

Transfer Case - F250-F550 Super Duty Pickups

SPECIFICATIONS

MATERIAL SPECIFICATIONS

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Item	Specification	Fill Capacity
Motorcraft® Transfer Case Fluid XL-12	ESP-M2C166-H	1.9L (4.0 pt)
Motorcraft® Metal Surface Prep ZC-31-A	-	-
Multi-Purpose Grease XG-4 and/or XL-5	ESB-M1C93-B	-
Silicone Gasket and Sealant TA-30	WSE-M4G323-A4	-
Thread Sealant with PTFE TA-24	WSK-M2G350-A2	-

TORQUE SPECIFICATIONS

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Description	Nm	lb-ft	lb-in
3-position indicator switch	27	20	-
Case bolts ⁽¹⁾	-	-	-
Drain and fill plugs	27	20	-
Front driveshaft flange bolts	111	82	-
Front output nut	223	164	-
Poppet screw	20	-	177
Rear driveshaft flange bolts	102	75	-
Rear output nut	251	186	-
Rear retainer bolts	31	23	-
Sector support	31	23	-
Shift lever bolt	27	20	-
Shift lever nut	20	-	177
Shift motor bolts	20	-	177
Transfer case control bracket bolt	40	30	-
Transfer case control pivot bolt	40	30	-
Transfer case skid plate bolts	24	18	-
Transfer case-to-transmission bolts	50	37	-
(1) Refer to the appropriate procedure(s).			

DESCRIPTION AND OPERATION

TRANSFER CASE

The New Venture Gear transfer cases are either manual or electric shift.

When the Four-Wheel Drive (4WD) is engaged, power is supplied to all 4 wheels through the transfer case. The transfer cases are either Manual Shift-On-Stop (MSOS) 4x4 system or Electronic Shift-On-The-Fly (ESOF) 4x4 system.

- The **MSOS 4WD** system is engaged or disengaged by rotating the control for both front wheel hub locks from the FREE or LOCK position, then manually engaging or disengaging the transfer case with the floor-mounted shifter.
- The **ESOF 4WD** system is engaged or disengaged by a rotary control located on the instrument panel that allows selection of **2WD** , 4x4 high or 4x4 low operations.

When the vehicle is in **2WD** operation, the sprocket that drives the drive chain is freewheeling.

When in the 4x4 mode of operation, torque is transferred from the main input shaft through the drive chain to the transfer case front output shaft. The front output driveshaft then transfers this torque to the front differential.

DIAGNOSIS AND TESTING

TRANSFER CASE

Refer to **FOUR WHEEL DRIVE (4WD) SYSTEMS** .

GENERAL PROCEDURES

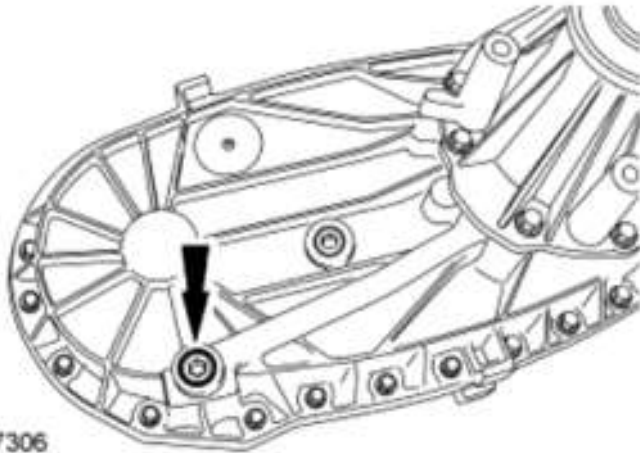
TRANSFER CASE DRAINING AND FILLING

Material

MATERIAL SPECIFICATIONS

Item	Specification
Motorcraft® Transfer Case Fluid XL-12	ESP-M2C166-H

1. Remove the drain plug and drain the transfer case.



N0067306

Fig. 1: Locating Drain Plug
 Courtesy of FORD MOTOR CO.

2. Install the drain plug.
 - Tighten to 27 Nm (20 lb-ft).

NOTE: If the correct fill procedures are not followed, a transfer case failure can result.

NOTE: The fluid level must be just below the fill plug hole.

3. Remove the fill plug from the rear of the transfer case and fill the transfer case with the specified automatic transmission fluid.
4. Install the fill plug.
 - Tighten to 27 Nm (20 lb-ft).

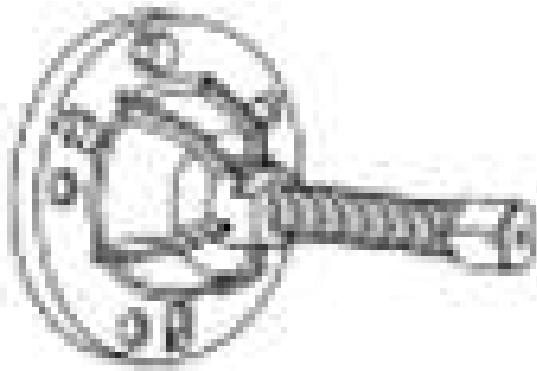
IN-VEHICLE REPAIR

TRANSFER CASE REAR OUTPUT SHAFT SEAL

Special Tool(s)

SPECIAL TOOL REFERENCE

	Flange Remover 205-076
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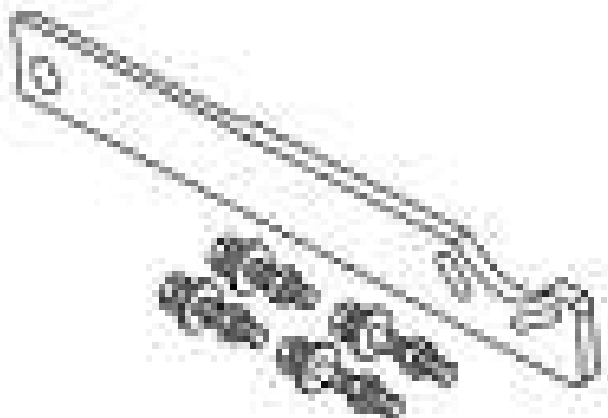
ST2242-A



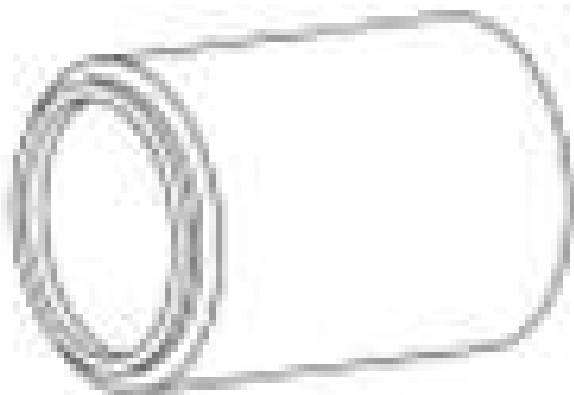
ST1255-A

Handle
205-153 (T80T-4000-W)

Holding Fixture, Drive Pinion Flange
205-126 (T78P-4851-A)



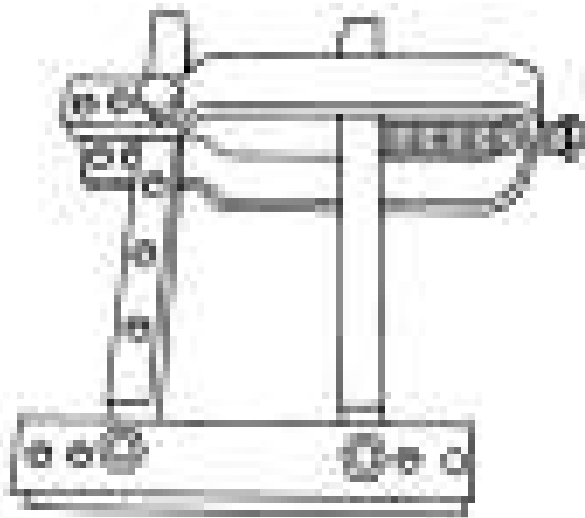
ST1257-A



ST2233-A

Installer, Output Shaft Oil Seal
308-403

Remover, Torque Converter Oil Seal
307-309 (T94P-77001-BH)

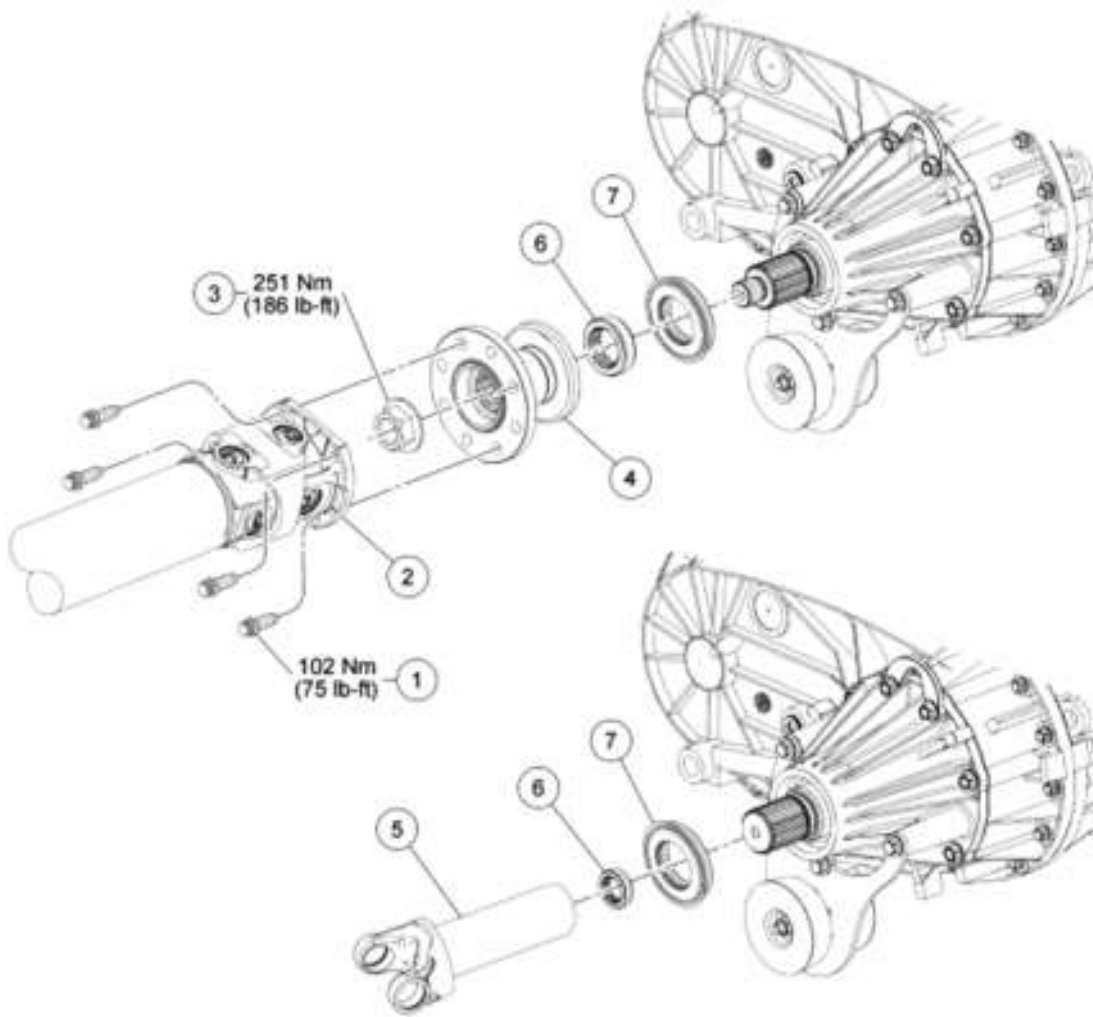


ST1758-A



ST1185-A

Slide Hammer
100-001 (T50T-100-A)



N0066572

Fig. 2: Identifying Transfer Case Rear Output Shaft Seal Components With Torque Specifications
 Courtesy of FORD MOTOR CO.

ITEM DESCRIPTION CHART

Item	Part Number	Description
1	N811880-S	Rear driveshaft flange bolt (4 required)
2	4602	Rear driveshaft
3	7045	Rear output flange nut
4	7B214	Flange
5	7B214	Slip yoke
6	-	Shipping seal
7	7B215	Rear output shaft seal

Removal

All vehicles

1. With the vehicle in NEUTRAL, position it on a hoist. For additional information, refer to **JACKING**

& LIFTING .

Vehicles equipped with a flange

2. Index-mark the rear driveshaft and the transfer case rear flange. Remove and discard the 4 rear driveshaft flange bolts.

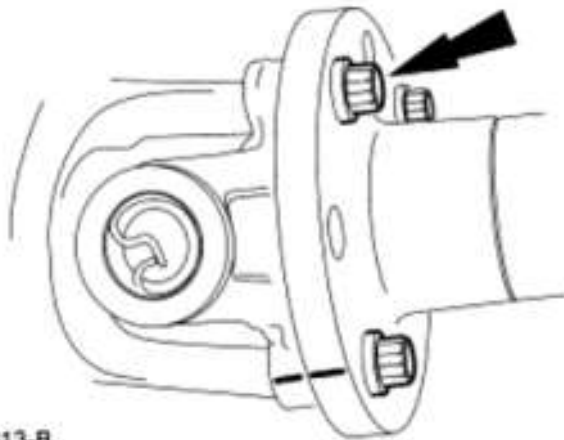


Fig. 3: Locating Rear Driveshaft Flange Bolts
Courtesy of FORD MOTOR CO.

3. Disconnect the rear driveshaft from the transfer case and position it aside.
4. Using the Drive Pinion Flange Holding Fixture to prevent the flange from turning, remove and discard the rear output flange nut.

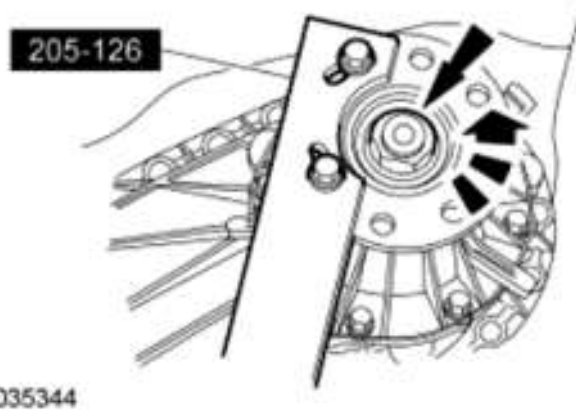


Fig. 4: Removing Rear Output Flange Nut Using Drive Pinion Flange Holding Fixture
Courtesy of FORD MOTOR CO.

5. Using the Flange Remover, remove the flange.

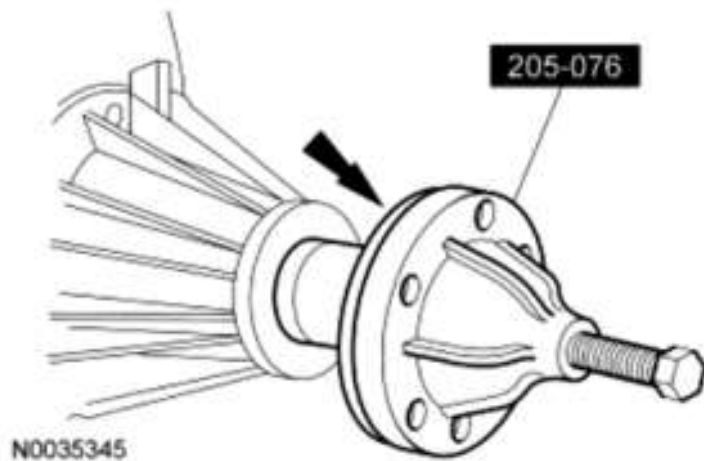


Fig. 5: Removing Flange Using Flange Remover
 Courtesy of FORD MOTOR CO.

- Using the Slide Hammer with the Torque Converter Oil Seal Remover, remove the rear output seal.

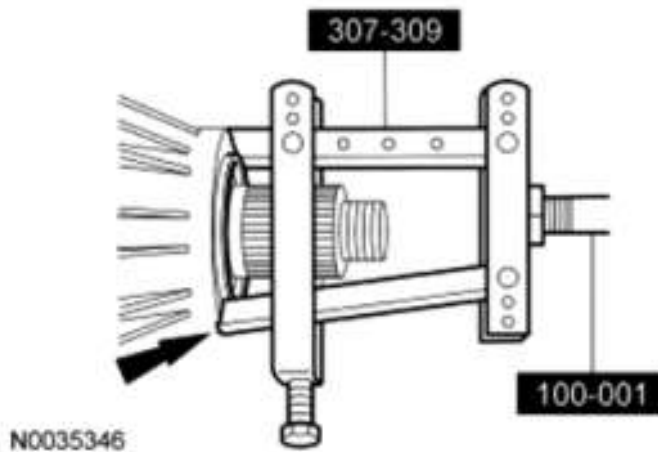


Fig. 6: Removing Rear Output Seal Using Slide Hammer With Torque Converter Oil Seal Remover
 Courtesy of FORD MOTOR CO.

- Inspect the flange seal surface for wear or damage. Install a new flange, if necessary.

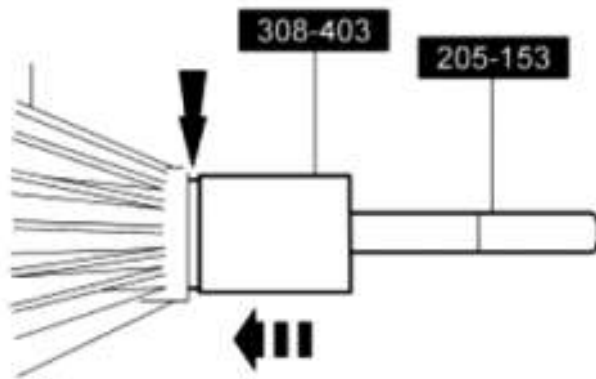
Vehicles equipped with a slip yoke

- Remove the driveshaft. For additional information, refer to **DRIVESHAFT** .
- Using a suitable tool, remove the rear output seal.
- Inspect the slip yoke seal surface for wear or damage. Install a new yoke, if necessary.

Installation

Vehicles equipped with a flange

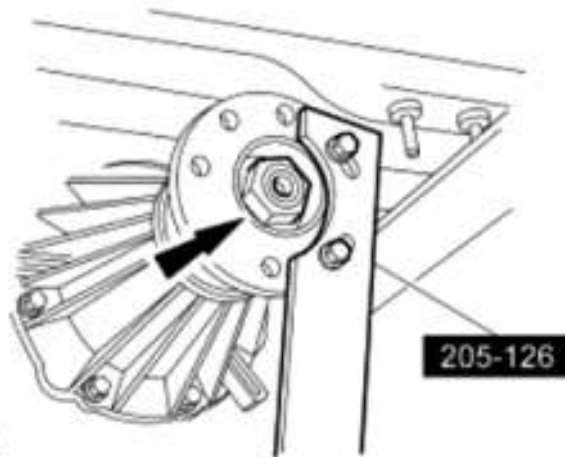
- Using the Output Shaft Oil Seal Installer and the Handle, install a new rear output seal.



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Fig. 7: Installing Rear Output Seal Using Output Shaft Oil Seal Installer And Handle
 Courtesy of FORD MOTOR CO.

2. Using the Drive Pinion Flange Holding Fixture to prevent the flange from turning, install the rear flange and a new rear output flange nut.
 - Tighten to 251 Nm (186 lb-ft).



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Fig. 8: Installing Rear Flange And Rear Output Flange Nut Using Drive Pinion Flange Holding Fixture
 Courtesy of FORD MOTOR CO.

NOTE: **Align the index marks made during removal.**

3. Connect the rear driveshaft to the transfer case.
4. Install 4 new rear driveshaft flange bolts.
 - Tighten to 102 Nm (75 lb-ft).

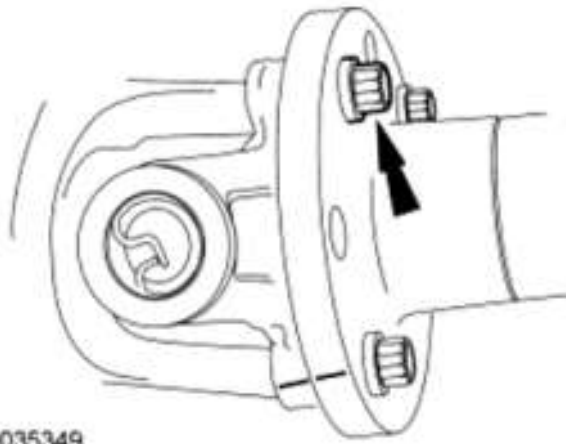


Fig. 9: Locating Rear Driveshaft Flange Bolts
 Courtesy of FORD MOTOR CO.

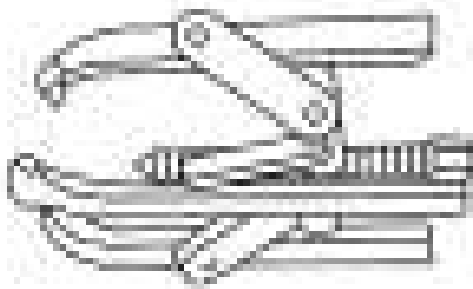
Vehicles equipped with a slip yoke

5. Using a suitable driver, install the rear output seal.
6. Install the driveshaft. For additional information, refer to **DRIVESHAFT** .

TRANSFER CASE FRONT OUTPUT SHAFT SEAL

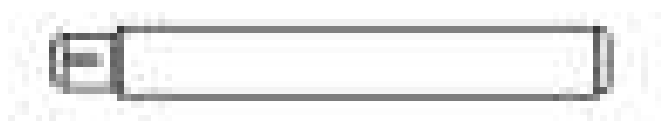
Special Tool(s)

SPECIAL TOOL REFERENCE



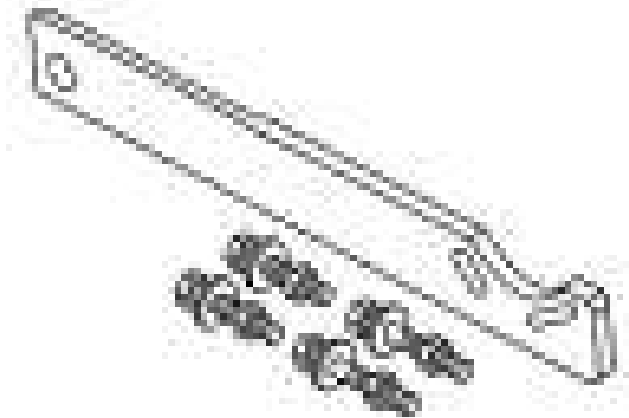
ST1184-A

2 or 3 Jaw Puller
 205-D027 (D80L-1013-A)



Handle
205-153 (T80T-4000-W)

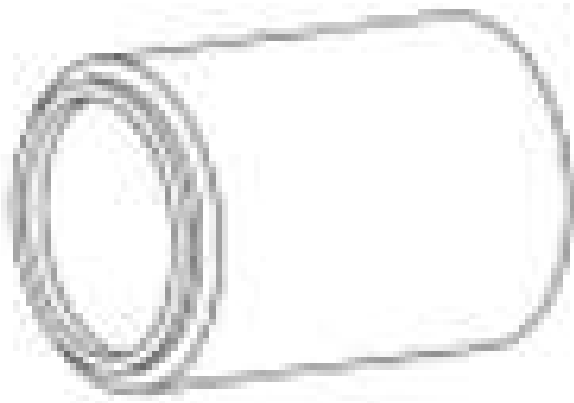
ST1255-A



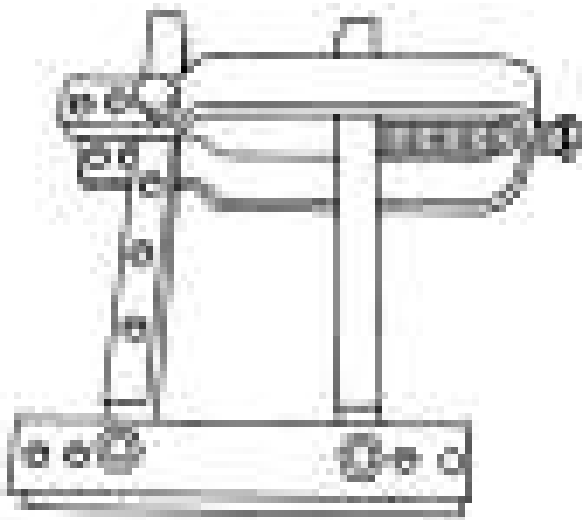
Holding Fixture, Drive Pinion Flange
205-126 (T78P-4851-A)

ST1257-A

Installer, Output Shaft Oil Seal
308-403



ST2233-A



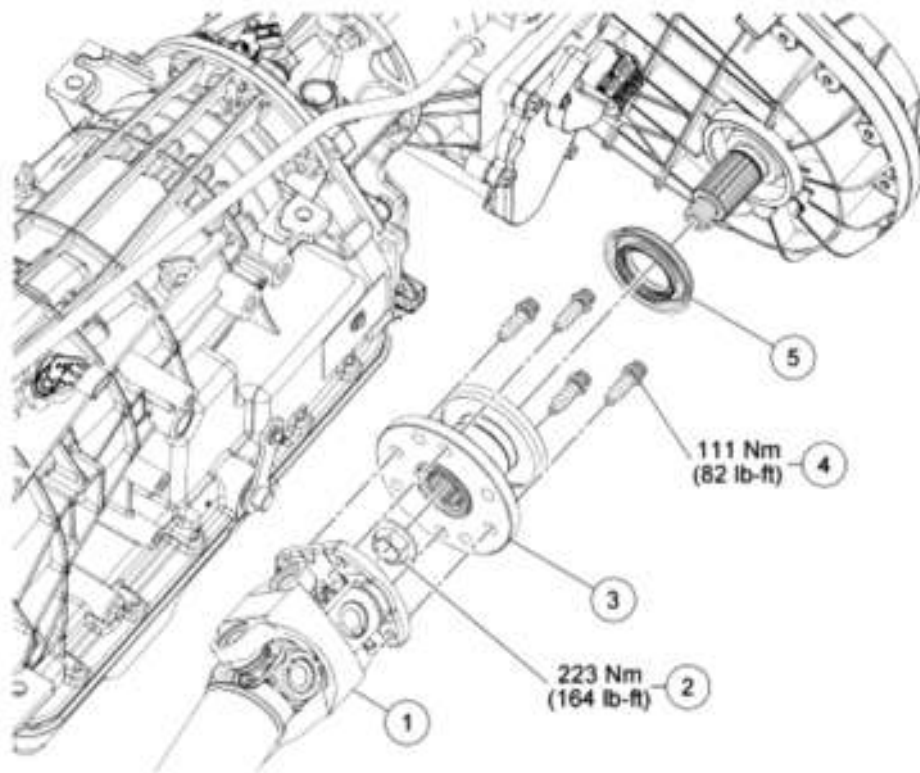
ST1758-A

Remover, Torque Converter Oil Seal
307-309 (T94P-77001-BH)

Slide Hammer
100-001 (T50T-100-A)



ST1185-A



N0067260

Fig. 10: Identifying Transfer Case Front Output Shaft Seal Components With Torque Specifications
 Courtesy of FORD MOTOR CO.

ITEM DESCRIPTION CHART

Item	Part Number	Description
1	4817	Front driveshaft
2	7045	Front output flange nut
3	7B214	Flange
4	-	Front driveshaft flange bolt
5	7B215	Front output seal

Removal

1. With the vehicle in NEUTRAL, position it on a hoist. For additional information, refer to **JACKING & LIFTING** .
2. If equipped, remove the 4 bolts and the skid plate.

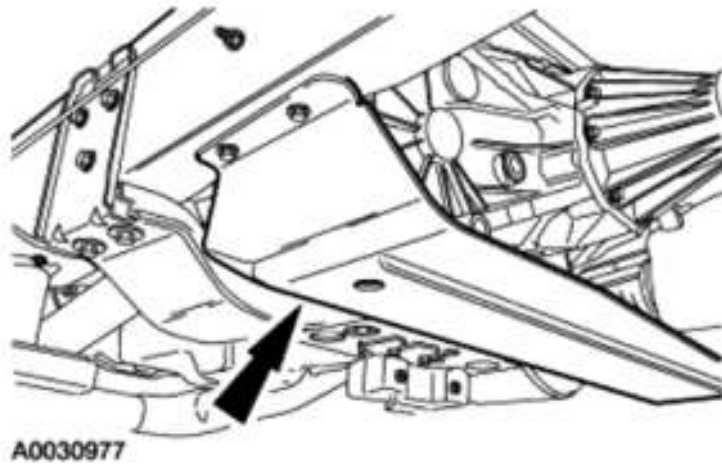


Fig. 11: Locating Transfer Case Skid Plate
Courtesy of FORD MOTOR CO.

NOTE: Index-mark the front driveshaft and the transfer case front flange to maintain driveline balance.

3. Remove the front driveshaft. For additional information, refer to **DRIVESHAFT** .
4. Using the Drive Pinion Flange Holding Fixture to prevent the flange from turning, remove and discard the front driveshaft flange nut.

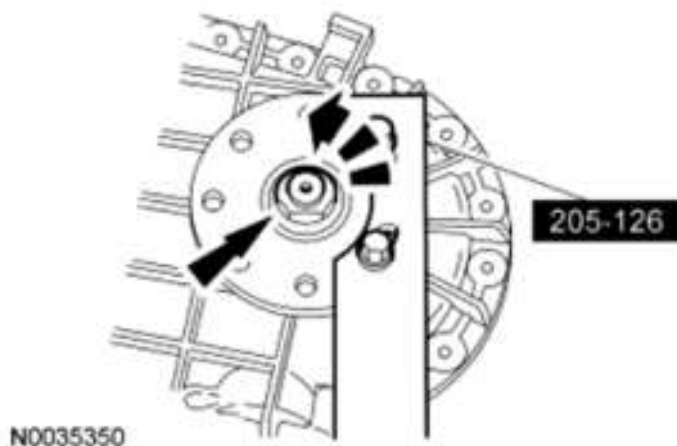


Fig. 12: Removing Front Driveshaft Flange Nut Using Drive Pinion Flange Holding Fixture
Courtesy of FORD MOTOR CO.

5. Using the 2 or 3 Jaw Puller, remove the flange.

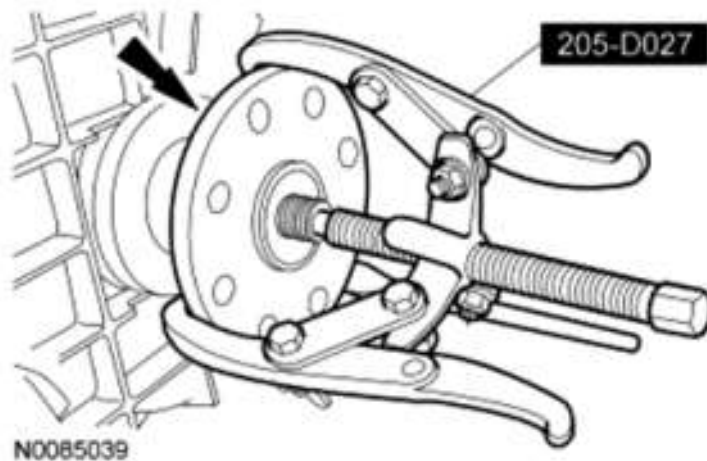


Fig. 13: Identifying Jaw Puller (205-D027) And Flange
 Courtesy of FORD MOTOR CO.

- Using the Slide Hammer with the Torque Converter Oil Seal Remover, remove the front output seal.

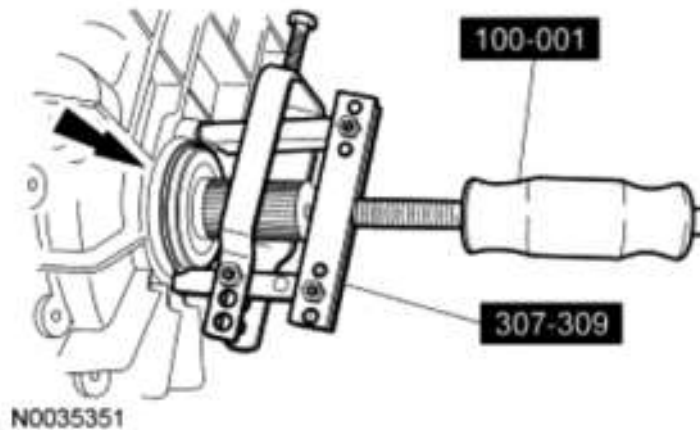
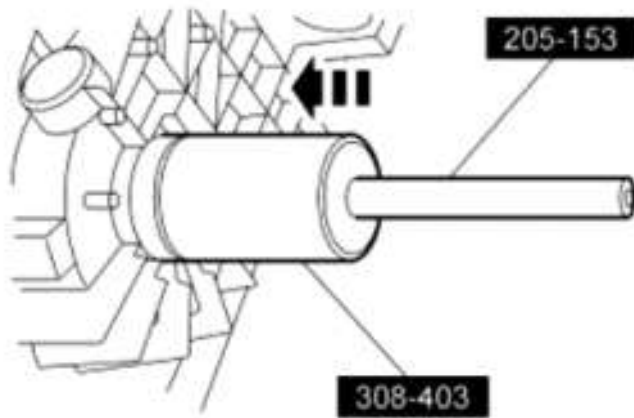


Fig. 14: Removing Front Output Seal Using Slide Hammer With Torque Converter Oil Seal Remover
 Courtesy of FORD MOTOR CO.

- Inspect the flange seal surface for wear or damage. Install a new flange, if necessary.

Installation

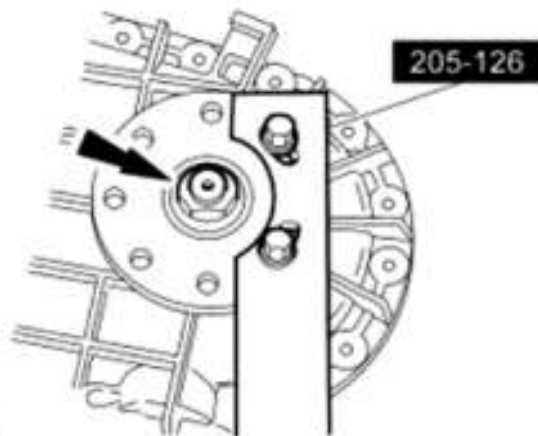
- Using the Output Shaft Oil Seal Installer with the Handle, install a new front output seal.



N0035352

Fig. 15: Installing Front Output Seal Using Output Shaft Oil Seal Installer With Handle
 Courtesy of FORD MOTOR CO.

2. Using the Drive Pinion Flange Holding Fixture to prevent the flange from turning, install the front flange and a new front driveshaft flange nut.
 - Tighten to 223 Nm (164 lb-ft).



N0035353

Fig. 16: Installing Front Flange And Front Driveshaft Flange Nut Using Drive Pinion Flange Holding Fixture
 Courtesy of FORD MOTOR CO.

NOTE: **Align the index marks made during removal.**

3. Install the front driveshaft. For additional information, refer to **DRIVESHAFT** .
4. If equipped, install the skid plate and the 4 bolts.
 - Tighten to 24 Nm (18 lb-ft).

TRANSFER CASE SHIFT LEVER

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		6SURFNHW UHWDLQLQJ ULQJ
	\$	'ULYH FKDLQ
		'ULYHQ VSURFNHW
)URQW RXWSXW VKDIW
		5HWDLQLQJ ULQJ
)URQW RLO SXPS EDOO EHDULQJ
)URQW RLO SXPS UHWDLQLQJ ULQJ
)	6HFWRU DVVHPEO\
		5HDU FDVH KDOI
		0RGH VSULQJ
		0RGH IRUN DVVHPEO\
	&	0RGH IRUN FHQWHU SDG
	&	0RGH IRUN HQG SDGV
		5DQJH IRUN DVVHPEO\
	&	5DQJH VKLIW IRUN SDG

'LVDVVHPEO\

127('LVFDUG DOO QXWV EROWW BQGUHFRWDLQLQJ KHEQJWV
WUDQVIHU FDVH ,QVWDOO DOO QJHJ IDWVH DQVHVP G O

\$OO YHKLFOHV

\$WWDFK WKH WUDQVIHU FDQJH)WIRVXUKH 7UDQVPLVVL RQ +R

)LJ _____, GHQWLI\LQJ 7UDQVPLVVLRQ +ROGLQJ)L[WXUH
&RXUWHV\ RI)25' 02725 &2

5HPRYH WKH SRVLWLRQ VZLWFK

)LJ _____ 5HPR3YRLVQLWLRQ 6ZLWFK
&RXUWHV\ RI)25' 02725 &2

5HPRYH WKH GUDLQ DQG ILOO SOXJV

)LJ _____ /RFDWLQJ 'UDLQ \$QG)LOO 3OXJV

&RXUWHV\ RI)25' 02725 &2

8VLQJ WKH 'ULYH 3LQLRQ)SUDHQJHQ WR V G HQID DLQ VHX UHR W RW X
WKH IURQW RXWSXW QXW

)LJ 5HPRYLQJ)URQW 'ULYH VKLDIHW 3)IODQJH)IODQJH L+QJO C
&RXUWHV\ RI)25' 02725 &2

8VLQJ WKH RU -DZ 3XOOHU UHPRYH WKH IODQJH

)LJ ,GHQWLI\LQJ '-DZ \$OG)IODQJH
&RXUWHV\ RI)25' 02725 &2

9HKLFOHV HTXLSSHG ZLWK D IODQJH

8VLQJ WKH 'ULYH 3LQLRQ)SUDHQJHQ WR V G HQID DLQ VHX UHR W RW X
WKH UH DU RXWSXW QXW

)LJ _____ 5HPRYLQJ 5HDU 2XWSXW 3000RE 100081LQRI0GL0H
&RXUWHV\ RI)25' 02725 &2

8VLQJ WKH RU -DZ 3XOOHU UHPRYH WKH IODQJH

)LJ _____ ,GHQWLI\LQJ '-DZ \$000)ODQJH
&RXUWHV\ RI)25' 02725 &2

5HPRYH WKH VOLQJHU IURUPHVKHODRQW IODQJH000UWKH

)LJ _____ /RFDWLQJ)ODQJH 6OLQJHU
&RXUWHV\ RI)25' 02725 &2

8VLQJ WKH 6OLGH +DPPHU ZLWOK6WIK0 5RPRXHU&RUHPRUWHHW

)LJ 5HPRYLQJ 5HDU 2XWSXW 6HVO 8RUQX16 &RGY HDWPH
5HPRYHU
&RXUWHV\ RI)25' 02725 &2

9HKLFOHV HTXLSSHG ZLWK D VOLS \RNH

5HPRYH DQG GLVFDUG WKH UHDU UHWDLQHU EROWV

)LJ /RFDWLQJ 5HDU 5HWDLQHU %ROWV
&RXUWHV\ RI)25' 02725 &2

\$OO YHKLFOHV

8VLQJ WKH 7UDQVIHU &DVWH RXXH QWHDSU HDWBUQMHSDR0
WKH UHDU UHWDLQHU

)LJ 6HSDUDWLQJ 5HDU 5HW ~~DLQ7HJ~~ ~~QURRU5~~ ~~HDVH~~ ~~DR~~ ~~V8VQ~~
&RXUWHV\ RI)25' 02725 &2

8VLQJ WKH)URQW 3XPS %X ~~VQGH~~ ~~DR~~ ~~GRY~~ ~~HX~~ ~~IZW~~ ~~V~~ ~~KOMK~~ ~~SU~~ ~~HDV~~
EHDULQJ

)LJ 5HPRYLQJ 1HHGOH %HDULQJ
&RXUWHV\ RI)25' 02725 &2

'LVFRQQHFW WKH RLO WX ~~DR~~ ~~VQGH~~ ~~DR~~ ~~GRY~~ ~~HX~~ ~~IZW~~ ~~V~~ ~~KOMK~~ ~~SU~~ ~~HDV~~
RLO SXPS

)LJ /RFDWLQJ 2LO 7XEH \$QG 2LO 3XPS \$VVHPEO\
&RXUWHV\ RI)25' 02725 &2

5HPRYH DQG GLVFDUG WKH UHWDLQLQJ ULQJ
,QVWDOO WKH 2XWSXW 6KDIW 5HDU 6QDS 5LQJ 6OHY
/LIW XS RQ WKH VKDIW ~~DQGLVFDUG~~ ~~W~~ ~~5HPRYH~~ ~~WKH~~ ~~2XWSXW~~ ~~6KDIW~~ ~~5HDU~~ ~~6QDS~~ ~~5LQJ~~ ~~6OHY~~

)LJ ,GHQWLI\LQJ 2XWSXW 6KDIW \$QG 5H6WDLQ 5DQ
&RXUWHV\ RI)25' 02725 &2

5HPRYH DQG GLVFDUG WKH FDVH EROWV

)LJ /RFDWLQJ &DVH %ROWV
&RXUWHV\ RI)25' 02725 &2

8VLQJ WKH 7UDQVIHU &DVH ~~MRKHV~~ IFDJ 16 SKUDYGHU WKSIDUDM

)LJ 6HSDUDWLQJ &DVH +DOYRXV8VLQJ6SUDYGHU &DVH
&RXUWHV\ RI)25' 02725 &2

5HPRYH WKH RLO WXE H

)LJ /RFDWLQJ 2LO 7XE H

&RXUWHV\ RI)25' 02725 &2

5HPRYH WKH EDOO EHDULQJ UHWDLQLQJ ULQJ

)LJ /RFDWLQJ %DOO %HDULQJ 5HWDLQLQJ 5LQJ
&RXUWHV\ RI)25' 02725 &2

8VLQJ WKH 'ULYH 3LQLRQK%WHLQJQ&XSH, QQW DO 0XILWZLEW
EHDULQJ

)LJ 5HPRYLQJ %DOO %HDULQJ
&RXUWHV\ RI)25' 02725 &2

8VLQJ WKH 8QLYHUVDO 3XODHHDULQJ UHWDLQLQJ UHPRYH WKH QHHG

)LJ 5HPRYLQJ 1HHGOH %HDUHQJ 6HWQJ 8QLYHUVDO 3X
&RXUWHV\ RI)25' 02725 &2

5HPRYH WKH FKLS FROOHFWRU PDJQHW

)LJ /RFDWLQJ &KLS &ROOHFWRU 0DJQHW
&RXUWHV\ RI)25' 02725 &2

5HPRYH WKH GULYHQ VSURFNHW UHWDLQLQJ ULQJ

)LJ /RFDWLQJ 'ULYHQ 6SURFNHW 5HWDLQLQJ 5LQJ

&RXUWHV\ RI)25' 02725 &2

5HPRYH WKH GULYH VSURFNHW UHWDLQLQJ ULQJ

)LJ /RFDWLQJ 'ULYH 6SURFNHW 5HWDLQLQJ 5LQJ
&RXUWHV\ RI)25' 02725 &2

5HPRYH WKH PRGH VSULQJ

)LJ /RFDWLQJ 0RGH 6SULQJ
&RXUWHV\ RI)25' 02725 &2

5HPRYH WKH VSURFNHWV DQG FKDLQ DV DQ DVVHPEO\

)LJ 5HPRYLQJ 6SURFNHWV \$QG &KDLQ \$VVHPEO\
&RXUWHV\ RI)25' 02725 &2

5HPRYH WKH PDLQVKDIW ~~DIW~~WKH PRGH IRUN DV DQ DVV

)LJ 5HPRYLQJ 0DLQVKDIW \$QG 0RGH)RUN \$VVHPEO\
&RXUWHV\ RI)25' 02725 &2

6OLGH WKH PRGH VOHHYHUBWHWWKH ~~P~~~~ER~~~~S~~~~R~~~~DIW~~~~Q~~~~D~~~~Q~~G VHSD

)LJ /RFDWLQJ 0RGH)RUN ~~6K~~LYMW 5DLO \$QG 0RGH 60

&RXUWHV\ RI)25' 02725 &2

3ODFH WKH PDLQVKDIW LQ WKV IRIDG MG ZHQG YLSZD ZIGW K WK
5HPRYH WKH FOXWFK JHDU

)LJ 5HPRYLQJ &OXWFK *HDU
&RXUWHV\ RI)25' 02725 &2

5HPRYH WKH PRGH KXE

5HPRYH WKH GULYH VSURFNHW KXE

)LJ /RFDWLQJ 'ULYH 6SURFNHW +XE
&RXUWHV\ RI)25' 02725 &2

,QVSHFW DOO RI WKH FRP&RQHQWV IRU ZHDU DQG GDPDJ
,QVSHFW WKH PRGH IRUN SDGV IRU ZHDU

)LJ /RFDWLQJ 0RGH)RUN 3DGV
&RXUWHV\ RI)25' 02725 &2

127(5RWDWH WKH VHFWRU DVVHPSQVWRLRQHRUZKBM
UHPRYDO

)LJ /RFDWLQJ 5DQJH)RUN \$WWHPEHUYHQG 5DQJH 6KLI
&RXUWHV\ RI)25' 02725 &2

5HPRYH WKH UDQJH IRUN DWVHPEHUYHQG WKH UDQJH VKL
,QVSHFW WKH UDQJH IRUN DSDGZRIRQ ZHLDUFD,UGVWKHS DQJ
PDLQVKDIW DQG WKH VOHHYH

)LJ /RFDWLQJ 5DQJH)RUN 3DGV
&RXUWHV\ RI)25' 02725 &2

8VLQJ WKH 6OLGH +DPPHU ZLW 16 WDKH 57RURYXHU & RQYRUY'

)LJ _____ 5HPRYLQJ ,QSXW 6HDO 8VRQJX6D&RQYHDPWHU :2LVOK
&RXUWHV\ RI)25' 02725 &2

5HPRYH DQG GLVFDUG WKH UHWDLQLQJ ULQJ
,QVWDOO WKH ,QSXW 6KDIW 6QDS 5LQJ 6OHYH
5HPRYH DQG GLVFDUG WKH UHWDLQLQJ ULQJ
z 5HPRYH WKH ,QSXW 6KDIW 6QDS 5LQJ 6OHYH

)LJ _____ ,GHQWLI\LQJ ,QSXW 6KDIW 6QDS 5LQJ 6OHYH
&RXUWHV\ RI)25' 02725 &2

5HPRYH WKH SODQHWDU\ DVVHPEO\

)LJ /RFDWLQJ 3ODQHWDU\ \$VVHPEO\
&RXUWHV\ RI)25' 02725 &2

5HPRYH WKH LQSXW EHDULQJ UHWDLQLQJ ULQJ

)LJ /RFDWLQJ ,QSXW %HDULQJ 5HWDLQLQJ 5LQJ
&RXUWHV\ RI)25' 02725 &2

8VLQJ WKH 'ULYH 3LQLRQ %HDULQJ EOXHS ,QHWDO OCHFR D Q GA

)LJ 5HPRYLQJ)URQW ,QSXW %HDULQJ 5HWDLQLQJ 5LQJ
&RXUWHV\ RI)25' 02725 &2

3UHVV

&RXUWHV\ RI)25' 02725 &2

8VLQJ WKH 7RUTXH &RQYHUWKH @00G6H@DP5HPUR YUHP &YWK

)LJ 5HPRYLQJ)URQW 2XWSXWHU82/L@JHROT5HP &R
+DPPHU
&RXUWHV\ RI)25' 02725 &2

5HPRYH DQG GLVFDUG WKH UHWDLQLQJ ULQJ
,QVWDOO WKH 2XWSXW 6KDIW)URQW 6QDS 5LQJ 6OHH
5HPRYH DQG GLVFDUG WKH UHWDLQLQJ ULQJ

)LJ GHQWLI\LQJ 2XWSXW 6KDIWH)URQW H@W@DLSQ 5LQJ 5
&RXUWHV\ RI)25' 02725 &2

5HPRYH WKH 2XWSXW 6KDIW GURKQWI 6QDS 5LQW SXWH WKH IDV

)LJ _____, GHQWLI\LQJ 6SHFLDO 7RRO
&RXUWHV\ RI)25' 02725 &2

5HPRYH WKH IURQW RXW\$XW EDOO EHDULQJ UHWDLQLQJ

)LJ _____/RFDWLQJ)URQW 2XW\$XW5%DOO %HDULQJ 5HWDLQJ
&RXUWHV\ RI)25' 02725 &2

8VLQJ WKH 5HDU \$[OH 2LQDQGHQ ,DQVDOOXLUWZIEWK SWHV
EDOO EHDULQJ

)LJ 5HPRYLQJ)URQW 2XWSXW %DOO %HDULQJ
&RXUWHV\ RI)25' 02725 &2

5HPRYH WKH ORFN SODWH UHWDLQLQJ ULQJ

)LJ /RFDWLQJ /RFN 3ODWH 5HWDLQLQJ 5LQJ
&RXUWHV\ RI)25' 02725 &2

/LIW RXW WKH LQSXW JHDU

z ,QVSHFW WKH LQSXW JHDUDI QW Z H B D U R U I Q D H F D J M V D , Q V W

)LJ /RFDWLQJ ,QSXW *HDU \$VGH B D D Q H W D U \ & D U U L H
&RXUWHV\ RI)25' 02725 &2

5HPRYH WKH ORFN SODWH

)LJ _____ /RFDWLQJ /RFN 3ODWH
&RXUWHV\ RI)25' 02725 &2

5HPRYH WKH IURQW LQSXW JHDU WKUXVW ZDVKHU

)LJ _____ /RFDWLQJ)URQW ,QSXW *HDU 7KUXVW :DVKHU
&RXUWHV\ RI)25' 02725 &2

5HPRYH WKH UHDU LQSXW JHDU WKUXVW ZDVKHU

)LJ _____ /RFDWLQJ 5HDU ,QSXW *HDU 7KUXVW :DVKHU

&RXUWHV\ RI)25' 02725 &2

,QVSHFW WKH JHDU WHHWK DQG WXPYVW ZOWWBOO IR QHZ
LI QHFHVVDU\

)LJ /RFDWLQJ *HDU 7HHWK \$QG 7KUXVW :DVKHUV
&RXUWHV\ RI)25' 02725 &2

5HPRYH WKH SRSSHW DVVHPEO\

)LJ 5HPRYLQJ 3RSSHW \$VVHPEO\
&RXUWHV\ RI)25' 02725 &2

127(,I LQVWDOOLQJ D QHZ SRSSHW VSULQJ FRWRPXW
RULJLQDO SRSSHW VSULQJ

)LJ _____ /RFDWLQJ 3RSSHW 6FUHZ 6SULQJ \$QG 3RSSHW
&RXUWHV\ RI)25' 02725 &2

'LVDVVHPEOH WKH SRSSHWSRSSHV WKH VSULQJ DQG WKH
5HPRYH WKH ORFNQXW VSDHFZUDVQJ WKKHDFWRU DWKHPV

)LJ _____ /RFDWLQJ 6HFWRU \$VVHPEO\ /RFNQXW
&RXUWHV\ RI)25' 02725 &2

8VLQJ WKH 6HOHFWRU 6KDVHFWRW 6RDNMWSRBRWH WKH

)LJ _____ 5HPRYLQJ 6HFWRU 6KDILW 6KDSWRUXW 8RDNHWH OHFW
&RXUWHV\ RI)25' 02725 &2

5HPRYH DQG GLVFDUG WKH VXSSRUW 2 ULQJ VHDO

)LJ /RFDWLQJ 56XSSRUW 2
&RXUWHV\ RI)25' 02725 &2

\$VVHPEO\

\$OO YHKLFOHV

,QVWDOO D QHZ VXSSRUW 2 ULQJ VHDO

)LJ /RFDWLQJ 56XSSRUW 2
&RXUWHV\ RI)25' 02725 &2

127(3ULRU WR LQVWDOODWLRQ UHFRUGV W 8 DQWU HDG V

8VLQJ WKH 6HOHFWRU 6KDV WIRXU VGRF MH WX SLQRUWDOO WKH
z 7LJKWHQ WR 1P OE IW

)LJ 5HPRYLQJ 6HFWRU 6KD IUV 6KDS WR UXW 8/R QN H6/H O H
&RXUWHV\ RI)25' 02725 &2

,QVWDOO WKH VHFWRU DVVHPEO\

)LJ /RFDWLQJ 6HFWRU \$VVHPEO\
&RXUWHV\ RI)25' 02725 &2

,QVWDOO WKH VSDFHU WCRFQXMU WKH ZDVKHU DQG W

)LJ /RFDWLQJ 6HFWRU \$VVHPEO\ /RFNQXW

&RXUWHV\ RI)25' 02725 &2

127(,I LQVWDOOLQJ D QHZ SRSSHVH VSULQJ
SRSSHV VSULQJ

)LJ /RFDWLQJ 3RSSHW 6FUHZ 6SULQJ \$QG 3RSSHW
&RXUWHV\ RI)25' 02725 &2

\$VVHPEOH WKH SRSSHVH VSULQJ WKH VSULQJ DQG WKH SR
,QVWDOO WKH SRSSHVH DVVHPEO\
z 7LJKWHQ WR 1P OE LQ

)LJ /RFDWLQJ 3RSSHW \$VVHPEO\ 1XW
&RXUWHV\ RI)25' 02725 &2

,QVWDOO WKH UH DU LQSXW JH DU WKUXVW ZDVKHU

)LJ /RFDWLQJ 5HDU ,QSXW *H DU 7KUXVW :DVKHU
&RXUWHV\ RI)25' 02725 &2

,QVWDOO WKH IURQW LQSXW JH DU WKUXVW ZDVKHU

)LJ /RFDWLQJ)URQW ,QSXW *H DU 7KUXVW :DVKHU
&RXUWHV\ RI)25' 02725 &2

127(,QVWDOO WKH ORFN SODWH(ZDVLKQWIRXWZDUPSHG

)LJ /RFDWLQJ /RFN 3ODWH

&RXUWHV\ RI)25' 02725 &2

,QVWDOO WKH ORFN SODWH

3ODFH WKH LQSXW JHDULQMPREWKH SODQHWDU\ FDUULHU

)LJ /RFDWLQJ ,QSXW *HDU \$QGH BDDQHWDU\ &DUULHU
&RXUWHV\ RI)25' 02725 &2

,QVWDOO D QHZ ORFN SODWH UHWDLQLQJ ULQJ

)LJ /RFDWLQJ /RFN 3ODWH 5HWDLQLQJ 5LQJ
&RXUWHV\ RI)25' 02725 &2

8VLQJ WKH ,QSXW 6KDIW %DQG GDEJD, QVWDOO LHWDE DWK SXWKV
EHDULQJ

)LJ _____ , QVWDOOLQJ)URQW , Q6SXDW% %HDULQJ JYQQW DCSXW
3UHVV
&RXUWHV\ RI)25' 02725 &2

, QVWDOO D QHZ EHDULQJ UHWDLQHU ULQJ

)LJ _____ /RFDWLQJ , QSXW %HDULQJ 5HWDLQLQJ 5LQJ
&RXUWHV\ RI)25' 02725 &2

3RVLWLRQ WKH SODQHWDVVDVHPEO\ LQWR WKH IURQW

)LJ /RFDWLQJ 3ODQHWDU\ \$VVHPEO\
&RXUWHV\ RI)25' 02725 &2

,QVWDOO D QHZ UHWDLQLQJ ULQJ
,QVWDOO WKH ,QSXW 6KDIW 6QDS 5LQJ 6OHYH
,QVWDOO D QHZ UHWDLQLQJ ULQJ
z 5HPRYH WKH ,QSXW 6KDIW 6QDS 5LQJ 6OHYH

)LJ ,GHQWLI\LQJ ,QSXW 6KDIW 6QDS 5LQJ 6OHYH
&RXUWHV\ RI)25' 02725 &2

8VLQJ WKH ,QSXW 6KDIW 6QDS 5LQJ 6OHYH

)LJ ,QVWDOOLQJ ,QSXW 6KDIW 6QDS 5LQJ 6OHYH
&RXUWHV\ RI)25' 02725 &2

8VLQJ WKH 2XWSXW 6KDIW 6QDS 5LQJ 6OHYH
RXWSXW EDOO EHDULQJ

)LJ _____, QVWDOOLQJ)URQW 2XWSXW% BQDI% HDLQW % MDO
+DQGOH \$QG 3UHVV
&RXUWHV\ RI)25' 02725 &2

, QVWDOO D QHZ IURQW BXWSXW EDOO EHDULQJ UHWDLQJ

)LJ _____ /RFDWLQJ)URQW 2XWSXW% BQDI% HDLQJ 5HWDLQJ
&RXUWHV\ RI)25' 02725 &2

3RVLWLRQ WKH IURQW BXWSXW VKDIW LQ WKH IURQW FDY

)LJ /RFDWLQJ)URQW 2XWSXW 6KDIW
&RXUWHV\ RI)25' 02725 &2

,QVWDOO D QHZ UHWDLQLQJ ULQJ
,QVWDOO WKH 2XWSXW 6KDIW)URQW 6QDS 5LQJ 6OHH
,QVWDOO D QHZ UHWDLQLQJ ULQJ
z 5HPRYH WKH 2XWSXW 6KDIW)URQW 6QDS 5LQJ 6OH

)LJ ,GHQWLI\LQJ 2XWSXW 6KDIWH)URQW 6QDS 5LQJ
&RXUWHV\ RI)25' 02725 &2

8VLQJ WKH 2XWSXW 6KDIWH 2LQJ 6OHH L,QVWDOOHDJ QHZ WKUR

)LJ ,QVWDOOLQJ)URQW 2XWSXW 6KDIWH)URQW 6QDS 5LQJ
&RXUWHV\ RI)25' 02725 &2

8VLQJ WKH 2XWSXW 6KDIWH 2LQJ 6OHH L,QVWDOOHDJ QHZ WKUR

)LJ _____, QVWDOOLQJ 6OLQJHUX2VCS XWR QKD I W D2Q JH 68MLQJH D
&RXUWHV\ RI)25' 02725 &2

8VLQJ WKH 'ULYH 3LQLRQ)SUDH QJHHQ WR WCKHQJO)LQWFK UH RVP RW X
IODQJH DQG D QHZ IURQW RXWSXW QXW
z 7LJKWHQ WR 1P OE IW

)LJ _____, QVWDOOLQJ)URQW)OXW JHV \$QG 'JULY QW8 L2X WRSQX
)LWXUH
&RXUWHV\ RI)25' 02725 &2

127(5RWDWH WKH VHFWRU DVVHPBBV WRL WCKHRUZKBM
LQVWDOODWLRQ

)LJ _____ /RFDWLQJ 5DQJH)RUN \$WWH ~~PHOY~~ QG 5DQJH 6KLI
&RXUWHV\ RI)25' 02725 &2

3RVLWLRQ WKH UDQJH IR ~~NI~~ ~~W~~ ~~PH~~ ~~YH~~ ~~DQ~~ ~~GW~~ ~~WK~~ ~~HUR~~ ~~QW~~ ~~H~~ ~~D~~
3RVLWLRQ WKH GULYH VSURFNHW KXE RQ WKH PDLQVKDI

)LJ _____ /RFDWLQJ 'ULYH 6SURFNHW +XE
&RXUWHV\ RI)25' 02725 &2

,QVWDOO WKH PRGH KXE

127(7KH WKLQ VLGH RI WKH V\QFKURQLJHU UDFRU XSGB

)LJ /RFDWLQJ ORGH)RUN @KHWH5DLO \$QG ORGH 6
&RXUWHV\ RI)25' 02725 &2

\$VVHPEOH WKH PRGH IRUNLQVWKHWH UDLO DQG WKH P
,QVWDOO WKH PRGH IRUNLQVWKHWH UDLO DVVHPEO
z 7KH VKLIW UDLO PXVW ERWWRP LQ WKH FDVH

)LJ ,QVWDOOLQJ ORGH)RUN\ \$QG)@KQW 8DVLJ \$VVH
&RXUWHV\ RI)25' 02725 &2

127(,QVWDOO WKH PDLQVKDIW DVVHPEOHU R WUKDW EV
DJDLQVW RQH RI WKH PRGH VOHHGFRWPHHW O\I V
V\QFKURQLJHU ZLOO ELQG

)LJ _____, QVWDOOLQJ 0DLQVKDIW
&RXUWHV\ RI)25' 02725 &2

, QVWDOO WKH PDLQVKDIW
, QVWDOO WKH FOXWFK JHDU

)LJ _____, QVWDOOLQJ &OXWFK *HDU
&RXUWHV\ RI)25' 02725 &2

, QVWDOO WKH GULYH VSDURGF NWHM GULYH G UFKYHLQ VSDURGF NDH

)LJ _____ ,QVWDOOLQJ 'ULYH 6SURFNHW 5HWDLQLQJ 5LQJ
&RXUWHV\ RI)25' 02725 &2

,QVWDOO WKH PRGH VSULQJ

)LJ _____ /RFDWLQJ ORGH 6SULQJ
&RXUWHV\ RI)25' 02725 &2

,QVWDOO D QHZ GULYH VSURFNHW UHWDLQLQJ ULQJ

)LJ _____ /RFDWLQJ 'ULYH 6SURFNHW 5HWDLQLQJ 5LQJ
&RXUWHV\ RI)25' 02725 &2

,QVWDOO D QHZ GULYHQ VSURFNHW UHWDLQLQJ ULQJ

)LJ /RFDWLQJ 'ULYHQ 6SURFNHW 5HWDLQLQJ 5LQJ
&RXUWHV\ RI)25' 02725 &2

8VLQJ WKH 2XWSXW 6KDIW K HMDUH%+DDULQH DDGWD V XHWOZE
EHDULQJ

)LJ ,QVWDOOLQJ %DOO %M D5HIDQJ %M DQJL QJ WGSXWD 6KOH
3UHVV
&RXUWHV\ RI)25' 02725 &2

,QVWDOO D QHZ EDOO EHDULQJ UHWDLQLQJ ULQJ

)LJ /RFDWLQJ %DOO %HDULQJ 5HWDLQLQJ 5LQJ
&RXUWHV\ RI)25' 02725 &2

127(7KH LGHQWLILFDWLRQ QXPEHUV FROVWKH 2XWSXW
5HDU %HDULQJ ,QVWDOOHU DQG WKH +DQGOH

)LJ ,QVWDOOLQJ 1HHGOHD %WD5HLDQJ %VIDQJL QXWSXW D6CK
\$QG 3UHVV
&RXUWHV\ RI)25' 02725 &2

8VLQJ WKH 2XWSXW 6KDIWK %HDKUH%+DDQLQH DQGWIDVXHW DZE
QHHGOH EHDULQJ
,QVWDOO WKH FKLS FROOHFWRU PDJQHW

)LJ /RFDWLQJ &KLS &ROOHFWRU 0DJQHW
&RXUWHV\ RI)25' 02725 &2

,QVWDOO WKH RLO WXEH

)LJ /RFDWLQJ 2LO 7XEH
&RXUWHV\ RI)25' 02725 &2

&OHDQ ERWK FDVH PDWLQFJHVXUHSFHV ZLWK PHWDO VXUID
127(7KH VLOLFRRQH EHDG PXVW EH QRLQDUQHGLDWRKHQ
\$SSO\ D EHDG RI VLOLFRRQH MBVQWWDFQGRVHWKHDQDWWWRW
z 7KH EHDG PXVW EH RQ WKIRZLQUGWHKRILWQKHGERQWKKRQ
3RVLWLRQ WKH UHDFKDOI RQWR WKH IURQW FDVH

)LJ /RFDWLQJ %HDG 2I 6LOSUFRRQHQDQDWRNHW \$SSO\2IQ&D
&RXUWHV\ RI)25' 02725 &2

127(8VH D FULVVFURVV SDWWHUQRQWHQ WLJKWHQLQ
,QVWDOO WKH QHZ FDVH ERQWV
z 7LJKWHQ WR 1P OE IW

)LJ _____ /RFDWLQJ &DVH %ROWV
&RXUWHV\ RI)25' 02725 &2

,QVWDOO WKH QHZ UHWDLQLQJ ULQJ
,QVWDOO WKH 2XWSXW 6KDIW 5HDU 6QDS 5LQJ 6OHY
,QVWDOO WKH QHZ UHWDLQLQJ ULQJ
z 5HPRYH WKH 2XWSXW 6KDIW 5HDU 6QDS 5LQJ 6OHH

)LJ _____ ,GHQWLI\LQJ 2XWSXW 6KBYM 5HQU56QDS 6L
&RXUWHV\ RI)25' 02725 &2

127(3ULRU WR DVVHPEO\ YHULI\WM KDRV OV 6H P2S USLQFN

)LJ /RFDWLQJ 2LO 7XEH \$QG 2LO 3XPS \$VVHPEO\
&RXUWHV\ RI)25' 02725 &2

6OLGH WKH RLO SXPS DVVHPEO\ WKH RDOQWKEHW D

127(7KH LGHQWLILFDWLRQ QXPEHU V\QWWIDFH QMKGIO
7UDQVIHU &DVH 1HHGOH %HDULQDQVWDOOHU D

)LJ ,QVWDOOLQJ 1HHGOH&DVH UHQLG SVL QHDUDQV\,QVW
\$QG 3UHV
&RXUWHV\ RI)25' 02725 &2

8VLQJ WKH 7UDQVIHU &DVH LMKI QKH %DQGLQJ DQVWDOOHV
QHHGOH EHDULQJ

&OHDQ WKH UHDU FDVH DQGHUHZLWK HPW DDOH VXP DFLQ JS V
\$SSO\ D EHDG RI VLOLFQRU HDUNHHW DQGHVH DQVW IDI

)LJ _____ /RFDWLQJ 6LOLFRQH *~~D Q N H S W H D Q G H B O D Q M W B S Q~~
&RXUWHV\ RI)25' 02725 &2

3RVLWLRQ WKH UH DU UH WDLQH U RQ WKH UH DU FDVH

)LJ _____ 3RVLWLRQLQJ 5H DU 5H WDLQH U 2Q 5H DU &DVH
&RXUWHV\ RI)25' 02725 &2

,QVWDOO WKH QHZ UH DU UH WDLQH U ER OW V
z 7LJKWHQ WR 1P OE IW

)LJ /RFDWLQJ 5HDU 5HWDLQHU %ROWV
&RXUWHV\ RI)25' 02725 &2

9HKLFOHV HTXLSSHG ZLWK D IODQJH

8VLQJ WKH 2XWSXW 6KDIKH 2LQQGHO LQVWDOOHU QHZWKH

)LJ ,QVWDOOLQJ 5HDU 2X6KSW BHOGBDQQQZWWOOWU
&RXUWHV\ RI)25' 02725 &2

8VLQJ WKH 2XWSXW 6KDIKH 2LQQGHO LQVWDOOHU QHZWKH

)LJ ,QVWDOOLQJ 6OLQJHXWGXWHDKDDQDQSDILQJHU
&RXUWHV\ RI)25' 02725 &2

8VLQJ WKH 'ULYH 3LQLRQ)SUDQJHHQWRWKHQJOLQWJUHVRW
IODQJH DQG D QHZ RXWSXW QXW

z 7LJKWHQ WR 1P OE IW

)LJ ,QVWDOOLQJ 5HDU)O ~~DDQ J'WJ \$QG 3LXWLBXW) CIXWJB~~
)LWXUH
&RXUWHV\ RI)25' 02725 &2

9HKLFOHV HTXLSSHG ZLWK D VOLS \RNH

8VLQJ D VXLWDEOH GULY~~HHU~~DOLQVWDOO WKH UHDU RXWSX

\$OO YHKLFOHV

127('R QRW XVH DLU WRROV RU ~~GFDVHU IP DW RR WFKXU SOX~~

,QVWDOO WKH GUDLQ DQG ILOO SOXJV

z 7LJKWHQ WR 1P OE IW

)LJ /RFDWLQJ 'UDLQ \$QG)LOO 3OXJV
&RXUWHV\ RI)25' 02725 &2

,QVWDOO WKH SRVLWLRQ VZLWFK

z 7LJKWHQ WR IW P OE

)LJ /RFD~~BWVQWLRQ~~ 6ZLWFK
&RXUWHV\ RI)25' 02725 &2

7LJKWHQ WKH VKLIW OHYHU QXW WR 1P OE LQ

)LJ /RFDWLQJ 6KLIW /HYHU 1XW
&RXUWHV\ RI)25' 02725 &2

5HPRYH WKH WUDQVIHU FDR~~OGILQJ~~)L[WXUH DQVPLVVLRQ +

)LJ ,GHQWLI\LQJ 7UDQVPLVVLRQ +ROGLQJ)L[WXUH

&RXUWHV\ RI)25' 02725 &2

75\$16)(5 &\$6((/(&7521,& 6+,)7

6SHFLDO 7RRO V

63(&,\$/ 722/ 5() (5(1&(

RU -DZ 3XOOHU
' ' / \$

+DQGOH
7 7 :

+ROGLQJ)L[WXUH 'ULYH 3LQ
7 3 \$

+ROGLQJ)L[WXUH 7UDQVPLV
7 / %

,QVWDOOHU 'ULYH 3LQLRQ %
7 7 ' 7

,QVWDOOHU 'ULYH 3LQLRQ %
7 7)

,QVWDOOHU ,QSXW 6KDIW %

,QVWDOOHU ,QSW 6KDIW 2L

,QVWDOOHU 2XWSXW 6KDIW

,QVWDOOHU 2XWSXW 6KDIW

,QVWDOOHU 2XWSXW 6KDIW
3DUW RI .LW 6

,QVWDOOHU 2XWSXW 6KDIW
3DUW RI .LW 6

,QVWDOOHU 2XWSXW 6KDIW

,QVWDOOHU 2XWSXW 6KDIW

,QVWDOOHU 5HDU \$[OH 2LO

7 7 <

,QVWDOOHU 7UDQVIHU &DVH

5HPRYHU)URQW 3XPS %XVK
7 / &

5HPRYHU 7RUTXH &RQYHUWH
7 3 %+

6OHYH ,QSXW 6KDIW 6QDS

6OHYH 2XWSXW 6KDIW)URC

6OHYH 2XWSXW 6KDIW 5HD

6 O L G H + D P P H U
7 7 \$

6 R F N H W 6 H F W R U 6 K D I W 1 X W

6SUHDGHU 7UDQVIHU &DVH -

8QLYHUVDO 3XOOHU 6HW
'6 ' / \$

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0DWHULDO

0\$7(5,\$/ 63(&.),&\$7,216

, WHP	6SHFLILFDWLRQ
0RWRUFUDIWS 0HWDO 6XUIDFH 3UHS =& \$	
0XOWL 3XUSRVH *UHDVH ;* DQG RU ;/	(6% 0 & %
6LOLFRQH *DVNHW DQG 6HDODQW 7\$	:6(0 * \$
7KUHDG 6HDODQW ZLWK 37)(7\$	:6. 0 * \$

(OHFWULF 6KLIW 7UDQVIHU &DVH

)LJ ([SORGHG 9LHZ 2I (O&D)WHLF 6KLIW 7UDQVIHU
 &RXUWHV\ RI)25' 02725 &2

,7(0 '(6&5,37,21 &+\$57

,WHP	3DUW 1XPEHU	'HVFULSWLRQ
\$	%ROW	
*	*HDUPRWRU HQFRGHU DVVHPEO\	
)	3ODVWLF UHWDLQHU	
	2 ULQJ PRWRU VHDO	
:	ORWRU DGDSWHU	

	=	2 ULQJ VHDO	
	/	3RSSHW VFUHZ	
		2 ULQJ VHDO	
		6SULQJ	
		3RSSHW	
	%	)URQW RXWSXW VHDO	
	&	6OLQJHU	
	%	)URQW IODQJH	
		+H[ORFNQXW	
	%	,QSW VHDO	
		,QSW EHDULQJ UHWDLQHU ULQJ	
		)URQW KDOI FDVH	
		9HQW	
		%DOO EHDULQJ IURQW LQSW	
	1	)URQW LQSW EHDULQJ UHWDLQLQJ ULQJ	ULQJ
		\$QQXOXV JHDU SDUW RI	
		\$QQXOXV UHWDLQLQJ ULQJ	
	5	/RFN SODWH UHWDLQLQJ ULQJ	
	%	/RFN SODWH	
	=	)URQW LQSW JHDU WKUXVW ZDVKHU	HU
		,QSW JHDU	
		3LORW EHDULQJ	
	=	5HDU LQSW JHDU WKUXVW ZDVKHU	HU
	\$	3ODQHWDU\ FDUULHU DVVHPEO\	
		5DQJH VKLIW VOHHYH	
		6\QFKURQL]HU VOHHYH	
		6\QFKURQL]HU VSULQJV SDUW RI	
		+XE UHWDLQLQJ ULQJ	
	\$	6\QFKURQL]HU VWUXW	
		6\QFKURQL]HU KXE	
		2XWHU ULQJ	
	\$	6\QFKURQL]HU VWUXWV	
	.	0LGGOH ULQJ	
	=	,QQHU ULQJ	
		&OXWFK JHDU UHWDLQLQJ ULQJ	
	&	&OXWFK JHDU	
	:	'ULYH VSURFNHW KXE	
		'ULYH VSURFNHW	
		6SURFNHW UHWDLQLQJ ULQJ	
		0DLQVKDIW	
		5HDU UHWDLQHU	
		1HHGOH EHDULQJ	
	%	5HDU RXWSXW VHDO	
	&	6OLQJHU	

	%	5HDU IODQJH
		1XW
	\$	5HWDLQHU EROW
	'	%XVKLQJ GRZHO
		5HDU KDOI FDVH
		%DOO EHDULQJ
		5HWDLQLQJ ULQJ
	5	5HWDLQLQJ ULQJ
	\$	2LO SXPS DVVHPEO\
	\$	)LOO SOXJ
	\$	'UDLQ SOXJ
	\$	5HDU FDVH EROW
	(	&KLS FROOHFWRU PDJQHW
	\$	2LO VFUHHQ
	1	/RZHU WXEH FRQQHFWRU
	\$	/RZHU RLO WXEH
	1	8SSHU WXEH FRQQHFWRU
	\$	8SSHU RLO WXEH
		2 ULQJ VHDO
	)	6HFWRU DVVHPEO\
		)URQW RLO SXPS UHWDLQLQJ ULQJ
		)URQW RLO SXPS EDOO EHDULQJ
		5HWDLQLQJ ULQJ
		)URQW RXWSXW VKDIW
		'ULYHQ VSURFNHW
		6SURFNHW UHWDLQLQJ ULQJ
		1HHGOH EHDULQJ
		5DQJH IRUN DVVHPEO\
	&	5DQJH VKLIW IRUN SDG
	&	0RGH IRUN HQG SDGV
	&	0RGH IRUN FHQWHU SDG
		0RGH IRUN DVVHPEO\
		0RGH VSULQJ
	\$	'ULYH FKDLQ

'LVDVVHPEO\

\$OO YHKLFOHV

127('LVFDUG DOO QXWV EROW WBDQGUHFRNDLQJWKHPEQJWV
WUDQVIHU FDVH ,QVWDOO DOO QJHZ IDWVHQQVHVPGE

\$WWDFK WKH WUDQVIHU FDVH LWRXWKH 7UDQVPLVVLRQ

)LJ _____, GHQWLI\LQJ 7UDQVPLVVLRQ +ROGLQJ)L[WXUH
&RXUWHV\ RI)25' 02725 &2

5HPRYH WKH JHDUPRWRU HQFRGHU DVVHPEO\

)LJ _____ 5HPRYLQJ *HDUPRWRU (QFRGHU \$VVHPEO\
&RXUWHV\ RI)25' 02725 &2

5HPRYH WKH GUDLQ DQG ILOO SOXJV

)LJ _____ /RFDWLQJ 'UDLQ \$QG)LOO 3OXJV

&RXUWHV\ RI)25' 02725 &2

8VLQJ WKH 'ULYH 3LQLRQ)SUDHQJHQ WR V G HQID DLQ WK UHR W RW X
WKH IURQW RXWSXW QXW

)LJ 5HPRYLQJ)URQW 'ULYHVWKIDYW 3DQQRG)XDW 8VLQRG
&RXUWHV\ RI)25' 02725 &2

8VLQJ WKH RU -DZ 3XOOHU UHPRYH WKH IODQJH

)LJ ,GHQWLI\LQJ '-DZ \$QGQJHQDQJH
&RXUWHV\ RI)25' 02725 &2

9HKLFOHV HTXLSSHG ZLWK D IODQJH

8VLQJ WKH 'ULYH 3LQLRQ)SUDHQJHQ WR V G HQID DLQ WK UHR W RW X
WKH UH DU RXWSXW QXW

)LJ _____ 5HPRYLQJ 5H DU 2XWSXWH)3LDQJRHQ 1)XWD QJHL GJR OUGLYQ
&RXUWHV\ RI)25' 02725 &2

8VLQJ WKH RU -DZ 3XOOHU UHPRYH WKH IODQJH

)LJ _____ ,GHQWLI\LQJ '-DZ \$OGQJODQJH
&RXUWHV\ RI)25' 02725 &2

5HPRYH WKH VOLQJHU IURUPHVKHODRQW IODQJHDKUWKH

)LJ _____ /RFDWLQJ)ODQJH 6OLQJHU
&RXUWHV\ RI)25' 02725 &2

8VLQJ WKH 6OLGH +DPPHU ZLWK6 WDK 5RPRXHU & RQMPRUMHW

)LJ 5HPRYLQJ 5HDU 2XWSXW 6:LDVK 8VRLQJX 6IO&RGY HDMP
5HPRYHU
&RXUWHV\ RI)25' 02725 &2

9HKLFOHV HTXLSSHG ZLWK D VOLS \RNH

8VLQJ D VXLWDEOH WRRDOUHPRYH WKH UHDU RXWSXW V
\$OO YHKLFOHV

5HPRYH DQG GLVFDUG WKH UHDU UHWDLQHU EROWV

)LJ /RFDWLQJ 5HDU 5HWDLQHU %ROWV
&RXUWHV\ RI)25' 02725 &2

8VLQJ WKH 7UDQVIHU & DVWH RYKH QJHDSU HBW DUQMHSDBP
WKH UHDU UHWDLQHU

)LJ 6HSDUDWLQJ 5HDU 5HWDQQRUDQRIF5H8DUV8D+RX8M
&RXUWHV\ RI)25' 02725 &2

8VLQJ WKH)URQW 3XPS %XVQLQH DQGRYHWXIZWV8OMK\$U+HV
EHDULQJ

)LJ 5HPRYLQJ 1HHGOH %HDULQJ
&RXUWHV\ RI)25' 02725 &2

'LVFRQQHFW WKH RLO WX8M+H8E8HPRYH WKH RLO SXPS

)LJ /RFDWLQJ 2LO 7XEH \$QG 2LO 3XPS \$VVHPEO\
&RXUWHV\ RI)25' 02725 &2

5HPRYH DQG GLVFDUG WKH UHWDLQLQJ ULQJ
,QVWDOO WKH 2XWSXW 6KDIW 5HDU 6QDS 5LQJ 6OHHY
/LIW XS RQ WKH VKDIW DQG DHDQJH DQG GLVFDUG WK
z 5HPRYH WKH 2XWSXW 6KDIW 5HDU 6QDS 5LQJ 6OHH

)LJ ,GHQWLI\LQJ 2XWSXW 6KBYM \$QDU56QDS 6L
&RXUWHV\ RI)25' 02725 &2

5HPRYH DQG GLVFDUG WKH FDVH EROWV

)LJ /RFDWLQJ &DVH %ROWV
&RXUWHV\ RI)25' 02725 &2

8VLQJ WKH 7UDQVIHU &DVH ~~MRKHV~~ IFQJ 16 SKUDYGHU DVGHG DWHDW

)LJ 6HSDUDWLQJ &DVH +DHY+RXV LQQJ 6SUBQGHU &DV
&RXUWHV\ RI)25' 02725 &2

5HPRYH WKH RLO WXEH

)LJ /RFDWLQJ 2LO 7XEH

&RXUWHV\ RI)25' 02725 &2

5HPRYH WKH EDOO EHDULQJ UHWDLQLQJ ULQJ

)LJ /RFDWLQJ %DOO %HDULQJ 5HWDLQLQJ 5LQJ
&RXUWHV\ RI)25' 02725 &2

8VLQJ WKH 'ULYH 3LQLRQK%WHLQJQ&XSH, QQW DO 0XILWZLEW
EHDULQJ

)LJ 5HPRYLQJ %DOO %HDULQJ
&RXUWHV\ RI)25' 02725 &2

8VLQJ WKH 8QLYHUVDO 3XODHHDULQJ UHWDLQLQJ UHPRYH WKH QHHG

)LJ 5HPRYLQJ 1HHGOH %HDOOQJ 8VHWJ 8QLYHUVDO 3X
&RXUWHV\ RI)25' 02725 &2

5HPRYH WKH FKLS FROOHFWRU PDJQHW

)LJ /RFDWLQJ &KLS &ROOHFWRU 0DJQHW
&RXUWHV\ RI)25' 02725 &2

5HPRYH WKH GULYHQ VSURFNHW UHWDLQLQJ ULQJ

)LJ /RFDWLQJ 'ULYHQ 6SURFNHW 5HWDLQLQJ 5LQJ

&RXUWHV\ RI)25' 02725 &2

5HPRYH WKH GULYH VSURFNHW UHWDLQLQJ ULQJ

)LJ /RFDWLQJ 'ULYH 6SURFNHW 5HWDLQLQJ 5LQJ
&RXUWHV\ RI)25' 02725 &2

5HPRYH WKH PRGH VSULQJ

)LJ /RFDWLQJ 0RGH 6SULQJ
&RXUWHV\ RI)25' 02725 &2

5HPRYH WKH GULYH VSURFNHW UHWDLQLQJ ULQJ

)LJ 5HPRYLQJ 6SURFNHWV \$QG &KDLQ \$VVHPEO\
&RXUWHV\ RI)25' 02725 &2

5HPRYH WKH PDLQVKDIW DQGHWKH PRGH IRUN DV DQ DVV

)LJ 5HPRYLQJ 0DLQVKDIW \$QG 0RGH)RUN \$VVHPEO\
&RXUWHV\ RI)25' 02725 &2

6OLGH WKH PRGH IRUN DQGHWKH PRGH IRUN DQGHWKH PRGH IRUN

)LJ /RFDWLQJ 0RGH)RUN 0KHIWH 5DLO \$QG 0RGH 6

&RXUWHV\ RI)25' 02725 &2

3ODFH WKH PDLQVKDIW LQ WKV IRIDG MG ZHQG YLSZHDZIGW K WK
5HPRYH WKH FOXWFK JHDU

)LJ 5HPRYLQJ &OXWFK *HDU
&RXUWHV\ RI)25' 02725 &2

5HPRYH WKH UHWDLQLQJ MEQJ DQG WKH V\QFKURQLJHU K

)LJ /RFDWLQJ 5HWDLQLQJ +5LEJ \$QG 6\QFKURQLJHU
&RXUWHV\ RI)25' 02725 &2

5HPRYH WKH RXWHU ULQJ

)LJ /RFDWLQJ 2XWHU 5LQJ 2Q 0LGGOH 5LQJ
&RXUWHV\ RI)25' 02725 &2

5HPRYH WKH PLGGOH ULQJ

)LJ /RFDWLQJ 0LGGOH 5LQJ 2Q ,QQHU 5LQJ
&RXUWHV\ RI)25' 02725 &2

5HPRYH WKH LQQHU ULQJ

)LJ /RFDWLQJ ,QQHU 5LQJ 2Q 'ULYH 6SURFNHW

&RXUWHV\ RI)25' 02725 &2

5HPRYH WKH GULYH VSURFNHW KXE

)LJ /RFDWLQJ 'ULYH 6SURFNHW +XE
&RXUWHV\ RI)25' 02725 &2

,QVSHFW DOO RI WKH FRP&RQHQWV IRU ZHDU DQG GDPDJ
,QVSHFW WKH PRGH IRUN SDGV IRU ZHDU

)LJ /RFDWLQJ 0RGH)RUN 3DGV
&RXUWHV\ RI)25' 02725 &2

127(0DQXDO VKLIW UDQJH IRUN MØRIZØW UQFLVØKX WWUUD
VLPLODU

127(5RWDWH WKH VHFWRU DVVHPBØV WRL RØ HRUZKØM
UHPRYDO

)LJ /RFDWLQJ 5DQJH)RUN \$MWHØØY\$QG 5DQJH 6KL
&RXUWHV\ RI)25' 02725 &2

5HPRYH WKH UDQJH IRUN DWVHØØYHQG WKH UDQJH VKL

127(0DQXDO VKLIW UDQJH IRUN MØRIZØW UQFLVØKX WWUUD
VLPLODU

)LJ /RFDWLQJ 0DQXDO 6KLIW 5DQJH)RUN
&RXUWHV\ RI)25' 02725 &2

,QVSHFW WKH UDQJH IRUNDSØGØRIBØ ZHLDVFD,UGVWIKHS DØQJ
PDLQVKDIW DQG WKH VOHHYH

8VLQJ WKH 7RUTXH &RQYHUWØH ØØØGØH ØDPØHØR YUHPØØYWK

)LJ _____ 5HPRYLQJ ,QSXW 6HDO 8VROJX60LGRQYB8WHHU :2LWOK
&RXUWHV\ RI)25' 02725 &2

5HPRYH DQG GLVFDUG WKH UHWDLQLQJ ULQJ
,QVWDOO WKH ,QSXW 6KDIW 6QDS 5LQJ 6OHYH
5HPRYH DQG GLVFDUG WKH UHWDLQLQJ ULQJ
z 5HPRYH WKH ,QSXW 6KDIW 6QDS 5LQJ 6OHYH

)LJ _____ ,GHQWLI\LQJ ,QSXW 6KDIW 6QDS 5LQJ 6OHYH
&RXUWHV\ RI)25' 02725 &2

5HPRYH WKH SODQHWDU\ DVVHPEO\

)LJ /RFDWLQJ 3ODQHWDU\ \$VVHPEO\
&RXUWHV\ RI)25' 02725 &2

5HPRYH WKH LQSXW EHDULQJ UHWDLQLQJ ULQJ

)LJ /RFDWLQJ ,QSXW %HDULQJ 5HWDLQLQJ 5LQJ
&RXUWHV\ RI)25' 02725 &2

8VLQJ WKH 'ULYH 3LQLRQ %HDULQJ EOXH S,QNWD OCHFR D Q G

)LJ 5HPRYLQJ)URQW ,QSXW QLRDU%QDUMQQJ&XSLYQHV

3UHVV

&RXUWHV\ RI)25' 02725 &2

8VLQJ WKH 7RUTXH &RQYHUWKH @00G6H@DP5PHUR YUHP ZYWK

)LJ 5HPRYLQJ)URQW 2XWSXW 6KDIW)URQW 6QDS 5LQJ 6OHH
+DPPHU
&RXUWHV\ RI)25' 02725 &2

5HPRYH DQG GLVFDUG WKH UHWDLQLQJ ULQJ
,QVWDOO WKH 2XWSXW 6KDIW)URQW 6QDS 5LQJ 6OHH
5HPRYH DQG GLVFDUG WKH UHWDLQLQJ ULQJ

)LJ ,GHQWLI\LQJ 2XWSXW 6KDIW)URQW 6QDS 5LQJ 6OHH
&RXUWHV\ RI)25' 02725 &2

5HPRYH WKH 2XWSXW 6KDIW)URQW 6QDS 5LQJ 6OHH

)LJ _____, GHQWLI\LQJ 6SHFLDO 7RRO
&RXUWHV\ RI)25' 02725 &2

5HPRYH WKH IURQW RXW\$XW EDOO EHDULQJ UHWDLQLQJ

)LJ _____ /RFDWLQJ)URQW 2XW\$XW %DOO %HDULQJ 5HWDLQ
&RXUWHV\ RI)25' 02725 &2

8VLQJ WKH 5HDU \$[OH 2LQDQGH, DQVDOXLUZIEOK WKHV
EDOO EHDULQJ

)LJ 5HPRYLQJ)URQW 2XWSXW %DOO %HDULQJ
&RXUWHV\ RI)25' 02725 &2

5HPRYH WKH ORFN SODWH UHWDLQLQJ ULQJ

)LJ /RFDWLQJ /RFN 3ODWH 5HWDLQLQJ 5LQJ
&RXUWHV\ RI)25' 02725 &2

/LIW RXW WKH LQSXW JHDU

z ,QVSHFW WKH LQSXW JHDUDI QW Z H B D U R U I Q H F D J M V D , Q V W

)LJ /RFDWLQJ ,QSXW *HDU \$QGHPEOQHWDU\ &DUUL
&RXUWHV\ RI)25' 02725 &2

5HPRYH WKH ORFN SODWH

)LJ _____ /RFDWLQJ /RFN 3ODWH
&RXUWHV\ RI)25' 02725 &2

5HPRYH WKH IURQW LQSXW JHDU WKUXVW ZDVKHU

)LJ _____ /RFDWLQJ)URQW ,QSXW *HDU 7KUXVW :DVKHU
&RXUWHV\ RI)25' 02725 &2

5HPRYH WKH UHDU LQSXW JHDU WKUXVW ZDVKHU

)LJ _____ /RFDWLQJ 5HDU ,QSXW *HDU 7KUXVW :DVKHU

&RXUWHV\ RI)25' 02725 &2

,QVSHFW WKH JHDU WHHWK DQG WRPXYW ZOWWBOO IR QHZ
LI QHFHVVDU\

)LJ /RFDWLQJ *HDU 7HHWK \$QG 7KUXVW :DVKHUV
&RXUWHV\ RI)25' 02725 &2

5HPRYH WKH SRSSHW DVVHPEO\

)LJ 5HPRYLQJ 3RSSHW \$VVHPEO\
&RXUWHV\ RI)25' 02725 &2

127(,I LQVWDOOLQJ D QHZ SRSSHW VSULQJ FRWRPXW
RULJLQDO SRSSHW VSULQJ

5HPRYH DQG GLVFDUG WKH VXSSRUW 2 ULQJ VHDO

)LJ /RFDWLQJ 516XSSRDW 2
&RXUWHV\ RI)25' 02725 &2

\$VVHPEO\

\$OO YHKLFOHV

,QVWDOO D QHZ VXSSRUW 2 ULQJ VHDO

)LJ /RFDWLQJ 516XSSRDW 2
&RXUWHV\ RI)25' 02725 &2

127(3ULRU WR LQVWDOODWLRQ KUHFDGWWHEDDQW HDG

)LJ 5HPRYLQJ 6HFWRU 6KDRW ~~6KSSRU~~ UWWB ~~6IRQJ~~ 6WOFV
&RXUWHV\ RI)25' 02725 &2

8VLQJ WKH 6HFWRU 6KDIWWRUWDGDFNHWU LQVWDOO WKH P
,QVWDOO WKH VHFWRU DW WHUPEOVH2Q FDKHH HQVWIDOE WKK
ULQJ

)LJ /RFDWLQJ 6HFWRU \$VVHPEO\
&RXUWHV\ RI)25' 02725 &2

127(,I LQVWDOOLQJ D QHZ SRSSHW VQUERORUWWRXWV
SRSSHW VSULQJ

)LJ /RFDWLQJ 3RSSHW 6FUHZ 6SULQJ \$QG 3RSSHW
&RXUWHV\ RI)25' 02725 &2

\$VVHPEOH WKH SRSSHW VFSUHMZ WKH VSULQJ DQG WKH SR
,QVWDOO WKH SRSSHW DVVHPEO\
z 7LJKWHQ WR 1P OE LQ

)LJ /RFDWLQJ 3RSSHW \$VVHPEO\ 1XW
&RXUWHV\ RI)25' 02725 &2

,QVWDOO WKH UHDU LQSXW JHDU WKUXVW ZDVKHU

)LJ /RFDWLQJ 5HDU ,QSXW *HDU 7KUXVW :DVKHU
&RXUWHV\ RI)25' 02725 &2

,QVWDOO WKH IURQW LQSXW JHDU WKUXVW ZDVKHU

)LJ _____ /RFDWLQJ)URQW ,QSXW *HDU 7KUXVW :DVKHU
&RXUWHV\ RI)25' 02725 &2

127(_____ ,QVWDOO WKH ORFN SODWH(ZD WLKQ W RIX W ZDDPS HG

)LJ _____ /RFDWLQJ /RFN 3ODWH
&RXUWHV\ RI)25' 02725 &2

,QVWDOO WKH ORFN SODWH
3ODFH WKH LQSXW JHDUVLQMP EOWKH SODQHWDU\ FDUULHU

)LJ /RFDWLQJ ,QSXW *H DU \$QGHPEHQHWDU\ &DUULHU
&RXUWHV\ RI)25' 02725 &2

,QVWDOO D QHZ ORFN SODWH UHWDLQLQJ ULQJ

)LJ /RFDWLQJ /RFN 3ODWH 5HWDLQLQJ 5LQJ
&RXUWHV\ RI)25' 02725 &2

8VLQJ WKH ,QSXW 6KDIW %DQGQDJD,QQWDXLWDEZDQISXWKV
EHDULQJ

)LJ ,QVWDOOLQJ)URQW ,QSXW\WHQHDQJLQJLQVWQSH
3UHVV
&RXUWHV\ RI)25' 02725 &2

,QVWDOO D QHZ EHDULQJ UHWDLQHU ULQJ

)LJ /RFDWLQJ ,QSXW %HDULQJ 5HWDLQLQJ 5LQJ
&RXUWHV\ RI)25' 02725 &2

3RVLWLRQ WKH SODQHWDU\HDVVHPEO\ LQWR WKH IURQW

)LJ /RFDWLQJ 3ODQHWDU\ \$VVHPEO\
&RXUWHV\ RI)25' 02725 &2

,QVWDOO D QHZ UHWDLQLQJ ULQJ
,QVWDOO WKH ,QSXW 6KDIW 6QDS 5LQJ 6OHYH
,QVWDOO D QHZ UHWDLQLQJ ULQJ
z 5HPRYH WKH ,QSXW 6KDIW 6QDS 5LQJ 6OHYH

)LJ _____, GHQWLI\LQJ , QSXW ~~6KDIWH2 EDOO EHDULQJ~~ ~~5LQQJ 56 QH H~~
&RXUWHV\ RI)25' 02725 &2

8VLQJ WKH , QSXW 6KDIWH2 ~~E DOO EHDULQJ~~ ~~LOWWDOOHD~~ ~~QHV KL QSKX~~

)LJ _____, QVWDOOLQJ , QSXW ~~6KDIWH2 EDOO EHDULQJ~~ ~~5LQQJ 56 QH H~~ ~~2 D~~
&RXUWHV\ RI)25' 02725 &2

8VLQJ WKH 2XWSXW 6KDIWH2 ~~E DOO EHDULQJ~~ ~~LOWWDOOHD~~ ~~QHV KL QSKX~~
RXWSXW EDOO EHDULQJ

)LJ _____, QVWDOOLQJ)URQW 2X2KSKSX % DCOIWH)DULQW %VIDO
+DQGOH \$QG 3UHVV
&RXUWHV\ RI)25' 02725 &2

,QVWDOO D QHZ IURQW BXWSXW EDOO EHDULQJ UHWDLQL

)LJ _____/RFDWLQJ)URQW 2XWSXW % DCO %HDULQJ 5HWDLQ
&RXUWHV\ RI)25' 02725 &2

3RVLWLRQ WKH IURQW BXWSXW VKDIW LQ WKH IURQW FDY

)LJ /RFDWLQJ)URQW 2XWSXW 6KDIW
&RXUWHV\ RI)25' 02725 &2

,QVWDOO D QHZ UHWDLQLQJ ULQJ
,QVWDOO WKH 2XWSXW 6KDIW)URQW 6QDS 5LQJ 6OHH
,QVWDOO D QHZ UHWDLQLQJ ULQJ
z 5HPRYH WKH 2XWSXW 6KDIW)URQW 6QDS 5LQJ 6OH

)LJ ,GHQWLI\LQJ 2XWSXW 6KDIW)URQW 6QDS 5LQJ 6OHH
&RXUWHV\ RI)25' 02725 &2

8VLQJ WKH 2XWSXW 6KDIW 2LQJ 6OHH LQVWDOOHU QHZ WKUR

)LJ ,QVWDOOLQJ)URQW 2XWSXW 6KDIW)URQW 6QDS 5LQJ 6OHH
&RXUWHV\ RI)25' 02725 &2

8VLQJ WKH 2XWSXW 6KDIW 2LQJ 6OHH LQVWDOOHU QHZ WKUR

)LJ _____, QVWDOOLQJ 6OLQJH2X2CS XWR QKD)V D2Q JH 68MLQJH U
&RXUWHV\ RI)25' 02725 &2

8VLQJ WKH 'ULYH 3LQLRQ)SUDHJHHQWR QK IHQJO)LQWFK UH RVP RW >
IODQJH DQG D QHZ IURQW RXWSXW QXW
z 7LJKWHQ WR 1P OE IW

)LJ _____, QVWDOOLQJ)URQW)OXW JH V \$QG 'ULRQ W3 I2Q MRSQ
+ROGLQJ)L[WXUH
&RXUWHV\ RI)25' 02725 &2

127(5RWDWH WKH VHFWRU DVVHPBQV WRL RQ HRUZKEM
LQVWDOODWLRQ

)LJ _____ /RFDWLQJ 5DQJH)RUN \$MWH6PFIH\$IQG 5DQJH 6KL
&RXUWHV\ RI)25' 02725 &2

3RVLWLRQ WKH UDQJH IRKNIW WWHPEYH DQG WKH URDQWHFV
3RVLWLRQ WKH GULYH VSURFNHW KXE RQ WKH PDLQVKDI

)LJ _____ /RFDWLQJ 'ULYH 6SURFNHW +XE
&RXUWHV\ RI)25' 02725 &2

3RVLWLRQ WKH LQQHU ULQJ RQ WKH GULYH VSURFNHW

)LJ /RFDWLQJ ,QQHU 5LQJ 2Q 'ULYH 6SURFNHW
&RXUWHV\ RI)25' 02725 &2

3RVLWLRQ WKH PLGGOH ULQJ RQ WKH LQQHU ULQJ

)LJ /RFDWLQJ 0LGGOH 5LQJ 2Q ,QQHU 5LQJ
&RXUWHV\ RI)25' 02725 &2

3RVLWLRQ WKH RXWHU ULQJ RQ WKH PLGGOH ULQJ

)LJ /RFDWLQJ 2XWHU 5LQJ 2Q 0LGGOH 5LQJ
&RXUWHV\ RI)25' 02725 &2

3RVLWLRQ DQG URWDWHWW ~~GHRS\ Q FLQURRQ WJ KH KQ Z VKDQVCLHOG~~
UHWDLQLQJ ULQJ

)LJ /RFDWLQJ 5HWDLQLQJ ~~5LQJ~~ \$QG 6\QFKURQL]HU
&RXUWHV\ RI)25' 02725 &2

127(7KH WKLQ VLGH RI WKH V\QFKURR ~~QV]HU DFEH XSZE~~

)LJ /RFDWLQJ 0RGH)RUN 0KHWH5DLO \$QG 0RGH 6
&RXUWHV\ RI)25' 02725 &2

\$VVHPEOH WKH PRGH IRUNDFMURHQLKLUWOBHCHDQG WKH V
,QVWDOO WKH PRGH IRUNLQVWKHURVQWFDUHLQ DVVHPEO
z 7KH VKLIW UDLO PXVW ERWWRP LQ WKH FDVH

)LJ ,QVWDOOLQJ 0RGH)RUN\ \$QG)6KQW 85DLQ \$VVH
&RXUWHV\ RI)25' 02725 &2

127(,QVWDOO WKH PDLQVKDIW DVVHPEOHURVWUKDW BV
DJDLQVW RQH RI WKH V\QFKURQLJHU VOHHYH WH

)LJ ,QVWDOOLQJ 0DLQVKDIW
&RXUWHV\ RI)25' 02725 &2

,QVWDOO WKH PDLQVKDIW
,QVWDOO WKH FOXWFK JHDU

)LJ _____, QVWDOOLQJ & OXWFK * HDU
&RXUWHV\ RI)25' 02725 &2

, QVWDOO WKH GULYH V ~~SURF~~ ~~NHVM~~ ~~GULYH~~ ~~6~~ ~~UF~~ ~~KYHLQ~~ ~~VSURF~~ ~~NHW~~

)LJ _____, QVWDOOLQJ 'ULYH 6 ~~SURF~~ ~~HWLY~~ ~~HL~~ ~~KDL~~ ~~Q~~ SURFNH
&RXUWHV\ RI)25' 02725 &2

, QVWDOO WKH PRGH VSULQJ

)LJ _____ /RFDWLQJ ORGH 6SULQJ

&RXUWHV\ RI)25' 02725 &2

,QVWDOO D QHZ GULYH VSURFNHW UHWDLQLQJ ULQJ

)LJ /RFDWLQJ 'ULYH 6SURFNHW 5HWDLQLQJ 5LQJ
&RXUWHV\ RI)25' 02725 &2

,QVWDOO D QHZ GULYHQ VSURFNHW UHWDLQLQJ ULQJ

)LJ /RFDWLQJ 'ULYHQ 6SURFNHW 5HWDLQLQJ 5LQJ
&RXUWHV\ RI)25' 02725 &2

8VLQJ WKH 2XWSXW 6KDIWKH%+DDQLQH DQVWDVXVH
EHDULQJ

)LJ _____, QVWDOOLQJ %DOO %M D5HDQJ %M DQJ L QJ WGSXWD 6KDH
3UHVV
&RXUWHV\ RI)25' 02725 &2

, QVWDOO D QHZ EDOO EHDULQJ UHWDLQLQJ ULQJ

)LJ _____ /RFDWLQJ %DOO %HDULQJ 5HWDLQLQJ 5LQJ
&RXUWHV\ RI)25' 02725 &2

127(7KH LGHQWLILFDWLRQ QXPEHUV FROVWKH 2XEMD XWC
5HDU %HDULQJ , QVWDOOHU ZLWK WKH +DQGOH

)LJ _____, QVWDOOLQJ 1HHGOHD%WD5HLDQJ %VIDQJL QXWSXW D60C
\$QG 3UHVV
&RXUWHV\ RI)25' 02725 &2

8VLQJ WKH 2XWSXW 6KDIW%KMDUH%HDQLOH DQGW D VXHW DZE
QHHGOH EHDULQJ
, QVWDOO WKH FKLS FROOHFWRU PDJQHW

)LJ _____/RFDWLQJ &KLS &ROOHFWRU 0DJQHW
&RXUWHV\ RI)25' 02725 &2

, QVWDOO WKH RLO WXEH

)LJ /RFDWLQJ 2LO 7XEH
&RXUWHV\ RI)25' 02725 &2

&OHDQ ERWK FDVH PDWLQFJHVXUHSFHV ZLWK PHWDO VXUID
127(7KH VLOLFQRH EHDG PXVW EH QRLQDUHQGLDWRKDW
\$SSO\ D EHDG RI JDVNHWDFOGRVWKOHDQDWWR WKH MRLQW
z 7KH EHDG PXVW EH RQ WKIRZLQUGWKRILWQKHGERQWKRHO
3RVLWLRQ WKH UH DU FKHOKDOI RQWR WKH IURQW FDVH

)LJ /RFDWLQJ %HDG 2I 6LOSUFHQWZQDVRNEW \$SSO\2IQ&D
&RXUWHV\ RI)25' 02725 &2

127(8VH D FULVVFURVV SDWWHUQRQWVQ WLJKWHQLQ
,QVWDOO WKH QHZ FDVH EROWV
z 7LJKWHQ WR 1P OE IW

)LJ _____ /RFDWLQJ &DVH %ROWV
&RXUWHV\ RI)25' 02725 &2

,QVWDOO WKH QHZ UHWDLQLQJ ULQJ
,QVWDOO WKH 2XWSXW 6KDIW 5HDU 6QDS 5LQJ 6OHY
,QVWDOO WKH QHZ UHWDLQLQJ ULQJ
z 5HPRYH WKH 2XWSXW 6KDIW 5HDU 6QDS 5LQJ 6OHH

)LJ _____ ,GHQWLI\LQJ 2XWSXW 6KBYM 5HQU56QDS 6L
&RXUWHV\ RI)25' 02725 &2

127(3ULRU WR DVVHPEO\ YHULI\WM KDRV OV 6H P2S USLQFN

)LJ /RFDWLQJ 2LO 7XEH \$QG 2LO 3XPS \$VVHPEO\
&RXUWHV\ RI)25' 02725 &2

6OLGH WKH RLO SXPS DVVHPEO\ WKH RDOQWKEHW D

127(7KH LGHQWLILFDWLRQ QXPEHU V\QWWIDFH QMKGIO
7UDQVIHU &DVH 1HHGOH %HDULQJ, QVWDOOHU Z

)LJ ,QVWDOOLQJ 1HHGOH & DVH UHQLJ QVL QJH DUDQJ, QVW
\$QG 3UHV
&RXUWHV\ RI)25' 02725 &2

8VLQJ WKH 7UDQVIHU &DVH LMKI QKH %DQGLQJ DQ QVW OXEH
QHHGOH EHDULQJ

&OHDQ WKH UH DU FDVH DQGH UHDLW KHPM DLDQH VXP DFLQ JS V
\$SSO\ D EHDG RI VLOLFQRU HDUNHHWDQGHVH DQDQW IDI

)LJ /RFDWLQJ 5HDU 5HWDLQHU %ROWV
&RXUWHV\ RI)25' 02725 &2

9HKLFOHV HTXLSSHG ZLWK D IODQJH

8VLQJ WKH 2XWSXW 6KDIKH 2LQQSHO LQVWDOOHU QHZWKH

)LJ ,QVWDOOLQJ 5HDU 2X6KSW BHOGBDQQQZWWOOWU
&RXUWHV\ RI)25' 02725 &2

8VLQJ WKH 2XWSXW 6KDIKH WDOGBDLQJZUV,QLVWDOOHU WKH

)LJ ,QVWDOOLQJ 6OLQJHXWGXSHDKDWDQIIBSOLQJHU
&RXUWHV\ RI)25' 02725 &2

8VLQJ WKH 'ULYH 3LQLRQ)SUDQJHHQWRWKHQJQJLQWJUHVRW
IODQJH DQG D QHZ UHURXWSXW QXW

z 7LJKWHQ WR 1P OE IW

)LJ _____ ,QVWDOOLQJ 5HDU)O ~~QJ'W~~ \$QG 32 ~~XW~~ & ~~XW~~ C ~~X~~ WJ B
)LWXUH
&RXUWHV\ RI)25' 02725 &2

9HKLFOHV HTXLSSHG ZLWK D VOLS \RNH

8VLQJ D VXLWDEOH GULY ~~WHD~~ OLQVWDOO WKH UH DU RXWSX
\$OO YHKLFOHV

127('R QRW XVH DLU WRROV RU ~~GFD~~ ~~VD~~ ~~HJ~~ ~~IP~~ ~~DA~~ ~~RR~~ ~~WFK~~ ~~HJ~~ SOX

,QVWDOO WKH GUDLQ DQG ILOO SOXJV
z 7LJKWHQ WR 1P OE IW

)LJ _____ /RFDWLQJ 'UDLQ \$QG)LOO 3OXJV
&RXUWHV\ RI)25' 02725 &2

127(\$SSO\ D FRDW RI PXOWL SXUS ~~RVD~~ ~~DIG~~ ~~DS~~ ~~WHD~~ ~~UH~~ WR W

,QVWDOO WKH JHDUPRWRU HQFRGHU DVVHPEO\
z 7LJKWHQ VKLIW PRWRU EROWV WR 1P OE LQ

)LJ _____ /RFDWLQJ 6KLIW 0RWRU %ROWV
&RXUWHV\ RI)25' 02725 &2

5HPRYH WKH WUDQVIHU FDRVIGILQJ)L[WKH 0H DQVPLVLRQ +

)LJ _____ ,GHQWLI\LQJ 7UDQVPLVLRQ +ROGLQJ)L[WXUH
&RXUWHV\ RI)25' 02725 &2

5(029\$/

75\$16)(5 &\$6(

7UDQVIHU &DVH 0DQXDO 6KLIW

)LJ _____, GHQWLI\LQJ 7UDQVIHU & DVH 6KLIW SRQHQQWV
 &RXUWHV\ RI)25' 02725 &2

,7(0 '(6&5,37,21 &+\$57

,WHP	3DUW	1XPEHU	'HVFULSWLRQ
		5HDU	GULYHVKDIW EROW UHTXLUHG
		5HDU	GULYHVKDIW
		)URQW	GULYHVKDIW EROW UHTXLUHG
		)URQW	GULYHVKDIW
	%	7UDQVIHU	FDVH VKLIW OLQNDJH
		9HQW	KRVH
		SRVLWLRQ	PRGH VZLWFK HOHFWULFD
		7UDQVIHU	FDVH WR WUDQVPLVVLRQ EROW
	\$	7UDQVIHU	FDVH

7UDQVIHU &DVH (OHFWULF 6KLIW

)LJ _____, GHQWLI\LQJ 7UDQVIHU HOHFWUL & FRKSRQ HQWV
 &RXUWHV\ RI)25' 02725 &2

,7(0 '(6&5,37,21 &+\$57

,WHP	3DUW	1XPEHU	'HVFULSWLRQ
		5HDU	GULYHVKDIW EROW UHTXLUHG
		5HDU	GULYHVKDIW
		)URQW	GULYHVKDIW EROW UHTXLUHG
		)URQW	GULYHVKDIW
		9HQW	KRVH
		*HDU	PRWRU HQFRGHU HOHFWULFDO FRQQHF
		*HDU	PRWRU HOHFWULFDO FRQQHFWRU
		7UDQVIHU	FDVH WR WUDQVPLVVLRQ EROW
	\$	7UDQVIHU	FDVH

\$OO YHKLFOHV

127(6KLIW WKH WUDQVIHU FDVH WR +

:LWK WKH YHKLFOH LQ 1(875\$ /)SRVDGGRWLRQDQ & DQFRULPD
/,.)7.1*

,I HTXLSSHG UHPRYH WKH EROWV DQG WKH VNLG SODW

)LJ /RFDWLQJ 7UDQVIHU &DVH 6NLG 3ODWH
&RXUWHV\ RI)25' 02725 &2

9HKLFOHV HTXLSSHG ZLWK D IODQJH

127(,QGH[PDUN WKH IURQW GULYHDKHDIIODWRHWKH W

5HPRYH DQG GLVFDUG WKGG SURVQLRQLWKVKDIURQWRGWLVI

127(,QGH[PDUN WKH UH DU GULYHDKHDIIODWRHWKH WU

5HPRYH DQG GLVFDUG WKGG SURVQLRQLWKVKDHDUEBOWWHD

9HKLFOHV HTXLSSHG ZLWK D VOLS \RNH

5HPRYH WKH GULYHVKDIW)RHUHDGGRASLRQDO LQIRUPDWLF

9HKLFOHV ZLWK PDQXDO VKLIW

'LVFRQQHFW WKH PDQXDOVPKVIWLRQ QNDJH IURP WKH WUD

'LVFRQQHFW WKH SRVLWELRQPHFWRVZLWFK HOHFWULFD

)LJ /RFDWLQJ 0RGH 6ZLWFK (OHFWULFD &RQQHF
&RXUWHV\ RI)25' 02725 &2

9HKLFOHV ZLWK HOHFWULF VKLIW

'LVFRQQHFW WKH JHDU PRMFRUHQDFRGHWKH QHHFWURFRVQLFR

)LJ /RFDWLQJ *H DU ORWRUQ QHFRVGHU \$QGFWDLFDROW&RU
&RQQHFWRU
&RXUWHV\ RI)25' 02725 &2

\$OO YHKLFOHV

'LVFRQQHFW WKH YHQW KRVH

)LJ /RFDWLQJ 9HQW +RVH
&RXUWHV\ RI)25' 02725 &2

,I GLVDVVHPEO\ LV QHFHVVDUO VGHUHQGO DMLQH SIOXLG K HQ IL
z 7LJKWHQ WR 1P OE IW

)LJ _____ /RFDWLQJ 'UDLQ 3OXJ
&RXUWHV\ RI)25' 02725 &2

3RVLWLRQ D VXLWDEOHHKLEBVOHLDQGDVFNFXURHWWHZWWQAD
5HPRYH WKH WUDQVIHU FDVH WR WUDQVPLVVLRQ EROW
6HSDUDWH WKH WUDQVIHXVEQVH3IXOP WKKH WUDQVHVKOFBY
WUDQVIHU FDVH IURP WKH YHKLFOH

,167\$// \$7,21

75\$16)(5 & \$6(

7UDQVIHU &DVH 0DQXDO 6KLIW

)LJ _____, GHQWLI\LQJ 7UDQVIHU7 & DVH & SRVLFDO FRQWURO KLIW
 &RXUWHV\ RI)25' 02725 &2

,7(0 '(6&5,37,21 &+\$57

,WHP	3DUW	1XPEHU	'HVFULSWLRQ
		5HDU	GULYHVKDIW EROW UHTXLUHG
		5HDU	GULYHVKDIW
		)URQW	GULYHVKDIW EROW UHTXLUHG
		)URQW	GULYHVKDIW
	%	7UDQVIHU	FDVH VKLIW OLQNDJH
		9HQW	KRVH
		SRVLWLRQ	PRGH VZLWFK HOHFWULFDO FRQWURO
		7UDQVIHU	FDVH WR WUDQVPLVVLRQ EROW
	\$	7UDQVIHU	FDVH

7UDQVIHU &DVH (OHFWULF 6KLIW

)LJ _____, GHQWLI\ LQJ 7UDQVIHU7 & DVN H & B S S R I Q E E D W U R E W & K L I W
 &RXUWHV\ RI)25' 02725 & 2

,7(0 '(6&5,37,21 &+\$57

,WHP	3DUW	1XPEHU	'HVFULSWLRQ
		5HDU	GULYHVKDIW EROW UHTXLUHG
		5HDU	GULYHVKDIW
		)URQW	GULYHVKDIW EROW UHTXLUHG
		)URQW	GULYHVKDIW
		9HQW	KRVH
		*HDU	PRWRU HQFRGHU HOHFWULFDO FRQQHF
		*HDU	PRWRU HOHFWULFDO FRQQHFWRU
		7UDQVIHU	FDVH WR WUDQVPLVVLRQ EROW
	\$	7UDQVIHU	FDVH

\$OO YHKLFOHV

6HFXUH WKH WUDQVIHU FDVH WR WUDQVPLVVLRQ SO LIRWHV D ERQZ
 H[WHQVLRQ KRXLQJ

,QVWDOO WKH WUDQVIHU FDVH WR WUDQVPLVVLRQ ERO

z 7LJKWHQ WR IW1P OE

9HKLFOHV ZLWK HOHFWULF VKLIW

&RQQHFW WKH JHDU PRWRUHQDEB GWKHUHQDFWRURWRO FRODQ

)LJ /RFDWLQJ *HDU ORWRUQ QHFRVGHU \$(QGFWDUFDFWRU
&RQQHFWRU
&RXUWHV\ RI)25' 02725 &2

9HKLFOHV ZLWK PDQXDO VKLIW

&RQQHFW WKH PDQXDO VKLIW OLQNDJH WR WKH WUDQVP
&RQQHFW WKH SRVLWLRQPHWRUUVZLWFK HOHFWULFDO F

)LJ /RFDWLQJ *HDU ORWRUQ QHFRVGHU \$(QGFWDUFDFWRU
&RQQHFWRU
&RXUWHV\ RI)25' 02725 &2

\$OO YHKLFOHV

&RQQHFW WKH YHQW KRVH

)LJ /RFDWLQJ 9HQW +RVH
&RXUWHV\ RI)25' 02725 &2

5HPRYH WKH KLJK OLIW MDFN

9HKLFOHV HTXLSSHG ZLWK D IODQJH

\$OLJQ WKH LQGH[PDUNV HWK ~~QWF~~ ~~WQ~~ ~~QMKM~~ ~~WUKD~~ ~~HQV~~ ~~HHDU~~ ~~FGUM~~
UHDU GULYHVKDIW EROWV

z 7LJKWHQ WR 1P OE IW

\$OLJQ WKH LQGH[PDUNV YW ~~KK~~ ~~DI~~ ~~WR~~ ~~Q~~ ~~H~~ ~~FK~~ ~~WK~~ ~~LD~~ ~~QV~~ ~~FG~~ ~~MZ~~ ~~FGU~~
IURQW GULYHVKDIW EROWV

z 7LJKWHQ WR 1P OE IW

9HKLFOHV HTXLSSHG ZLWK D VOLS \RNH

,QVWDOO WKH GULYHVKB ~~QW~~ ~~U~~ ~~H~~ ~~9~~ ~~0~~ ~~6~~ ~~SL~~ ~~W~~ ~~LR~~ ~~Q~~ ~~DO~~ ~~LQ~~ ~~IR~~ ~~UP~~ ~~D~~ ~~W~~

,I HTXLSSHG LQVWDOO ~~QW~~ ~~K~~ ~~V~~ ~~N~~ ~~L~~ ~~G~~ ~~S~~ ~~O~~ ~~D~~ ~~W~~ ~~H~~ ~~D~~ ~~Q~~ ~~G~~ ~~W~~ ~~K~~ ~~H~~ ~~E~~ ~~R~~

z 7LJKWHQ WR 1P OE IW

)LJ /RFDWLQJ 7UDQVIHU &DVH 6NLG 3ODWH
&RXUWHV\ RI)25' 02725 &2

,I GUDLQHG ILOO WKH) WU DDG VHW LRDQDHO W 75 \$RDSDFW&R6Q U
'5\$,1,1* \$1'),//,1*

)LJ /RFDWLQJ 'UDLQ 3OXJ
&RXUWHV\ RI)25' 02725 &2