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Technical Tips

Regenerative circuits are used to provide faster cylinder extension speeds by taking the oil from the rod end and diverting it to the head end of the cylinder. This means that the effective area during extension is the rod area that will give a faster speed but also a **reduced force**. This means that by using a cylinder with a 2:1 area ratio between piston and rod, equal speeds and forces can be obtained in both directions without using a double rod.

Two Types of Sun Regeneration Valve Assemblies

Sun Hydraulics manufactures two types of regeneration valve assemblies:

- The **full time regeneration assembly** uses a pilot-to-close check valve and a standard check valve to provide continuous regeneration with the reduced output force from the cylinder. It has a limited number of applications and is most commonly used for providing fast extension speeds with low force.
- The **pressure sensitive regeneration assembly** uses a pilot-to-close check valve and a counterbalance valve to provide a regeneration function. This is used on many applications such as compacting machines. The first part of the cylinder extension occurs when there is very little load (for example during initial compaction) and regeneration provides a fast extension speed. When the load resistance increases, the pressure on the full-bore side starts to increase and will pilot open a counterbalance valve connecting the rod side to tank and take the circuit out of regeneration. This then provides a slower speed as it is now operating on the full-bore area but also a corresponding increase in force. Regenerative circuits **do not** affect the retraction speed of the cylinder.

Hydraulic Cylinder Ratio

The choice of hydraulic cylinder ratio will have a significant effect on the performance of your system.

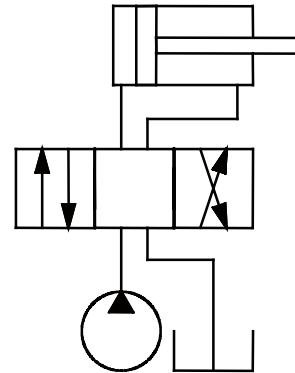
- Cylinders are manufactured in an almost unlimited combination of ratios. These ratios affect the speed of extension and retraction of the cylinders. With a 2:1 ratio cylinder, extend speed will equal the retract speed.

- Another issue is the pressure required to move the cylinder as the ratio varies. In machines that require large diameter cylinder rods for column strength, the ratio is larger and oil for regeneration is reduced.
- Small diameter cylinder rods provide a larger oil supply due to the smaller cylinder ratio.
- Low ratios will require more pressure to move even the cylinder alone and in a pressure sensitive regeneration assembly, the regeneration function may cease too soon or never function.

The following examples show the basic calculations used to determine the speed of extension of the cylinder in regeneration.

The cylinder dimensions used in all examples are as follows:

Bore Diameter (Head End) 4.25"
Rod Diameter 3.00"



With a 10 GPM flow from the pump

4.25" Bore Diameter = 14.2 in² area
3.00" Rod Diameter = 7.1 in² area

$$\text{Cylinder Ratio} = \frac{\text{Head End Area}}{(\text{Head End Area} - \text{Rod Area})} = \frac{\text{Head End Area}}{\text{Annular Area}}$$

$$\text{Cylinder Ratio} = \frac{(14.2 \text{ in}^2)}{(14.2 \text{ in}^2 - 7.1 \text{ in}^2)} = 2 = >2:1 \text{ Ratio}$$

Cylinder Extend Speed *without* Regeneration

$$\text{Extend Speed} = \frac{(\text{Pump Flow GPM})(231)}{\text{Head End Area}} = \frac{(10 \text{ GPM})(231)}{14.2 \text{ in}^2} = 163 \text{ in / min.}$$

$$\text{Retract Speed} = \frac{(\text{Pump Flow GPM})(231)}{(\text{Annular Area})} = \frac{(10 \text{ GPM})(231)}{7.1 \text{ in}^2} = 325 \text{ in / min.}$$

Cylinder Extend Speed *with* Regeneration

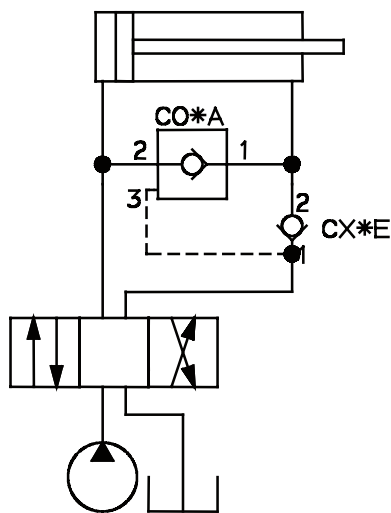
Rod side oil is redirected to the head end of the cylinder instead of the directional valve and adds to the flow going into the head end. The extend speed is due to the pump flow replacing the cylinder rod volume.

Extend Speed in Regeneration Mode

$$= \frac{(\text{Pump Flow GPM})(231)}{(\text{Rod Area})}$$

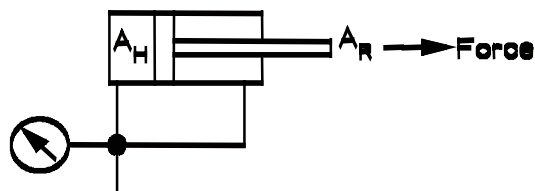
$$= \frac{(10)(231)}{(7.1)}$$

$$= 325 \text{ in / min.}$$



The net force output available during regeneration is less than the force available in a standard extend function.

A_H = Head End Area
 A_R = Rod Area
 Supply Pressure = P



$$P (A_H) - P (A_H - A_R) = \text{Force Output}$$

$$P (A_H) - P (A_H) + P (A_R) = \text{Force Output}$$

$$P (A_R) = \text{Force Output}$$

The output force available is the product of pressure in the cylinder and area of the rod.

Without regeneration, the force output would be equal to the product of pressure in the cylinder and the head end area.

Extend pressure required in regeneration is dependent on the cylinder ratio and pilot-to-close check valve pressure. The regeneration assemblies manufactured by Sun Hydraulics incorporate a 75 psi crack pressure pilot-to-close check valve. See the following circuit.

Supply Pressure = P

$$P (A_H) - (P + 75)(A_H - A_R) = 0$$

$$P (A_H) = (P + 75)(A_H - A_R)$$

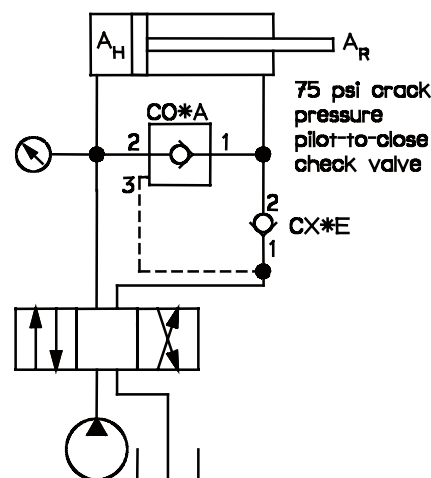
$$P (A_H) = P (A_H) + 75 A_H - P(A_R) - 75 (A_R)$$

$$P (A_H) - P (A_H) = 75 A_H - P(A_R) - 75 (A_R)$$

$$0 = 75 A_H - P (A_R) - 75 (A_R)$$

$$P (A_R) = 75 (A_H) - 75 (A_R)$$

$$P = \frac{75 (A_H - A_R)}{A_R} = \text{Extend Pressure}$$



NOTE: The circuit shown above may not support a load in the extend mode. See Cautionary Notes at end of this section.

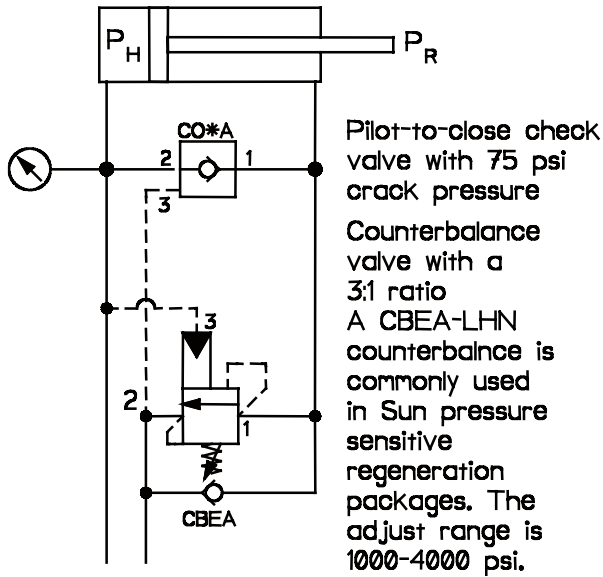
Pressure P is the minimum supply pressure required to extend the cylinder with a 75 psi crack pressure pilot-to-close check valve. This value does not include any system load on the cylinder or seal friction in the cylinder. The actual pressure required to extend the cylinder will be greater than this calculation.

Sun Hydraulics manufactures two types of regeneration assemblies; (1) Full Time and (2) Pressure Sensitive.

- Full time does what the name implies. It provides regeneration *all the time*.
- The pressure sensitive type has an adjust that allows setting the pressure where regeneration ceases.
- Pressure sensitive regeneration uses a Sun counterbalance valve. The adjust range for the regeneration function is *not* the adjust range of the counterbalance valve.

Consider the following Sun pressure sensitive regeneration circuit:

- P_H = Pressure in Head End of Cylinder
- P_R = Pressure in Rod End of Cylinder
- P_{CB} = Setting of Counterbalance Valve. Valve starts to open.
- $P_R = P_H + 75$ (in Regeneration Mode)
- $P_{CB} = P_R + \text{Ratio} (P_H)$



NOTE: The circuit shown above may not support a load in the extend mode. See Cautionary Notes at end of this section.

The minimum setting where regeneration speed starts to diminish:

$$P_{CB} = P_R + (\text{Ratio})(P_H)$$

$$P_{CB} = (P_H + 75) + 3 (P_H)$$

$$1000 = 4 P_H + 75$$

$$P_H = 231 \text{ psi}$$

The maximum setting would be:

$$4000 = 4 P_H + 75$$

$$P_H = 981 \text{ psi}$$

Note: The adjust range for regeneration speed to start to diminish is 231-981 psi.

Potential Problems for Consideration

Using the cylinder dimensions from the examples (4.25" Bore and 3.00" Rod) the extend pressure calculation:

$$P = \frac{75 (A_H - A_R)}{A_R} = \frac{75 (14.2 - 7.1)}{7.1} = 75 \text{ psi}$$

75 psi is required to extend the cylinder without any load and not including any seal friction.

System Variations

Larger Rod Diameter (ie. Outrigger Cylinders)

4.25" Bore Diameter (14.2in² Head Area)
3.5" Rod Diameter (9.6² Rod Area)

- 10 GPM Pump Flow
- Extend Speed without Regeneration

$$\frac{(10 \text{ GPM}) 231}{14.2 \text{ in}^2} = 163 \text{ in / min.}$$

- Extend Speed with Regeneration

$$\frac{(10 \text{ GPM}) 231}{9.6 \text{ in}^2} = 241 \text{ in / min.}$$

- Retract Speed

$$\frac{(10 \text{ GPM}) 231}{(14.2 - 9.6 \text{ in}^2)} = 502 \text{ in / min.}$$

- Extend pressure with a 75 psi crack pressure pilot-to close check valve.

$$P = \frac{75 (A_H - A_R)}{A_R} = \frac{75 (14.2 - 9.6)}{9.6} = 36 \text{ psi}$$

Small Rod Diameter

4.25" Bore Diameter (14.2in² Head Area)
2.00" Rod Diameter (3.1in² Rod Area)

- Extend Speed without Regeneration

$$\frac{(10 \text{ GPM}) 231}{14.2 \text{ in}^2} = 163 \text{ in / min.}$$

- Extend Speed with Regeneration

$$\frac{(10 \text{ GPM}) 231}{(3.1 \text{ in}^2)} = 745 \text{ in / min.}$$

- Retract Speed

$$\frac{(10 \text{ GPM}) 231}{(14.2 - 3.1) \text{ in}^2} = 208 \text{ in / min.}$$

- Extend pressure with a 75 psi crack pressure pilot-to-close check valve.

$$P = \frac{75 (A_H - A_R)}{A_R} = \frac{75 (14.2 - 3.1) \text{ in}^2}{3.1 \text{ in}^2} = 269 \text{ psi}$$

Regeneration Features Summary

Large Rod Diameter

- Reduced Regeneration Speed Advantage
- High Retract Speed
- Lower Extend Pressure
- Higher Force Output in Regeneration

Small Rod Diameter

- Increased Regeneration Speed Advantage
- Lower Retract Speed
- Higher Extend Pressure
- Lower Force Output in Regeneration

Worst case example with a cylinder ration of 1.16:1 and a 75 psi crack pressure pilot-to-close check.

$$\text{Cylinder Ratio} = \frac{A_H}{(A_H - A_R)} = 1.16:1 \quad \begin{array}{l} \text{(Very Small Rod} \\ \text{Diameter in} \\ \text{relation to Bore)} \end{array}$$

$$\text{If: } A_H = 1.16 \quad (A_H - A_R) = 1$$

$$\text{Then } A_H = 0.16$$

$$\text{Pressure to Extend } P = \frac{75 (A_H - A_R)}{A_R} = \frac{75 (1)}{0.16} = 470 \text{ psi}$$

In this example, depending on the setting of the counterbalance valve, regeneration may cease upon application of flow due to the high extend pressure without external load.

Formulas

Formulas for calculation of flow rates in regeneration circuits.

$$\text{Flow out of Rod End} = \frac{(D_b^2 - D_r^2)}{D_b^2} \times \text{Pump Flow}$$

$$\text{Combined Flow} = \left(\frac{D_b^2}{D_r^2} \right) \times \text{Pump Flow}$$

(Pump Flow plus Regenerative Flow)

$$\text{Retraction Flow} = \frac{D_b^2}{(D_b^2 - D_r^2)} \times \text{Pump Flow}$$

(Flow out of Blind End during Retraction)

D_b = Blind End Cylinder Bore Diameter

D_r = Rod Diameter

Application Cautionary Statements

Full Time Regeneration Assemblies

- Regeneration does not cease at any time during the cycle.
- Extreme cylinder ratios may prevent the system from moving. Heat may be a problem when regeneration occurs but system pressure is high and oil is flowing through the system relief valve.
- Cylinder force is reduced at all times.

Pressure Sensitive Regeneration Assemblies

- Regeneration may cease too soon or never occur due to system pressure required.
- The assumption that the adjust range of the regeneration package is the same as the counterbalance valve is incorrect.
- Extreme cylinder ratios may prevent the regeneration package from operating at all.

General Issues for both Types of Sun Regeneration Packages

1. **It is important to remember to size hydraulic lines correctly to allow for the increased flow going into the full bore side of the cylinder.**
2. The pilot-to-close check valve has a 75 psi crack pressure. A rod down cylinder application or a load on the cylinder that would tend to extend the rod is extremely dangerous. A rod down application could suddenly fall as the rod oil flows through the pilot-to-close check valve to the blind end of the cylinder. The blind end of the cylinder would cavitate but could not hold the load.
3. To prevent the problem of unexpected rod motion, a load control valve must be installed in the rod port. A Sun vented pilot-to-open check valve or vented counterbalance valve can provide load locking or load control and locking. **Only** vented versions of those cartridges must be used to have a functional system.
4. The effective adjustment range for the pressure sensitive regeneration assembly is **not** the same as the adjustment range of the counterbalance valve used in the assembly. Refer to the previous pages of technical tips to determine the regeneration adjust range for the specific counterbalance valve.

Pressure Sensitive Regeneration Assemblies

<i>Line Mounted Assemblies</i>	<i>Sandwich Mounted Assemblies</i>
12 GPM / 45 L/min.	10 GPM / 40 L/min.
SERIES 1 CARTRIDGES	D03/CETOP 3
YDCC-LHN-A*	YDCA-LHN-AA
YDCD-LHN-A*	YDCG-LHN-B*
25 GPM / 95 L/min.	25 GPM / 95 L/min.
SERIES 2 CARTRIDGES	D05/CETOP 5
YDEK-LHN-A*	YDEM-LHN-B*
YDEG-LHN-A*	YDEH-LHN-AK
YDEF-LHN-A*	YDES-LHN-BA
YDEC-LHN-A*	YDER-LHN-BA
YDED-LHN-A*	YDEE-LHN-BA
50 GPM / 190 L/min.	25 GPM / 95 L/min.
SERIES 3 CARTRIDGES	D05 X, Y/CETOP 5 X, Y
YDGC-LHN-A*	YDEL-LHN-BB
YDGC-LHN-AP	
YDGD-LHN-A*	
YDGD-LHN-AP	
YDGD-LHN-AQ	
YDGL-LHN-AP	
YDGL-LHN-AQ	
YDGL-LHN-A4	
YDGL-LHN-A5	
100 GPM / 380 L/min.	50 GPM / 190 L/min.
SERIES 4 CARTRIDGES	D07/CETOP 7
YDHC-LHN-A5	YDFE-LHN-AB
120 GPM / 450 L/min.	YDFG-LHN-AB
YDJC-LHN-AN	40 GPM / 150 L/min.
240 GPM / 910 L/min.	D08/CETOP 8
YDJC-LHN-A6 Dual Cartridges	YDFF-LHN-CA Dual Cartridges
YDJC-LHN-AS Dual Cartridges	
	60 GPM / 230 L/min.
	YDFJ-LHN-CA
	YDFK-LHN-CA
	80 GPM/300 L/min.
	YDGE-LHN-CA
	YDGF-LHN-CA

Flow ratings are nominal.

See performance curves on following page for detailed pressure flow characteristics.

* Indicates optional port types available.

Full Time Regeneration Assemblies	
<i>Line Mounted Assemblies</i>	<i>Sandwich Mounted Assemblies</i>
	15 GPM / 60 L/min.
	D03/CETOP 3
	YDCK-XCN-AA
	YDCF-XCN-AA
30 GPM / 115 L/min.	25 GPM / 95 L/min.
SERIES 2 CARTRIDGES	D05/CETOP 5
YDEP-XCN-A*	YDEV-XCN-BA
	YDET-XCN-BA
	YDEN-XCN-BA
60 GPM / 230 L/min.	25 GPM / 95 L/min.
SERIES 3 CARTRIDGES	D05 X, Y/CETOP 5 X, Y
YDGK-XCN-A*	YDEW-XCN-BB
YDGJ-XCN-A*	
240 GPM / 910 L/min.	50 GPM / 190 L/min
SERIES 4 CARTRIDGES	D07/CETOP 7
YDJD-XCN-AS	YDFH-XCN-AB
	YDFI-XCN-AB
	60 GPM / 230 L/min.
	D08/CETOP 8
	YDFL-XCN-CA
	YDFM-XCN-CA
	90 GPM / 340 L/min.
	YDGH-XCN-CA
	YDGI-XCN-CA

Flow ratings are nominal.

See performance curves on following page for detailed pressure flow characteristics.

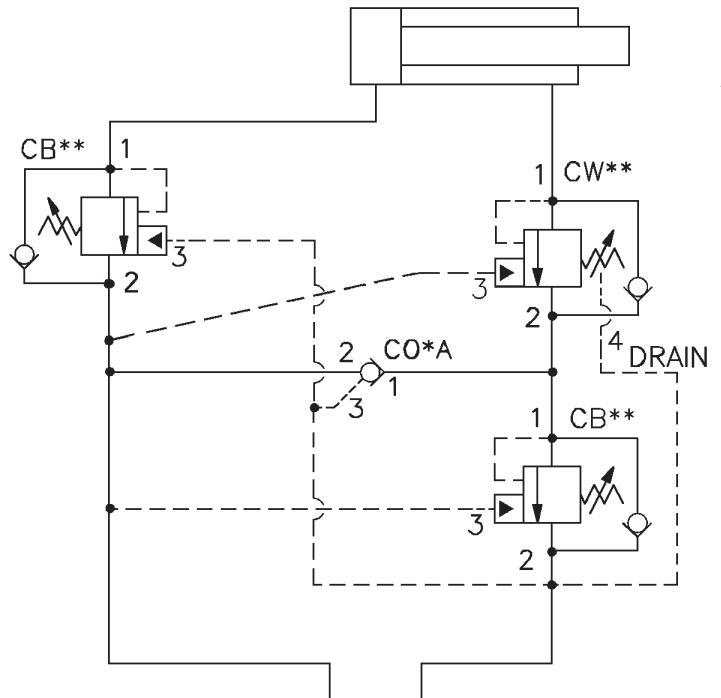
* Indicates optional port types available.

Sun Regeneration Circuit Using Other Sun Cartridge Valves

Regeneration Circuit with Pressure Unloading and Load Holding in both Extend and Retract Mode

(This example circuit demonstrates another method of Regeneration, but is not available as a pre-packaged assembly.)

- This concept can be used where the load may tend to extend the cylinder as well as causing it to retract.
- Pressure sensitive regeneration system provides regeneration with progressive unloading up to full force operation.
- Both counterbalances to be sized for appropriate flows (i.e. cap end counterbalance must be sized for pump plus rod end flow, while rod end counterbalance is sized for rod end flow only.)
- With work ports drained and counterbalance valves adjusted to appropriate pressure settings, cylinder should not move in either direction.



CB** Counterbalance Valve
 CW** Vented Counterbalance Valve
 CO*A Pilot-to-close Check Valve

Cross Reference Table

Full Time to Pressure Sensitive Regeneration

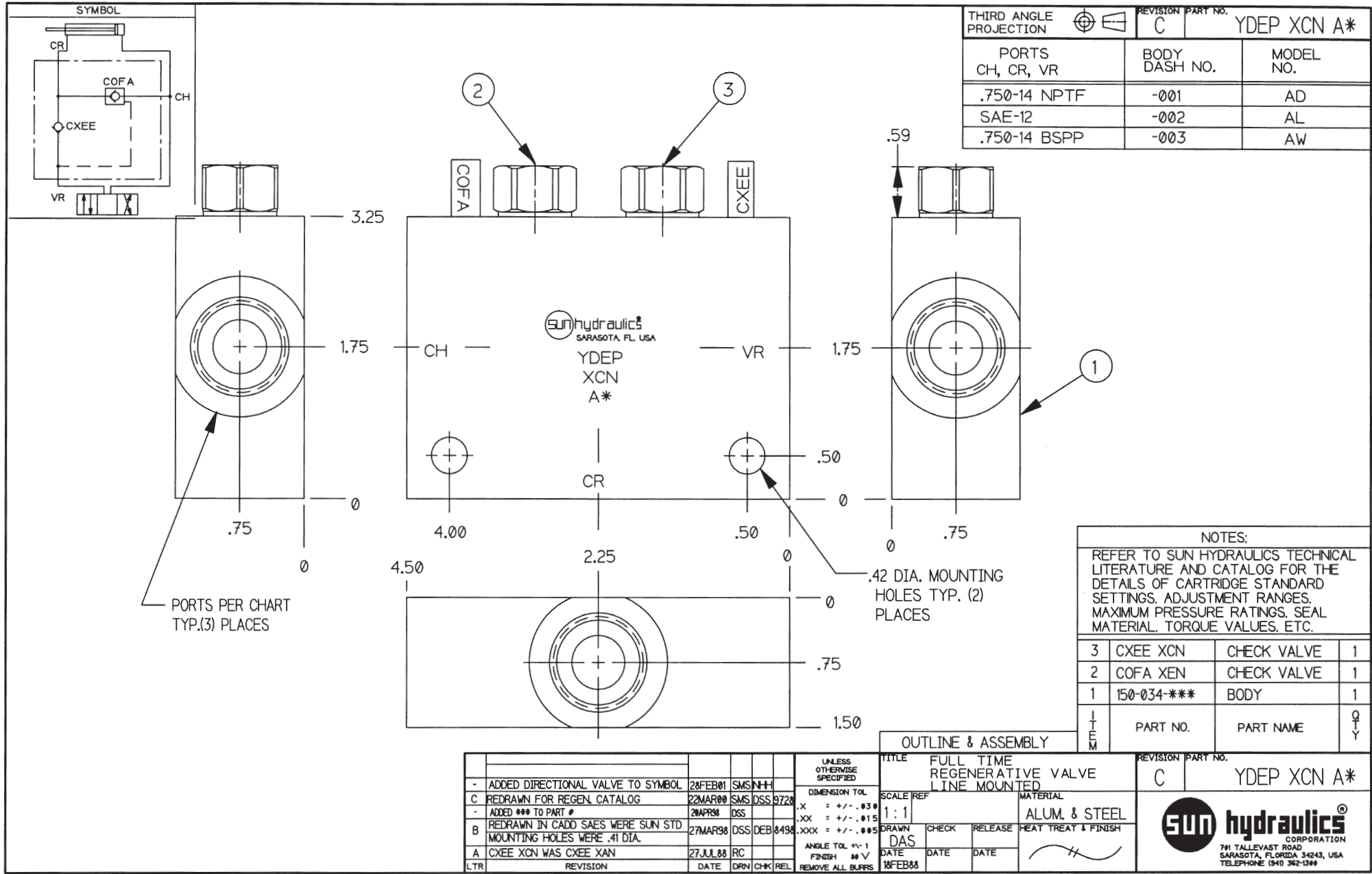
<i>Pressure Sensitive Regeneration Assembly Model Code</i>	<i>Page Loca- tion</i>	<i>Sun Part Number for Body</i>	<i>Full Time Regeneration Assembly Model Code</i>	<i>Page Loca- tion</i>
YDCA-LHN-AA	86	150-281	YDCF-XCN-AA	24
YDEK-LHN-A*	50	150-034	YDEP-XCN-A*	14
YDES-LHN-BA	90	152-188	YDET-XCN-BA	28
YDER-LHN-BA	88	152-187	YDEV-XCN-BA	26
YDEE-LHN-BA	94	150-015	YDEN-XCN-BA	30
YDFE-LHN-AB	96	151-146	YDFI-XCN-AB	36
YDFG-LHN-AB	98	152-746	YDFH-XCN-AB	34
YDGC-LHN-A*	56	150-784-00*	YDGK-XCN-A*	16
YDGD-LHN-A*	60	150-785-00*	YDGJ-XCN-A*	18
YDGF-LHN-CA	104	151-537	YDGH-XCN-CA	44
YDJC-LHN-AS	82	151-496-00*	YDJD-XCN-AS	20
YDEC-LHN-A*	48	150-034-00*	YDEP-XCN-A*	14
YDFJ-LHN-CA	116	153-055	YDFL-XCN-CA	38
YDFK-LHN-CA	108	153-056	YDFM-XCN-CA	40

* Indicates optional port types available.

NOTES

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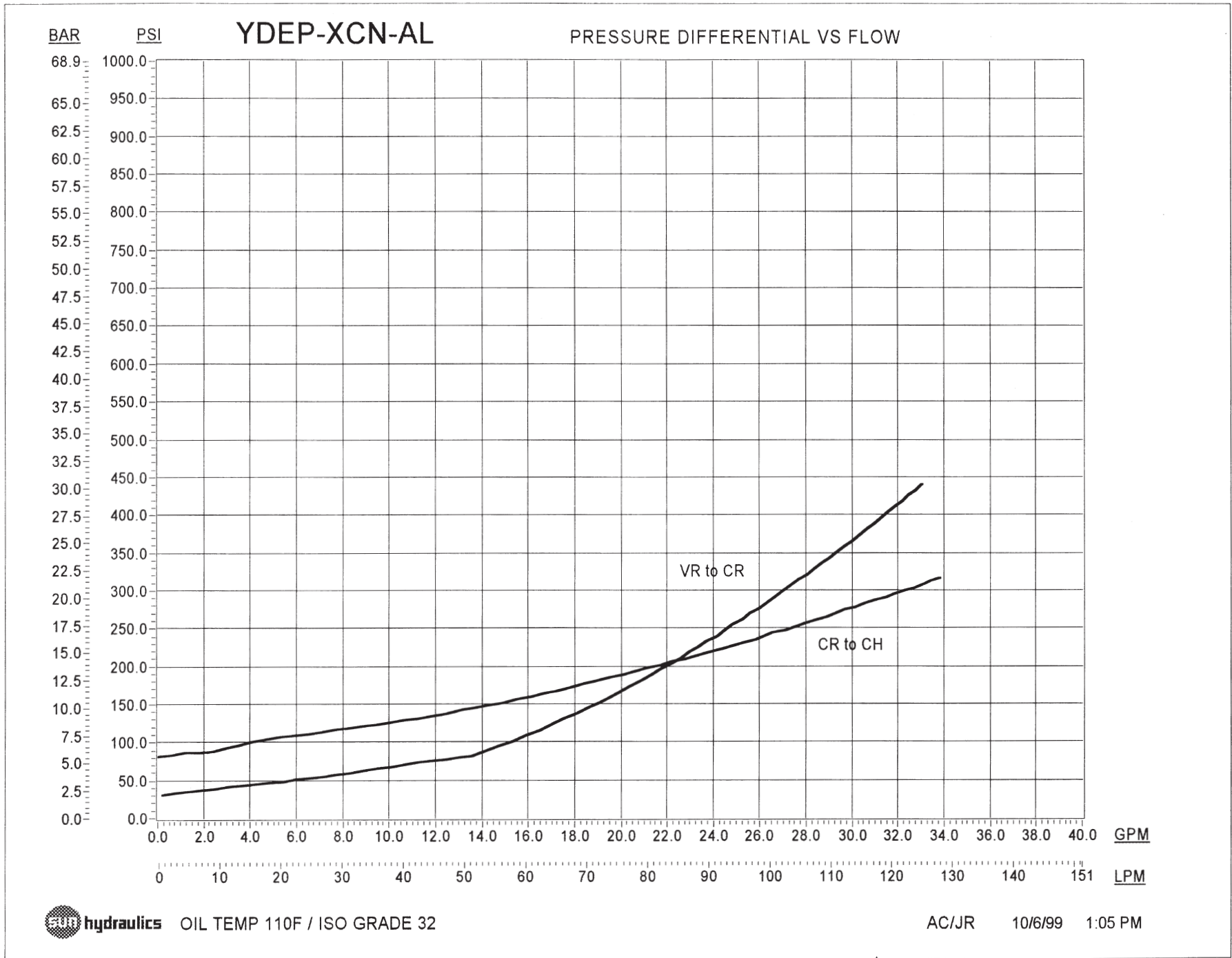
THIRD ANGLE PROJECTION	REVISION PART NO. C	YDEP XCN A*
PORTS CH, CR, VR	BODY DASH NO.	MODEL NO.
.750-14 NPTF	-001	AD
SAE-12	-002	AL
.750-14 BSPP	-003	AW

NOTES:			
REFER TO SUN HYDRAULICS TECHNICAL LITERATURE AND CATALOG FOR THE DETAILS OF CARTRIDGE STANDARD SETTINGS, ADJUSTMENT RANGES, MAXIMUM PRESSURE RATINGS, SEAL MATERIAL, TORQUE VALUES, ETC.			
3	CXEE XCN	CHECK VALVE	1
2	COFA XEN	CHECK VALVE	1
1	150-034-***	BODY	1
ITEM	PART NO.	PART NAME	QTY

OUTLINE & ASSEMBLY			
UNLESS OTHERWISE SPECIFIED			
TITLE FULL TIME REGENERATIVE VALVE LINE MOUNTED			
DIMENSION TOL		SCALE REF 1:1	
.X = +/- .030		MATERIAL ALUM. & STEEL	
.XX = +/- .015		DRAWN DAS	
.XXX = +/- .005		CHECK RELEASE HEAT TREAT & FINISH	
ANGLE TOL +/- 1		DATE DATE DATE	
FINISH #V		DATE DATE DATE	
REMOVE ALL BURRS		DATE 10FEB88	

REVISION PART NO. C	YDEP XCN A*
791 TALLEVAST ROAD SARASOTA, FLORIDA 34243, USA TELEPHONE (941) 362-1399	

LTR	REVISION	DATE	DRN	CHK	REL
-	ADDED DIRECTIONAL VALVE TO SYMBOL	28FEB01	SMS	NH	
C	REDRAWN FOR REGEN. CATALOG	22MAR00	SMS	DSS	0728
-	ADDED *** TO PART #	20APR98	DSS		
B	REDRAWN IN CADD SAES WERE SUN STD. MOUNTING HOLES WERE .41 DIA.	27MAR98	DSS	DEB	0498
A	CXEE XCN WAS CXEE XAN	27JUL88	RC		



SYMBOL

PORTS PER CHART TYP. (3) PLCS.

SUNhydraulics
SARASOTA, FL. USA
YDGK XCN A*

THIRD ANGLE PROJECTION	REVISION	PART NO.
	B	YDGK XCN A*

PORT TYPE	MODEL NO.	BODY DASH NO.	THREAD TYPE
.750-14 NPTF	AD	-001	INCH
1.000-11.5 NPTF	AE	-002	INCH
1.250-11.5 NPTF	AF	-003	INCH
SAE-12	AL	-004	INCH
SAE-16	AM	-005	INCH
SAE-20	AN	-006	INCH
.750-14 BSPP	AW	-007	METRIC
1.000-11 BSPP	AX	-008	METRIC
1.250-11 BSPP	AY	-009	METRIC

NOTES:
REFER TO SUN HYDRAULICS TECHNICAL LITERATURE AND CATALOG FOR THE DETAILS OF CARTRIDGE STANDARD SETTINGS, ADJUSTMENT RANGES, MAXIMUM PRESSURE RATINGS, SEAL MATERIAL, TORQUE VALUES, ETC.

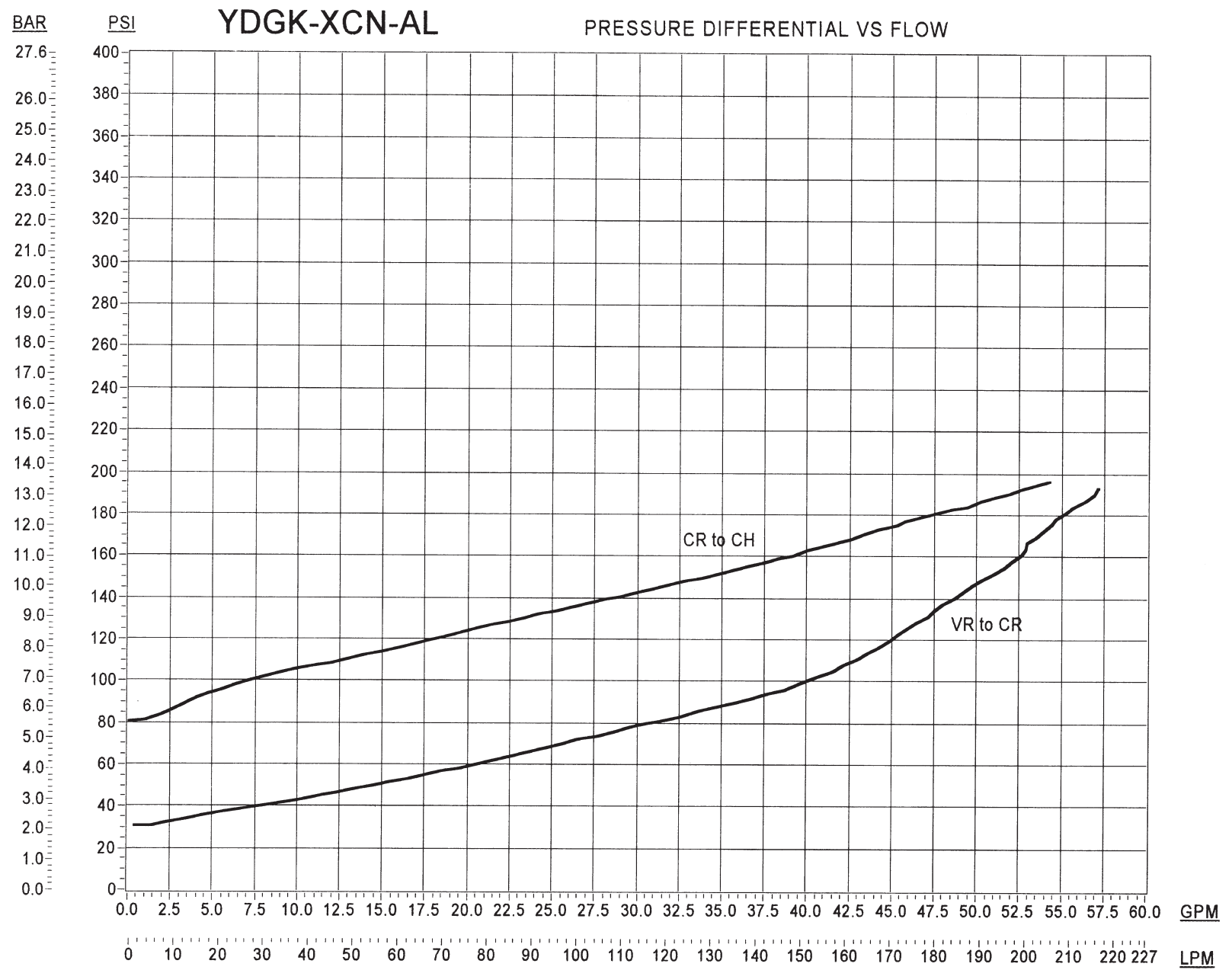
ITEM	PART NO.	PART NAME	QTY
3	COHA XEN	CHECK VALVE	1
2	CXGE XCN	CHECK VALVE	1
1	150-784-***	BODY	1

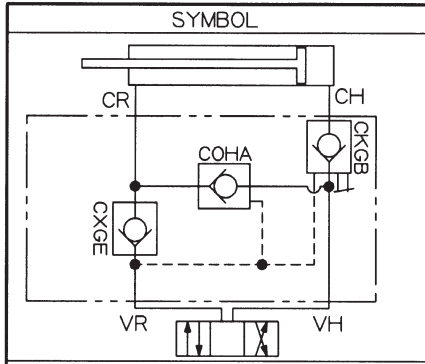
MOUNTING HOLES :
INCH : .375-16UNC x .62 DP.
METRIC : M10 x 1.5-6H x .62 DP. TYP (2) PLACES

OUTLINE & ASSEMBLY				TITLE			REVISION		
				FULL TIME LINE MOUNT REGENERATIVE VALVE			B YDGK XCN A*		
UNLESS OTHERWISE SPECIFIED				SCALE REF			MATERIAL		
DIMENSION TOL				1:2			ALUMINUM		
.X = +/- .03 #				DRAWN BRS			HEAT TREAT & FINISH		
.XX = +/- .015				CHECK			6382		
.XXX = +/- .005				DATE			24FEB95		
ANGLE TOL +/- 1				DATE			24FEB95		
FINISH #0 ✓				DATE			24FEB95		
REMOVE ALL BURRS									
- ADDED DIRECTIONAL VALVE TO SYMBOL 01MAR01 SMS NHT									
B REDRAWN FOR REGEN CATALOG 22MAR00 SMS DSS 9723									
A ITEM#1 WAS 50-785 28FEB95 BRS GBB 6306									
LTR REVISION				DATE			DRN CHK REL		

701 TALLEYVAST ROAD
SARASOTA, FLORIDA 34243, USA
TELEPHONE (941) 362-1369

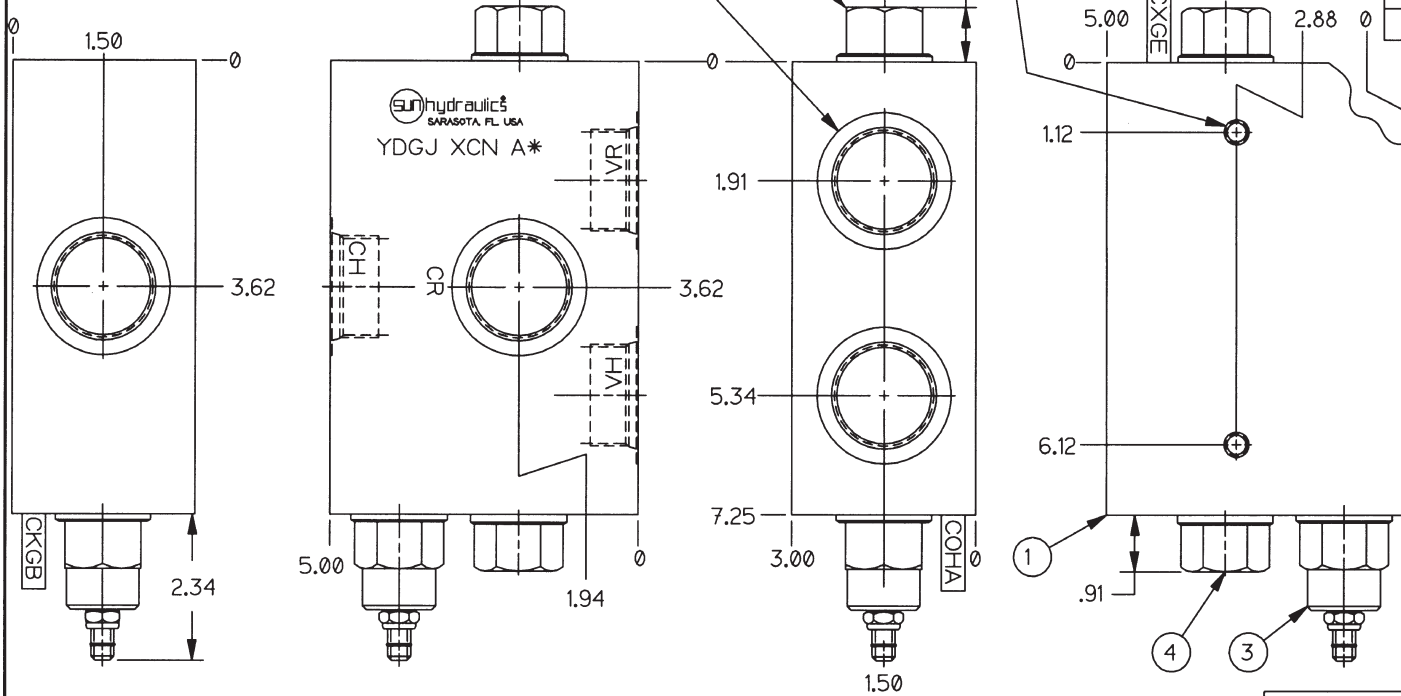
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PORTS PER CHART
TYP. (4) PLCS.

MOUNTING HOLES :
INCH : .375-16UNC
x .62 DP.
METRIC : M10 x
1.5-6H x .62 DP.
TYP (2) PLACES



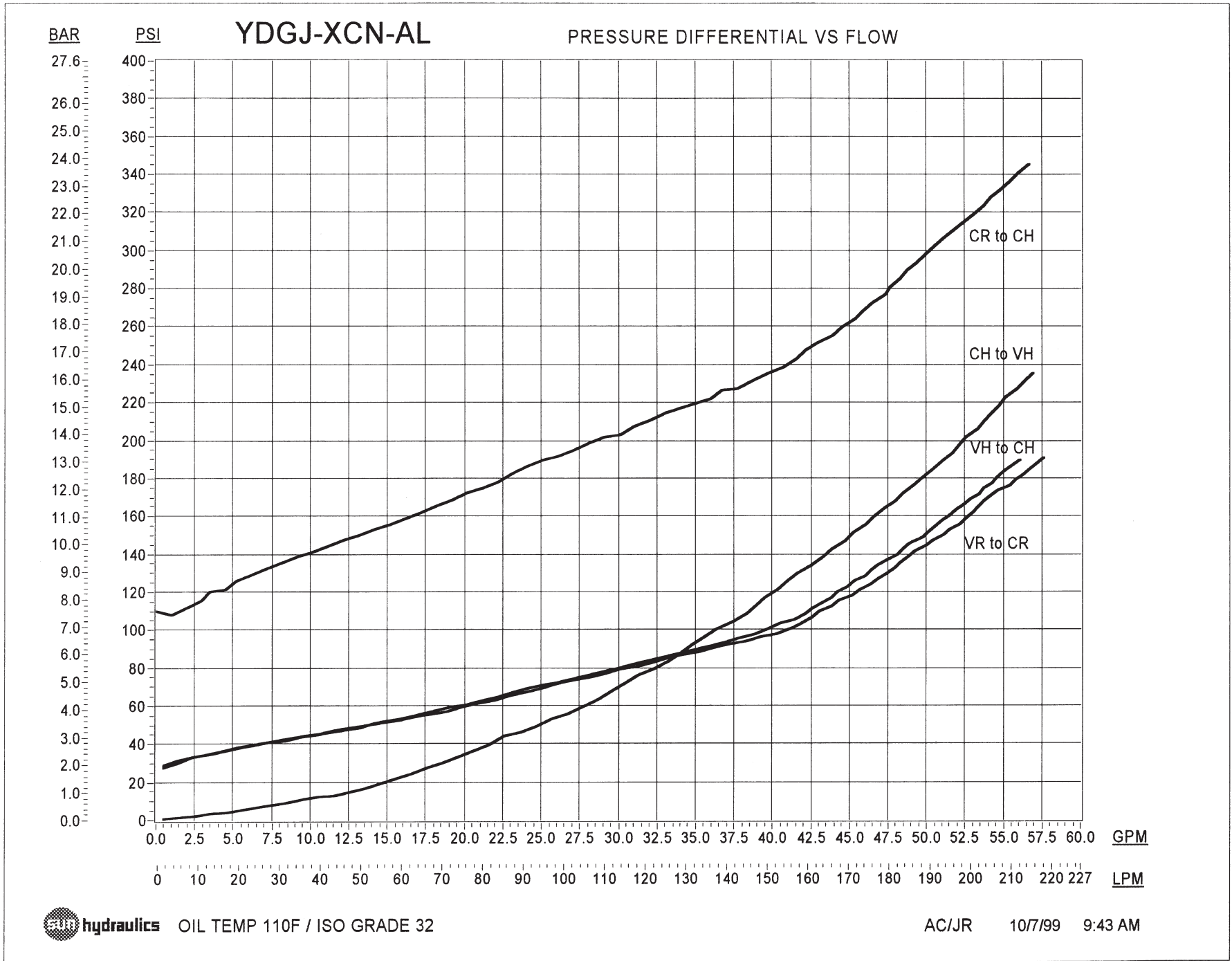
THIRD ANGLE PROJECTION		REVISION PART NO.	
		B	YDGJ XCN A*
PORT TYPE	MODEL NO.	BODY DASH NO.	THREAD TYPE
.750-14 NPTF	AD	-001	INCH
1.000-11.5 NPTF	AE	-002	INCH
1.250-11.5 NPTF	AF	-003	INCH
SAE-12	AL	-004	INCH
SAE-16	AM	-005	INCH
SAE-20	AN	-006	INCH
.750-14 BSPP	AW	-007	METRIC
1.000-11 BSPP	AX	-008	METRIC
1.250-11 BSPP	AY	-009	METRIC

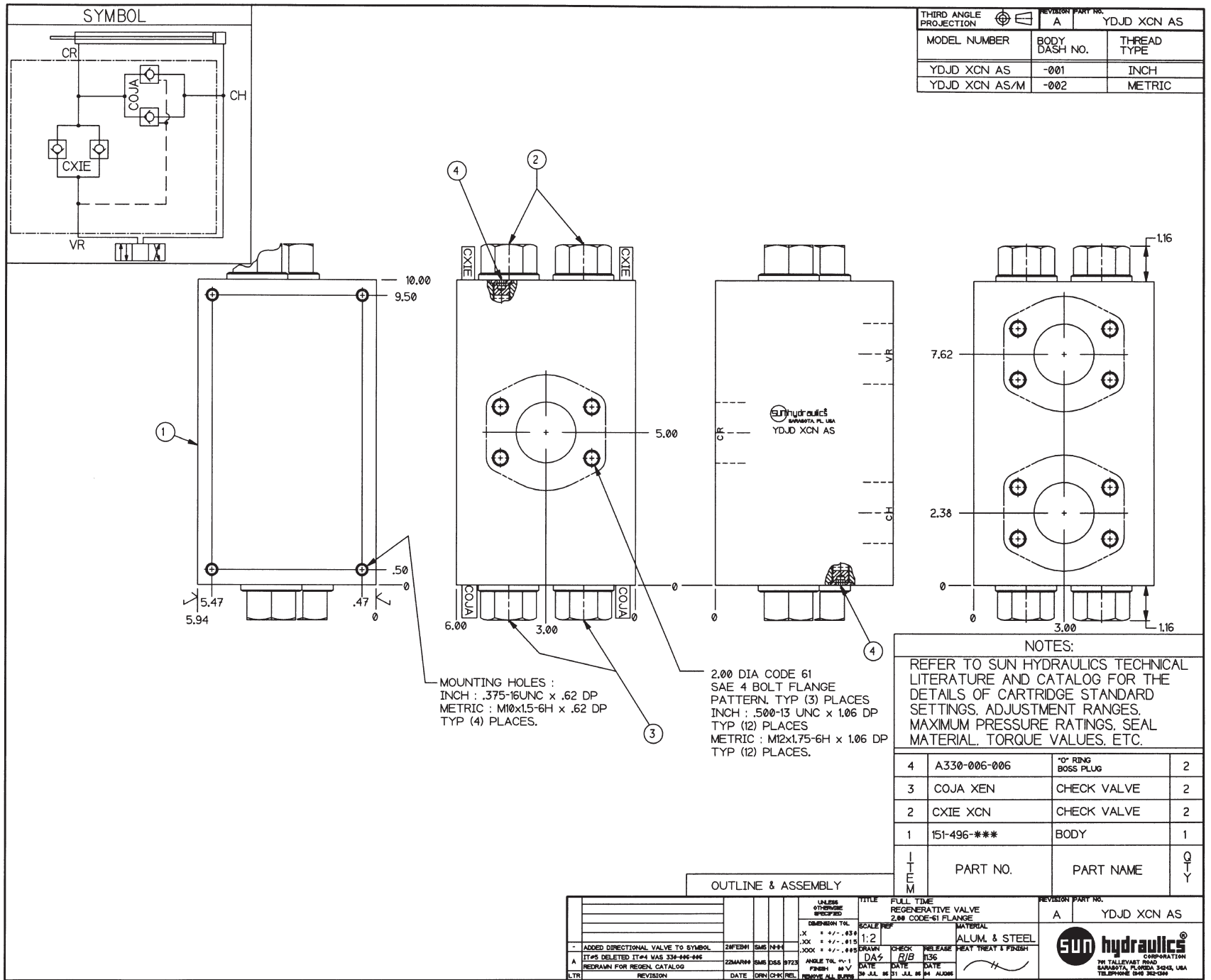
NOTES:
REFER TO SUN HYDRAULICS TECHNICAL LITERATURE AND CATALOG FOR THE DETAILS OF CARTRIDGE STANDARD SETTINGS, ADJUSTMENT RANGES, MAXIMUM PRESSURE RATINGS, SEAL MATERIAL, TORQUE VALUES, ETC.

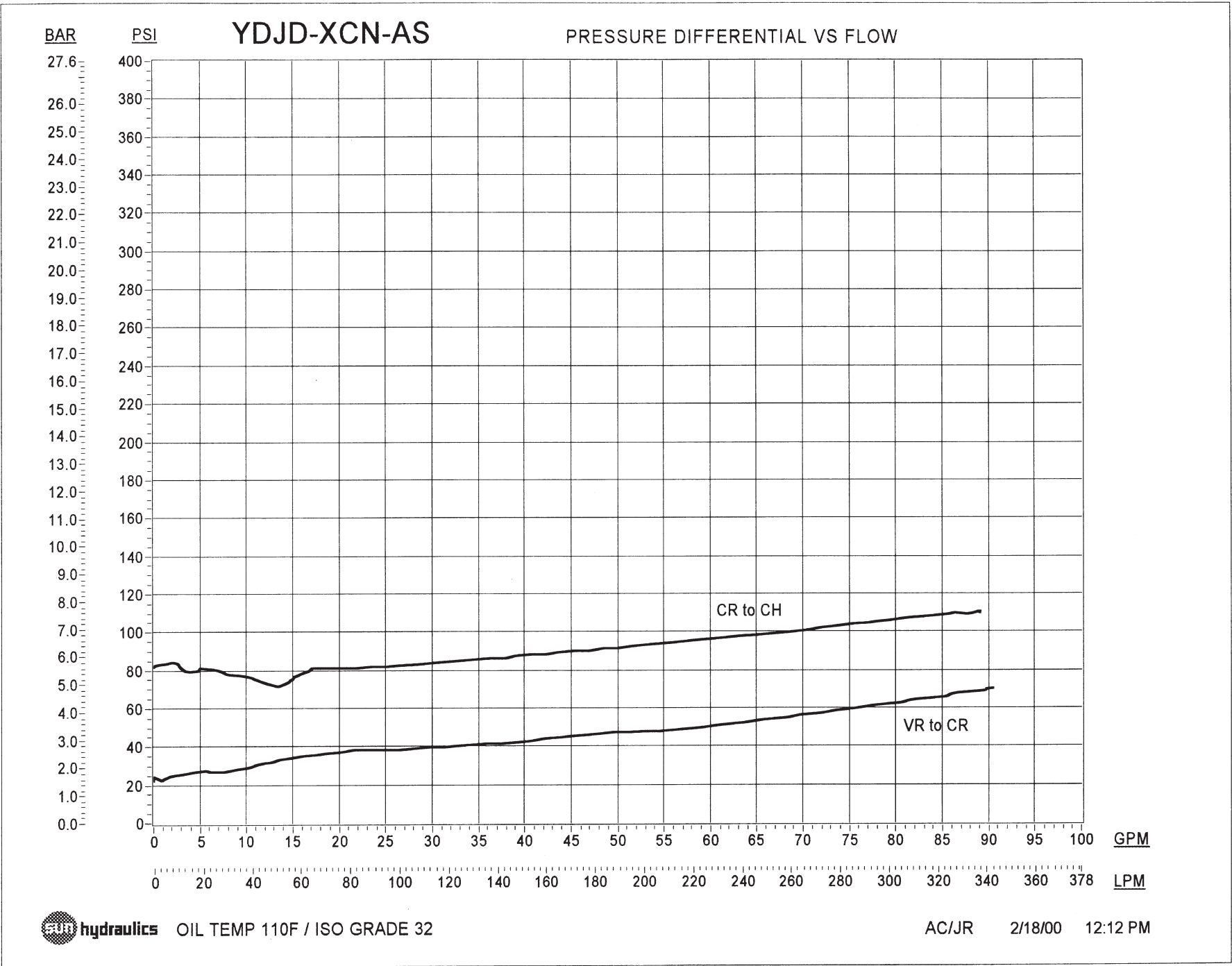
ITEM	PART NO.	PART NAME	QTY
4	COHA XEN	CHECK VALVE	1
3	CKGB LCN	CHECK VALVE	1
2	CXGE XCN	CHECK VALVE	1
1	150-785-***	BODY	1

UNLESS OTHERWISE SPECIFIED				TITLE FULL TIME LINE MOUNT REGENERATIVE VALVE WITH CYL. LOCK				REVISION PART NO.	
DIMENSION TOL				SCALE REF				B YDGJ XCN A*	
.X = +/- .030				1:2				ALUM. & STEEL	
.XX = +/- .015				DRAWN BRS				HEAT TREAT & FINISH	
.XXX = +/- .005				CHECK				5649	
ANGLE TOL +/- 1				DATE 12MAY94					
FINISH ** V				DATE					
REMOVE ALL BURRS				DATE 12MAY94					
LTR REVISION				DATE DRN CHK REL					
- ADDED DIRECTIONAL VALVE TO SYMBOL 28FEB91 SMS NHH				B REDRAWN FOR REGEN CATALOG REVISED SYM 23MAR94 SMS DSS 9723				A DELETED CBGA NOTE 24FEB95 BRS 6382	

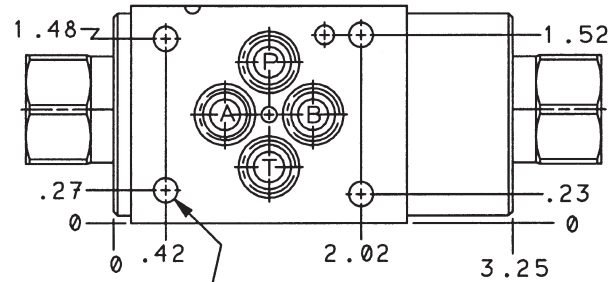
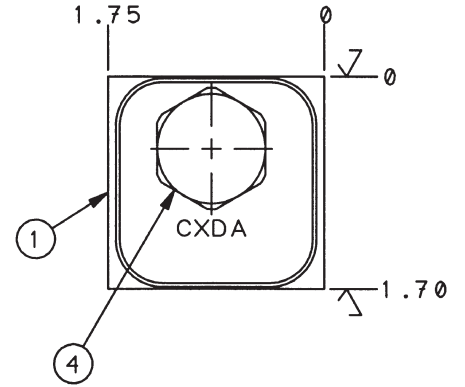
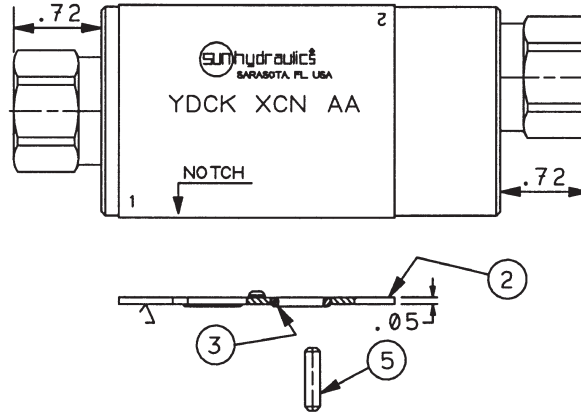
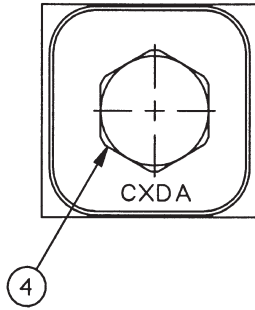
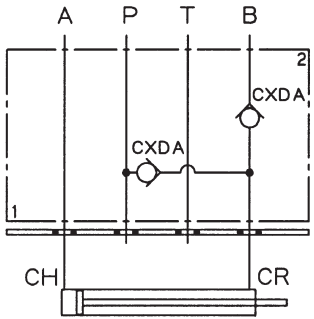








SYMBOLS



ISO 03 PATTERN
.20 DIA MOUNTING HOLES
TYP (4) PLACES

THIRD ANGLE
PROJECTION



REVISION PART NO.
A YDCK XCN AA

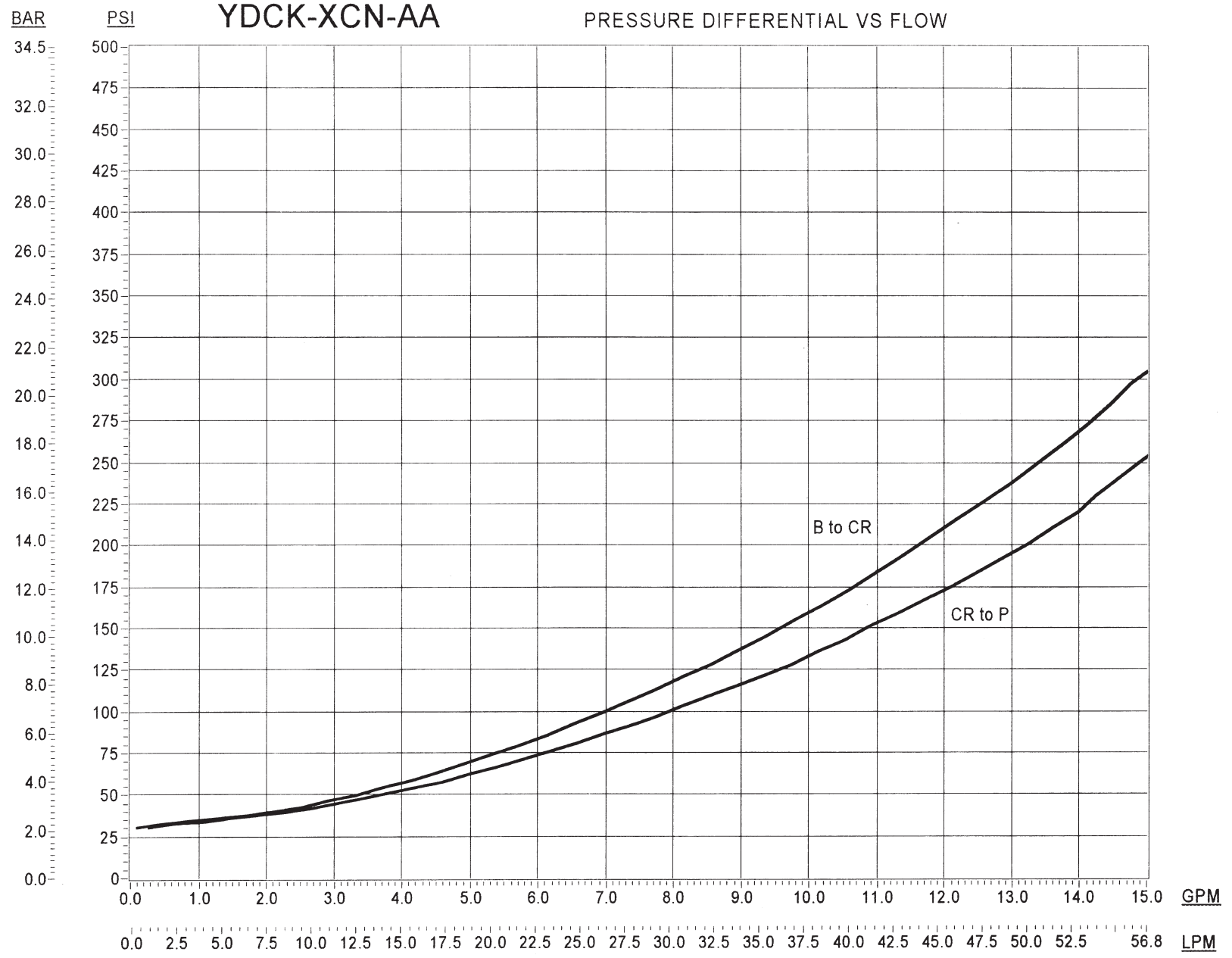
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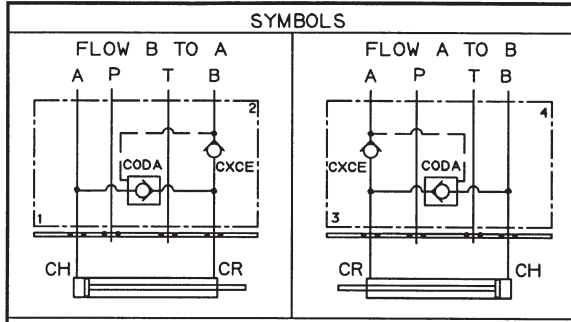
REFER TO SUN HYDRAULICS TECHNICAL LITERATURE AND CATALOG FOR THE DETAILS OF CARTRIDGE STANDARD SETTINGS, ADJUSTMENT RANGES, MAXIMUM PRESSURE RATINGS, SEAL MATERIAL, TORQUE VALUES, ETC.

ITEM	PART NO.	PART NAME	QTY
5	811-001-006	PIN	1
4	CXDA XCN	CHECK VALVE	2
3	500-001-012	"O" RING	4
2	700-002	SEAL PLATE	1
1	153-553	BODY	1

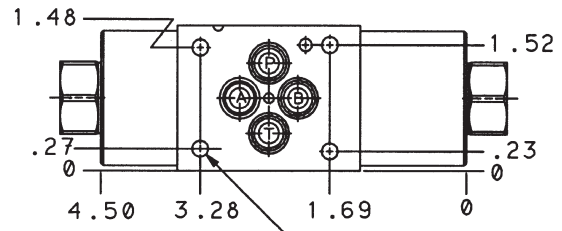
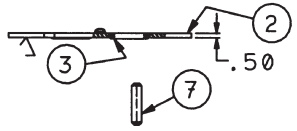
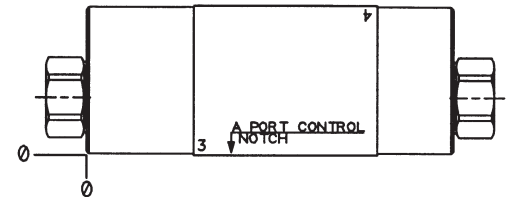
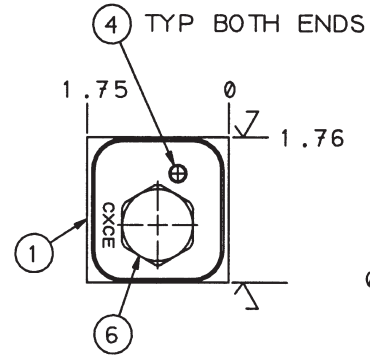
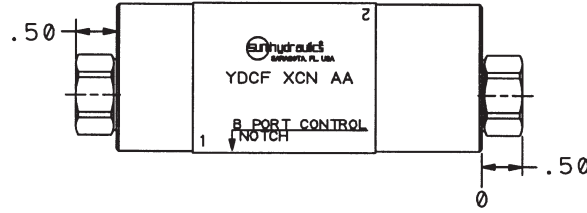
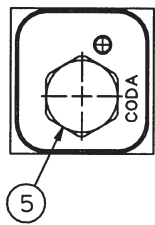
OUTLINE & ASSEMBLY

UNLESS OTHERWISE SPECIFIED					TITLE ISO-03 FULL TIME REGENERATION VALVE B TO P FLOW			REVISION PART NO.	
DIMENSION TOL					SCALE REF	MATERIAL			<p>SUN hydraulics CORPORATION 791 TALLEYVAST ROAD SARASOTA, FLORIDA 34243, USA TELEPHONE (941) 362-1369</p>
.X = +/- .030					1:1	ALUMINUM			
.XX = +/- .015					DRAWN	CHECK	RELEASE	HEAT TREAT & FINISH	
.XXX = +/- .005					DA	STW	6009		
ANGLE TOL +/- 1					DATE	DATE	DATE		
FINISH # V					22SEP94	22SEP94	22SEP94		
REMOVE ALL BURRS									
A	REDRAWN FOR REGEN. CATALOG	22MAR00	SMS	DSS	9723				
LTR	REVISION	DATE	DRN	CHK	REL				





THIRD ANGLE PROJECTION REVISION PART NO.
C YDCF XCN AA



ISO 03 PATTERN
.20 DIA MOUNTING HOLES
TYP (4) PLACES

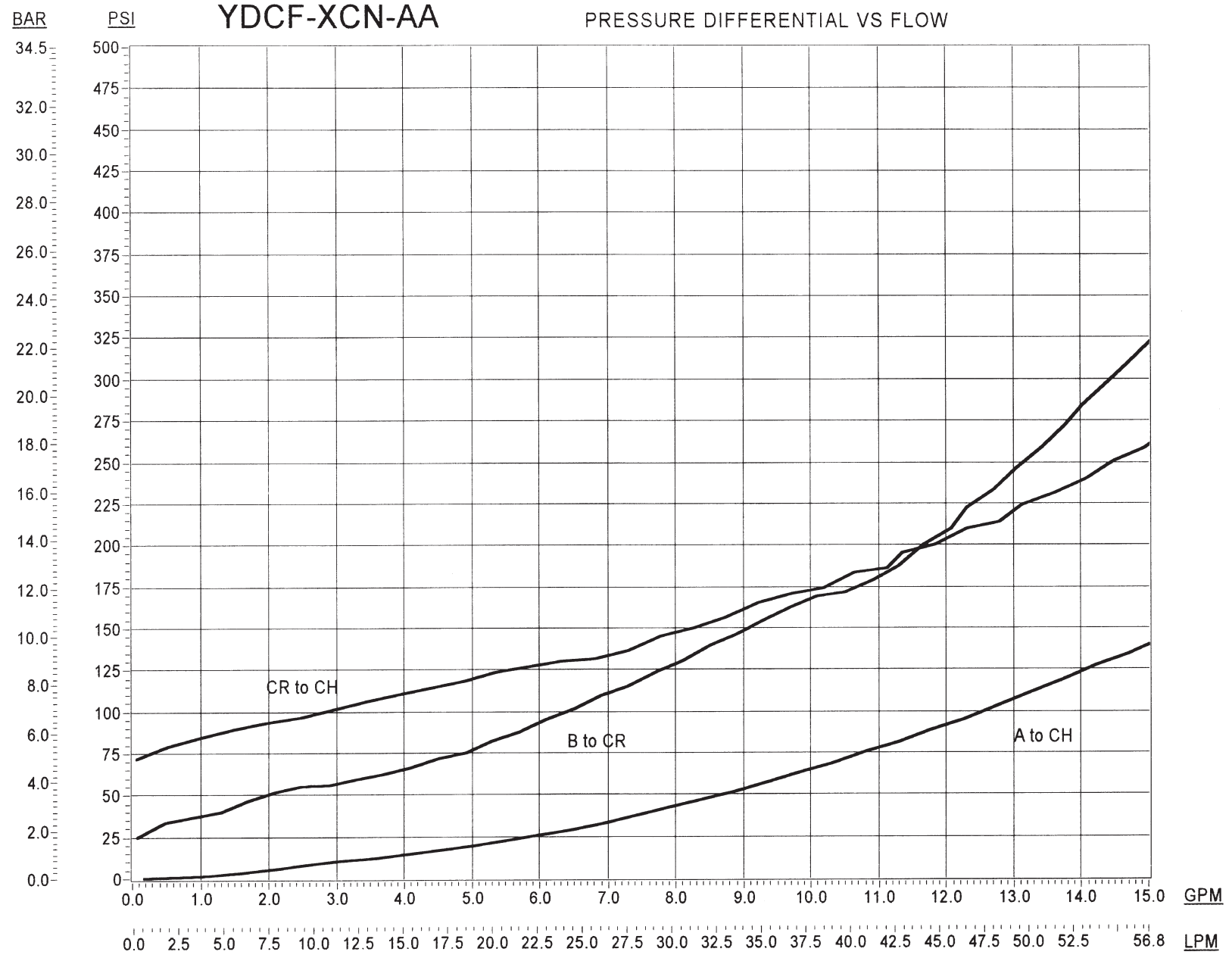
NOTES:
REFER TO SUN HYDRAULICS TECHNICAL LITERATURE AND CATALOG FOR THE DETAILS OF CARTRIDGE STANDARD SETTINGS, ADJUSTMENT RANGES, MAXIMUM PRESSURE RATINGS, SEAL MATERIAL, TORQUE VALUES, ETC.

7	811-001-006	PIN	1
6	CXCE XCN	CHECK VALVE	1
5	CODA XEN	CHECK VALVE	1
4	850-004-218	PLUG	2
3	500-001-012	O-RING	4
2	700-002	SEAL PLATE	1
1	150-281	BODY	1
I	PART NO.	PART NAME	QTY

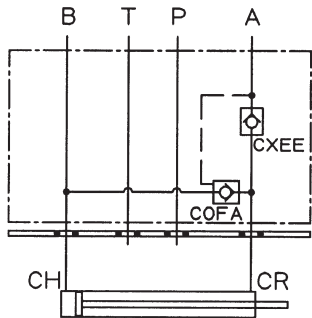
OUTLINE & ASSEMBLY

					UNLESS OTHERWISE SPECIFIED			TITLE FULL TIME ISO 03 REGENERATION VALVE FLOW B TO A OR A TO B			REVISION PART NO. C YDCF XCN AA		
					DIMENSION TOL			SCALE REF 1:1.5			MATERIAL 6061-T6 ALUM.		
C REDRAWN FOR REGEN CATALOG					22MAR00	SMS	DSS	9723	DRAWN BRS			HEAT TREAT & FINISH	
B REVISED STAMPING & ADDED IT#7					18NOV92	BRS	4080	CHECK RJB			3115		
A CXCE WAS SHOWN AS A P.O. CHECK IN SYMBOL					06APR92	RJB	3615	RELEASE DATE			DATE		
LTR REVISION					DATE	DRN	CHK	REL	05JUN91			06JUN91 06JUN91	

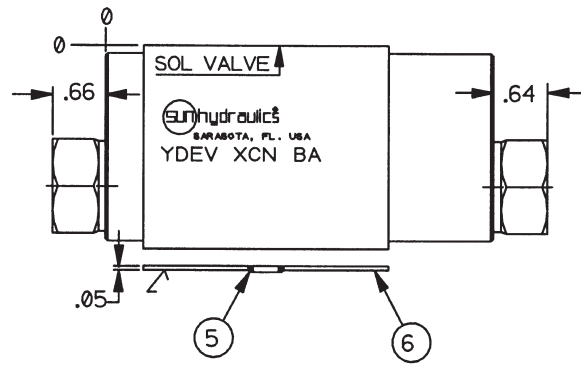
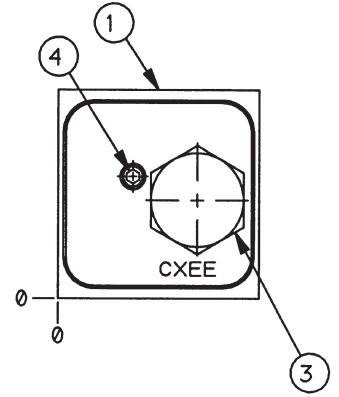
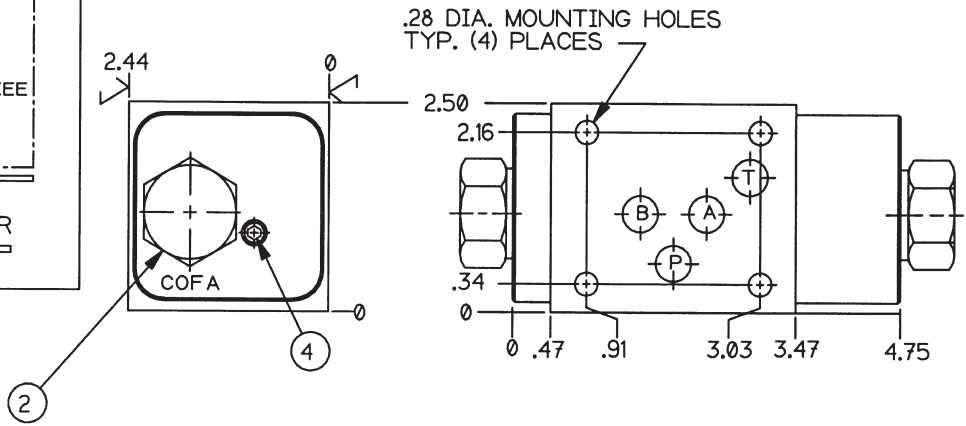




SYMBOLS



THIRD ANGLE PROJECTION REVISION PART NO. B YDEV XCN BA



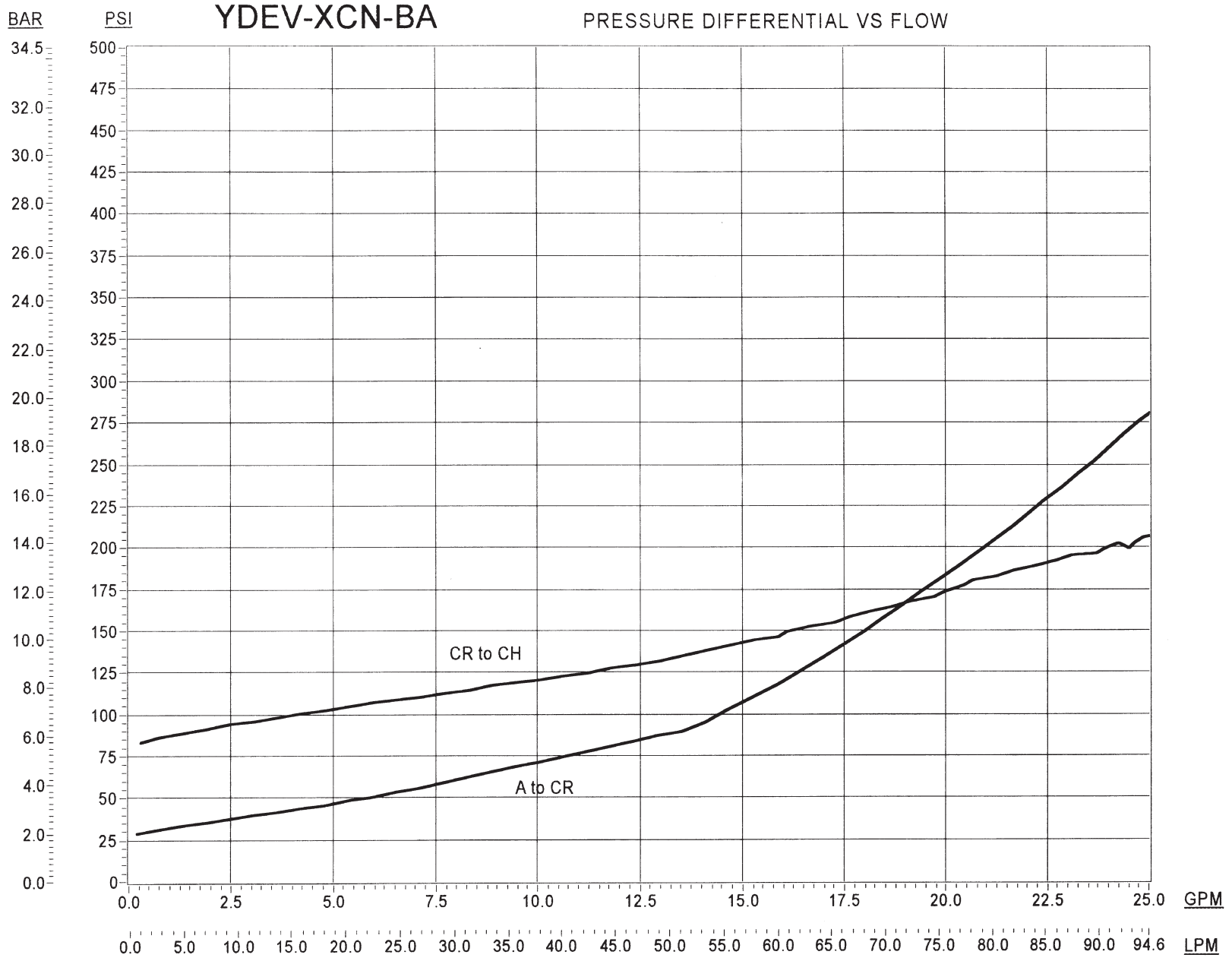
NOTES:
REFER TO SUN HYDRAULICS TECHNICAL LITERATURE AND CATALOG FOR THE DETAILS OF CARTRIDGE STANDARD SETTINGS, ADJUSTMENT RANGES, MAXIMUM PRESSURE RATINGS, SEAL MATERIAL, TORQUE VALUES, ETC.

6	700-001	SEAL PLATE	1
5	500-001-014	SEAL "O"RING	5
4	340-001	PIPE PLUG	2
3	CXEE XCN	CHECK VALVE	1
2	COFA XEN	CHECK VALVE	1
1	152-187	BODY	1
ITEM	PART NO.	PART NAME	QTY

UNLESS OTHERWISE SPECIFIED				TITLE ISO-05 REGENERATIVE FULL TIME FLOW A TO B		
DIMENSION TOL				SCALE REF		MATERIAL
.X = +/- .030				: 1.5		ALUMINUM
.XX = +/- .015				DRAWN		HEAT TREAT & FINISH
.XXX = +/- .005				BRS RJB 3143		H
ANGLE TOL +/- 1				DATE		
FINISH #0 V				13 JUN 91 18 JUN 91 21 JUN 91		
REMOVE ALL BURRS						
B	REDRAWN FOR REGEN. CATALOG	22MAR00	SMS	DSS	9723	
A	TITLE WAS B TO A	20AUG92	RJB		8987	
LTR	REVISION	DATE	DRN	CHK	REL	

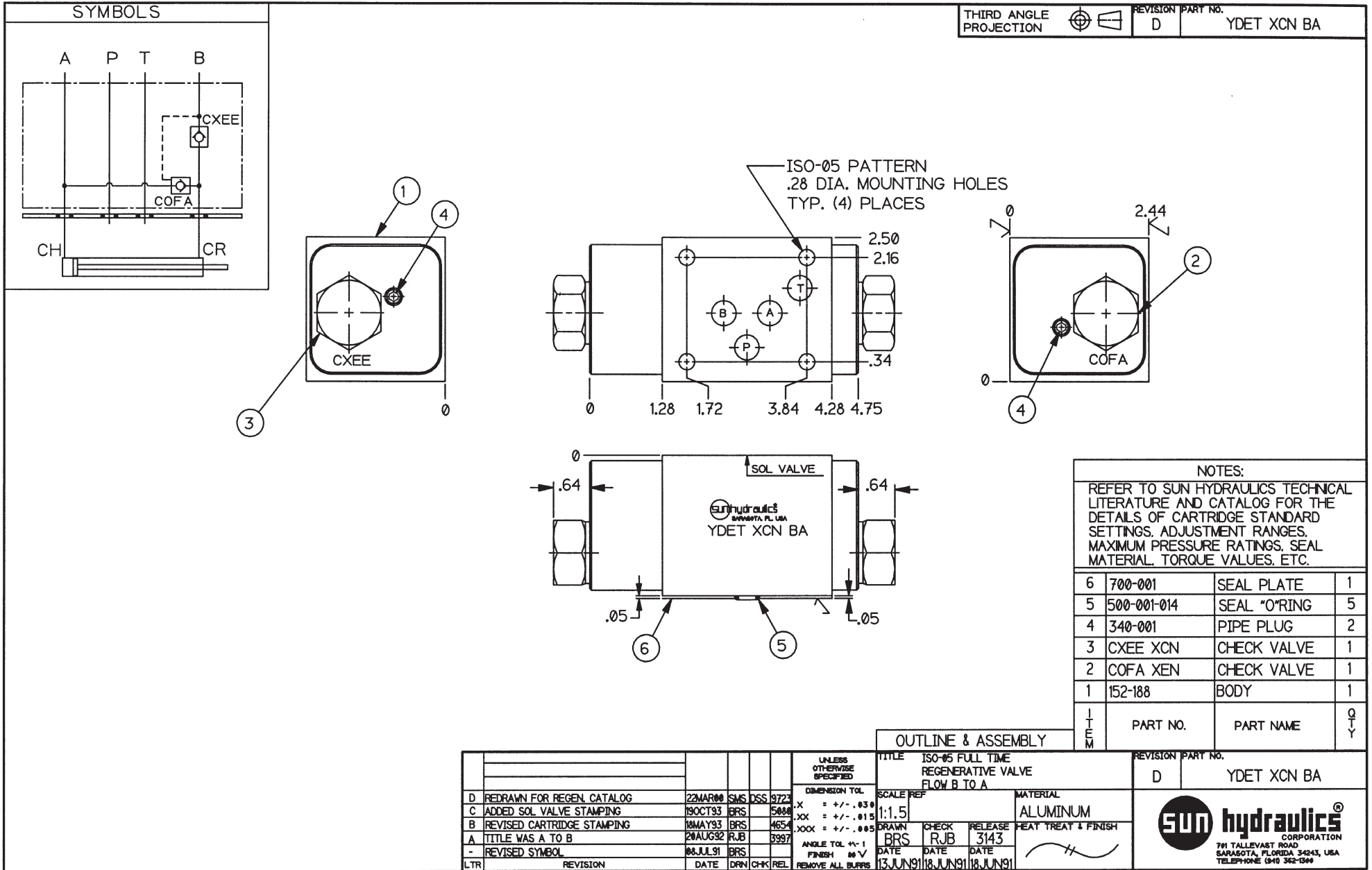
REVISION PART NO. B YDEV XCN BA

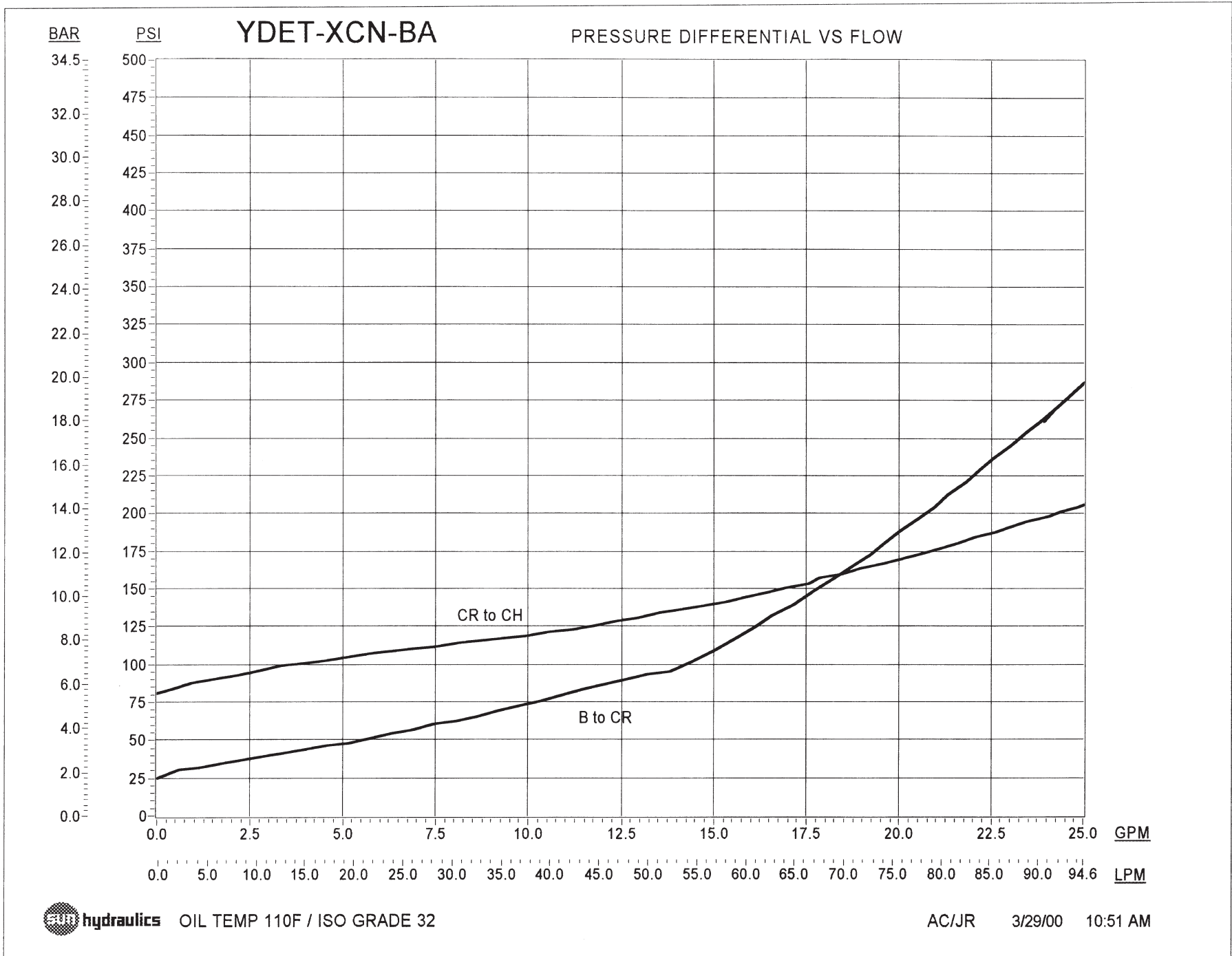
191 TALLEYVAST ROAD
SARASOTA, FLORIDA 34243, USA
TELEPHONE (813) 362-1300

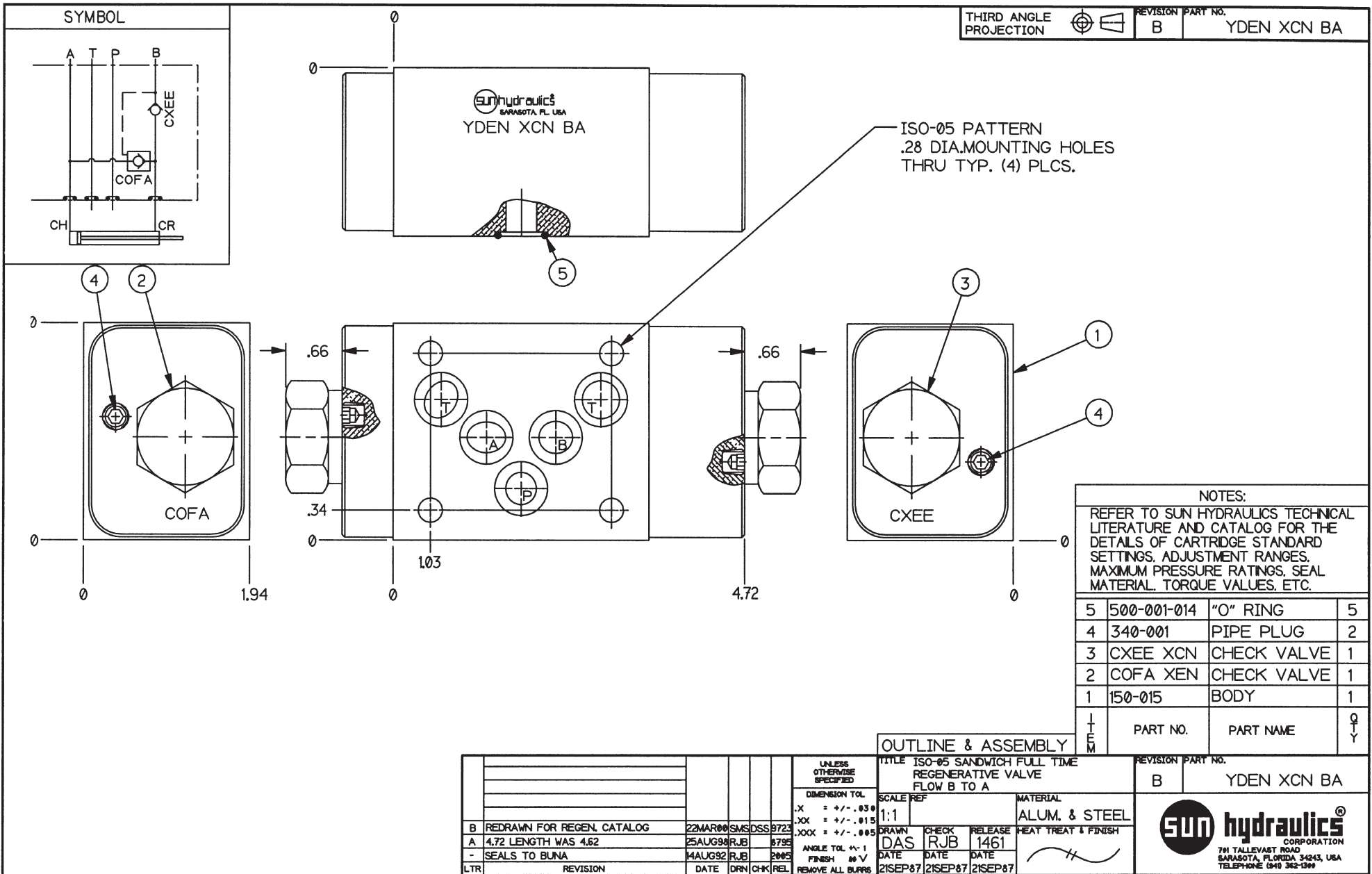


 **sun hydraulics** OIL TEMP 110F / ISO GRADE 32

AC/JR 3/29/00 10:50 AM







NOTES:

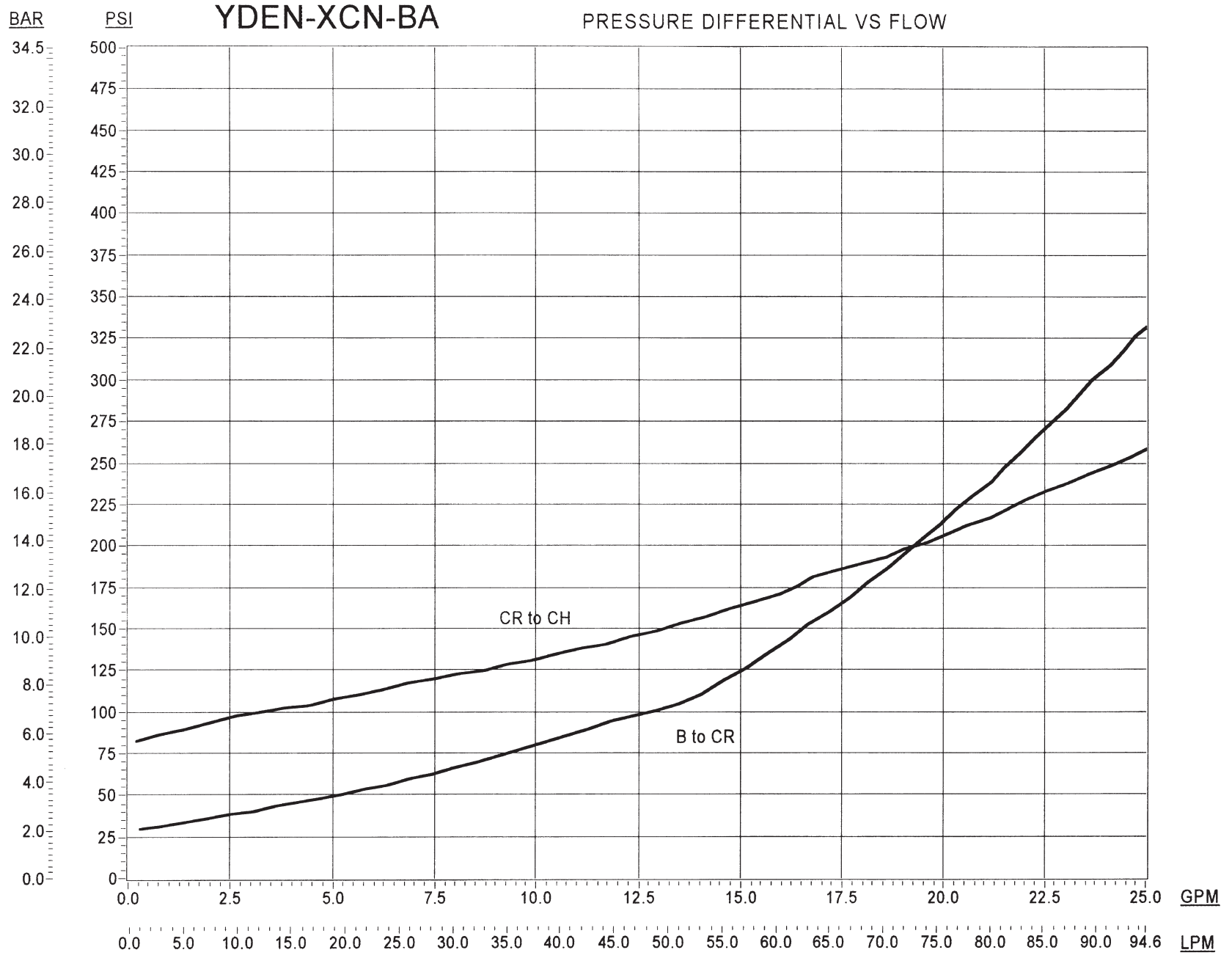
REFER TO SUN HYDRAULICS TECHNICAL LITERATURE AND CATALOG FOR THE DETAILS OF CARTRIDGE STANDARD SETTINGS, ADJUSTMENT RANGES, MAXIMUM PRESSURE RATINGS, SEAL MATERIAL, TORQUE VALUES, ETC.

5	500-001-014	"O" RING	5
4	340-001	PIPE PLUG	2
3	CXEE XCN	CHECK VALVE	1
2	COFA XEN	CHECK VALVE	1
1	150-015	BODY	1

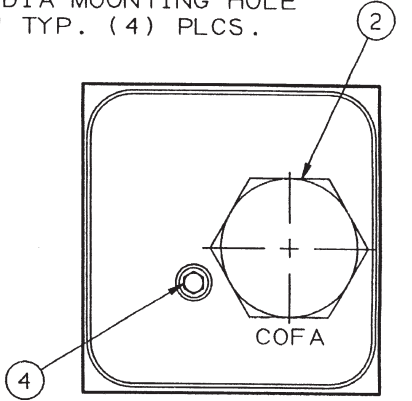
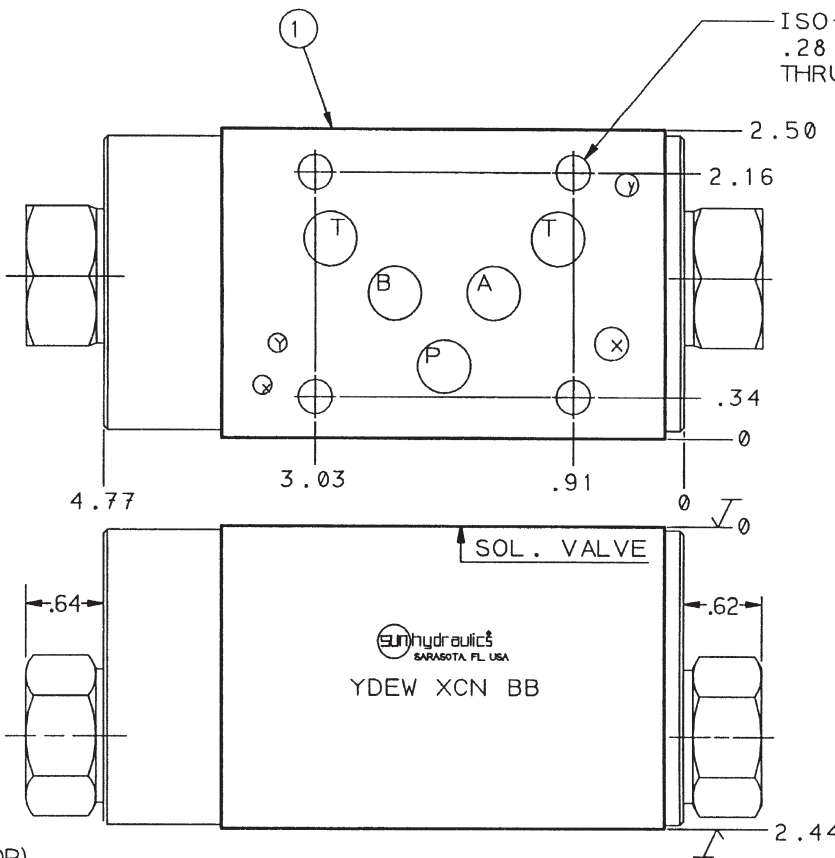
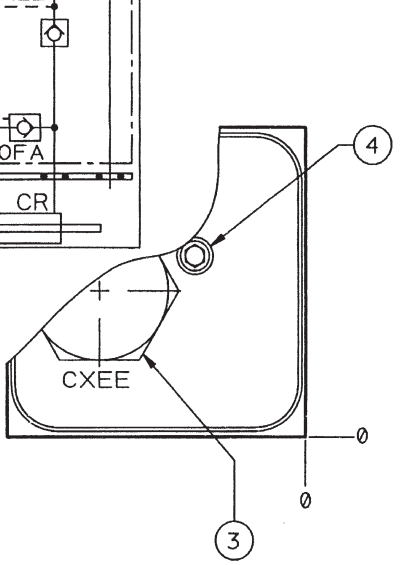
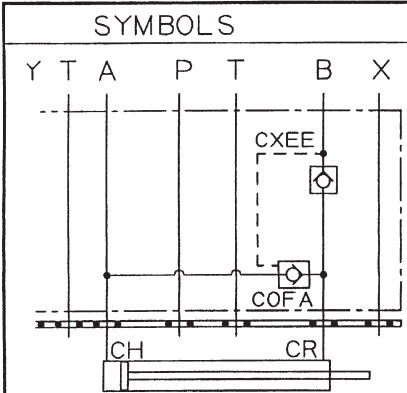
REV	PART NO.	PART NAME	QTY
1	B	YDEN XCN BA	

REV	REVISION	DATE	DRN	CHK	REL
B	REDRAWN FOR REGEN. CATALOG	22MAR88	SMS	DSS	3723
A	4.72 LENGTH WAS 4.62	25AUG98	RJB		8795
-	SEALS TO BUNA	14AUG92	RJB		2005
LTR					





REVISION PART NO.
YDEW XCN BB



INSTALLATION REQUIRES SEAL KIT:

990-120-009 BUNA-N FOR ISO-05 X,Y (U.S.)
 990-120-010 VITON FOR ISO-05 X,Y (U.S.)

990-120-011 BUNA-N FOR ISO-05 X,Y (EUROPEAN/CETOP)
 990-120-012 VITON FOR ISO-05 X,Y (EUROPEAN/CETOP)

(KIT INCLUDES SEAL PLATE AND ORINGS)

NOTES:
 REFER TO SUN HYDRAULICS TECHNICAL LITERATURE AND CATALOG FOR THE DETAILS OF CARTRIDGE STANDARD SETTINGS, ADJUSTMENT RANGES, MAXIMUM PRESSURE RATINGS, SEAL MATERIAL, TORQUE VALUES, ETC.

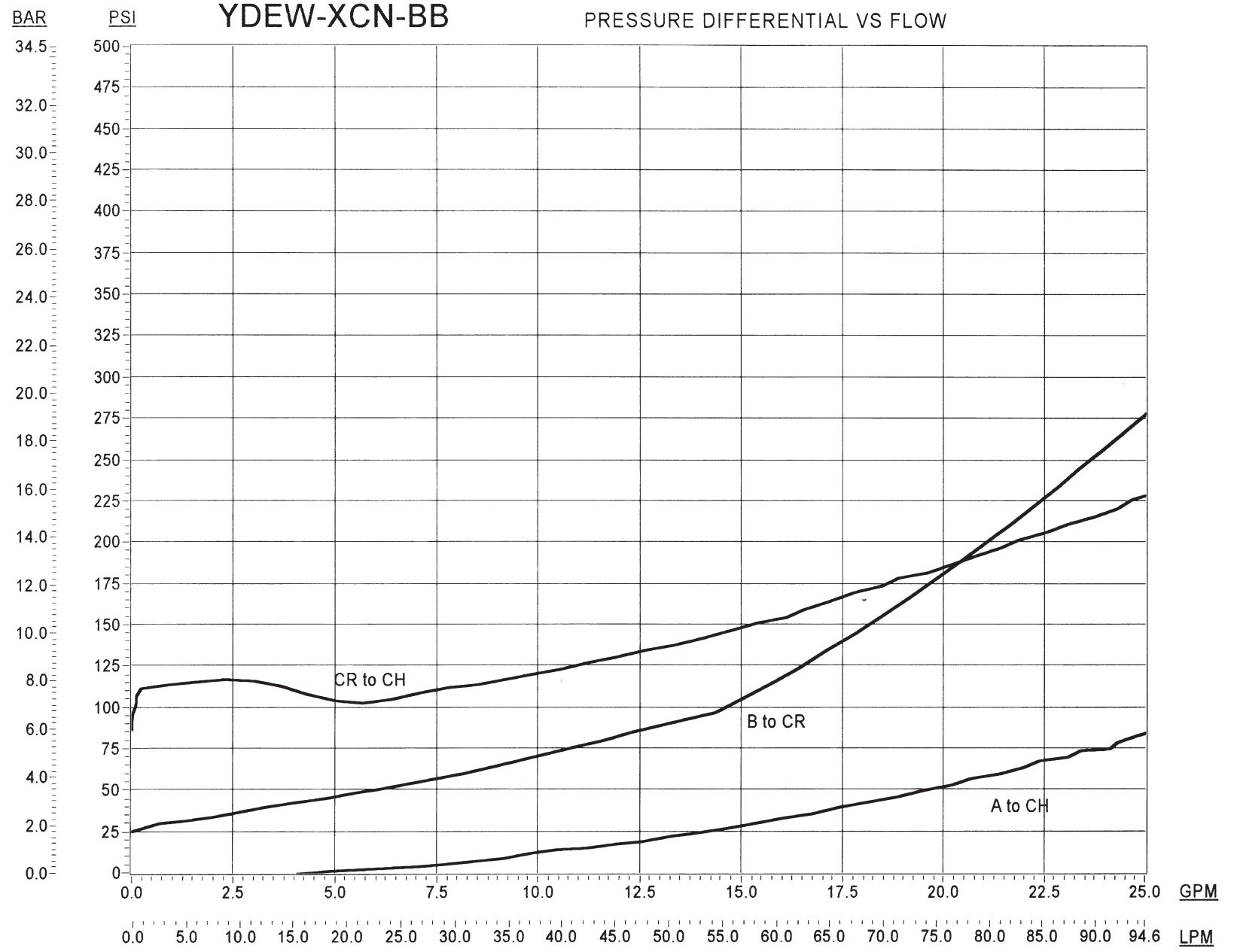
4	340-001	PIPE PLUG	2
3	CXEE XCN	CHECK VALVE	1
2	COFA XEN	CHECK VALVE	1
1	150-700	BODY	1

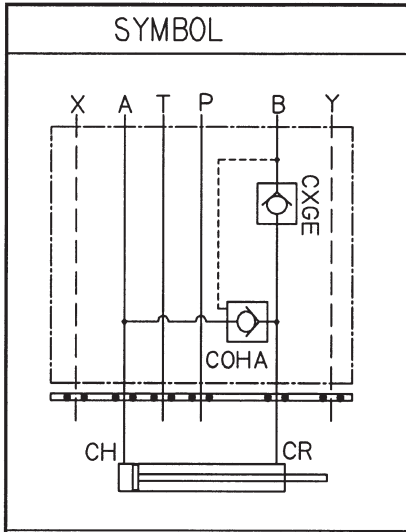
ITEM	PART NO.	PART NAME	QTY
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OUTLINE & ASSEMBLY

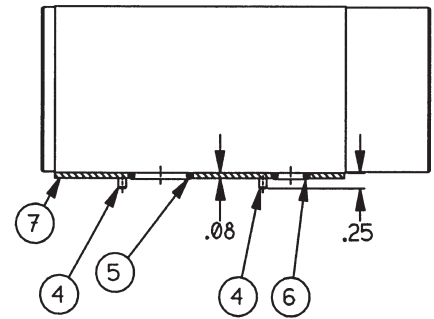
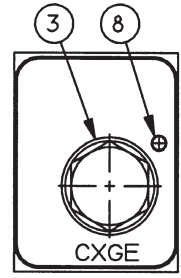
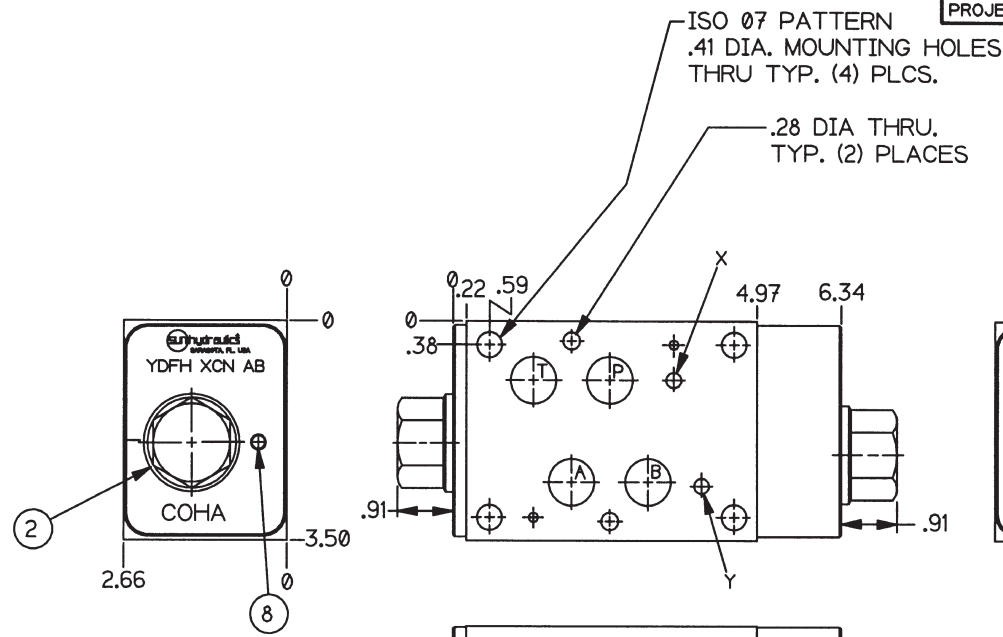
TITLE ISO-05 X,Y PATTERN FULL TIME REGENERATIVE VALVE FLOW B TO A				REVISION PART NO. YDEW XCN BB	
DIMENSION TOL XX = +/- .015 XXX = +/- .005 MACHINING STANDARD 5-100		SCALE REF 1:1		MATERIAL ALUM & STEEL	
ANGLE TOL +/- 1 FINISH #4V		DRAWN SMS	CHECK NHH	HEAT TREAT & FINISH	
REMOVE ALL BURRS +.005 MAX. BREAK		DATE 10APR00	DATE 10APR00	DATE 10APR00	







THIRD ANGLE PROJECTION REVISION PART NO. D YDFH XCN AB



NOTES:
REFER TO SUN HYDRAULICS TECHNICAL LITERATURE AND CATALOG FOR THE DETAILS OF CARTRIDGE STANDARD SETTINGS, ADJUSTMENT RANGES, MAXIMUM PRESSURE RATINGS, SEAL MATERIAL, TORQUE VALUES, ETC.

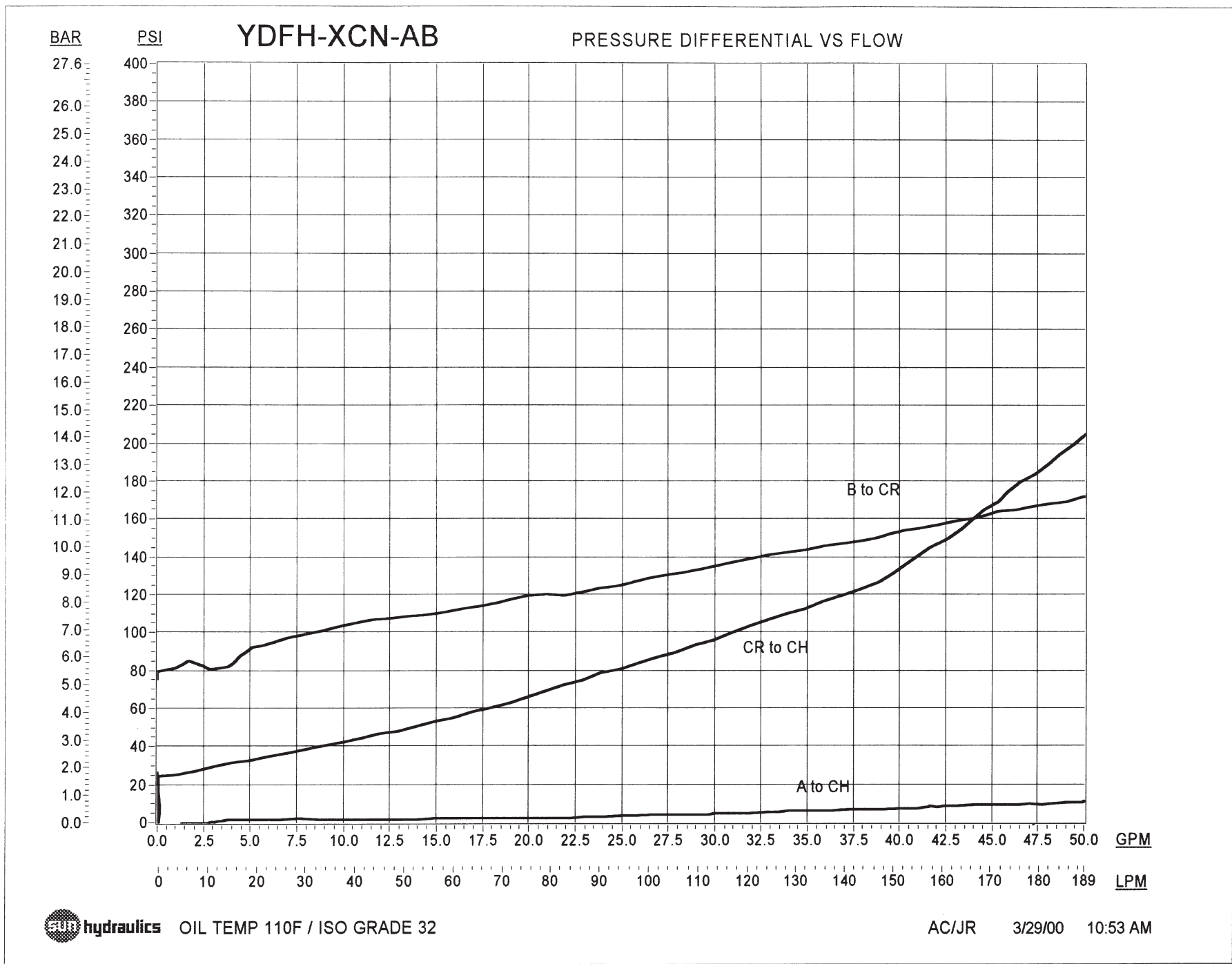
8	850-004-250	KOENIG PLUG	2
7	700-006	SEAL PLATE	1
6	500-001-111	"O" RING	2
5	500-001-118	"O" RING	4
4	811-001-006	PIN	2
3	CXGE XCN	COUNTERBALANCE VALVE	1
2	COHA XEN	CHECK VALVE	1
1	152-746	BODY	1
ITEM		PART NO.	PART NAME
		D	YDFH XCN AB

OUTLINE & ASSEMBLY

D	REDRAWN FOR REGEN. CATALOG	23MAR90	SMSDSS	8723
C	MOVED COHA SLIGHTLY	28APR94	RJB	5686
B	CORRECTED NOTE#4	11DEC92	DAS	4237
A	REMOVED REGENERATION NOTE	1MAY92	BRS	
LTR	REVISION	DATE	DRN	CHK/REL

UNLESS OTHERWISE SPECIFIED		TITLE ISO-07 FULL TIME REGENERATIVE VALVE FLOW B TO A		REVISION PART NO. D YDFH XCN AB	
DIMENSION TOL		SCALE REF 1:2		MATERIAL ALUM. & STEEL	
.X = +/- .030		DRAWN RJB		HEAT TREAT & FINISH	
.XX = +/- .015		CHECK DAS			
.XXX = +/- .005		RELEASE 3435			
ANGLE TOL +/- 1		DATE 18DEC91		DATE 19DEC91	
FINISH 80 V		DATE 18DEC91		DATE 19DEC91	
REMOVE ALL BURRS					





SYMBOL

THIRD ANGLE PROJECTION

REVISION	PART NO.
A	YDFI XCN AB

ISO 07 PATTERN
.41 DIA. MOUNTING HOLES
THRU TYP. (4) PLCS.

.28 DIA THRU.
TYP. (2) PLACES

3.50
2.66

.38
1.44
1.81
6.34
6.19
.91

.08
.25

NOTES:

REFER TO SUN HYDRAULICS TECHNICAL LITERATURE AND CATALOG FOR THE DETAILS OF CARTRIDGE STANDARD SETTINGS, ADJUSTMENT RANGES, MAXIMUM PRESSURE RATINGS, SEAL MATERIAL, TORQUE VALUES, ETC.

ITEM	PART NO.	PART NAME	QTY
8	340-001	PIPE PLUG	2
7	700-006	SEAL PLATE	1
6	500-001-111	"O" RING	2
5	500-001-118	"O" RING	4
4	811-001-006	PIN	2
3	CXGE XCN	CHECK VALVE	1
2	COHA XEN	CHECK VALVE	1
1	151-146	BODY	1

UNLESS OTHERWISE SPECIFIED					
DIMENSION TOL					
.X = +/- .030					
.XX = +/- .015					
.XXX = +/- .005					
ANGLE TOL +/- 1					
FINISH # V					
REMOVE ALL BURRS					

OUTLINE & ASSEMBLY

TITLE ISO-07 FULL TIME
REGENERATIVE VALVE
FLOW A TO B

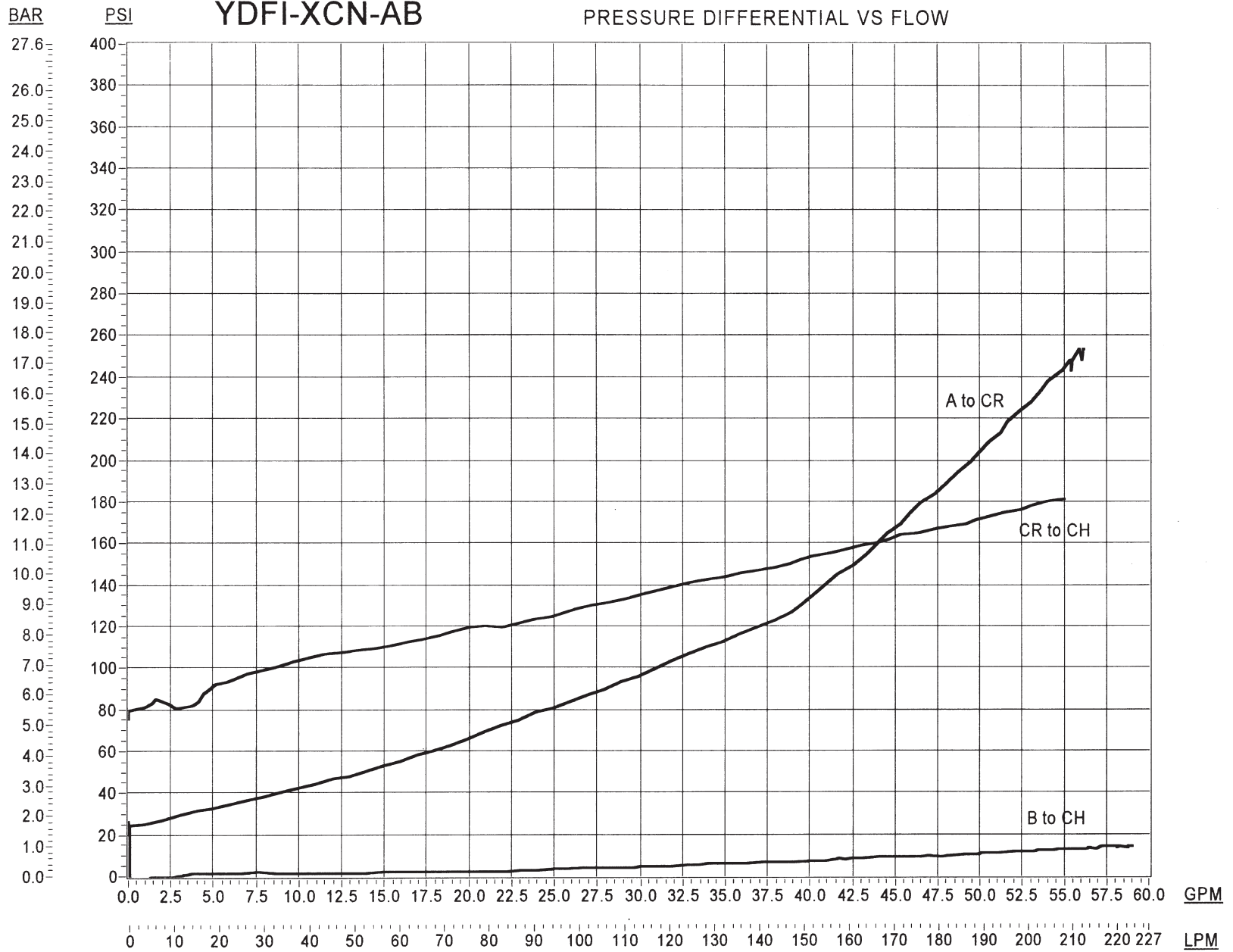
DRAWN BRS	CHECK RJB	RELEASE 2149
DATE 05JUL89	DATE 05JUL89	DATE 05JUL89

REVISION	PART NO.
A	YDFI XCN AB

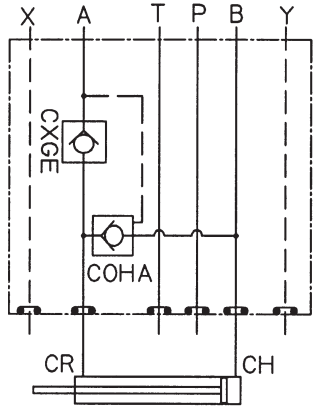
SUN hydraulics®

CORPORATION
791 TALLEVAST ROAD
SARASOTA, FLORIDA 34243, USA
TELEPHONE (941) 362-1360

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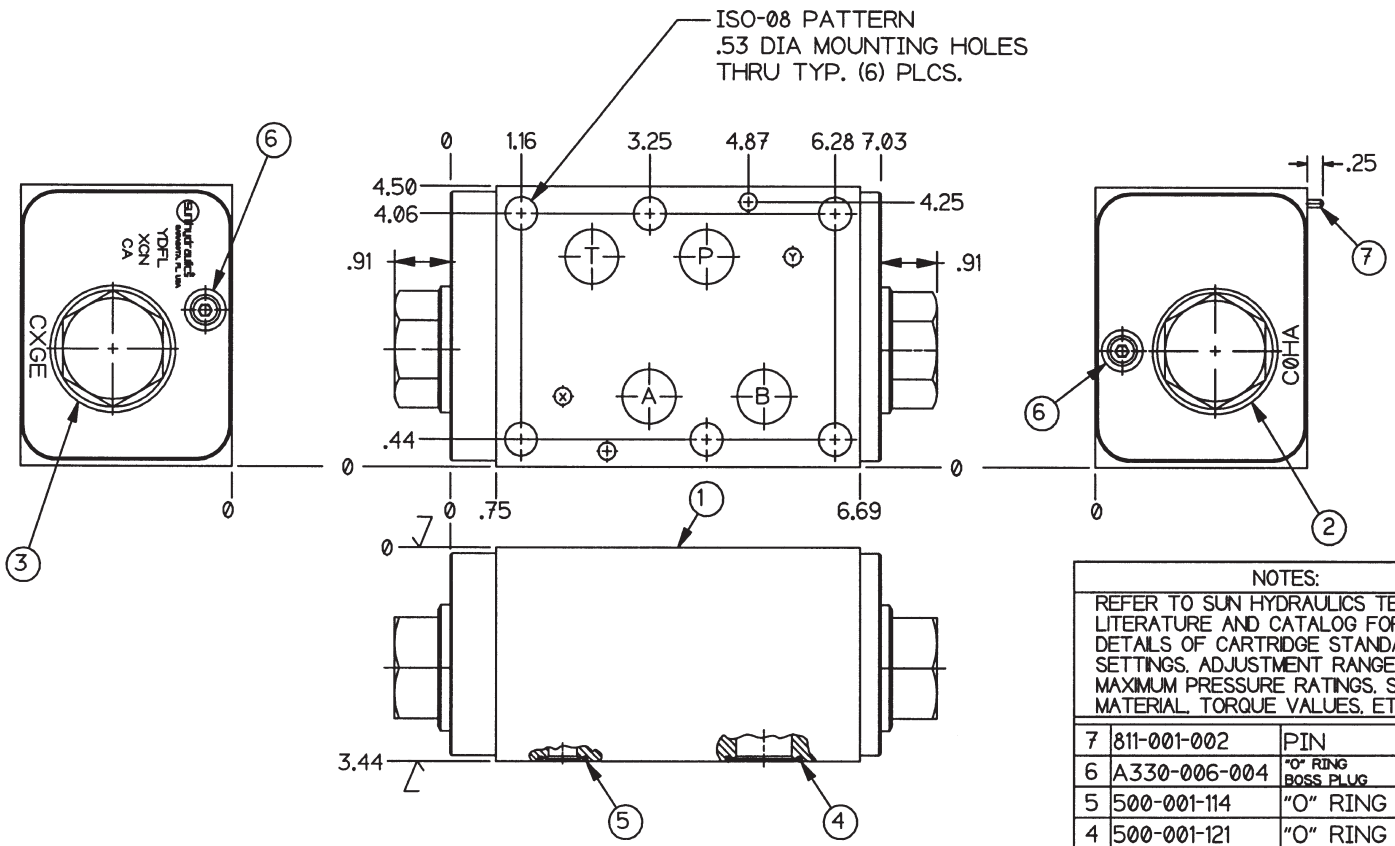
SYMBOL



THIRD ANGLE PROJECTION



REVISION PART NO.
A YDFL XCN CA



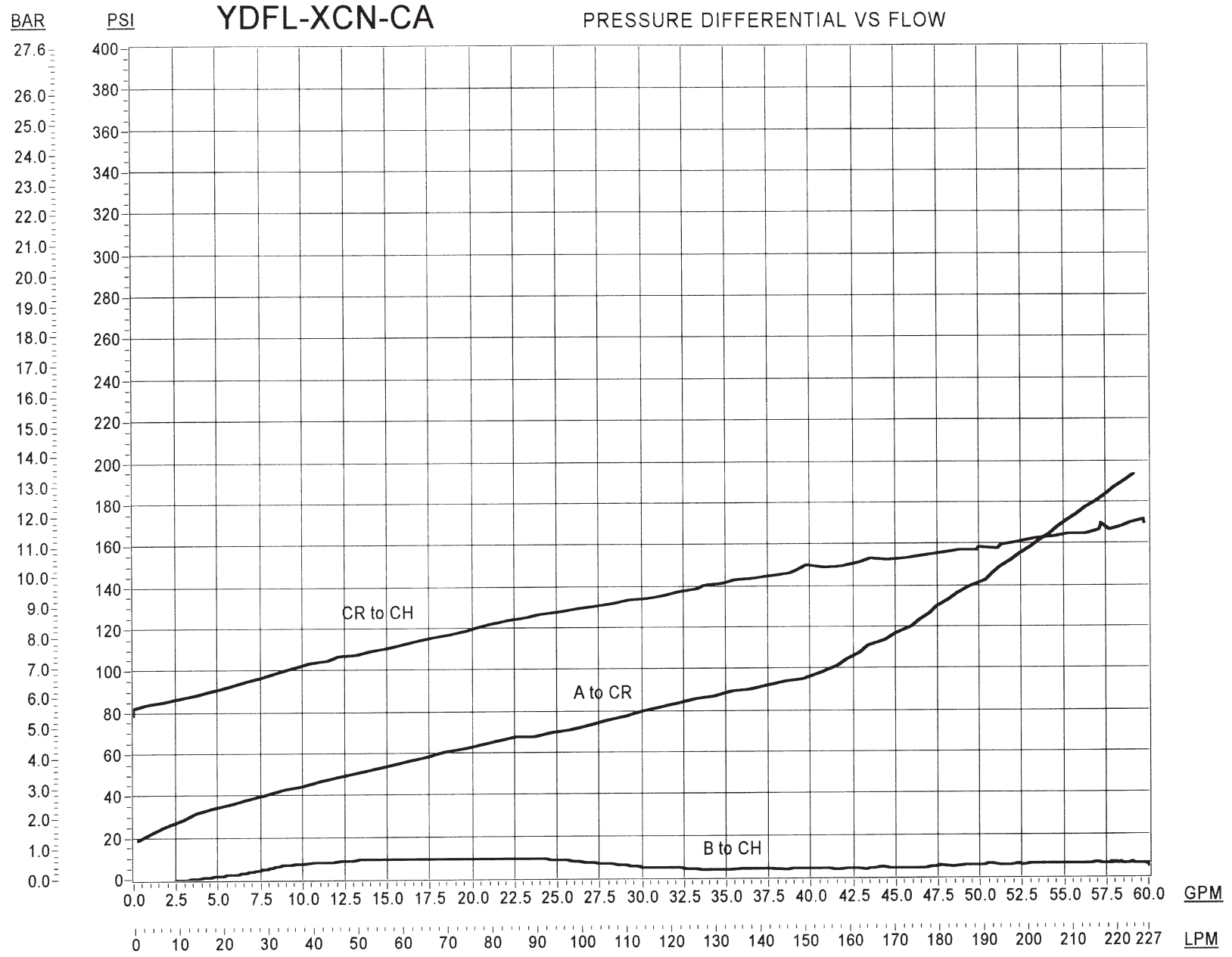
NOTES:
REFER TO SUN HYDRAULICS TECHNICAL LITERATURE AND CATALOG FOR THE DETAILS OF CARTRIDGE STANDARD SETTINGS, ADJUSTMENT RANGES, MAXIMUM PRESSURE RATINGS, SEAL MATERIAL, TORQUE VALUES, ETC.

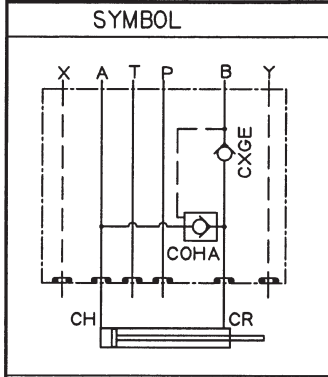
7	811-001-002	PIN	1
6	A330-006-004	"O" RING BOSS PLUG	2
5	500-001-114	"O" RING	2
4	500-001-121	"O" RING	4
3	CXGE XCN	CHECK VALVE	1
2	COHA XEN	CHECK VALVE	1
1	153-055	BODY	1
ITEM	PART NO.	PART NAME	QTY

OUTLINE & ASSEMBLY

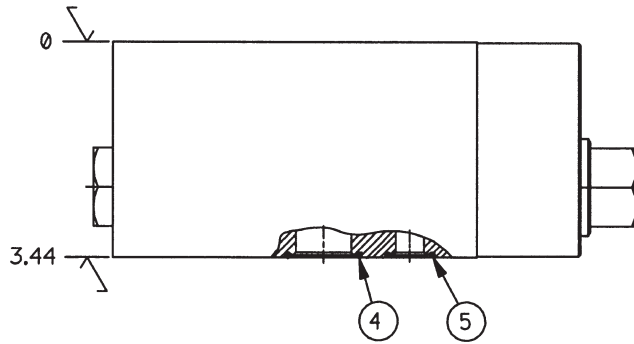
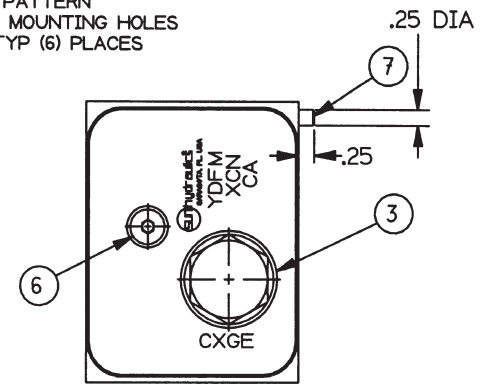
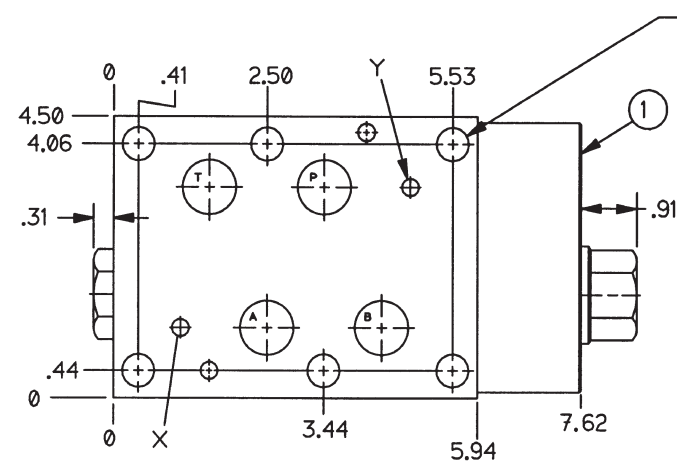
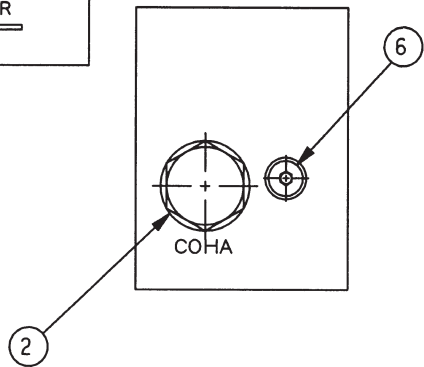
UNLESS OTHERWISE SPECIFIED				TITLE ISO-08 FULL TIME REGENERATIVE VALVE FLOW A TO B				REVISION PART NO. A YDFL XCN CA	
DIMENSION TOL				SCALE REF		MATERIAL			
.X = +/- .030				1:2		ALUMINUM			
.XX = +/- .015				DRAWN		CHECK		HEAT TREAT & FINISH	
.XXX = +/- .005				DAS		4245			
ANGLE TOL +/- 1				DATE		DATE		DATE	
FINISH #0				1DEC92		14DEC92		14DEC92	
REMOVE ALL BURRS									
IT#7 WAS IT#8 OLD IT#7 DELETED IT#6				23MAR90		SMS		DSS 9723	
WAS 330-006-004 REDRAWN FOR REGEN.									
CATALOG									
LTR	REVISION	DATE	DRN	CHK	REL				







THIRD ANGLE PROJECTION REVISION PART NO.
 A YDFM XCN CA



NOTES:
 REFER TO SUN HYDRAULICS TECHNICAL LITERATURE AND CATALOG FOR THE DETAILS OF CARTRIDGE STANDARD SETTINGS, ADJUSTMENT RANGES, MAXIMUM PRESSURE RATINGS, SEAL MATERIAL, TORQUE VALUES, ETC.

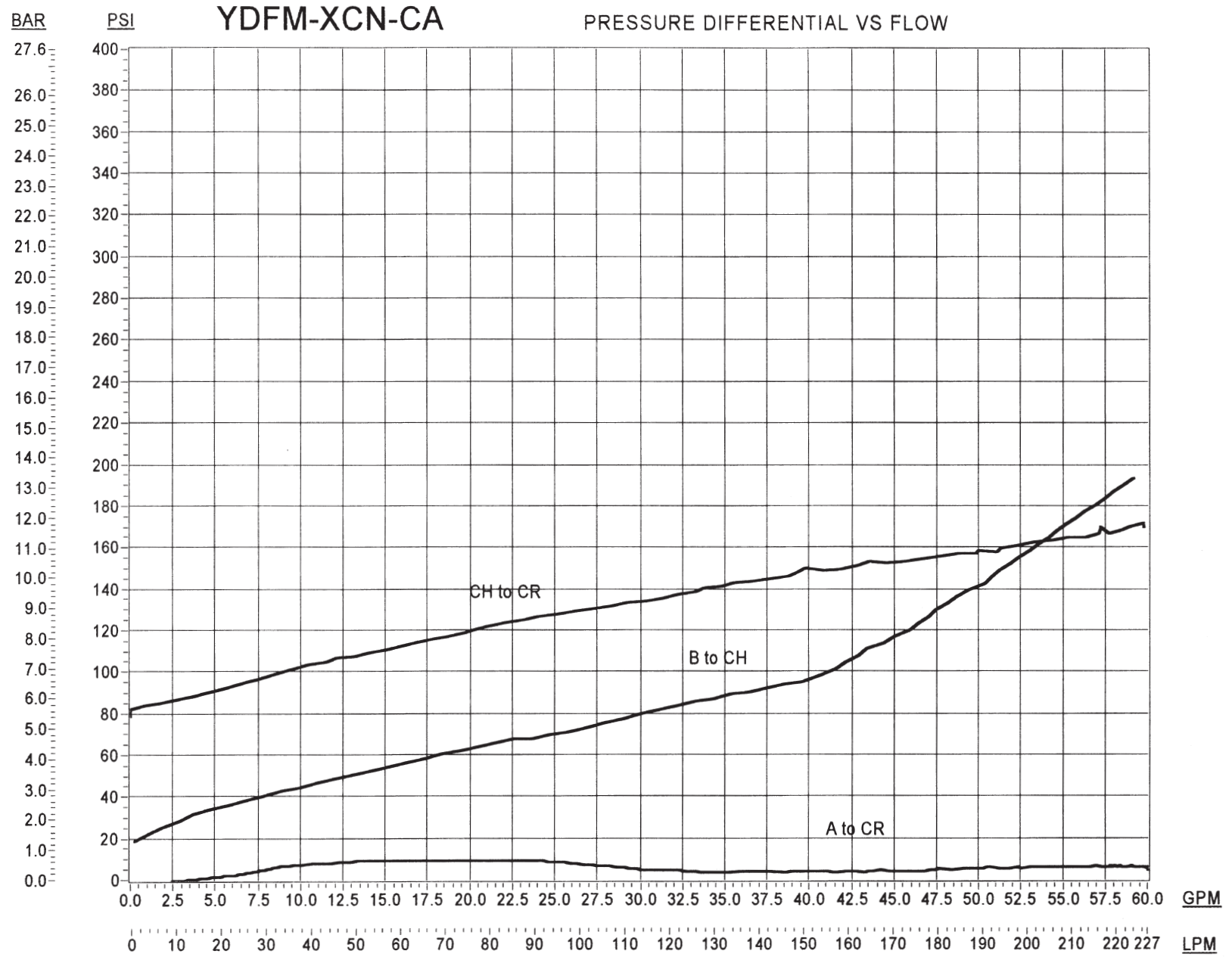
ITEM	PART NO.	PART NAME	QTY
7	811-001-002	PIN	1
6	A330-006-004	"O" RING BOSS PLUG	2
5	500-001-114	"O" RING	2
4	500-001-121	"O" RING	4
3	CXGE XCN	CHECK VALVE	1
2	COHA XEN	CHECK VALVE	1
1	153-056	BODY	1

IT#7 WAS IT#8 OLD IT#7 DELETED IT#6				
A WAS 330-006-004 REDRAWN FOR REGEN. CATALOG	23MAR00	SMS	DSS	9723
LTR	REVISION	DATE	DRN	CHK REL

UNLESS OTHERWISE SPECIFIED	TITLE ISO-08 FULL TIME REGENERATIVE VALVE FLOW B TO A		
DIMENSION TOL	SCALE REF	MATERIAL	
.X = +/- .030	1:2	ALUM. & STEEL	
.XX = +/- .015		HEAT TREAT & FINISH	
.XXX = +/- .005	DRAWN	CHECK	RELEASE
ANGLE TOL +/- 1	DAS		
FINISH #0 V	DATE	DATE	DATE
REMOVE ALL BURRS	01DEC92		

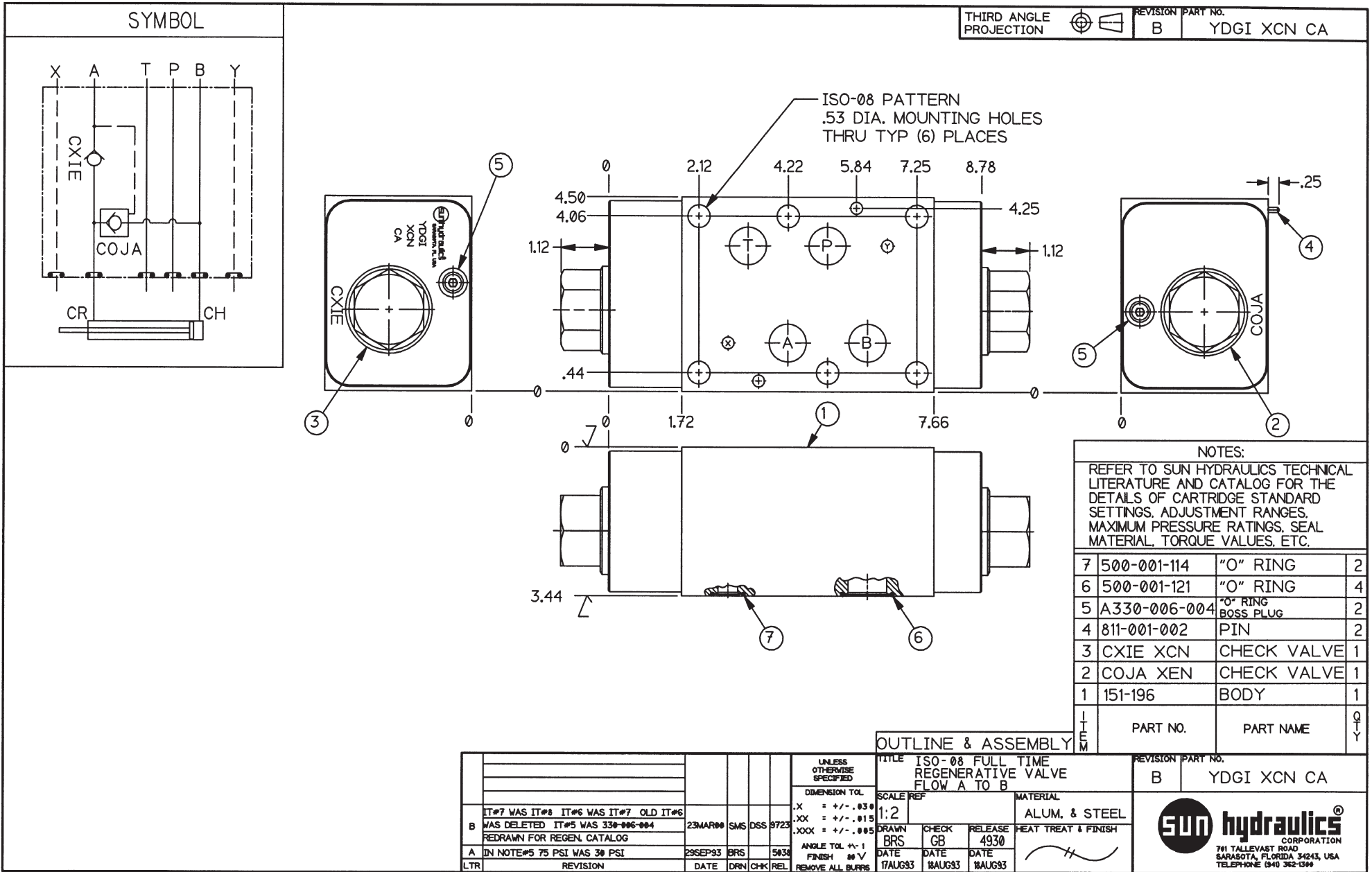
REVISION PART NO.
 A YDFM XCN CA

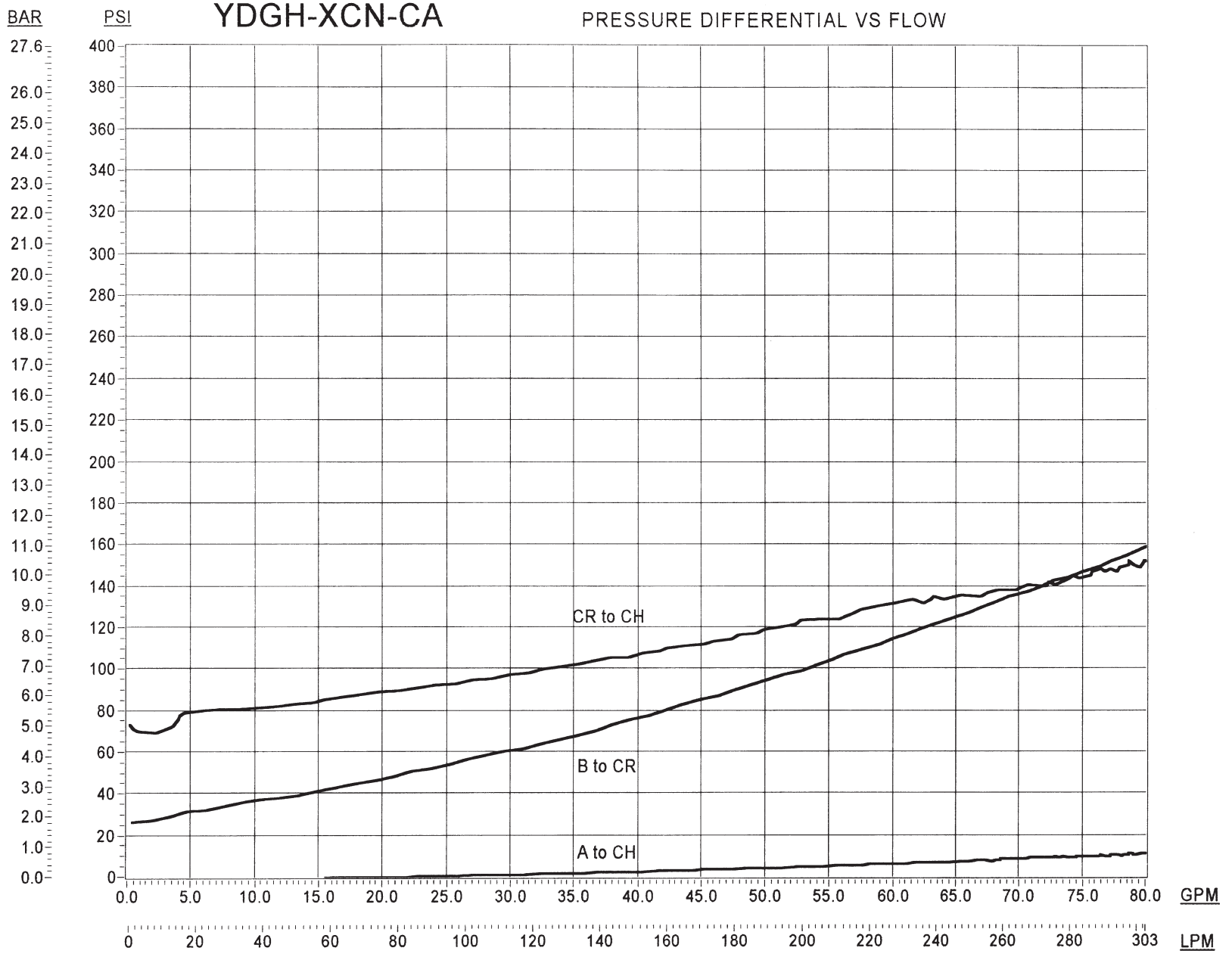
SUN hydraulics CORPORATION
 701 TALLEVAST ROAD
 SARASOTA, FLORIDA 34243, USA
 TELEPHONE (810) 362-1300

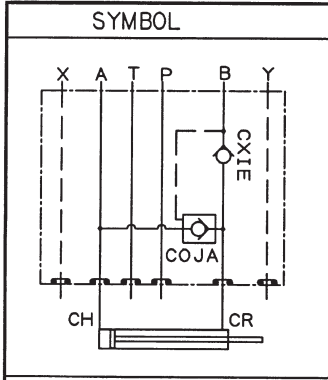


 **sun hydraulics** OIL TEMP 110F / ISO GRADE 32

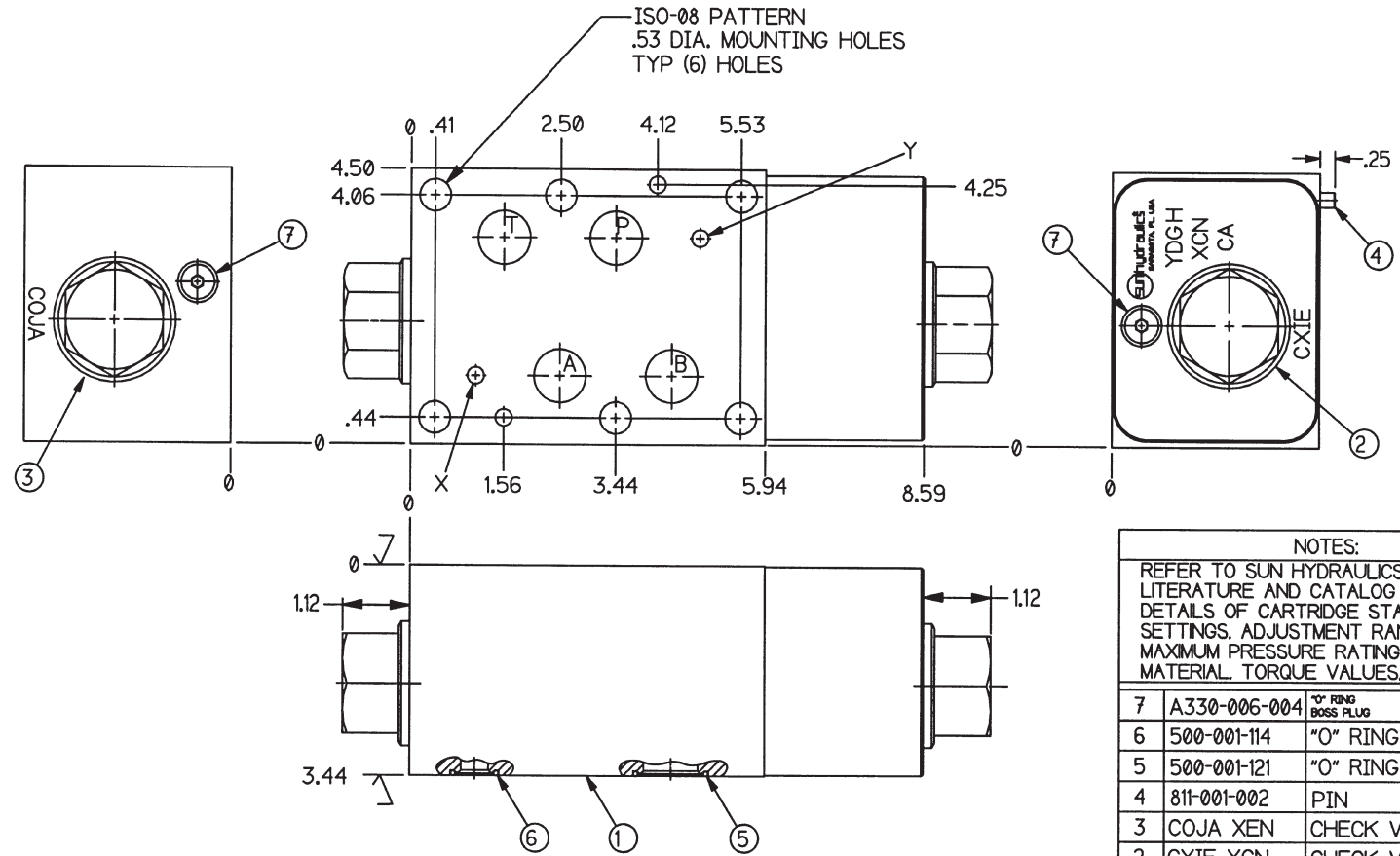
AC/JR 3/29/00 11:11 AM







THIRD ANGLE PROJECTION REVISION PART NO.
 A YDGH XCN CA

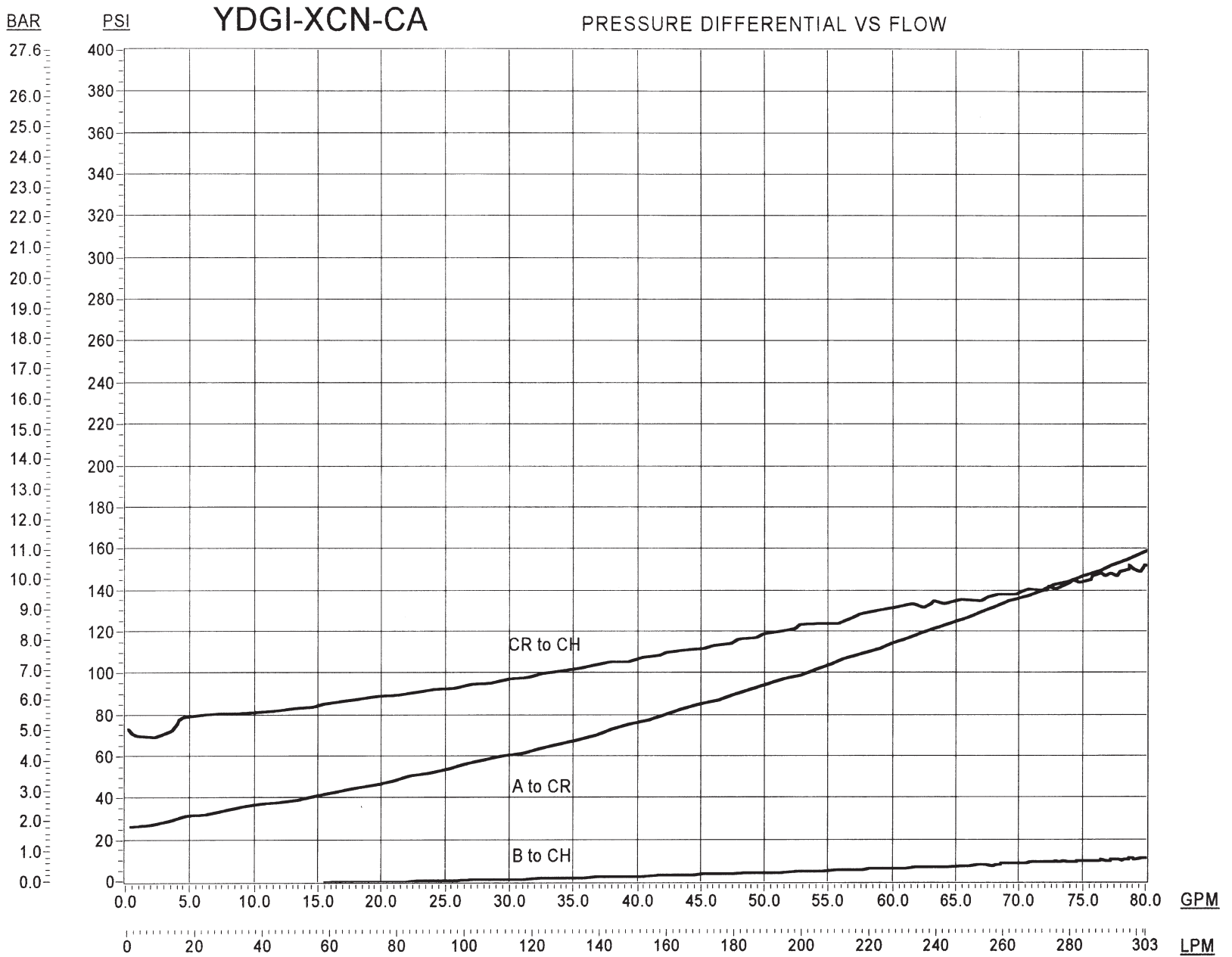


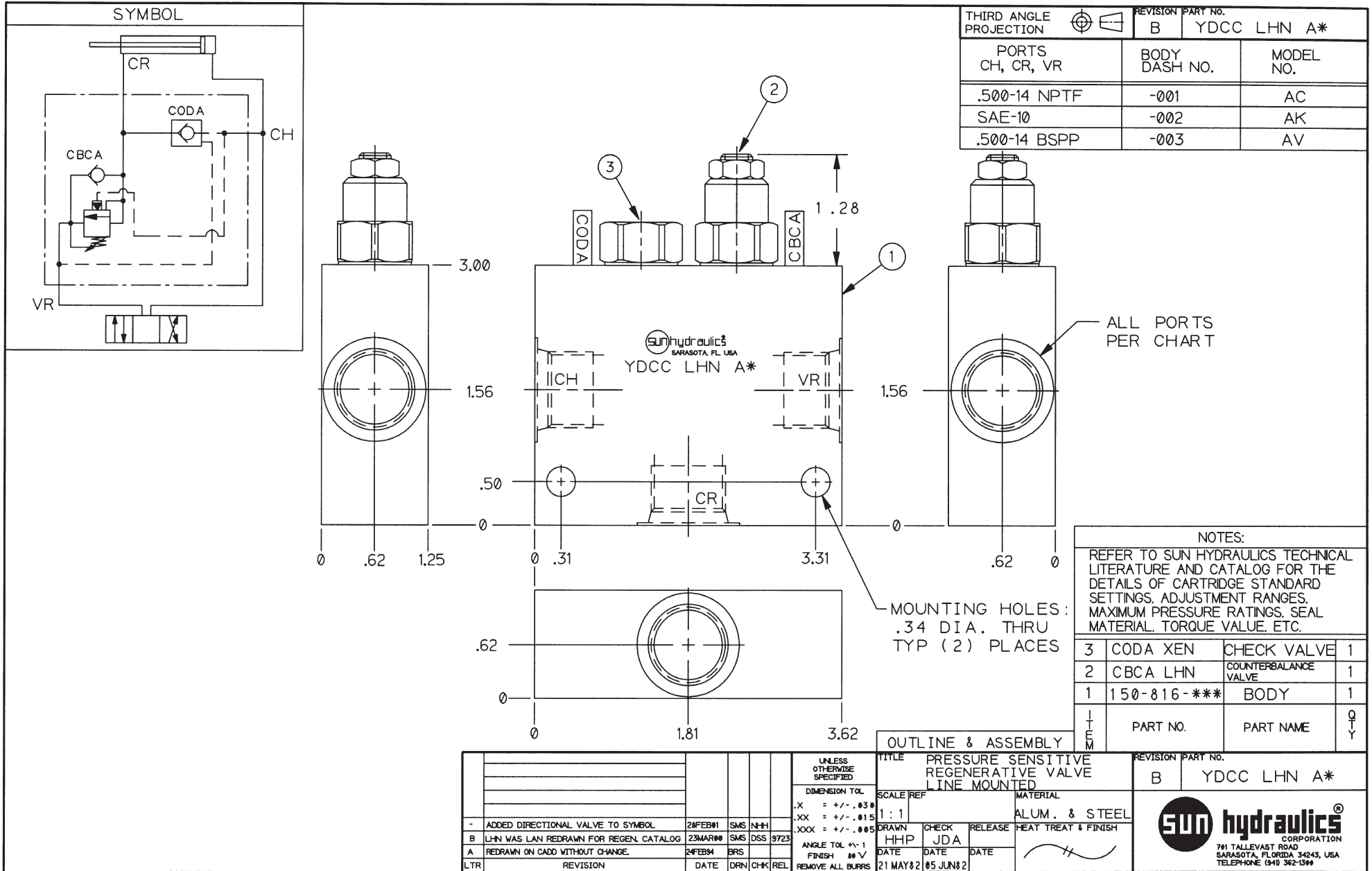
NOTES:
 REFER TO SUN HYDRAULICS TECHNICAL LITERATURE AND CATALOG FOR THE DETAILS OF CARTRIDGE STANDARD SETTINGS, ADJUSTMENT RANGES, MAXIMUM PRESSURE RATINGS, SEAL MATERIAL, TORQUE VALUES, ETC.

ITEM	PART NO.	PART NAME	QTY
7	A330-006-004	O ^h RING BOSS PLUG	2
6	500-001-114	"O" RING	2
5	500-001-121	"O" RING	4
4	811-001-002	PIN	1
3	COJA XEN	CHECK VALVE	1
2	CXIE XCN	CHECK VALVE	1
1	151-537	BODY	1

					OUTLINE & ASSEMBLY			REVISION PART NO. A YDGH XCN CA	
					TITLE ISO-08 FULL TIME REGENERATIVE VALVE FLOW B TO A			MATERIAL ALUM. & STEEL	
					SCALE REF 1:2				
					DRAWN BRS CHECK DAS RELEASE DATE DATE DATE			HEAT TREAT & FINISH 	
					DATE 1MAY92 DATE 1MAY92 DATE				
UNLESS OTHERWISE SPECIFIED					DIMENSION TOL .X = +/- .030 .XX = +/- .015 .XXX = +/- .005				
A DELETED IT# IT#7 WAS 338-006-004 REDRAWN FOR REGEN. CATALOG					23MAR90 SMS DSS 9723				
LTR REVISION					DATE DRN CHK REL				
					ANGLE TOL +/- 1 FINISH #0 V REMOVE ALL BURRS				







THIRD ANGLE PROJECTION	REVISION B	PART NO. YDCC LHN A*
PORTS CH, CR, VR	BODY DASH NO.	MODEL NO.
.500-14 NPTF	-001	AC
SAE-10	-002	AK
.500-14 BSPP	-003	AV

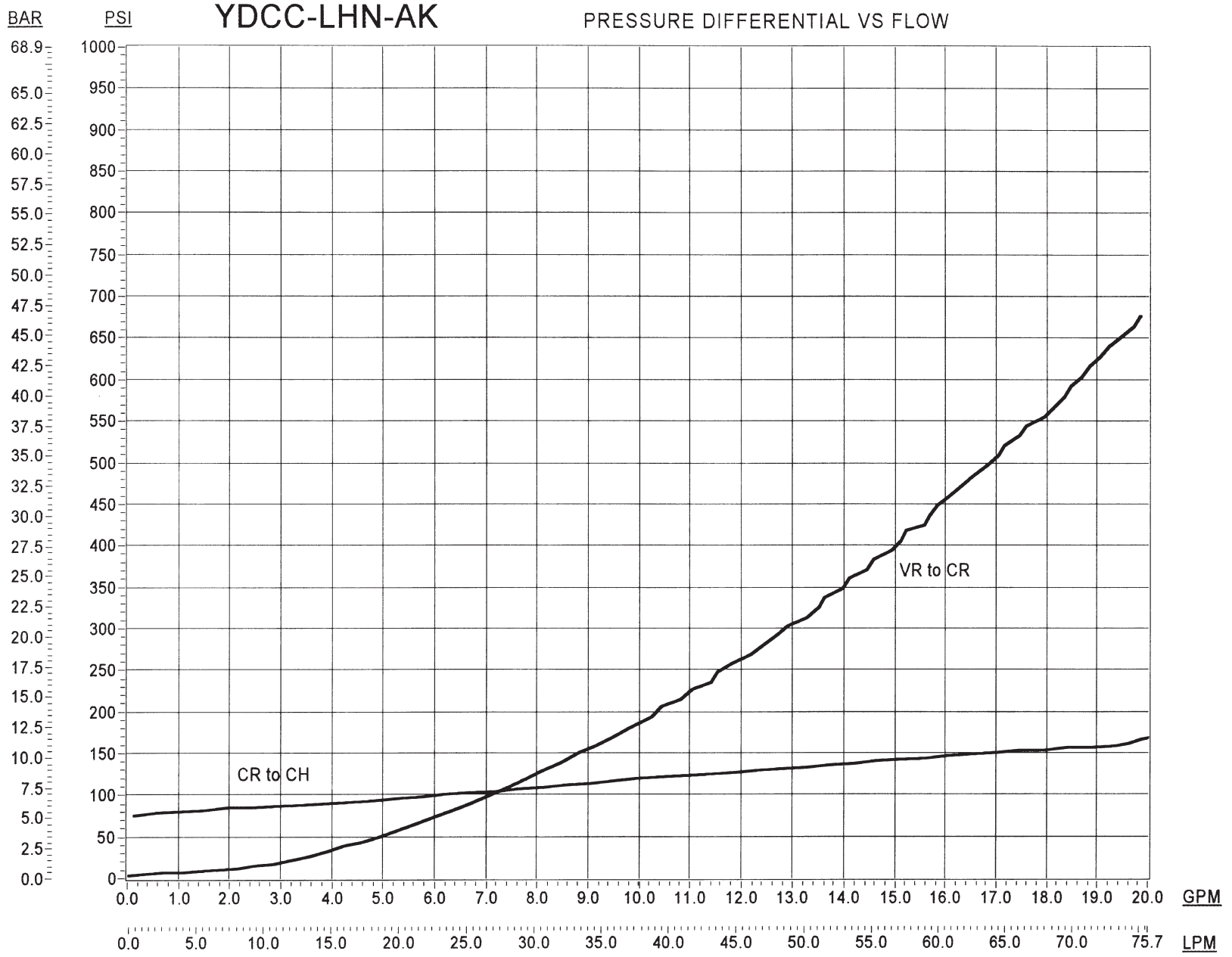
NOTES:
REFER TO SUN HYDRAULICS TECHNICAL LITERATURE AND CATALOG FOR THE DETAILS OF CARTRIDGE STANDARD SETTINGS, ADJUSTMENT RANGES, MAXIMUM PRESSURE RATINGS, SEAL MATERIAL, TORQUE VALUE, ETC.

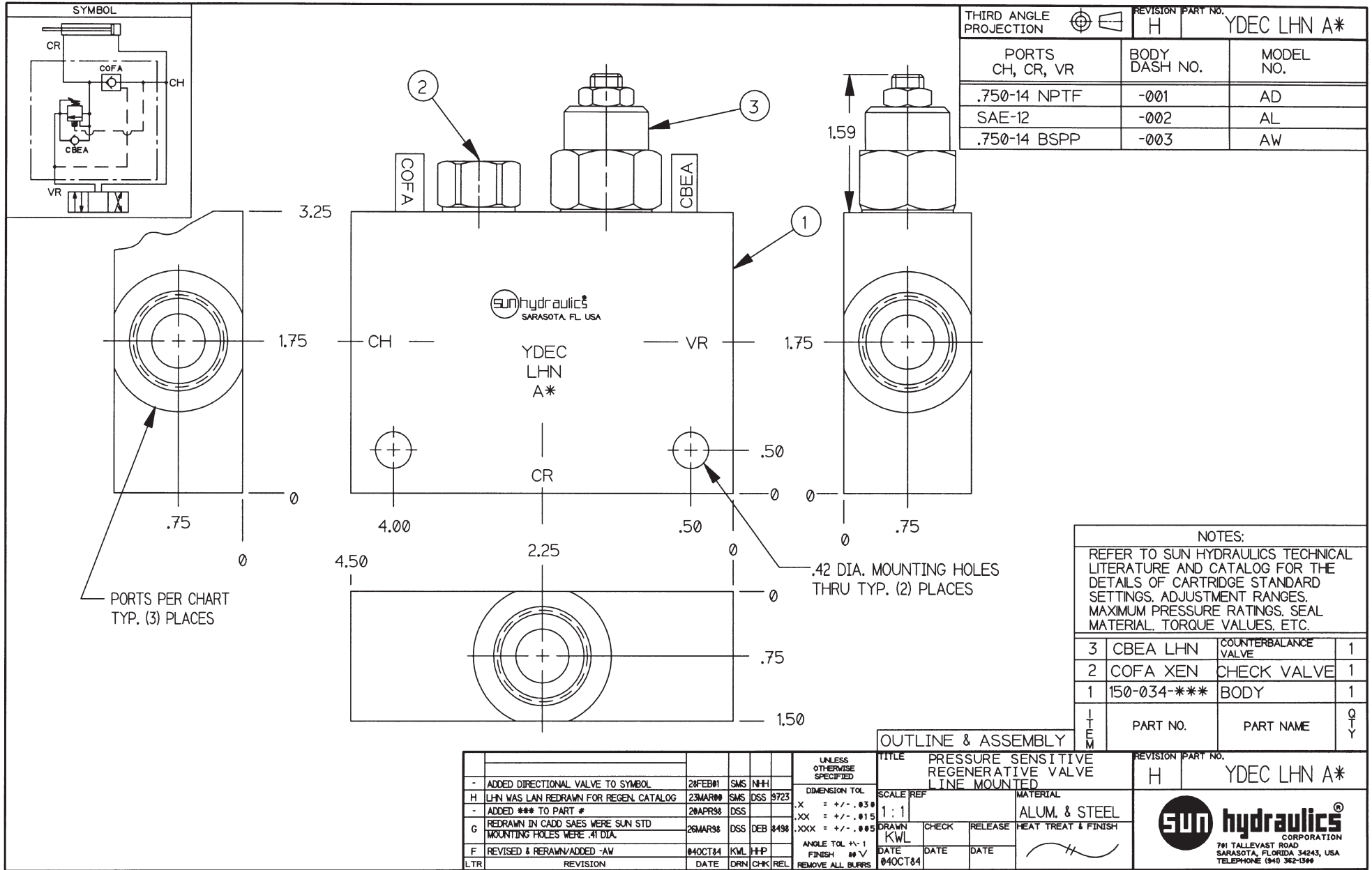
3	CODA XEN	CHECK VALVE	1
2	CBCA LHN	COUNTERBALANCE VALVE	1
1	150-816-***	BODY	1

ITEM	PART NO.	PART NAME	QTY
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UNLESS OTHERWISE SPECIFIED				TITLE PRESSURE SENSITIVE REGENERATIVE VALVE LINE MOUNTED				REVISION PART NO. B YDCC LHN A*			
DIMENSION TOL				SCALE REF 1:1				MATERIAL ALUM. & STEEL			
.X = +/- .030				DRAWN HHP				HEAT TREAT & FINISH			
.XX = +/- .015				CHECK JDA							
.XXX = +/- .005				RELEASE							
ANGLE TOL +/- 1				DATE 21 MAY 82				DATE 05 JUN 82			
FINISH #0 V											
REMOVE ALL BURRS											

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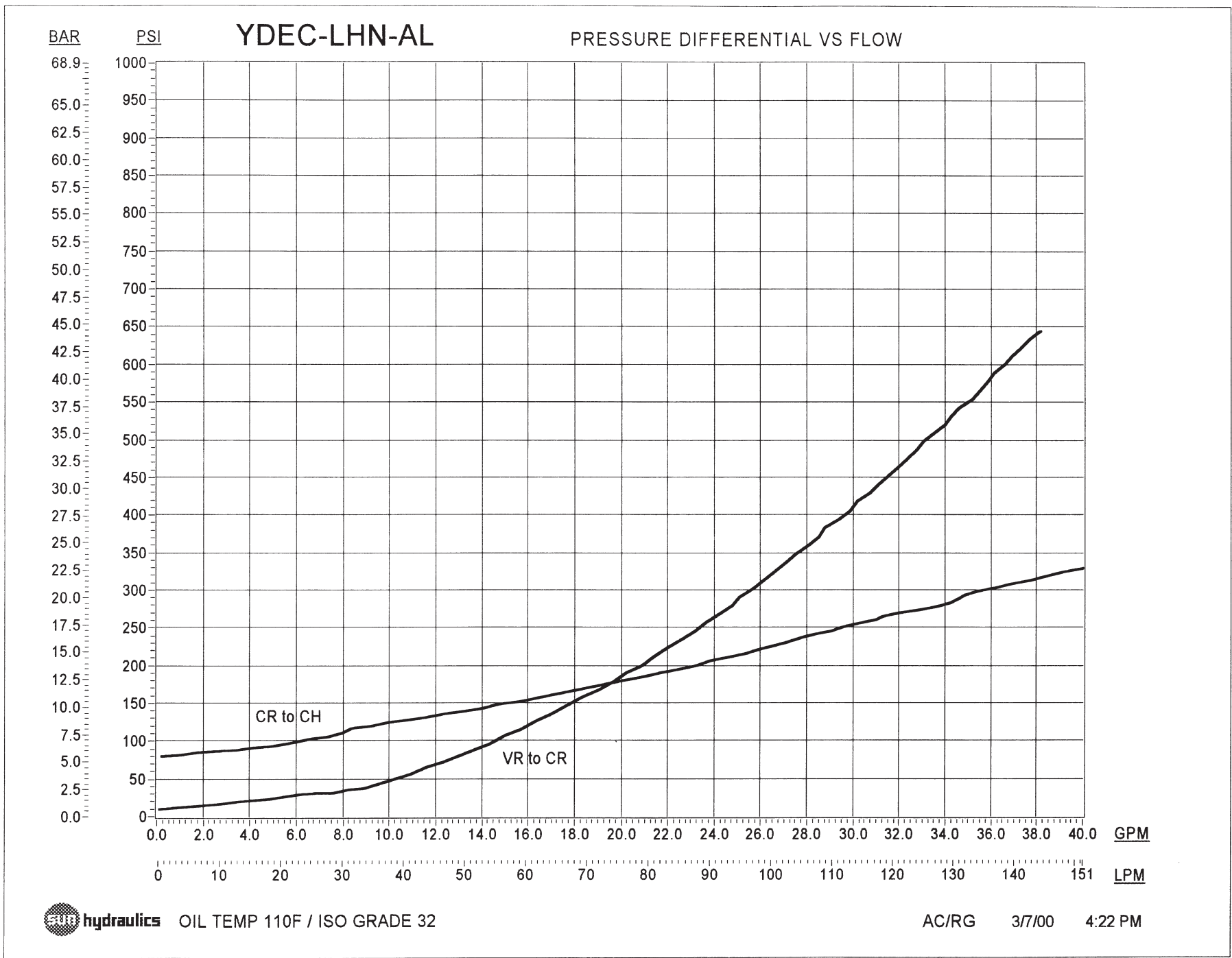
THIRD ANGLE PROJECTION	REVISION H	PART NO. YDEC LHN A*
PORTS CH, CR, VR	BODY DASH NO.	MODEL NO.
.750-14 NPTF	-001	AD
SAE-12	-002	AL
.750-14 BSPP	-003	AW

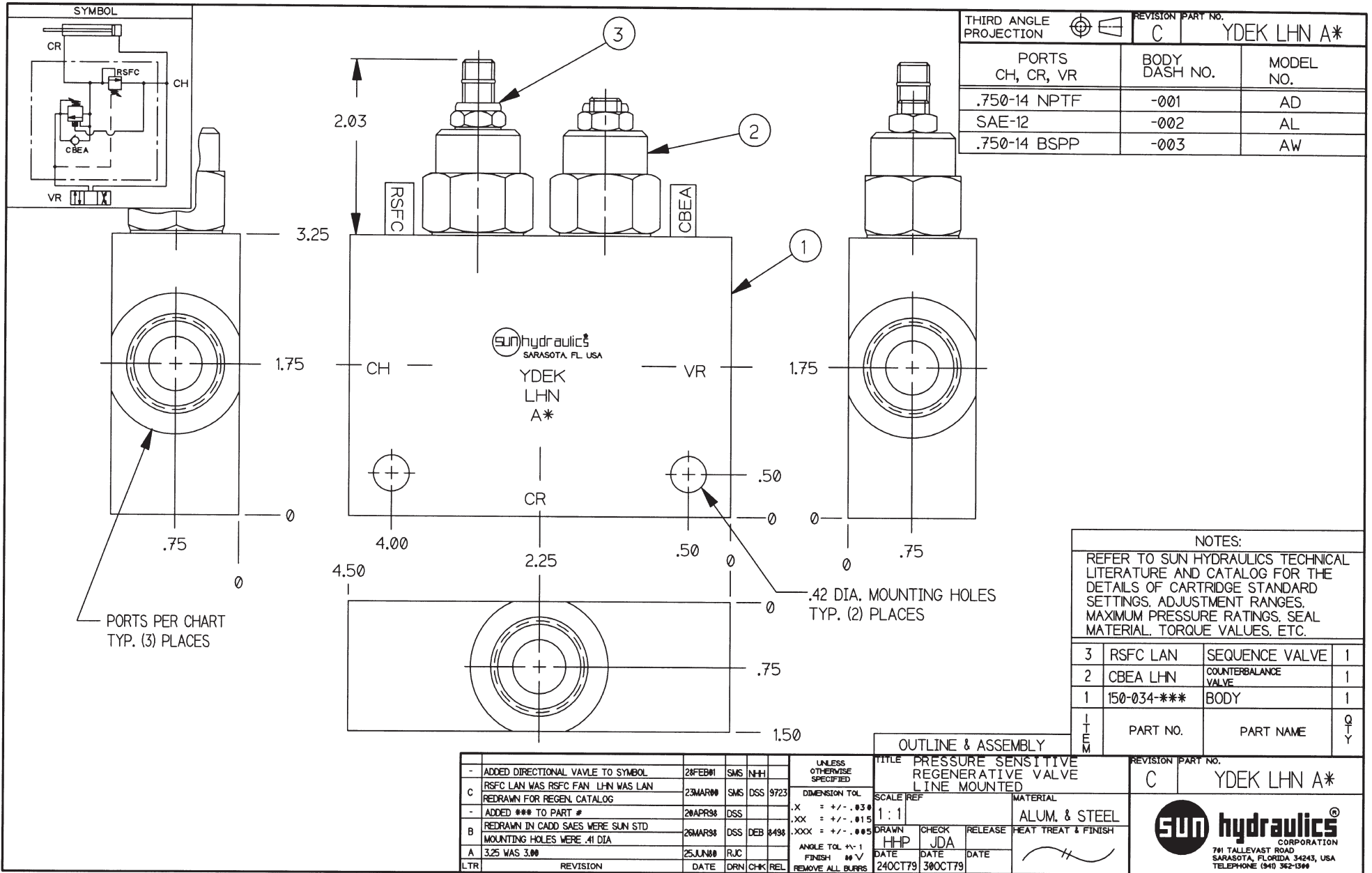
NOTES:
REFER TO SUN HYDRAULICS TECHNICAL LITERATURE AND CATALOG FOR THE DETAILS OF CARTRIDGE STANDARD SETTINGS, ADJUSTMENT RANGES, MAXIMUM PRESSURE RATINGS, SEAL MATERIAL, TORQUE VALUES, ETC.

3	CBEA LHN	COUNTERBALANCE VALVE	1
2	COFA XEN	CHECK VALVE	1
1	150-034-***	BODY	1
ITEM	PART NO.	PART NAME	QTY

UNLESS OTHERWISE SPECIFIED				TITLE PRESSURE SENSITIVE REGENERATIVE VALVE LINE MOUNTED		REVISION PART NO. H YDEC LHN A*	
DIMENSION TOL				SCALE REF 1:1		MATERIAL ALUM. & STEEL	
.X = +/- .030				DRAWN KWL		HEAT TREAT & FINISH	
.XX = +/- .015				CHECK DATE		RELEASE DATE	
.XXX = +/- .005				DATE 04OCT84			
ANGLE TOL +/- 1 FINISH #V REMOVE ALL BURRS							
LTR REVISION							







THIRD ANGLE PROJECTION	REVISION PART NO. C YDEK LHN A*
PORTS CH, CR, VR	BODY DASH NO. MODEL NO.
.750-14 NPTF	-001 AD
SAE-12	-002 AL
.750-14 BSPP	-003 AW

NOTES:
REFER TO SUN HYDRAULICS TECHNICAL LITERATURE AND CATALOG FOR THE DETAILS OF CARTRIDGE STANDARD SETTINGS, ADJUSTMENT RANGES, MAXIMUM PRESSURE RATINGS, SEAL MATERIAL, TORQUE VALUES, ETC.

3	RSFC LAN	SEQUENCE VALVE	1
2	CBEA LHN	COUNTERBALANCE VALVE	1
1	150-034-***	BODY	1

ITEM	PART NO.	PART NAME	QTY
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OUTLINE & ASSEMBLY

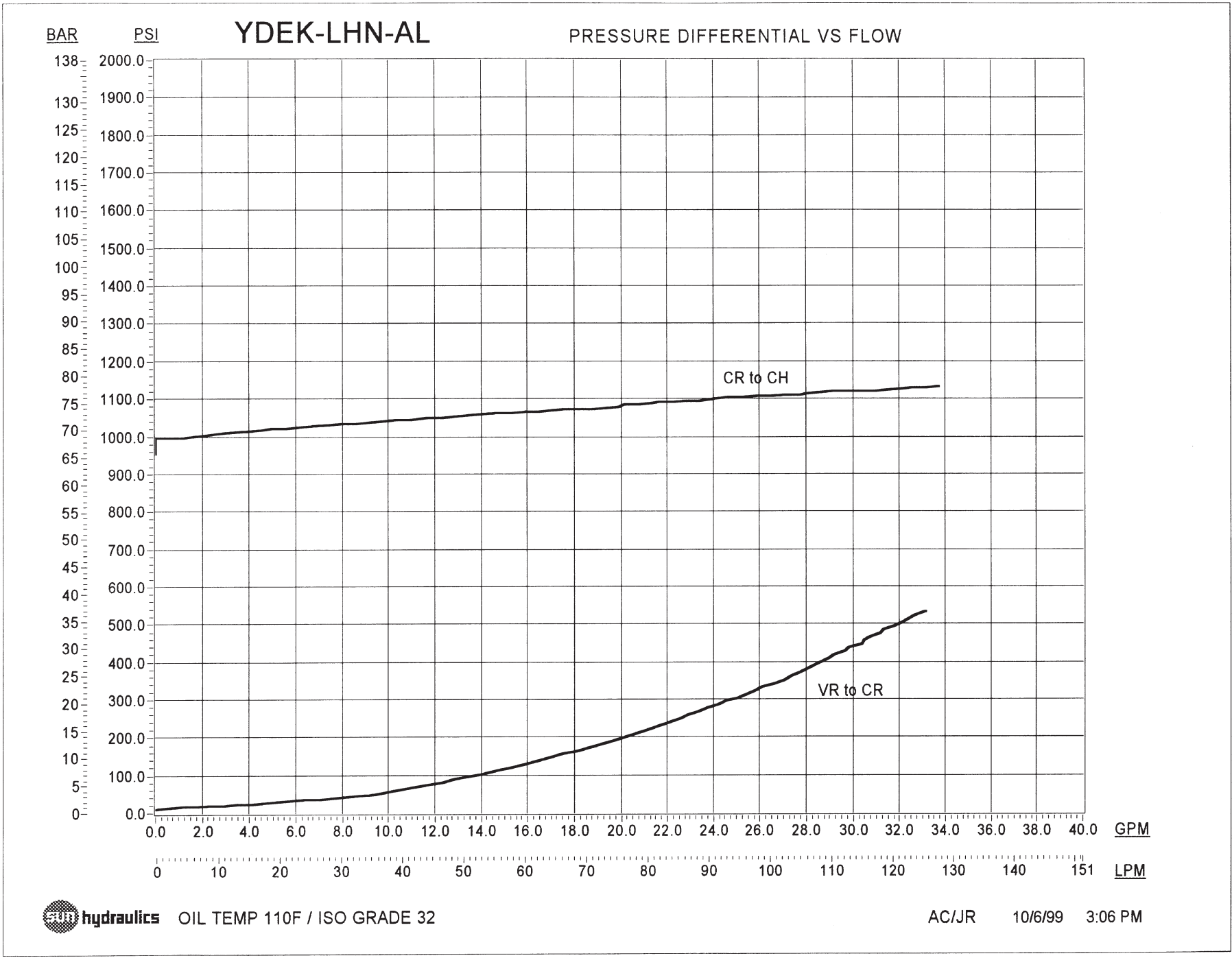
TITLE	SCALE REF	MATERIAL
PRESSURE SENSITIVE REGENERATIVE VALVE LINE MOUNTED	1:1	ALUM. & STEEL
DRAWN	CHECK	RELEASE
HHP	JDA	
DATE	DATE	DATE
24OCT79	30OCT79	

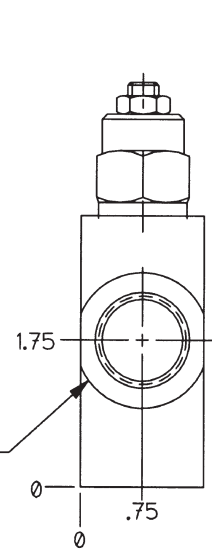
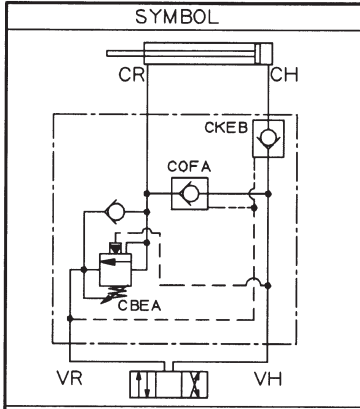
UNLESS OTHERWISE SPECIFIED	DIMENSION TOL	SCALE REF	MATERIAL
	.X = +/- .030	1:1	ALUM. & STEEL
	.XX = +/- .015		HEAT TREAT & FINISH
	.XXX = +/- .005		
ANGLE TOL +/- 1	FINISH #0 V		
REMOVE ALL BURRS			

REVISION	DATE	DRN	CHK	REL
A	25JUN80	RJC		
B	26MAR98	DSS	DEB	8498
C	23MAR00	SMS	DSS	9723
	20FEB01	SMS	NHH	

REVISION PART NO. C YDEK LHN A*

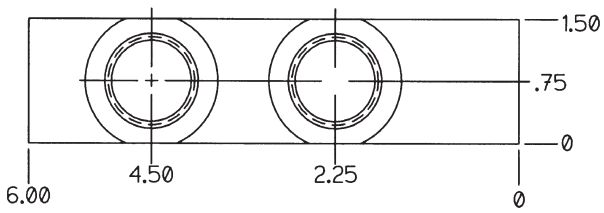
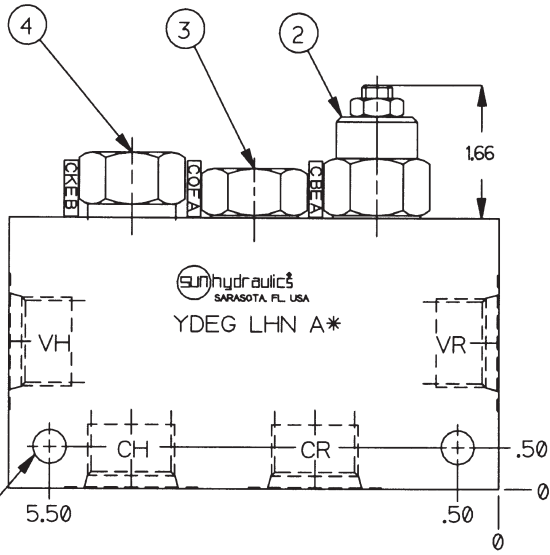
701 TALLEYVAST ROAD
SARASOTA, FLORIDA 34243, USA
TELEPHONE (941) 362-1300



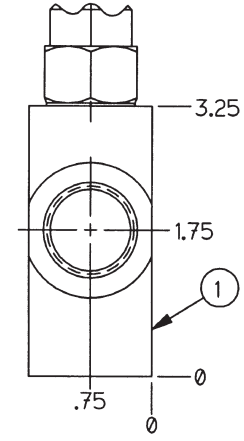


PORTS PER CHART
TYP. (4) PLCS.

.41 DIA. MOUNTING HOLES
TYP. (2) PLCS.



THIRD ANGLE PROJECTION	REVISION E	PART NO. YDEG LHN A*
PORTS CR, CH, VR, VH	BODY DASH NO. -001	THREAD TYPE AD
.750-14 NPTF	-002	AW
.750-14 BSPP	-003	AL

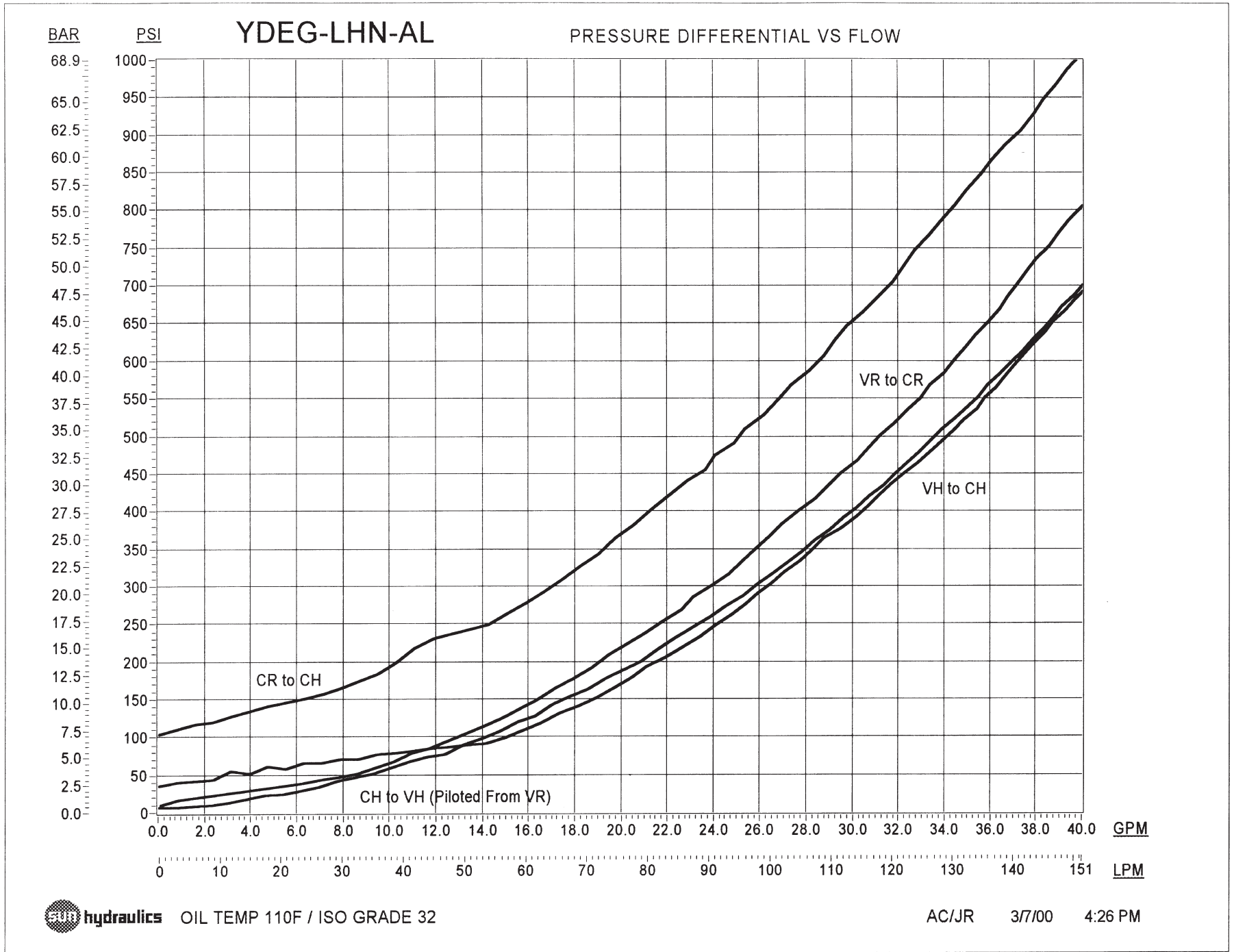


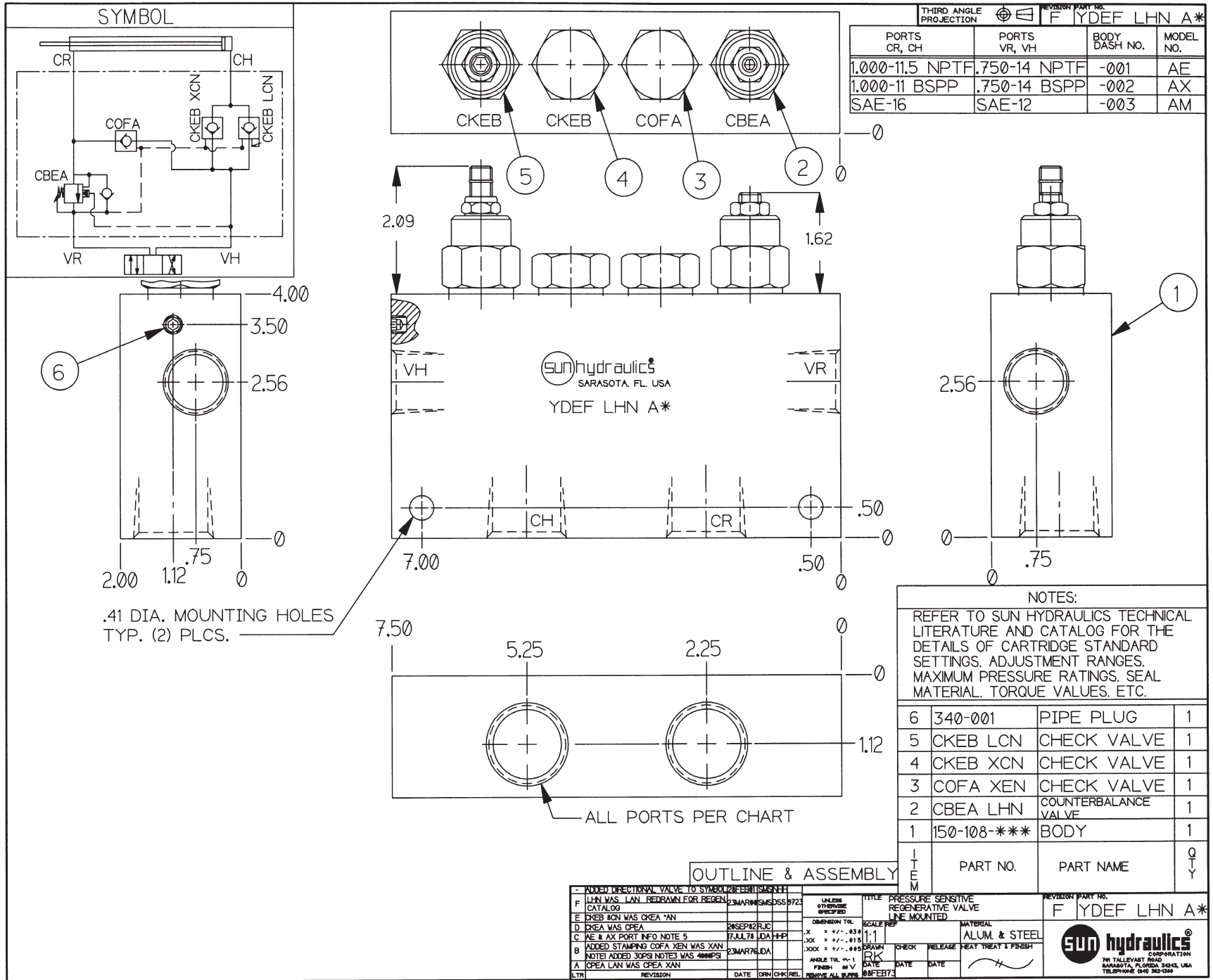
NOTES:
REFER TO SUN HYDRAULICS TECHNICAL LITERATURE AND CATALOG FOR THE DETAILS OF CARTRIDGE STANDARD SETTINGS, ADJUSTMENT RANGES, MAXIMUM PRESSURE RATINGS, SEAL MATERIAL, TORQUE VALUES, ETC.

4	CKEB XCN	CHECK VALVE	1
3	COFA XEN	CHECK VALVE	1
2	CBEA LHN	COUNTERBALANCE VALVE	1
1	150-030-***	BODY	1
ITEM	PART NO.	PART NAME	QTY

OUTLINE & ASSEMBLY

UNLESS OTHERWISE SPECIFIED				TITLE PRESSURE SENSITIVE REGENERATIVE VALVE LINE MOUNTED			REVISION E		PART NO. YDEG LHN A*	
-	ADDED DIRECTIONAL VALVE TO SYMBOL	28FEB01	SMS NHH	DIMENSION TOL.	SCALE REF	YDEA LHN A*	MATERIAL	ALUM. & STEEL		
E	LHN WAS LAN REDRAWN FOR REGEN. CATALOG	23MAR00	SMS DSS 9725	.X = +/- .030	1:1.5	YDEB LHN AD	HEAT TREAT & FINISH			
D	CKEB XCN WAS CKEA XAN	18JUL88	RC	.XX = +/- .015	DRAWN HHP	YDEC LHN AD		CORPORATION 781 TALLEYVAST ROAD SARASOTA, FLORIDA 34243, USA TELEPHONE (813) 362-1300		
C	CKEA XAN WAS CPEA XAN	20SEP82	RJC	.XXX = +/- .005	CHECK	RELEASE				
B	3.25 WAS 3.00 REMOVED 340-001	03NOV88	RJC	ANGLE TOL +/- 1	DATE	DATE	DATE			
A	REDRAWN A SIZE OBSOLETE	08AUG78	JDA HHP	FINISH #0 V	08AUG78					
LTR	REVISION	DATE	DRN	CHK	REL					





THIRD ANGLE PROJECTION		REVISION PART NO.	
F YDEF LHN A*		F YDEF LHN A*	
PORTS CR, CH	PORTS VR, VH	BODY DASH NO.	MODEL NO.
1.000-11.5 NPTF	.750-14 NPTF	-001	AE
1.000-11 BSPP	.750-14 BSPP	-002	AX
SAE-16	SAE-12	-003	AM

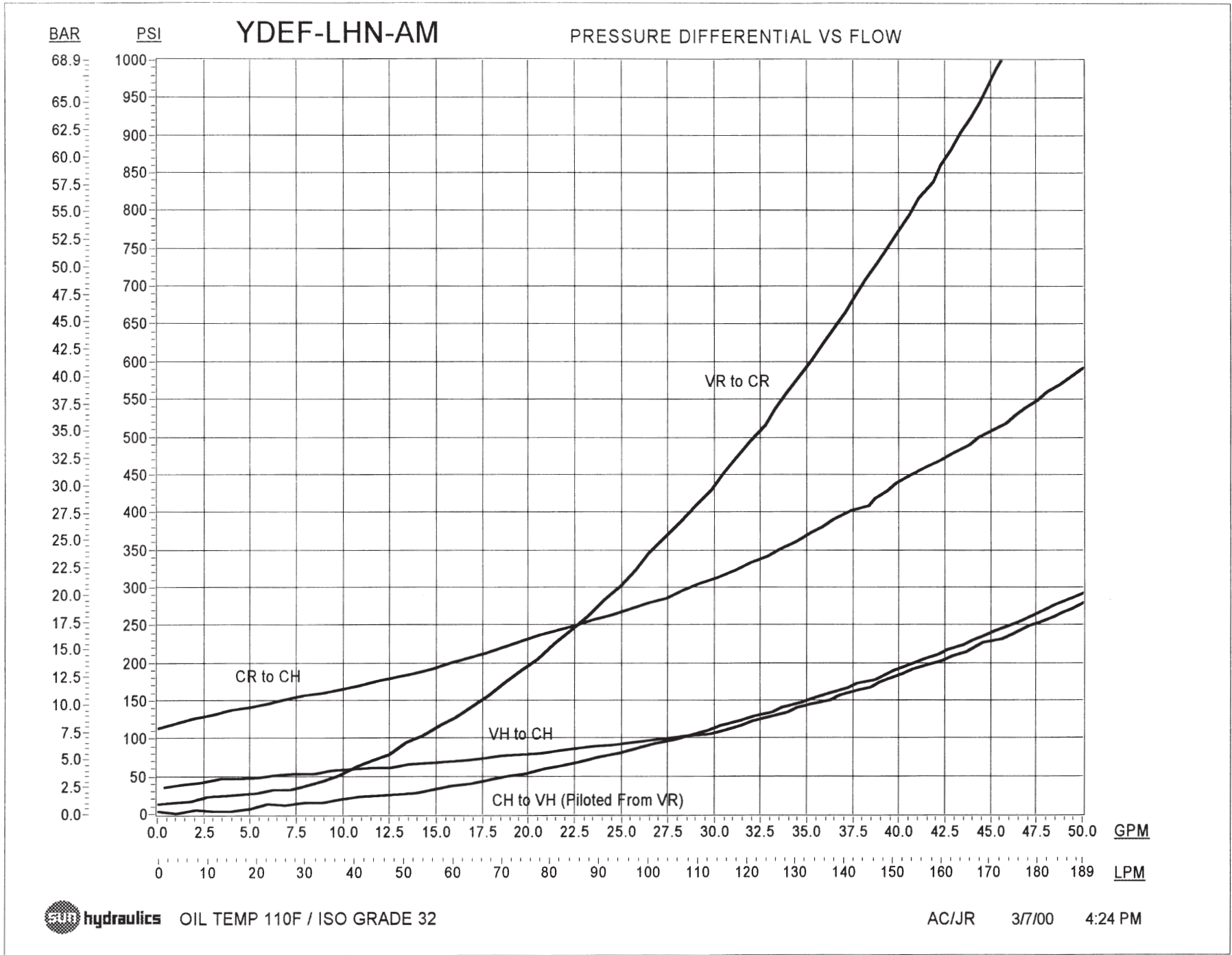
NOTES:
REFER TO SUN HYDRAULICS TECHNICAL LITERATURE AND CATALOG FOR THE DETAILS OF CARTRIDGE STANDARD SETTINGS, ADJUSTMENT RANGES, MAXIMUM PRESSURE RATINGS, SEAL MATERIAL, TORQUE VALUES, ETC.

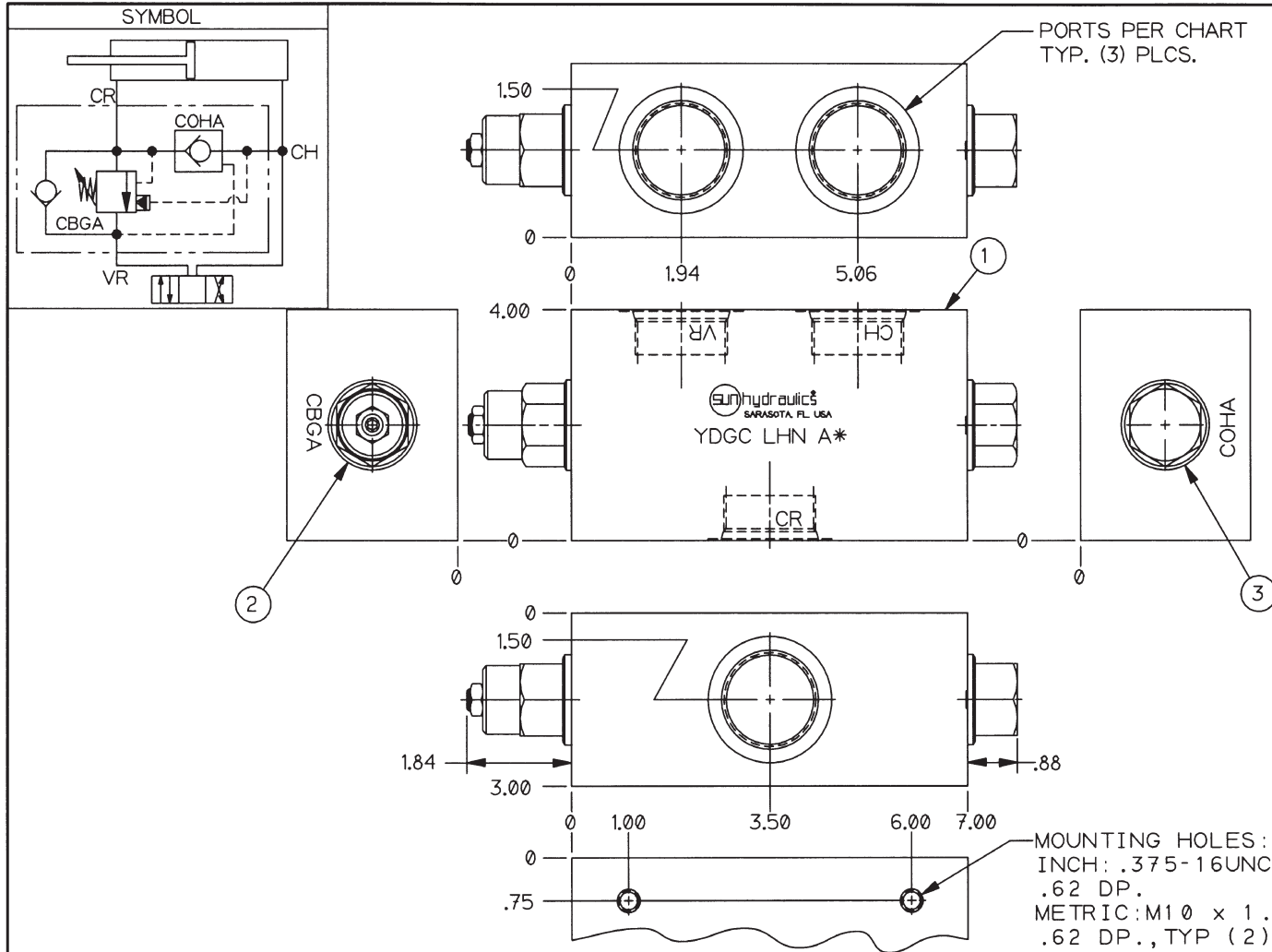
QTY	PART NO.	PART NAME	QTY
1	6	340-001 PIPE PLUG	1
1	5	CKEB LCN CHECK VALVE	1
1	4	CKEB XCN CHECK VALVE	1
1	3	COFA XEN CHECK VALVE	1
1	2	CBEA LHN COUNTERBALANCE VALVE	1
1	1	150-108-*** BODY	1

OUTLINE & ASSEMBLY

F	ADDED INSTRUCTIONAL VALVE TO SYMBOL	28FEB73	UNLESS OTHERWISE SPECIFIED	TITLE	SCALE	MATERIAL
F	LHN WAS LCN REDRAWN FOR REGEN CATALOG	23MAY88	28FEB73	REGENERATIVE VALVE LINE MOUNTED	1:1	ALUM. & STEEL
E	CKEB XCN WAS CKEA *AN	28SEP82	JUC	DATE	DATE	DATE
D	CBEA WAS CPEA	17JUL78	LDJ HFP	CHECK	RELEASE	HEAT TREAT & FINISH
C	AE & AX PORT INFO NOTE 5	23MAR76	LDJ	DATE	DATE	DATE
B	ADDED STAMPING COFA XEN WAS XAN	23MAY88	LDJ	DATE	DATE	DATE
A	CPEA LCN WAS CPEA XAN	23MAY88	LDJ	DATE	DATE	DATE







PORTS PER CHART TYP. (3) PLCS.

THIRD ANGLE PROJECTION	REVISION	PART NO.	
	D	YDGC LHN A*	
PORT TYPE	MODEL NO.	BODY DASH NO.	THREAD TYPE
.750-14 NPTF	AD	-001	INCH
1.000-11.5 NPTF	AE	-002	INCH
1.250-11.5 NPTF	AF	-003	INCH
SAE-12	AL	-004	INCH
SAE-16	AM	-005	INCH
SAE-20	AN	-006	INCH
.750-14 BSPP	AW	-007	METRIC
1.000-11 BSPP	AX	-008	METRIC
1.250-11 BSPP	AY	-009	METRIC

NOTES:
REFER TO SUN HYDRAULICS TECHNICAL LITERATURE AND CATALOG FOR THE DETAILS OF CARTRIDGE STANDARD SETTINGS, ADJUSTMENT RANGES, MAXIMUM PRESSURE RATINGS, SEAL MATERIAL, TORQUE VALUES, ETC.

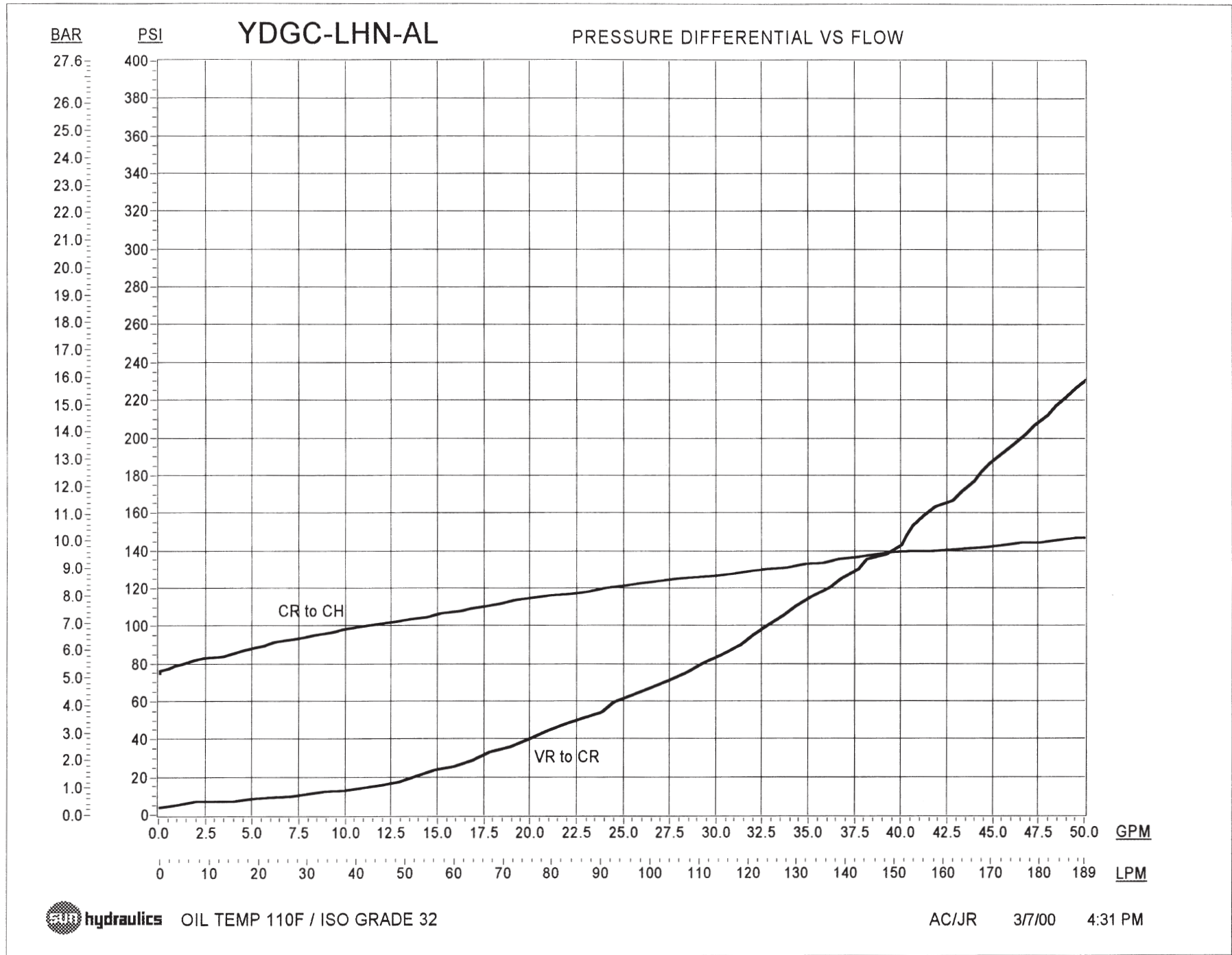
ITEM	PART NO.	PART NAME	QTY
3	COHA XEN	CHECK VALVE	1
2	CBGA LHN	COUNTERBALANCE VALVE	1
1	150-784-***	BODY	1

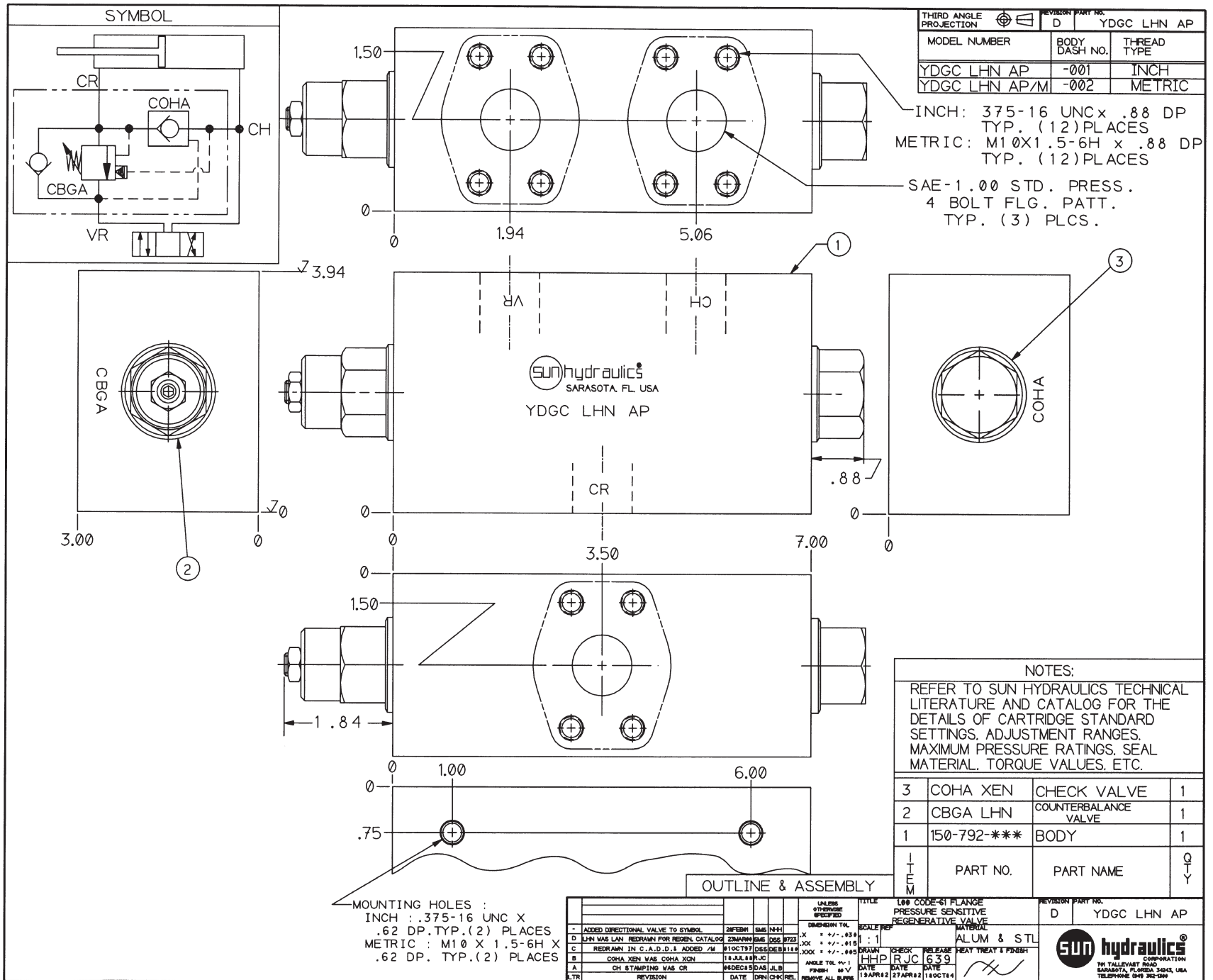
MOUNTING HOLES:
INCH: .375-16UNC x .62 DP.
METRIC: M10 x 1.5-6H x .62 DP., TYP (2) PLACES

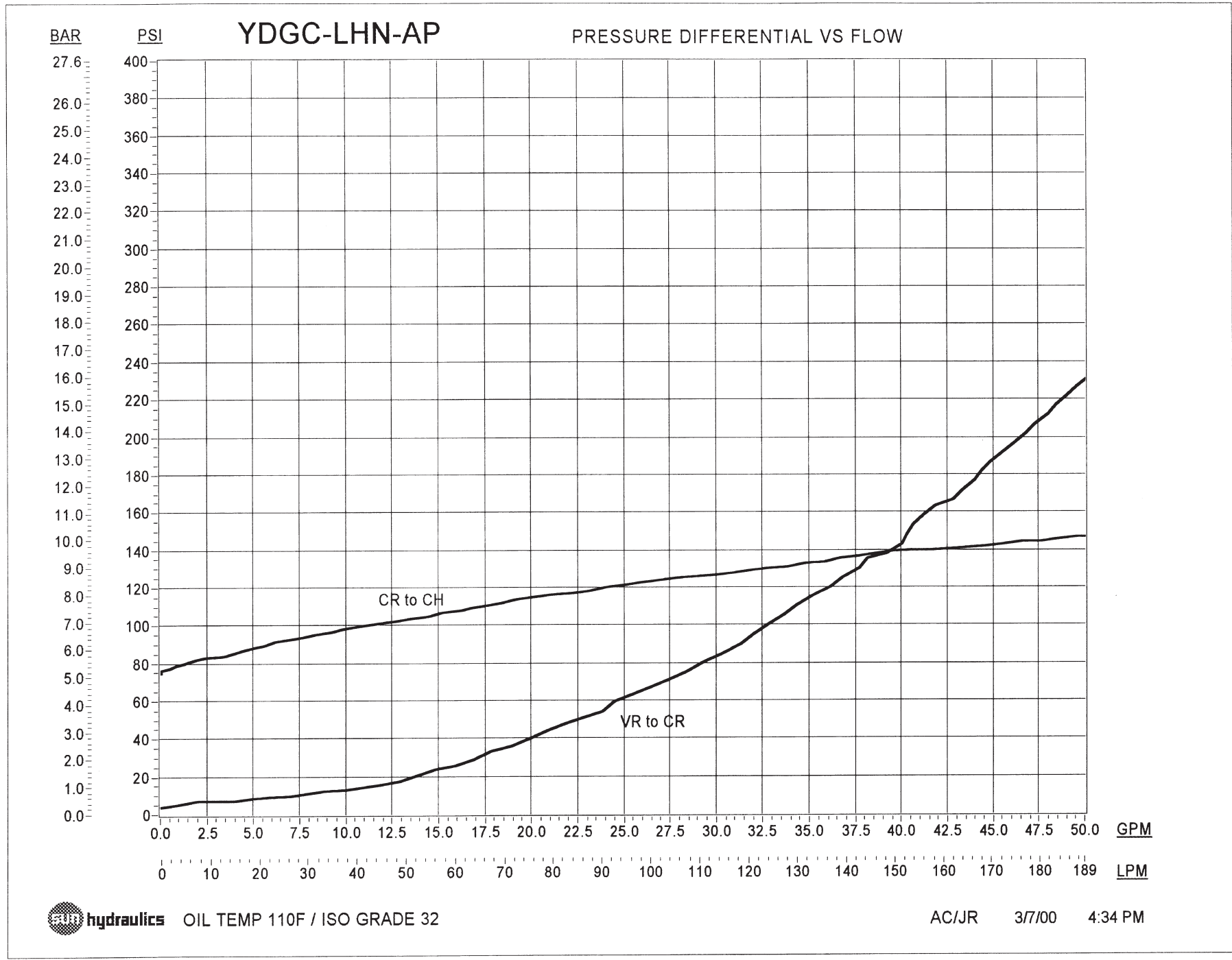
UNLESS OTHERWISE SPECIFIED					TITLE PRESSURE SENSITIVE LINE MOUNT REGENERATIVE VALVE			REVISION PART NO.	
DIMENSION TOL					SCALE REF			MATERIAL	
.X = +/- .030					1:2			ALUMINUM	
.XX = +/- .015					DRAWN HHP			HEAT TREAT & FINISH	
.XXX = +/- .005					CHECK RJC			639	
ANGLE TOL +/- 1					DATE 19APR82			DATE 27APR82	
FINISH #0 ✓					DATE 18OCT82			DATE 18OCT82	
REMOVE ALL BURRS									
- ADDED DIRECTIONAL VALVE TO SYMBOL 28FEB01 SMS NHH									
D REDRAWN FOR REGEN. CATALOG LHN WAS LAN 23MAR00 SMS DSS 9723									
C REDRAWN ON CADD, ADDED NOTES 2 & 6 29 JUL 93 BRS RJB									
LTR REVISION					DATE DRN CHK REL				

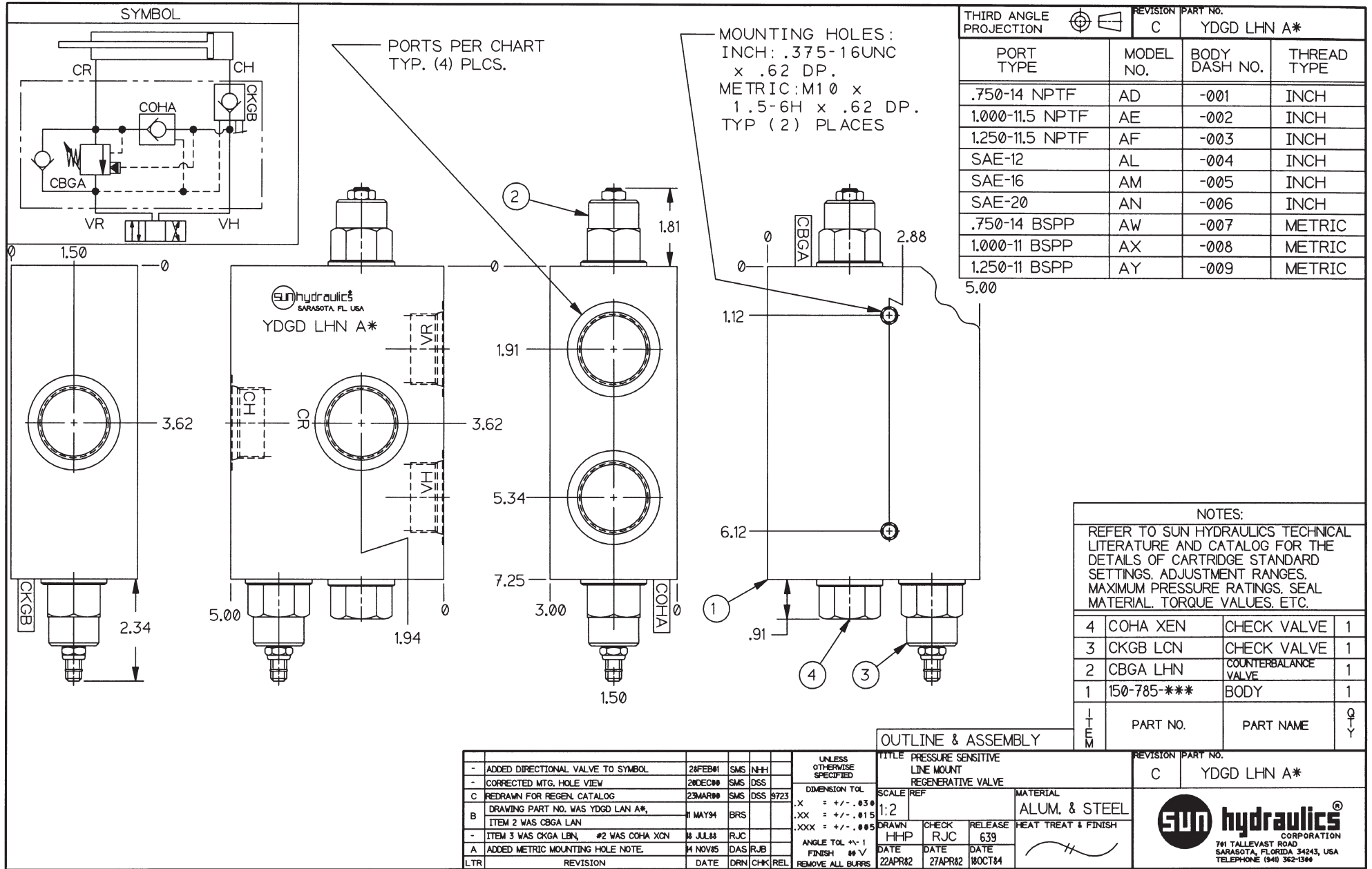
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THIRD ANGLE PROJECTION		REVISION	PART NO.	
		C	YDGD LHN A*	
PORT TYPE	MODEL NO.	BODY DASH NO.	THREAD TYPE	
.750-14 NPTF	AD	-001	INCH	
1.000-11.5 NPTF	AE	-002	INCH	
1.250-11.5 NPTF	AF	-003	INCH	
SAE-12	AL	-004	INCH	
SAE-16	AM	-005	INCH	
SAE-20	AN	-006	INCH	
.750-14 BSPP	AW	-007	METRIC	
1.000-11 BSPP	AX	-008	METRIC	
1.250-11 BSPP	AY	-009	METRIC	

MOUNTING HOLES:
 INCH: .375-16UNC
 x .62 DP.
 METRIC: M10 x
 1.5-6H x .62 DP.
 TYP (2) PLACES

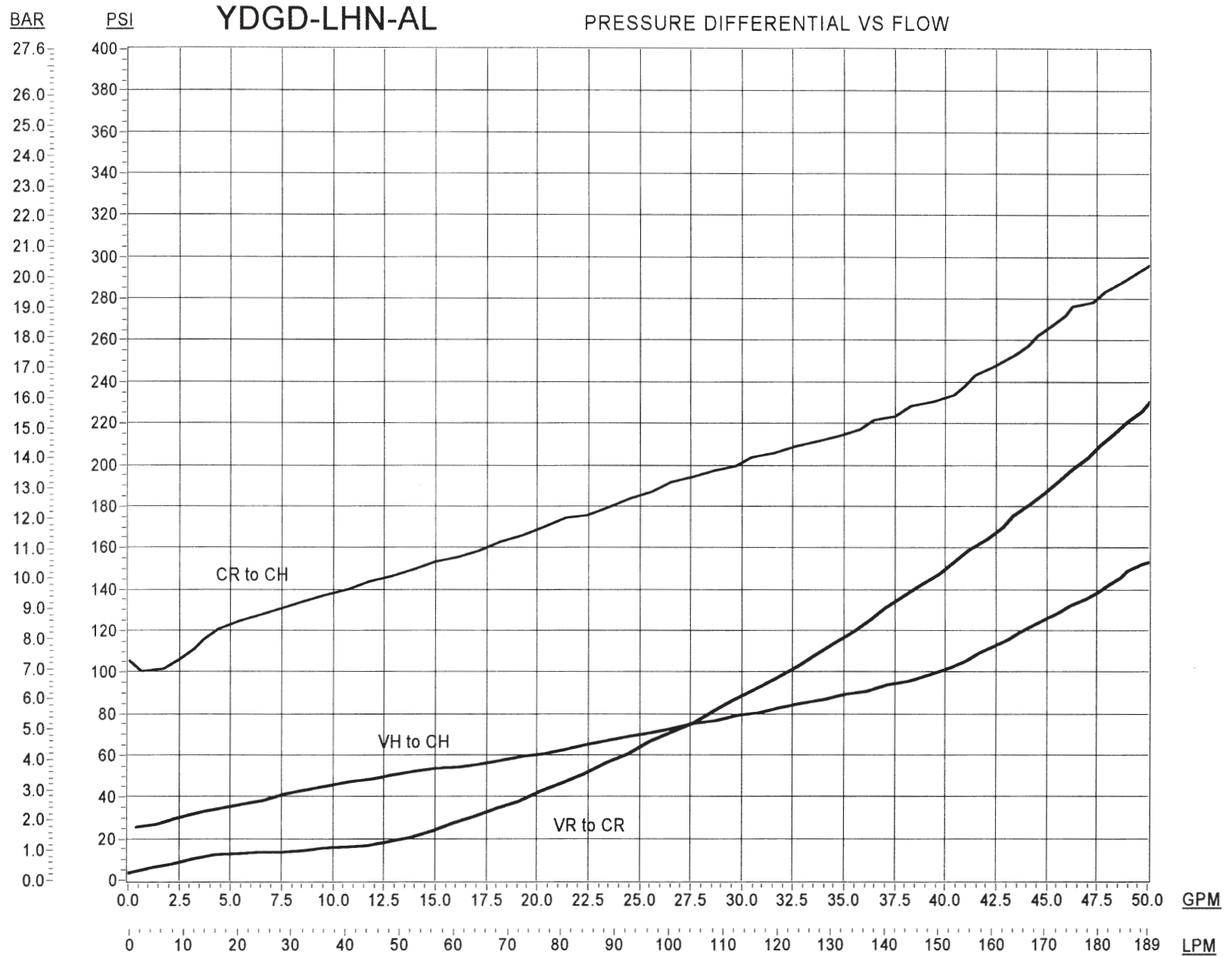
NOTES:
 REFER TO SUN HYDRAULICS TECHNICAL LITERATURE AND CATALOG FOR THE DETAILS OF CARTRIDGE STANDARD SETTINGS, ADJUSTMENT RANGES, MAXIMUM PRESSURE RATINGS, SEAL MATERIAL, TORQUE VALUES, ETC.

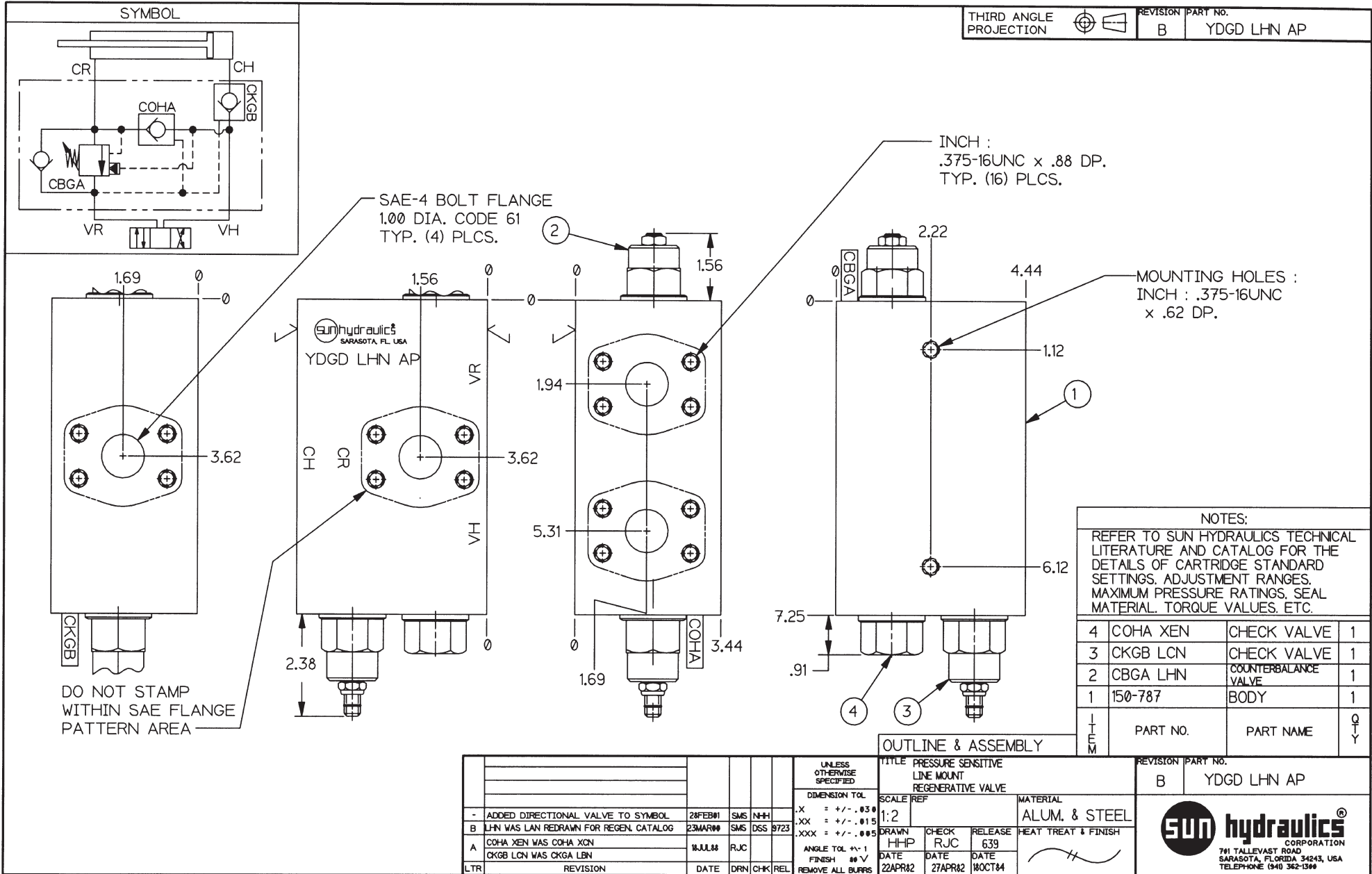
ITEM	PART NO.	PART NAME	QTY
4	COHA XEN	CHECK VALVE	1
3	CKGB LCN	CHECK VALVE	1
2	CBGA LHN	COUNTERBALANCE VALVE	1
1	150-785-***	BODY	1

OUTLINE & ASSEMBLY

UNLESS OTHERWISE SPECIFIED				TITLE			REVISION		PART NO.		
-	ADDED DIRECTIONAL VALVE TO SYMBOL	28FEB81	SMS	NHH	PRESSURE SENSITIVE LINE MOUNT REGENERATIVE VALVE			C	YDGD LHN A*		
-	CORRECTED MTG. HOLE VIEW	28DEC80	SMS	DSS	SCALE	REF	MATERIAL				
C	REDRAWN FOR REGEN. CATALOG	23MAR80	SMS	DSS	1:2		ALUM. & STEEL				
B	DRAWING PART NO. WAS YDGD LAN A*, ITEM 2 WAS CBGA LAN	11MAY79	BRS		DRAWN	CHECK	RELEASE	HEAT TREAT & FINISH			
-	ITEM 3 WAS CKGA LCN, #2 WAS COHA XCN	18JUL88	RJC		HHP	RJC	639				
A	ADDED METRIC MOUNTING HOLE NOTE.	14NOV85	DAS	RJB	DATE	DATE	DATE				
LTR	REVISION	DATE	DRN	CHK	REL	22APR82	27APR82	18OCT84			





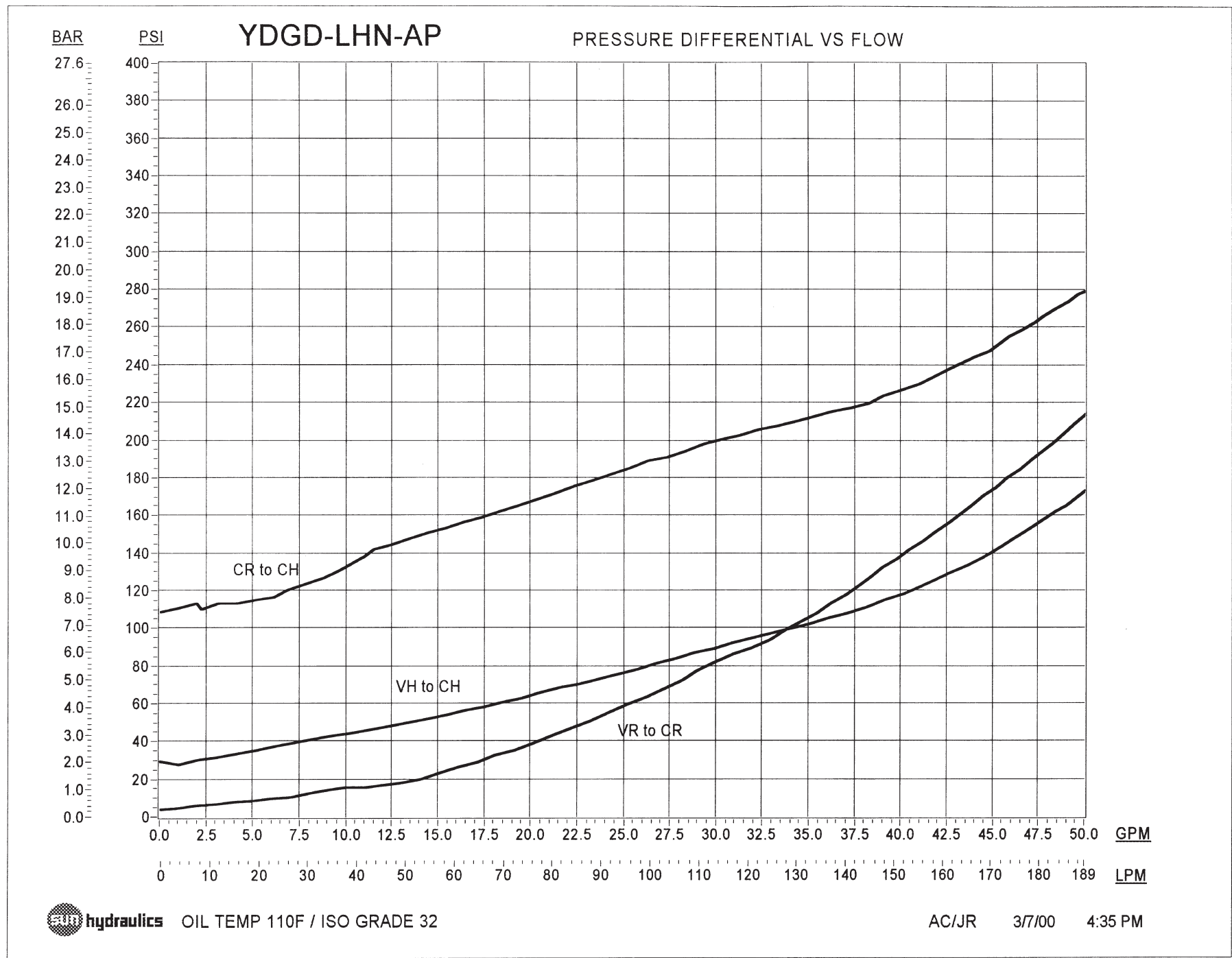


NOTES:
REFER TO SUN HYDRAULICS TECHNICAL LITERATURE AND CATALOG FOR THE DETAILS OF CARTRIDGE STANDARD SETTINGS, ADJUSTMENT RANGES, MAXIMUM PRESSURE RATINGS, SEAL MATERIAL, TORQUE VALUES, ETC.

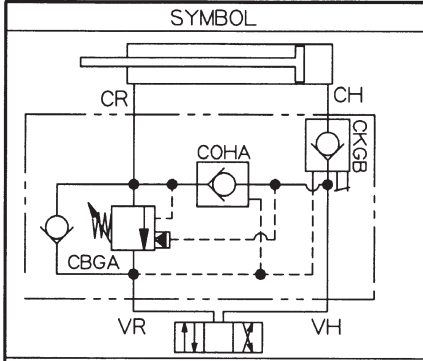
4	COHA XEN	CHECK VALVE	1
3	CKGB LCN	CHECK VALVE	1
2	CBGA LHN	COUNTERBALANCE VALVE	1
1	150-787	BODY	1

ITEM	PART NO.	PART NAME	QTY
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TITLE				PRESSURE SENSITIVE LINE MOUNT REGENERATIVE VALVE				REVISION B PART NO. YDGD LHN AP			
UNLESS OTHERWISE SPECIFIED				SCALE REF				MATERIAL			
DIMENSION TOL				SCALE REF				ALUM. & STEEL			
-X = +/- .030				DRAWN				HEAT TREAT & FINISH			
-XX = +/- .015				HHP				HHP			
-XXX = +/- .005				CHECK				RELEASE			
ANGLE TOL +/- 1				DATE				DATE			
FINISH # V				22APR82				27APR82			
REMOVE ALL BURRS				DATE				18OCT84			
LTR				REVISION				DATE			
				DRN				CHK			
				REL							



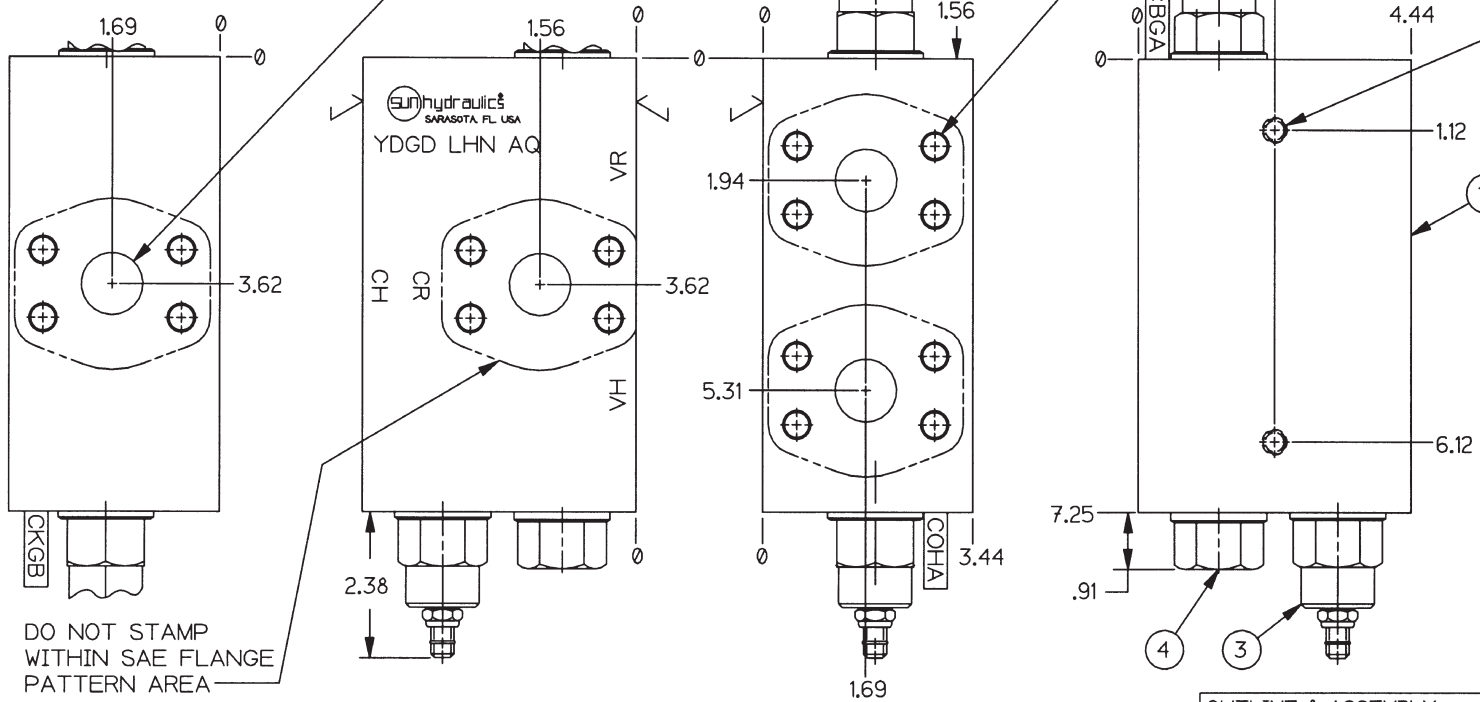
THIRD ANGLE PROJECTION  REVISION PART NO.
 B YDGD LHN AQ



INCH :
 .438-14UNC x 1.12 DP.
 TYP. (16) PLCS.

SAE-4 BOLT PATTERN
 1.250 DIA. CODE-61
 TYP. (4) PLCS.

MOUNTING HOLES
 INCH : .375-16UNC
 x .62 DP.

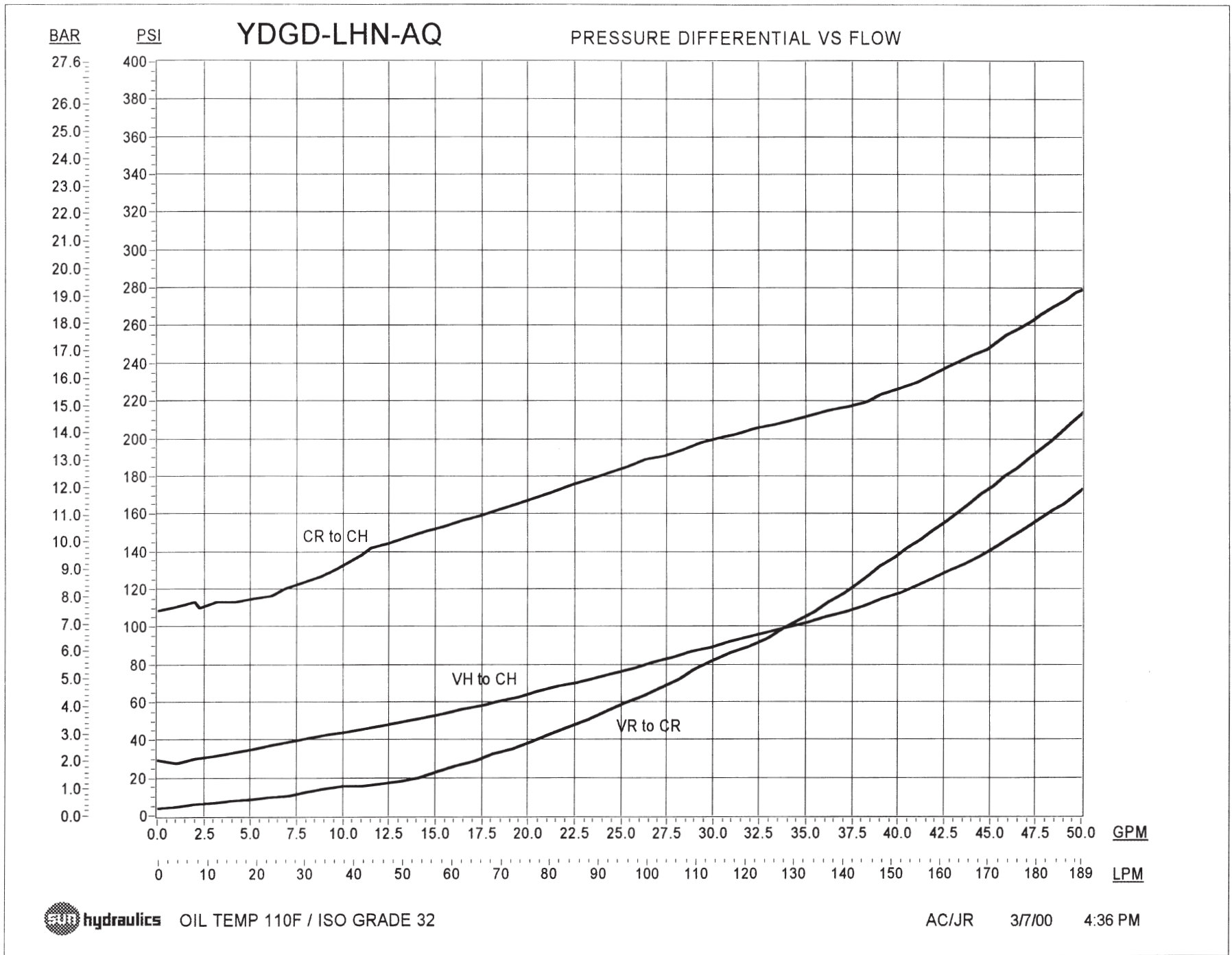


NOTES:
 REFER TO SUN HYDRAULICS TECHNICAL LITERATURE AND CATALOG FOR THE DETAILS OF CARTRIDGE STANDARD SETTINGS, ADJUSTMENT RANGES, MAXIMUM PRESSURE RATINGS, SEAL MATERIAL, TORQUE VALUES, ETC.

4	COHA XEN	CHECK VALVE	1
3	CKGB LCN	CHECK VALVE	1
2	CBGA LHN	COUNTERBALANCE VALVE	1
1	150-788	BODY	1

ITEM	PART NO.	PART NAME	QTY
	B	YDGD LHN AQ	

UNLESS OTHERWISE SPECIFIED					TITLE PRESSURE SENSITIVE LINE MOUNT REGENERATIVE VALVE			REVISION PART NO.	
DIMENSION TOL					SCALE REF	MATERIAL			HEAT TREAT & FINISH
.X = +/- .030					1:2	ALUM. & STEEL			
.XX = +/- .015					DRAWN HHP	CHECK RJC	RELEASE 639		
.XXX = +/- .005					DATE 22APR82	DATE 27APR82	DATE 18OCT84		
ANGLE TOL +/- 1									
FINISH #0 ✓									
REMOVE ALL BURRS									
LTR REVISION					DATE	DRN	CHK	REL	



SYMBOL

DO NOT STAMP WITHIN PATTERN AREA

1.00 SAE CODE 61
4-BOLT FLANGE PATTERN
TYP (4) PLACES

INCH: .375-16UNC x .88 DP
METRIC: M10x1.5-6H x .88 DP
TYP (16) PLACES

THIRD ANGLE PROJECTION	REVISION	PART NO.
	A	YDGL LHN AP
MODEL NUMBER	BODY DASH NO.	THREAD TYPE
YDGL LHN AP	-001	INCH
YDGL LHN AP/M	-002	METRIC

NOTES:

REFER TO SUN HYDRAULICS TECHNICAL LITERATURE AND CATALOG FOR THE DETAILS OF CARTRIDGE STANDARD SETTINGS, ADJUSTMENT RANGES, MAXIMUM PRESSURE RATINGS, SEAL MATERIAL, TORQUE VALUES, ETC.

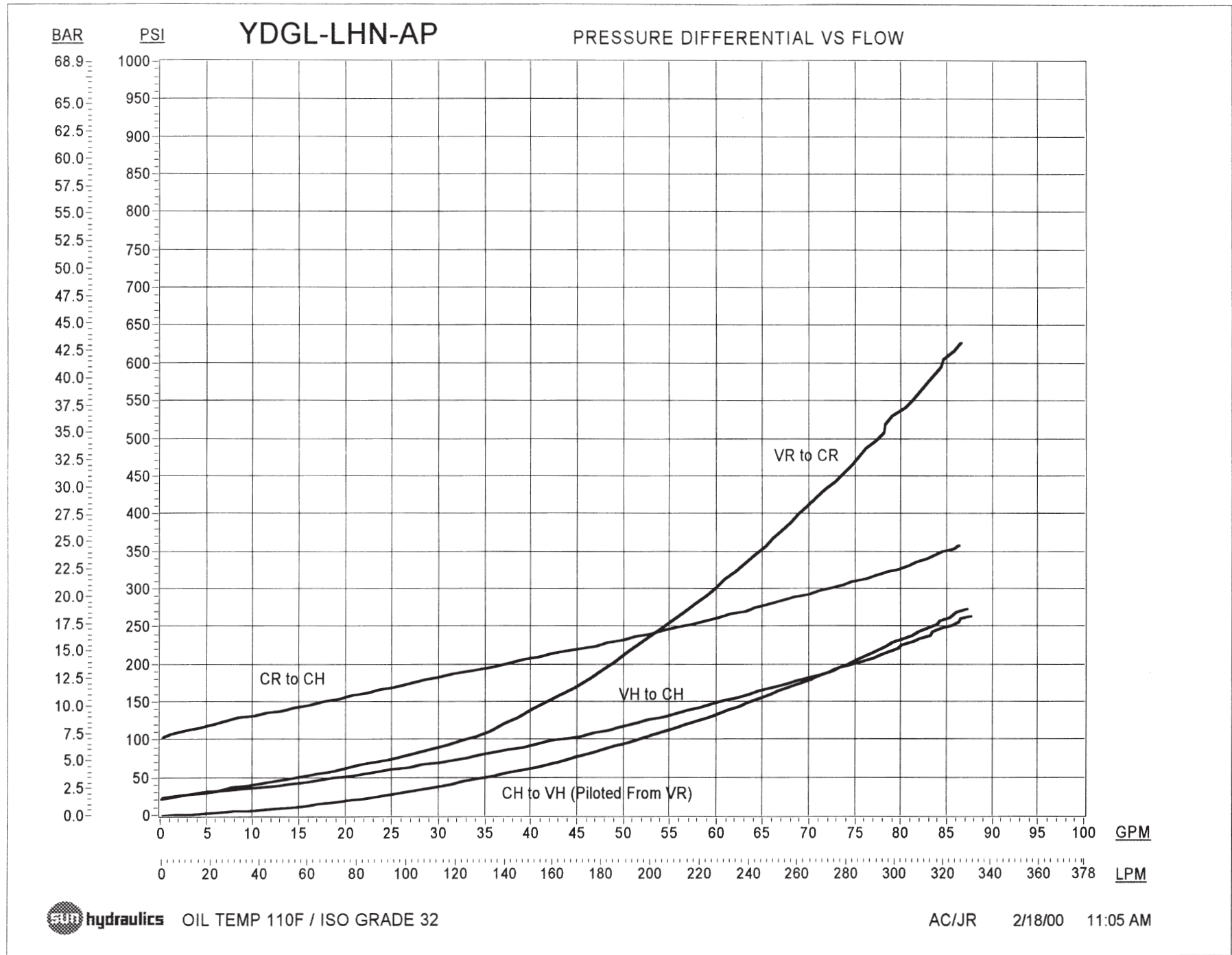
ITEM	PART NO.	PART NAME	QTY
5	850-004-250	KOENIG PLUG	2
4	COHA XEN	CHECK VALVE	1
3	CKIB LCN	CHECK VALVE	1
2	CBGA LHN	COUNTERBALANCE VALVE	1
1	153-839-***	BODY	1

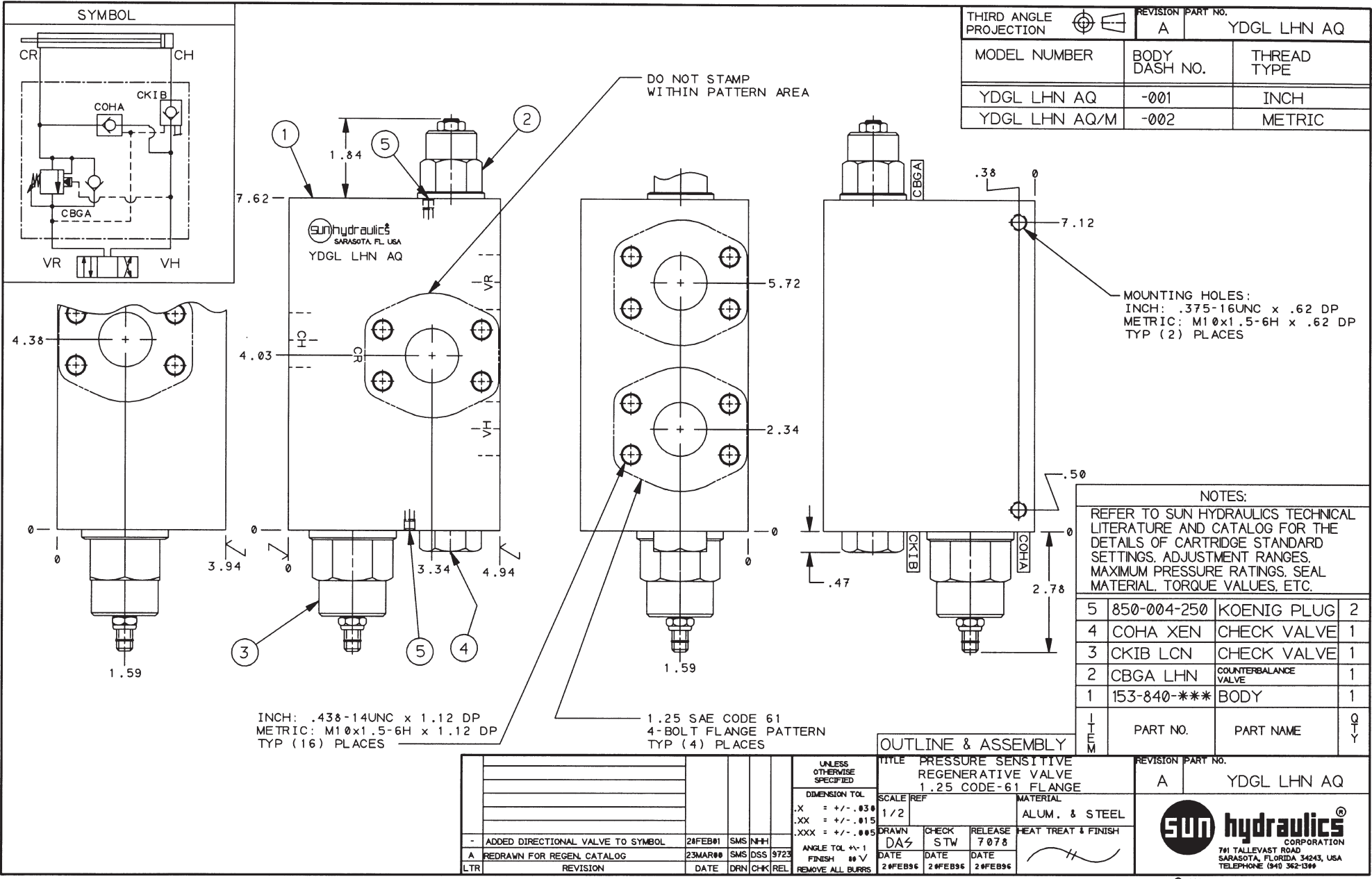
OUTLINE & ASSEMBLY

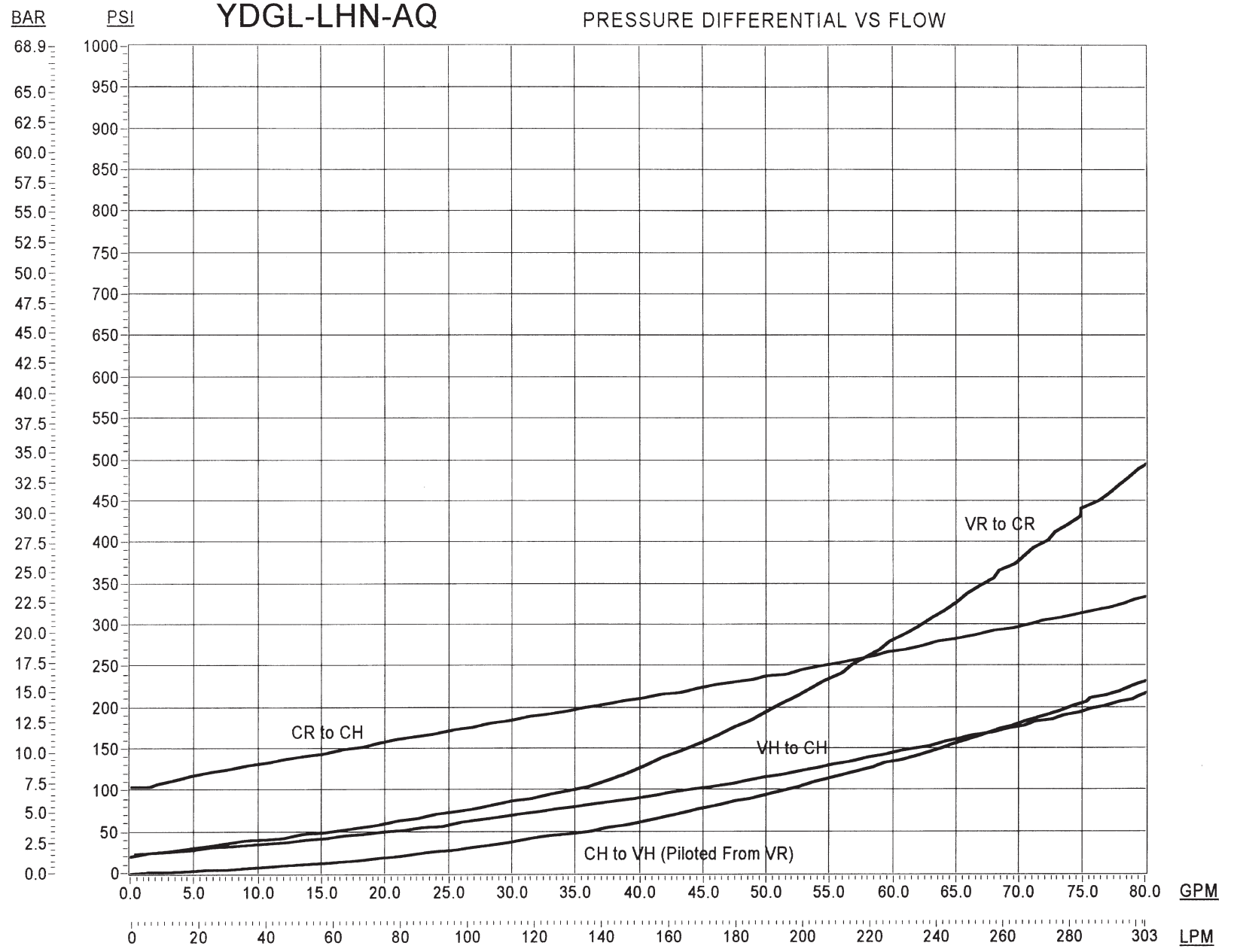
UNLESS OTHERWISE SPECIFIED		TITLE		REVISION		PART NO.	
DIMENSION TOL		PRESSURE SENSITIVE REGENERATIVE VALVE 1.00 CODE-61 FLANGE		A		YDGL LHN AP	
.X = +/- .030		SCALE REF		MATERIAL		ALUM. & STEEL	
.XX = +/- .015		1/2		HEAT TREAT & FINISH			
.XXX = +/- .005		DRAWN		DATE		DATE	
ANGLE TOL +/- 1		DAS		2#FEB96		2#FEB96	
FINISH #0 V		CHECK		DATE		DATE	
REMOVE ALL BURRS		STW		2#FEB96		2#FEB96	
		RELEASE		DATE		DATE	
		7078					

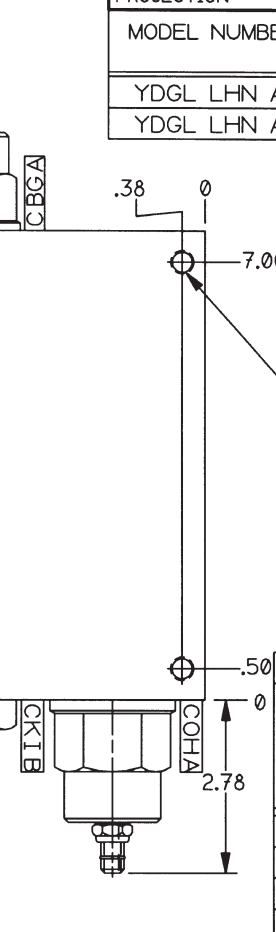
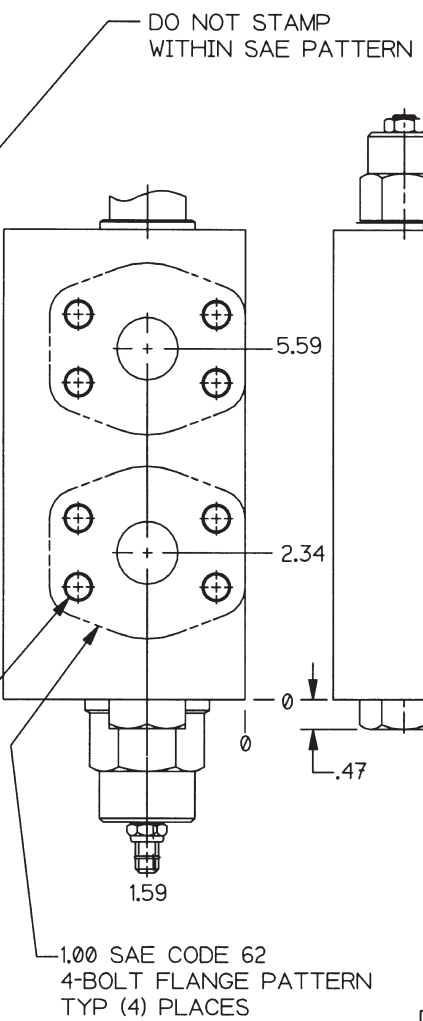
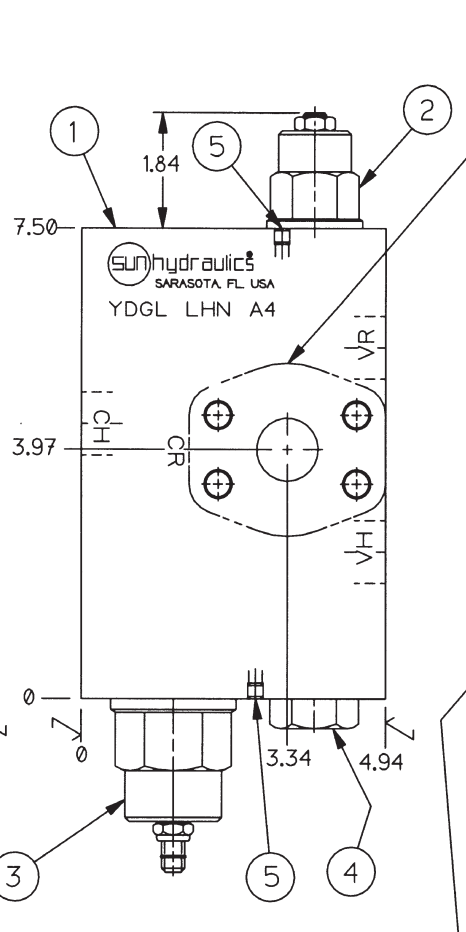
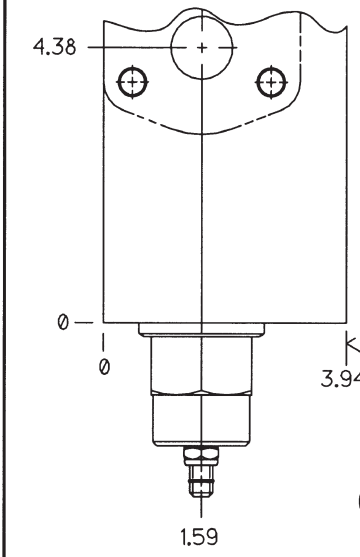
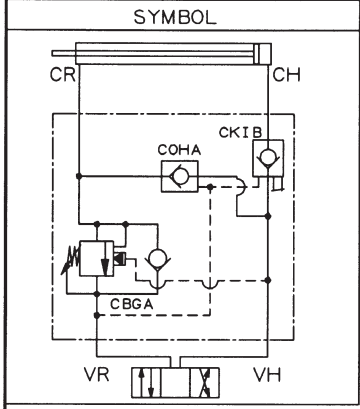
REVISION	DATE	DRN	CHK	REL
A	23MAR96	SMS	DSS	9723
LTR				

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INCH : .438-14UNC x 1.06 DP
 METRIC : M12x1.75-6H x 1.06 DP
 TYP (16) PLACES

1.00 SAE CODE 62
 4-BOLT FLANGE PATTERN
 TYP (4) PLACES

THIRD ANGLE PROJECTION	REVISION A	PART NO. YDGL LHN A4
MODEL NUMBER	BODY DASH NO.	THREAD TYPE
YDGL LHN A4	-001	INCH
YDGL LHN A4/M	-002	METRIC

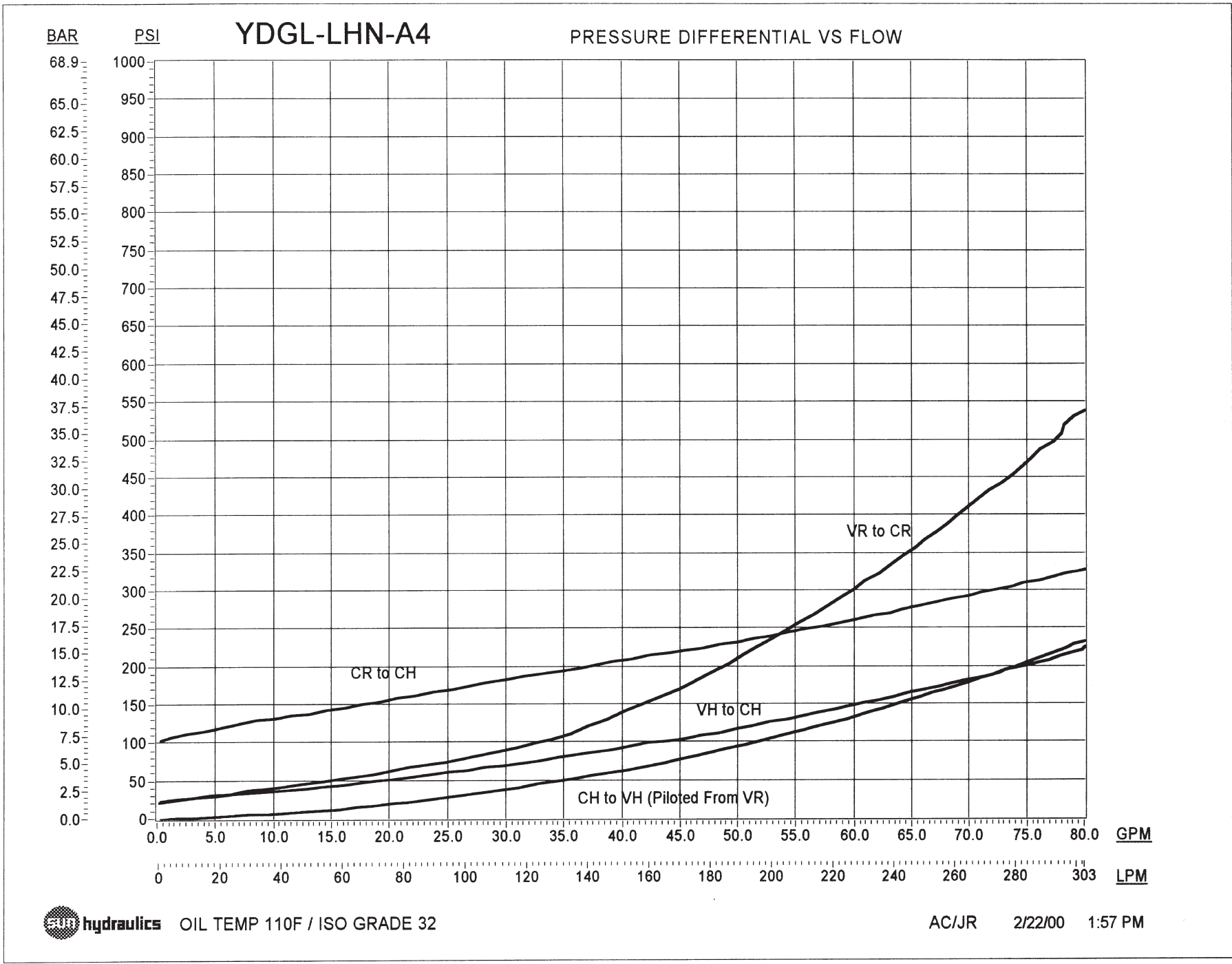
MOUNTING HOLES :
 INCH : .375-16UNC x .62 DP
 METRIC : M10x1.5-6H x .62 DP
 TYP (2) PLACES

NOTES:
 REFER TO SUN HYDRAULICS TECHNICAL LITERATURE AND CATALOG FOR THE DETAILS OF CARTRIDGE STANDARD SETTINGS, ADJUSTMENT RANGES, MAXIMUM PRESSURE RATINGS, SEAL MATERIAL, TORQUE VALUES, ETC.

ITEM	PART NO.	PART NAME	QTY
5	850-004-250	KOENIG PLUG	2
4	COHA XEN	CHECK VALVE	1
3	CKIB LCN	CHECK VALVE	1
2	CBGA LHN	COUNTERBALANCE VALVE	1
1	153-841-***	BODY	1

OUTLINE & ASSEMBLY

UNLESS OTHERWISE SPECIFIED				TITLE PRESSURE SENSITIVE REGENERATIVE VALVE 4-BOLT FLANGE MOUNT			REVISION PART NO. A YDGL LHN A4	
DIMENSION TOL				SCALE REF 1/2			MATERIAL ALUMINUM	
.X = +/- .030				DRAWN DAS			HEAT TREAT & FINISH	
.XX = +/- .015				CHECK STW			7078	
.XXX = +/- .005				RELEASE DATE			20FEB96	
ANGLE TOL +/- 1				DATE			20FEB96	
FINISH # V				DATE			20FEB96	
REMOVE ALL BURRS								
- ADDED DIRECTIONAL VALVE TO SYMBOL 20FEB91 SMS NHH								
A REDRAWN FOR REGEN. CATALOG 23MAR96 SMS DSS 9723								
LTR REVISION								



SYMBOL

DO NOT STAMP WITHIN PATTERN AREA

1.25 SAE CODE 62
4-BOLT FLANGE PATTERN
TYP (4) PLACES

THIRD ANGLE PROJECTION		REVISION	PART NO.
		A	YDGL LHN A5
MODEL NUMBER	BODY DASH NO.	THREAD TYPE	
YDGL LHN A5	-001	INCH	
YDGL LHN A5/M	-002	METRIC	

INCH: .500-13UNC x 1.00 DP
METRIC: M14x2.0-6H x 1.00 DP
TYP (16) PLACES

MOUNTING HOLES :
INCH : .375-16UNC x .62 DP
METRIC : M10x1.5-6H x .62 DP
TYP (2) PLACES

NOTES:
REFER TO SUN HYDRAULICS TECHNICAL LITERATURE AND CATALOG FOR THE DETAILS OF CARTRIDGE STANDARD SETTINGS, ADJUSTMENT RANGES, MAXIMUM PRESSURE RATINGS, SEAL MATERIAL, TORQUE VALUES, ETC.

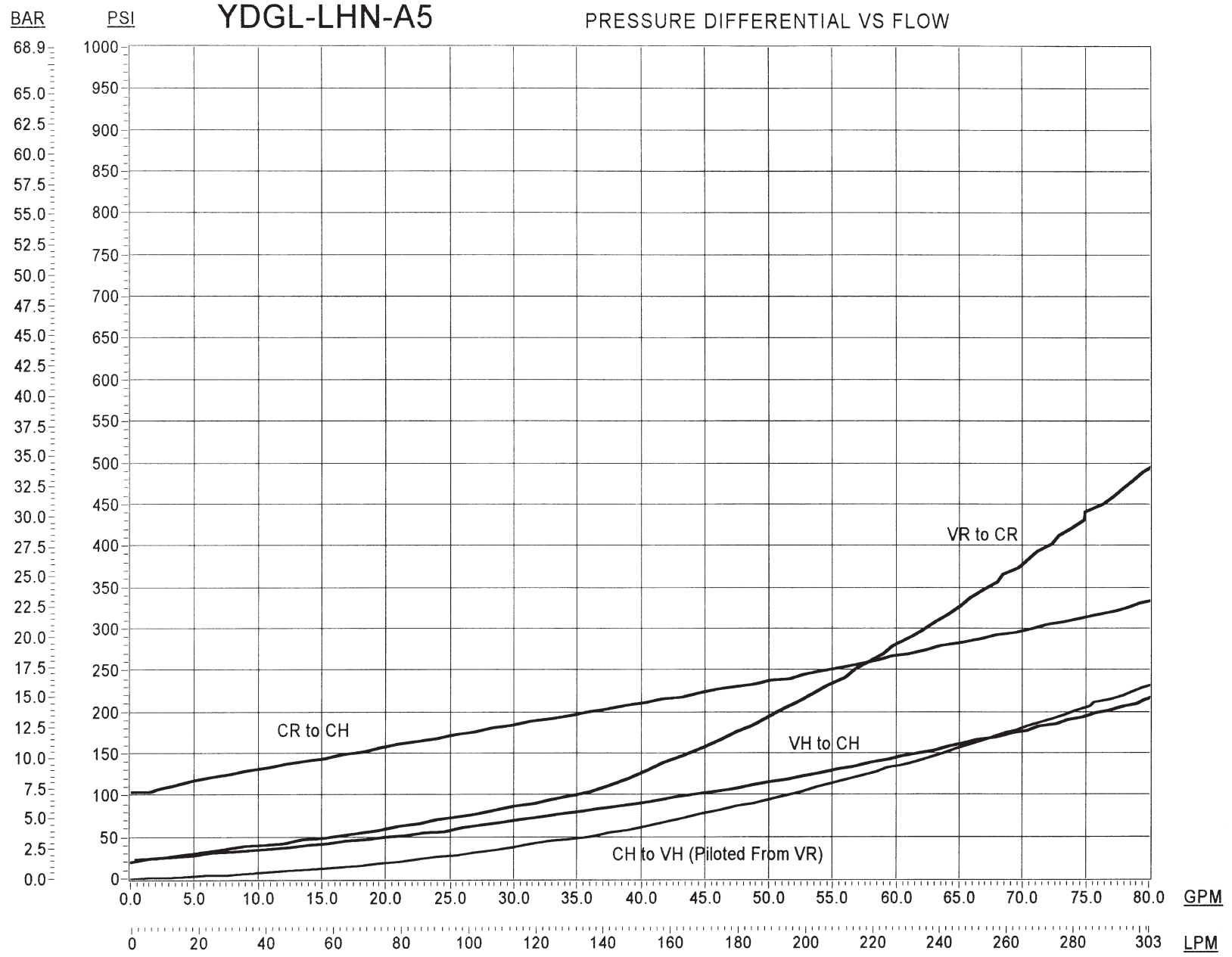
5	850-004-250	PLUG	2
4	COHA XEN	CHECK VALVE	1
3	CKIB LCN	CHECK VALVE	1
2	CBGA LHN	COUNTERBALANCE VALVE	1
1	153-842-***	BODY	1

ITEM	PART NO.	PART NAME	QTY

OUTLINE & ASSEMBLY

UNLESS OTHERWISE SPECIFIED		TITLE PRESSURE SENSITIVE REGENERATIVE VALVE 1.25 CODE-62 FLANGE		REVISION PART NO.	
DIMENSION TOL		SCALE REF		A YDGL LHN A5	
.X = +/- .030		1:2		ALUM. & STEEL	
.XX = +/- .015		DRAWN		HEAT TREAT & FINISH	
.XXX = +/- .005		DAS STW		7078	
ANGLE TOL +/- 1		DATE		DATE	
FINISH 88 V		2#FEB96		2#FEB96	
REMOVE ALL BURRS		DATE		DATE	
		2#FEB96		2#FEB96	

ADDED DIRECTIONAL VALVE TO SYMBOL	2#FEB01	SMS	NHH
REDRAWN FOR REGEN. CATALOG	23MAR00	SMS	DSS 9723
LTR	REVISION	DATE	DRN CHK REL



SYMBOL

1.25 SAE CODE 62 4 BOLT FLANGE PATTERN, TYP(3) PLACES.
 INCH : .500-13UNC x 1.00 DP
 METRIC : M14x2.0-6H x 1.00 DP.
 TYP (12) PLACES
 (8) SHOWN , (4) OPPOSITE

MOUNTING HOLES :
 INCH : .375-16UNC x .75 DP.
 TYP. (2) PLCS.
 METRIC : M10x1.5-6H x .75 DP.
 TYP. (2) PLCS.

THIRD ANGLE PROJECTION

MODEL NUMBER	BODY DASH NO.	THREAD TYPE
YDHC LHN A5	-001	INCH
YDHC LHN A5/M	-002	METRIC

NOTES:
 REFER TO SUN HYDRAULICS TECHNICAL LITERATURE AND CATALOG FOR THE DETAILS OF CARTRIDGE STANDARD SETTINGS, ADJUSTMENT RANGES, MAXIMUM PRESSURE RATINGS, SEAL MATERIAL, TORQUE VALUES, ETC.

3	COHA XEN	CHECK VALVE	2
2	CBGA LHN	COUNTERBALANCE VALVE	2
1	152-611-***	BODY	1

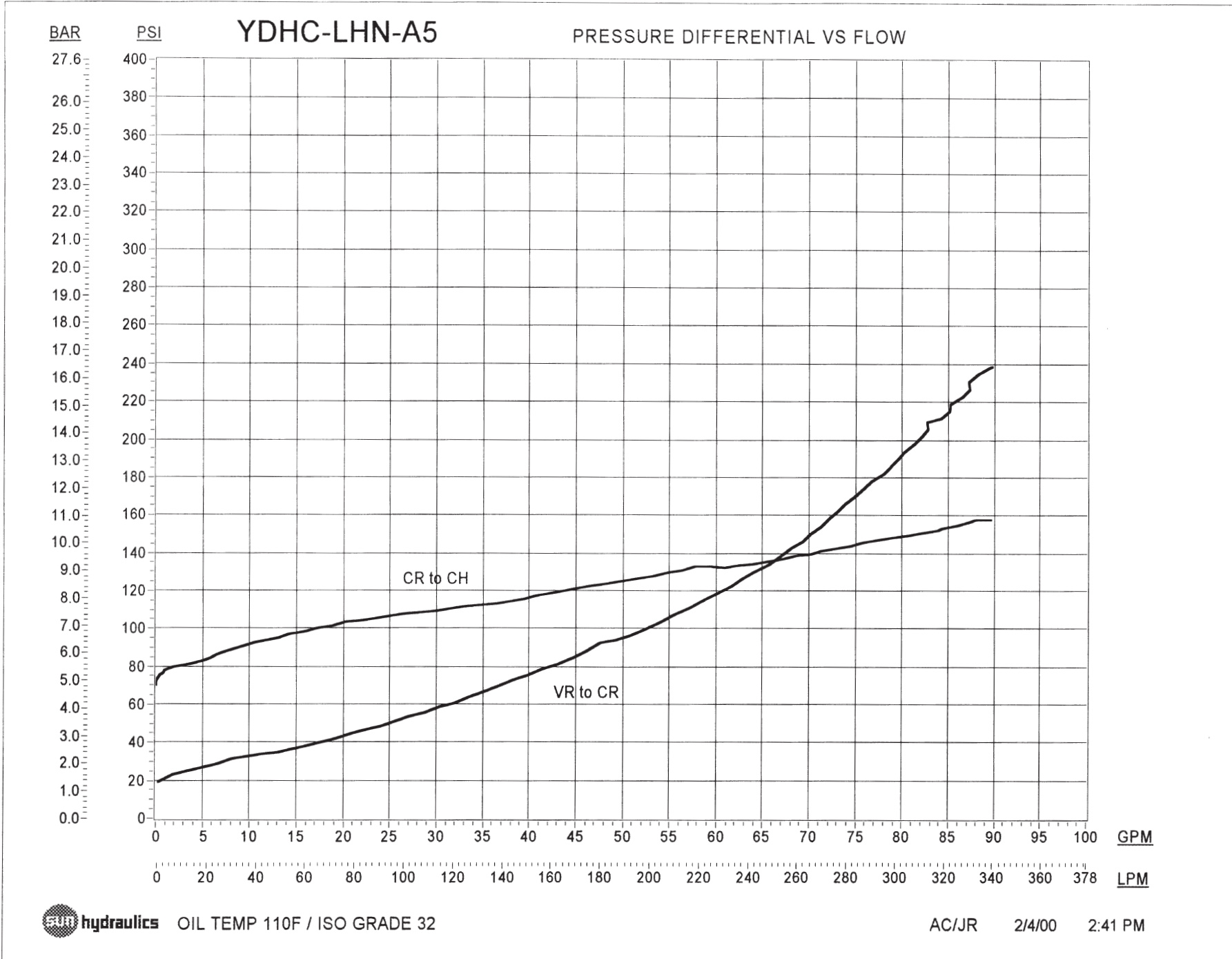
ITEM	PART NO.	PART NAME	QTY
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OUTLINE & ASSEMBLY

UNLESS OTHERWISE SPECIFIED		TITLE PRESSURE SENSITIVE REGENERATIVE VALVE 1.25 CODE-62 FLANGE		REVISION PART NO.	
DIMENSION TOL		SCALE REF		A YDHC LHN A5	
.X = +/- .030		1/2		MATERIAL ALUMINUM	
.XX = +/- .015		DRAWN R/B		HEAT TREAT & FINISH	
.XXX = +/- .005		CHECK DA		DATE	
ANGLE TOL +/- 1		DATE 4/20/91		DATE 4/22/91	
FINISH: #6 V		DATE		DATE	
REMOVE ALL BURRS		DATE		DATE	

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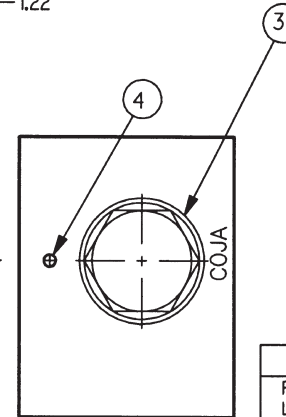
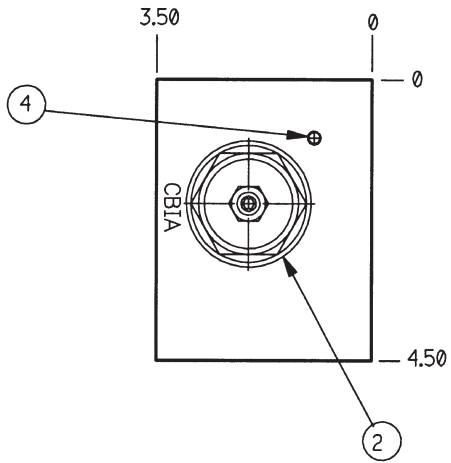
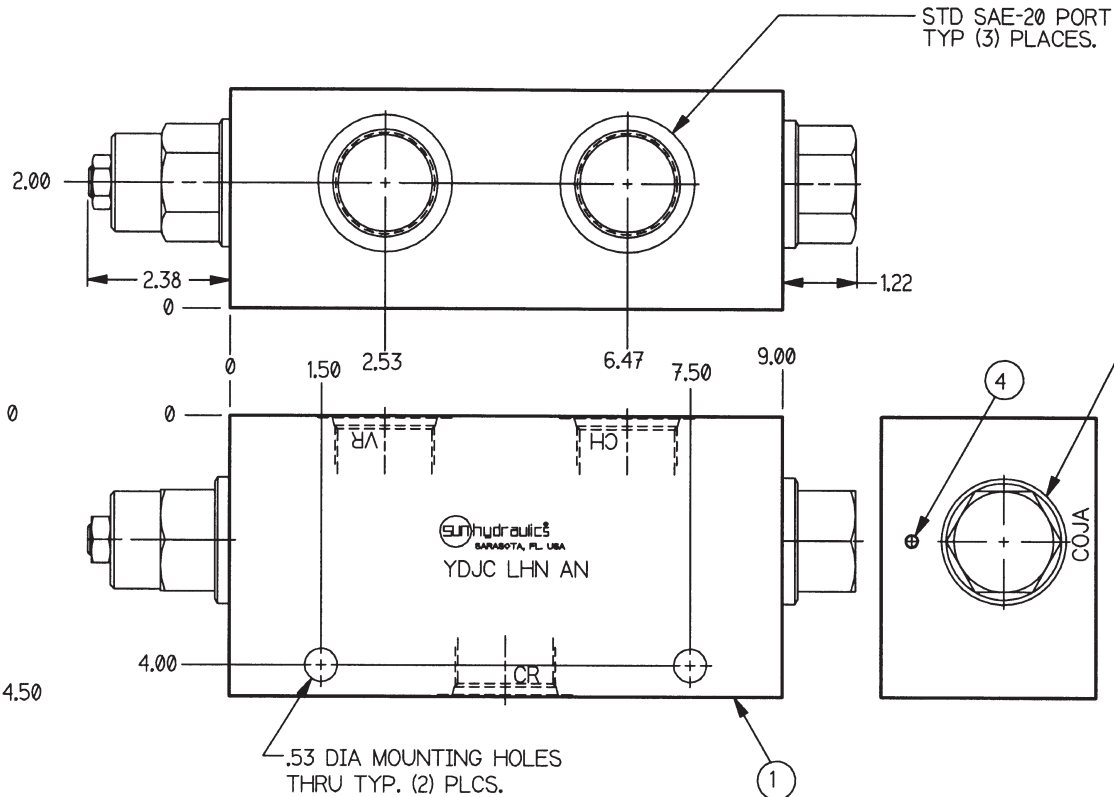
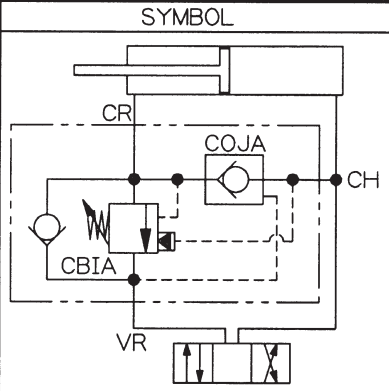
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THIRD ANGLE PROJECTION



REVISION PART NO.
B YDJC LHN AN



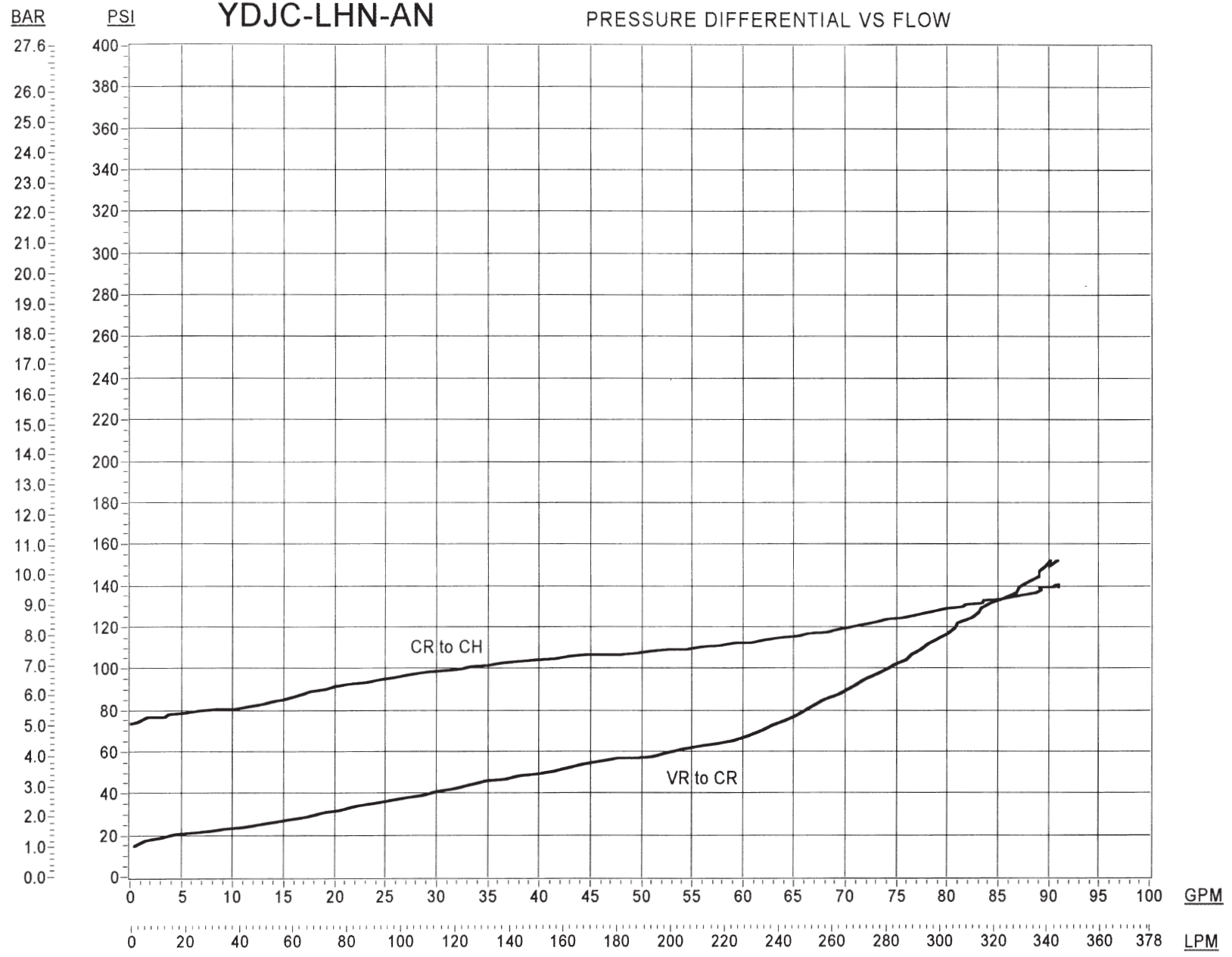
NOTES:
REFER TO SUN HYDRAULICS TECHNICAL LITERATURE AND CATALOG FOR THE DETAILS OF CARTRIDGE STANDARD SETTINGS, ADJUSTMENT RANGES, MAXIMUM PRESSURE RATINGS, SEAL MATERIAL, TORQUE VALUES, ETC.

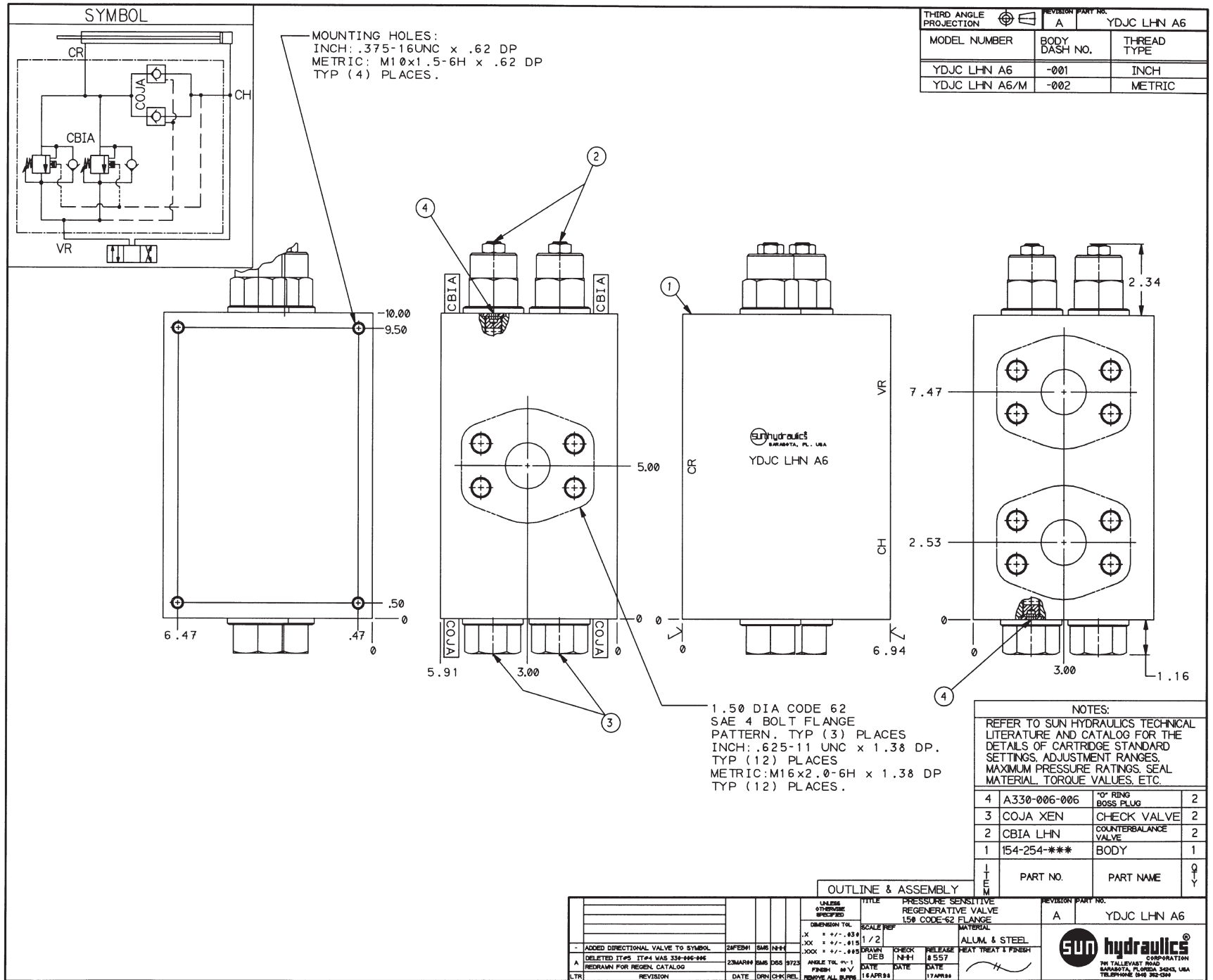
ITEM	PART NO.	PART NAME	QTY
4	850-004-218	KOENIG PLUG	2
3	COJA XEN	CHECK VALVE	1
2	CBIA LHN	COUNTERBALANCE VALVE	1
1	152-754-001	BODY	1

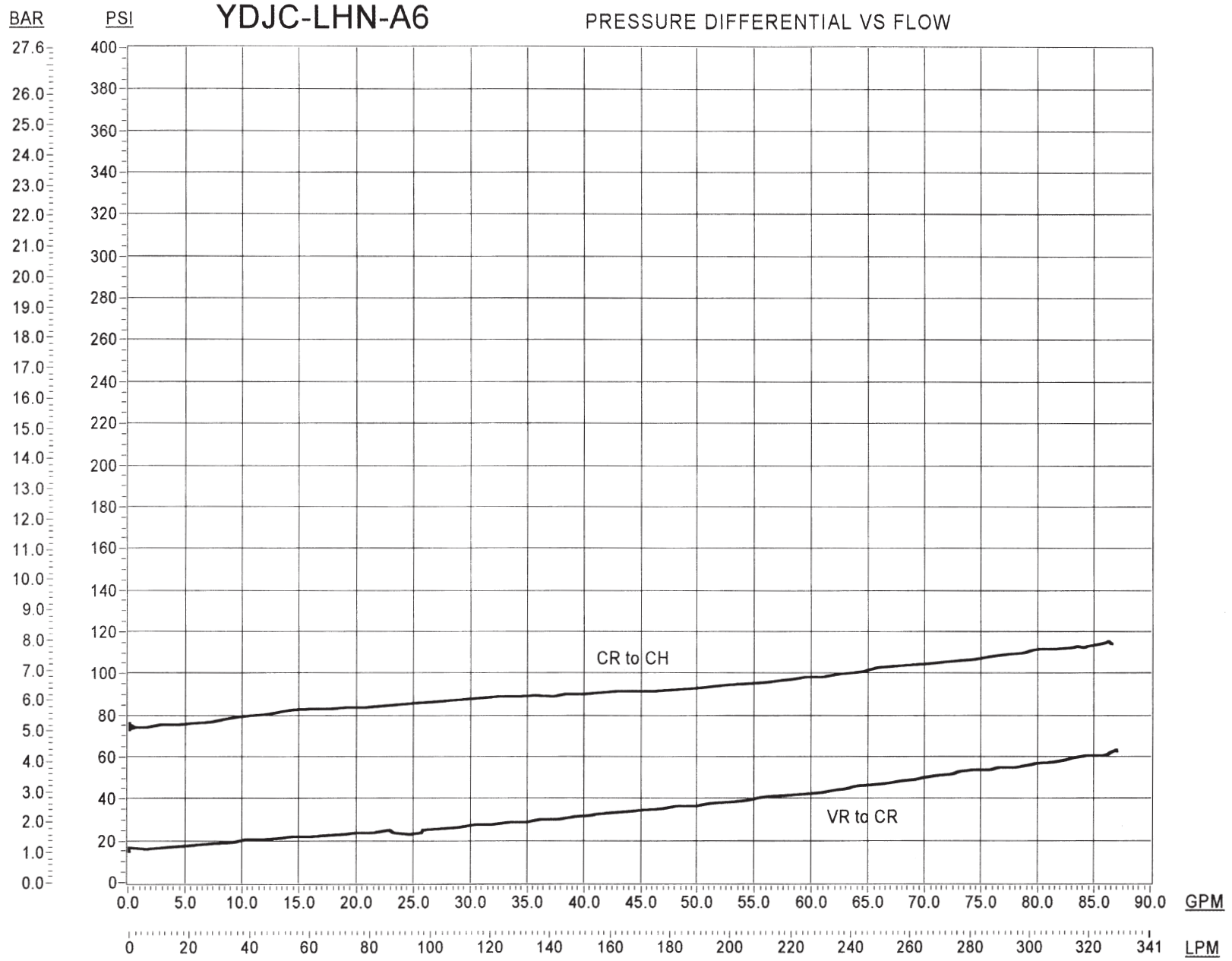
OUTLINE & ASSEMBLY

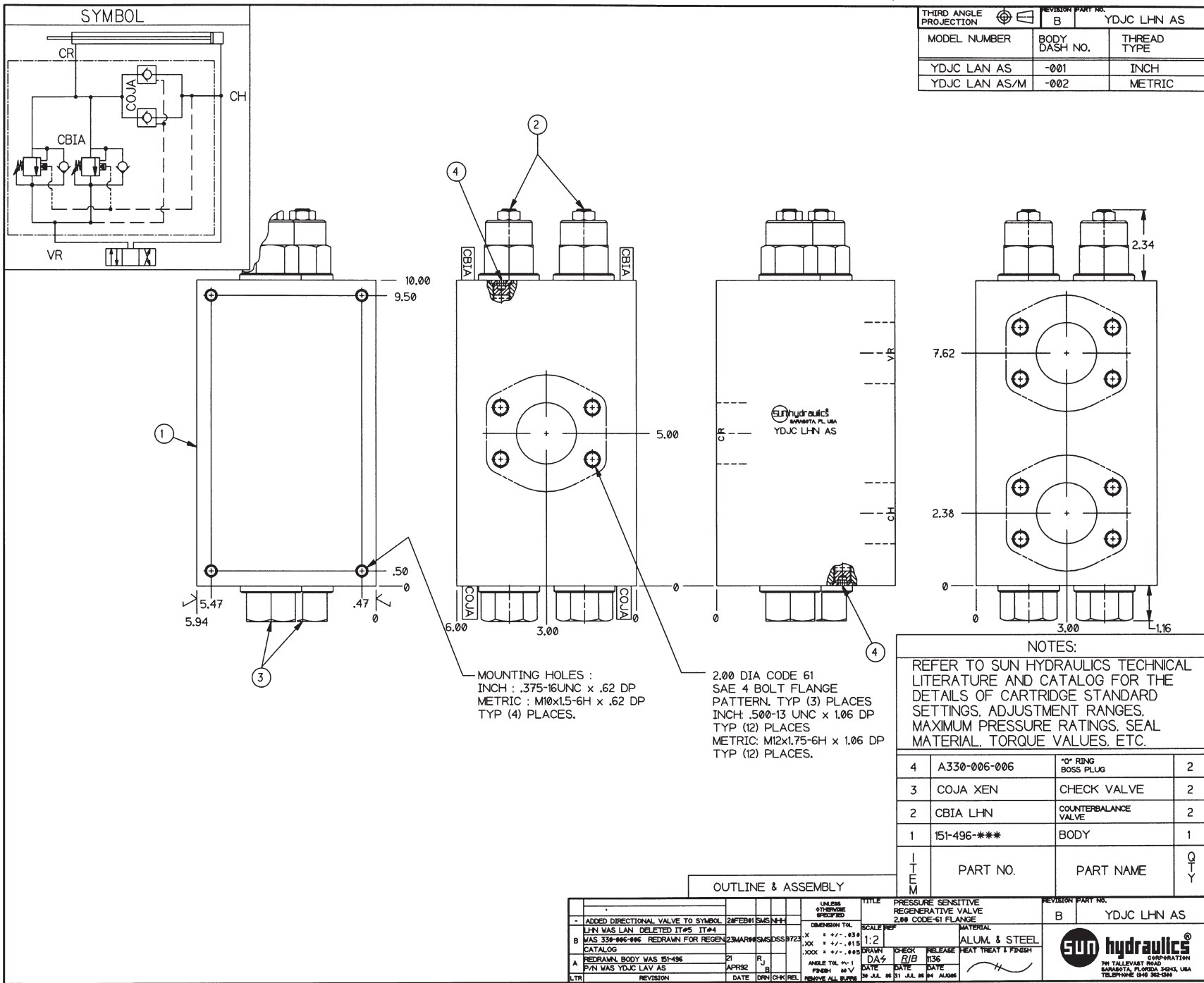
REVISION				DATE	DRN	CHK	REL	TITLE				SCALE	MATERIAL	REVISION PART NO.	
-	ADDED DIRECTIONAL VALVE TO SYMBOL	28FEB01	SMS	NH				PRESSURE SENSITIVE REGENERATIVE VALVE LINE MOUNT				1:2	ALUM. & STEEL	B	YDJC LHN AN
B	IT.1 PART NO. WAS 152-754	11 JUL 00	GH					DRAWN: DEB							
A	REDRAWN FOR REGEN. CATALOG	23MAR00	SMS	DSS	9723			DATE: 26NOV91							
LTR								UNLESS OTHERWISE SPECIFIED							
								DIMENSION TOL							
								.X = +/- .030							
								.XX = +/- .015							
								.XXX = +/- .005							
								ANGLE TOL +/- 1							
								FINISH #0 V							
								REMOVE ALL BURRS							

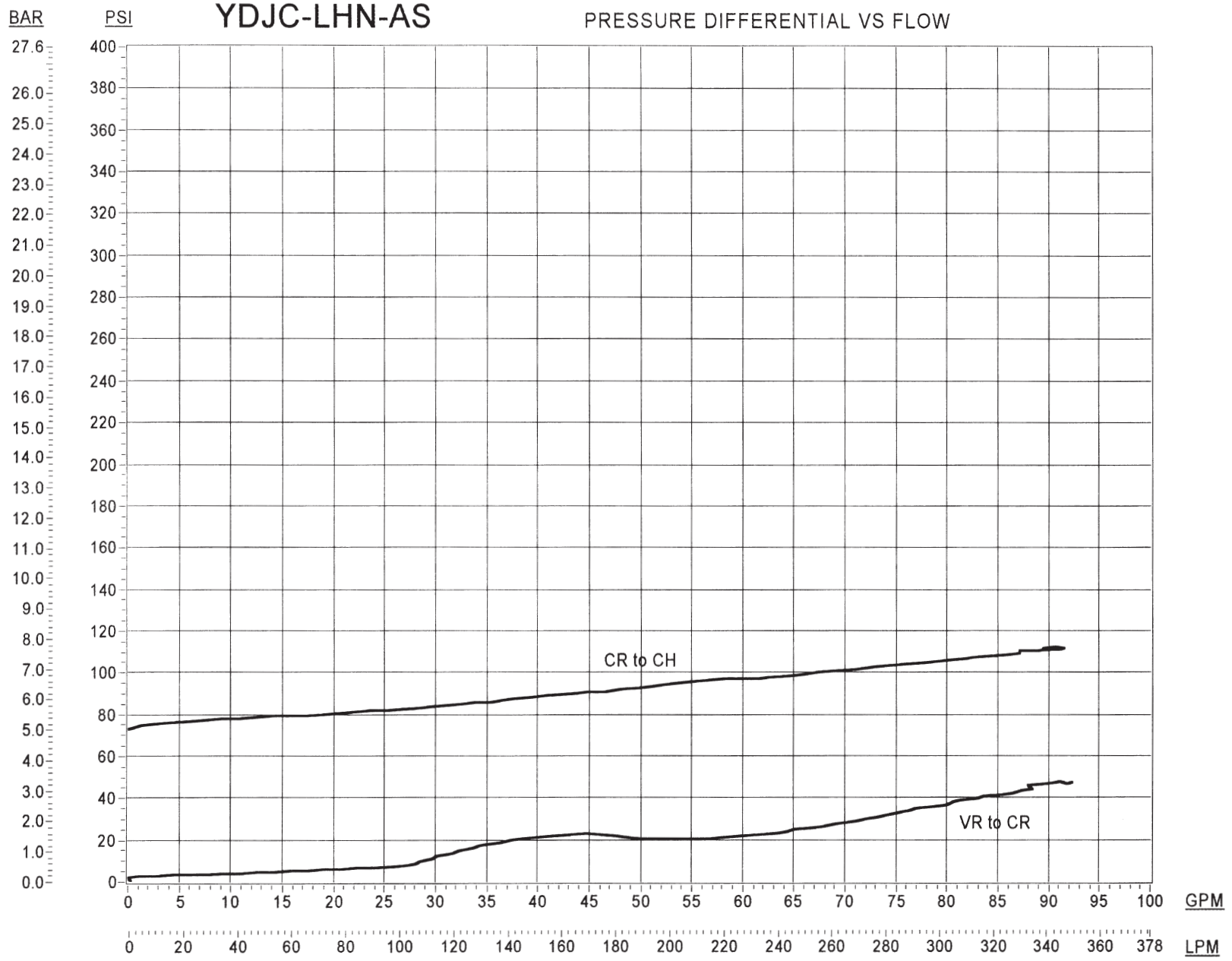






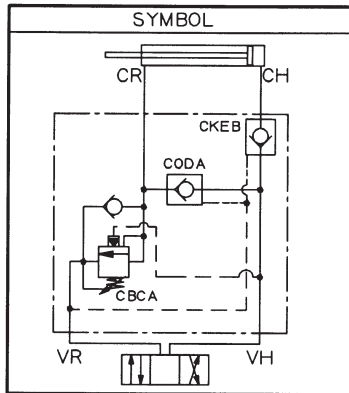




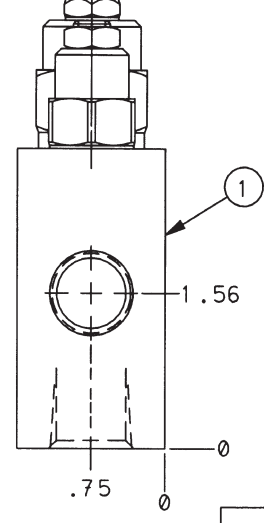
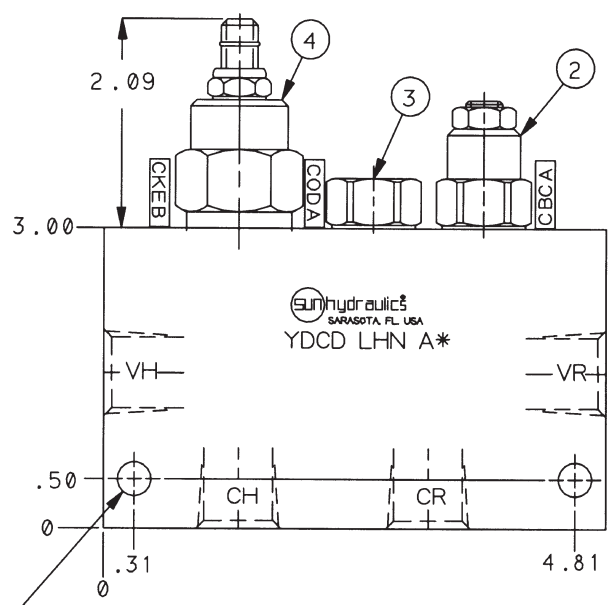
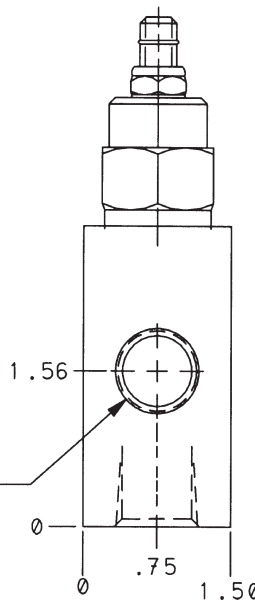


 **sun hydraulics** OIL TEMP 110F / ISO GRADE 32

AC/JR 3/7/00 4:37 PM

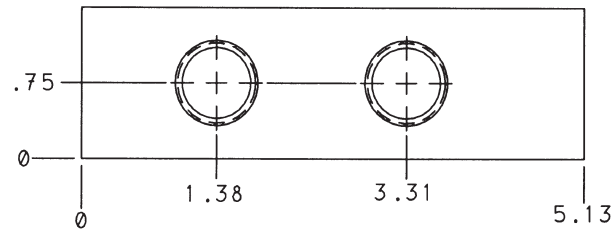


THIRD ANGLE PROJECTION		REVISION	C	PART NO.	YDCD LHN A*
PORTS CH, CR, VR, VH		BODY DASH NO.	-001	MODEL NO.	AC
.500-14 NPTF		BODY DASH NO.	-002	MODEL NO.	AK
SAE-10		BODY DASH NO.	-003	MODEL NO.	AV
.500-14 BSPP					



PORTS PER CHART TYP. (4) PLCS.

.34 DIA. MOUNTING HOLES THRU TYP. (2) PLCS.



NOTES:
REFER TO SUN HYDRAULICS TECHNICAL LITERATURE AND CATALOG FOR THE DETAILS OF CARTRIDGE STANDARD SETTINGS, ADJUSTMENT RANGES, MAXIMUM PRESSURE RATINGS, SEAL MATERIAL, TORQUE VALUES, ETC.

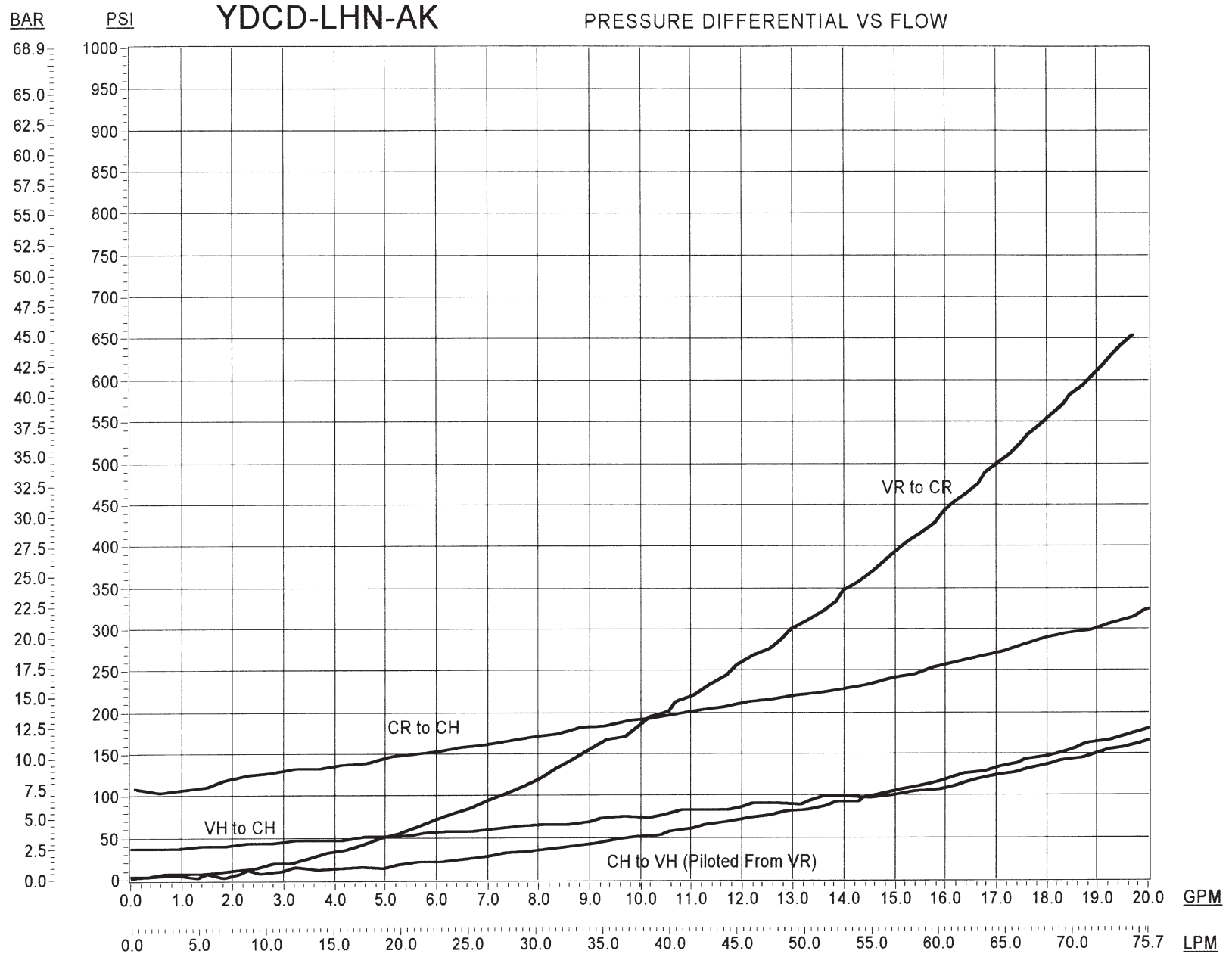
ITEM	PART NO.	PART NAME	QTY
4	CKEB LCN	CHECK VALVE	1
3	CODA XEN	CHECK VALVE	1
2	CBCA LHN	COUNTERBALANCE VALVE	1
1	150-817-***	BODY	1

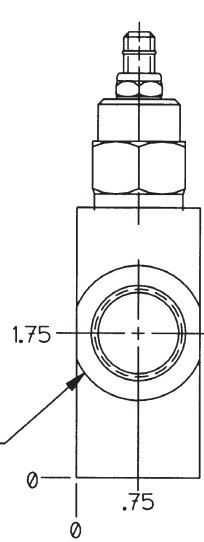
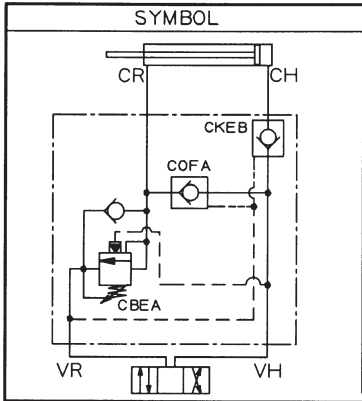
OUTLINE & ASSEMBLY

LTR	REVISION	DATE	DRN	CHK	REL
-	ADDED DIRECTIONAL VALVE TO SYMBOL	24FEB81	SMS	NHH	
C	LHN WAS LAN REDRAWN FOR REGEN. CATALOG	23MAR88	SMS	DSS	9723
B	CKEB LCN WAS CKEA LCN	18JUL88	RC		
A	CKEA LCN WAS CPEA LCN	24SEP82	RJC		

UNLESS OTHERWISE SPECIFIED		TITLE		REVISION		PART NO.	
DIMENSION TOL		PRESSURE SENSITIVE REGENERATIVE VALVE LINE MOUNTED		C		YDCD LHN A*	
.X = +/- .030		SCALE REF		MATERIAL		ALUM. & STEEL	
.XX = +/- .015		1:1.25		HEAT TREAT & FINISH		H	
.XXX = +/- .005		DRAWN HHP		CHECK JDA		RELEASE	
ANGLE TOL +/- 1		DATE 21 MAY 82		DATE 05 JUN 82		DATE	
FINISH #0 V		REMOVE ALL BURRS					

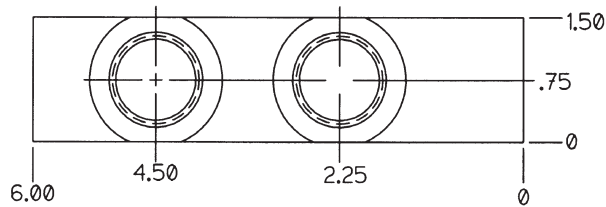
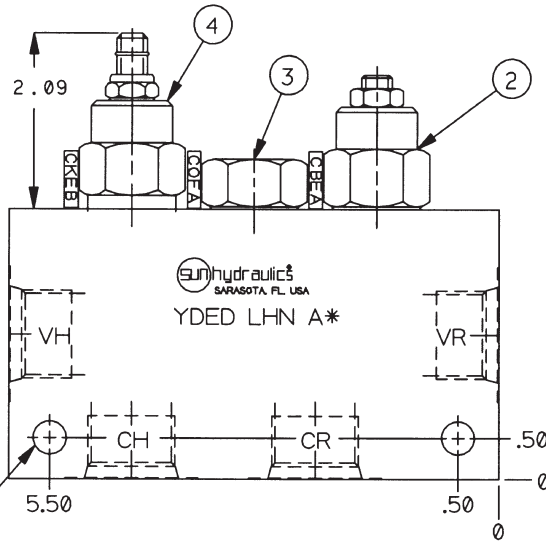
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CORPORATION
701 TALLEVAST ROAD
SARASOTA, FLORIDA 34243, USA
TELEPHONE (840) 362-1300



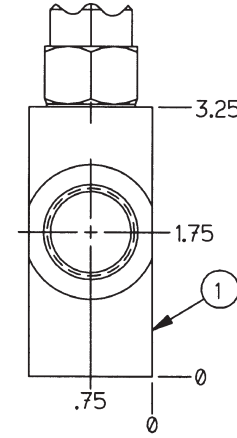


PORTS PER CHART
TYP. (4) PLCS.

.41 DIA. MOUNTING HOLES
THRU TYP. (2) PLCS.



THIRD ANGLE PROJECTION	REVISION H	PART NO. YDED LHN A*
PORTS CR, CH, VR, VH	BODY DASH NO.	THREAD TYPE
.750-14 NPTF	-001	AD
.750-14 BSPP	-002	AW
SAE-12	-003	AL



NOTES:
REFER TO SUN HYDRAULICS TECHNICAL LITERATURE AND CATALOG FOR THE DETAILS OF CARTRIDGE STANDARD SETTINGS, ADJUSTMENT RANGES, MAXIMUM PRESSURE RATINGS, SEAL MATERIAL, TORQUE VALUES, ETC.

4	CKEB LCN	CHECK VALVE	1
3	COFA XEN	CHECK VALVE	1
2	CBEA LHN	COUNTERBALANCE VALVE	1
1	150-030-***	BODY	1

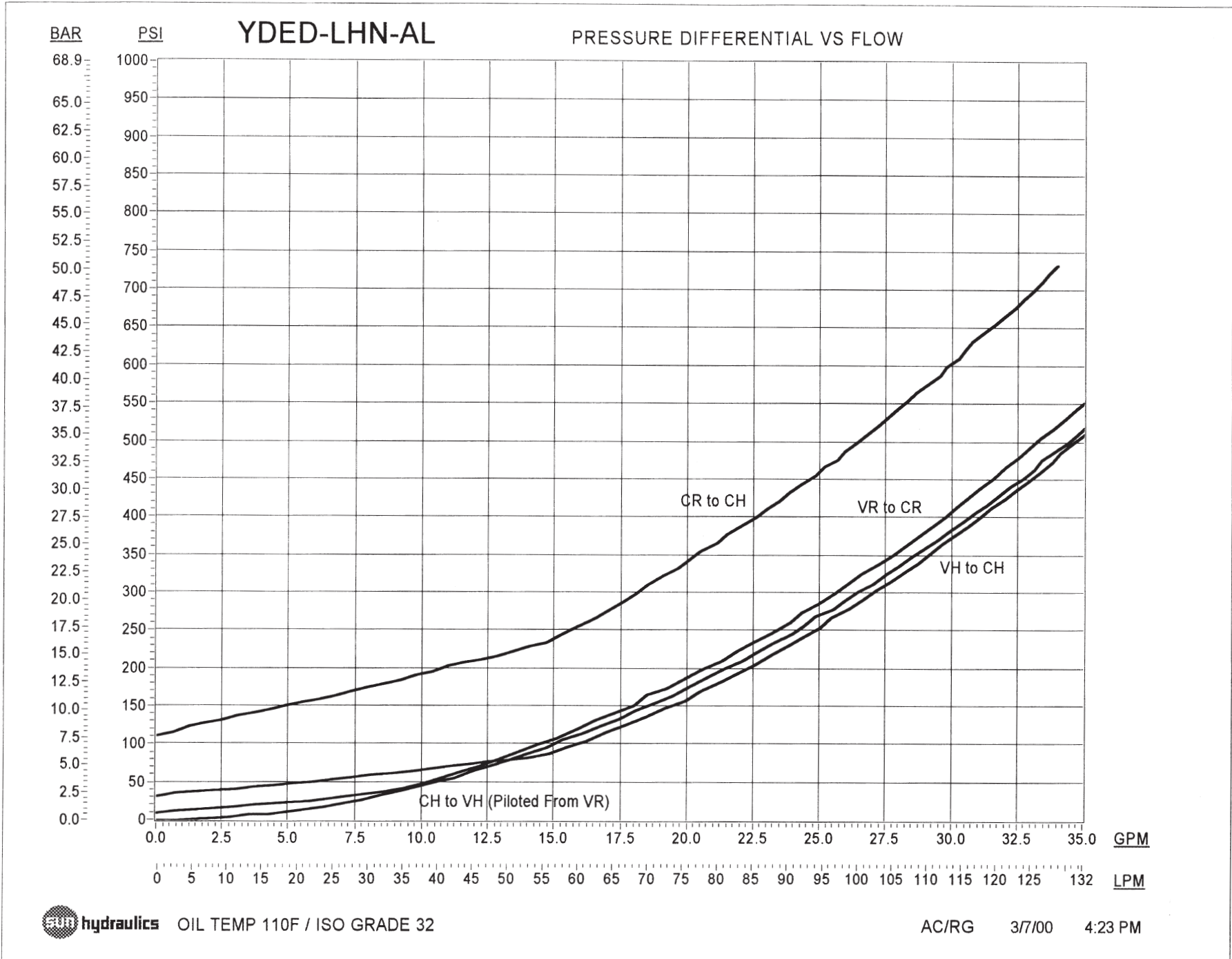
ITEM	PART NO.	PART NAME	QTY
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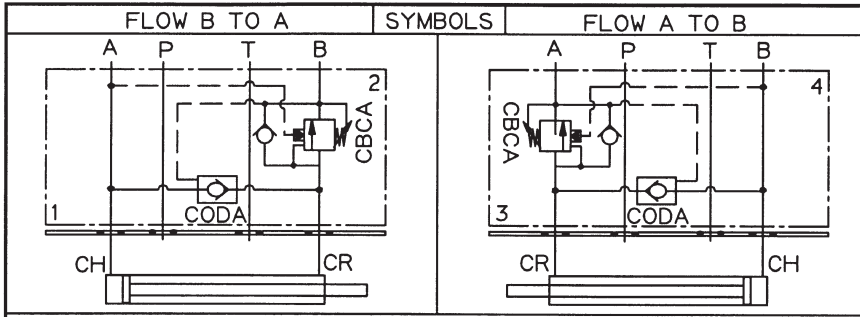
OUTLINE & ASSEMBLY

UNLESS OTHERWISE SPECIFIED				TITLE PRESSURE SENSITIVE REGENERATIVE VALVE LINE MOUNTED		REVISION H		PART NO. YDED LHN A*	
DIMENSION TOL				SCALE REF YDEA LAN A** MATERIAL		1:15		YDEB LAN AD ALUM. & STEEL	
.X = +/- .030				DRAWN HHP		CHECK RELEASE		HEAT TREAT & FINISH	
.XX = +/- .015				DATE		DATE		DATE	
.XXX = +/- .005				ANGLE TOL +/- 1					
FINISH #0 V				REMOVE ALL BURRS					
LTR REVISION				DATE DRN CHK REL					

-	ADDED DIRECTIONAL VALVE TO SYMBOL	28FEB01	SMS	NHH
H	LHN WAS LAN REDRAWN FOR REGEN. CATALOG	23MAR00	SMS	DSS 9723
G	CKEB LAN WAS CKEA LAN	18JUL00	RC	
F	CKEA LAN WAS OPEA LAN	28SEP02	RJC	
E	REMOVED 340-001 3.25 WAS 3.00	24SEP00	RJC	
D	REDRAWN A SIZE OBSOLETE	08AUG78	JDA	HHP

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THIRD ANGLE PROJECTION



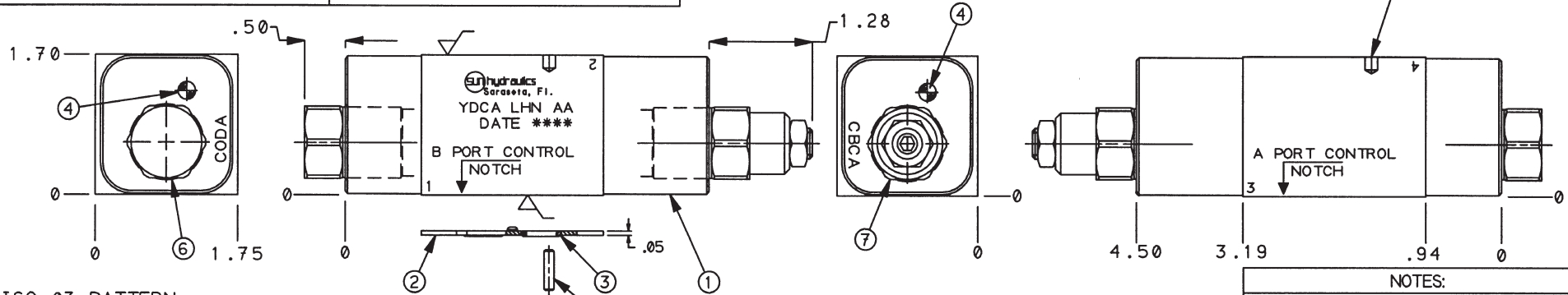
REVISION PART NO.

C

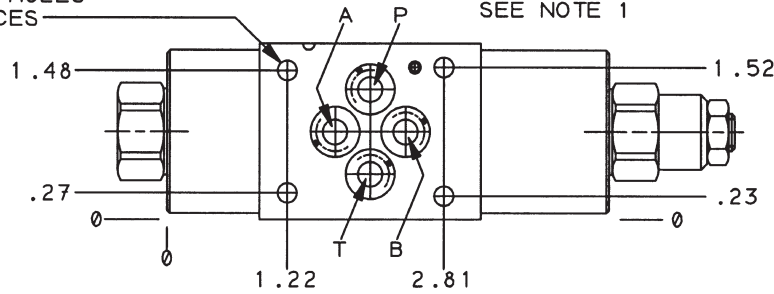
YDCA LHN AA

NOTES:
1) CUSTOMER TO INSTALL PIN FOR FUNCTIONAL ORIENTATION

LOCATION PIN CLEARANCE HOLE
.16 DIA x .16 DP.
TYP (2) PLACES.



ISO-03 PATTERN
.20 DIA MOUNTING HOLES
THRU TYP (4) PLACES



NOTES:
REFER TO SUN HYDRAULICS TECHNICAL LITERATURE AND CATALOG FOR THE DETAILS OF CARTRIDGE STANDARD SETTINGS, ADJUSTMENT RANGES, MAXIMUM PRESSURE RATINGS, SEAL MATERIAL, TORQUE VALUES AND ETC.

ITEM	PART NO.	PART NAME	QTY
7	CBCA LHN	COUNTERBALANCE VALVE	1
6	CODA XEN	CHECK VALVE	1
5	811-001-006	PIN	1
4	850-004-218	KOENIG PLUG	2
3	500-001-012	"O" RING	4
2	700-002	SEAL PLATE	1
1	150-281	BODY	1

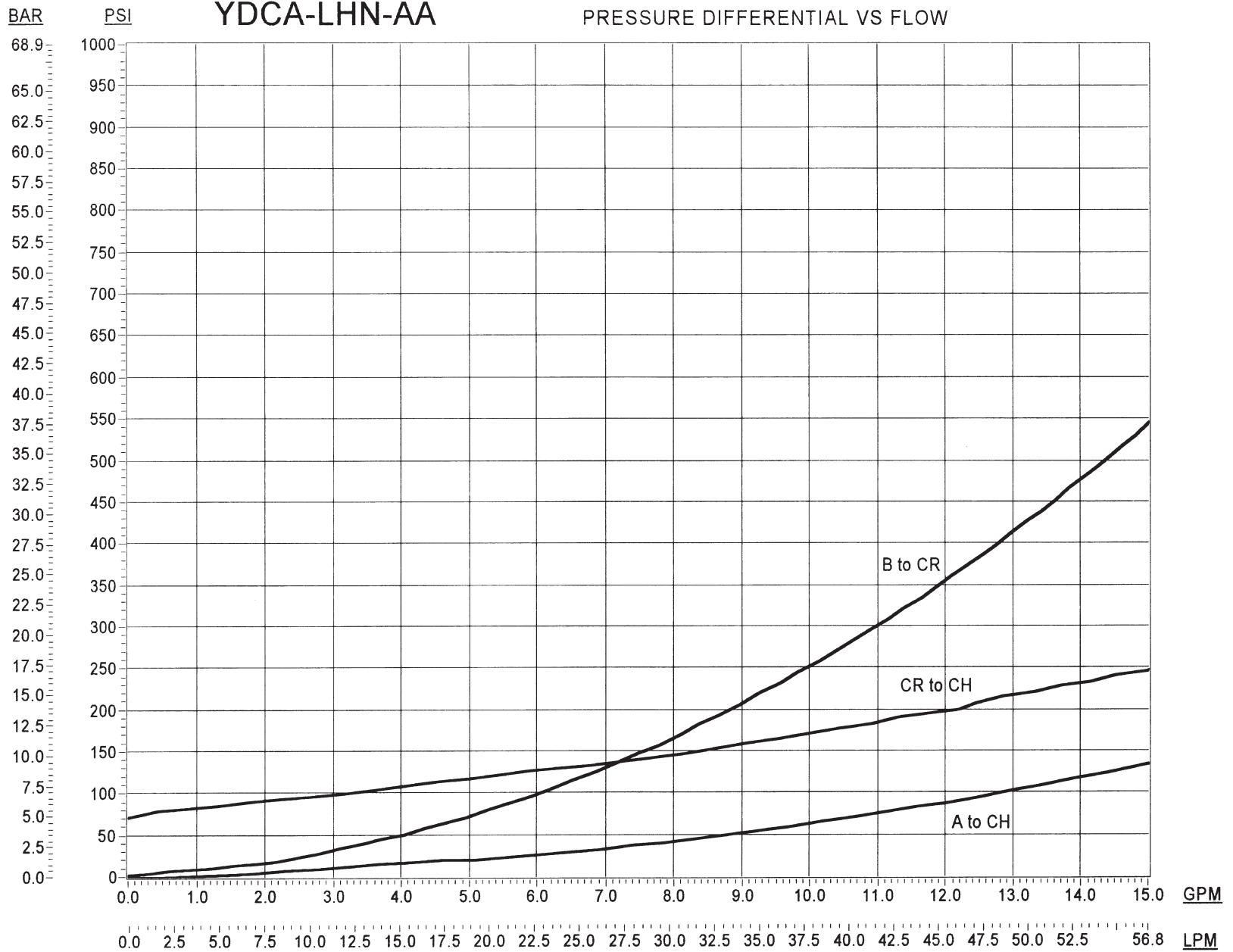
SEE NOTE 1 *

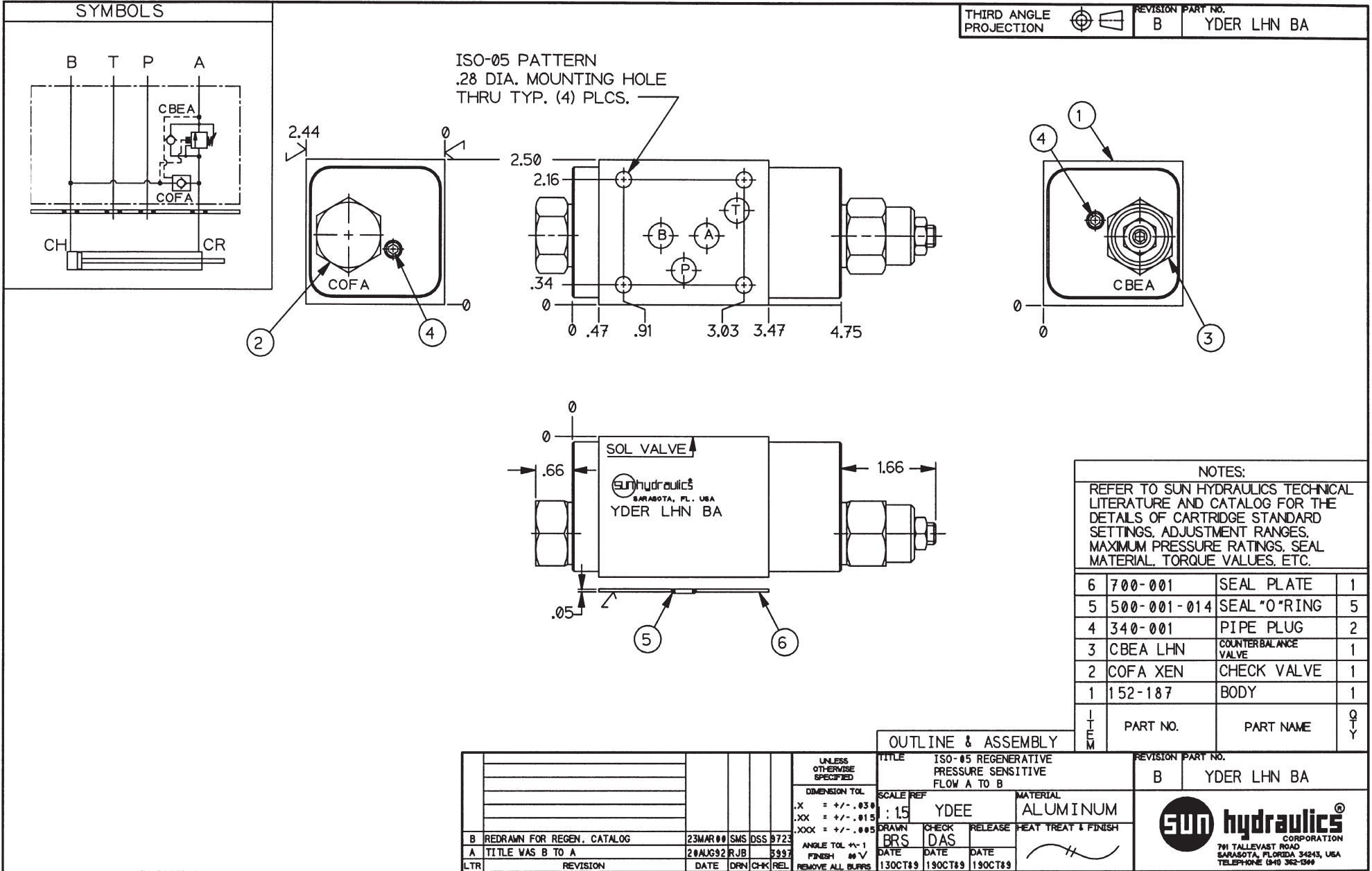
OUTLINE & ASSEMBLY

REVISION	DATE	DRN	CHK	REL
C	23MAR88	SMS	DSS	19723
B	28AUG89	GH	DRC	
A	18NOV92	BRS		4888
-	07APR89	DAS		2885
-	19OCT88	RC		1823
LTR				

UNLESS OTHERWISE SPECIFIED		TITLE ISO-03 PRESS. SENSITIVE REGENERATIVE VALVE FLOW A TO B OR B TO A		REVISION PART NO.	
DIMENSION TOL		SCALE REF		C YDCA LHN AA	
.X = +/- .030		1:1.25		ALUMINIUM	
.XX = +/- .015		DRAWN RJC		HEAT TREAT & FINISH	
.XXX = +/- .005		CHECK	RELEASE		
ANGLE TOL +/- 1		DATE	DATE		
F30081 88 V		DATE	DATE		
REMOVE ALL BURRS		26AUG88			







THIRD ANGLE PROJECTION REVISION PART NO.
 B YDER LHN BA

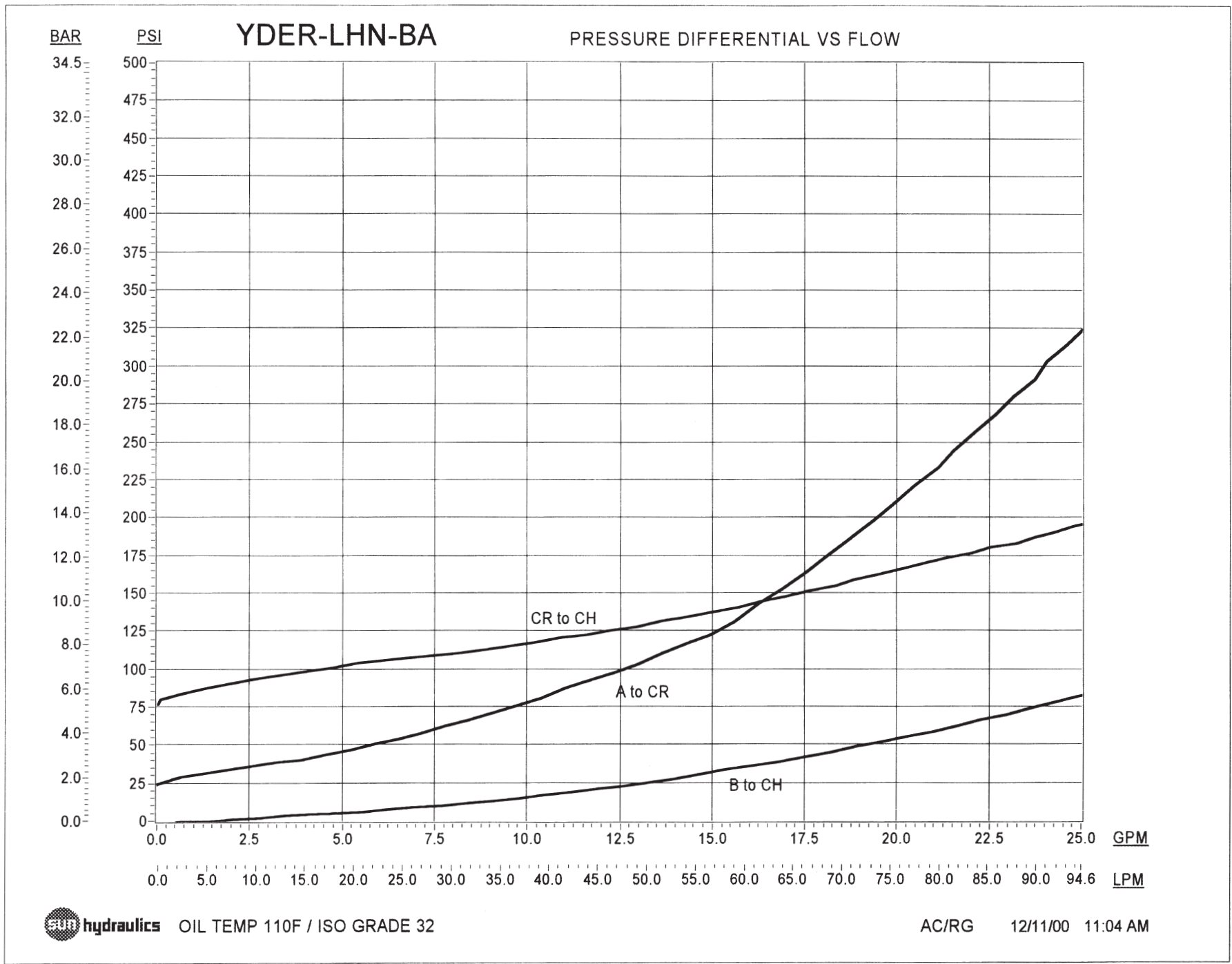
ISO-05 PATTERN
 .28 DIA. MOUNTING HOLE
 THRU TYP. (4) PLCS.

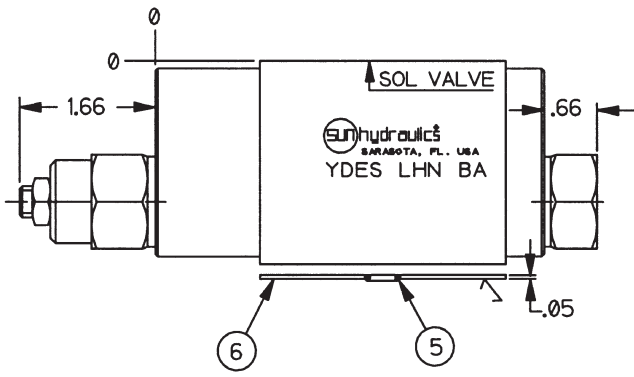
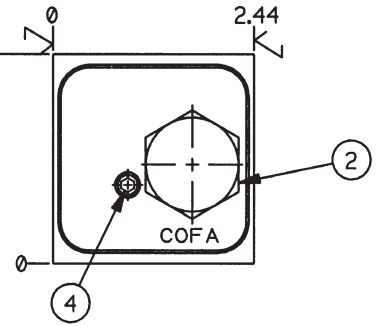
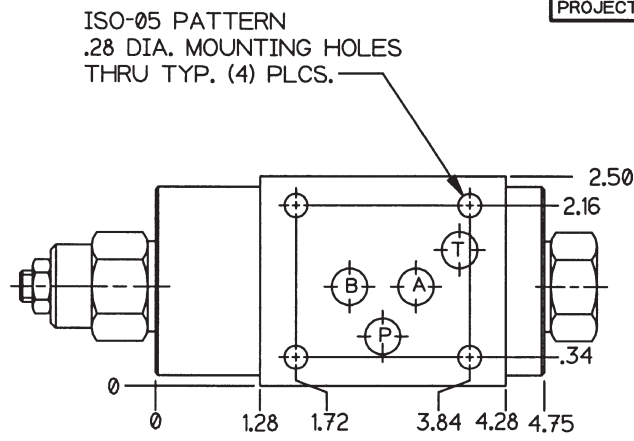
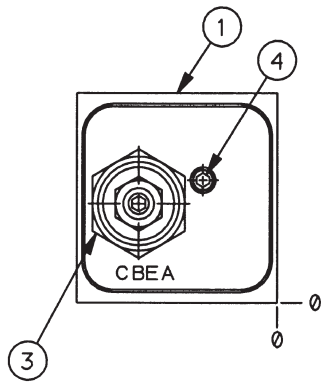
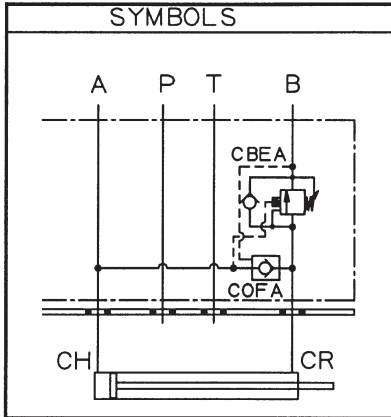
NOTES:
 REFER TO SUN HYDRAULICS TECHNICAL LITERATURE AND CATALOG FOR THE DETAILS OF CARTRIDGE STANDARD SETTINGS, ADJUSTMENT RANGES, MAXIMUM PRESSURE RATINGS, SEAL MATERIAL, TORQUE VALUES, ETC.

ITEM	PART NO.	PART NAME	QTY
6	700-001	SEAL PLATE	1
5	500-001-014	SEAL O-RING	5
4	340-001	PIPE PLUG	2
3	CBEA LHN	COUNTERBALANCE VALVE	1
2	COFA XEN	CHECK VALVE	1
1	152-187	BODY	1

UNLESS OTHERWISE SPECIFIED				TITLE			REVISION PART NO.		
DIMENSION TOL				ISO-05 REGENERATIVE PRESSURE SENSITIVE FLOW A TO B			B YDER LHN BA		
.X = +/- .030				SCALE REF	YDEE		MATERIAL		
.XX = +/- .015				: 15			ALUMINUM		
.XXX = +/- .005				DRAWN	CHECK	RELEASE	HEAT TREAT & FINISH		
ANGLE TOL +/- 1				BRS	DAS				
FINISH #0 V				DATE	DATE	DATE			
REMOVE ALL BURRS				13OCT89	19OCT89	19OCT89			
B	REDRAWN FOR REGEN. CATALOG	23MAR88	SMS DSS 9723						
A	TITLE WAS B TO A	28AUG92	RJB 5997						
LTR	REVISION	DATE	DRN CHK REL						

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NOTES:
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ITEM	PART NO.	PART NAME	QTY
6	700-001	SEAL PLATE	1
5	500-001-014	SEAL O-RING	5
4	340-001	PIPE PLUG	2
3	CBEA LHN	COUNTERBALANCE VALVE	1
2	COFA XEN	CHECK VALVE	1
1	152-188	BODY	1

REVISION	DATE	DRN	CHK	REL
C	23MAR00	SMS	DSS	9723
B	29OCT93	BRS		
A	28AUG92	RJB		3997
-	20MAY91	BRS		
-	06DEC89	BRS		

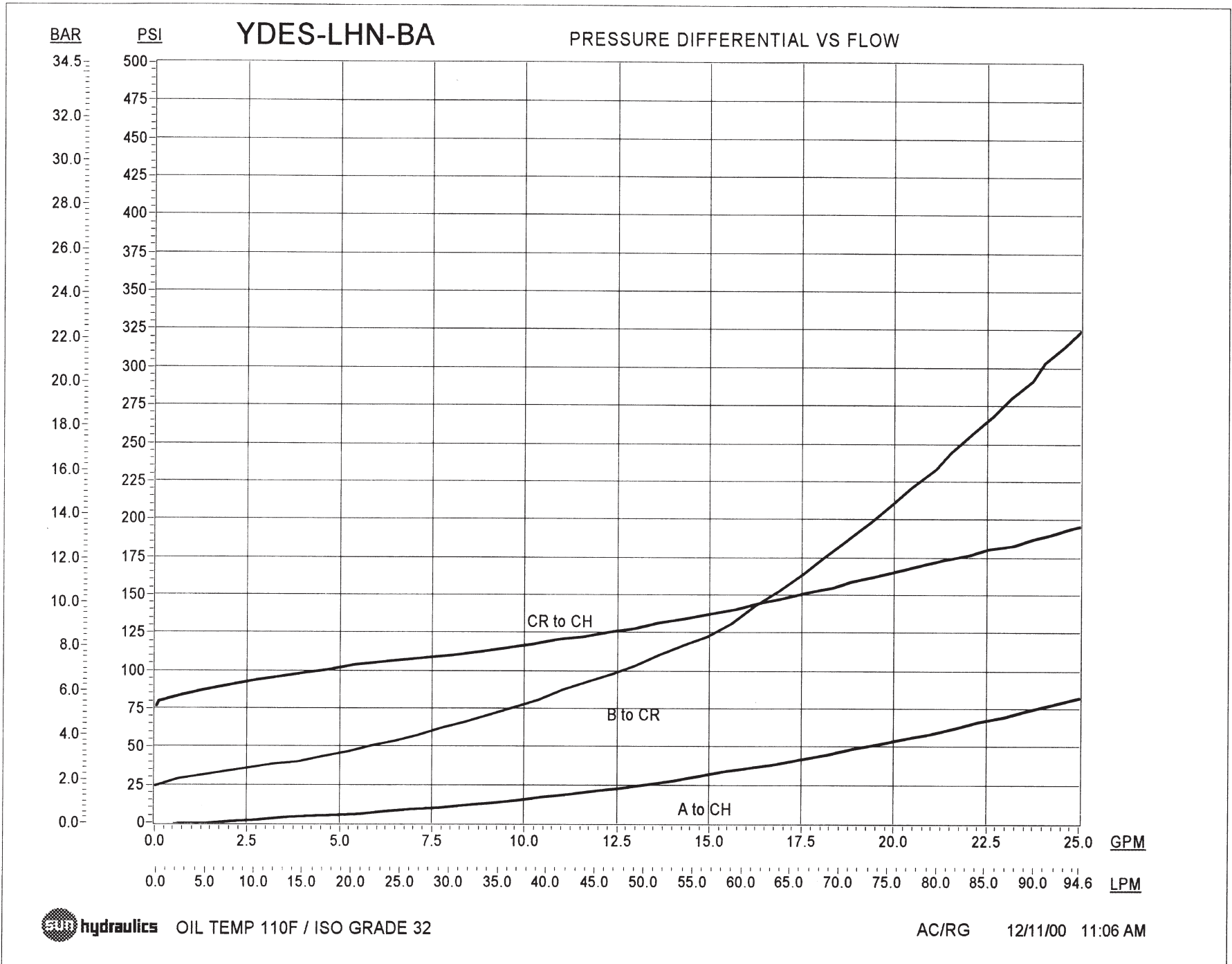
UNLESS OTHERWISE SPECIFIED		
DIMENSION TOL	SCALE REF	MATERIAL
.XX = +/- .030	1:15	ALUMINUM
.XX = +/- .015	YDEE	HEAT TREAT & FINISH
.XXX = +/- .005	YDEE	
ANGLE TOL +/- 1	DRAWN	DATE
FINISH #0 V	BRS	DAS
REMOVE ALL BURRS	DATE	DATE
	11OCT89	19OCT89

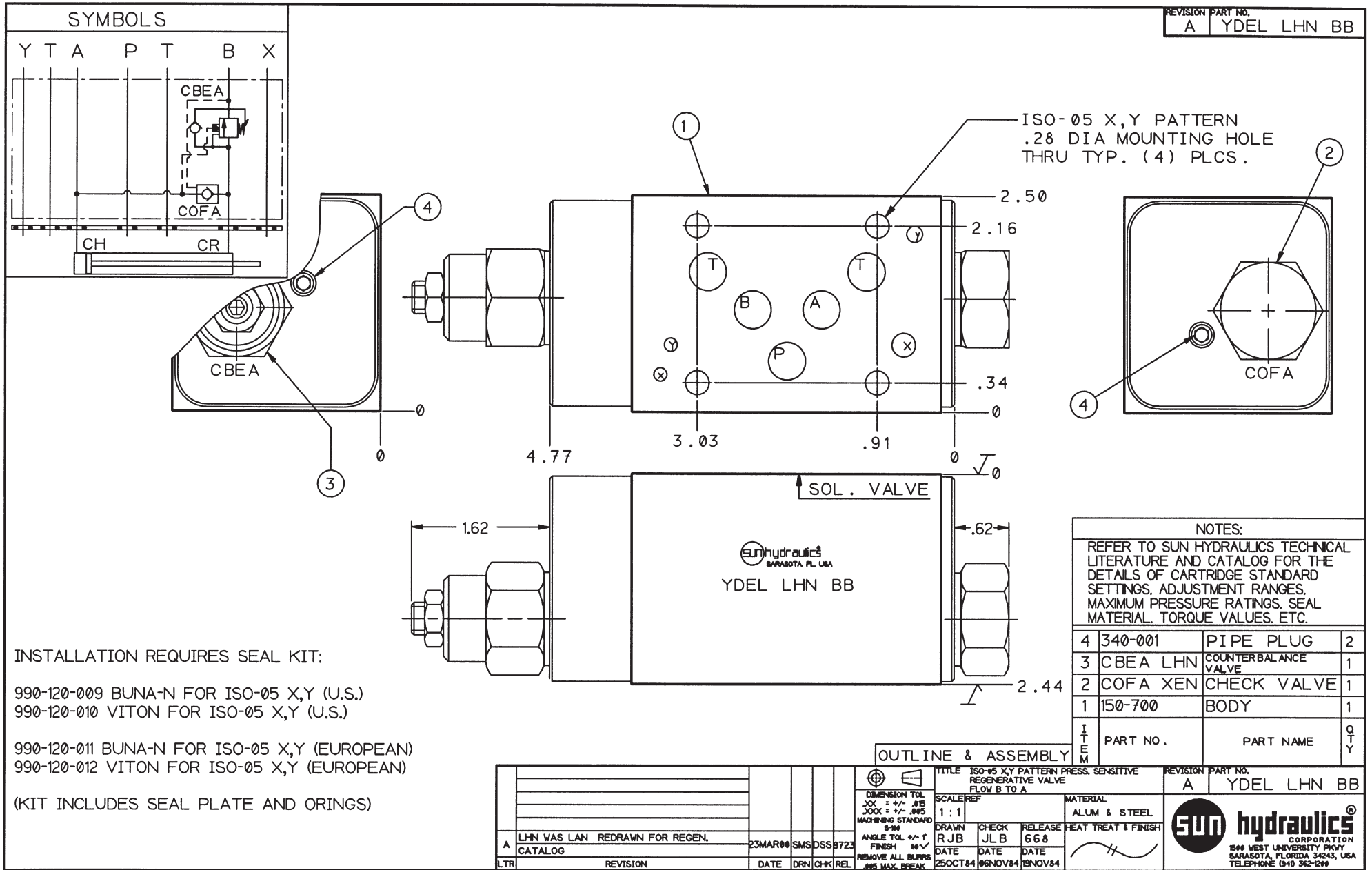
OUTLINE & ASSEMBLY

TITLE: ISO-05 REGENERATIVE PRESSURE SENSITIVE FLOW B TO A

REVISION PART NO. C YDES LHN BA

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INSTALLATION REQUIRES SEAL KIT:

990-120-009 BUNA-N FOR ISO-05 X,Y (U.S.)
 990-120-010 VITON FOR ISO-05 X,Y (U.S.)

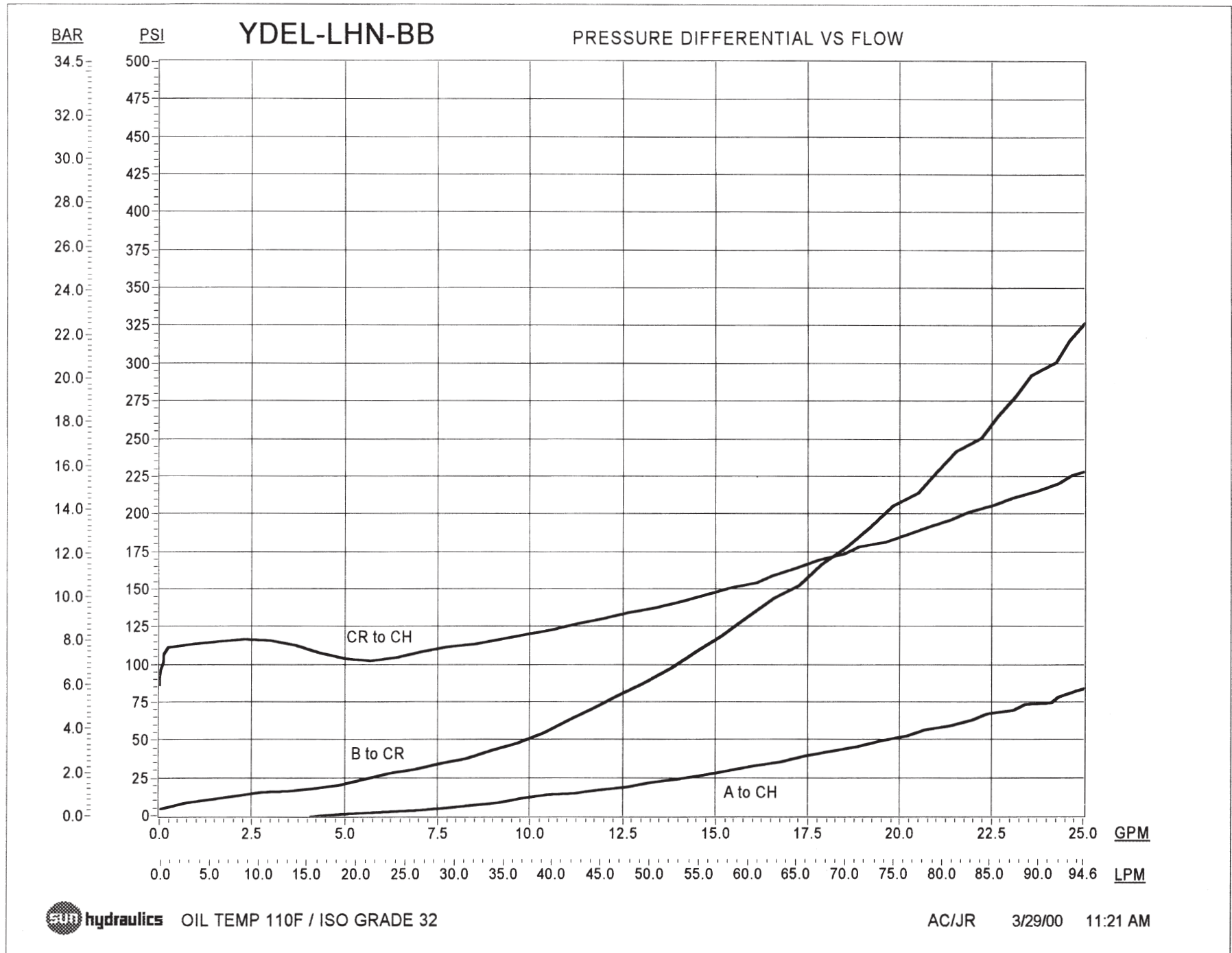
990-120-011 BUNA-N FOR ISO-05 X,Y (EUROPEAN)
 990-120-012 VITON FOR ISO-05 X,Y (EUROPEAN)

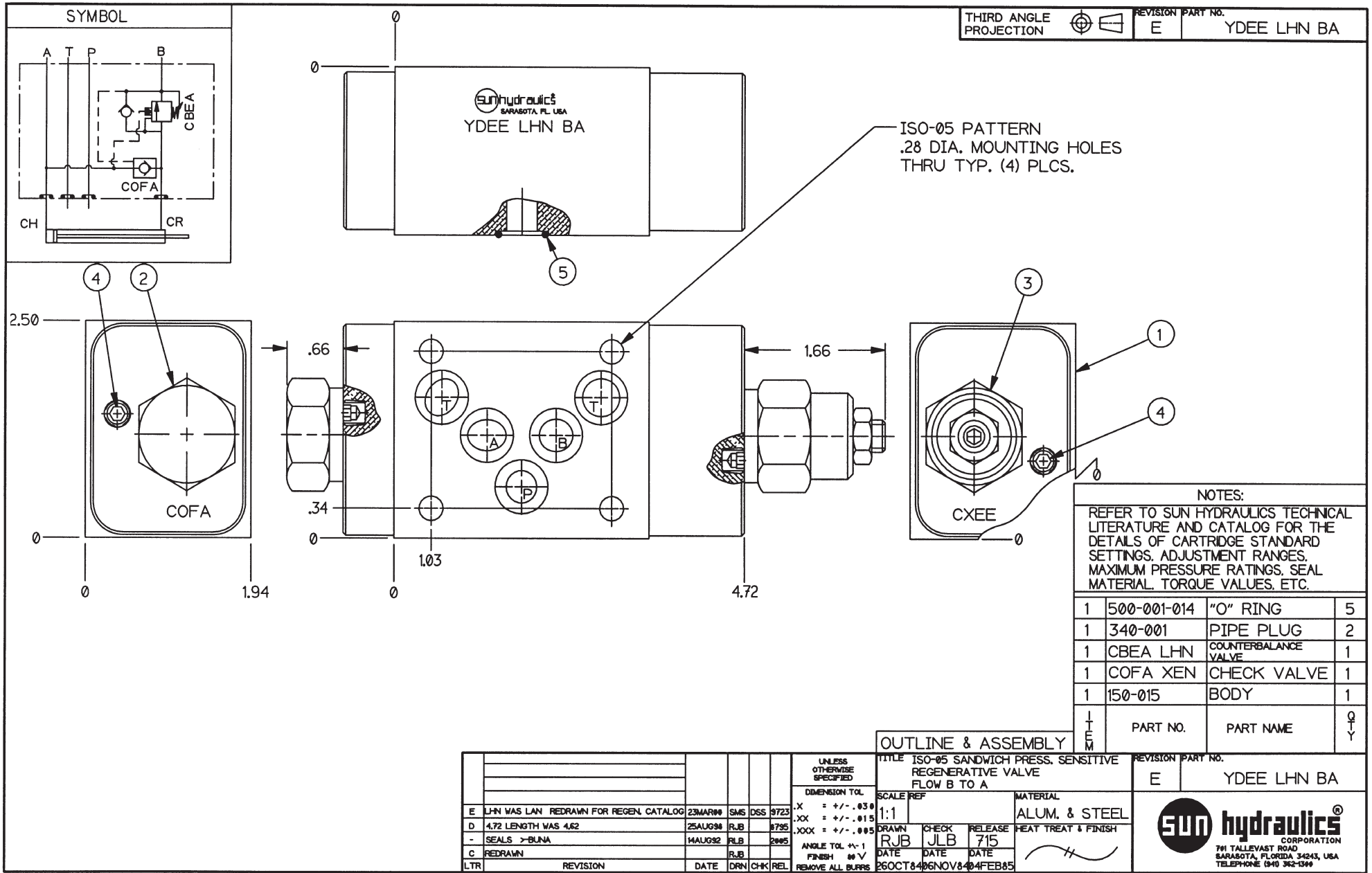
(KIT INCLUDES SEAL PLATE AND ORINGS)

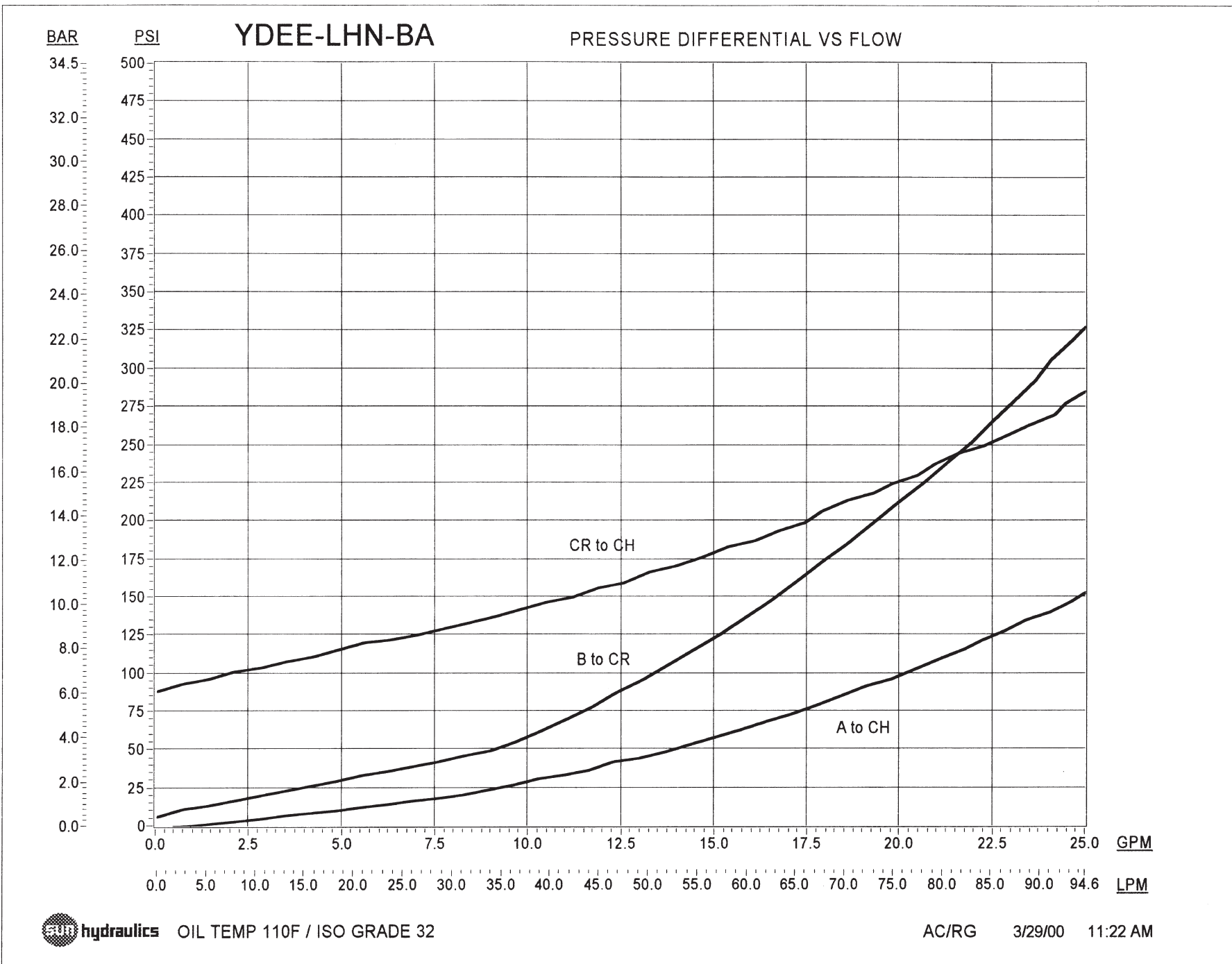
NOTES:			
REFER TO SUN HYDRAULICS TECHNICAL LITERATURE AND CATALOG FOR THE DETAILS OF CARTRIDGE STANDARD SETTINGS, ADJUSTMENT RANGES, MAXIMUM PRESSURE RATINGS, SEAL MATERIAL, TORQUE VALUES, ETC.			
4	340-001	PIPE PLUG	2
3	CBEA LHN	COUNTERBALANCE VALVE	1
2	COFA XEN	CHECK VALVE	1
1	150-700	BODY	1
ITEM	PART NO.	PART NAME	QTY

A		YDEL LHN BB	
DIMENSION TOL .001 = +/- .005 .002 = +/- .005 MACHINING STANDARD 5-10 ANGLE TOL +/- 1° FINISH #6 ✓ REMOVE ALL BURRS .002 MAX. BREAK			
LHN WAS LAN REDRAWN FOR REGEN. CATALOG		23MAR00	SMS/DSS/3723
LTR	REVISION	DATE	DRN/CHK/REL
TITLE ISO-05 X,Y PATTERN PRESS. SENSITIVE REGENERATIVE VALVE FLOW B TO A		REVISION PART NO.	
SCALE REF 1:1		A YDEL LHN BB	
DRAWN RJB	CHECK JLB	RELEASE 668	MATERIAL ALUM & STEEL
DATE 25OCT84	DATE 06NOV84	DATE 18NOV84	HEAT TREAT & FINISH









SYMBOL

THIRD ANGLE PROJECTION

REVISION	PART NO.
A	YDFE LHN AB

3

ISO 07 PATTERN
.41 DIA. MOUNTING HOLES
THRU TYP. (4) PLCS.

.28 DIA THRU.
TYP. (2) PLACES

2

NOTES:

REFER TO SUN HYDRAULICS TECHNICAL LITERATURE AND CATALOG FOR THE DETAILS OF CARTRIDGE STANDARD SETTINGS, ADJUSTMENT RANGES, MAXIMUM PRESSURE RATINGS, SEAL MATERIAL, TORQUE VALUES, ETC.

ITEM	PART NO.	PART NAME	QTY
8	340-001	PIPE PLUG	2
7	700-006	SEAL PLATE	1
6	500-001-111	"O" RING	2
5	500-001-118	"O" RING	4
4	811-001-006	PIN	2
3	CBGA LHN	COUNTERBALANCE VALVE	1
2	COHA XEN	CHECK VALVE	1
1	151-146	BODY	1

UNLESS OTHERWISE SPECIFIED							
DIMENSION TOL							
.X = +/- .030							
.XX = +/- .015							
.XXX = +/- .005							
ANGLE TOL +/- 1							
FINISH #0 V							
REMOVE ALL BURRS							

OUTLINE & ASSEMBLY

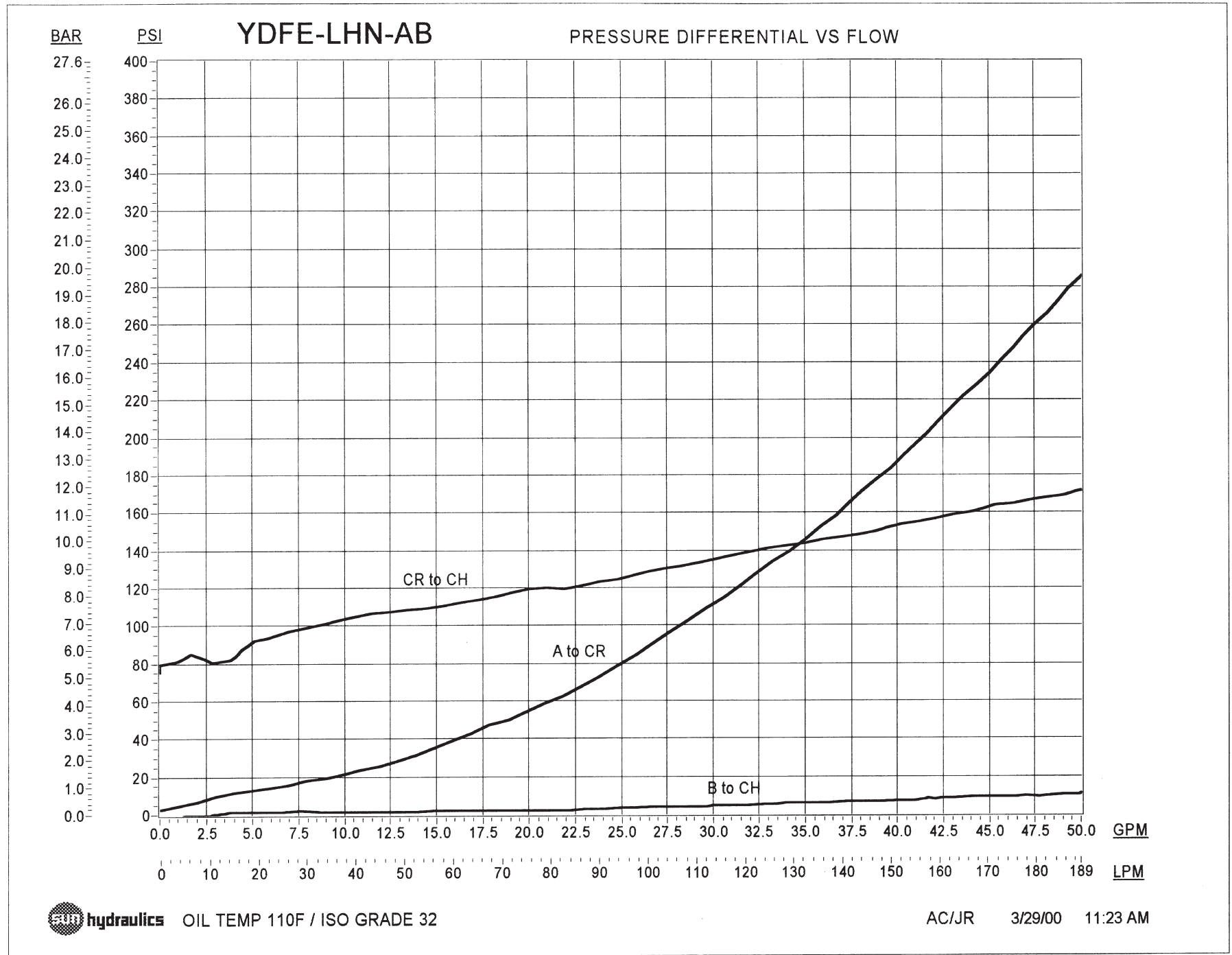
TITLE ISO-07 PRESS. SENSITIVE
REGENERATIVE VALVE
FLOW A TO B

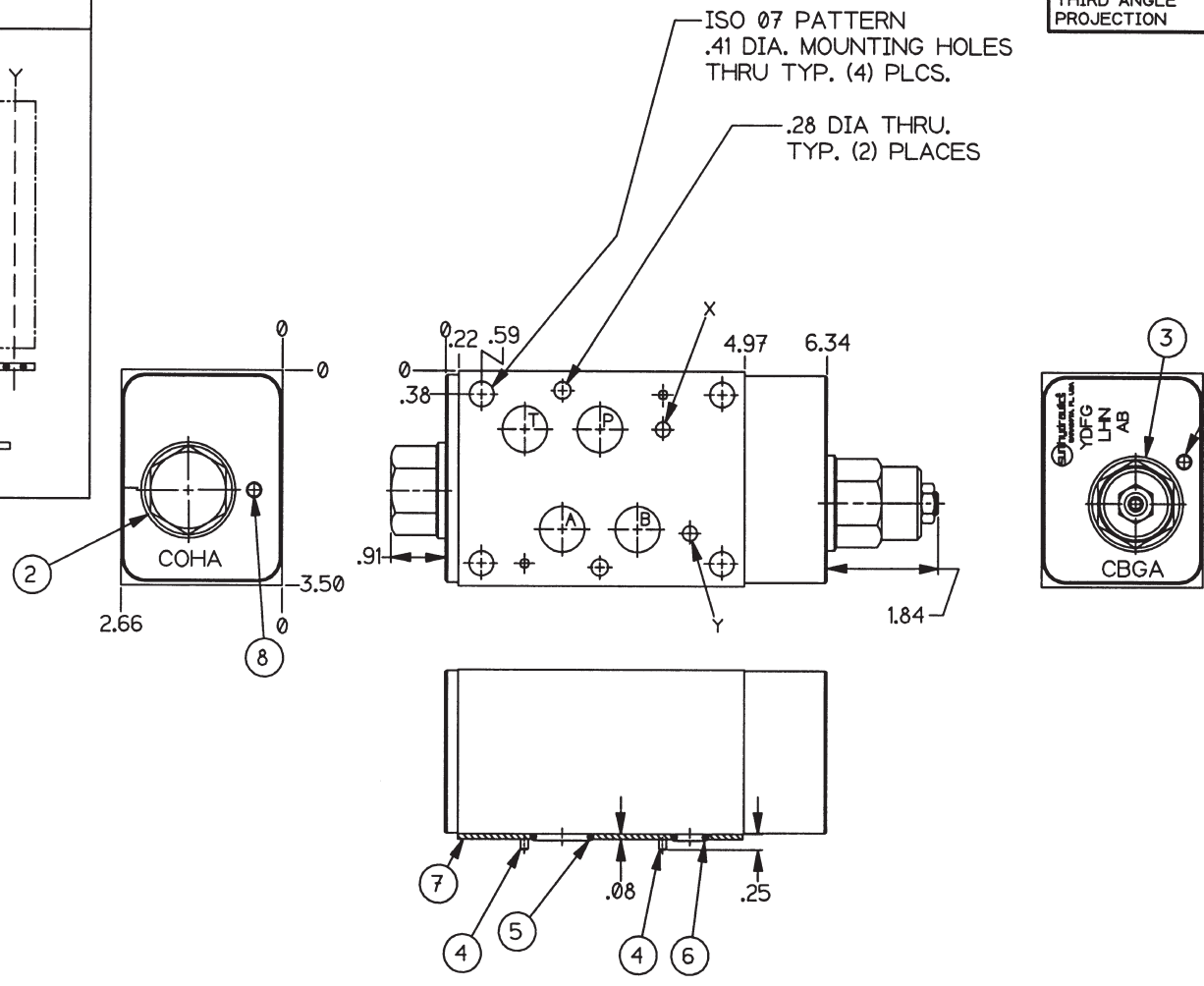
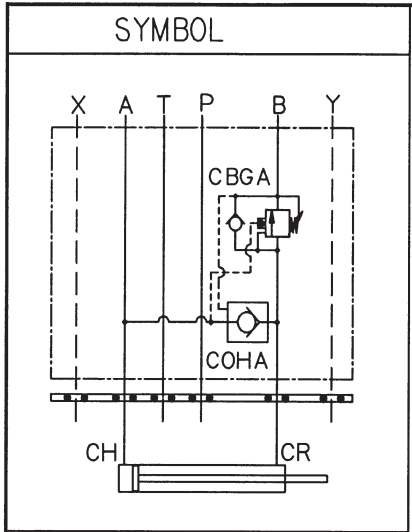
SCALE REF	MATERIAL
1:2	ALUM. & STEEL
DRAWN	CHECK
DAS	JLB
RELEASE	HEAT TREAT & FINISH
DATE	DATE
24SEP85	30SEP85

REVISION	PART NO.
A	YDFE LHN AB

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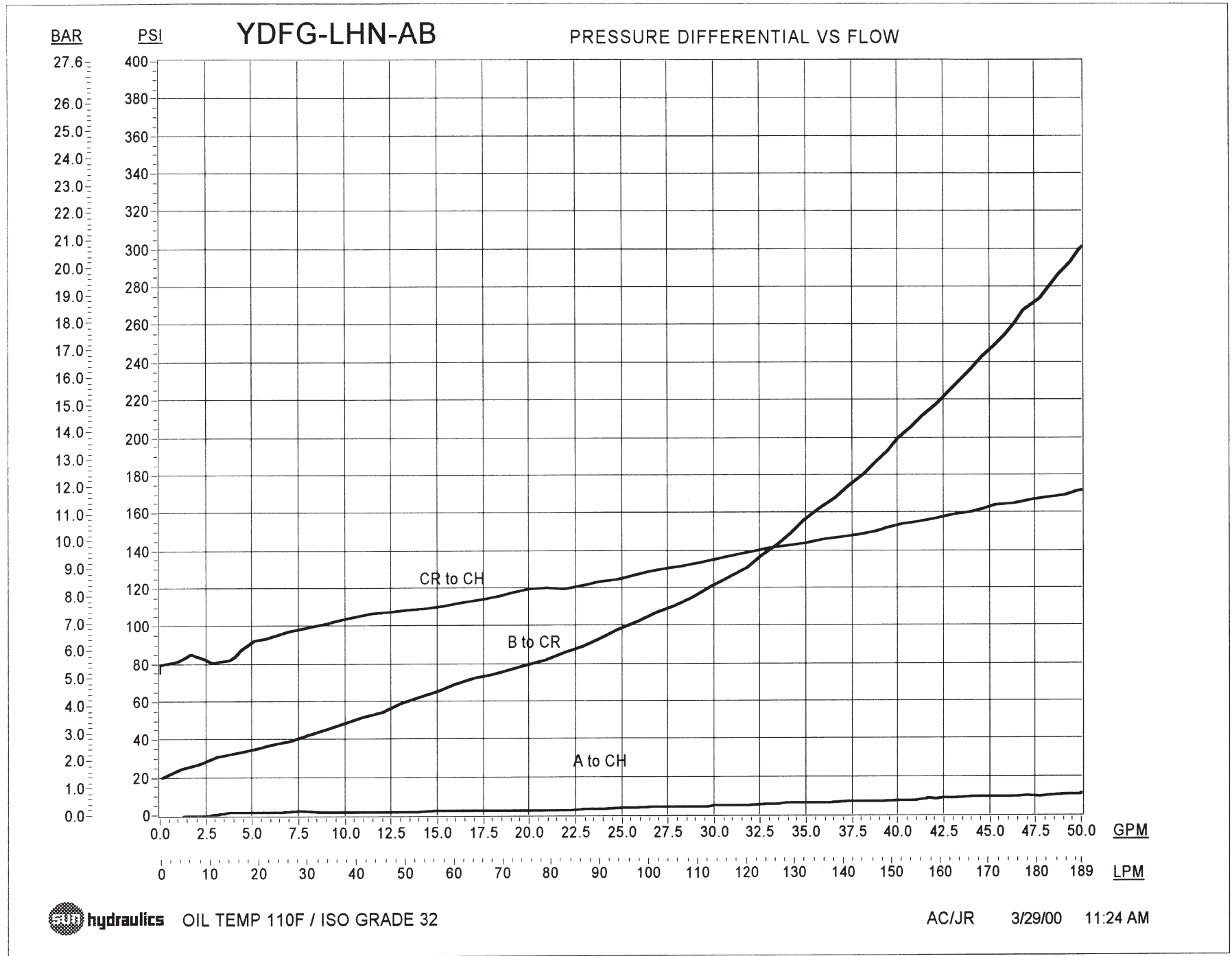


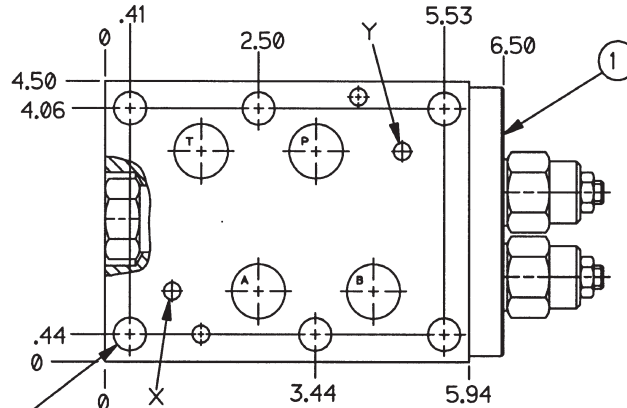
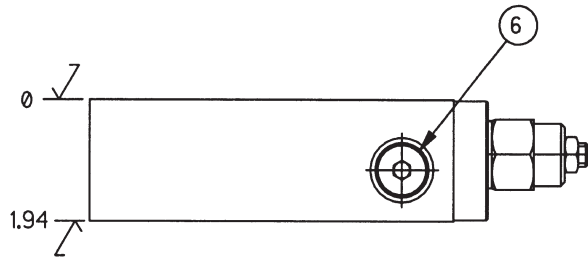
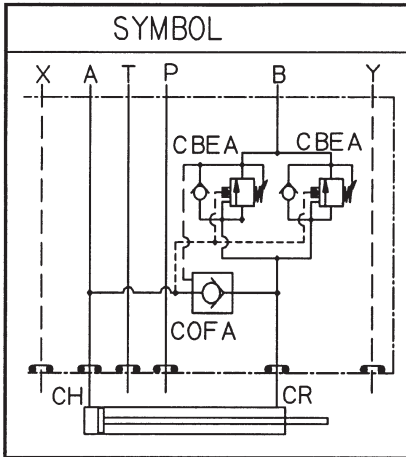
THIRD ANGLE PROJECTION REVISION PART NO.
 B YDFG LHN AB

NOTES:
 REFER TO SUN HYDRAULICS TECHNICAL LITERATURE AND CATALOG FOR THE DETAILS OF CARTRIDGE STANDARD SETTINGS, ADJUSTMENT RANGES, MAXIMUM PRESSURE RATINGS, SEAL MATERIAL, TORQUE VALUES, ETC.

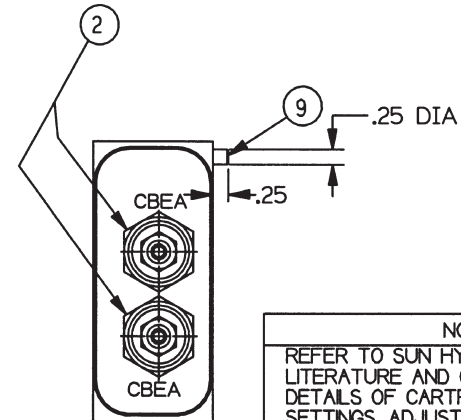
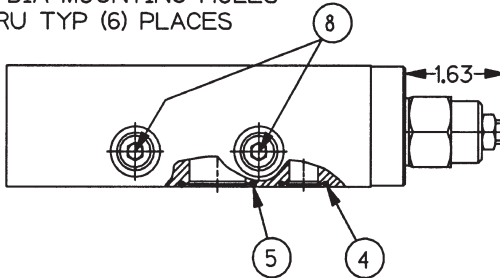
8	850-004-250	KOENIG PLUG	2
7	700-006	SEAL PLATE	1
6	500-001-111	"O" RING	2
5	500-001-118	"O" RING	4
4	811-001-006	PIN	2
3	CBGA LHN	COUNTERBALANCE VALVE	1
2	COHA XEN	CHECK VALVE	1
1	152-746	BODY	1
ITEM		PART NO.	PART NAME
		B	YDFG LHN AB

UNLESS OTHERWISE SPECIFIED				TITLE ISO-07 PRESS. SENSITIVE REGENERATIVE VALVE FLOW B TO A			REVISION PART NO.	
DIMENSION TOL				SCALE REF			MATERIAL	
.X = +/- .030				1:2			ALUM. & STEEL	
.XX = +/- .015				DRAWN CHECK RELEASE			HEAT TREAT & FINISH	
.XXX = +/- .005				RJB DAS 3435				
ANGLE TOL +/- 1				DATE DATE DATE			791 TALLEVAST ROAD	
FINISH 80 V				18DEC91 19DEC91 19DEC91			SARASOTA, FLORIDA 34243, USA	
REMOVE ALL BURRS							TELEPHONE (941) 362-1500	
B	REDRAWN FOR REGEN. CATALOG	23MAR90	SMS	DSS	B723			
A	MOVED COHA SLIGHTLY	28JUL94	RJB					
LTR	REVISION	DATE	DRN	CHK	REL			





ISO 08 PATTERN
.53 DIA MOUNTING HOLES
THRU TYP (6) PLACES



THIRD ANGLE PROJECTION REVISION PART NO.
C YDFF LHN CA

NOTES:
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ITEM	PART NO.	PART NAME	QTY
9	811-001-002	PIN	1
8	340-001	PIPE PLUG	2
7	A330-006-006	"O" RING BOSS PLUG	2
6	A330-006-008	"O" RING BOSS PLUG	1
5	500-001-121	"O" RING	4
4	500-001-114	"O" RING	2
3	COFA XEN	CHECK VALVE	1
2	CBEA LHN	COUNTERBALANCE VALVE	2
1	151-470	BODY	1

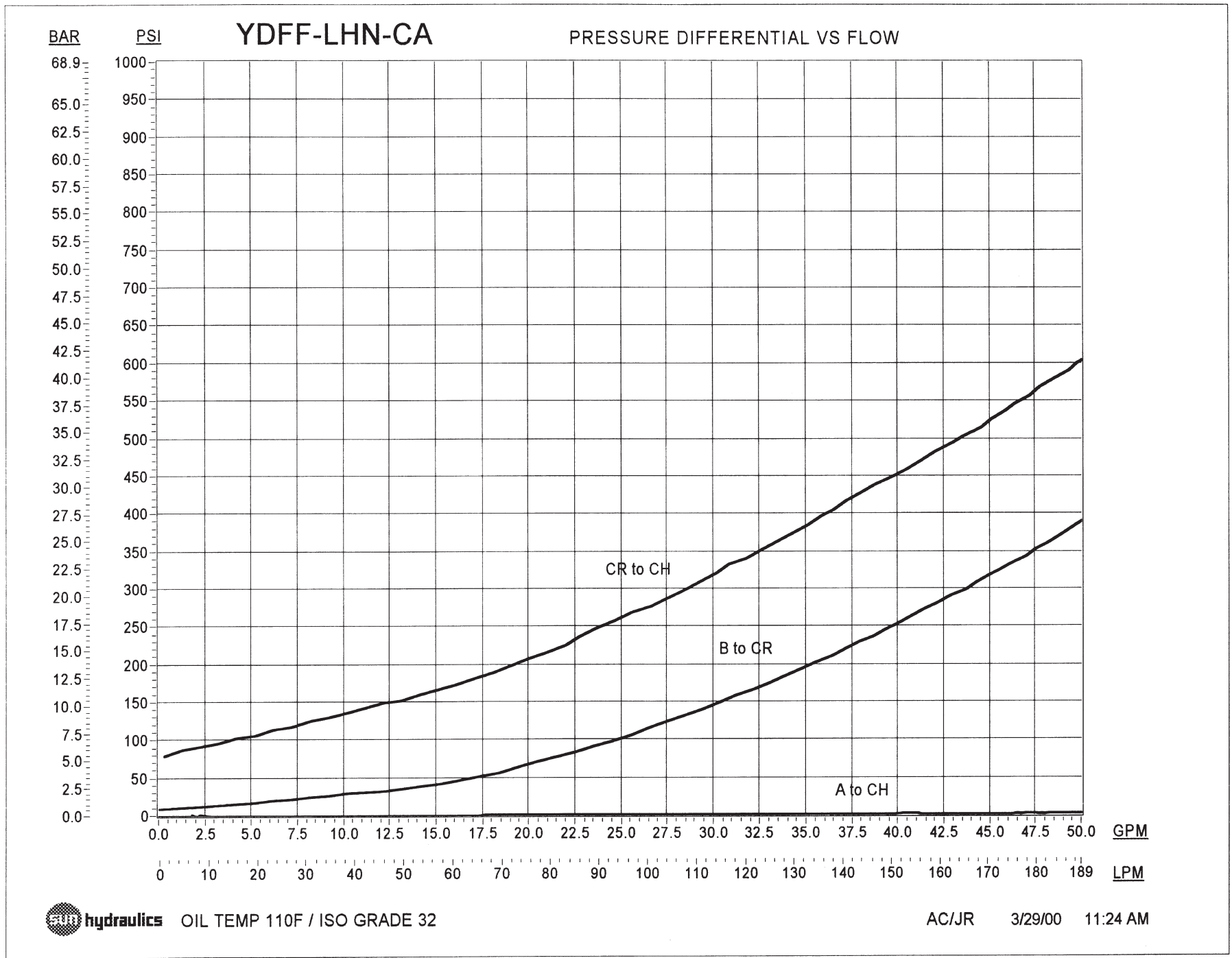
OUTLINE & ASSEMBLY

REV	DESCRIPTION	DATE	DRN	CHK	REL
C	LHN WAS LAM DELETED OLD IT#7 & 9 IT#9 WAS IT#11 IT#8 WAS IT#10 IT#6 & 7 WERE 33#S NOW A33#S REDRAWN FOR REGEN CATALOG	23MAR86	SMS	DGS	9723
B	REDESIGNED & REDRAWN, CORRECTED DATUM	08SEP83	DAS		
-	SEALS TO BLINA	0-14-82	RJB		2985
-	PLUG CHANGE PER RELEASE 1024	10-27-80	RJC		1024
A	ITEM 4 QTY WAS 3, ADDED ITEM 10	3-10-87	DAS		1362
LTR	REVISION	DATE	DRN	CHK	REL

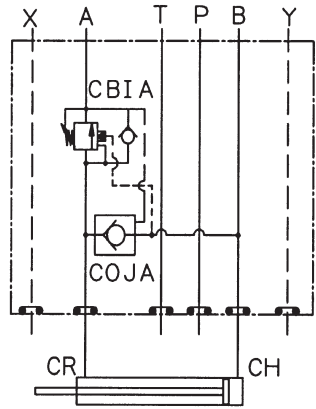
UNLESS OTHERWISE SPECIFIED	TITLE ISO-08 PRESS. SENSITIVE REGENERATIVE VALVE FLOW B TO A	SCALE REF 1:2	MATERIAL ALUM. & STEEL
DIMENSION TOL .X = +/- .030 .XX = +/- .015 .XXX = +/- .005	ANGLE TOL +/- 1	FINISH 80 V	HEAT TREAT & FINISH
REMOVE ALL BURRS	DATE 14JUN86	CHECK DATE 16JUN86	RELEASE DATE
	DRAWN DAS	CHECK JLB	

REVISION PART NO.
C YDFF LHN CA

SUN hydraulic CORPORATION
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SARASOTA, FLORIDA 34243, USA
TELEPHONE (810) 362-1399



SYMBOL



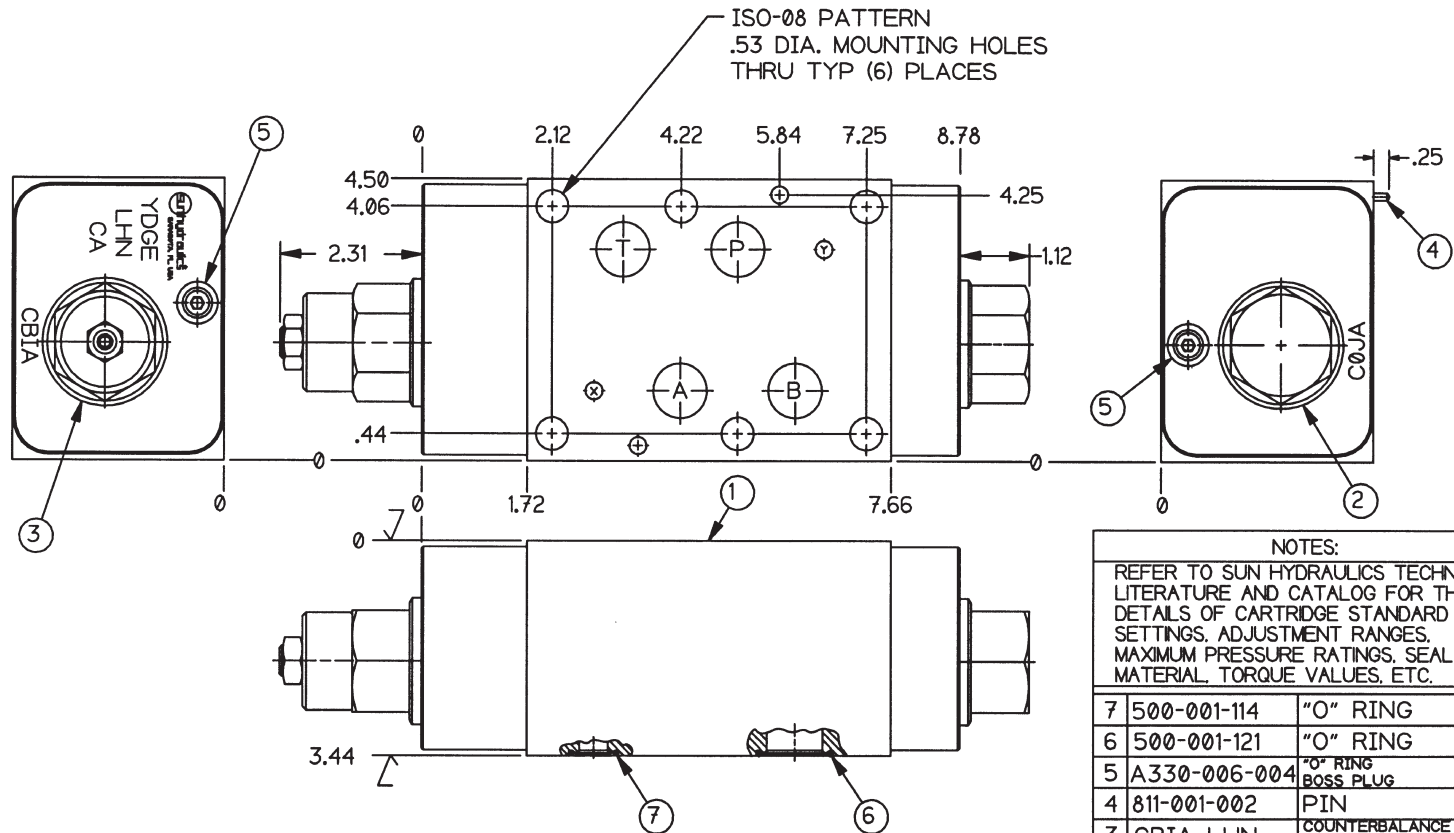
THIRD ANGLE PROJECTION



REVISION PART NO.

C

YDGE LHN CA



NOTES:
REFER TO SUN HYDRAULICS TECHNICAL LITERATURE AND CATALOG FOR THE DETAILS OF CARTRIDGE STANDARD SETTINGS, ADJUSTMENT RANGES, MAXIMUM PRESSURE RATINGS, SEAL MATERIAL, TORQUE VALUES, ETC.

7	500-001-114	"O" RING	2
6	500-001-121	"O" RING	4
5	A330-006-004	"O" RING BOSS PLUG	2
4	811-001-002	PIN	2
3	CBIA LHN	COUNTERBALANCE VALVE	1
2	COJA XEN	CHECK VALVE	1
1	151-196	BODY	1
PART NO.		PART NAME	QTY

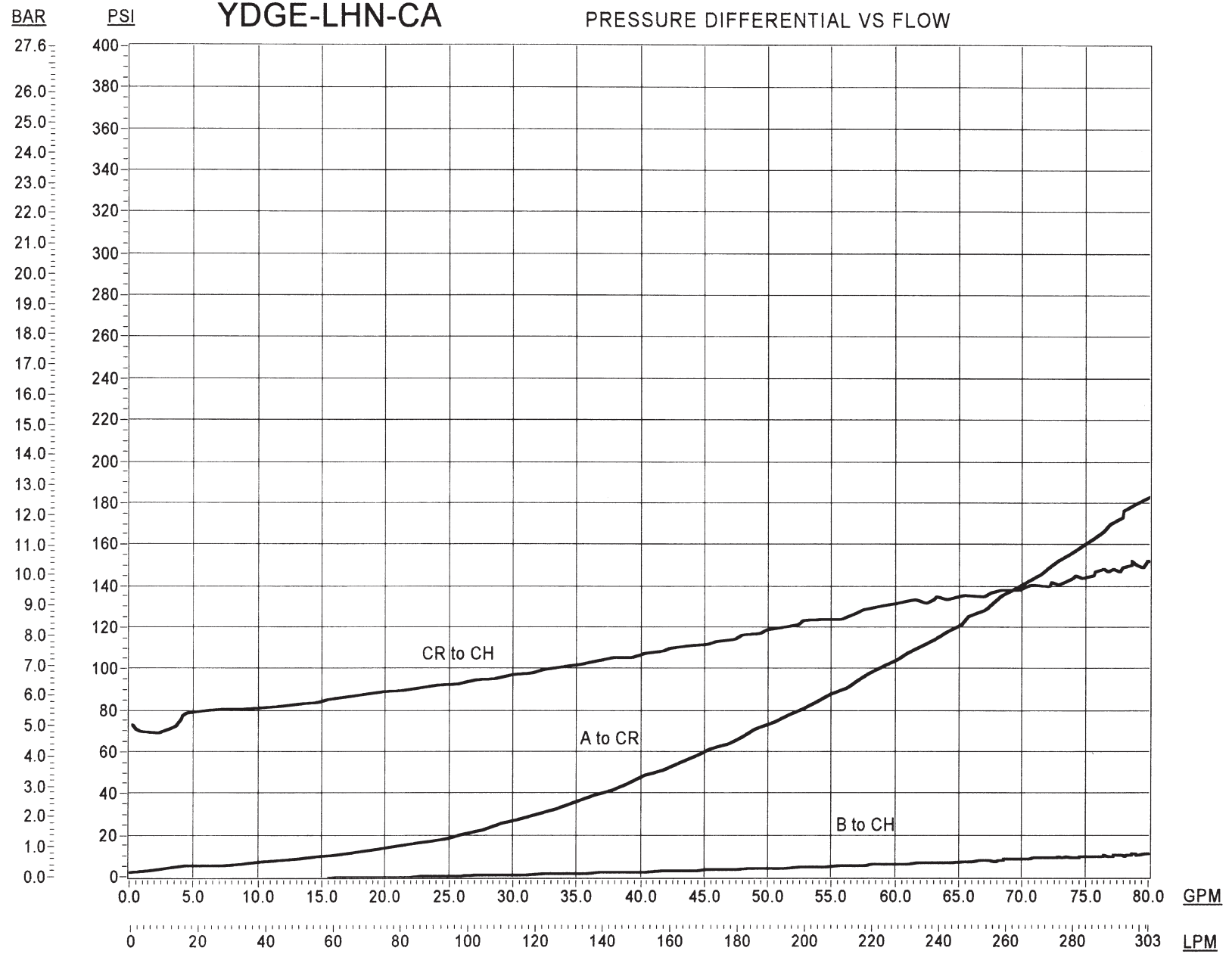
OUTLINE & ASSEMBLY

LHN WAS LAN IT#7 WAS IT#8 IT#6 WAS IT#7				
C DELETED OLD IT#6 IT#5 WAS 330-006-004 REDRAWN FOR REGEN. CATALOG	23MAR00	SMS	DSS	9723
B IN NOTE 5 , 75 PSI WAS 30 PSI	29 SEP 93	BRS		
A REDRAWN ON CADD , SEALS WERE VITON	17 AUG 93	BRS	GB	9330
LTR	REVISION	DATE	DRN	CHK

UNLESS OTHERWISE SPECIFIED	TITLE ISO-08 PRESS. SENSITIVE REGENERATIVE VALVE FLOW A TO B
DIMENSION TOL	SCALE REF 1:2
.X = +/- .030	MATERIAL ALUM. & STEEL
.XX = +/- .015	HEAT TREAT & FINISH
.XXX = +/- .005	
ANGLE TOL +/- 1	DATE 18NOV84
FINISH #0 V	DATE 18NOV84
REMOVE ALL BURRS	DATE 18NOV84

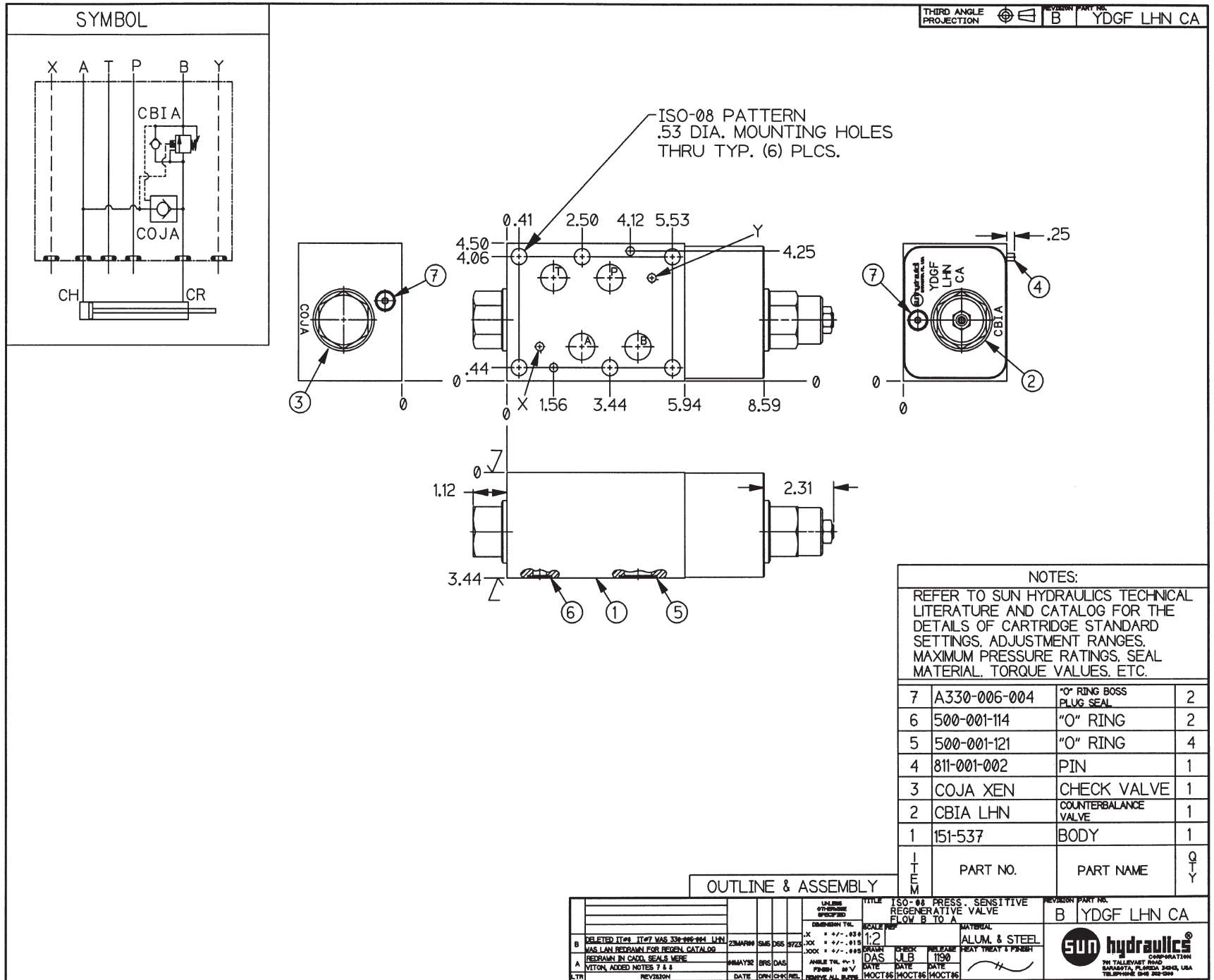
REVISION PART NO.
C YDGE LHN CA

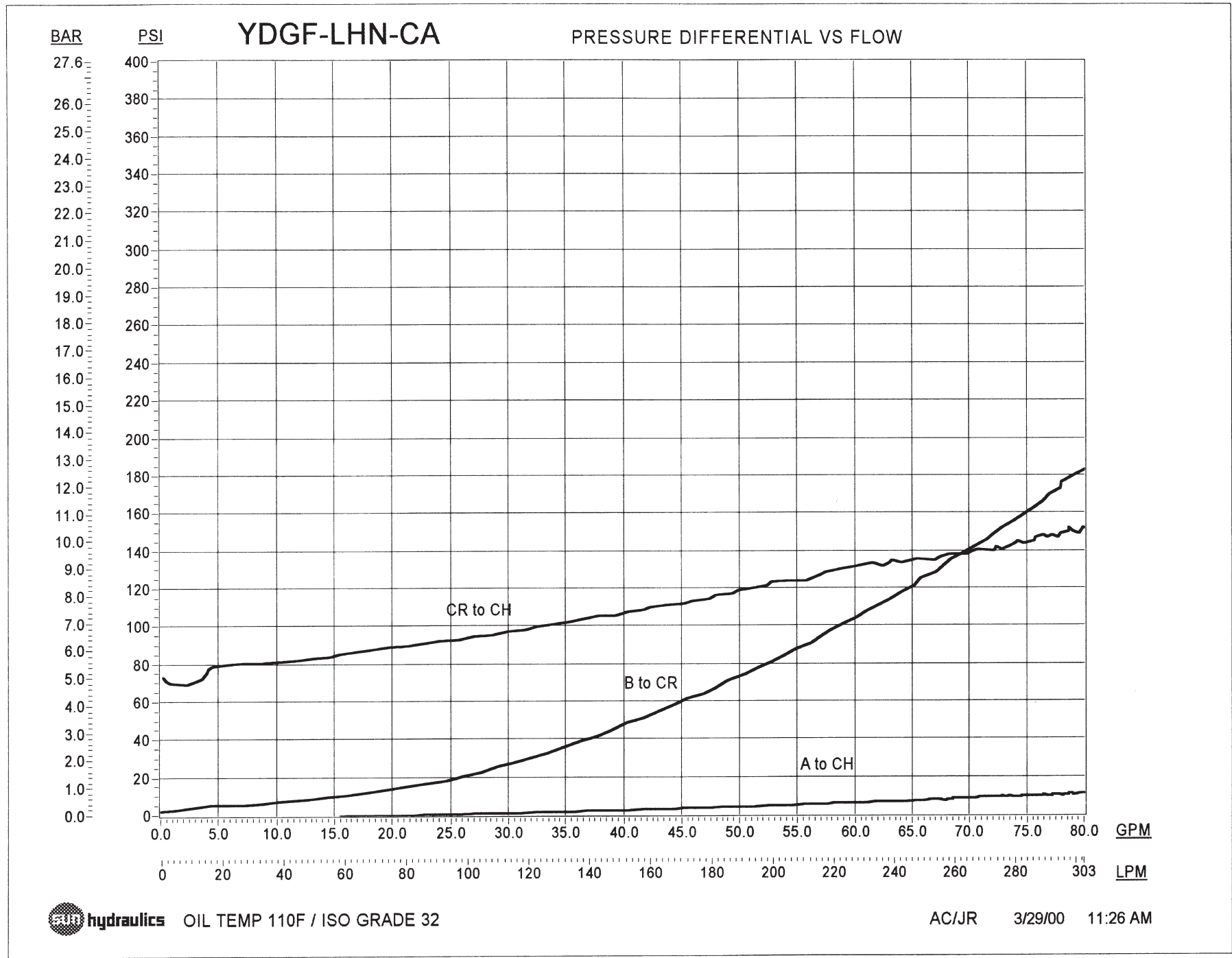
SUN hydraulic CORPORATION
791 TALLEYVAST ROAD
SARASOTA, FLORIDA 34243, USA
TELEPHONE (941) 362-1300



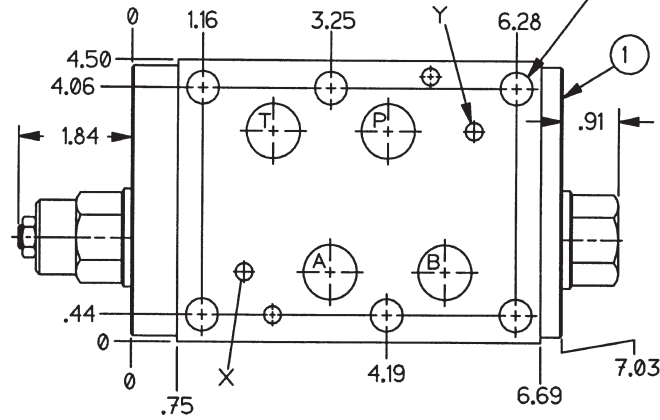
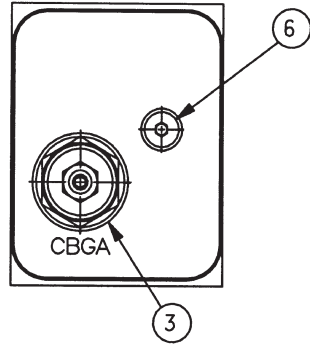
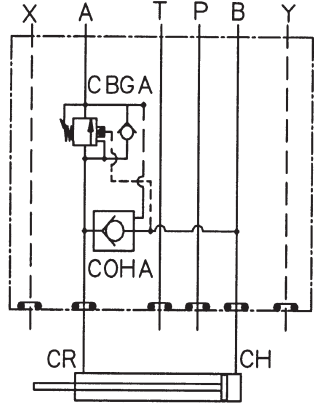
OIL TEMP 110F / ISO GRADE 32

AC/JR 3/29/00 11:25 AM

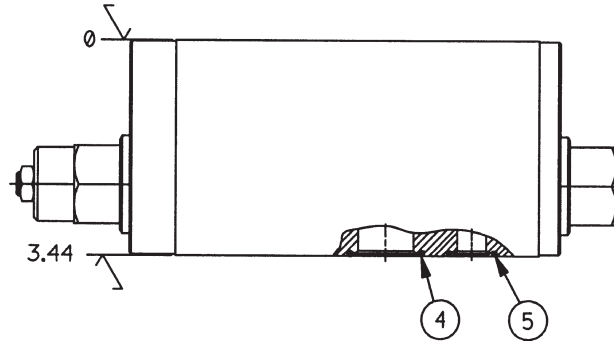
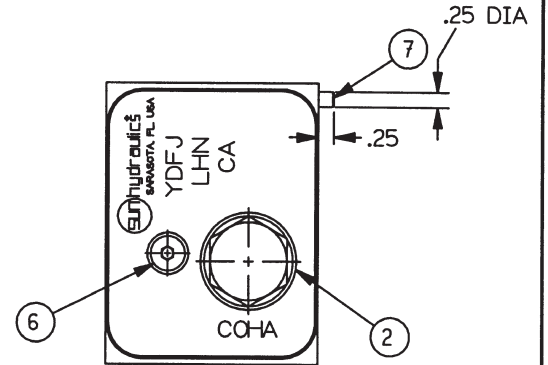




SYMBOL



ISO 08 PATTERN
.53 DIA MOUNTING HOLES
THRU TYP (6) PLACES



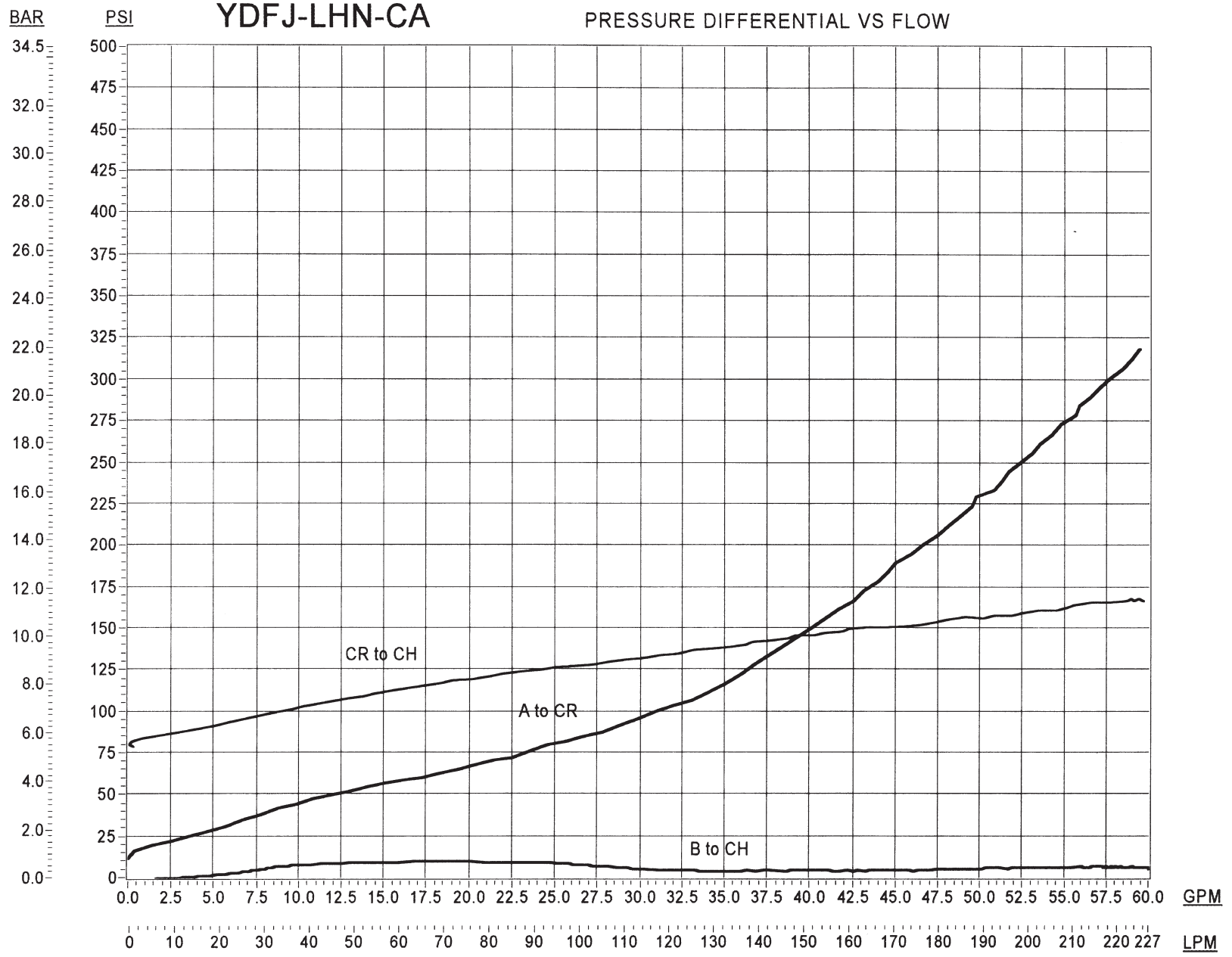
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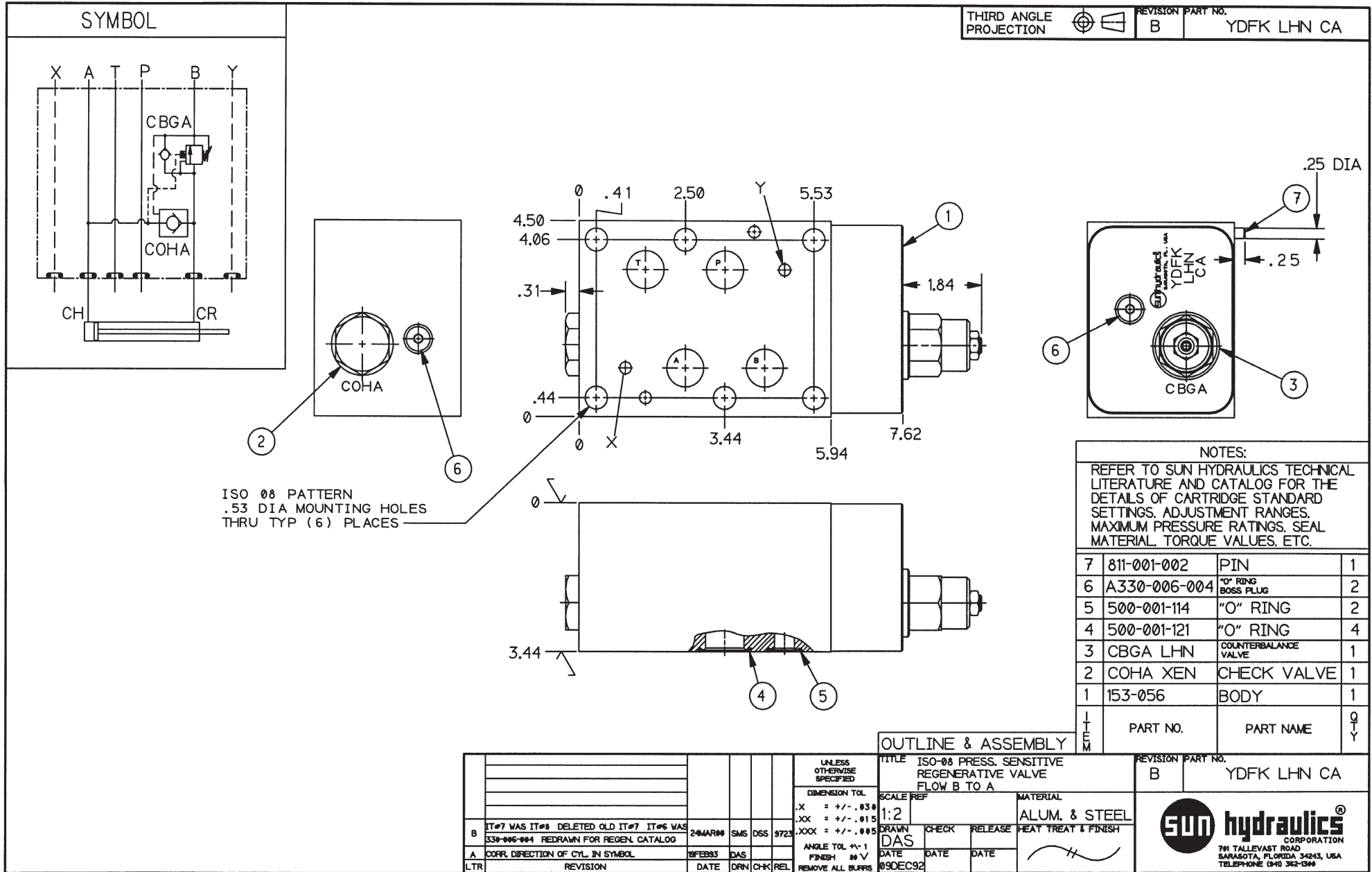
REFER TO SUN HYDRAULICS TECHNICAL LITERATURE AND CATALOG FOR THE DETAILS OF CARTRIDGE STANDARD SETTINGS, ADJUSTMENT RANGES, MAXIMUM PRESSURE RATINGS, SEAL MATERIAL, TORQUE VALUES, ETC.

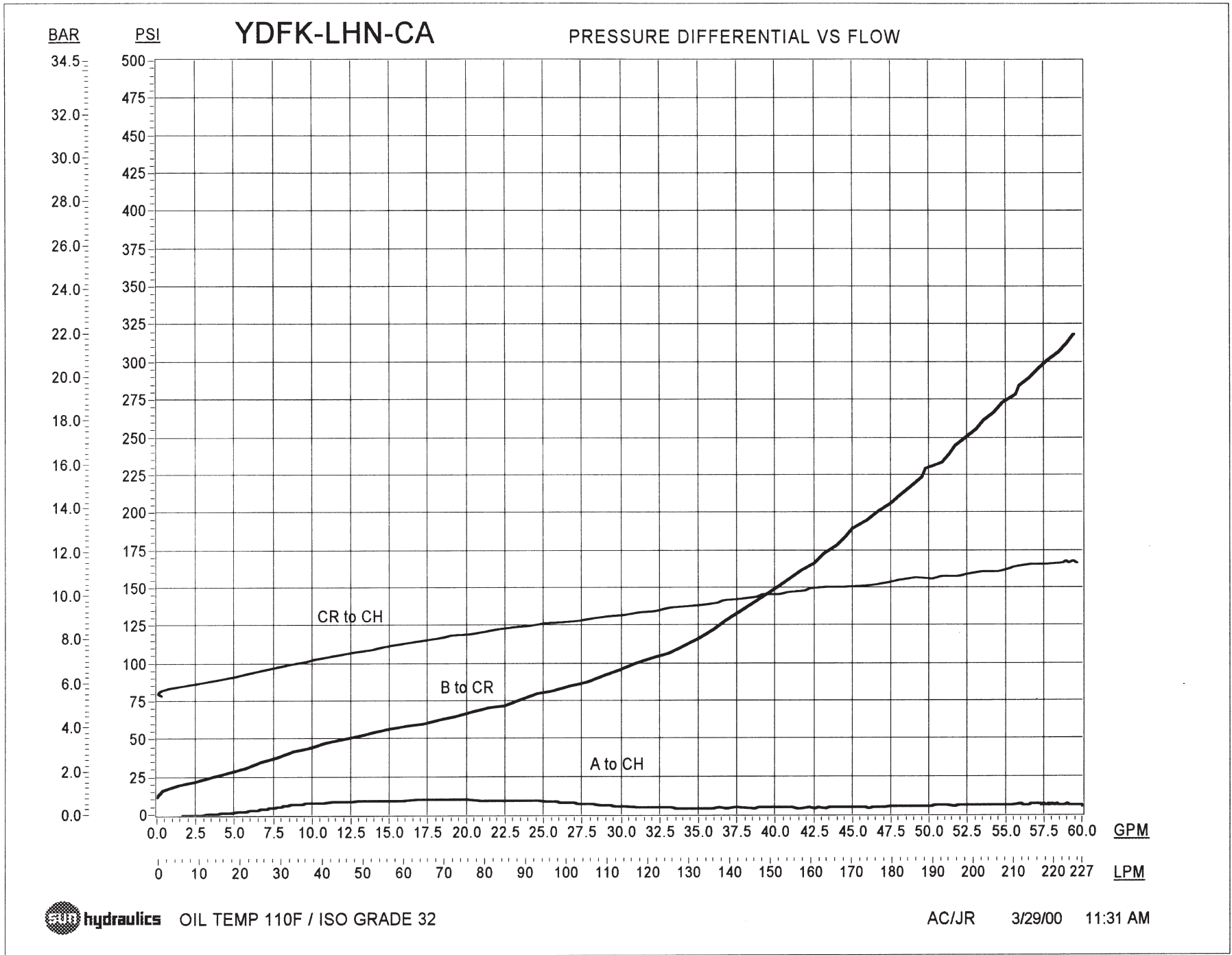
ITEM	PART NO.	PART NAME	QTY
7	811-001-002	PIN	1
6	A330-006-004	"O" RING BOSS PLUG	2
5	500-001-114	"O" RING	2
4	500-001-121	"O" RING	4
3	CBGA LHN	COUNTERBALANCE VALVE	1
2	COHA XEN	CHECK VALVE	1
1	153-055	BODY	1

OUTLINE & ASSEMBLY

					UNLESS OTHERWISE SPECIFIED		TITLE ISO-08 PRESS. SENSITIVE REGENERATIVE VALVE FLOW A TO B		REVISION PART NO.	
					DIMENSION TOL		SCALE REF		MATERIAL	
					.X = +/- .030		1:2		ALUM. & STEEL	
					.XX = +/- .015		DRAWN		HEAT TREAT & FINISH	
					.XXX = +/- .005		DAS			
A					ANGLE TOL +/- 1		CHECK		RELEASE	
LTR					FINISH 80 V		DATE		DATE	
REVISION					REMOVE ALL BURRS		DATE		DATE	
							04DEC92			
									<p>SUN hydraulics CORPORATION 791 TALLEYVAST ROAD SARASOTA, FLORIDA 34243, USA TELEPHONE (941) 362-1300</p>	







SYMBOLS

MODEL #	BODY DASH NO.	PORTS CH & T	PORTS CR & P	PORTS PSH & PSR	THREAD TYPE
BC	-001	.500-14 NPTF	.375-18 NPTF	.250-18 NPTF	INCH
BK	-002	SAE-10	SAE-8	.250-18 NPTF	INCH
BV	-003	.500-14 BSPP	.375-19 BSPP	.250-19 BSPP	INCH
BV/M	-004	.500-14 BSPP	.375-19 BSPP	.250-19 BSPP	METRIC

.28 DIA. MOUNTING HOLES TYP. (2) PLCS.

ISO-03 PATTERN
INCH: 10-24UNC x .38 DP.
METRIC: M5 X 0.8-6H x .38 DP
TYP. (4) PLCS.

PORTS PSR & PSH PER CHART

PORTS CH & T PER CHART

PORTS CR & P PER CHART

NOTES:

REFER TO SUN HYDRAULICS TECHNICAL LITERATURE AND CATALOG FOR THE DETAILS OF CARTRIDGE STANDARD SETTINGS, ADJUSTMENT RANGES, MAXIMUM PRESSURE RATINGS, SEAL MATERIAL, TORQUE VALUES, ETC.

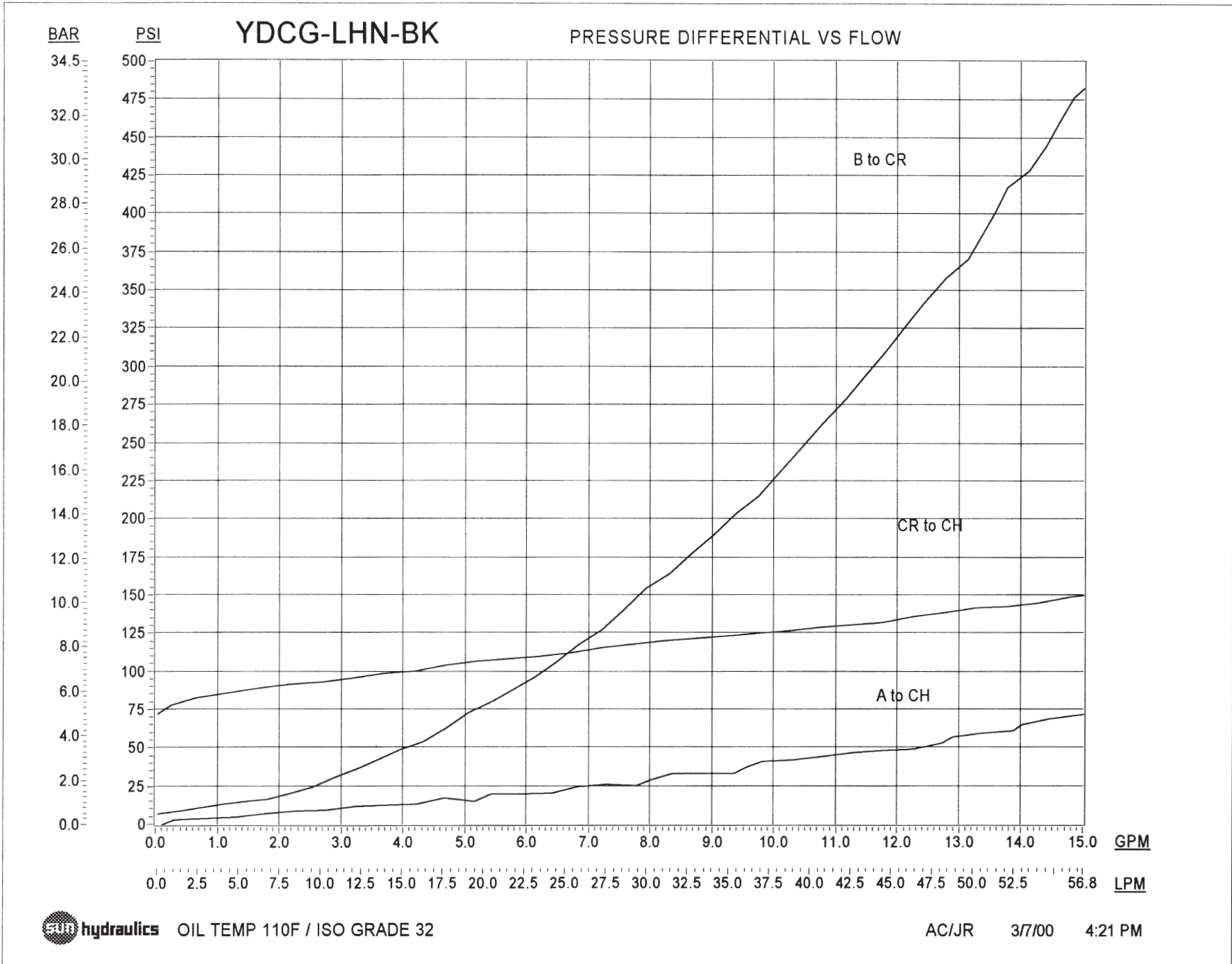
ITEM	PART NO.	PART NAME	QTY
4	CODA XEN	CHECK VALVE	1
3	RPEC LAN	RELIEF VALVE	1
2	CBCA LHN	COUNTERBALANCE VALVE	1
1	152-601-***	BODY	1

OUTLINE & ASSEMBLY

TITLE				REVISION PART NO.	
ISO-03 SUBPLATE REGENERATIVE VALVE				B	YDCG LHN B*
SCALE REF		MATERIAL		<p>SUN hydraulics CORPORATION 791 TALLEVAST ROAD SARASOTA, FLORIDA 34243, USA TELEPHONE (810) 362-1399</p>	
1:2		ALUM & STEEL			
DRAWN	CHECK	RELEASE	HEAT TREAT & FINISH		
BRS	RJB	3016			
DATE	DATE	DATE			
03APR91	04APR91	05APR91			

UNLESS OTHERWISE SPECIFIED				
DIMENSION TOL				
.X = +/- .030				
.XX = +/- .015				
.XXX = +/- .005				
ANGLE TOL +/- 1				
FINISH 40 V				
REMOVE ALL BURRS				

REVISION	DATE	DRN	CHK	REL
B	23MAR90	SMS	DSS	9723
A	05JAN90	MVB	DSS	9606
-	16APR91	BRS		



SYMBOL

ISO-05 PATTERN

ISO-05 PATTERN

STD SAE-8 PORT

THIRD ANGLE PROJECTION

REVISION PART NO.
G YDEH LHN AK

NOTES:

REFER TO SUN HYDRAULICS TECHNICAL LITERATURE AND CATALOG FOR THE DETAILS OF CARTRIDGE STANDARD SETTINGS, ADJUSTMENT RANGES, MAXIMUM PRESSURE RATINGS, SEAL MATERIAL, TORQUE VALUES, ETC.

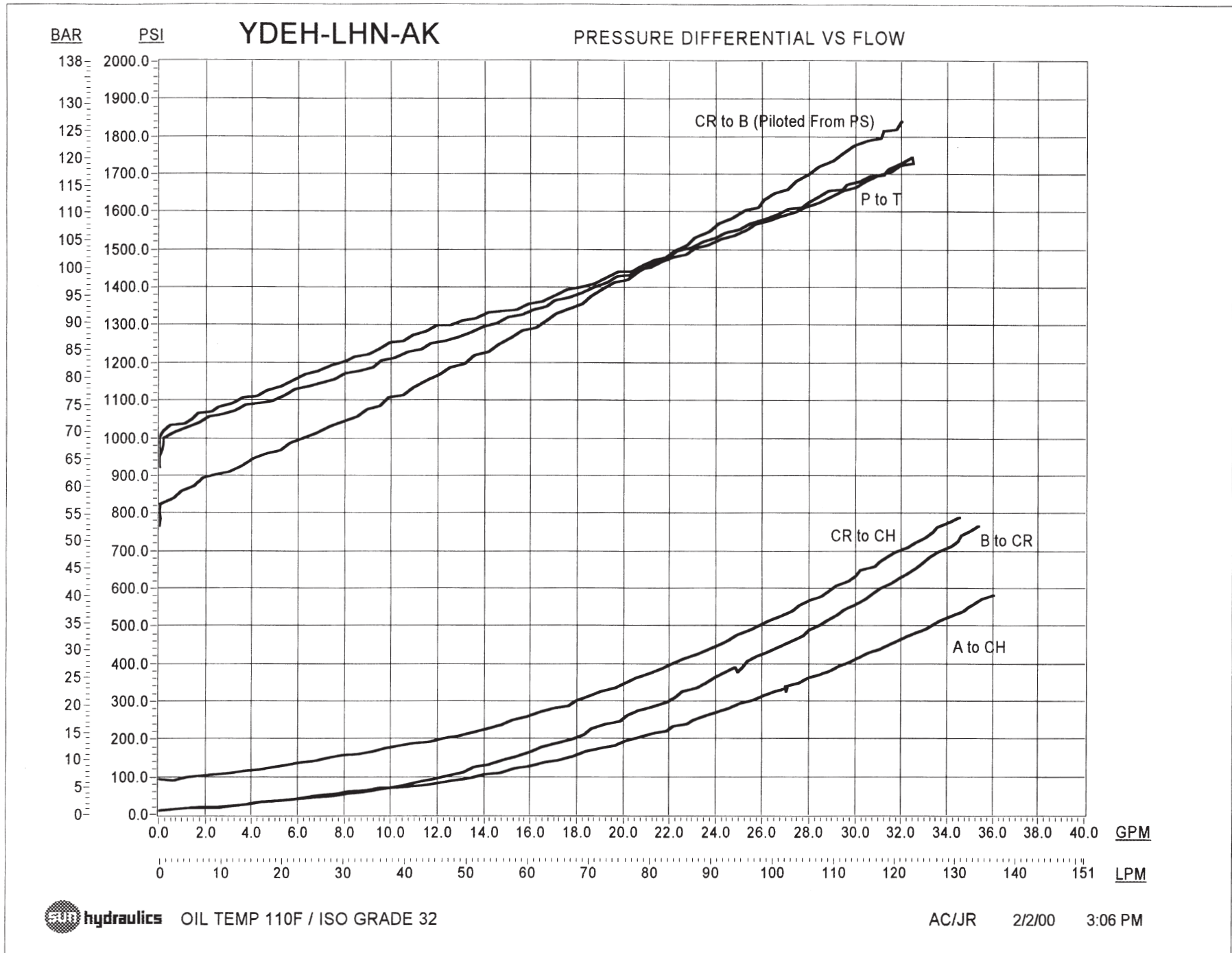
5	CBEA LHN	COUNTERBALANCE VALVE	1
4	CKEC LAN	CHECK VALVE	1
3	COFA XEN	CHECK VALVE	1
2	RDFA LAN	RELIEF VALVE	1
1	150-023	BODY	1

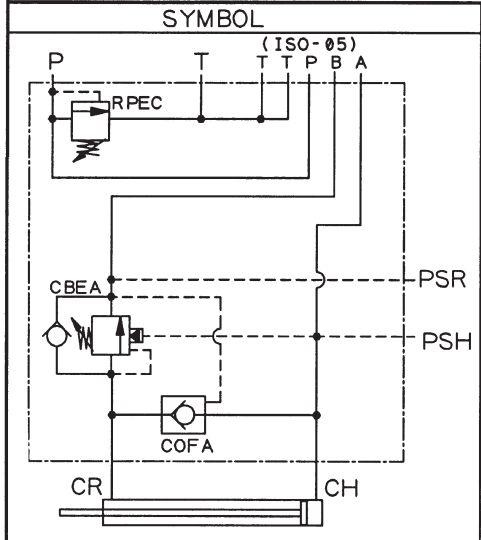
ITEM	PART NO.	PART NAME	QTY
1	150-023	BODY	1

OUTLINE & ASSEMBLY

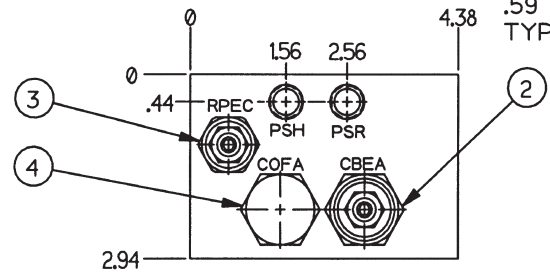
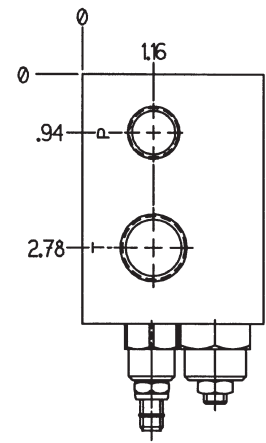
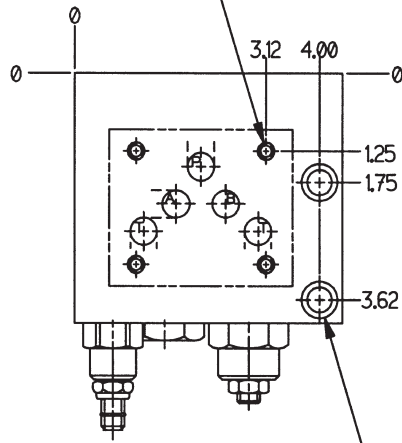
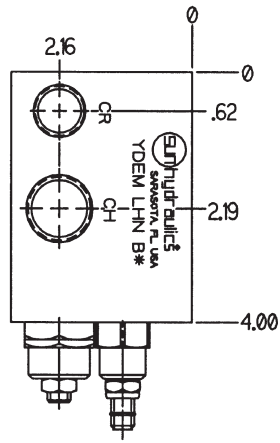
UNLESS OTHERWISE SPECIFIED		TITLE ISO-05 PRESS. SENSITIVE REGENERATIVE VALVE FLOW B TO A		REVISION PART NO. G YDEH LHN AK	
DIMENSION TOL		SCALE REF	MATERIAL		
.X = +/- .030			ALUM. & STEEL		
.XX = +/- .015		DRAWN JDA	CHECK	RELEASE	HEAT TREAT & FINISH
.XXX = +/- .005		DATE 18DEC73	DATE	DATE	
ANGLE TOL +/- 1		REMOVE ALL BURRS			
FINISH #0 V					

LHN WAS LAN REDRAWN FOR REGEN. CATALOG	23MAR70	SMS	DSS	9723
LTR	REVISION	DATE	DRN	CHK REL





ISO-05 PATTERN
 INCH: .250-20UNC x .50 DP.
 METRIC: M6x1.0-6H x .50 DP.



.41 DIA. MOUNTING HOLES THRU TYP. (2) PLCS.
 .59 DIA. C-BORE x .56 DP. TYP. (2) PLCS.

MTG. THREAD	PORTS PSH & PSR	PORTS T & CH	PORTS P & CR	BODY DASH NO.	MODEL NO.
INCH	.250-18 NPTF	.750-14 NPTF	.500-14 NPTF	-001	BD
INCH	.250-18 NPTF	SAE-12	SAE-10	-002	BL
METRIC	.250-19 BSPP	.750-14 BSPP	.500-14 BSPP	-003	BW

THIRD ANGLE PROJECTION

REVISION PART NO. YDEM LHN B*

NOTES:
 REFER TO SUN HYDRAULICS TECHNICAL LITERATURE AND CATALOG FOR THE DETAILS OF CARTRIDGE STANDARD SETTINGS, ADJUSTMENT RANGES, MAXIMUM PRESSURE RATINGS, SEAL MATERIAL, TORQUE VALUES, ETC.

ITEM	PART NO.	PART NAME	QTY
4	COFA XEN	CHECK VALVE	1
3	RPEC LAN	RELIEF VALVE	1
2	CBEA LHN	COUNTERBALANCE VALVE	1
1	151-208-***	BODY	1

OUTLINE & ASSEMBLY

UNLESS OTHERWISE SPECIFIED				TITLE ISO-05 PATTERN PRESSURE SENSITIVE REGENERATIVE MANIFOLD				REVISION PART NO. YDEM LHN B*		
DIMENSION TOL.				SCALE REF		MATERIAL				
.X = +/- .030				1/2		ALUM. & STEEL				
.XX = +/- .015				DRAWN		CHECK		RELEASE		HEAT TREAT & FINISH
.XXX = +/- .005				DAS RJB		DATE		DATE		DATE
ANGLE TOL +/- 1				DATE		DATE		DATE		DATE
FINISH #1				15JUL86		23JUL86				
REMOVE ALL BURRS										
A LHN WAS LAN REDRAWN FOR REGEN. CATALOG		24MAR88		SMS DSS 9723						
- CHARTED BW MODEL PORTS T, CH, PSH & PSR WERE LABELED NPTF		12DEC86		RLB						
LTR REVISION		DATE		DRN		CHK		REL		



