

PVV PVNPS

Compact, field proven high horsepower pumps



910007

MAKING MACHINES GO AND PROBLEMS GO AWAY®

THE WORLD DEMANDS OILGEAR

Oilgear has a rich legacy of more than 100 years manufacturing pumps and hydraulic equipment. We pride ourselves on MAKING MACHINES GO AND PROBLEMS GO AWAY[®]. For decades, Oilgear has developed hydraulic techniques to meet the unique needs for many equipment manufacturers and end users worldwide.



OILGEAR TRAVERSE CITY, MI USA



OILGEAR FREMONT, NE USA



OILGEAR TOWLER



SOUTH KOREA



OILGEAR CHINA



OILGEAR SPAIN

Global Service Network

No matter where you are, Oilgear can quickly and efficiently provide service to you.

Oilgear's large pump manufacturing centers are in Traverse City, Michigan and Leeds, England. Further domestic manufacturing capacity and product specialization are provided by our Fremont, Nebraska, pump manufacturing facility. We also have manufacturing and field service centers in Germany, France, Spain, China and Korea.

Engineering and Application Expertise

Oilgear's engineering capabilities are second to none. Our application and field engineers are factory-trained and have spent years, often decades, working in the market segments they service. Every Oilgear engineer brings this personal experience to the meeting table, plus the collective knowledge gained from Oilgear's more than 100 years of servicing the general industry with innovative fluid power solutions.



PVV COMPACT, FIELD PROVEN HIGH HORSEPOWER PUMPS



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PVV FAMILY COMPACT, FIELD PROVEN HIGH HORSEPOWER PUMPS

Field-Proven Performance

Up to 587 horsepower (438 kw) in a small package enables compact, light weight installation package Proven design rotating group with 25 years of heavy duty applications.

Engineered with proven materials and robust design.



- 1 Swashblock and integral saddle with special polymerous bearings allows running with low viscosity or other special fluids
- 2 Keyed or splined shaft
- **3** Patented pressure lubricated swashblock design provides high performance for high cycling operation
- Sealed front shaft bearing allows operation with low viscosity or other special fluids
- 5 Adjustable minimum and maximum volume stops (standard)
- Piston shoes run on flat steel thrust plate
 Hydrostatically balanced piston shoe assembly provides long life
- 7 Cylinder mounted polymerous journal bearing enables operation with low viscosity or other special fluids

- 8 Industry proven mechanically retained shoe mechanism allows speeds up to 1800 rpm
- 9 Replaceable hardened cylinder wear plate and bronze port plate provides greater resistance to contamination
- 10 Rugged cylinder design hardened nodular iron construction for improved performance and contamination resistance
- 11 Thru-shaft torque capability enables multiple pump installation from a single shaft
- 12 Valve plate selection: Rear or top and bottom port connections available
- 13 Quiet port plate design minimizes noise at typical electric motor speeds

PVV FAMILY SPECIFICATIONS

MODEL		PVV-200	PVV-250	PVV-440	PVV-540	
Theoretical Displacement in³/rev [cc/rev]		12.20 [200]	15.26 [250]	26.90 [440]	33.00 [540]	
Rate Pressure - Cor PSI [BAR] Rated	ntinuous	6,000 [414]	5,000 [345]	6,500 [450] 5,000 [345]		
Rate Pressure - Pea PSI [BAR] Rated	ık	6,500 [450]	5,800 [400]	7,250 [500] 5,800 [400]		
	1000 RPM GPM [LPM]	47 [178]	59 [223]	104 [394]	129 [488]	
Rated Flow At	1200 RPM GPM [LPM]	58 [219]	72 [273]	125 [473]	155 [587]	
Rated Pressure	1500 RPM GPM [LPM]	72 [273]	91 [344]	Consult Oilgear Tech Support	Consult Oilgear Tech Support	
	1800 RPM GPM [LPM]	86 [326]	109 [413]	Consult Oilgear Tech Support	Consult Oilgear Tech Support	
Maximum Speed RPM		1800	1800 1200		1200	
	1000 RPM HP [kW]	185 [138]	203 [152]	489 [365]	460 [343]	
Power Input At	1200 RPM HP [kW]	223 [166]	242 [180]	587 [438]	547 [408]	
Continous Rated Pressure	1500 RPM HP [kW]	278 [208]	302 [225]	Consult Oilgear Tech Support	Consult Oilgear Tech Support	
	1800 RPM HP [kW]	330 [246]	362 [270]	Consult Oilgear Tech Support	Consult Oilgear Tech Support	
	Width in. [mm]	16.31 [414.3]		21.11 [536.2]		
	Length in. [mm]	17.14 [435.4]		20.93 [531.6]		
Umensions	Height in. [mm]	12.01 [305.1]		15.40 [391.2]		
	Weight Ibs. [kg]	355 [161]		735 [333]		
Face Mtg. Flange		ISO 200 4-Bolt or SAE E		ISO 250 4-Bolt		

NOTE: PVV-440 is supercharged only (2-8 bar).





PVV MODEL ORDERING INFORMATION

VARIABLE PUMP EXAMPLE PVV -540- B2	U	V — L	D	F	Y — P	—1NN	SN ·	– NN
	4	5 - 6	7	8	9 - 10	- 11	12	13
					11a 11I	b 11c /	11d 1	l1e 11

1 = UNIT, TYPE & DESIGN SERIES PVV PVV Variable Displacement Pump

2 = UNIT TYPE				
200	200 ml/rev.			
250	250 ml/rev.			
440	440 ml/rev.			
540	540 ml/rev.			

3 = D	3 = DESIGN SERIES (Subject to change)					
D1	540V Controls					
B2	200/250					
A2	440					

4 = DESIGN SERIES MODIFIER					
Α	SAE Mounting & BSPP Ports (200/250 only)				
В	ISO Mounting & BSPP Ports				
S	SAE Mounting & SAE Ports (200/250 only)				
U	ISO Mounting & SAE Ports (not available w/440)				

5 = SEALS				
V	Viton (Standard)			
В	Buna Nitrile			
Е	Butyl			
Р	EPR			

6 = ROTATION L Left Hand (CCW)

R	Right Hand (CW)

7 = VALVE PLATE TYPE One-Way Service

D	Top & Bottom Ported (not available with 440)
S	Rear Ported

8 = CONNECTION TYPE

F Flange (Flanges are customer supplied)

9 = SHAFT END DESIGNATOR

Y	Keyed (ISO) (Standard)
S	Splined (SAE)
Т	Keyed (SAE)

10 = CONTROL TYPE

Α	Force Amplifier (not available w/440)
F	Fixed (screw adjustable)
Ρ	Pressure Compensating (not available w/440)
R	Two Position Solenoid Selector
۷	Electrohydraulic (w/Feedback)

FOR CONTROL TYPE P ONLY					
11a=	COMPENSATOR OPTIONS				
1	Single Setting				
2	Dual Setting				
3	Triple Setting				

_	Thpic occurry		
A	Normally Open Proportional Device		
B	Normally Closed Proportional Device		
C	Single Pressure with Soft Start		
D	Dual Pressure with Soft Start		
E	Triple Pressure with Soft Start		
R	Remote Control		

	SOLENOID VOLTAGE
Ν	None Required
0	115/60 - 110/50 VAC
1	230/60 - 220/50 VAC
2	12 VDC
3	24 VDC

11c= CONNECTOR		
Ν	None Required	
R	.500 NPT w/o Lite	
W	.500 NPT w/Lite	
S	PG-11 w/o Lite	
L	PG-11 w/Lite	

11d= CONTROL MODIFIER			
F	Load Sense Option		
G	Load Sense w/Horsepower Limiting Option		
н	Horsepower Limiting Option		

11e= INPUT HORSEPOWER OVER-RIDE

100 100 HP Input (Specify 1800 RPM HP)

12 = VOLUME STOPS		
SN	Maximum	
SA	Minimum	
SB	Maximum and Minimum	

13 = VALVE PLATE ADAPTER - FOR TOP & BOTTOM PORTED VALVE PLATE ONLY NN None CP Cover Plate

AN	SAE A; 2 Bolt Mounting (200/250 only)
AA	SAE AA; 2 Bolt Mounting (200/250 only
BN	SAE B; 2 Bolt Mounting
BB	SAE BB; 2 Bolt Mounting (200/250 only
CN	SAE C; 2 Bolt Mounting

NLY

11b= SOLENOID VOLTAGE

0	115/60 - 110/50 VAC
1	230/60 - 220/50 VAC
2	12 VDC
3	24 VDC

11c= CONNECTOR

Ν	None Required	
R	.500 NPT w/o Lite	
W	.500 NPT w/Lite	
S	PG-11 w/o Lite	
L	PG-11 w/Lite	
В	.500 NPT Conduit Box	

FOR CONTROL TYPE V ONLY

11a=	ΤΥΡ	E			
M20	Inte	gral	20	Liter	SV
ſ	6				1.0

R	Remote	Mounted SV

11b= (REMOTE		(REMOTE ONLY) PUMP MOUNTING
	N	Outside of Poservoir

Т	"In-Tank" Mounting

11c=	(REMOTE ONLY) VISUAL
	STROKE INDICATOR
Ν	None Required
L	Cable Mounting Arranged For Indicator on Left Side of Pump Facing Drive Shaft
R	Cable Mounting Arranged For Indicator on Right Side of Pump, Facing Drive Shaft
11 -1	
IId=	(INTEGRAL SV ONLY)

19	CONTAMINATION FUSE
F	Fuse Included
OMIT	NO FUSE

For non-standard requests, please contact technical sales. Subject to change without notice.

PVV MODEL ORDERING INFORMATION



1 = U	NIT, TYPE & DESIGN SERIES
PVV	PVV Variable Displacement Pump

2 = UNIT TYPE

200	200 ml/rev.
250	250 ml/rev.
440	440 ml/rev.
540	540 ml/rev.

3 = DESIGN SERIES

B2	Series (Subject to change)
D1	540V Controls
A2	440

4 = DESIGN SERIES MODIFIER	
Α	SAE Mounting & BSPP Ports (200/250 only)
В	ISO Mounting & BSPP Ports
c C	CAE Mounting & CAE Darts (200/200 anks)

s	SAE Mounting & SAE Ports (200/250 only)
U	ISO Mounting & SAE Ports (not available w/440)

5 = SEALS

)	
۷	Viton (Standard)
В	Buna Nitrile
Е	Butyl
Р	EPR

6 = ROTATION

L	Left Hand (CCW)
R	Right Hand (CW)

7 = VALVE PLATE TYPE

Olic	Huy bernee
D	Top & Bottom Ported (not available with 440)
S	Rear Ported

8 = CONNECTION TYPE

F	Flange
	(Flanges are customer supplied)

9 = SHAFT END DESIGNATOR

Y	Keyed (ISO) (Standard)
5	Splipod (SAE)

T Keyed (SAE)

10 = CONTROL TYPE

Α	Force Amplifier (not available w/440)
F	Fixed (screw adjustable)
Ρ	Pressure Compensating (not available w/440)
R	Two Position Solenoid Selector
V	Electrohydraulic (w/Feedback)

FOR CONTROL TYPE A ONLY

11a =	OPERATOR
Е	Proportional Coil Amplifier Connector (Open Loop) obsolete
F	Proportional Coil Operator w/ Amplifier Connector & D.C.D.T (Closed Loop) obsolete
R	Remote Pressure Signal 150 to 650 PSI (10 to 45 Bar)
Ρ	Pull Type Manual Stem Operator
Μ	Push Type Manual Stem Operator
11b =	SIGNAL OUTPUT

R	Rising Signal/Increases Stroke
F	Falling Signal/Increases Stroke
11c =	CONTROL BIAS
F	Spring Bias to Full Stroke (Standard)
G	With Sequence Valve for Standby Pilot
н	Ext. Pilot Pressure Port w/Checks
11d =	= UNIT
Ρ	Pressure Over-ride Modifiers
11e =	PRESSURE OVER-RIDE OPTIONS
F	Single Setting Flange Mount with System Safety
F	Single Setting Flange Mount with System Safety Multi Compensator or System Relief Settings Via Pilot Control Module; Flange Mount
F G	Single Setting Flange Mount with System Safety Multi Compensator or System Relief Settings Via Pilot Control Module; Flange Mount
F G 11f=	Single Setting Flange Mount with System Safety Multi Compensator or System Relief Settings Via Pilot Control Module; Flange Mount INPUT HORSEPOWER OVER-RIDE

FOR CONTROL TYPE F ONLY

11abc = STROKE		
100	Full Stroke	
~		

075 75% Stroke **050** 50% Stroke, etc.

12 =	VOLUME STOPS
SN	Maximum
SA	Minimum
SB	Maximum and Minimum
13 = [°] & BO [°]	VALVE PLATE ADAPTER - FOR TOP TTOM PORTED VALVE PLATE ONLY

NN None

СР	Cover Plate
AN	SAE A; 2 Bolt Mounting (200/250 only)
AA	SAE AA; 2 Bolt Mounting (200/250 only)
BN	SAE B; 2 Bolt Mounting
BB	SAE BB; 2 Bolt Mounting (200/250 only)
CN	SAE C; 2 Bolt Mounting

For non-standard requests, please contact technical sales. Subject to change without notice.



PVV-200 DISPLACEMENT: 200 CC/REV

PERFORMANCE DATA



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CONNECTIONS TABLE

DESIGN SERIES	A	В	S	U
INLET	3" SAE	3" SAE	3" SAE	3" SAE
	Code	Code	Code 61	Code 61
	61 (M16	61 (M16	(5/8"	(5/8"
	BOLTS)	BOLTS)	BOLTS)	BOLTS)
OUTLET	2" SAE	2" SAE	2" SAE	2" SAE
	Code	Code	Code	Code
	62 (M20	62 (M20	62 (3/4"	62 (3/4"
	BOLTS)	BOLTS)	BOLTS)	BOLTS)
CASE DRAIN	1.25" BSP Threaded Port	1.25" BSP Threaded Port	#20 SAE Threaded Port Adapter	#20 SAE Threaded Port Adapter



INLET DATA

SOUND DATA





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PVV-250

DISPLACEMENT: 250 CC/REV

PERFORMANCE DATA





CONNECTIONS TABLE

DESIGN SERIES	Α	В	S	U
INLET	3″ SAE	3″ SAE	3" SAE	3" SAE
	Code	Code	Code 61	Code 61
	61 (M16	61 (M16	(5/8"	(5/8"
	BOLTS)	BOLTS)	BOLTS)	BOLTS)
OUTLET	2" SAE	2″ SAE	2" SAE	2" SAE
	Code	Code	Code	Code
	62 (M20	62 (M20	62 (3/4"	62 (3/4"
	BOLTS)	BOLTS)	BOLTS)	BOLTS)
CASE DRAIN	1.25" BSP Threaded Port	1.25" BSP Threaded Port	#20 SAE Threaded Port Adapter	#20 SAE Threaded Port Adapter



INLET DATA

SOUND DATA





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PVV-440 DISPLACEMENT: 440 CC/REV

PERFORMANCE DATA



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CONNECTIONS TABLE

DESIGN SERIES	В
INLET	4" SAE Code 61 (M16 BOLTS)
OUTLET	Oilgear Towler HP Flange Code L700669G006 (M30 BOLTS)
CASE DRAIN	1.5" BSP Threaded Port



INLET DATA

SOUND DATA

Supercharged inlet required. 29 psia minimum. 200 psig maximum.



PVV-540 DISPLACEMENT: 540 CC/REV

PERFORMANCE DATA



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PVV-540

CONNECTIONS TABLE

DESIGN SERIES	В	U
INLET	4" SAE Code 61 (M16 BOLTS)	4" SAE Code 61 (5/8" BOLTS)
OUTLET	2.5" SAE Code 62 (M24 BOLTS)	2.5" SAE Code 62 (7/8" BOLTS)
CASE DRAIN	1.5" BSP Threaded Port	#24 SAE Threaded Port Adapter



INLET DATA

SOUND DATA



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PVV PUMP CONTROLS* - PRESSURE*

SINGLE PRESSURE COMPENSATOR P-1NN

Ensures maximum pump flow until unit reaches preset control setting then regulates output flow to match the requirements of the system while maintaining preset output pressure.



SINGLE PRESSURE COMPENSATOR W/ LOAD SENSE P-1NN/F



* Be sure system and pumps are protected against over loads with a high pressure relief valve. If control shifts faster than 150 milliseconds, cavitation can occur.

- # Not to be used for decompressing system.
- ** PVV-440 only available with F, VR, RU and VM controls.

PVV PUMP CONTROLS* - PRESSURE*



SINGLE PRESSURE COMPENSATOR W/ HORSEPOWER LIMIT P-1NN/H

SINGLE PRESSURE COMPENSATOR W/ HORSEPOWER LIMIT & LOAD SENSE P-1NN/G

Load sensing control matches pump flow and pressure to load demand until (limited) horsepower setting is reached.

To limit horsepower consumption, pump delivery is automatically reduced as unit pressure rises.

Refer to note in "How to Order" prior to specifying input horsepower.

Control then automatically reduces pump delivery as system pressure rises to limit horsepower consumption.

Refer to note in "How to Order" prior to specifying input horsepower.



* Be sure system and pumps are protected against over loads with a high pressure relief valve. If control shifts faster than 150 milliseconds, cavitation can occur.

- # Not to be used for decompressing system.
- ** PVV-440 only available with F, VR, RU and VM controls.



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PVV PUMP CONTROLS* - PRESSURE*

SINGLE SOFT START PRESSURE COMPENSATOR # P-C--



Pump starts "softly" by going quickly at low pressure to a reduced flow setting, thereby reducing start-up torque requirements. After start-up, the pressure compensator function takes over.

SINGLE SOFT START W/ LOAD SENSE # P-C--/F

Pump starts "softly" by going quickly at low pressure to a reduced flow setting, thereby reducing start-up torque requirements, before maintaining a constant flow rate for a given flow control valve setting regardless of changes in drive speed and/or working pressure.



* Be sure system and pumps are protected against over loads with a high pressure relief valve. If control shifts faster than 150 milliseconds, cavitation can occur.

- # Not to be used for decompressing system.
- ** PVV-440 only available with F, VR, RU and VM controls.

PVV PUMP CONTROLS* - PRESSURE*

SINGLE SOFT START W/ HORSEPOWER LIMIT # P-C--/H

Pump starts "softly" by going quickly at low pressure to a reduced flow setting, thereby reducing start-up torque requirements, before automatically reducing pump delivery as unit pressure rises and limiting horsepower consumption.



SINGLE SOFT START W/ HORSEPOWER LIMIT & LOAD SENSE # P-C--/G

Pump starts "softly" by going quickly at low pressure to a reduced flow setting, thereby reducing start-up torque requirements before load sensing control matches flow and pressure to load demand until (limit) horsepower setting is reached.

Control then automatically reduces pump delivery as system pressure rises to limit horsepower consumption.



* Be sure system and pumps are protected against over loads with a high pressure relief valve. If control shifts faster than 150 milliseconds, cavitation can occur.

Not to be used for decompressing system.

 $^{\ast\ast}\,$ PVV-440 only available with F, VR, RU and VM controls.



PVV PUMP CONTROLS* - PRESSURE*

DUAL PRESSURE COMPENSATOR P-2--



Similar to "P-1NN" but provides two independently adjustable pressure compensated deliveries as selected by an integral solenoid.

TRIPLE PRESSURE COMPENSATOR P-3--





* Be sure system and pumps are protected against over loads with a high pressure relief valve. If control shifts faster than 150 milliseconds, cavitation can occur.

- # Not to be used for decompressing system.
- $^{\ast\ast}\,$ PVV-440 only available with F, VR, RU and VM controls.

PVV PUMP CONTROLS* - PRESSURE*

DUAL SOFT START # P-D--

Pump starts "softly" similar to "P-C--" but then provides two independently adjustable pressure compensated deliveries as selected by an integral solenoid.



TRIPLE SOFT START # P-E--

Similar to "P-C--" but, after the soft start the unit provides three independently adjustable pressure compensated deliveries as selected by an integral solenoid.



* Be sure system and pumps are protected against over loads with a high pressure relief valve. If control shifts faster than 150 milliseconds, cavitation can occur.

- # Not to be used for decompressing system.
- $^{\ast\ast}\,$ PVV-440 only available with F, VR, RU and VM controls.



PVV PUMP CONTROLS* - PRESSURE*

ELECTRONIC PROPORTIONAL PRESSURE COMPENSATOR P-A or P-B 25 MICRON Provides an infinite number of independent **OP11** remotely adjustable pressure settings in response to an electronic command. GPA А RP1 OP5 OP8 OP Available in "-A, normally open" configuration OP3 (as shown) or in "-B, normally closed" configuration. **O**P14 OP1 OP2 OP6 GP2 GP4

REMOTE PRESSURE COMPENSATOR W/ HORSEPOWER LIMITER P-RNN/H

A remote control module connected to this control can be used to adjust the pressure compensation setting and the horsepower limiter will automatically reduce pump delivery as unit pressure rises.



DR

DR

REMOTE PRESSURE COMPENSATOR P-RNN

A remote control module connected to this control can be used to adjust the pressure compensation setting.



* Be sure system and pumps are protected against over loads with a high pressure relief valve. If control shifts faster than 150 milliseconds, cavitation can occur.

Not to be used for decompressing system.

** PVV-440 only available with F, VR, RU and VM controls.

PVV PUMP CONTROLS* - ELECTRONIC*

REMOTE ELECTRONIC SERVO VALVE VR

A remote electrohydraulic servo valve can be used to position the control mechanism. Feed back from the integral LVDT can be used in an electronic closedloop configuration to provide a highly accurate remote variable delivery control.



Two adjustable deliveries as selected by an integral solenoid operated valve.

ELECTRONIC SERVO VALVE VM

An electrohydraulic servo valve positions the swashplate mechanism with a closed loop position control (with LVDT feedback) providing a highly accurate remote variable delivery control.



Α 1

в

GPA

GP4

1X 4A

2A

GP2



* Be sure system and pumps are protected against over loads with a high pressure relief valve.

** PVV-440 only available with F, VR, RU and VM controls.



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PVV PUMP CONTROLS* - FIXED / FORCE AMPLIFIER*

FIXED

📁 FIXED (SCREW ADJUSTABLE) F

Two adjustable screws are used to "lock" (fix) pump delivery.



FORCE AMPLIFIER*

PROPORTIONAL A

Any 5 - 15 lb force (manual, or pilot pressure) can be applied to the stem of the amplifier valve to change the pump displacement. The control can be set up to allow either increase or decrease in stroke (delivery) with increase in force applied. For additional information on this control, varieties, use with modification horsepower limit, load sense, etc. please see Data Sheet 47428. * Be sure system and pumps are protected against over loads with a high pressure relief valve.

** PVV-440 only available with F, VR, RU and VM controls.

Two Oilgear "PVV" axial piston variable delivery pumps can be integrally coupled together and driven from a single shaft.

The PVV-200/-250 can be run at 150% input shaft torque with the front pump at full rated output and the rear pump at half rated output, or with the front pump at half rated output and the rear pump at full rated output (or any combination that equals 150% or less).

The PVV-540 can be run at 50% thru-shaft torque with the front pump at full rated output and the rear PVV-200/-250 pump also at full rated output. Pump deliveries can be combined for large volume circuits or deliveries can be used individually. See the following table and calculations for Allowable Thru-shaft Torque.

How to calculate torque for each pump

<u>T (in. lbs.) = Pressure (psi) x Displacement (cu. in./rev.)</u>* 5.655

Add the respective torques for each unit:

- T1 = front pump torque required
 - T2 = second pump torque required

Tn = Additional pump or torque for any other driven device

* Assumes 90% mechanical efficiency

T2 + Tn Sum must be less than max rear pump drive shaft torque shown in table below: T1 + T2 + Tn Sum must be less than max input shaft torque shown in table below:

UNIT SIZE	MAX. INPUT SHAFT TORQUE (IN-LBS)	MAX REAR PUMP DRIVE SHAFT TORQUE (IN-LBS)
200 / 250	20,295	13,530
440	Thru shaft not available	
540	43,770	14,590



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