



CELEBRATING A CENTURY OF EXPERIENCE
DESIGNED & MANUFACTURED BY PRODUCERS FOR PRODUCERS



COMPOSITION RINGS

Unlike smooth metal plungers, the composition rings used on Martin-style plungers are designed to swell to fit the grooved plunger and pump barrel properly. Sizing and pre-swelling are critical factors in achieving optimal working performance.

STANDARD SPLIT TYPE (ST) & FLANGE TYPE (FT) RINGS

are made of natural rubber and duck material. They are triple gauged and precision ground to give a uniform working fit in the barrel. ST Rings and FT Rings are manufactured for all sizes of split ring and flange spacer plungers.



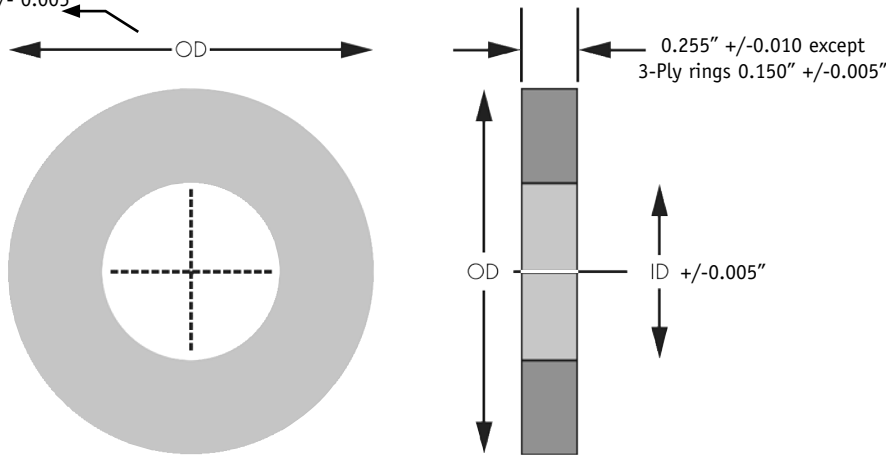
HIGH TEMP ST AND FT RINGS

are made of synthetic rubbers, which swell less than natural rubbers, and provide more resistance to abrasion and higher temperatures. The High Temp ring swells more slowly and with more consistency than the natural rubber ring. High Temp rings remain relatively flat on their OD, and usually fit slightly looser than natural rubber rings. For temperatures from 285° to 360° and wells with excessive abrasion problems, the High Temp ring is recommended.

Dimensions and Tolerances for Flange-type, Split-type Composition and Resistoil Rings

Flange Type		Split Type		
Pump Bore Size and Ring OD	Ring ID	Pump Bore Size and Ring OD	Ring ID	Thickness
1 1/16	7/8	1	0.625	3-Ply
1 1/4	1	1 1/4	7/8	3-Ply
1 1/2	1 1/8	1 1/2	15/16	3-Ply
1 5/8	1 5/16	1 5/8	1 1/16	5-Ply
1 3/4	1 5/16	1 3/4	1 7/32	5-Ply
1 25/32	1 1/2	1 25/32	1 7/32	5-Ply
2	1 1/2	2	1 7/16	5-Ply
2 1/8	1 11/16	2 1/8	1 1/2	5-Ply
2 1/4	1 7/8	2 1/4	1 5/8	5-Ply
2 1/2	2 1/8	2 1/2	1 7/8	5-Ply
2 3/4	2 5/8	2 3/4	2 1/8	5-Ply
3 1/4	2 15/16	3 1/4	2.531	5-Ply
		3 3/4	3	5-Ply
		4 3/4	4	5-Ply

Specified undersize tolerance +/- 0.005



WANT TO BUILD A GREAT TRASH PUMP USING YOUR EXISTING SPLIT RING MARTIN PLUNGER? THEN TRY DARCOVA'S INNOVATIVE YELLOWJACKETS



RING UNDERSIZE TABLE FOR BASE SIZE BARRELS*
BASED ON BOTH TEMPERATURE AND GRAVITY

Number undersizes are for "Standard" rings, 1 1/2" and larger. Deduct 10 from number if rings are 1 1/4" or smaller.	The letter undersizes are for all "High Temp" synthetic rings
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Numbers are nominal undersize in thousandths of an inch. Undersizes for "High Temp" and "Standard" are coded by the letters, each being approximately .005" smaller than the preceding letter. "High Temp" rings are always larger than Standard for the same well fluid condition.

Bottom Hole Temperature	Under 28° API	28°-32° API	33°-37° API	38°-42° API	43°-47° API	Over 47° API	Water Well
Under 80°F	A or #45	A or #45	B or #50	B or #55	C or #60	C or #60	AA or #40
80-110°F	B or #50	B or #55	C or #60	C or #60	D or #70	D or #70	A or #45
110-150°F	B or #50	B or #55	C or #60	C or #65	D or #75	E or #75	B or #50
150-185°F	C or #55	C or #60	D or #65	D or #70	E or #80	F or #80	C or #55
185-225°F	D or #65	D or #65	E or #70	E or #80	F or #85	F or #85	C or #55

AA can also be used in very cool, low gravity wells.

Greater swelling can be caused by batch treating with aromatic base chemicals and it may be necessary to use one or two steps smaller.

* Worn or oversized barrels should be gauged when determining ring minus size.

PRE-SWELLING PROCEDURE

1. THOROUGHLY CLEAN the plunger grooves before installing new rings and check for inaccuracies in the plunger barrel to avoid miss-fits.
2. INSTALL RINGS, staggering the slits.
3. USE KEROSENE, NOT GASOLINE, to pre-swell the rings. Gasoline can cause over-swelling and sticking of the plunger.
4. DIP PLUNGER with installed rings in kerosene for 30 seconds. The rings will swell quickly during the next 20 minutes and continue to swell for up to 4 hours, depending upon air temperature (higher temperature = faster swell). High Temp Rings swell less and at a slower rate than Standard Rings.
5. BEGIN ROLLING when rings begin to tighten in the grooves. Repeat until rings cannot be pulled apart by hand.

NOTE: If plunger won't be installed within two weeks, cover the plunger and rings with grease or heavy lube to prevent evaporation. *Then you can finish the job after your hunting trip!*

If plunger and rings are to be run in sandy conditions, where excess slippage may damage the rings, ALLOW 4 FULL HOURS for pre-swell to take place before plunger is run in the well.



DARCOVA's innovative **Yellowjackets**® convert your existing Martin-style plunger into "pressure-actuated" technology. No more pre-swelling and rolling down to obtain the proper fit. Simply install **Yellowjacket**® rings onto your split ring plunger and you're ready to assemble your pump. **Yellowjackets**® withstand bottom hole wear and tear better than "rag" rings because of their material construction and design.

MATERIAL CONSTRUCTION

DARCOVA Nylon® and XT® thermoplastic resins are a *lot* tougher than composition materials so Yellowjackets last longer.

Wellbore abrasives (including frac sands) are *much* less likely to embed in the ring and tear up the barrel.

RING DESIGN

The **Yellowjacket** ring expands on the upstroke to provide the seal necessary for pump efficiency, and contracts on the downstroke to effect a free-falling plunger.

DARCOVA XT® YELLOWJACKETS®

DARCOVA XT® **Yellowjackets**® are Teflon®-based for eXT®eme well conditions. XT® **Yellowjackets**® provide unsurpassed performance in coal bed methane production and in wells with high bottom hole temperatures. Our exclusive XT® **Yellowjackets**® operate in temperatures up to 400°F. They are eXT®emely resistant to abrasion and oilfield chemicals. DARCOVA's XT® **Yellowjackets**® have changed the industry's concept of the Martin plunger.



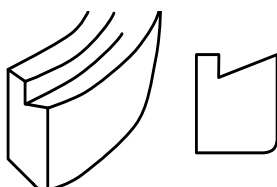
DARCOVA NYLON YELLOWJACKETS®

If your well conditions are less than extreme but you still want the longest lasting, best-designed ring on the market, buy DARCOVA NYLON® **Yellowjackets**®. Our heat-stabilized Nylon®-based thermoplastic possesses many of the same outstanding qualities as Teflon®-based thermoplastic, but to a slightly lesser degree. Our Nylon® **Yellowjackets**® have a lower service temperature (up to 300°F).



PERFORMANCE

If you *do* run the rings too long...if you *do* manage to abrade the surface, the thermoplastic resin is consistently uniform throughout the ring. The inside is the same as the outside surface. But our point is that it's hard to wear them out! (Nothing lasts forever, folks — change them when you need to. We'll make more.) When you put DARCOVA **Yellowjackets**® on a Martin-style plunger (approximately 0.040" to 0.050" undersized), you have a pump capable of lifting iron sulfides, coal fines, and sand-laden fluids by passing solids between the plunger and barrel on the downstroke. DARCOVA's all-plastic **Yellowjacket**® rings make the retrofitted "pressure-actuate" plunger *WORK* for you.



The innovative groove design maximizes the well's own hydrostatic head.

Field-tested under the most adverse well conditions, DARCOVA's **Yellowjacket**® rings are proven favorites among North American oil producers.