benchmarking tests.

Trial conditions include:

- Selected RV types from different OEMs (e.g. Nabtesco).
- Higher loads, when compared with real operations, to accelerate testing outcome.
- Non-stop operation (24 hours per day and 7 days per week) for extended time periods.

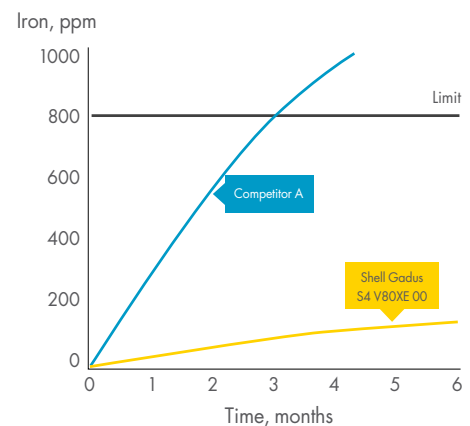
## KEY TRIAL FINDINGS

After months of continuous operation:

- The RV lubricated with Competitor A reached the 800 ppm iron limit in the grease after 3 to 4 months.
- The RV lubricated with Shell Gadus S4 V80XE 00 continued well below the limit at only 140 ppm after 6 months.

Rigorous test results highlighted Shell Gadus S4 V80XE 00 as the highest performer of the greases by:

- Extending RV service life significantly.
- Enabling longer relubrication intervals.
- Running temperature ca. 5°C lower.
- Reducing the iron (Fe) contamination in grease.



## COMPATIBILITY

Shell Gadus S4 V80XE 00 is compatible with:

- Metals and polymeric materials used in RV engineering.
- Other greases used in these and related industrial robot applications.

Exceptions may apply. Please consult your Shell Technical Advisor to confirm suitability for use.

## CONTACT US

To find out more about Shell Lubricant Solutions for the General Manufacturing industry, contact the Shell team in your market.