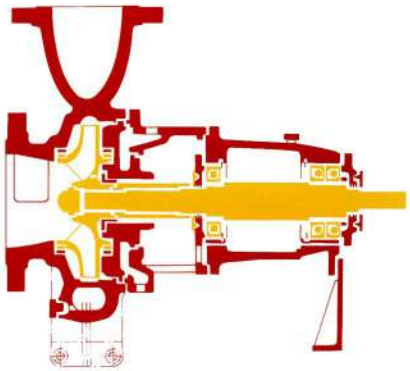
Acc. to API 610

CPR

Heavy Duty Process Pump

TORISHIMA

CPR



INTRODUCING

Torishima CPR series are process pumps according to API610. Their main fields of application are oil refineries, the petrochemical and chemical industries. Torishima CPR series pumps use back pull out design, which means the rotating assembly can be dismantled without removing the pump casing from the piping .If a spacer type flexible coupling is fitted, the driver can also remain attached to the common baseplate when the pump being dismantled.

OPERATING RANGE

		50 Hz	60 Hz
Capacity	Q	up to 3000 USGPM	2200 USGPM
Total head	H	up to 240 m	200 m
Product temperature	t	- 40 up to 350 ℃	
Pump discharge pressure	Pd	up to 40 bar	
Pump sizez	DN	40 to 200 mm	

PRODUCT PUMPED
Hydrocarbons and aggressive media

DESIGN
The CPR series represents a further development of existing single-stage back pull-out pumps. The use of a spacer coupling allows the removal of the rotor and bearing bracket without disturbing the pump casing or motor.
High versality and reliability are the result of the simple, robust design which meets the requirements and recommendations of API. The modular construction system used means optimum part interchangeability in spite of the range of different sizes available. Each of the 11 pump sizes - covers a carefully selected performance range, allowing selection of a highly efficient pump with minimum NPSH requirement.

CASING
One-piece volute casing; from DN 80 upwards double volute; open towards the discharge side. The casing wear ring is renewable, the casing is centreline supported.

IMPELLER
Closed, radial flow impeller fitted with renewable protective wear ring; hydraulically balanced by discharge side gap and balance bores. The wear ring clearance conforms to API.

BEARINGS
The drive end fixed bearing comprises 2 angular contact ball bearings in O-arrangement, the non-located bearing is a radial roller bearing on the non-drive end. The bearing bracket must be cooled if the product temperature exceeds 200 ℃.

SHAFT SEALS
The stuffing box is designed to accept single acting mechanical seals or soft-packed stuffing boxes without machining the casing cover, which means after startup using a soft-packed stuffing box, the pump can be converted to a mechanical seal.

NOZZLE ORIENTATION
End suction, vertical centerline discharge nozzle.

DIRECTION OF ROTATION
The Rotational direction of pump is clockwise (CW) viewed from the drive end.

FLANGES
ANSI Class 150/300

MATERIALS
CPR pumps are supplied as standard in carbon steel to API material class S-1. The parts under pressure can be supplied in 5% chrome steel (class D-6), stainless steel (class A-8) or 12% chrome steel (class C-6) according to the type and temperature of the product.

APPLICATION

Torishima CPR series designed for heavy-duty applications in oil & gas, petroleum refinery, petrochemical, offshore (platform) installation, hydrocarbon and crude oil pipeline and pulp & paper industry. Built for heavy and continuous duty with hot, corrosive and viscous fluids. Widely used for heavy-duty applications in oil & gas, petrochemical and chemical industry.



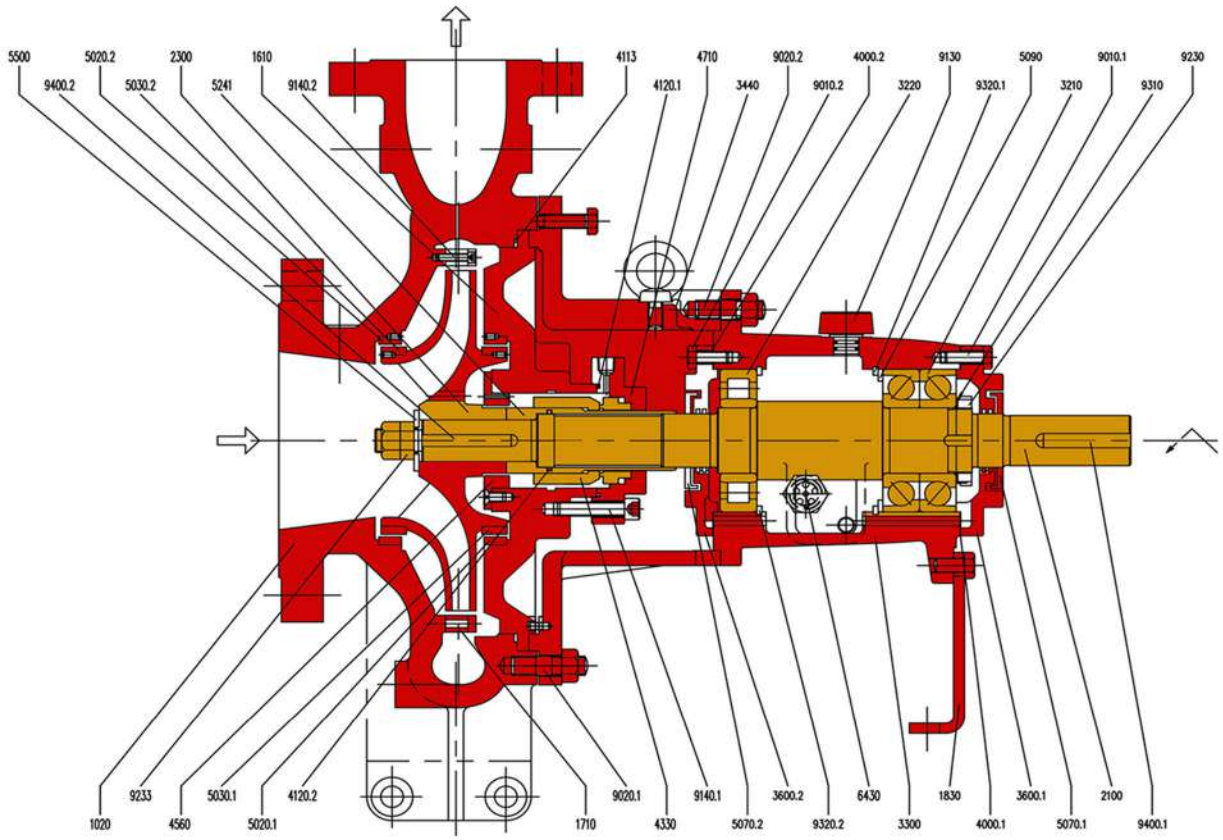

Available in all API 610

API 610 process pump packages are used in high-temperature and high-pressure applications found in the petroleum, petrochemical, natural gas and power industries. Torishima CPR series is the most robust centrifugal design in the industrial market; they are ideal for applications that involve temperatures that exceed 350°C.

API 610 Material Classification

Part Designation	Material classes to API610		
	S-1	A-8	C-6
	Material type	Material type	Material type
Volute casing and casing cover	heast-resistant cast steel	stainless steel 316	12% chrome steel
Impeller	cast iron	stainless steel 316	12% chrome steel
Impeller wearing	cast iron	stainless steel 316	12% chrome steel
Casing wearing	cast iron	stainless steel 316	12% chrome steel
Shaft	carbon steel	stainless steel 316	12% chrome steel
Shaft protecting sleeve	12% chrome steel	stainless steel 316	12% chrome steel

SECTIONAL DRAWINGS AND LIST OF COMPONENTS



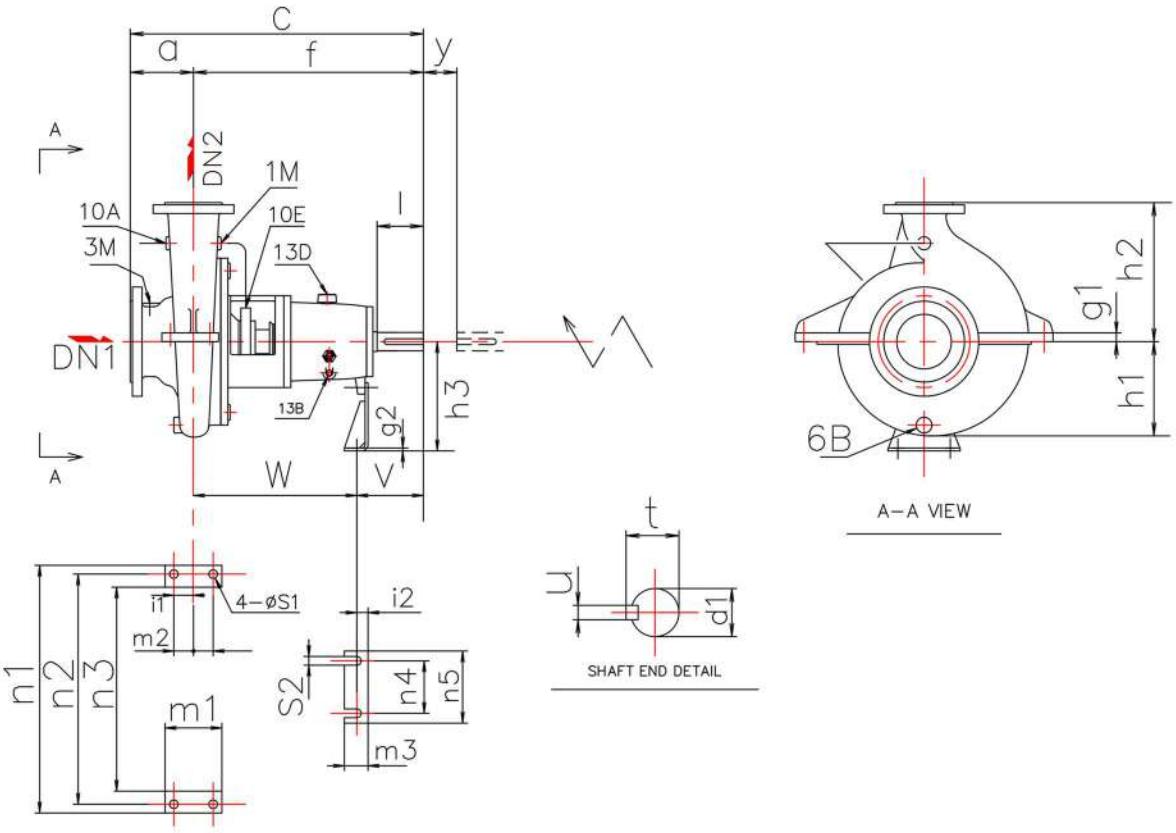
*typical drawing only

PART NO.	PART DESIGNATION	MATERIAL	PCS
1020	Volute Casing	FCD400-15	1
1610	Casing Cover	FCD400-15	1
1710	Diffuser	FCD400-15	1
1830	Support Foot	SS400	1
2100	Shaft	SUS420J2Q	1
2300	Impeller	FCD400-15	1
3210	Ball Bearing	NO.73XXBDB	1
3220	Roller Bearing	NO.NU3XX	1
3300	Bearing Housing	FC250	1
3440	Bracket	FCD400-15	1
3600.1	Bearing Cover	FC250	1
3600.2	Bearing Cover	FC250	1
4000.1	Gasket	VALQUA6500	1
4000.2	Gasket	VALQUA6500	1
4113	Vortex Gasket	TOMBO 1804-NA	1
4120.1	O-Ring	FKM	1

PART NO.	PART DESIGNATION	MATERIAL	PCS
4120.2	O-Ring	FKM	1
4330	Mechanical Seal		1
4560	Throat Bushing	SUS420J2	1
4710	Seal Cover	SUS316	1
5020.1	Casing Wearing Ring	FC200	1
5020.2	Casing Wearing Ring	FC200	1
5030.1	Impeller Wearing Ring	FC200	1
5030.2	Impeller Wearing Ring	FC200	1
5070.1	Deflector	SUS316	1
5070.2	Deflector	SUS316	1
5090	Adjust Ring	SPCC	1
5241	Seal Sleeve	SUS420J2HCr	1
5500	Washer	SUS316	1
6430	Oil Level Gauge	C3604BD NI	1
9010.1	Hexagonal Bolt	S45C	1
9010.2	Hexagonal Bolt	S45C	1

PART NO.	PART DESIGNATION	MATERIAL	PCS
9020.1	STUD BOLT	S45C	16
9020.2	STUD BOLT	S45C	4
9130	PLUG	SS400	1
9140.1	Hexagon Socket Head Cap Screw	SUS316L	4
9140.2	Hexagon Socket Head Cap Screw	SUS316L	3
9230	Bearing Nut	S25C	1
9233	Hard Lock Nut	SS400Zn	1
9310	Washer	SS330	1
9320.1	Snap Ring	SK85	1
9320.2	Snap Ring	SK85	1
9400.1	Key	S45C	1
9400.2	Key	S4SC	1

PUMP DIMENSION



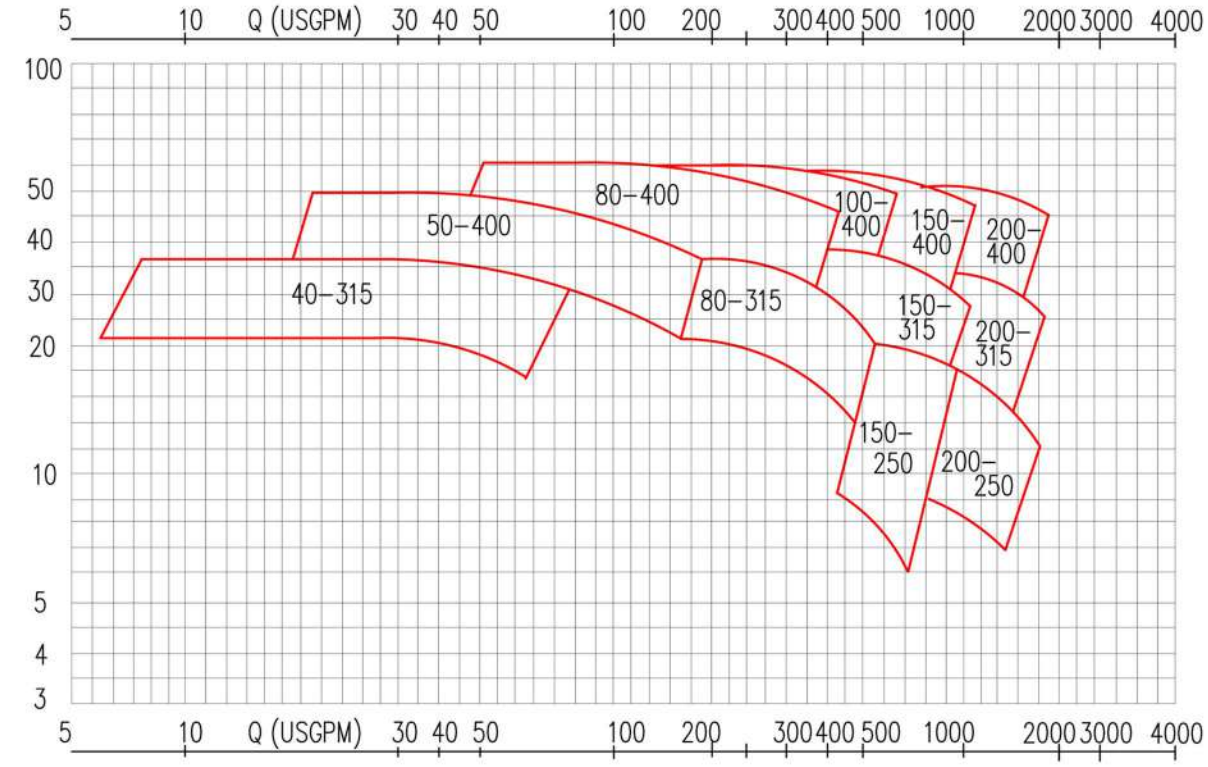
y=Dimension (During disassembly without moving the motor)

PUMP TYPE	PUMP DIMENSION														
	DN1	DN2	a	f	C	g1	g2	h1	h2	h3	m1	m3	n1	n3	n5
CPR 40–315	50	40	125	500	625	19	8	190	250	225	130	47	500	400	160
CPR 50–400	80	50	140	530	670	25	12	250	315	315	130	52	690	590	160
CPR 80–315	100	80	140	530	670	21	12	230	320	280	130	52	640	540	160
CPR 80–400	100	80	155	670	820	25	12	270	355	355	130	60	690	590	200
CPR 100–400	150	100	150	670	820	25	12	280	365	355	150	60	740	640	200
CPR 150–250	200	150	170	530	700	25	12	245	385	315	150	52	690	590	160
CPR 150–315	200	150	170	670	840	25	12	260	410	355	150	60	690	590	200
CPR 150–400	200	150	160	670	840	25	12	310	450	355	150	60	820	720	200
CPR 200–250	250	200	180	670	860	25	12	275	425	355	150	60	690	590	200
CPR 200–315	250	200	210	720	930	30	12	290	460	355	180	60	790	650	200
CPR 200–400	250	200	180	720	910	30	12	320	500	355	180	60	900	760	200

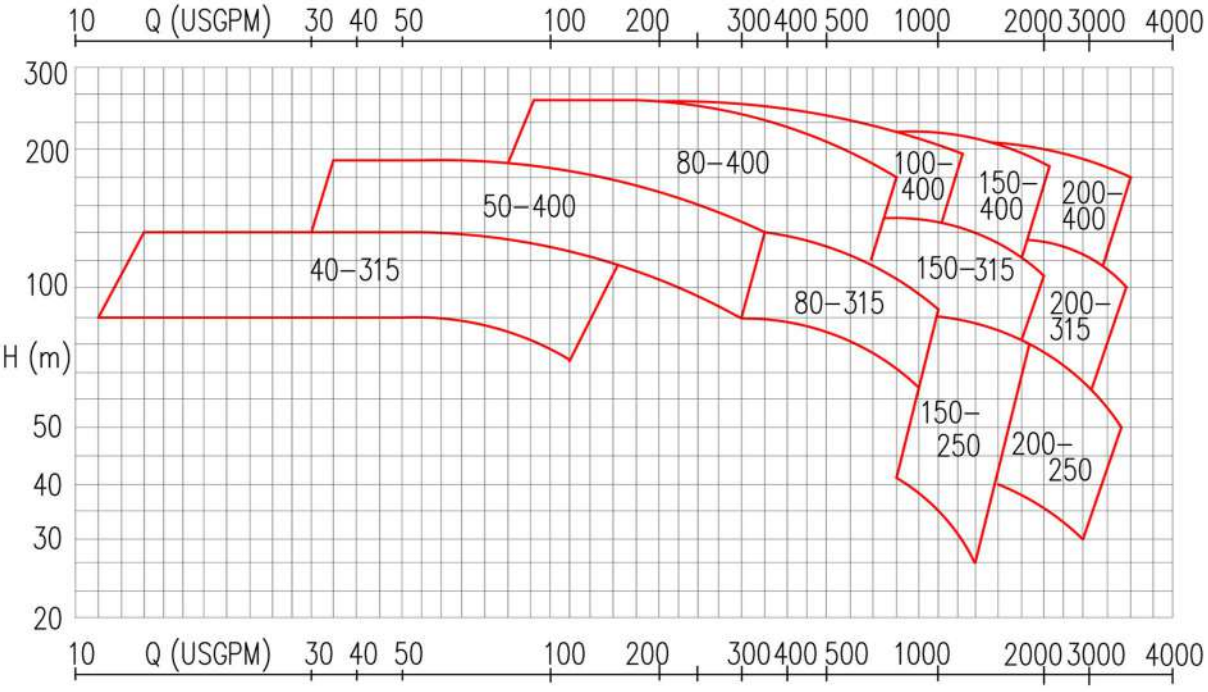
PUMP TYPE	SHAFT END					PUMP LEG								
	d1	l	t	u	y	i1	i2	m2	n2	n4	S1	S2	V	W
CPR 40–315	32	80	35.3	10	120	52.5	30	90	460	110	18	14	130	370
CPR 50–400	42	110	45.1	12	120	72	33	110	650	110	18	14	160	370
CPR 80–315	42	110	45.1	12	140	51	33	90	600	110	18	14	160	370
CPR 80–400	48	110	51.5	14	180	55	39	110	650	140	18	14	170	500
CPR 100–400	48	110	51.5	14	180	55	39	110	700	140	18	18	170	500
CPR 150–250	42	110	45.1	12	140	72	33	100	650	110	18	14	160	370
CPR 150–315	48	110	51.5	14	180	55	39	110	650	140	18	18	170	500
CPR 150–400	48	110	51.5	14	180	55	39	110	780	140	18	18	170	500
CPR 200–250	48	110	51.5	14	180	55	39	110	650	140	18	18	170	500
CPR 200–315	60	140	64.2	18	180	65	39	130	740	140	22	18	205	515
CPR 200–400	60	140	64.2	18	180	65	39	130	850	140	22	18	205	515

SELECTION CHART

50Hz



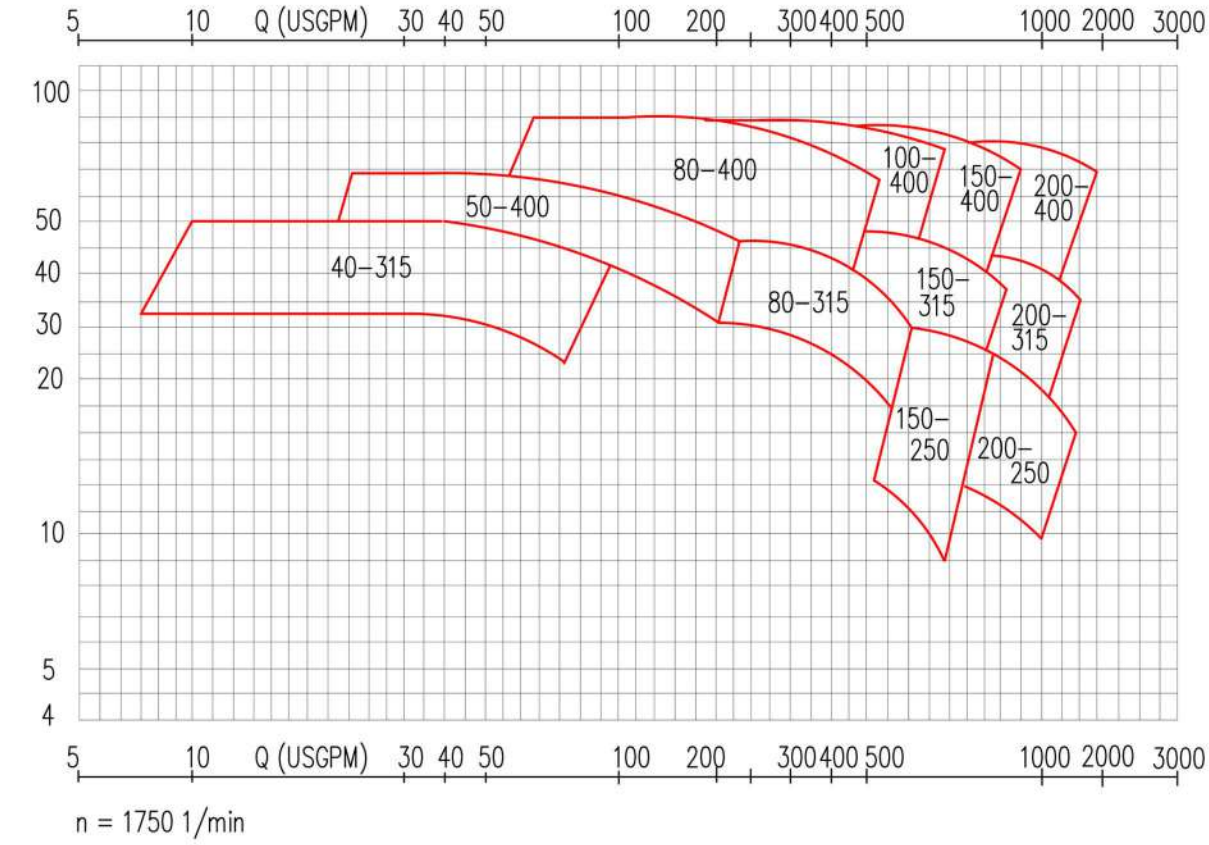
n = 1450 1/min



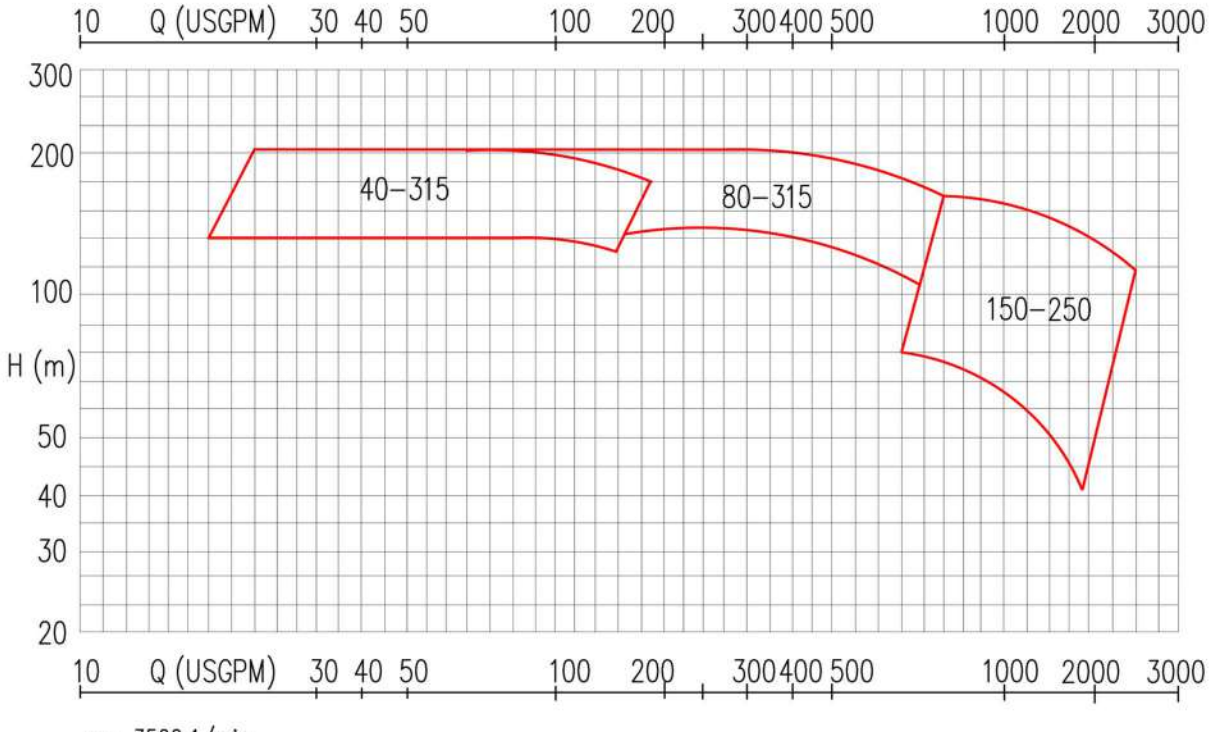
n = 2900 1/min

SELECTION CHART

60Hz



n = 1750 1/min



n = 3500 1/min