



G **RACO OILFIELD SERVICES**
Moving Forward, Honoring the Past



LINER HANGER COMPLETIONS

VOLUME II



To Our Customers:

Graco is a leading oilfield services provider, trusted to deliver superior results and exceptional service throughout the industry. Through our well site operations and in our facilities, we are working to develop products, services and solutions that optimize customer performance in a safe and professional manner.

Over 25 years has been devoted to building a reputation; a reputation that guarantees to our customers a job well done; a reputation that generates our customer's extreme confidence; a reputation that defines professionalism. A service company is only as good as its people. Graco employees are industry recognized for their experience and knowledge. This ensures you will be provided with safe, reliable and professional service.

Graco specializes in liner hanger completion tools and services. Our priority is customer satisfaction through deployment of quality products, service and personnel. A Graco liner hanger expert will meet with you prior to drilling the well and installing the liner to provide design, operating and running procedures. This process is necessary to ensure the liner will be properly installed.

We offer an extensive line of reliable products, including liner hangers and running tools with proven reliability. This catalog is a comprehensive listing of our specialized equipment including a look at the "the big picture" of how liner hangers and the associated running tools are deployed.

Graco completion hardware is manufactured to the industry's most stringent levels of quality assurance in order to ensure our products and services exceed your expectations. State of the art engineering and design are a key component of the superior products that Graco delivers.

This catalog is as an overview of the equipment available to design your next liner completion. We look forward to fulfilling your requirements and meeting your specific needs.

Sincerely,

A handwritten signature in black ink, appearing to read 'Mark Mixon', followed by a horizontal line.

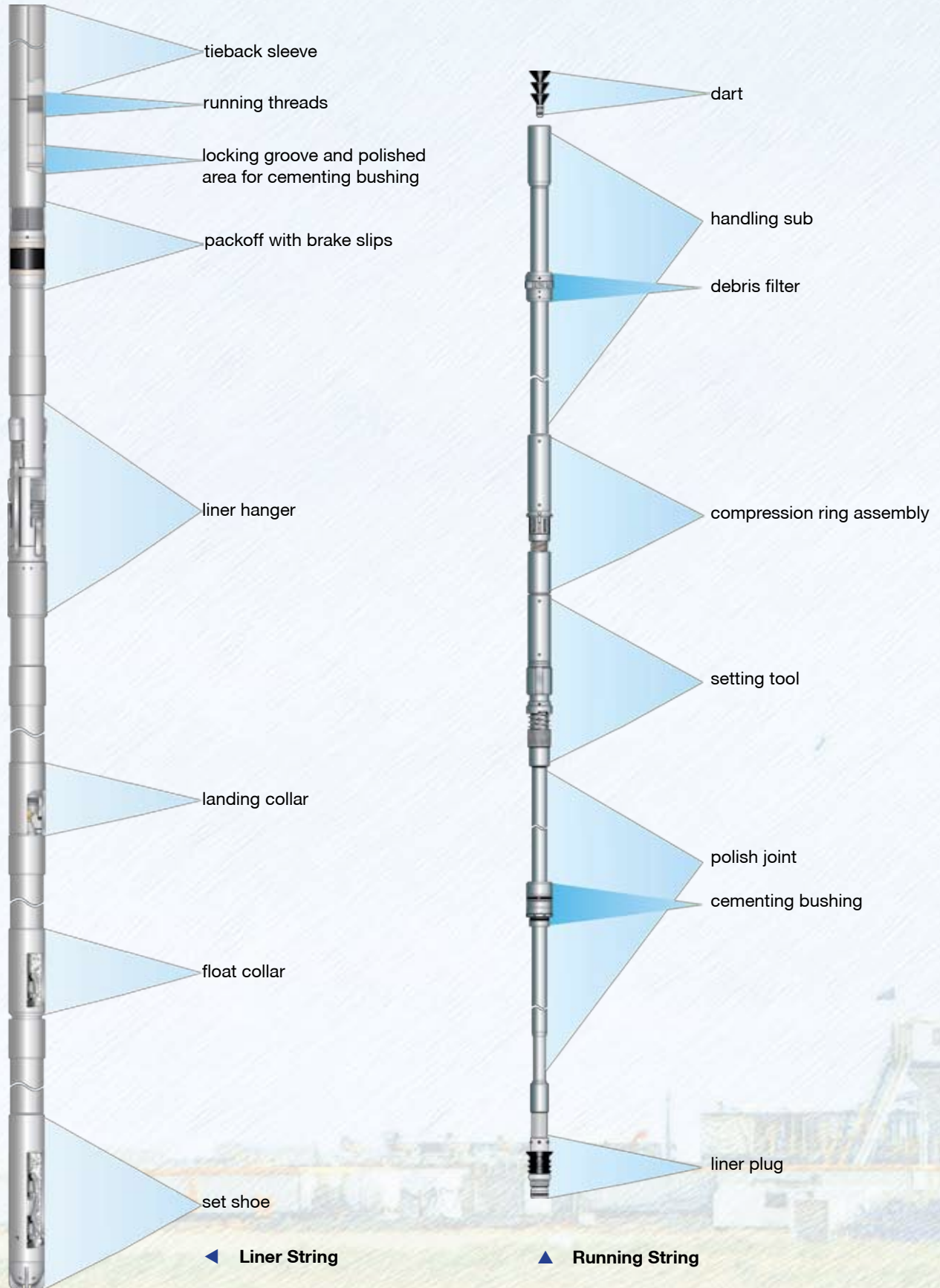
Mark Mixon
Chief Operating Officer

TABLE OF CONTENTS

Liner installation example*	ii	CEMENTING PACKOFFS	14
LINER HANGERS	1	Cementing Bushing [MODEL 284]	14
Single-Cone Mechanical Hanger [MODEL 38]	1	Polish Joint [MODEL 285]	14
Dual-Cone Mechanical Hanger [MODEL 40]	1	Retrieval Sub [MODEL 286]	14
Single-Cone Hydraulic Hanger [MODEL 44]	2	Debris Filter and Handling Sub [MODEL 256]	15
Dual-Cone Hydraulic Hanger [MODEL 45]	2	Handling Sub [MODEL 257]	15
LINER PACKOFFS	3	POLISH MILLS	16
Compression-Set Packoff [MODEL 357]	3	Locator Stop Mill [MODEL 65]	16
Compression-Set Packoff with Brake Slips [MODEL 380]	3	Tieback Mill [MODEL 68]	17
SETTING SUBS	4	TIEBACK EQUIPMENT	18
Setting Sub [MODEL 454]	4	Fill Collar [MODEL 460]	18
Setting Sub with Tieback [MODEL 455]	4	Tieback Stinger [MODEL 475]	19
FLOAT EQUIPMENT AND LANDING COLLARS	5	SPECIALTY COMPLETION TOOLS	20
Landing Collar [MODEL 22]	5	Liner-Hanger with Packoff [MODEL 358]	20
Ball-Seat Landing Collar [MODEL 25]	6	Posi-Lock Seal Assembly [MODEL 476]	21
Float Collar [MODEL 26]	7	Second Trip Packoff [MODEL 300]	21
Single-Valve Set Shoe [MODEL 30]	8	Tubing Seal Stinger [MODEL 478]	22
Double-Valve Set Shoe [MODEL 32]	8	Polished Bore Receptacle [MODEL 480]	23
PLUGS AND DARTS	9	THE BIG PICTURE	24-25
Plug [MODEL 17]	9	How the tools go together	24-25*
Dart [MODEL 20]	9	CHART OF TOOL SIZES	26*
CEMENTING MANIFOLD	10	LOCATIONS	27
Cementing Manifold [MODEL 500]	10	SERVICES	28
RUNNING TOOLS	11		
Mechanical-Set Tool [MODEL 264]	11		
Mechanical-Set Tool with Clutch [MODEL 270]	12		
Compression-Ring Assembly [MODEL 280]	13		

*Illustrates typical completions; ask your Graco representative about specialty completions.

LINER INSTALLATION EXAMPLE



Model 38 and 40 Liner Hangers

These liner hangers are for use in short-to-medium length liners and activate with a mechanical J-Cage.

- In open hole, sets the liner in place for cementing an extension to existing casing and to prevent the flow of fluids between zones
- In cased hole, sets the liner in place for cementing to replace a full casing string, to isolate damaged zones, or to tie back to the surface.
- In cased hole, can be used to set a blank, slotted or screen liner for sand control and wellbore stability, or to set a scab liner.
- Optimum for straight wells where drill-in and rotating are not necessary.
- Available for sour gas liners.

Features:

- Optional dual-cone Model 40 liner hanger supplies additional hanging capacity.
- High burst and collapse.
- Mechanical J-slot makes this hanger simple to actuate: when the liner is in place, picking up weight, rotating a quarter-turn to the left or to the right and setting down weight again will set the hanger and the liner.
- Available with right- or left-hand J-slot.



[40]



[38]

LINER HANGERS



[45]



[44]

Model 44 and 45 Liner Hangers

These liner hangers are for use in short-to-medium length liners and activate with a hydraulic cylinder.

- In open hole, sets the liner in place for cementing an extension to existing casing and to prevent the flow of fluids between zones
- In cased hole, set the liner in place for cementing to replace a full casing string, to isolate damaged zones, or to tie back to the surface
- In cased hole, can be used to set a blank, slotted or screen liner for sand control and wellbore stability, or to set a scab liner.
- Can be hung in straight wells, or rotated or drilled into horizontal wells.
- Available for sour gas liners.

Features:

- Optional multi-cone Model 45 liner hanger supplies additional hanging capacity.
- Simple to actuate: when the liner is in place, a setting ball dropped from the plug-dropping head seats in a collar below the hanger, creating the pressure necessary to shift the hydraulic cylinder upwards and set the hanger. Slacking off weight will then set the liner.

Model 357 and 380 Liner Packoff

The liner packoff provides an effective annular seal between the liner top and the casing.

- Isolates the open hole, preventing reverse circulating pressure from acting on the formation.
- Prevents gas migration and subsequent channeling and wormholing during cementing, which can lead to liner-top leakage, as well as weak bonding and a poor cementing job.
- Prevents formation breakdown and loss of cementing slurry.

Features:

- Metal rings prevent extrusion of the seals and ensure proper seal activation and integrity.
- Internal locking mechanism engages when the packoff is set to ensure that the seals don't become unset.
- Includes cementing bushing groove below tieback.
- Model 380 features integrated brake slips which prevent unwanted upward travel of packoff.
- Easy to set and activate
- Weight-set with the Model 280 Compression Ring Assembly Setting Tool.



[357]



[380]

SETTING SUBS



[455]



[454]

Model 455 and 454 Setting Sub

The setting sub carries the liner hanger into the hole.

- Cementing bushing groove allows the liner top to be sealed off with a retrievable cementing bushing after the setting tool has disengaged from the liner.
- Tieback sleeve, available with the Model 455, allows the liner string to connect to the top of the liner or back to the surface by sealing the annulus with a tieback seal stinger.

Features:

- Running threads for various setting tools inside the setting sub allow the hanger and/or packoff to be set.
- Clutch profiles at the top permit torquing of the liner with the proper setting tool.

Model 22 Landing Collar

Provides a landing seat below the packoff and/or hanger for the liner plug and the drill pipe dart.

- Positive latch and seal with the liner plug/drill pipe dart assembly creates an effective back pressure valve.
- Prevents back-flow of cement slurry into liner.

Features:

- All internal components are drillable with PDC bit to full ID bore.
- Available box-up-by-pin-down.



[22]

LANDING COLLARS



Model 25 Ball-Seat Landing Collar

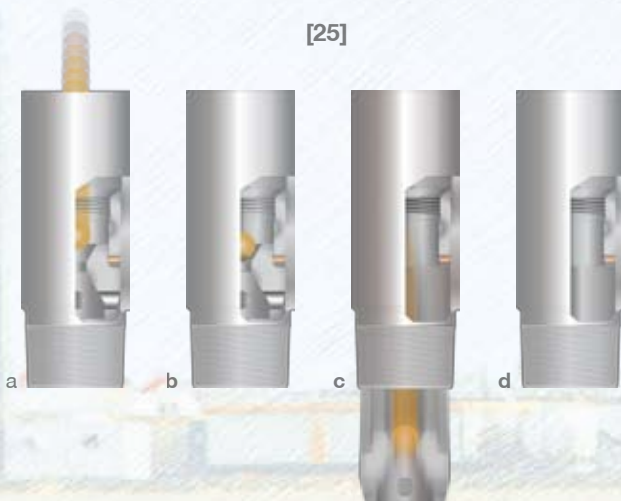
Provides a landing seat for a brass ball launched from the surface (see a, below left), used to actuate hydraulic tools placed above the collar.

- After ball has landed (see b, below right), pinned ball seat permits application of pressure up to a specified shear point. This pressure can be used to activate hydraulic tools above the collar.
- Higher pressures shear away the ball and the ball seat, re-establishing unrestricted circulation.
- Once the ball and the ball-seat have been sheared away, the tool reverts to a standard landing collar, providing a latch and seal seat for the liner wiper plug assembly, creating a back pressure valve to prevent back flow of cement into the liner.

Features:

- All components are PDC drillable to full ID bore.
- Available box-up-by-pin-down.

[25]



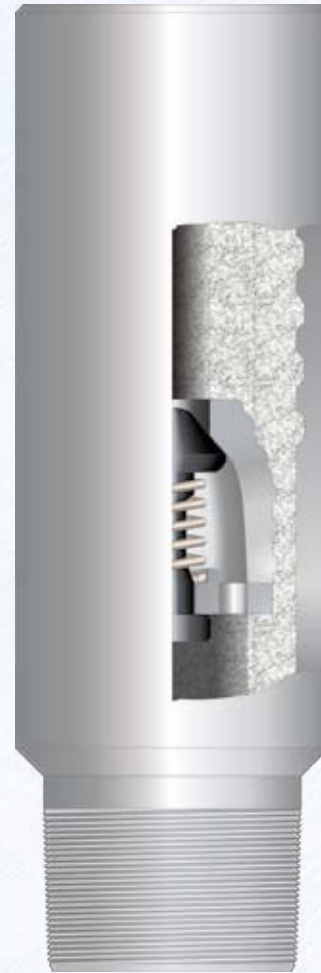
- a) Brass ball dropping from surface
- b) Ball in place on landing seat
- c) Ball seat shearing off and dropping
- d) Landing collar with ball seat sheared away

Model 26 Float Collar

Normally placed above the float shoe, the float collar provides an additional level of security by placing another back pressure check valve above the bottom of the liner.

Features:

- High-strength concrete plus greater wall thickness provide high burst and collapse resistance.
- One-way spring-loaded plunger check valve allows downward flow while preventing cement slurry from backing up into the liner.
- Interior components are easily drillable with PDC bits.
- Available box-up-pin-down.



[26]

FLOAT SHOES



[30]

Model 30 Single-Valve Set Shoe

The primary back pressure check valve at the bottom of the casing and the first cementing component of the liner string.

- Guides casing string to bottom.

Features:

- One-way spring-loaded plunger check valve allows downward flow while preventing cement slurry from backing up into the liner.
- Angled downward ports can re-establish circulation when the shoe lands on bottom or if the casing gets plugged, as well as creating a “washing” action that helps in cement slurry distribution.
- Interior components are easily drillable with PDC bits.
- Available with an anti-rotation bladed bottom.



[32]

Model 32 Double-Valve Set Shoe

Features:

- Integrated dual one-way spring-loaded plunger check valves.
- Bladed nose prevents rotation after liner has reached bottom.
- Also available with rounded cement nose.

Model 17 Dart

The drill pipe dart is launched from the plug-dropping head after cement has been pumped into the liner. Propelled by displacement fluids, the dart wipes cement from the drill pipe and latches and seals into the bore of the liner plug, creating an integral plug.

Features:

- All components are PDC drillable.
- Wiper blade sizes can be adjusted to wipe multiple ID's of various drill string configurations.



[17]

Model 20 Plug

The liner plug is attached to the bottom of the setting tool and provides a seat for the drill pipe dart. After the dart latches to the plug, the assembly is sheared off of the setting tool at a specific pressure. It then wipes cement from the inside of the liner until it latches and seals in the landing collar, creating a back pressure valve.

- Positive latch and seal bore for the drill pipe dart.
- Pinned to the setting tool to shear off at a pre-determined pressure.

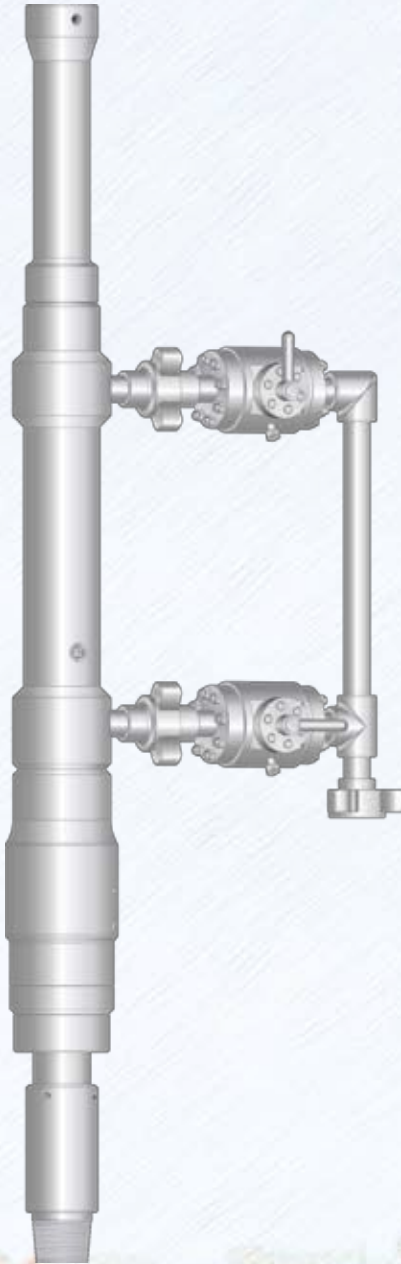
Features:

- All components are PDC drillable.
- Hollow bore allows displacement of fluids before dart latches.



[20]

CEMENTING MANIFOLDS



[500]

Model 500 Cementing Manifold

The cementing manifold suspends the weight of the drill string from the rig elevators. Cementing and displacement fluids are pumped into the running string via a set of external valves, while a heavy-duty swivel designed for rotation and extreme load-bearing capability below the elevators allows for easy string manipulation with cementing lines in place.

- Fluids are diverted past a loaded drill pipe dart until it is ready to drop. Then, by closing one valve and opening the other, displacement fluids are ready to propel the dart into the drill pipe or work string.
- While the fluids are being redirected to propel the dart, a positive valve stop keeps the dart in place until ready to launch. Turning the valve stop frees the dart and launches it down the work string.
- Compatible with assorted drill pipe sizes.

Model 264 Setting Tool

The setting tool carries the liner to setting and releasing depth, where the hanger and/or packoff can be set, and the liner can be disengaged from the drill string.

- This setting tool is for use in liner/packoff systems where rotation is not required.
- Simple disengagement: slacking off and rotating to the right frees the drill string from the liner

Features:

- Bearing assists in disengaging from the liner.
- Keyed mandrel ensures positive release.
- Requires use of cementing bushing or other liner seal during cementing.



[264]

RUNNING TOOLS



[270]

Model 270 Setting Tool

This setting tool can torque the liner for right-hand set liners before setting and releasing. Positive lock mechanism ensures that the liner cannot be released prematurely.

- Predetermined compressive weight shears lock pin, allowing right-hand rotation of the drill pipe to release the setting tool from the liner.

Features:

- Bearing assists in disengaging from the liner.
- Keyed mandrel ensures positive rotation and release.
- Requires use of cementing bushing or other liner seal during cementing.
- Clutch mechanism allows the liner to be right-hand torqued before releasing.

Model 280 Compression Ring Assembly

This setting tool is used to set the seals on a liner packoff.

- Once released, unique design prohibits ring segments from collapsing back into the tieback, ensuring that the packoff cannot become unset.
- Picking up on the ring assembly frees the ring segments from the inside of the tieback sleeve, which allows compressive weight on the top of the tieback sleeve with the Compression Ring Assembly to activate the packoff seals.

Features:

- 360° rings transmit more downward force to the packoff seals.



[280]

CEMENTING PACKOFFS



[284]



[286]



[285]

Model 284 Cementing Bushing (shown on Model 285 Polished Joint)

The Cementing Bushing provides a seal at the liner top for cementing tasks after the setting tool has been released from the liner or when the setting tool cannot be used as a seal. The retrievable cementing bushing eliminates the need for drilling out a bushing after cementing is completed.

- Completely retrievable.
- Full circle “dogs” lock into the groove of a packoff or setting sub for a positive, locked seal.
- No drill up. Picking up on the Polished Joint until the sub at the bottom bumps up against the bottom of the bushing will unlock the bushing’s dogs, freeing it from the inside of the packoff or sub.

Features:

- Makes a solid working seal when used with a special joint with a polished surface (“slick joint”).
- Inner and outer seals are resistant to high-pressure and high-temperature.

Model 286 Retrieval Sub

This sub has a latching groove for engaging the Cementing Bushing; the polished ID above the groove provides a smooth surface for the bushing’s seals.

Model 256 Debris Filter (shown on Model 257 Handling Sub)

The Debris Filter filters debris in the casing annulus between the handling sub and the top of the tieback sleeve. This is critical to keeping the inside of the tieback sleeve free of unexpected or unwanted items and/or heavily abrasive elements that would compromise releasing from the liner.

The handling sub is the connector between the setting tool and the drill string.



[257]



[256]

POLISH MILLS



[65]

Model 65 Locator Stop Mill

Cleans and dresses the top of the tieback receptacle to prevent seal assembly damage.

- Mill cutters re-establish proper angle at the tieback top for easy re-entry.
- Locates mill assembly at top of the tieback for proper space-out of Tieback Mill.

Features:

- Long-lasting dependable tungsten carbide cutting surfaces.
- Bypass courses allow circulation to sweep away debris.

Model 68 Tieback Mill

Cleans and dresses the ID of the tieback receptacle, removing debris from the bottom and ensuring a clean entry for the tieback seal stinger.

- De-burs cement with both upward and downward movements.
- Bottom mill cutters re-establish proper chamfer and re-entry angles.

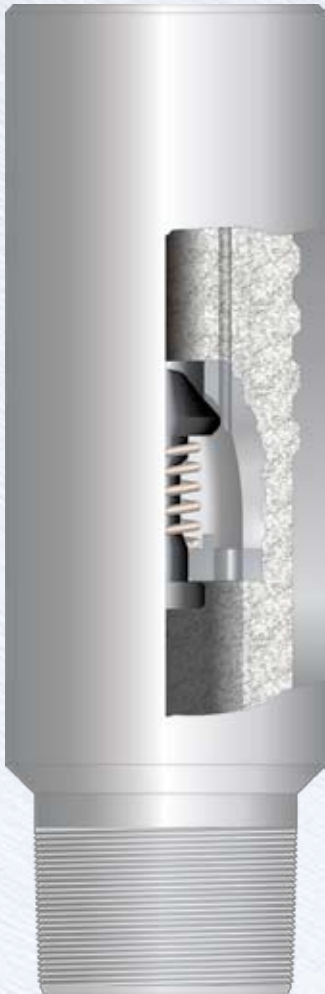
Features:

- Long-lasting dependable tungsten carbide cutting surfaces.
- Fluid bypasses allow debris to be swept away with circulation.



[68]

ORIFICE COLLAR



[460]

Model 460 Fill Collar

Allows liner and/or casing to fill while liner is being run, without overfilling the casing.

Features:

- High-strength concrete and greater wall thickness provide high burst and collapse resistance.
- Interior components are easily drillable with PDC bits.
- One-way spring-loaded plunger check valve allows downward flow while preventing cement slurry from backing up into the casing.
- Orifice bypass ducts prevent hydrostatic pressure lock when running in a tieback string.

Model 475 Tieback Seal Stinger

Used to connect from an existing liner via a tieback receptacle or a packoff receptacle back to the surface.

Features:

- Half-muleshoe nose can be rotated while tripping in to slide over ledges or bumps without getting stuck between the liner wall and the tieback during re-entry.
- An array of high-temperature, high-pressure, redundant sets of chevron or molded seals assures a premium packoff.
- One-piece unitized body results in no internal connections or obstructions.



[475]

SPECIALTY COMPLETION TOOLS



[358]

Model 358 Liner-Hanger with Packoff

The liner-hanger with packoff is a fully-retrievable mechanically-set packoff with a packoff element that sets at the same time the hanger is engaged. Can be used with screened or slotted liners, or in scab liners as the bottom packer with a weight-set packer above.

- Isolates the liner top with a reliable pressure seal.
- Fully retrievable in uncemented liners

Features:

- Full bore ID
- Metal rings prevent extrusion of the seals and ensure proper seal activation and integrity.
- Mechanical J-slot activation: when the liner is in place, rotate a quarter-turn to the left, slowly set weight down until setting pins shear and the element is activated and the slips are set.

Model 476 Posi-Lock Seal Assembly

Used to connect to an existing liner via a tieback receptacle or a packoff receptacle with releasing threads. The threaded slips on the Posi-Lock engage with the threads in the receptacle and ensure that the seals will not move during production.

Features:

- Releasing threads on the slips allow right-hand rotation on the Posi-Lock to free the assembly from the seal bore.
- An array of high-temperature, high-pressure, redundant sets of chevron or molded seals assures a premium, secure fit.

Model 300 Second Trip Packoff

Used to connect to an existing liner via a tieback receptacle or a packoff receptacle, or as an alternate or additional liner-to-casing seal.

Features:

- Integrated brake slips prevent unwanted upward travel of the packoff.
- An array of high-temperature, high-pressure, redundant sets of chevron or molded seals assures a premium, secure fit.



[300]

[476]

SPECIALTY COMPLETION TOOLS



[478]

Model 478 Tubing Seal Stinger

When combined with the Model 480 Polish Bore Receptacle, the Tubing Seal Stinger ties back a tubing string to the surface while isolating the annulus from bottom hole pressure.

Features:

- High burst and collapse for high pressure performance.
- Seal mandrel ID matches production tubing specifications.
- Half-muleshoe nose aids with stabbing-in.
- An array of high-temperature, high-pressure, redundant sets of chevron or molded seals assures a premium, secure seal.

Model 480 Polish Bore Receptacle

A thick-walled tube with a finely-honed ID that provides a sealing surface for a production tubing seal assembly. Length is determined by calculating tubing seal assembly movements over the life of the well.

- Used in place of a production packer to isolate the annulus from the bottom hole pressure.
- Full ID access to the liner below the casing without milling up a packer.

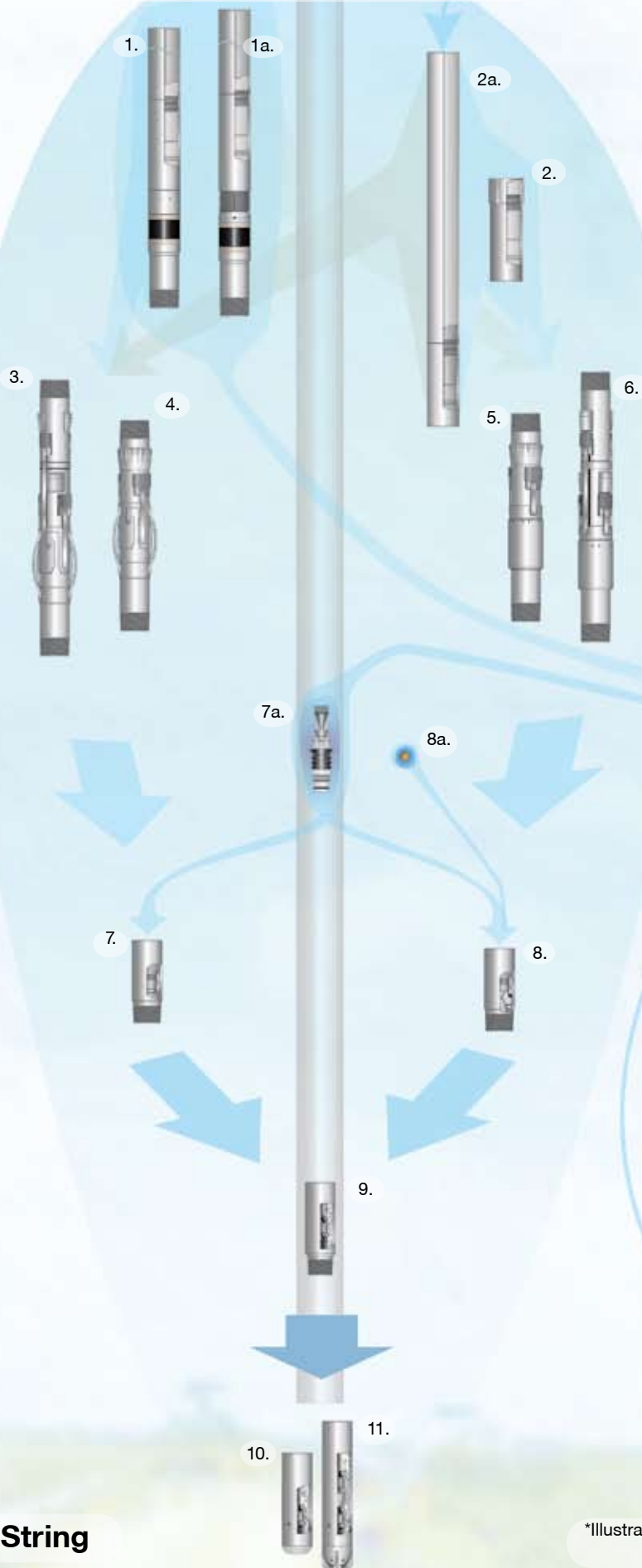
Features:

- Honed ID assures minimal seal damage during expansion or contraction.



[480]

CHART: HOW THE TOOLS GO TOGETHER*



1. **Compression-Set Packoffs**
 - provides liner-to-casing seal at the liner top
 - eliminates a second trip
 - helps prevent gas migration while cement sets up
 - isolates lost circulation zones
 - requires a compression ring assembly (12)
 - available with brake slips (1a) to prevent unwanted upward travel

2. **Setting Sub with tieback & bushing groove**
 - releasing threads for setting tools to set and release liner
 - Cementing Bushing (15) creates liner seal, allowing cementing during and after disconnect
 - tieback sleeve (2a) allows liner to be tied back to surface by means of a Tieback Stinger

3. **Dual-Cone Mechanical Hanger**
 - provides additional hanging capacity

4. **Single-Cone Mechanical Hanger**
 - used to run, hang and cement a liner
 - used to set a blank slotted or screen liner
 - slotted full cone gives best bypass area with greater hanging assurance in a single-cone hanger
 - simple actuation with rotation-activated J-slot

5. **Single-Cone Hydraulic Hanger**
 - requires no drill pipe manipulation
 - pressure-activated with Ball-Seat Landing Collar (8)
 - slotted full cone gives best bypass area with greater hanging assurance in a single-cone hanger

6. **Dual-Cone Hydraulic Hanger**
 - provides additional hanging capacity

7. **Landing Collar**
 - latches with the liner plug and drill pipe dart (7a) to create a back pressure valve
 - prevents back flow of cement slurry
 - internal components drillable to full ID

8. **Ball-Seat Landing Collar**
 - ball seat allows actuation of hydraulics above collar after sealing with brass ball (8a)
 - pre-determined higher pressure shears away ball seat providing unrestricted circulation

9. **Float Collar**
 - creates back pressure valve, preventing cement slurry from backing up into the liner
 - PDC drillable

10. **Single-Valve Set Shoe**
 - concrete nose guides casing string to bottom
 - angled down-jet ports can re-establish circulation if casing gets plugged
 - drillable one-way check valve

11. **Double-Valve Set Shoe**
 - drillable integral double-check valve
 - bladed anti-rotation nose for landing on bottom

*Illustrates typical completions; contact your Graco representative to discuss specialty completions.

Locator Stop Mill

- cleans and de-burs cement from liner top for easy re-entry
- prevents seal assembly damage
- locates mill assembly at liner top

Tieback Mill

- cleans and de-burs cement from tieback to prevent seal stinger damage

Cementing Manifold

- redirects fluid flow until dart is ready to be pumped
- can drop ball to actuate hydraulics
- integrated high-load, high-RPM swivel

Handling Sub & Debris Filter

- connects the setting tool to the drill string
- Debris Filter filters debris between the handling sub and the tieback sleeve (#2)

Dart

- displaces cement through multiple work string diameters
- latches and seals in liner plug (below)

12. Compression Ring Assembly

- used to set a compression packoff (1) by applying weight to the packoff tieback

13. Mechanical-Set Running Tool

- carries liner system to setting depth
- floating nut on keyed mandrel releases hanger with weighted rotation on tool

14. Mechanical-Clutch Setting Tool

- clutch and bearing allow liner to be rotated with out releasing tool prematurely

15. Polished Joint with Retrievable Cementing Bushing

- cementing bushing seals liner top after setting tool is disengaged from liner
- slick joint provides sealing surface for packoffs

Fill Collar

- allows liner to fill without over-filling the casing
- bypass ducts prevent hydraulic lock when running a tieback string

Tieback Stinger

- ties back a string of pipe to surface by sealing in tieback sleeve of packer or top sub
- tests liner top seal integrity

Liner Plug

- attaches to setting tool
- latches with dart (above)
- shears at pinned pressure, wipes liner, and latches in landing collar (7, 8)

Polish Mill String

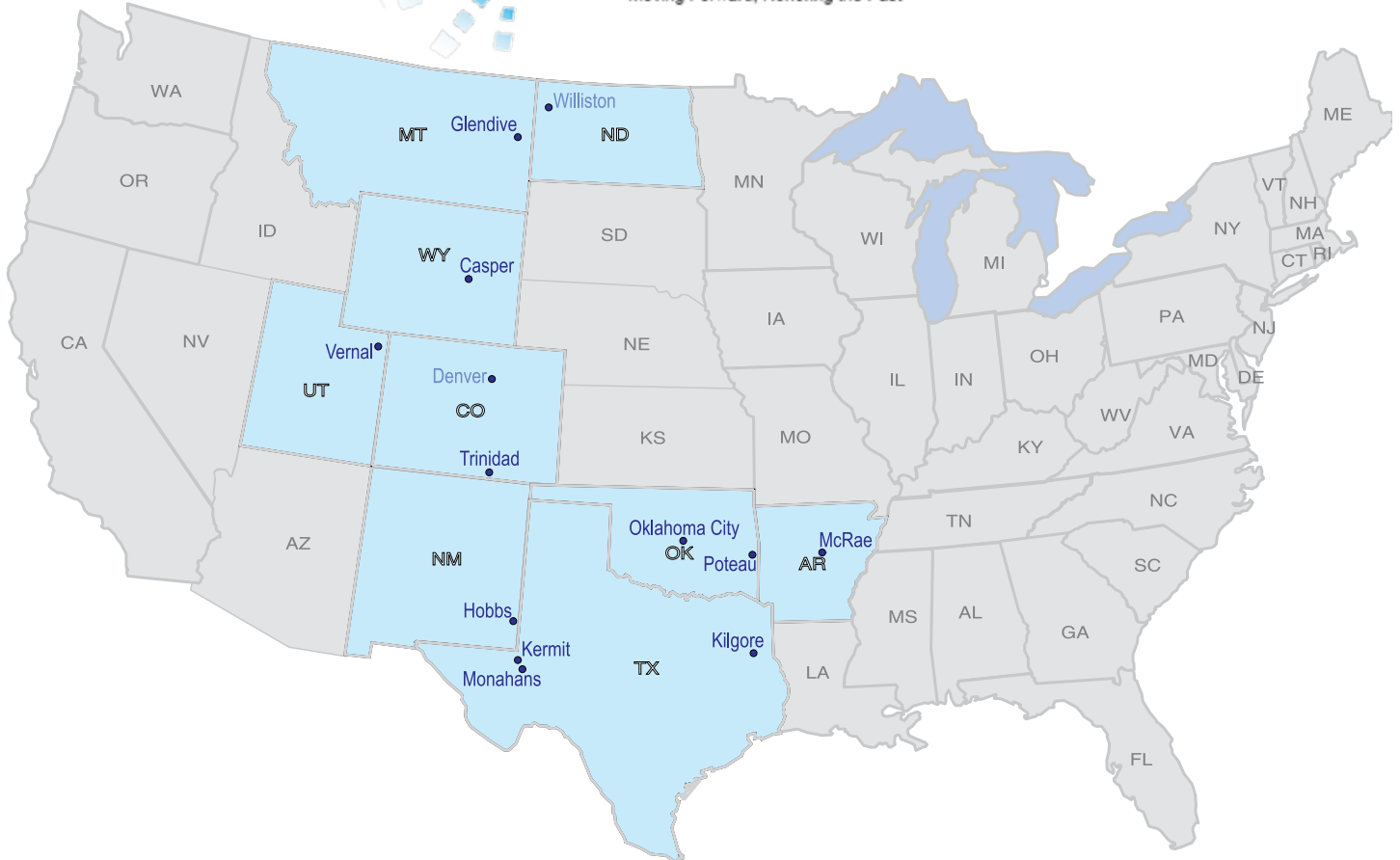
Tieback String

Running String

CHART OF TOOL SIZES*

						TOOL MODELS AND DESCRIPTIONS										
Liner		Casing		Dimensions		38	40	44	45	357	380	455	475	22	25	460
OD	weight range lb/ft	OD	weight range lb/ft	maximum tool OD (inches)	tieback ID	single mech hanger	dual mech hanger	single hydr hanger	dual hydr hanger	packoff	packoff brake slips	top sub	tieback stinger	landing collar	landing collar ballcatch	fill collar
3.500"	9.2-13.3	5.000"	11.5-13.0	4.250	3.500"	●				●				●		
			15.0-18.0	4.094		●				●			●			
3.500"	9.2-13.3	5.500"	14-15.5	4.625	3.750"	●		●		●			●	●	●	●
			17-20	4.500		●		●		●		●	●	●	●	
			20-23	4.375		●		●		●		●	●	●	●	
4.000"	9.5-14	5.500"	14-15.5	4.750	4.125"	●				●			●	●		●
			15.5-17	4.625		●				●		●	●		●	
			17-20	4.563		●				●		●	●		●	
5.000"	15-24.10	7.000"	17-20	6.125	5.250"	●	●	●	●	●	●		●	●	●	●
			20-26	6.000		●	●	●	●	●	●	●	●	●	●	
			26-32	5.875		●	●	●	●	●	●	●	●	●	●	
			32-35	5.750		●	●	●	●	●	●	●	●	●	●	
			35-38	5.688		●	●	●	●	●	●	●	●	●	●	
5.000"	15-24.10	7.625"	24-26.4	6.625	5.250"	●	●	●	●	●	●	●	●	●	●	●
			29.7-33.7	6.500		●	●	●	●	●	●	●	●	●	●	
			33.7-39	6.375		●	●	●	●	●	●	●	●	●	●	
			42.8-45.3	6.250		●	●	●	●	●	●	●	●	●	●	
5.500"	15.5-23	7.625"	24-26.4	6.625	5.750"	●	●	●	●	●	●	●	●	●	●	●
			29.7-33.7	6.500		●	●	●	●	●	●	●	●	●	●	
			33.7-39	6.375		●	●	●	●	●	●	●	●	●	●	
7.000"	23-38	9.625"	29.3-40	8.500	7.375"	●	●	●	●	●	●	●	●	●	●	●
			40-47	8.375		●	●	●	●	●	●	●	●	●	●	
			43.5-53.5	8.250		●	●	●	●	●	●	●	●	●	●	
			53.5-58.4	8.125		●	●	●	●	●	●	●	●	●	●	
7.625"	26.4-39	9.625"	43.5-47	8.375	7.750"	●	●	●	●	●	●	●	●	●	●	●
			53.5	8.250		●	●	●	●	●	●	●	●	●	●	

*Contact your Graco representative to discuss other tool sizes and specialty completions.



<p>Corporate: P.O. Box 667 265 E 100 S Vernal, UT 84078 435-789-2766</p>	<p>McRae 109 Bradford McRae, AR 72102 501-726-0012</p>	<p>Casper P.O. Box 3005 5810 W. Yellowstone Hwy Casper, WY 82644 307-237-5340</p>
<p>Glendive P.O. Box 323 301 State St Glendive, MT 59330 406-365-5373</p>	<p>Hobbs 1901 West Marland Hobbs, NM 88240 505-397-4671</p>	<p>Kermit P.O. Box 291 500 East Hwy 302 Kermit, TX 79745 432-586-3633</p>
<p>Kilgore 12477 State Hwy 149 Longview, TX 75603 903-643-8136</p>	<p>Monahans P.O. Box 391 3601 S I-20 Service Rd Monahans, TX 76756 432-943-5019</p>	<p>Poteau 27591 Rock Creek St Shady Point, OK 74956 918-963-2855</p>
<p>Trinidad 1055 Independence Road Trinidad, CO 81082 719-845-0918</p>	<p>Vernal 1261 E. 1500 S. Vernal, UT 84078 435-789-6804</p>	<p>Oklahoma City 7721 NW 10 St, Suite B Oklahoma City, OK 73127 405-789-2560</p>
	<p>City Sales Williston, ND - 701-572-4500 Denver, CO - 303-424-5609</p>	



SERVICES:

Fishing Services:

PREMIUM QUALITY FISHING TOOLS
INTERNAL RETRIEVALS
EXTERNAL RETRIEVALS
DRILL COLLARS
WHIPSTOCKS
WASHOVER PIPE

Rental Tools:

DRILL PIPE AND TUBING
WELL CONTROL EQUIPMENT
POWER SWIVELS 2.5–3.5
HANDLING TOOLS
SWABBING EQUIPMENT
LIGHT PLANTS

Circulation Equipment:

AIR REVERSE UNITS
FOAMING UNITS
AIR UNITS

Packer Equipment:

PACKERS
PLUGS
RETAINERS
COMPOSITE PLUGS
COMPOSITE CEMENT RETAINERS

Liner Equipment:

PACKOFFS
HANGERS
PLUGS
SETTING EQUIPMENT
FLOAT EQUIPMENT
PBR'S