

TEMPRESS®

Motor Gas Separator (MGS™) Tool



Completion & Production Services



The Tempress Motor Gas Separator (MGS™) is the most effective downhole phase separator in the industry and is used to ensure good circulation in depleted wells. This tool incorporates a rotary drum separator that removes the gas from the commingled flow allowing the fluid to operate the downhole motor at the designed flow rate.

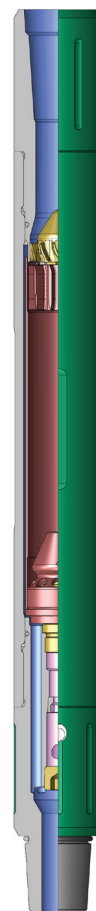
The MGS™ tool incorporates a gas orifice size that can be customized as needed to suit your well profile. This tool is commonly run in tandem with the Tempress HydroPull™ to accommodate a wide range of applications. The tool reduces or eliminates damage to the motor stator during commingled operations.



Applications

- Fishing
- Coiled and Jointed tubing
- Composite bridge plug milling
- Ball seat milling
- Sand cleanout
- Valve shifting
- Extended-reach well service
- Acidizing
- Chemical placement
- Screen and perforation cleaning
- Scale removal
- Depleted well service

Feature	Benefit
High-efficiency gas separation	• Removes free nitrogen from the commingled flow through the motor for depleted well service • Reduces or eliminates nitrogen damage to stators • Prevents motor over-speed • Extends motor life
Compact length	• Simplifies make-up of the bottom hole assembly
Wellbore Adaptability	• Accommodates severe doglegs and multilateral completions • Compatible with common well service fluids • Sour gas compatible
High reliability	• Multiday extreme-reach jobs without tripping • Over 99% downhole success rate



Specifications



Tool Diameter	1.69" (42.9 mm)	2.12" (54.0 mm)	2.88" (73.0 mm)	3.12" (79.3 mm) 3.38" (85.7 mm)
Flow Capacity (max commingled flow equivalent)	2.1 bpm (340 lpm)	2.1 bpm (340 lpm)	6.0 bpm (950 lpm)	6.0 bpm (950 lpm)
Water Flow Capacity	1.8 bpm (290 lpm)	1.8 bpm (290 lpm)	5.0 bpm (790 lpm)	5.0 bpm (790 lpm)
Maximum Particle Size	.125" (3.2 mm)	.125" (3.2 mm)	.156" (4.0 mm)	.156" (4.0 mm)
Average Pressure Differential	<160 psi @ 1.8 bpm (<1.1 MPa)		<250 psi @ 5.0 bpm (1.7 MPa)	<150 psi @ 5.0 bpm (1.0 MPa)
Connected length	16.02 in. (407 mm)	16.57 in. (421 mm)	25.44 in. (646 mm)	27.47 in. (698 mm)
Connections (box inlet, pin outlet)	1" AMT	1-1/2" AMT	2-3/8" PAC- DSI mod	2-3/8" API REG
Temperature (maximum)	400°F (200°C)			
Max Gas Fraction at Inlet	80%			
Typical Gas cut at Outlet	0.5%			

Information



Extended Reach Operations

The MGS™ tool is regularly run with a Tempress HydroPull™ tool. This combination allows pumping two-phase flow in the common case where a low-density water column is required along with extended lateral reach. As with any ERT, extended reach performance is somewhat diminished in the presence of compressible flow. However, the tunability of the MGS and HydroPull™ tools allows for successful well completions. Straight fluid is often run through this tool set while allowing transition to two-phase pumping operations at any time, if needed.

MGS™ Operation Guide

An operation guide is included with the MGS™ tool that provides operating instructions and job reporting requirements. These guides are also located within our Client Login site on our website.

Case Histories

The MGS™ tool is consistently displacing the competition in depleted well service. Please contact us or visit our website for the most recent MGS Case Histories.

Contact Information:

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Performance Software

A proprietary software program is available for MGS tool job planning. The software evaluates the best separator performance range for the job. The software outputs circulating pressures in the well, the transport of sand and cuttings in the horizontal and vertical sections of the well, equivalent fluid flow rates, and the amount of gas separation based on a set of input parameters. This software is located within our Client Login site on our website.

Two Phase Circulation Model with MGS™ & WBS Port Sizing

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This performance software is designed
specifically for use with Tempress® tools only

		blue data			
Well Data	Well date and designation	mm/dd/yy		Well name	
	Select units	US Units		see <i>Instructions</i> tab, press F9 key	
	Total Vertical Depth (TVD)	10,000	ft		
	Measured Depth (MD)	24,000	ft		
	Vertical casing ID	4.67	in		
	Horizontal casing or openhole ID	4.67	in		
	Temperature gradient, deg F/1000 ft	20	°F/1000 ft	bottomhole temperature: 240 °F	
Workstring	Length of tubing (coil or jointed)	28,000	ft		
	Tubing OD	2.625	in		
	Tubing wall thickness	0.156	in		
BHA	Minimum ID in motorhead or circ valve	0.875	in	upstream of MGS or WBS	
	BHA tool diameter	2.88	in		
	Select bypass tool: MGS or WBS	MGS™			
	# of pressure balancing restrictors (MGS)	0		use with low fluid flow, default is 0, factory installed	
	Select HydroPull® tool	HydroPull®		see HydroPull® Extended Reach software	
	HydroPull flow configuration	Standard Flow			
	No-load motor pressure (see <i>Motor Data</i> tab)	50	psid	at fluid rate, both 0 if no motor	
	On-off bottom motor pressure differential	750	psid	see <i>Motor Data</i> tab	
Fluid/Gas	Number of nozzles (bit or bullhose)	6		use 1 for equivalent diameter values	
	Bit nozzle diameter	0.375	in	see <i>Nozzle Sizes</i> tab	
	Nitrogen flow rate	1000	scfm		
	Fluid pump flow rate	3.60	bpm		
	Wellhead choke pressure (gage)	100	psig		
	Friction reducer effect	50%	% reduction		
	Fluid density	8.34	ppg	specific gravity = 1.00	
Bypass Ports	Fluid lost (-) to or gained (+) from formation	0.00	bpm		
	On-Bottom (Milling) or Off-Bottom	OFF BOTTOM		hit F9 key balanced	
	MGS bypass port size (select or enter value)	0.200	inch	5.08 mm	
		Press F9 to recalculate until solution stabilizes			
Pressures	RESULTS				
	Total BHA pressure drop	757	psi		
	Pump pressure	2130	psi		
	Bottomhole circulating pressure (BHCP)	3670	psi		
Transport	Vertical cuttings transport ratio (1-mm sand)	84%		should be >50%	
	Fluid velocity in horizontal section	322	fpm	OK	
	Horizontal flow stratification check	Mixed - OK			
Fluid Flow Rates	Motor equivalent flow	3.56	bpm		
	Bypass equivalent flow	1.07	bpm		
	Bypass water	0.04	bpm		
	On-off bottom motor flow variation	-	bpm	displays when WBS selected	
	Ratio of water bypassed	1%			
	Water flow to motor	3.56	bpm		
Gas Separation	Bypass nitrogen	1.03	bpm		
	Nitrogen cut in motor	0.00	bpm		
	Nitrogen ratio in motor	0%			

Refer to MGS™ and WBS Operators Guides
for more information or call 425.251.8120 for
well planning assistance

TEMPRESS®

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Circulating Pressure

