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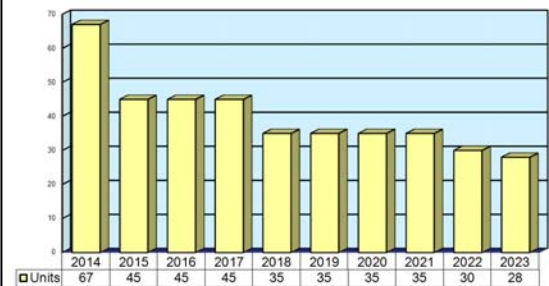
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Al-Faris AF Series

Outlook

- Serial production ongoing, exclusively for domestic Saudi procurement
- Program represents a major Saudi effort toward self-sufficiency in light armored vehicles
- Production forecast reflects Saudi Arabian procurement only; no export sales are expected at this time

Unit Production Forecast
2014-2023



Orientation

Description. Wheeled armored vehicles.

Sponsor. The Saudi Arabia Ministry of Defense and Aviation sponsors the AF series development and procurement program.

Licensees. None.

Status. Development through serial production.

Total Produced. Through 2013, we estimate that the contractor produced 377 AF-40-8-1 armored personnel carriers and 240 AF-40-8-2 reconnaissance vehicles.

Application. Light wheeled combat vehicles optimized for transporting and supporting infantry during both offensive and defensive operations.

Price Range. In 2014 U.S. dollars, the basic AF-40-8-1 armored personnel carrier reportedly maintains a unit price of \$241,900; the AF-40-8-2 reconnaissance vehicle costs \$269,900.

Contractors

Prime

Abdallah Al-Faris & Co for Heavy Industries LLC

PO Box 5987, Damman, 31432 Saudi Arabia, Tel: + 966 03 821 1395, Fax: + 966 03 821 1540, Prime

Subcontractor

ACDelco	http://www.acdelco.com , 6200 Grand Pointe Dr, PO Box 6020, Grand Blanc, MI 48439 United States, Tel: + 1 (800) 223-3526, Fax: + 1 (10) 06-250 (LAV-25 Turret)
BAE Systems plc	http://www.baesystems.com , 6 Carlton Gardens, London, SW1Y 5AD United Kingdom, Tel: + 44 1252 373232, Fax: + 44 1252 383991 (AF-Faris Turret)
CMI Defence, Cockerill Mechanical	http://www.cmigroupe.com , Avenue Greiner 1, Seraing, 4100 Belgium,

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Industries	Tel: + 32 4 330 2243, Fax: + 32 4 330 2582, Email: welcome@cmigroupe.com (90mm KEnerga Mk 8 Cannon)
Deutz AG	http://www.deutz.com, Ottostrasse 1, Koln-Porz (Eil), 51149 Germany, Tel: + 49 221 822 0, Fax: + 49 221 822 5850, Email: info@deutz.com (Al-Faris Diesel Engines)
Zahnradfabrik Friedrichshafen AG	http://www.zf.com, Graf von Soden Platz 1, Friedrichshafen, 88046 Germany, Tel: + 49 07541 77 0, Fax: + 49 07541 77 908000, Email: postoffice@zf.com (Al-Faris AF Series Gearbox)

Comprehensive information on Contractors can be found in Forecast International's "International Contractors" series. For a detailed description, go to www.forecastinternational.com (see Products & Services/Governments & Industries) or call + 1 (203) 426-0800.

Contractors are invited to submit updated information to Editor, International Contractors, Forecast International, 22 Commerce Road, Newtown, CT 06470, USA; rich.pettibone@forecast1.com

Technical Data



Al-Faris AF-40-8-1

Source: Al-Faris Group

AF-40-8-1

Crew. Two: commander and driver, plus 11 infantrymen.

Configuration. 8x8.

Armor. Steel alloy armor provides protection against 14.5mm ball projectiles over the frontal arc; it protects

against 7.62mm ball projectiles and ballistic fragments over the rest of the vehicle. The shape of the vehicle bottom is optimized against the effects of land mines. The vehicle can also mount the Modular Expandable Armor System (MEXAS).

Dimensions. The following data reflect the latest production-standard AF-40-8-1 armored personnel carrier.

	<u>SI Units</u>	<u>U.S. Units</u>
Length	7.89 m	25.92 ft
Width	2.94 m	9.65 ft
Height	2.36 m	7.74 ft
Combat weight	19.52 tonnes	21.52 tons
Fuel capacity	550 liters	146.28 gal

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Performance. The speed and range data reflect use on a paved road.

	<u>SI Units</u>	<u>U.S. Units</u>
Maximum speed	95 kmph	58.90 mph
Maximum range	800 km	496.80 stat mi
Maximum water speed	16 kmph	9.90 mph
Step	54 cm	1.77 ft
Trench	2.27 m	7.44 ft
Slope	34%	34%
Gradient	61%	61%
Fording	Amphibious	Amphibious

Engine. An unspecified Deutz air-cooled, supercharged, 10-cylinder diesel engine. This powerplant generates 298.4 kilowatts (400 hp), with a power-to-weight ratio of 15.29 kilowatts per tonne (18.59 hp/ton).

Two steerable propellers at the rear of the vehicle provide water propulsion via hydraulic motors. An optional 13-kilowatt (17.42-hp) diesel auxiliary power unit is available; the APU mounts on the left rear of the chassis. The standard dual 12-/24-volt electrical system features four 12-volt/125-ampere-hour batteries.

Gearbox. An unspecified Zahnradfabrik Friedrichshafen gearbox with one reverse and six forward-gear ratios. All the axles are steerable; steering is power-assisted.

Suspension and Running Gear. Independently sprung suspension system with a hydro-pneumatic (McPherson) spring system. An electromechanical self-regulating pressure system controls the level of the vehicle when in operation, adjusting ground clearance between 15 and 60 centimeters (5.91 and 23.62 in). The vehicle mounts radial 16.00x20 tires with run-flat inserts; the vehicle also employs a central tire pressure regulation system.

Armament. The AF-40-8-1 armored personnel carrier can mount a variety of machine guns and 40mm automatic grenade launchers on the vehicle roof.



Al-Faris AF-40-8-2

Source: Al-Faris Group

Al-Faris AF Series

AF-40-8-2

Crew. Three: commander, gunner, and driver.

Configuration. 8x8.

Armor. Same as the AF-40-8-1.

Dimensions. The following data reflect the latest production-standard AF-40-8-2 scout/reconnaissance vehicle.

	<u>SI Units</u>	<u>U.S. Units</u>
Length	7.89 m	25.92 ft
Width	2.94 m	9.65 ft
Height	2.71 m	8.89 ft
Combat weight	21.81 tonnes	24.04 tons
Fuel capacity	550 liters	146.28 gal

Performance. The speed and range data reflect use on a paved road.

	<u>SI Units</u>	<u>U.S. Units</u>
Maximum speed	92 kmph	57.1 mph
Maximum range	660 km	409.9 stat mi
Maximum water speed	16 kmph	9.90 mph
Step	54 cm	1.77 ft
Trench	2.27 m	7.44 ft
Slope	34%	34%
Gradient	61%	61%
Fording	Amphibious	Amphibious

Engine. An unspecified Deutz air-cooled, supercharged, 12-cylinder diesel engine. This powerplant generates 410.1 kilowatts (550 hp), with a power-to-weight ratio of 18.88 kilowatts per tonne (22.88 hp/ton).

Two steerable propellers at the rear of the vehicle provide water propulsion via hydraulic motors. An optional 13-kilowatt (17.42-hp) diesel auxiliary power unit is available; the APU mounts on the left-rear of the chassis. The standard dual 12-/24-volt electrical system features four 12-volt/125-ampere-hour batteries.

Gearbox. Same as the AF-40-8-1.

Suspension and Running Gear. Same as the AF-40-8-1.

Armament. The AF-40-8-2 scout and reconnaissance vehicle can mount a variety of weapons up to a 106mm recoilless rifle. The turret can also mount the 90mm CMI Defence (Cockerill) KEnerga Mk 8 ordnance, as well as all options available to the AF-40-8-1.

Variants/Upgrades

Variants. In addition to the AF-40-8-2, the Al-Faris company is developing a number of other variants of the basic AF-40-8 design. Beyond the variants in the following table, proposals exist for an anti-tank vehicle (mounting the M40 recoilless rifle), a self-propelled

mortar vehicle (mounting the Delco/BAE Systems 120mm mortar turret), an armored logistics vehicle, an armored command post, an air defense vehicle (with an unspecified armament), an ambulance, and a maintenance vehicle.

<u>Designation</u>	<u>Description</u>
AF-40-8-1	Basic Al-Fahd 40-8 series light armored vehicle.
AF-40-8-2	Primary variant reconnaissance vehicle. Trades troop capacity for a turret-mounted weapon such as a 106mm recoilless rifle, 105mm cannon, or 40mm automatic grenade launcher. Engine and gearbox mount in the rear.
AF-40-8 ICV	Infantry Combat Vehicle design proposal; mounts Delco turret with 25mm M242 Bushmaster cannon.
AF-40-8-35 FADV	Fighting and Air Defense Vehicle design proposal by Örlikon Contraves; mounts Örlikon Contraves' 35mm revolver cannon and Advanced Hit Efficiency and Destruction (AHED) system.

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Modernization and Retrofit Overview. Not applicable at this time. Some modernization and retrofit work may emerge later in the forecast period.

Program Review

Background. As a means to develop a domestic arms industry and replace the V-150 and other obsolescent vehicles in the Saudi National Guard, Saudi Arabia began developing an indigenous light armored vehicle in 1977 under the Dera Al Jazirah (Peninsular Shield) program.

From 6x6 to 8x8

The Abdallah Al-Faris firm completed the first 6x6 armored personnel carrier prototype in 1981. After extensive testing, the second prototype, the 6x6 El Labwa, was rolled out in 1988. By 1990, the Abdallah Al-Faris firm had reoriented the program toward an 8x8 vehicle configuration called the AF series.

Around 1996, the prime contractor began the manufacture of about 20 pre-serial-production models of the baseline AF-40-8-1 armored personnel carrier. Following extensive evaluation of those vehicles, Saudi Arabia's Ministry of Defense and Aviation placed the first order in March 1997. Serial production commenced in 1998.

Description. The AF-40-8 series exhibits a fairly conventional, but modern, 8x8 armored vehicle design.

Conventional Modern Design

In the basic AF-40-8-1 armored personnel carrier, the driver and commander sit side by side in the forward

portion of the vehicle; the engine and gearbox mount in the vehicle center, forward of the troop compartment. There is no access between the driver's compartment and the troop compartment. A fold-down rear door provides access to the rear troop compartment. The troop compartment also features a square roof-mounted hatch cover.

In the AF-40-8-2 vehicle, the engine and gearbox mount to the rear of the vehicle; the troop compartment serves as ammunition storage.

Crew-Friendly Features

Crews can easily remove the engine, gearbox, cooling system, and drive shafts for maintenance. An APU drives a hydraulic pump that can operate all vehicle systems when the main engine is shut down. Two air-conditioning units are standard, as are a nuclear, biological, and chemical (NBC) protective suite and amphibious operation equipment.

Optional equipment includes a liquid-cooled diesel engine; a central tire-inflation system; specialized riot-control equipment; fire detection/suppression equipment; a land-navigation system; various armament, communications, and night-vision equipment; and a hydraulically operated winch.

Related News

GCC Seeks to Form Military Alliance with Jordan, Morocco and Egypt – The Gulf Cooperation Council (GCC) has invited Jordan, Morocco and Egypt to form a military alliance to resolve the bloc's manpower issues. Saudi Arabia, Qatar, the United Arab Emirates, Kuwait, Bahrain and Oman have already sent a formal request to the three countries to join the proposed alliance.

The GCC announced the newly formed United States-backed Joint Military Command in December 2013. The joint command has agreed to be headquartered in Riyadh.

The military alliance would receive the assistance of a total of 300,000 troops from Morocco and Jordan, as well as Egypt if included. In exchange, the three countries will be provided with financial aid. (Morocco World News, 4/14)

Saudi Arabia Spending Big on Defense – Saudi Arabia is spending a lot on defense. In 2012, Riyadh was seventh in worldwide defense spending. By 2013, Saudi Arabia was fifth in spending behind the United States, China, Russia, and France. Riyadh increased its military budget by 14 percent to \$67 billion in 2013.

Instability in the region is fueling Saudi defense spending. Fighting in Yemen and Iraq continues, as well as a full-scale civil war in Syria. Iran continues to threaten its neighbors. Therefore, Saudi Arabia is upgrading its weaponry.

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Part of this funding will enable Saudi Arabia to enhance its missile defense capability. Washington's so-called pivot in foreign policy to Asia has Saudi Arabia and the region concerned. Overall, global defense spending fell in 2013 by 1.9 percent, to \$1.747 trillion. (FI, 4/14)

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Funding

The Saudi Ministry of Defense and Aviation funds the development and Saudi procurement of the AF series under the Dera Al Jazirah program.

Timetable

<u>Month</u>	<u>Year</u>	<u>Major Development</u>
	1977	Development of 6x6 vehicles under Dera Al Jazirah program begins
	1981	First prototype rolled out
Jun	1988	Second prototype (El Labwa) rolled out
Early	1990	Dera Al Jazirah program reoriented to an 8x8 vehicle
	1991-1998	Developmental testing of Al-Faris 8-400/Al-Fahd 8x8 vehicles
Mar	1997	Initial Saudi production order
	2014	Serial production ongoing; development continues

Worldwide Distribution/Inventories

Export Potential. Although a relative newcomer to the international armored vehicle market, Saudi Arabia regularly provides aid to some of its less affluent neighbors. Thus, the AF series vehicles could eventually find their way into one or more of those nations' inventories.

Countries. Saudi Arabia (377 AF-40-8-1s; 240 AF-40-8-2s)

Forecast Rationale

Serial production of the Al-Faris series of wheeled armored vehicles is ongoing for domestic Saudi procurement.

Conflicting Reports

The initial production run of the AF-40-8-1 wheeled armored carrier concluded in 2007 after the Saudi Army's procurement objective of around 220 vehicles was fulfilled. However, now that the prime contractor has reinitiated production, we expect that the Saudi Army will ultimately acquire as many as 630 AF-40-8-1 vehicles in total.

Open-source reporting indicates that the Saudi Army initially maintained a procurement objective of

approximately 210 AF-40-8-2 reconnaissance vehicles. However, our estimates suggest that the Army has surpassed this initial objective and will acquire at least 260 AF-40-8-2 models in total.

Objectives vs. Outlook

The Forecast International Weapons Group expects that Saudi procurement of both the AF-40-8-1 and AF-40-8-2 wheeled armored vehicles will extend significantly beyond the operator's stated procurement objectives. Indeed, we now anticipate that production of the AF-40-8-1 model will be maintained through the entirety of the forecast period.

Al-Faris AF Series

Ten-Year Outlook

ESTIMATED CALENDAR YEAR UNIT PRODUCTION												
Designation or Program		High Confidence				Good Confidence			Speculative			
	Thru 2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	Total
Abdallah Al-Faris & Co for Heavy Industries LLC												
AF-40 -8 -1												
	377	45	45	45	45	35	35	35	35	30	28	378
AF-40 -8 -2												
	240	22	0	0	0	0	0	0	0	0	0	22
Subtotal	617	67	45	45	45	35	35	35	35	30	28	400
Total	617	67	45	45	45	35	35	35	35	30	28	400