HYDAC INTERNATIONAL

ATEX version
Spool Type, Solenoid-Operated, Direct-Acting,
Area-Ratio principle

P3DRE 6 A20... -XE

DESCRIPTION

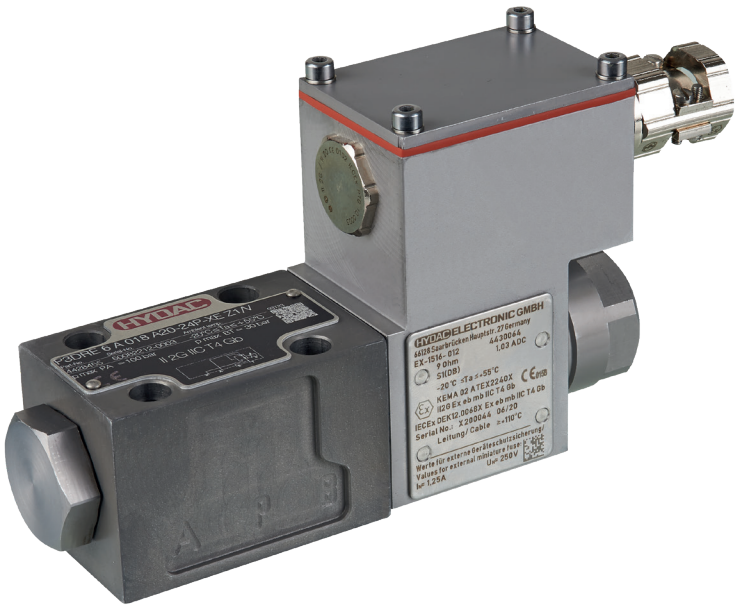
HYDAC proportional pressure control valves of the P3DRE 6 –XE ATEX series are pressure control valves for oil hydraulic systems that serve to adjust the level of a pressure.

The valve operates by oil-immersed solenoid.

The solenoid pushes the control spool to the desired opening position via a pressure detector ram. The pressure is proportional to the electric input signal at the solenoid coil.

TECHNICAL CHARACTERISTICS

- Direct-acting proportional pressure control valve with solenoid actuation
- Several setting ranges available
- ATEX-version solenoid with encapsulation
- Easy to exchange thanks to standardised hole pattern in accordance with ISO 5781-03-04 (comparable to ISO 4401-03)



Nominal size 6
up to 15 l/min
up to 100 bar

CONTENTS

MODEL CODE

P3DRE 6 A 018 A20 24P XE Z1 V

Designation
Proportional pressure control valve, direct-acting, with area-ratio principle

Nominal size (NG)
6

Design
A = closed-loop pressure control in port A
B = closed-loop pressure control in port B

Control pressure range
018 = 0 – 18 bar

Version (specified by manufacturer)
A20

Rated voltage
24 = 24 VDC (9 ohm)

Type of protection and ATEX information
XE = "e mb" II 3G IIC T4

Strain relief
Z = Ø 6.5 – 9.5 mm

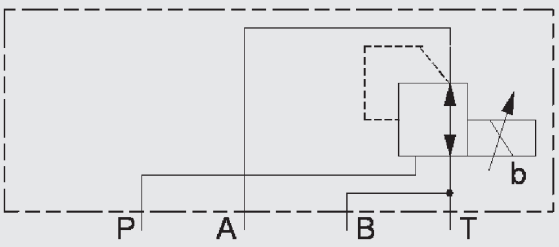
Sealing material
V = FKM (standard)
N = NBR (optional)

NOTICE REGARDING SAFETY OF OPERATION

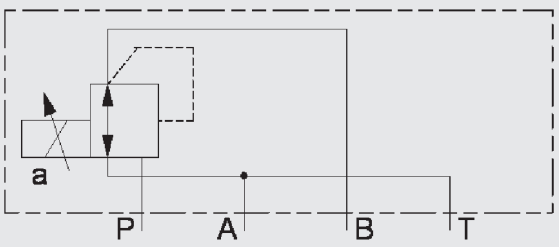
The operating instructions for the ATEX valves “P3DRE 6 –XE” in the document with part number 4474758 must be strictly observed and the requirements must be complied with in full. If the requirements are not observed, use in accordance with Directive 2014/34/EU is not permitted. Furthermore, the separate operating instructions for the explosion-proof solenoid coil in the document with the part number 4521000 must be observed.

SPOOL TYPES / SYMBOLS

Basic symbol P3DRE 6 **A**



Basic symbol P3DRE 6 **B**



FUNCTION

This 3-way pressure control valve belongs to the group of proportional pressure valves. They convert an electrical input signal into a proportional pressure output signal. The valves basically consist of the housing (1), a solenoid (2), the control spool (3), the two return springs (4), the solenoid plunger (5) and two pressure measuring spools (6).

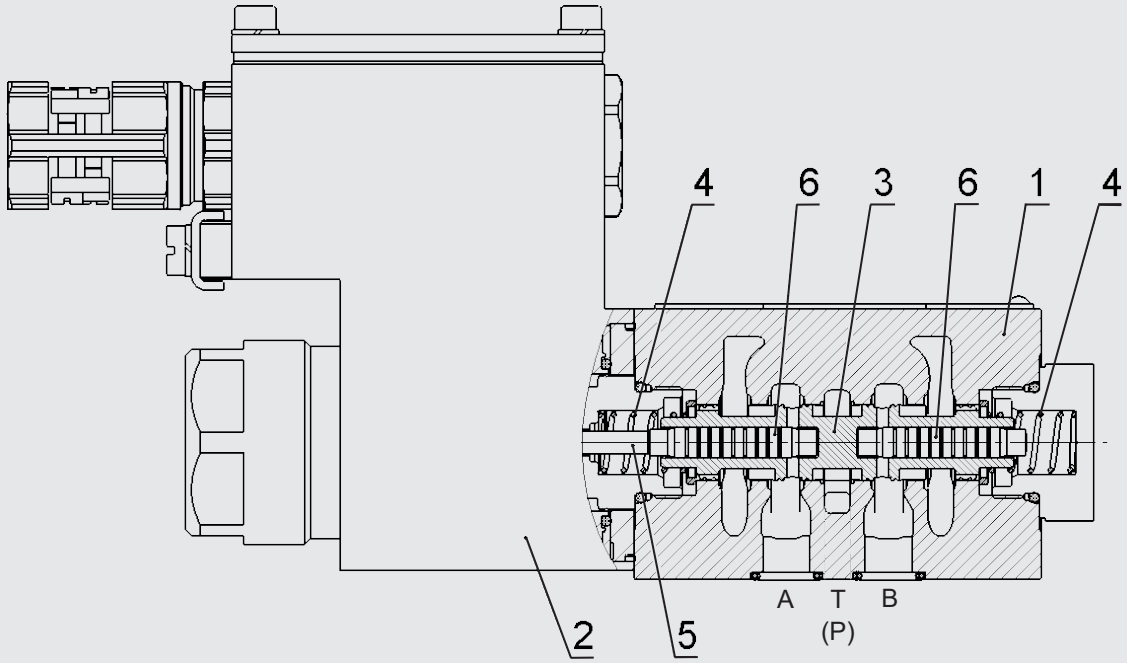
The proportional solenoid is DC solenoid that operate while immersed in oil with a central thread and a detachable coil. They are controlled by external electronics.

When current is fed to the solenoid (2), the solenoid force acts via the solenoid plunger (5) on the pressure measuring spools (6) and pushes them together with the control spool (3) to the right. This connects port P (pump) to port A (control pressure), and port B (not used) remains connected to port T (tank). The control pressure that builds up at port A acts with the pressure-active area of the pressure measuring spool (6) on the control spool (3), and thus against the solenoid force. If the control pressure exceeds the amount configured by the solenoid force, the control spool (3) is pushed back against the solenoid force. Port A remains connected to port T until the control pressure has dropped down to its set value.

If no current is fed to the solenoid, the two return springs (4) push the control spool (3) back to its original position.

Notice:
Vent the system and valve before initial start-up.

SECTION VIEW



TECHNICAL DATA

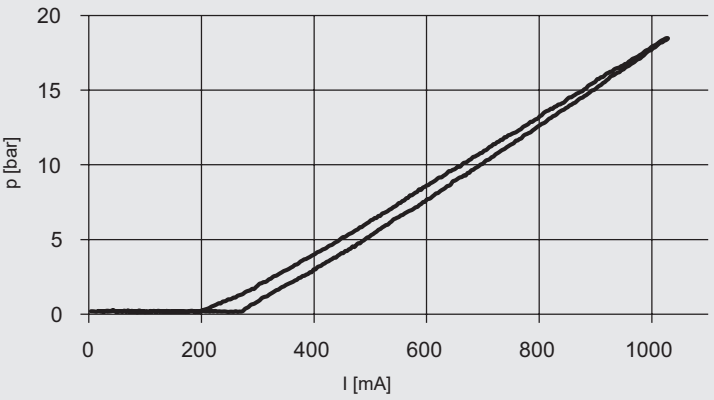
General specifications		
$MTTF_d$	150 - 1200 years, assessment according to DIN EN ISO 13849-1:2016; Table C.1, Confirmation of ISO 13849-2:2013; Tables C.1 and C.2	
Ambient temperature	-20 °C to +55 °C, (observe operating instructions part no.: 4474758)	
Mounting position	No orientation restrictions	
Weight	2.3 kg	
Material	Valve casing:	cast iron
	Coil housing:	steel
	Type label:	aluminium
Surface coating	Valve casing:	Zn-Ni-coating
	Coil housing:	Zn-Ni-coating
Hydraulic technical specifications		
Operating pressure	Ports: P, A, B	p_{max} 100 bar
	Ports: T	p_{max} 30 bar
Control pressure range	0 – 18 bar	
Max. flow rate, control spool	15 l/min	
Pressure fluid	Mineral oil based according to DIN 51524 part 1, 2 and 3 Ignition temperature ≥185 °C	
Temperature range of operating fluid	-20 °C to +80 °C	
Viscosity range	min. 20 to max. 400 mm²/s	
Filtration, max. permitted contamination level	ISO 4406 Class 18/16/13 or better	
Max. switching frequency	7,000 1/h	
Hysteresis	<6.0 % of p_{max} control	
Sealing material	FKM	
Electrical technical specifications		
Response time	Energised: approx. 50 – 100 ms	De-energised: approx. 10 – 60 ms
	The switching time specifications are largely dependent on the valve's pressure, flow rate and application.	
Type of voltage	Direct current	
Rated voltage	24 V	
Voltage tolerance	+4 %	
Pilot current	0 – 1030 mA (9 Ω)	
Dither frequency	80 to 150 Hz (100 recommended)	
Duty cycle	100 %	
Protection class according to DIN EN 60529	IP66[2)]	

[1)] See "Conditions and Instructions for Valves" in brochure 53.000
[2)] If installed correctly

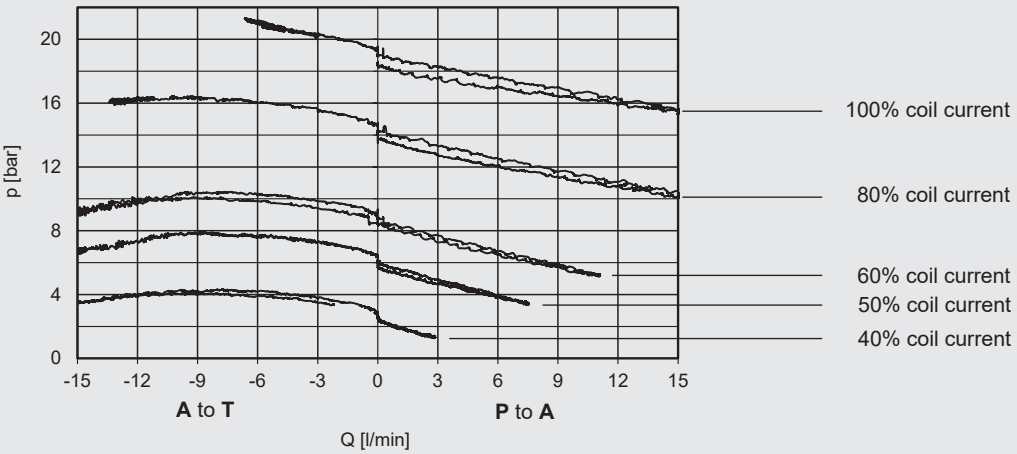
SAMPLE CHARACTERISTICS

Measured at T_{oil} = 40 °C and 46 mm²/s

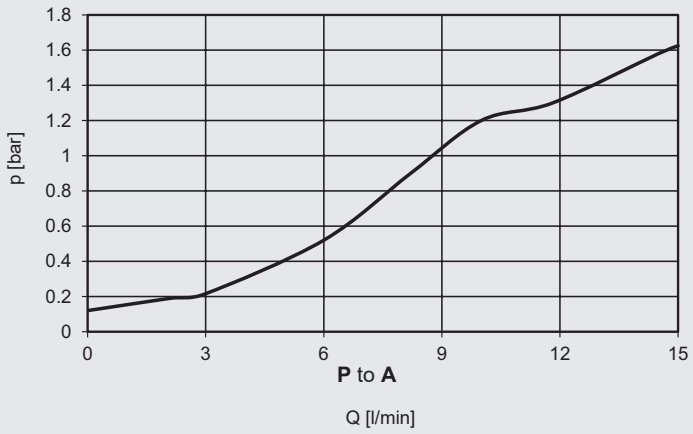
p/I - control pressure via coil current



p/Q control pressure via flow rate



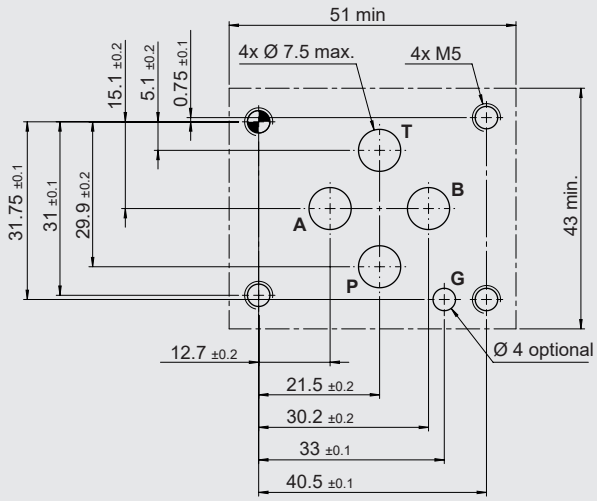
dp curve

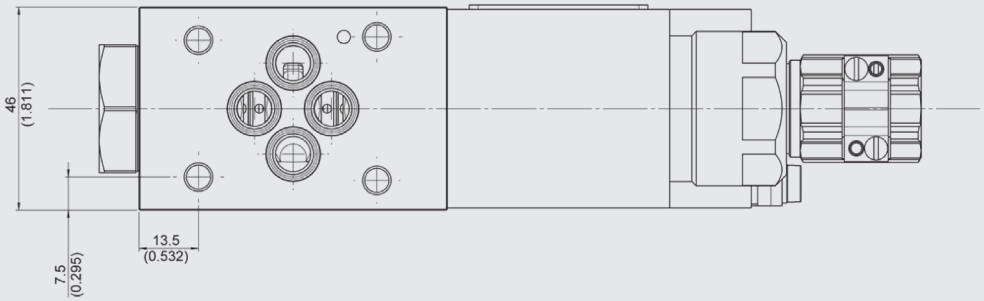


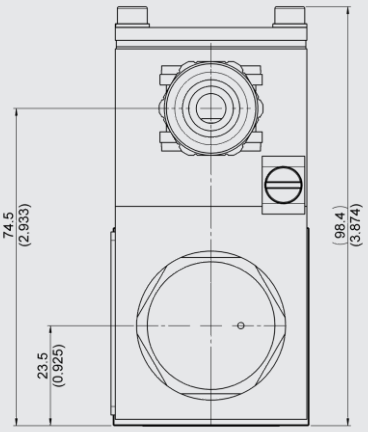
DIMENSIONS

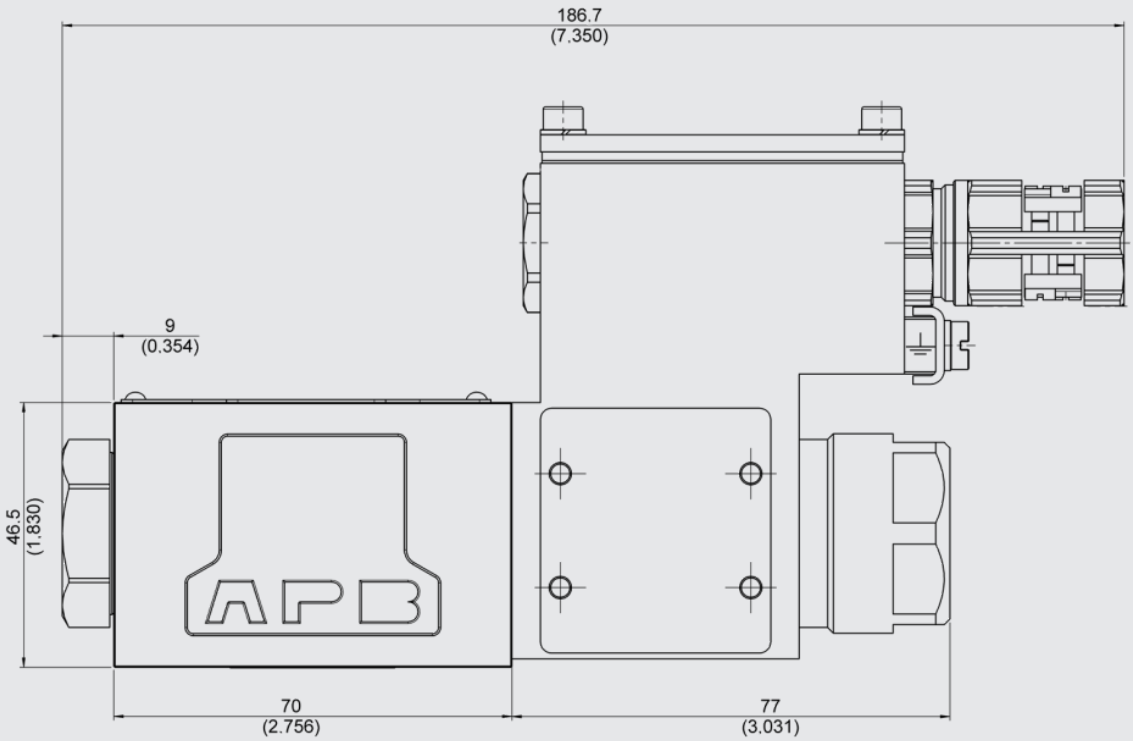
Hole pattern in acc. with ISO 5781-03-04 (comparable with ISO 4401-03-02)

P3DRE 6 **A**







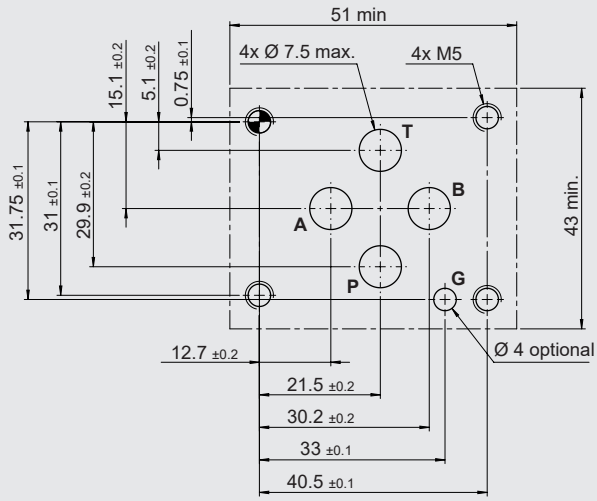


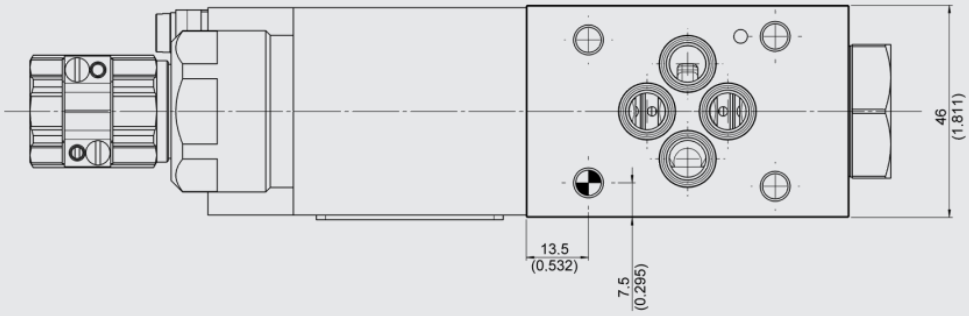
Fastening screws: (not included in scope of delivery)
DIN EN ISO 4762 – M5x50 – 10.9 / tightening torque: 7 Nm
Tightening torque tool in acc. with DIN EN ISO 6789, tool type II class A or B

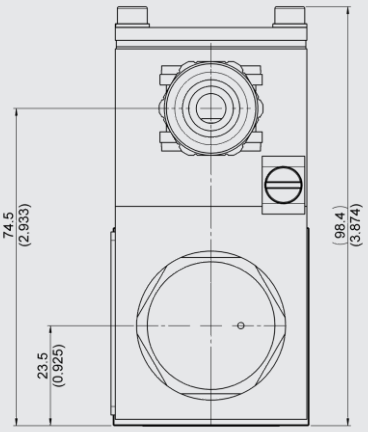
DIMENSIONS

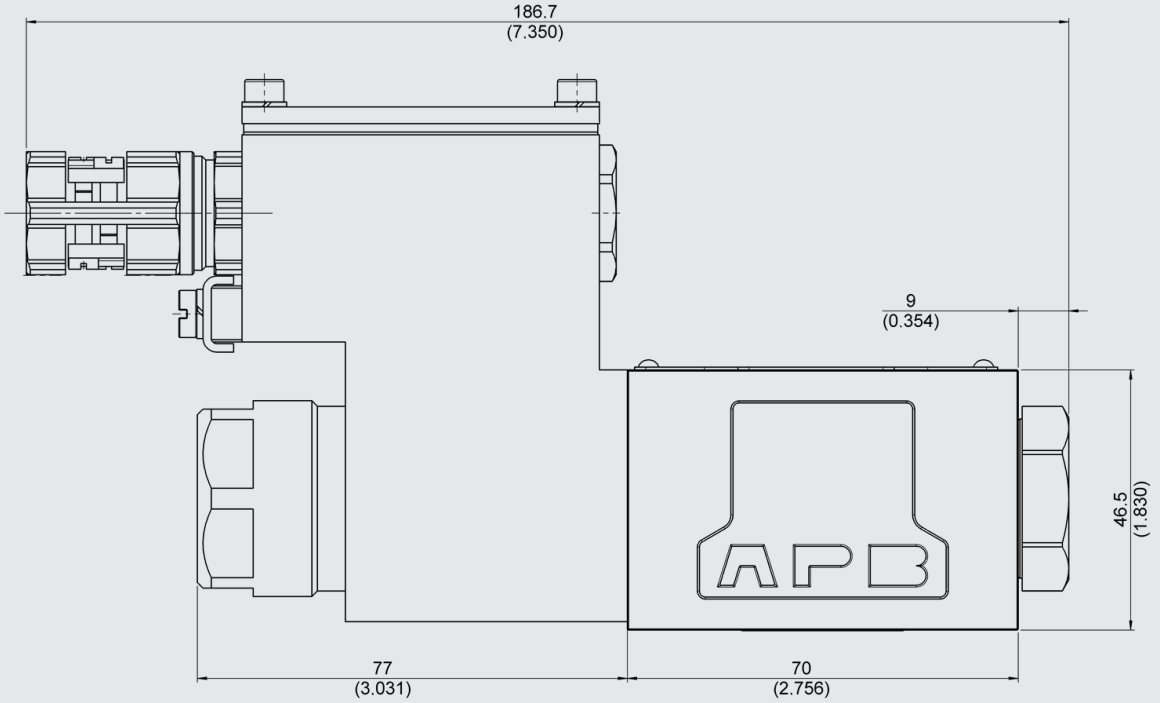
Hole pattern in acc. with ISO 5781-03-04 (comparable with ISO 4401-03-02)

P3DRE 6 **B**









Fastening screws: (not included in scope of delivery)
DIN EN ISO 4762 – M5x50 – 10.9 tightening torque: 7 Nm
Tightening torque tool in acc. with DIN EN ISO 6789, tool type II class A or B

ACCESSORIES

Designation		Part no.
Seal kits (4-part set)	9.25 x 1.78 80 Sh NBR	3492432
	9.25 x 1.78 80 Sh FKM	3120269

NOTE

The information in this brochure relates to the operating conditions and applications described. For applications not described, please contact the relevant technical department.

Subject to technical modifications.

Documents are only valid if they have been obtained via the website and are up-to-date.

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