

G FORCE JARS



**Drilling Jars • Coiled Tubing Jars
Impactors & Drivers**

“When You Need It”

Higher Impact • Easier Control • Unique Design

ABOUT G-FORCE

G-Force
J28GF

G-FORCE JARS, LLC was founded by staff that has over 50 years of knowledge in downhole tool design. Our Jars are bidirectional hydraulic jars which are much shorter and hit harder, making them more efficient than standard jars. We pride ourselves on customer service and are dedicated to helping educate and train to better serve our clients. **When you need it NOW**, G-Force tools can be delivered to anywhere in the country overnight, to any location. Our multiple locations help to make this possible, reducing downtime. **When you need it to WORK**, G-Force's team of engineers and in-house manufacturing enables us to provide the best in jarring and extended reach tools. These tools are constantly tested to ensure the most dependable and

reliable tool for your work force. All of our products are Made in America. G-Force is there **"When You Need It."** We're setting a new standard in rentals and sales to oilfield service companies by our ability to learn your requirements and exceed them.

Hydraulic Coiled Tubing Jars

How Does The G-Force Hydraulic Coiled Tubing Jar Work? G-Force Hydraulic jars use a piston (metering device) and oil to create a time delay. This time delay allows energy to be stored in stretched tubing. Once the energy is stored, the jar piston bypasses creating a hammer-and-anvil effect that imparts an impact load to the end of the tool assembly. As the jar is pulled in tension, a piston moves through a restricted bore containing oil. This process enables the system to store energy and the continued upward pull moves the piston over the step, which releases the stored energy and allows the mass to rapidly accelerate to the top of its stroke. This process creates an impact force that exceeds the tension that can be pulled on the tubing alone. The force supplied depends upon the force applied at the tool. The Hydraulic Coiled Tubing Jars can be supplied either up acting, down acting or bidirectional.

G-Force Hydraulic Coiled Tubing Jar Design Features

- Shorter than most hydraulic jars
- Higher impact capability, it can hit harder than any other jar of the same size.
- Maximum operating temperature 500 degrees F
- Large bore for drop ball
- High tensile strength for higher impact service capability
- Hydrostatic pressure balanced
- Can be run in compression or tension
- Straight pull up/push down jarring tool that employs a combination of proven principles of hydraulics and mechanics.
- Unique design simplifies redress
- Allows for easy & dependable service
- No setting or adjustment is required before going in the hole or after the fish is engaged.
- Easily control the intensity of jarring blows by varying the load
- Can deliver wide range of blows from low to very high impact

The G-FORCE Coiled Tubing Jar is fully adjustable down-hole by varying the pull of the coiled tubing to fire up or slacken off to fire down. Cocking or resetting the Coiled Tubing Jar is automatic once the desired impact is delivered, just raise or lower the string to allow the proprietary metering mechanism to be reactivated. Then the G-FORCE Coiled Tubing Jar is again ready to deliver the next impact. There is no need to "Cool Down" the G-FORCE Hydraulic Coiled Tubing Jar as its proprietary design allows the jar to maintain its temperature and pressure compensation at all times.

G-Force Coiled Tubing Jar Specifications

COMPLETE ASSEMBLY	J16GF	J21GF	J22GF	J28GF	J31GF
JAR O.D. (Inches)(mm)	1 11/16" (42.862)	2 1/8" (53.975)	2 1/4" (56.515)	2 7/8" (73.025)	3 1/8" (79.375)
JAR I.D. (Inches)(mm)	9/16" (14.287)	3/4" (19.05)	11/16" (17.462)	1" (25.40)	1.25" (31.75)
STANDARD CONNECTION	1 AMMT	1.5 AMMT	1.5 AMMT	2 3/8 PAC	2 3/8 REG
OVERALL LENGTH CLOSED (Inches)(mm)	4' 8 1/4" (1,428)	4' 9" (1,447)	4' 9" (1,447)	4' 6 3/8" (1,381)	5' 11 1/2" (1,816)
MAXIMUM OVERPULL (lbs)	10,000	18,000	25,000	34,000	45,000
MAXIMUM OVERPUSH (lbs)	10,000	15,000	15,000	20,000	35,000
TENSILE STRENGTH (lbs)	80,000	150,000	160,000	250,000	325,000
MAXIMUM LIFT LOAD AFTER JARRING (lbs)	50,000	100,000	120,000	200,000	280,000
TORSIONAL YIELD STRENGTH (ft/lbs)	950	2,000	2,500	3,500	5,000
TESTING PULL LOAD (lbs)	8,000	11,000	13,000	20,000	20,000
TESTING PUSH LOAD (lbs)	4,000	5,000	5,000	10,000	10,000
PUMP OPEN AREA (Sq. inches)	1.18	1.63	1.70	3.01	3.50
TOTAL STROKE (inches)	12"	12"	12"	12"	12"
TOTAL WEIGHT (lbs)(kg)	38 (17.27)	60 (27.21)	65 (29.48)	80 (36.36)	100 (45.45)

G-FORCE Jars

SUPER-FORCE

Super-Force

How Does The SUPER-FORCE Jar Work? The SUPER-FORCE is a Double acting Hydraulic Drilling Jar that incorporates new technology and surpasses the performance of existing jars. The SUPER-FORCE Drilling Jar can be run in all types of wells. They will hit harder, last longer and can be run in both tension and compression. The hydraulic jar utilizes an oil reservoir with

some type of metering orifice and a bypass area. When the string becomes stuck, overpull is applied. As the force is applied the sliding mandrel will begin to compress the oil in the reservoir, forcing the oil to bleed off slowly through the metering orifice. This allows time for the drill string to establish the strain energy required for the jarring effect. When the piston on the mandrel comes to the bypass area, the oil bleeds off almost instantly. The hammer then speeds toward the anvil, impacting and transferring the drill strings stored energy to the stuck point.

G-Force SUPER-FORCE Drilling Applications

- Straight Hole
- Directional Hole
- Work Over

G-Force SUPER-FORCE Design Advantages

- High over-pull capability (with additional safety factor)
- Longer free stroke
- Higher impact capability
- Hydraulic timer is self-compensating for hole temperature
- Mechanical up cocking lock prevents accidental cocking of the up jar section and firing of the down jar section
- Jar has rugged V-packing for extended service
- Jar can be used for high temperature service with minimum packing changes
- Jar has high tensile strength for higher impact service capability
- Tapered end connections allow jar to transverse smaller hole radii as well as reduce fatigue damage to the tool
- Optional "ZIP" lift or elevator lift shoulders available on upper end of jar for ease of use
- Jar is fully pressure balanced against hydrostatic pressure
- Jar's large pump open area allows the tool to be run in compression
- Hydrostatic pressure strengthens jar
- Splines are constantly engaged
- Straight push and pull operation for easy jar operation
- Large through bore for passage of instruments
- Redundant dynamic packing to prevent washouts and provide long down-hole service
- Massive over-pull failure results on internal washpipe collapse-packing is preloaded to prevent low pressure leakage and seal compression set problems
- All connections, shoulders and tensile/torque carrying parts are a fatigue resistant design. Additionally, the parts are cold worked to provide additional fatigue resistance (shot peened)

G-Force SUPER-FORCE Specifications

Complete Assembly	SF475	SF650	SF800
JAR O.D. inches (mm)	4.812" (122.224)	6.5" (165.100)	8" (203.200)
JAR I.D. inches (mm)	2.25" (57.150)	2.75" (69.85)	3" (76.20)
STANDARD CONNECTION	3 1/2 IF	4 1/2 XH or IF	6 5/8 Reg
OVERALL LENGTH "OPEN" Feet (mm)	30 ft (9,144)	32 ft (9,754)	32 ft (9,754)
MAXIMUM PULL LOAD lbs	100,000	200,000	350,000
UP STROKE (inches)	9"	9"	9"
DOWN STROKE (inches)	9"	8"	8"
TENSILE STRENGTH lbs	525,000	1,000,000	1,750,000
TORSIONAL STRENGTH IN SPLINES ft/lbs	40,000	91,000	125,000
PUMP OPEN AREA Sq. inches	11.13"	20.60"	28.27"
TOTAL STROKE inches	34"	29"	29"
TOOL WEIGHT lbs	1800	2600	3800

G-FORCE

Mission

Our purpose is to serve, innovate and make an impact for our client. We will serve our industry and client with competitively priced and top quality USA manufactured products. Our approach is to innovate downhole tool design to better serve our clients and surpass expectations. We are dedicated to making an impact in our industry. We will strive to be the most efficient and effective.

When You Need It - We'll be there.



G-Force
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Impactors

How Does The G-Force Impactor Work? The G-Force Impactor is a double acting accelerator used to increase the impact effect of the G-Force Coiled Tubing Jars. The Impactor stores concentrated energy in an optimal position in the jar string. It helps to absorb impact shock waves that travel up the drill pipe allowing the drill string to be utilized closer to their yield loads. This permits higher pull loads to be placed on the hydraulic drilling jars. The impactor provides the operator the ability to perform impact operation at or near the surface. The compressibility provides the necessary "stretch" to operate the jarring equipment. The impactor supplies drive for the concentrated weights in the jar string in the same manner as the long resilient drill string. It is an efficient reservoir for storing energy since its stretch is confined to a short tool length. The increased efficiency and stretch provides a much harder hitting jar system. This system increases the impact up to approximately a factor of three and can impact at much higher rates depending on conditions. It will work on any drill string and provides a means to get higher impact load in a crooked or extended reach well, where drag is a significant factor. The Impactor/Jar System should be placed as close to the stuck point as possible. The impact effect diminishes as the distance increases between the impactor and the jar at the stuck point.



G-Force
M31GF

G-Force Impactor Design Features

- Efficient energy reservoir in a short tool length
- Harder hitting jar system
- Higher impact loads in crooked or extended reach well
- Compressibility to provide necessary stretch
- Stores energy at optimal Jar string position
- Double acting accelerator
- Absorbs shock waves
- Factor of three increase in impact
- Ability to operate at or near surface
- Will work on any drill string

G-Force Impactor Specifications

COMPLETE ASSEMBLY	M16GF	M21GF	M22GF	M28GF	M31GF
IMPACTOR O.D. (inches)	1 11/16"	2 1/8"	2 1/4"	2 7/8"	3 1/8"
(mm)	42.862	53.975	56.515	73.025	79.375
IMPACTOR I.D. (inches)	9/16"	3/4"	11/16"	1"	1.25"
(mm)	14.287	19.05	17.46	25.4	31.75
STANDARD CONNECTION	1 AMMT	1.5 AMMT	1.5 AMMT	2 3/8 PAC	2 3/8 REG
OVERALL LENGTH "EXTENDED" (inches)	5' 10"	5' 11"	5' 11"	6' 1 1/2"	6' 5 3/8"
(mm)	1,778	1,803	1,803	1,866	1,965
MAXIMUM DETENT WORKING LOAD (lbs)	7,500	10,000	13,000	26,000	30,000
(N)	33,361	44,482	57,826	115,653	133,446
MAXIMUM LIFT LOAD AFTER JARRING (lbs)	50,000	100,000	120,000	200,000	280,000
TENSILE STRENGTH (lbs)	80,000	150,000	160,000	250,000	325,000
MAXIMUM OVERPULL (lbs)	10,000	18,000	25,000	34,000	45,000
TORSIONAL YIELD STRENGTH (lbs)	950	2000	2,100	3,500	5,000
FREE STROKE-UP (inches)(mm)	5" 127	5" 127	5" 127	7 5/8" 193.67	4 5/8" 117.47
FREE STROKE-DOWN (inches) (mm)	3 1/2" 88.9	4" 101.6	4" 101.6	2 3/8" 60.32	4 1/2" 114.3
TOTAL STROKE (inches) (mm)	8 1/2" 215.9	9" 228.6	9" 228.6	10" 254	9 1/8" 231.77
TOTAL WEIGHT (lbs) (kg)	42 19.05	65 29.48	70 31.75	90 40.82	110 49.89

G-FORCE Jars

Drivers



How Does The G-Force Driver Work? The G-Force Driver creates dynamic pressure pulses that have been proven to help you complete coiled tubing (CT) operations in horizontal wells by reducing wellbore friction when paired with a mud motor. It is the most cost effective alternative extended reach tool (ERT) on the market today with a proven record.

The G-Force Driver is a much shorter tool, which in completion operations creates a much shorter and manageable bottom hole assembly (BHA) thereby reducing daily spread costs to the customer and eliminating, in most cases, the need for outsourced cranes and additional lubricators. G-Force Drivers do not contain any elastomer or PDM sections, which enables the tool to be used in nitrogen applications with no adverse effects on the tool. G-Force does not charge for damages to the tool or for tool redressing, this ensures the lowest possible cost to the customer.

The G-Force Driver has been used all across the country with great results in field proven applications. The G-Force Driver helps to complete CT operations in extended reach horizontal wells, reduces friction between the BHA and wellbore, increases ROP times, does not damage other tools in the string, and has an economical advantage over the competition. Due to its small size and weight G-Force Drivers can be shipped overnight anywhere in the country for minimal cost, thus minimizing potential customer downtime.

Typical Extended Reach Applications

Acid Treatments

- Wellbore cleanouts (cement/scale/mud)
- Sliding sleeve manipulation
- Logging
- Coiled tubing drilling (CTD)
- Fishing
- Plug Milling
- Window Milling

Workover Treatments

- All milling and drilling operations
- Mud displacements
- Wellbore Cleanouts



G-Force Driver Design Features

- Shorter Tool for Maneuverability
- Reduces wellbore friction
- No Elastomer or PDM sections
- Increases ROP times
- Manageable BHA
- Can be used in Nitrogen applications
- Alternate to ERT tools
- Can be used in extended reach horizontal wells
- Variable pulsation based on flow rate

G-Force Driver Specifications

Complete Assembly	GF5	GF3	GF
DRIVER O.D. (inches)	1.687"	2.125"	2.875"
STANDARD CONNECTION	1 MT	1 1/2 MT	2 3/8 PAC
OVERALL LENGTH	19.75"	20.5"	20"
WEIGHT (lbs)	9	18	28
PRESSURE DROP AT TOOL (psi)	500	500	500
MAX BPM (barrels per minute)	1.5	2.5	4.5
MIN BPM (barrels per minute)	0.75	1.5	2.5
BEST OPERATING RANGE (bpm)	1.25	2.00	3.25
TEMP RANGE (°F)	550°	550°	550°
MAX OVERPULL (lbs)	60,000	80,000	110,000

G-FORCE Jars

Testers



How Does The G-Force Jar Tester Work?

The G-Force Jar Tester is custom made to fit the client's needs. The Tester is self-contained with a separate control panel. The tester is designed to test the operation of fishing Jars, drilling jars and other downhole drilling tools. The mainframe and hydraulic cylinder efficiently applies tension and compression forces in direct axial alignment with the work piece. The testers can be custom made to also test G-Force Impactors and jars at the same time in the test rack to receive an impact, or smaller test racks to test jars and impactors individually.

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For more information visit us at www.g-forcejars.com
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