

**BLACKMER MECHANICAL SEAL INSTALLATION
DUAL SEAL – PLAN 52 AND PLAN 53
CARTRIDGE MECHANICAL SEAL INSTRUCTIONS
MODELS: SGLD(W)3, SGLD(W)4**

960655
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**FORM
605**

Effective | MAR 2019
Replaces | SEPT 2018



This is a SAFETY ALERT SYMBOL.

When you see this symbol on the product, or in the manual, look for one of the following signal words and be alert to the potential for personal injury, death or major property damage



Warns of hazards that **WILL** cause serious personal injury, death or major property damage.



Warns of hazards that **CAN** cause serious personal injury, death or major property damage.



Warns of hazards that **CAN** cause personal injury or property damage.

NOTICE:

Indicates special instructions which are very important and must be followed.

NOTICE:

Blackmer pumps **MUST** only be installed in systems, which have been designed by qualified engineering personnel. The system **MUST** conform to all applicable local and national regulations and safety standards.

These instructions are intended to assist in the installation of Blackmer cartridge mechanical seals, and **MUST** be kept with the pump.

Blackmer pump service shall be performed by qualified technicians **ONLY**. Service shall conform to all applicable local and national regulations and safety standards.

Thoroughly review the pump manual, all instructions and hazard warnings, **BEFORE** performing any work on the Blackmer pump.

Maintain **ALL** system and Blackmer pump operation and hazard warning decals.



Hazardous pressure can cause personal injury or property damage

DISCONNECTING FLUID OR PRESSURE CONTAINMENT COMPONENTS DURING PUMP OPERATION CAN CAUSE SERIOUS PERSONAL INJURY, DEATH OR MAJOR PROPERTY DAMAGE



Hazardous voltage. Can shock, burn or cause death.

FAILURE TO DISCONNECT AND LOCKOUT ELECTRICAL POWER BEFORE ATTEMPTING MAINTENANCE CAN CAUSE SHOCK, BURNS OR DEATH



Hazardous machinery can cause serious personal injury.

FAILURE TO DISCONNECT AND LOCKOUT ELECTRICAL POWER OR ENGINE DRIVE BEFORE ATTEMPTING MAINTENANCE CAN CAUSE SEVERE PERSONAL INJURY OR DEATH



Hazardous pressure can cause serious personal injury or property damage

FAILURE TO RELIEVE SYSTEM PRESSURE PRIOR TO PERFORMING PUMP SERVICE OR MAINTENANCE CAN CAUSE SERIOUS PERSONAL INJURY OR PROPERTY DAMAGE.



Hazardous pressure can cause personal injury or property damage

FAILURE TO SET THE VEHICLE EMERGENCY BRAKE AND CHOCK WHEELS BEFORE PERFORMING SERVICE CAN CAUSE SEVERE PERSONAL INJURY OR PROPERTY DAMAGE.




Hazardous or toxic fluids can cause serious injury.

IF PUMPING HAZARDOUS OR TOXIC FLUIDS, SYSTEM MUST BE FLUSHED, PRIOR TO PERFORMING SERVICE OR MAINTENANCE




WARNING



Hazardous pressure can cause serious personal injury or property damage

FAILURE TO RELIEVE SEAL SUPPORT SYSTEM PRESSURE, PRIOR TO PERFORMING MAINTENANCE, CAN RESULT IN SERIOUS PERSONAL INJURY OR PROPERTY DAMAGE.

WARNING



Hazardous or toxic fluids can cause serious injury.

IF PUMPING HAZARDOUS OR TOXIC FLUIDS, SEAL SUPPORT SYSTEM OIL MAY CONTAIN HAZARDOUS OR TOXIC FLUIDS. CARE MUST BE TAKEN TO PROPERLY CONTAIN AND DISPOSE OF FLUIDS OR VAPORS CONTAINED IN SEAL SUPPORT SYSTEM.

NOTICE:
THE APPROPRIATE BLACKMER PUMP MANUAL AND PARTS LIST MAY BE OBTAINED FROM THE BLACKMER WEBSITE (WWW.BLACKMER.COM) OR BY CONTACTING BLACKMER CUSTOMER SERVICE.

PUMP INSTRUCTION SHEETS AND PARTS LISTS

Pump Model	Pump Instruction Sheet	Pump Parts Lists
SGL(W)D3	801-B00	801-B01
SGL(W)D4	801-B00	801-B02

NOTICE:
MAINTENANCE AND TROUBLE SHOOTING MUST BE DONE BY AN INDIVIDUAL EXPERIENCED WITH PUMP MAINTENANCE AND THE TYPE OF SYSTEM INVOLVED.

NOTICE:
THE FOLLOWING INSTRUCTIONS INCLUDE ONLY THE STEPS NECESSARY TO REMOVE AND REPLACE THE BLACKMER CARTRIDGE MECHANICAL SEAL. BEFORE PROCEEDING, READ AND FOLLOW ALL MECHANICAL SEAL RELATED INSTRUCTIONS AND HAZARD WARNINGS PROVIDED IN THE APPROPRIATE PUMP "INSTALLATION, OPERATION AND MAINTENANCE" MANUAL.

PLAN 52/53 CARTRIDGE MECHANICAL SEAL REMOVAL PROCEDURE

1. Drain all seal oil by removing the bottom drain plug.



Warning: The oil may contain pumping fluid and/or vapor. Take proper precautions.

2. Remove cartridge capscrews (22) from head ring (20)
3. Thread 2 capscrews into opposite, blind threaded holes as shown in Figure 1. Attempt to gently removed seal cartridge from head ring (20) and rotor/shaft (13) using capscrews as handles.

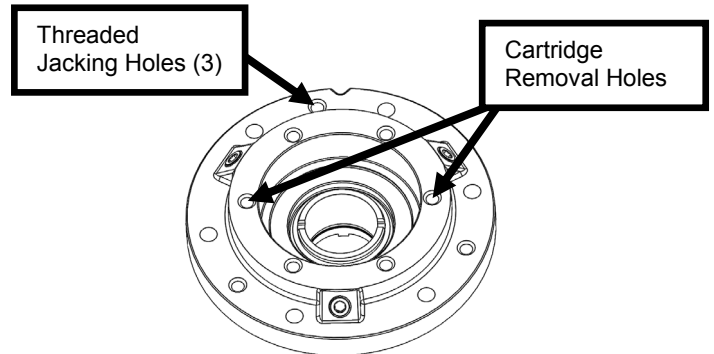


Figure 1 – Removal Capscrew Location – Plan 53

4. If cartridge cannot be removed by pulling, insert 3 capscrews (22) into cartridge threaded jacking holes and slowly tighten until cartridge is lifted off of shaft.

PLAN 53 CARTRIDGE MECHANICAL SEAL DISSASSEMBLY PROCEDURE

1. Remove snap ring from shaft drive collar(153N) as shown in Figure 2.

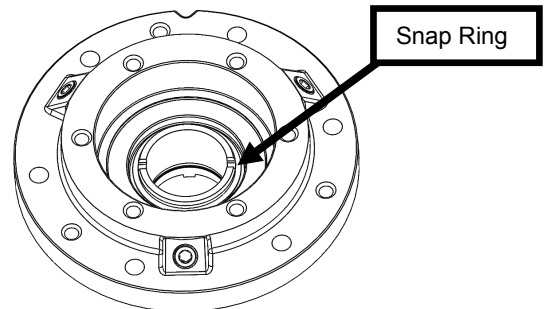


Figure 2 – Snap Ring Removal (Plan 53)

2. Separate the rotating face (153A) from the stationary cartridge (153R) by gently pressing on the inner drive collar (153N).
3. Remove outer carbon (153B) and inner carbon (153J). If required gently pry with a pry bar to remove.
4. Remove dynamic o-rings (153C and 153H), backer rings (153G and 153D), and springs (153F).
5. Clean cartridge (153R) ensuring all surfaces are free of contaminates. Pay special attention to o-ring grooves.

PLAN 52 COMPONENT MECHANICAL SEAL DISSASSEMBLY PROCEDURE

1. Remove head ring (20) by removing all capscrews (21) and separating from casing (12).
2. Loosen rotating face capscrews (153K) and remove. See Figure 3.

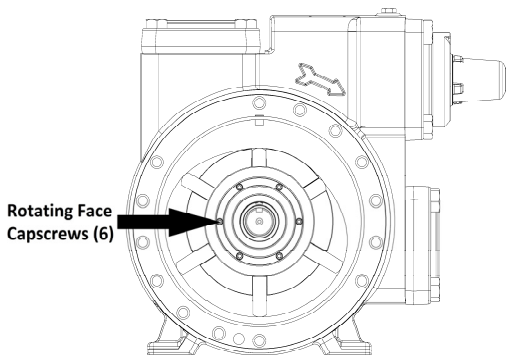


Figure 3 – Rotating Face Capscrew Removal (Plan 52)

3. Gently pry rotating face (153A) away from rotor/shaft (13)
4. Remove outer carbon (153B) and inner carbon (153J). If required gently pry with a pry bar to remove.
5. Remove dynamic o-rings (153C and 153H), backer rings (153G and 153D), and springs (153F).
6. Clean cartridge (153R) and rotor/shaft (13) ensuring all surfaces are free of contaminants. Pay special attention to o-ring grooves.

PLAN 53 CARTRIDGE MECHANICAL SEAL ASSEMBLY PROCEDURE

1. Insert springs (153F) into all blind spring holes in cartridge (153R). See Figure 4.

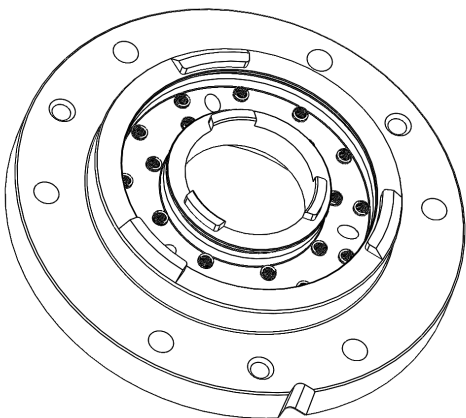


Figure 4 – Spring Installation (Plan 53)

2. Install backer rings (153D and 153G) into cartridge (153R). Bottom of backer ring should rest on springs. See Figure 5.
3. Apply a small amount of grease to o-rings (153C and 153H). Install o-rings into cartridge (153R). See Figure 5.
4. Align 3 tang features of carbons (153J and 153B) with 3 tang features of cartridge (153R). Gently press carbon into cartridge assembly taking care to not damage raised sealing face. See Figure 5.

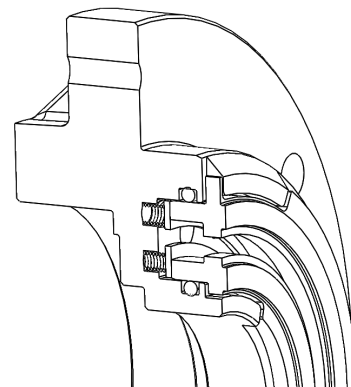


Figure 5 – Carbon Assembly (Plan 53)

5. Clean carbon (153B and 153J) raised faces and rotating seal sub-assembly face (153A). Use a lint-free rag and a suitable solvent such as methanol.
6. Insert rotating seal sub-assembly (153A) into cartridge sub-assembly. Turn assembly over and install snap ring. See Figure 2.
7. Install o-ring 153P and apply a small amount of grease to hold it in place.

PLAN 52 CARTRIDGE MECHANICAL SEAL ASSEMBLY PROCEDURE

1. Insert springs (153F) into all blind spring holes in cartridge (153R). See Figure 6.

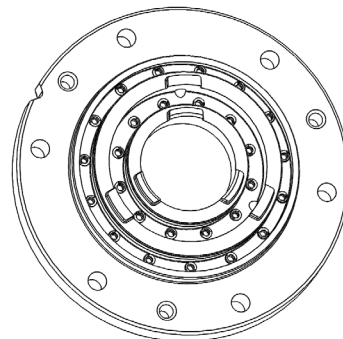


Figure 6 – Spring Installation (Plan 52)

2. Install backer rings (153D and 153G) into cartridge (153R). Bottom of backer ring should rest on springs. See Figure 7.
3. Apply a small amount of grease to o-rings (153C and 153H). Install o-rings into cartridge (153R). See Figure 7.
4. Align 3 tang features of carbons (153J and 153B) with 3 tang features of cartridge (153R). Gently press carbon into cartridge assembly taking care to not damage raised sealing face. See Figure 7.



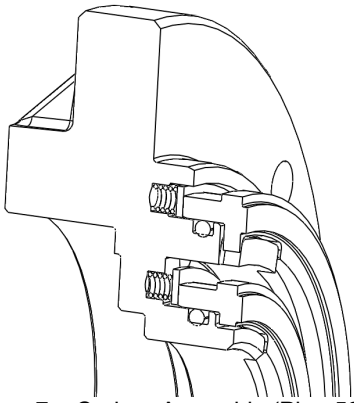


Figure 7 – Carbon Assembly (Plan 52)

5. Install o-ring (153P) and apply a small amount of grease to hold it in place.
6. Lightly grease ID o-ring of rotating seal. Install rotating face (153A) onto rotor/shaft (13) making sure to align hole near OD with seal alignment pin. Take care to not damage rotating seal face ID o-ring on rotor/shaft threads. See Figure 8.

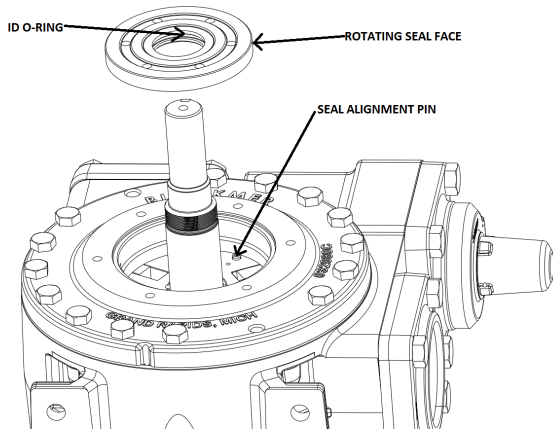
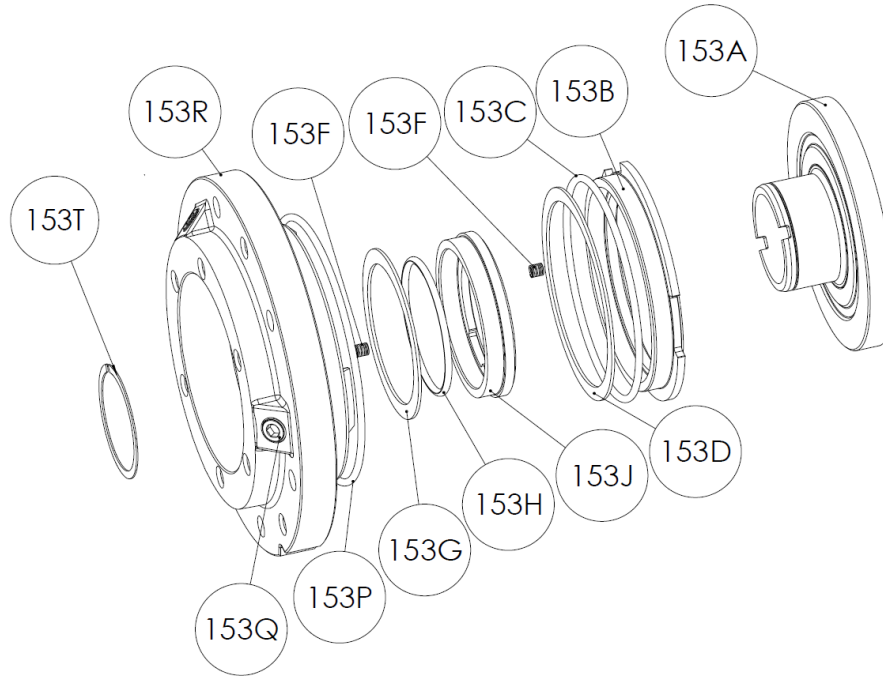


Figure 8 – Rotating Seal Face Installation (Plan 52)

7. Install sealing capscrews (153K) into rotating seal face and torque to 20-25 in-lbf.
8. Clean carbon (153B and 153J) raised faces and rotating seal sub-assembly face (153A). Use a lint-free rag and a suitable solvent such as methanol.



**BLACKMER PARTS LIST – PLAN 53 REBUILD
SEAL MODELS: SGL(W)D3, SGL(W)D4**



Ref. No.	Description	Parts per Seal	Part No.
153A	Rotating Seal Sub-Assembly ¹	1	332282
153B	Carbon, Outer ¹	1	332087
153C	O-ring, FKM ¹	1	702357
153D	Backer Ring, Outer	1	332089
153F	Spring ¹	21	332199
153G	Backer Ring, Inner	1	332088
153H	O-ring, FKM ¹	1	711929
153J	Carbon, Inner ¹	1	332086
153P	O-ring, FKM ¹	1	702059
153Q	Plug	3	908192
153R	Cartridge, Seal Insert	1	332081
153T	Snap Ring ¹	1	903590

¹ Included in Rebuild Kit 899053



1809 Century Avenue, Grand Rapids, Michigan 49503-1530, U.S.A.

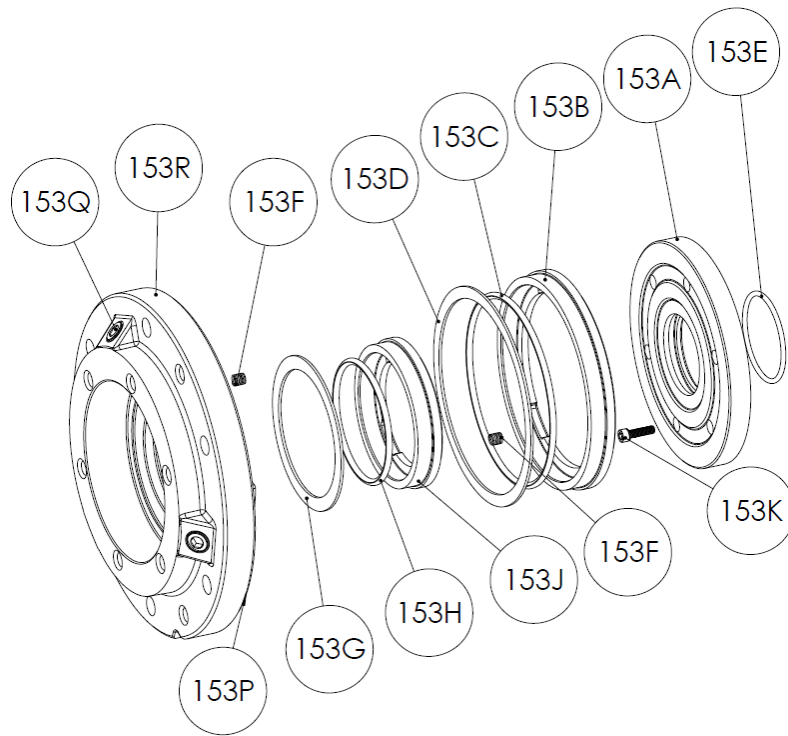
Telephone: (616) 241-1611 / Fax: (616) 241-3752

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BLACKMER PARTS LIST – PLAN 52 REBUILD SEAL MODELS: SGL(W)D3, SGL(W)D4



Ref. No.	Description	Parts per Seal	Part No.
153A	Rotating Seal ¹	1	332093
153B	Carbon, Outer ¹	1	332187
153C	O-ring, FKM ¹	1	701991
153D	Backer Ring, Outer	1	332085
153E	O-ring, FKM ¹	1	701962
153F	Spring ¹	27	332199
153G	Backer Ring, Inner	1	332088
153H	O-ring, FKM ¹	1	711929
153J	Carbon, Inner ¹	1	332086
153K	Sealing Capscrew ¹	6	920140
153P	O-ring, FKM ¹	1	702059
153Q	Plug	3	908192
153R	Cartridge, Seal Insert	1	332181

¹ Included in Rebuild Kit 899052



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