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DAI HEAVY INDUSTRIES CO., LTD. ENGINE & MACHINERY DIVISION.**

Instructions for Main Engine

Type S90ME-C

This book forms part of a set of books consisting of three volumes entitled:

- Vol. I OPERATION
- Vol. II MAINTENANCE
- Vol. III COMPONENTS AND DESCRIPTIONS

The purpose of these books is to provide general guidance on operation and maintenance and to describe the constructional features of a standard version of the above engine type. Deviations may be found in a specific plant. In addition, the books can be used for reference purposes, for instance in correspondence and when ordering spare parts.

It is essential that the following data is stated in spare parts orders as it is used by us to ensure the supply of the correct parts for the individual engines:

1. Name of vessel
2. Engine No. built by
3. Plate No.
4. Part No.
5. Quantity required (and description)

Example: M/S (HYUNDAI NO. 1) B200-90201-H40-072
 10 pcs (piston crown)

As reliable and economical operation of the diesel engines is conditional on correct operation and maintenance, it is essential that the engine-room personnel is fully acquainted with the contents of this book.

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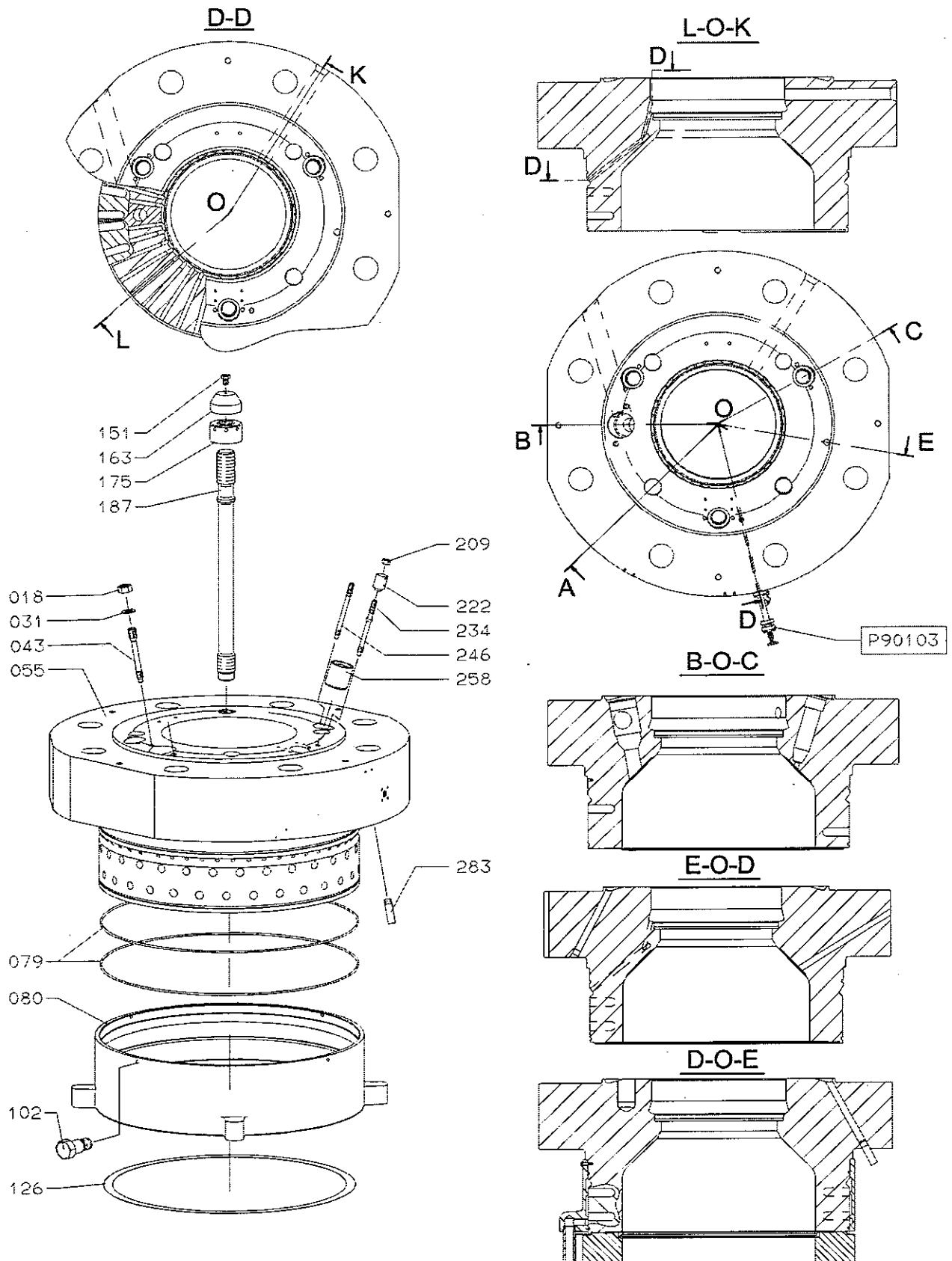
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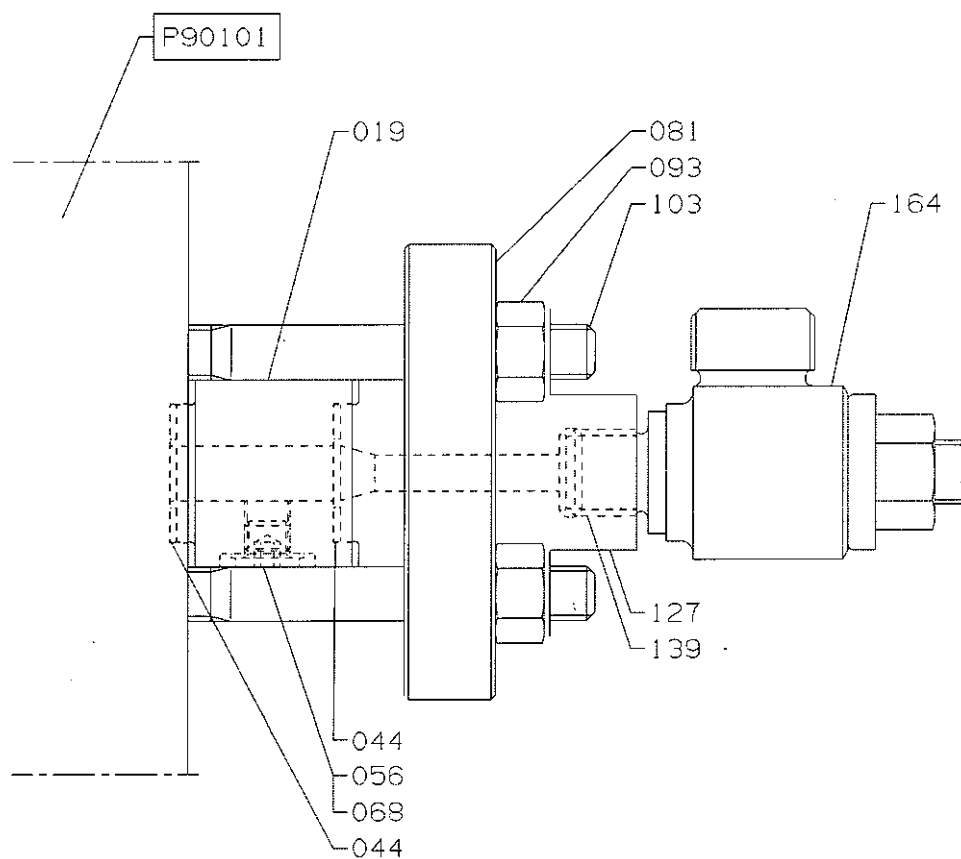
A. EXPLANATION & CODE BOOK

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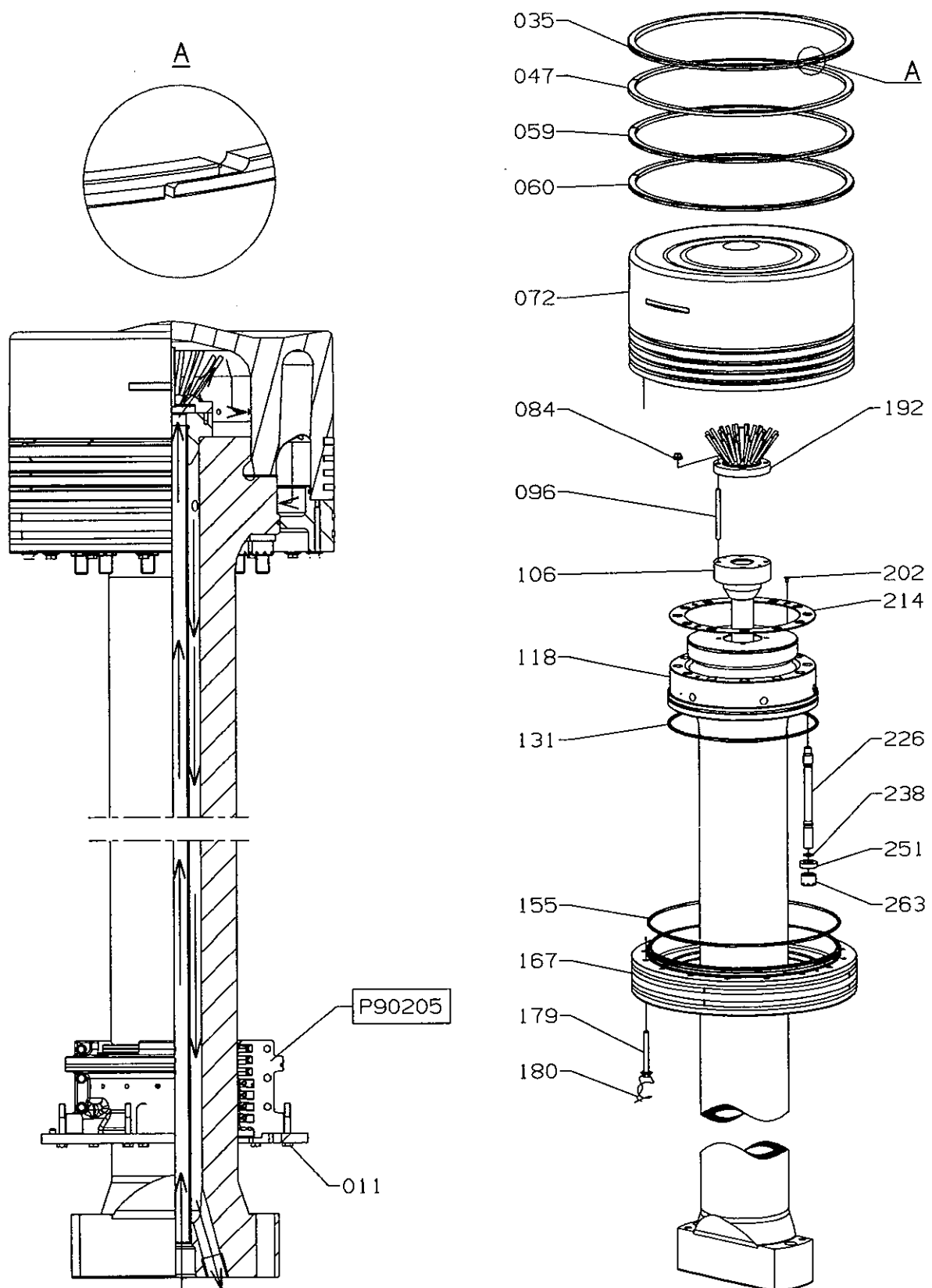
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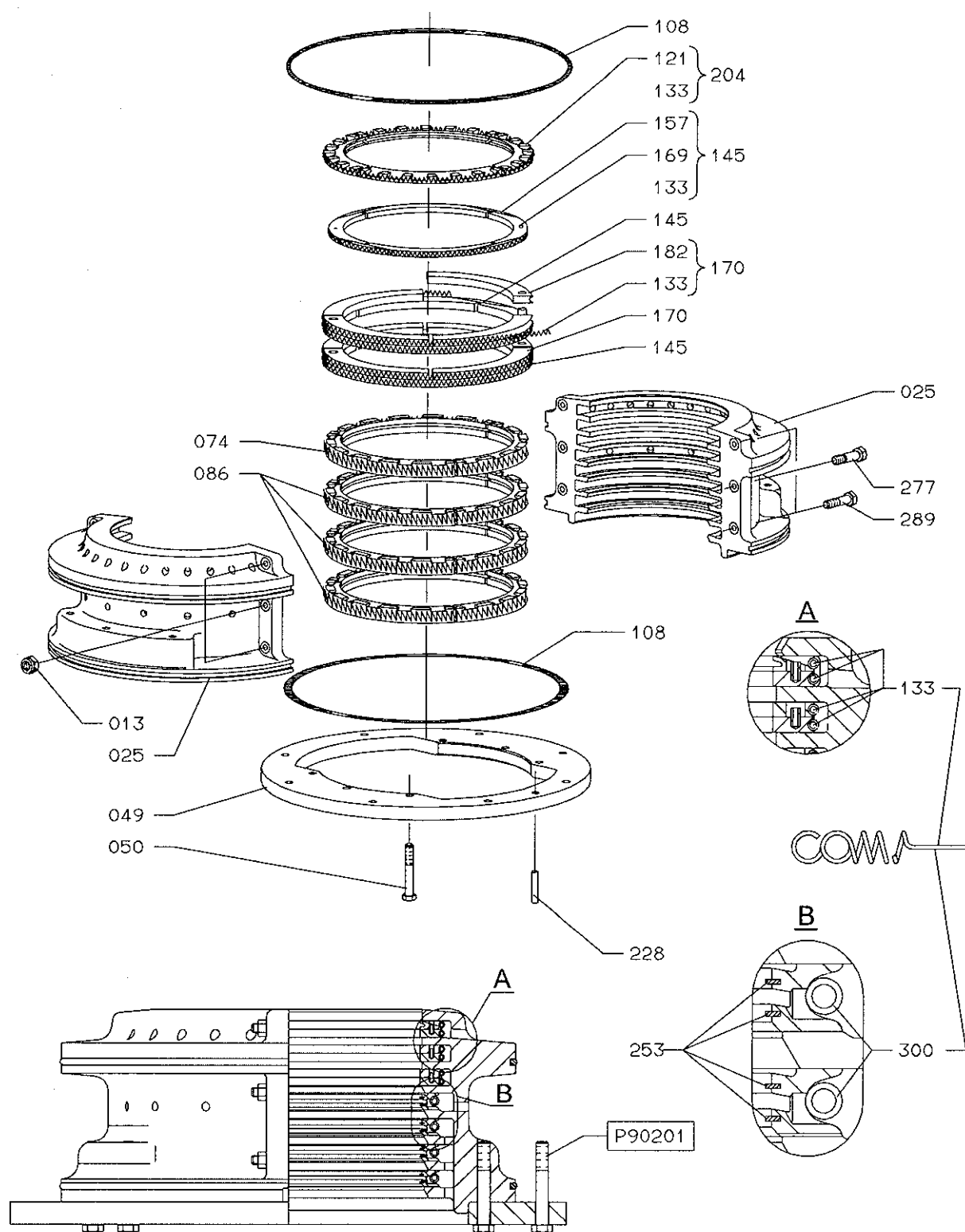
Item No.	Item Description	Item No.	Item Description
018	Nut		
031	Washer		
043	Stud		
055	Cylinder cover		
079	O-ring		
080	Cooling jacket		
102	Screw		
126	Gasket		
151	Screw		
163	Protective cap		
175	Nut		
187	Stud for exhaust valve		
209	Nut		
222	Spring housing, complete		
234	Stud for fuel valve		
246	Stud for fuel valve		
258	Pipe for fuel valve		
283	Pipe		
	Note:		



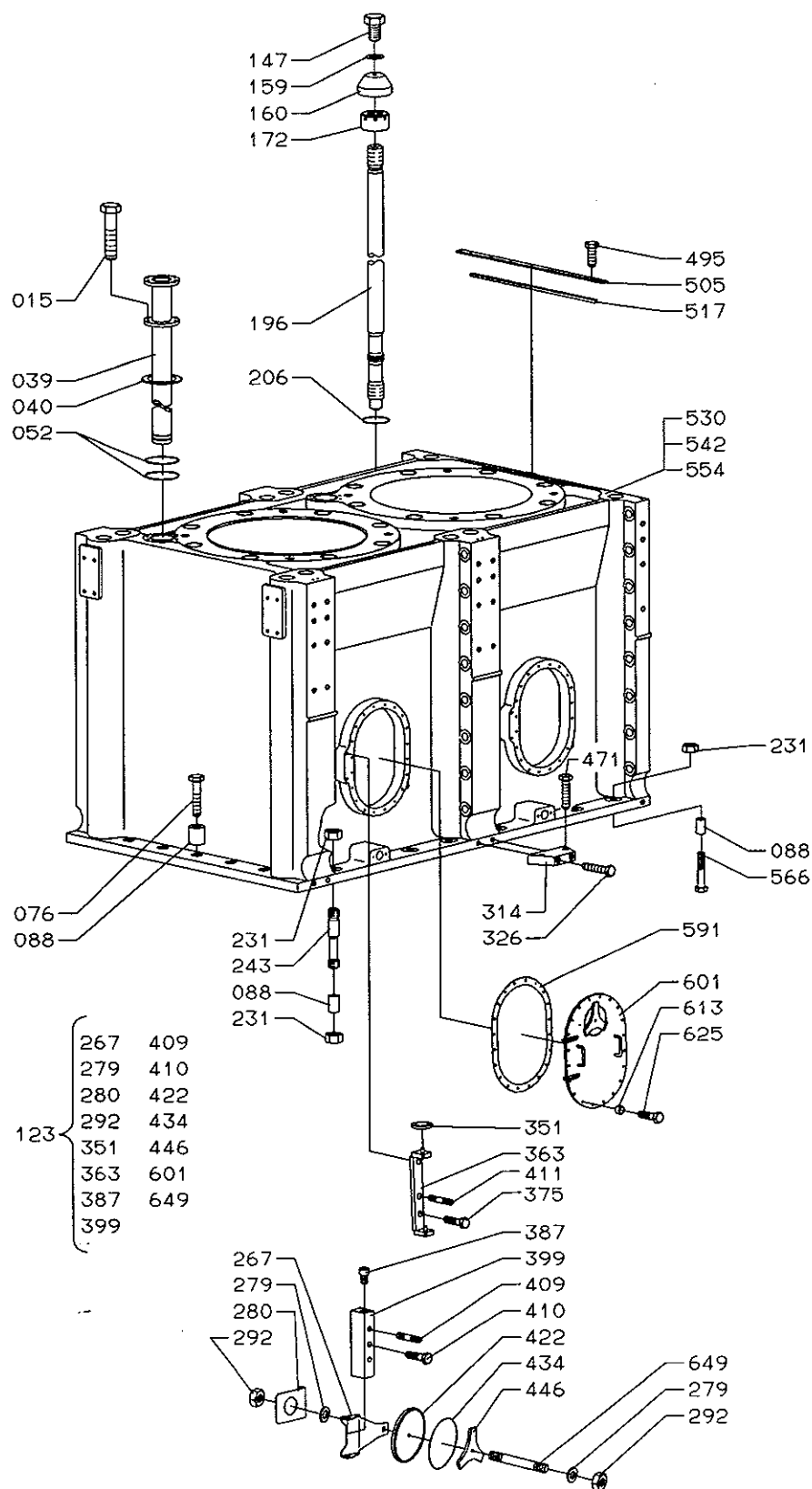
Item No.	Item Description	Item No.	Item Description
019	Extension		
044	Gasket		
056	Plug screw		
068	Gasket		
081	Flange		
093	Nut, self-locking		
103	Stud		
127	Extension		
139	Gasket		
164	Indicator cock		



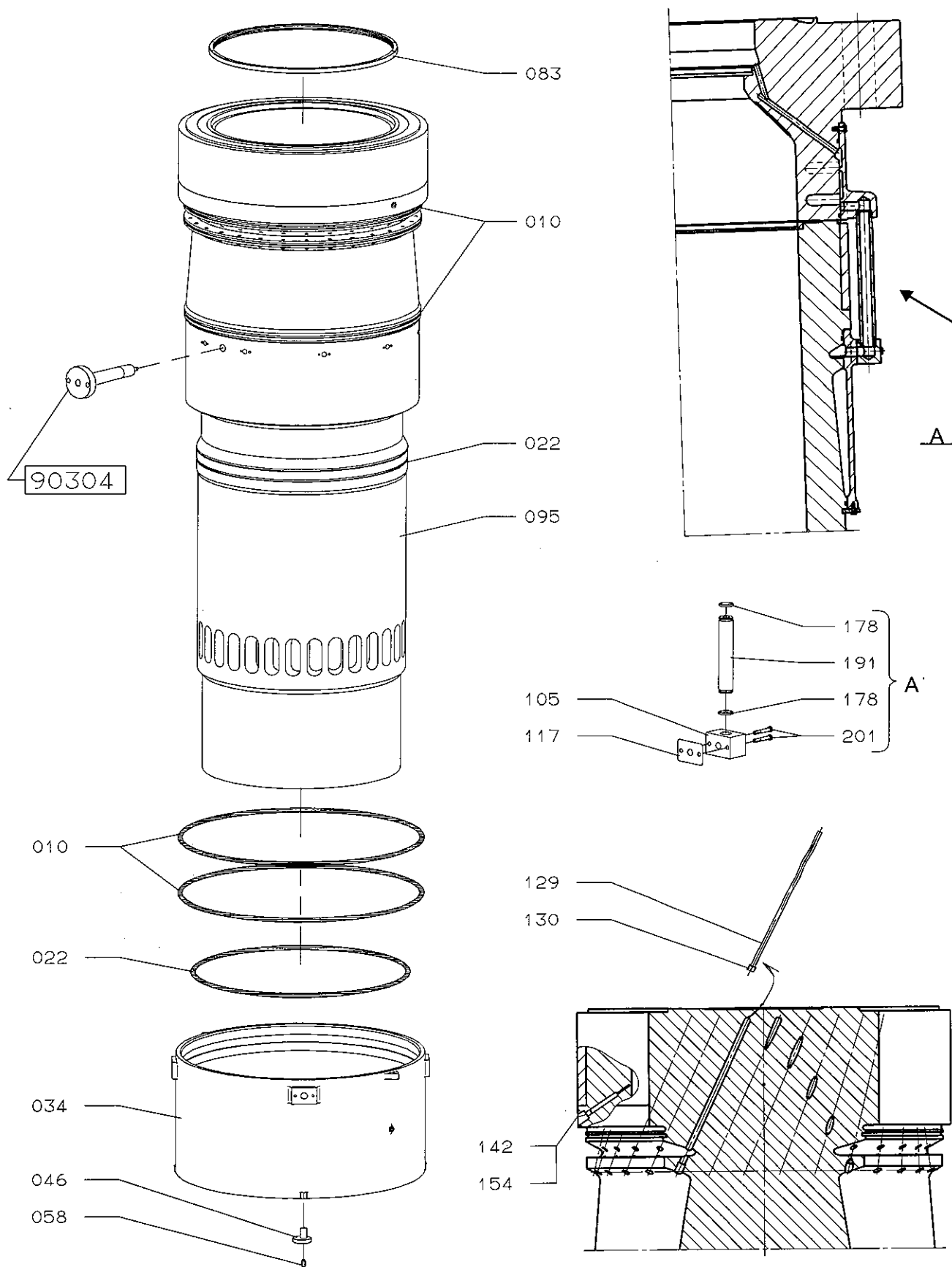
Item No.	Item Description	Item No.	Item Description
011	Screw		
035	Piston ring no. 1		
047	Piston ring no. 2		
059	Piston ring no. 3		
060	Piston ring no. 4		
072	Piston crown		
084	Cam lock nut		
096	Stud		
106	Pipe for cooling insert		
118	Piston rod		
131	D-ring		
155	D-ring		
167	Piston skirt		
179	Flange screw		
180	Locking wire		
192	Cooling insert		
202	Screw		
214	Intermediate disc		
226	Stud		
238	Sealing ring		
251	Disc		
263	Nut for hydraulic tightening		
	Note :		
	*		



Item No.	Item Description	Item No.	Item Description
013	Nut		
025	Housing for stuffing box		
049	Flange		
050	Screw		
074	Scraper ring		
086	Scraper ring		
108	O-ring		
121	Scraper ring		
133	Tension ring		
145	Sealing ring		
157	Sealing ring		
169	Spring pin		
170	Sealing ring		
182	Sealing ring		
204	Scraper ring		
228	Cylindrical pin		
253	Lamella		
277	Fit bolt		
289	Screw		
300	Tension ring		

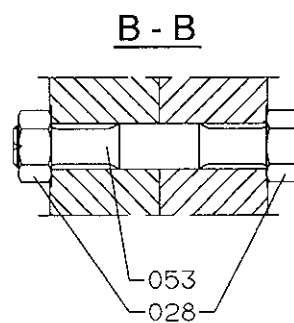
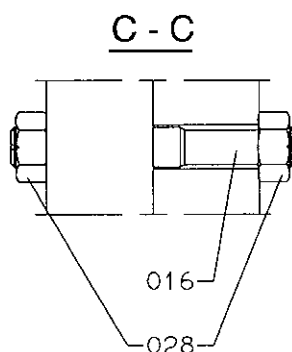
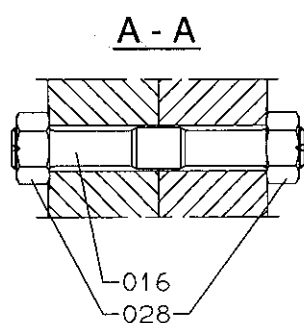
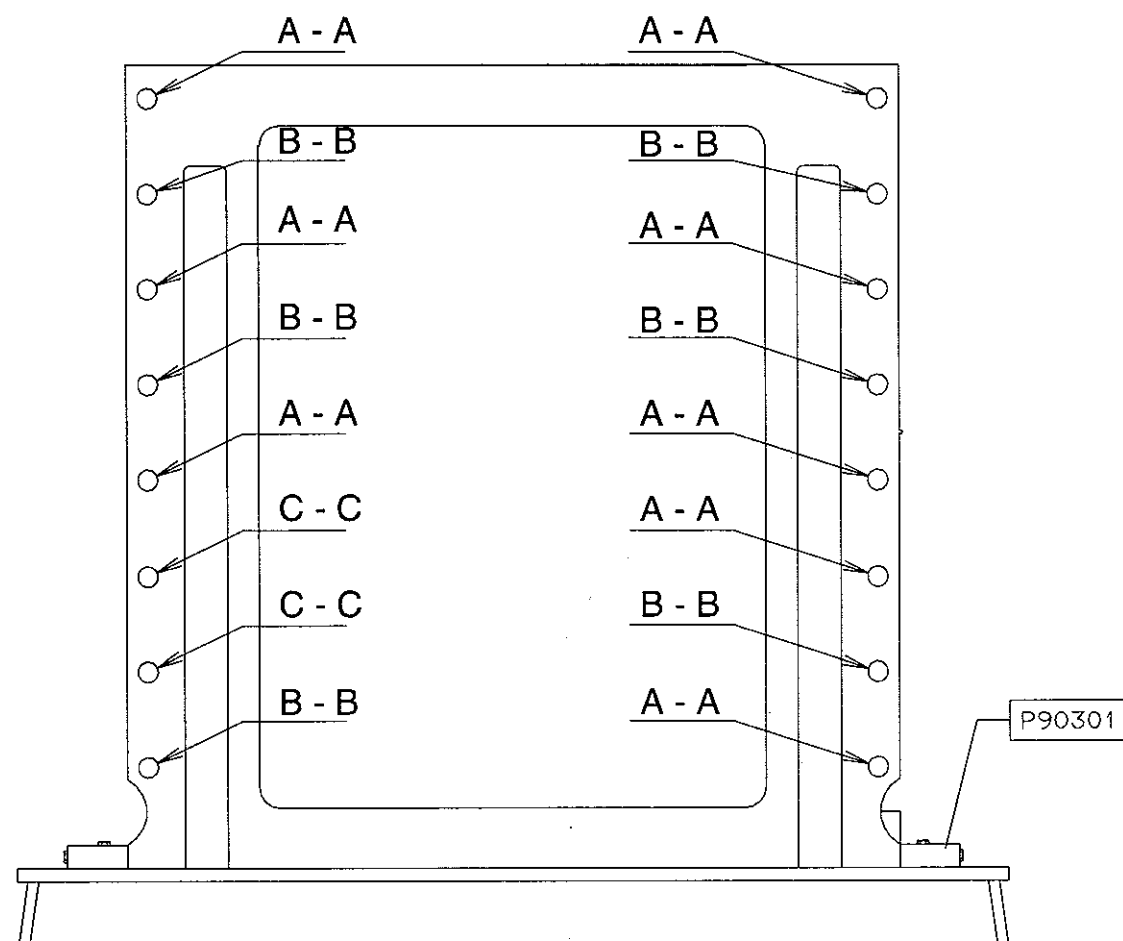


Item No.	Item Description	Item No.	Item Description
015	Screw		
039	Protective cap		
040	Packing		
052	Sealing ring		
076	Screw		
088	Distance piece		
123	Cleaning cover, complete		
147	Screw		
159	Washer		
160	Protective cap		
172	Nut		
196	Stud		
206	Sealing ring		
231	Nut		
243	Fitted stud		
267	Hinge		
279	Washer		
280	Locking plate		
292	Nut		
314	Plate		
326	Screw		
351	Washer		
363	Hinge		
375	Screw		
387	Screw		
399	Support		
409	Spring pin		
410	Screw		
411	Spring pin		
422	Cover		
434	Sealing ring		
446	Cross member		
471	Screw		
495	Screw		
505	Rail for sealing		
517	Packing - rubber		
530	Cylinder frame fore		
542	Cylinder frame intermediate		
554	Cylinder frame aft		
566	Screw		
591	Packing		
601	Cleaning cover		
613	Distance pipe		
625	Screw		
649	Stud		



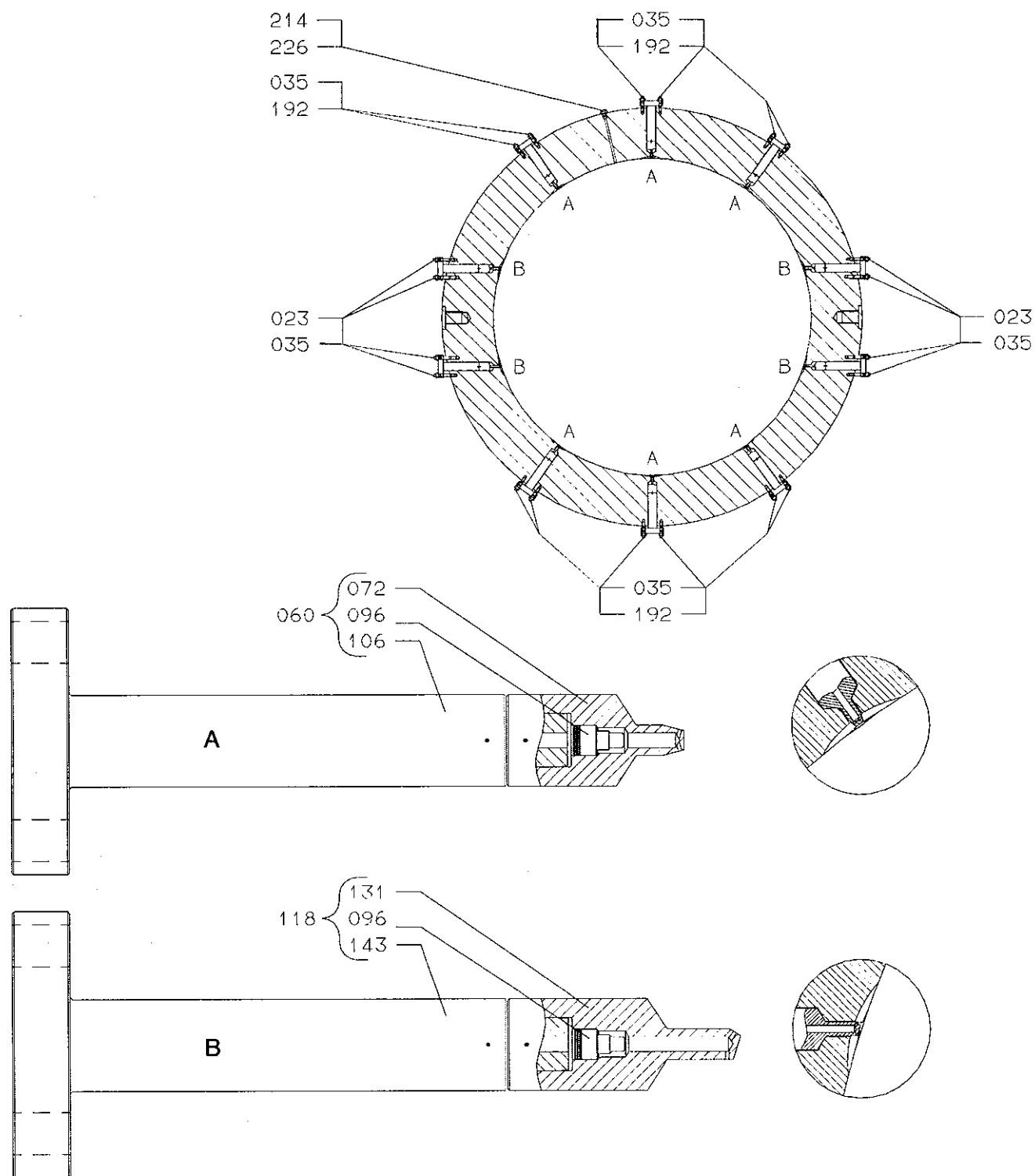
Item No.	Item Description
010	O-ring
022	O-ring
034	Cooling jacket
046	Clamp
058	Screw
083	Piston cleaning ring
095	Cylinder liner
105	Cooling water connection
117	Packing
129	Pipe
130	Spring pin
142	Plug screw for thermo sensor hole
154	Gasket
178	O-ring
191	Pipe
201	Screw

Item No.	Item Description



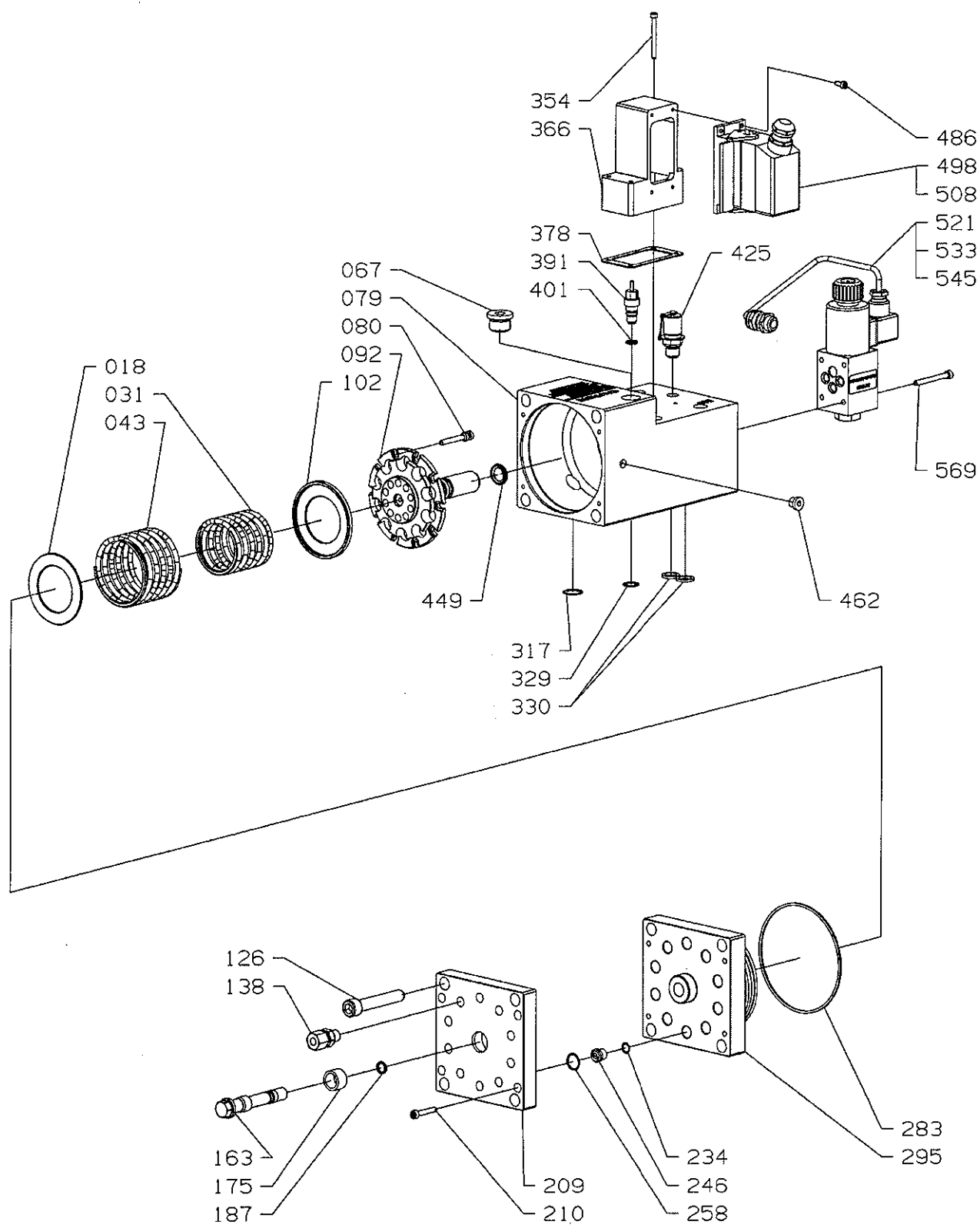
Item No.	Item Description
016	Stud
028	Nut
053	Fitted stud

Item No.	Item Description

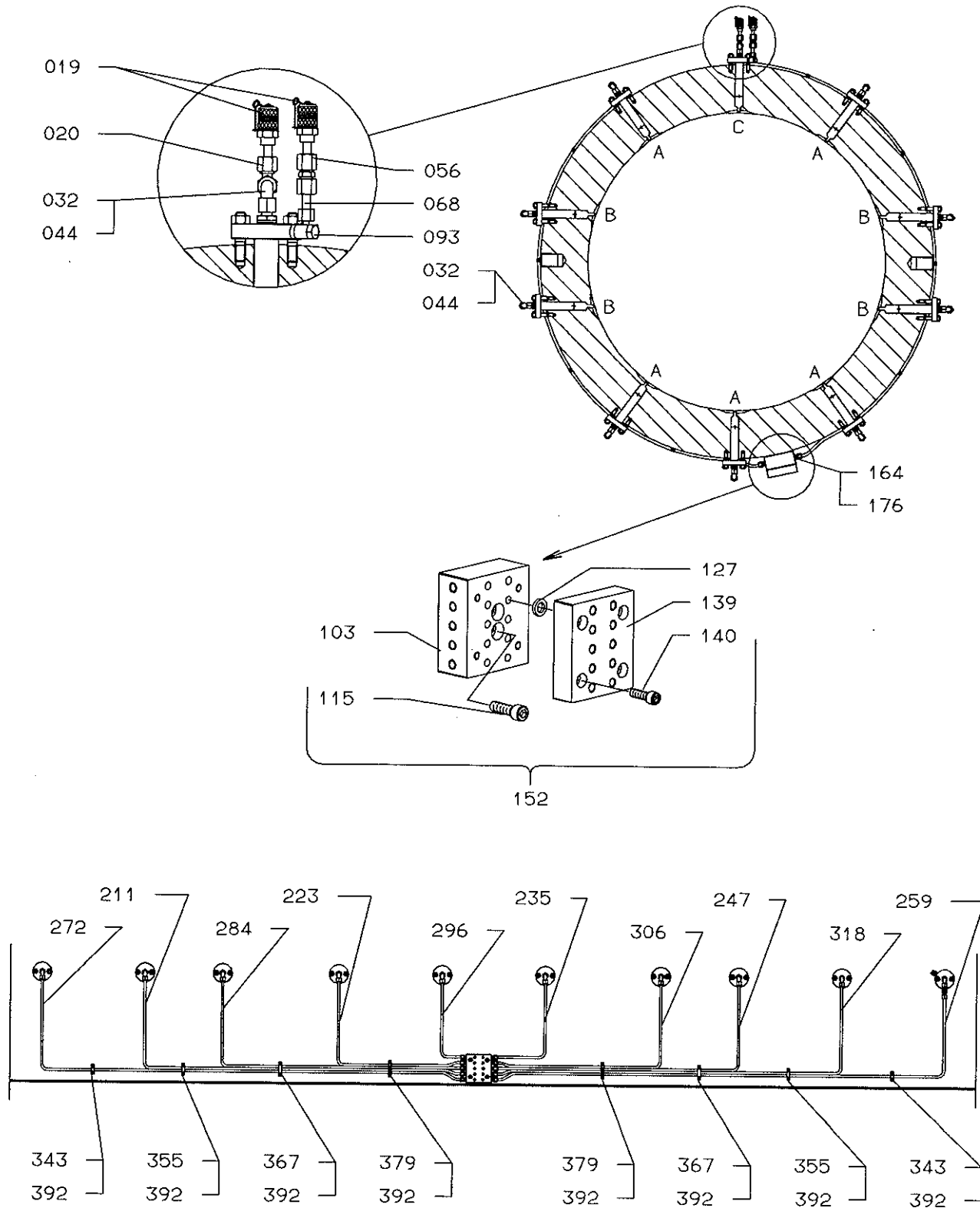


Item No.	Item Description
023	Stud
035	Nut
060	Non-return valve "A" complete
072	Valve housing
096	Valve
106	Valve head
118	Non-return valve "B" complete
131	Valve housing
143	Valve head
192	Stud
214	Packing
226	Screw

Item No.	Item Description



Item No.	Item Description	Item No.	Item Description
018	Disc		
031	Spring		
043	Spring		
067	Plug screw		
079	Cylinder housing		
080	Plunger		
092	Actuator piston		
102	Disc		
126	Screw		
138	Stud coupling		
163	Adjusting screw		
175	Spacer tubular		
187	O-ring		
209	Cover		
210	Screw		
234	O-ring		
246	Non-return valve		
258	O-ring		
283	Sealing ring		
295	Cylinder block		
317	O-ring		
329	O-ring		
330	Sealing ring		
354	Screw		
366	Housing		
378	Packing		
391	Inductive sensor		
401	O-ring		
425	Quick coupling, minimess		
449	Sealing ring		
462	Plug screw		
486	Screw		
498	Plug		
508	Plug		
521	Cable		
533	3/2-way solenoid valve		
545	Cable		
569	Screw		



Item No.	Item Description	Item No.	Item Description
019	Coupling, minimess		
020	Tee-screwed		
032	Coupling		
044	Packing		
056	Coupling		
068	Pipe		
093	Coupling		
103	Distributor block		
115	Screw		
127	Sealing ring		
139	Distributor block		
140	Screw		
152	Distributor block		
164	Coupling		
176	Packing		
211	Pipe		
223	Pipe		
235	Pipe		
247	Pipe		
259	Pipe		
272	Pipe		
284	Pipe		
296	Pipe		
306	Pipe		
318	Pipe		
343	Pipe holder		
355	Pipe holder		
367	Pipe holder		
379	Pipe holder		
392	Screw		

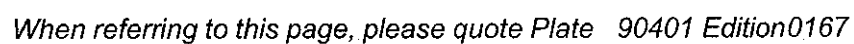
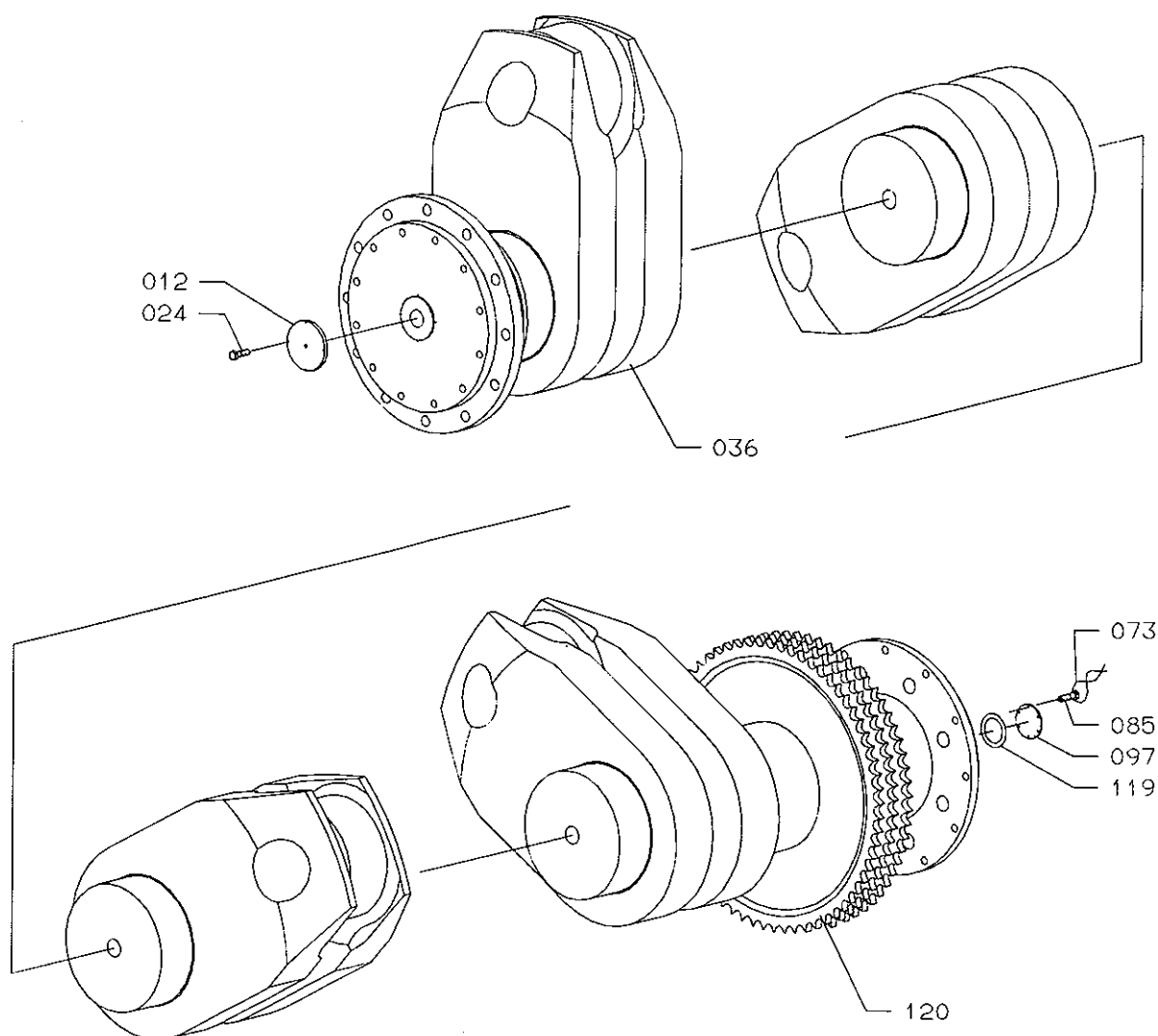
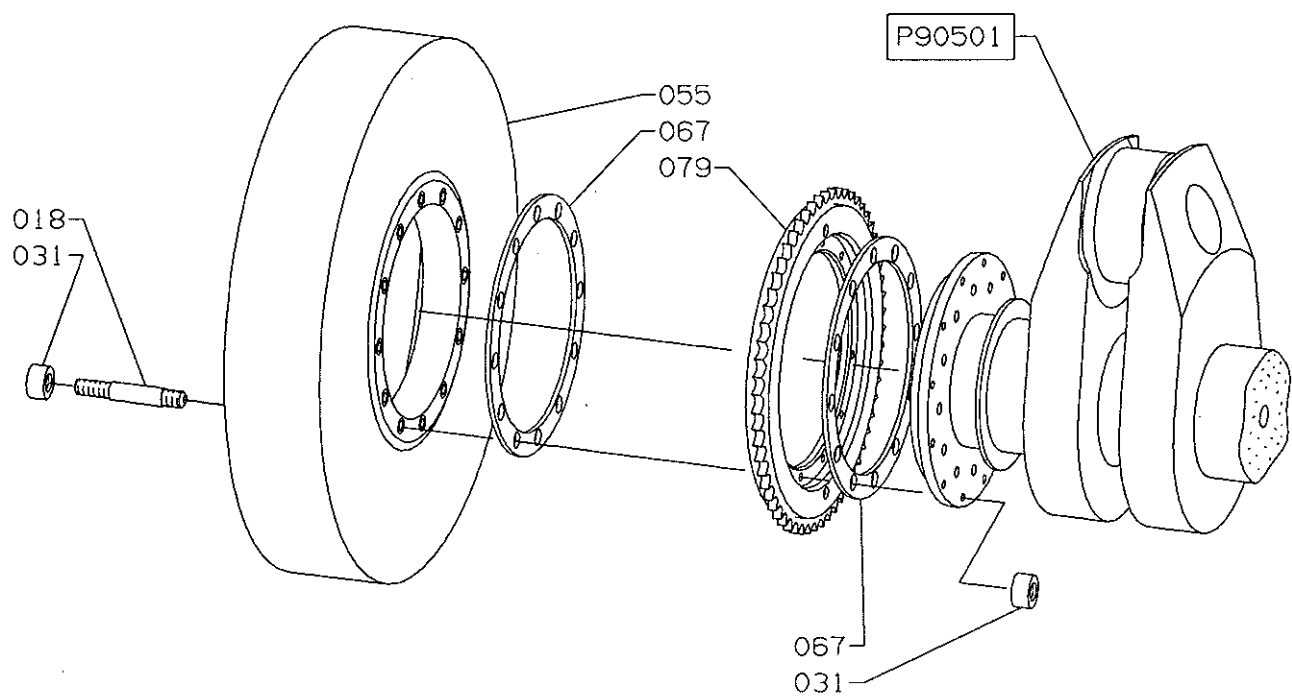


Plate 90401-0167 Connecting Rod and Crosshead

Item No.	Item Description	Item No.	Item Description
019	Telescope pipe		
020	Flange		
032	Bushing		
044	Housing		
056	Screw		
068	Screw		
081	Screw		
103	Guide shoe		
115	Lock washer		
139	Stop screw		
176	Plug		
188	Thurst piece		
211	Shim*		
235	Crosshead bearing shell, complete		
247	Crankpin bearing, complete		
259	Screw		
260	Crankpin bearing cap		
272	Crosshead bearing cap		
284	Guide ring		
296	Crosshead		
306	Screw		
331	Nut		
343	Stud		
355	Nut		
367	Guide shoe		
379	Plug		
380	Locking wire		
392	Shim*		
402	Shim*		
414	Washer		
426	Guide strip		
438	Screw		
451	Stud		
463	Guide pin		
475	Connecting rod		
487	Nut		
509	Stud		
510	Connecting rod, complete		
534	Outlet pipe		
546	Orifice plate		
571	Washer		
583	Screw		
595	Shim		
	* When ordering, please state thickness of shim.		

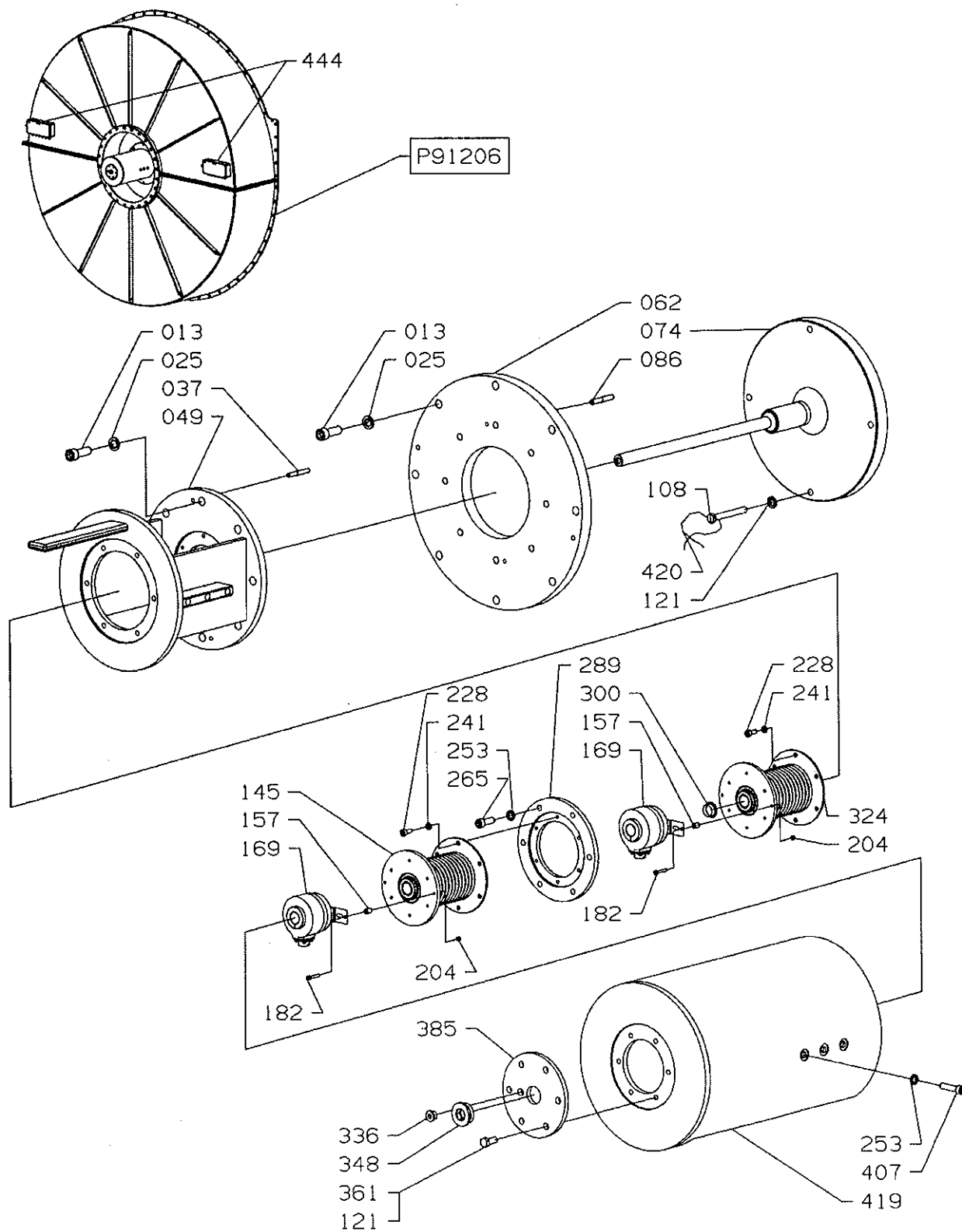


Item No.	Item Description	Item No.	Item Description
012	Flange		
024	Screw		
036	Crankshaft, complete		
073	Locking wire		
085	Screw		
097	Cover		
119	Packing		
120	Chain wheel		



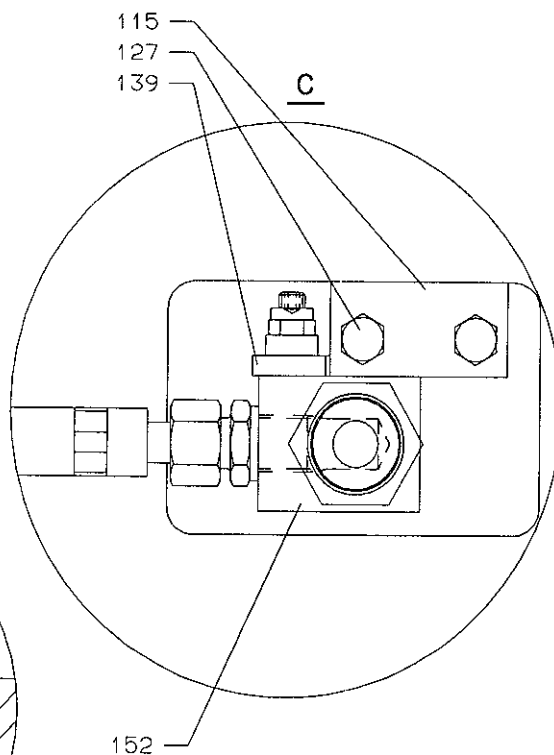
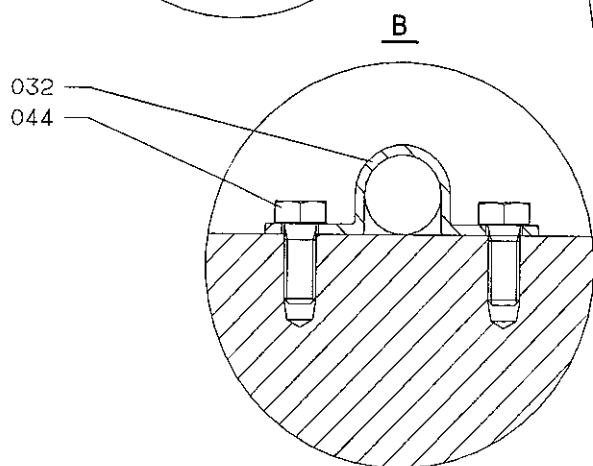
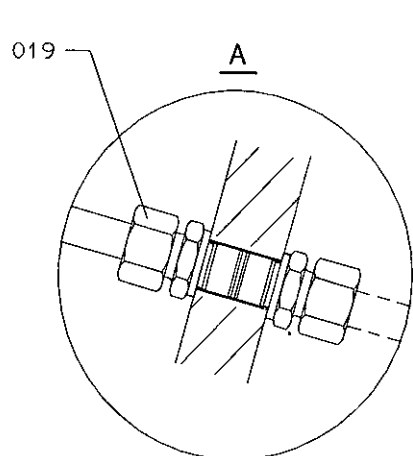
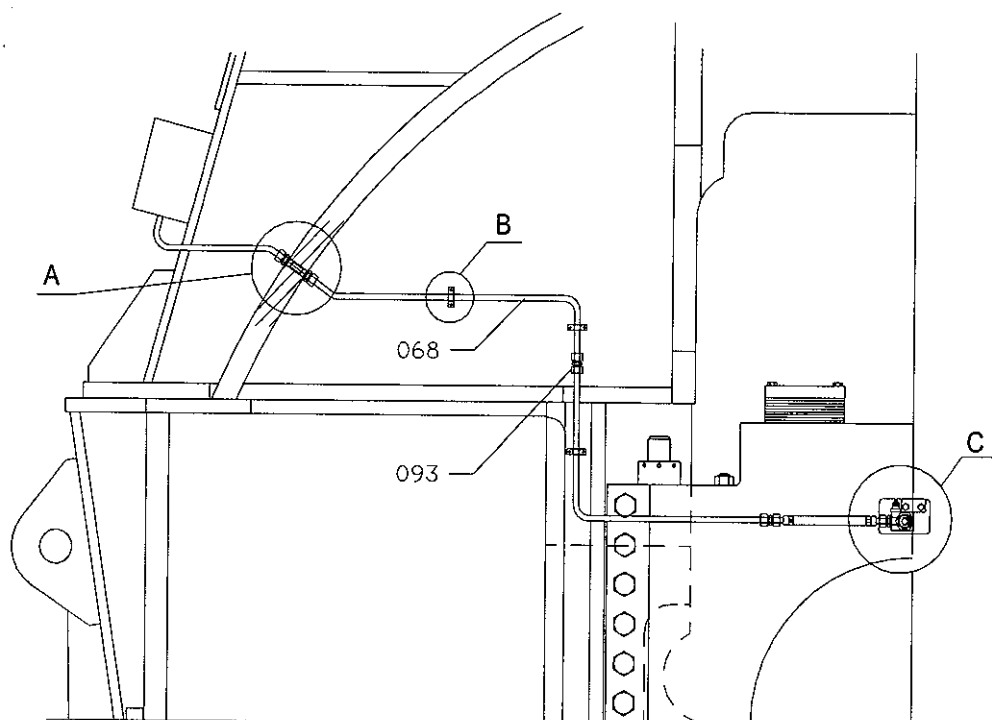
Item No.	Item Description
018	Stud
031	Nut
055	Tuning wheel
067	Disc
079	Chain wheel

Item No.	Item Description

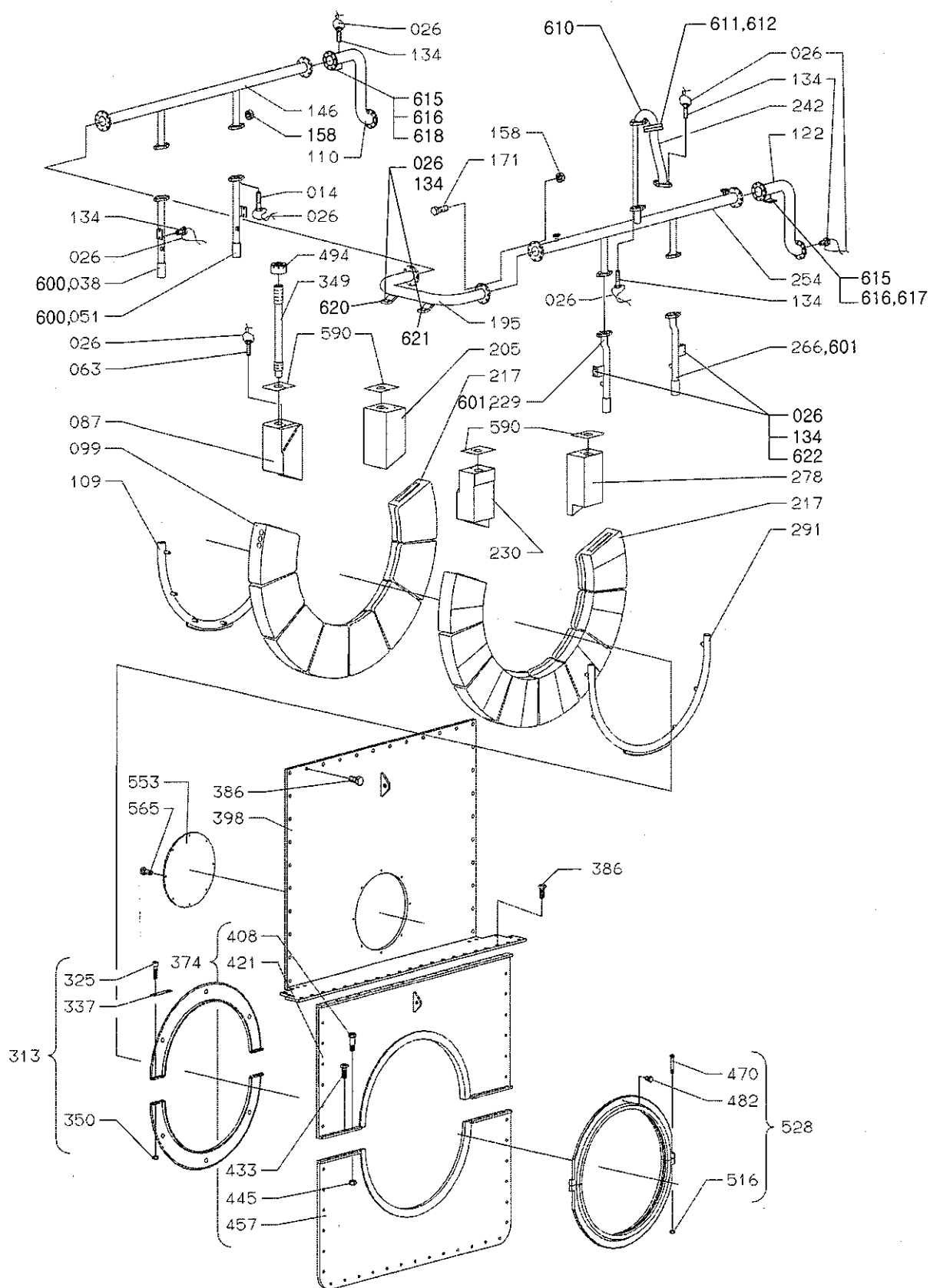


Item No.	Item Description
013	Screw
025	Spring lock
037	Tapered dowel
049	Bracket
062	Flange
074	Flange shaft
086	Tapered dowel
108	Screw
121	Washer
145	Bearing complete
157	Distance ring
169	Angle encoder
182	Screw
204	Self-locking nut
228	Screw
241	Spring lock
253	Spring lock
265	Screw
289	Flange
300	Sleeve
324	Bearing complete
336	Plug screw
348	Plug screw
361	Screw
385	Cover
407	Screw
419	Cover
420	Locking wire
444	Amplifier

Item No.	Item Description

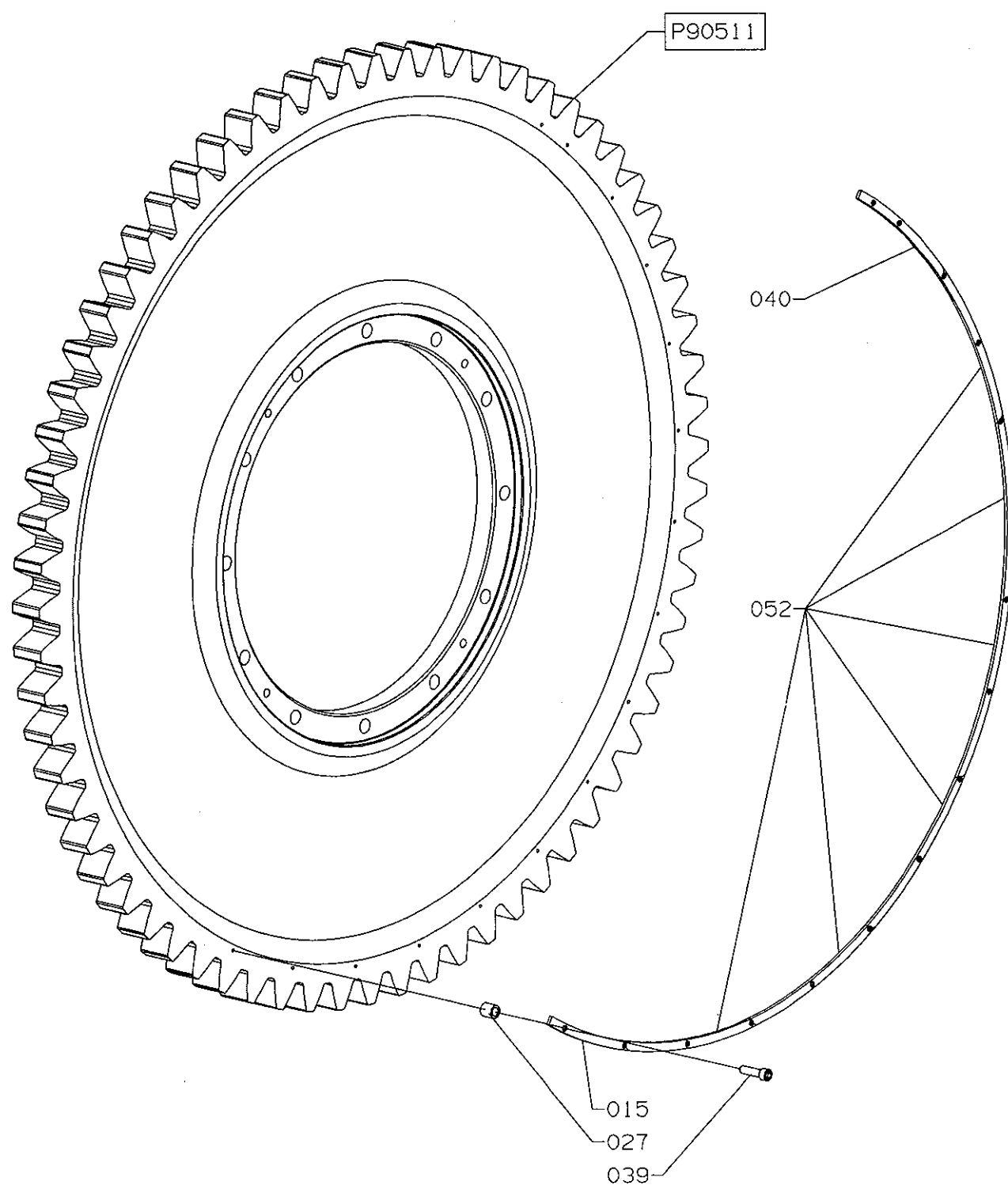


Item No.	Item Description	Item No.	Item Description
019	Coupling		
032	Pipe holder		
044	Screw		
068	Steel pipe		
093	Coupling		
115	Bracket		
127	Screw		
139	Washer		
152	Axial vibration monitor, complete		



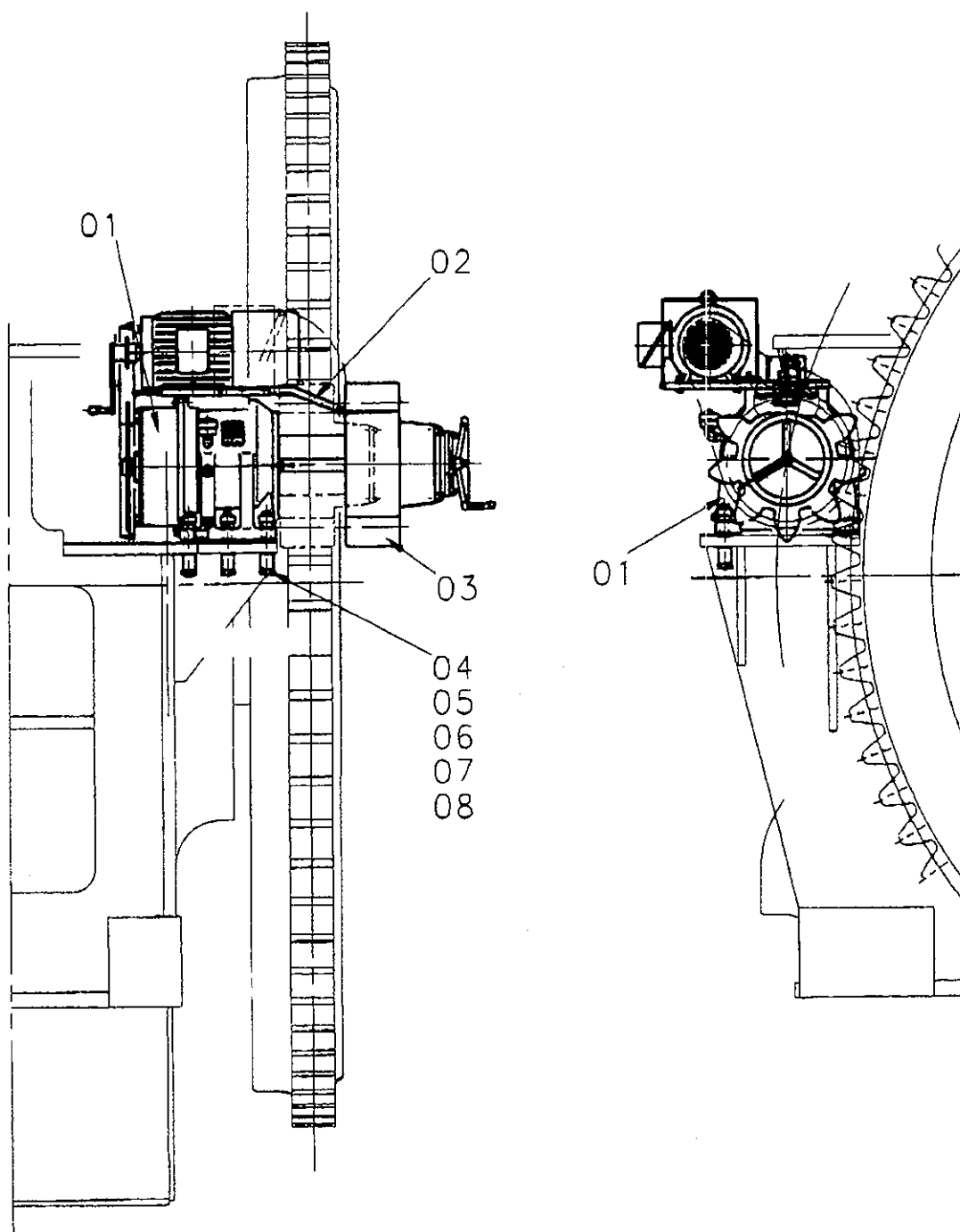
Item No.	Item Description
014	Screw
026	Locking wire
038	Lubricating oil pipe
051	Lubricating oil pipe
063	Screw
087	Segment stopper - Fore
099	Segment
109	Spray pipe
110	Lubricating oil pipe
122	Lubricating oil pipe
134	Screw
146	Lubricating oil pipe
158	Selflocking nut
171	Screw
195	Lubricating oil pipe
205	Segment stopper - Fore
217	Segment
229	Lubricating oil pipe
230	Segment stopper - Aft
242	Lubricating oil pipe
254	Lubricating oil pipe
266	Lubricating oil pipe
278	Segment stopper - Aft
291	Spray pipe
313	Oil throw ring, complete
325	Screw
337	Locking plate
349	Stud
350	Nut
374	Scraper ring housing, complete
386	Screw
398	Cover
408	Scraper ring housing - upper
421	Fitted bolt
433	Screw
445	Nut
457	Scraper ring housing - lower
470	Fitted bolt
482	Screw
494	Nut
516	Nut
528	Scraper ring, complete
553	Cover
565	Screw
590	Shim

Item No.	Item Description
600	Spary nozzle
601	Spary nozzle
610	Lubricating oil pipe
611	Screw
612	Self locking nut
615	Clamp
616	Self locking nut
617	Support
618	Support
620	Support
621	Support
622	Support



Item No.	Item Description
015	TDC indicator
027	Spacer, tubular
039	Screw
040	TDC indicator
052	TDC indicator
	Note:
	*

Item No.	Item Description



Item No.	Part Description	Item No.	Part Description
01	Turning gear		
02	Disengaging device		
03	Gear wheel		
04	Bolt		
05	Nut		
06	Distance pipe		
07	Distance pipe		
08	Distance pipe		

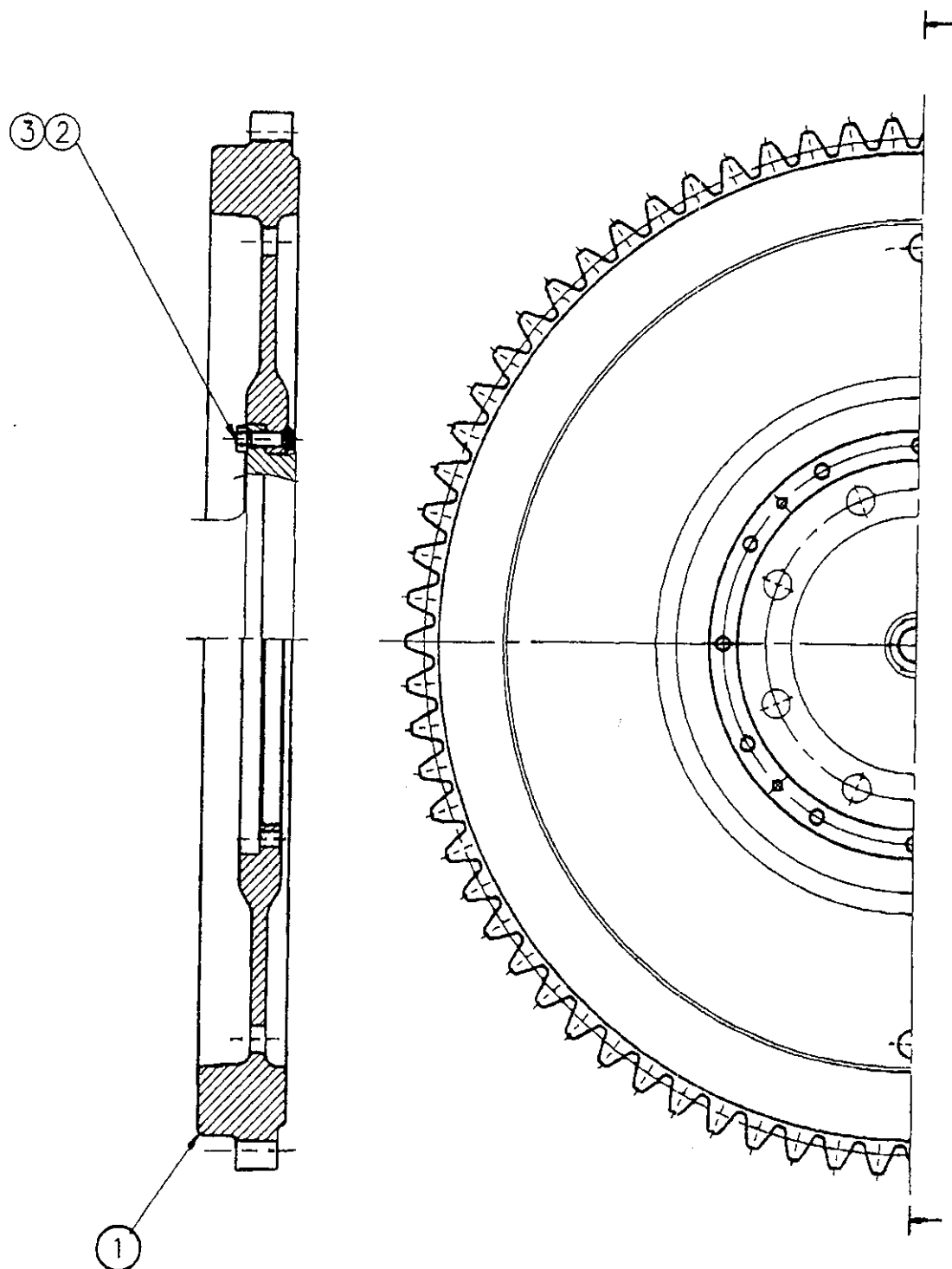
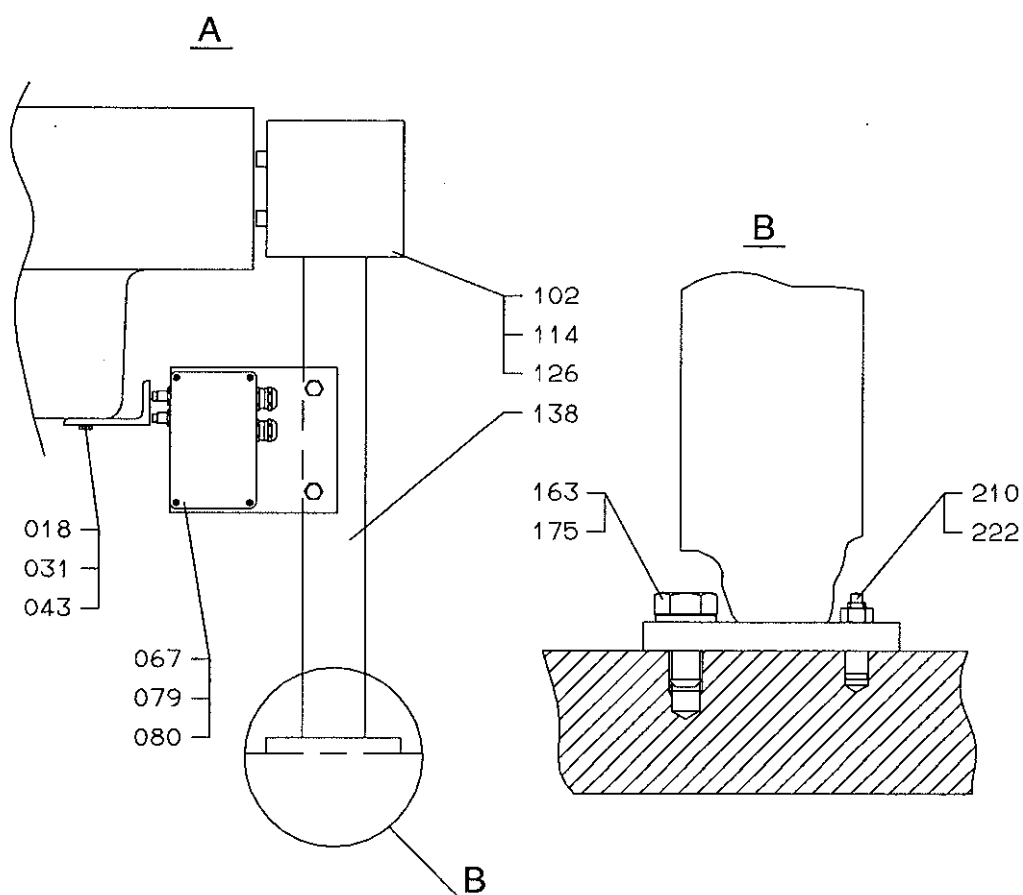
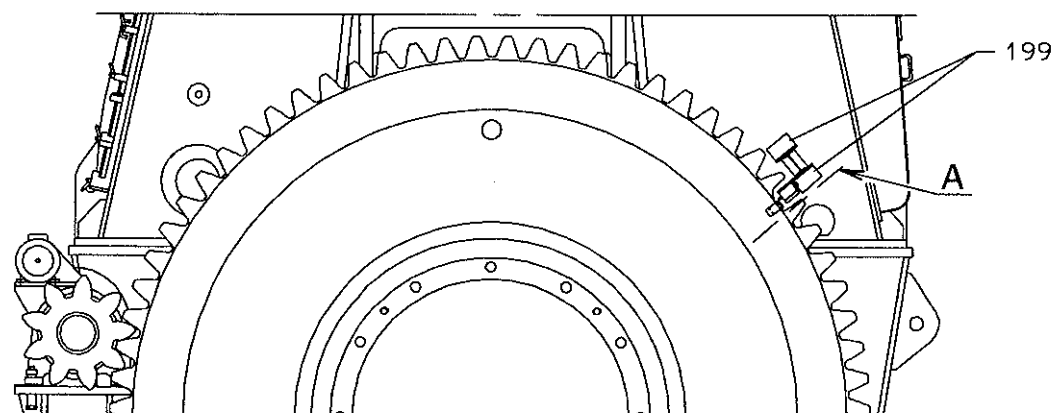


Plate 90510-103

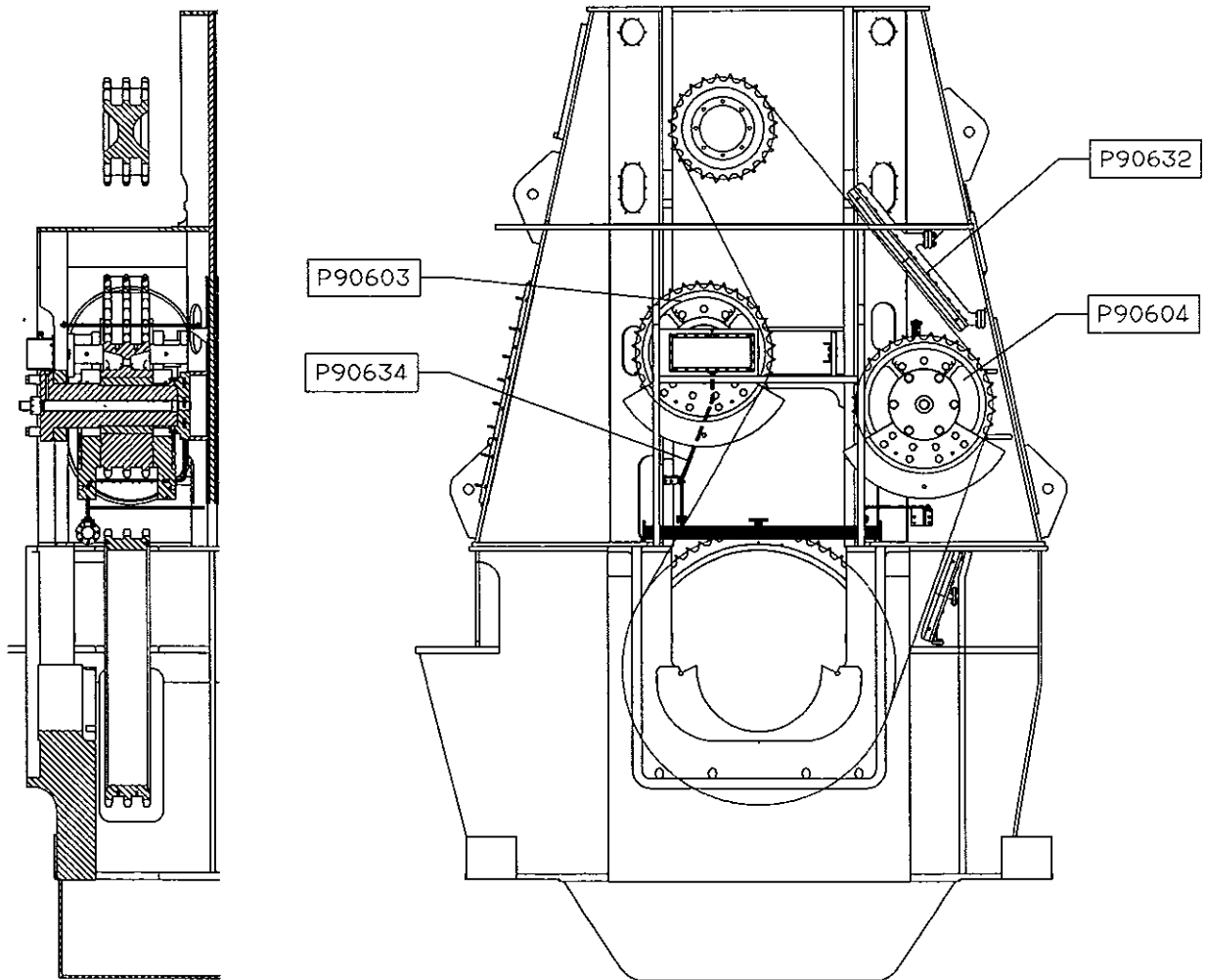
Turning Wheel

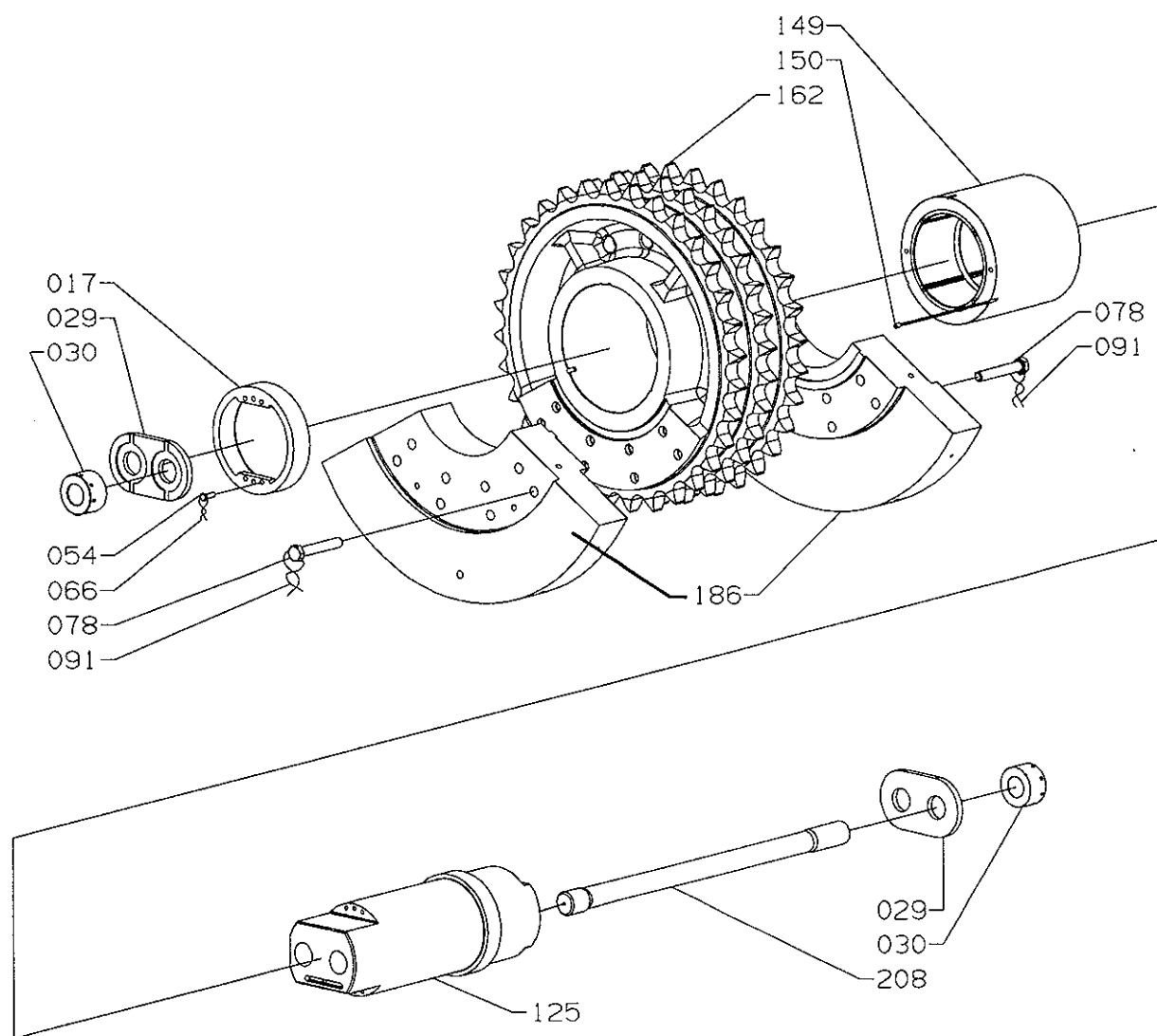
Item No.	Part Description
01	Turning wheel
02	Fitted bolt
03	Nut

Item No.	Part Description

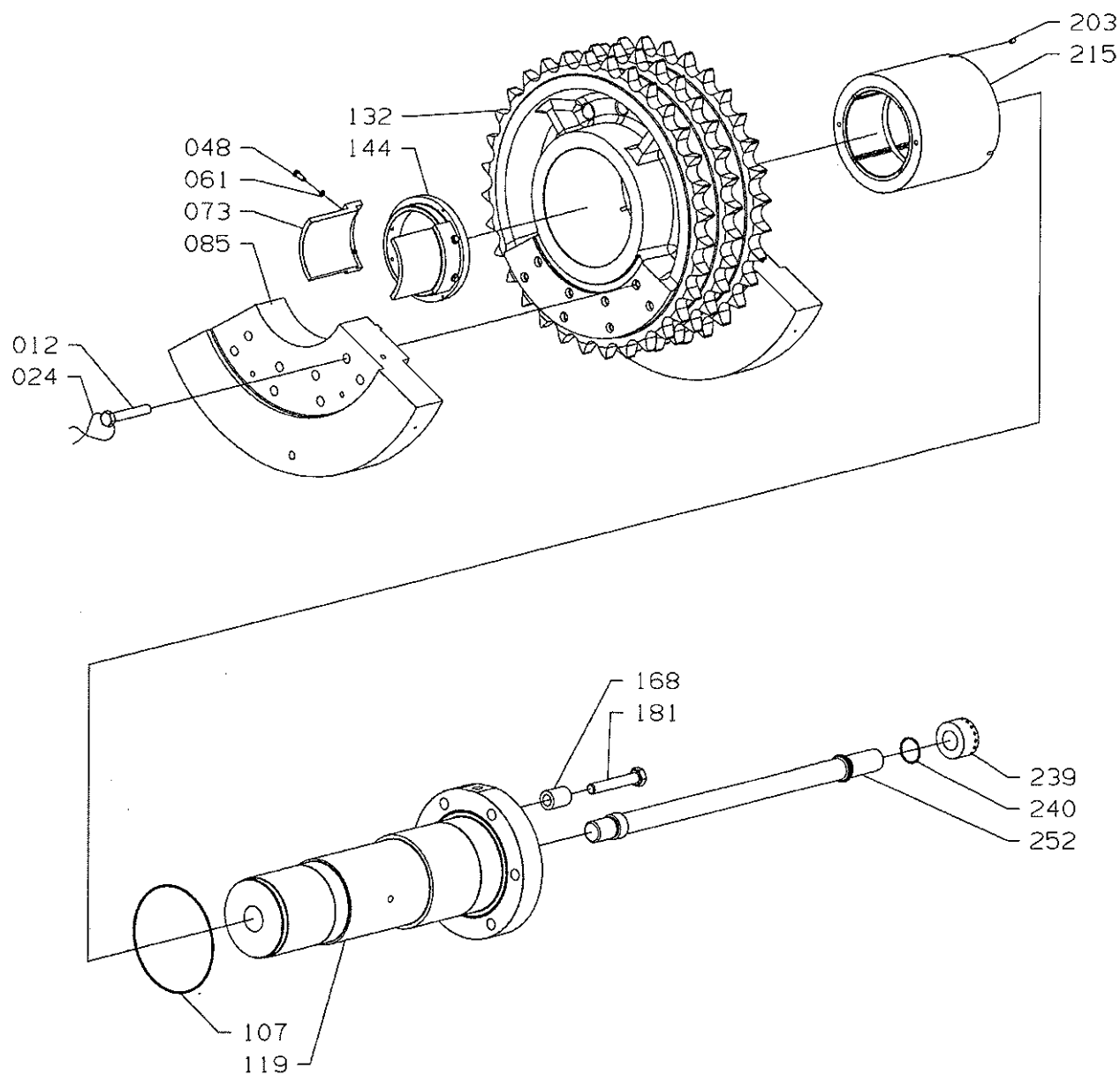


Item No.	Item Description	Item No.	Item Description
018	Support		
031	Screw		
043	Locking wire		
067	Pick-up box		
079	Screw		
080	Nut		
102	Screw		
114	Spring lock		
126	Nut		
138	Bracket		
163	Screw		
175	Spring lock		
199	Tacho pick-up		
210	Nut		
222	Cylindrical dowels		



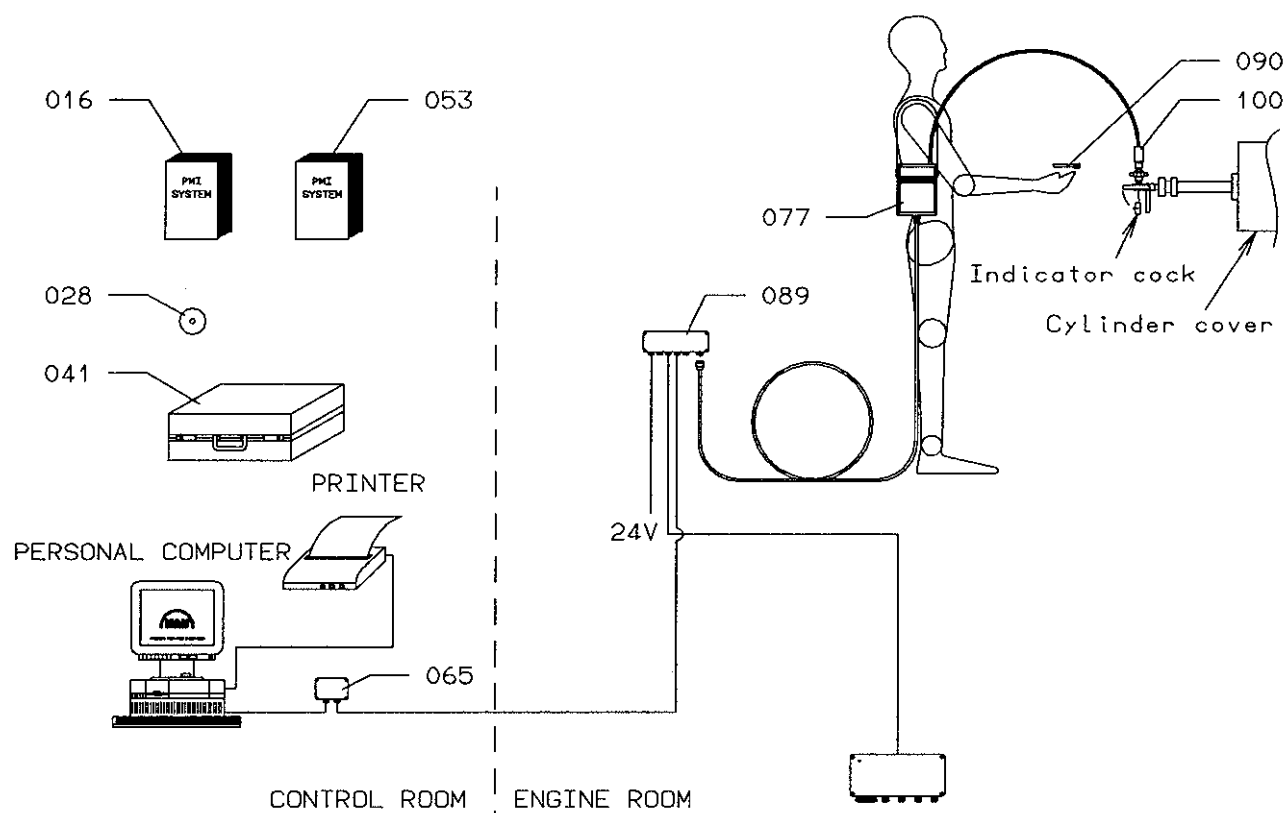


Item No.	Item Description	Item No.	Item Description
017	Bushing		
029	Disc		
030	Nut for hydraulic tightening		
054	Screw		
066	Locking wire		
078	Screw		
091	Locking wire		
125	Shaft		
149	Bushing		
150	Screw		
162	Chain wheel		
186	Flyweight		
208	Stud		
	Note:		
	*		

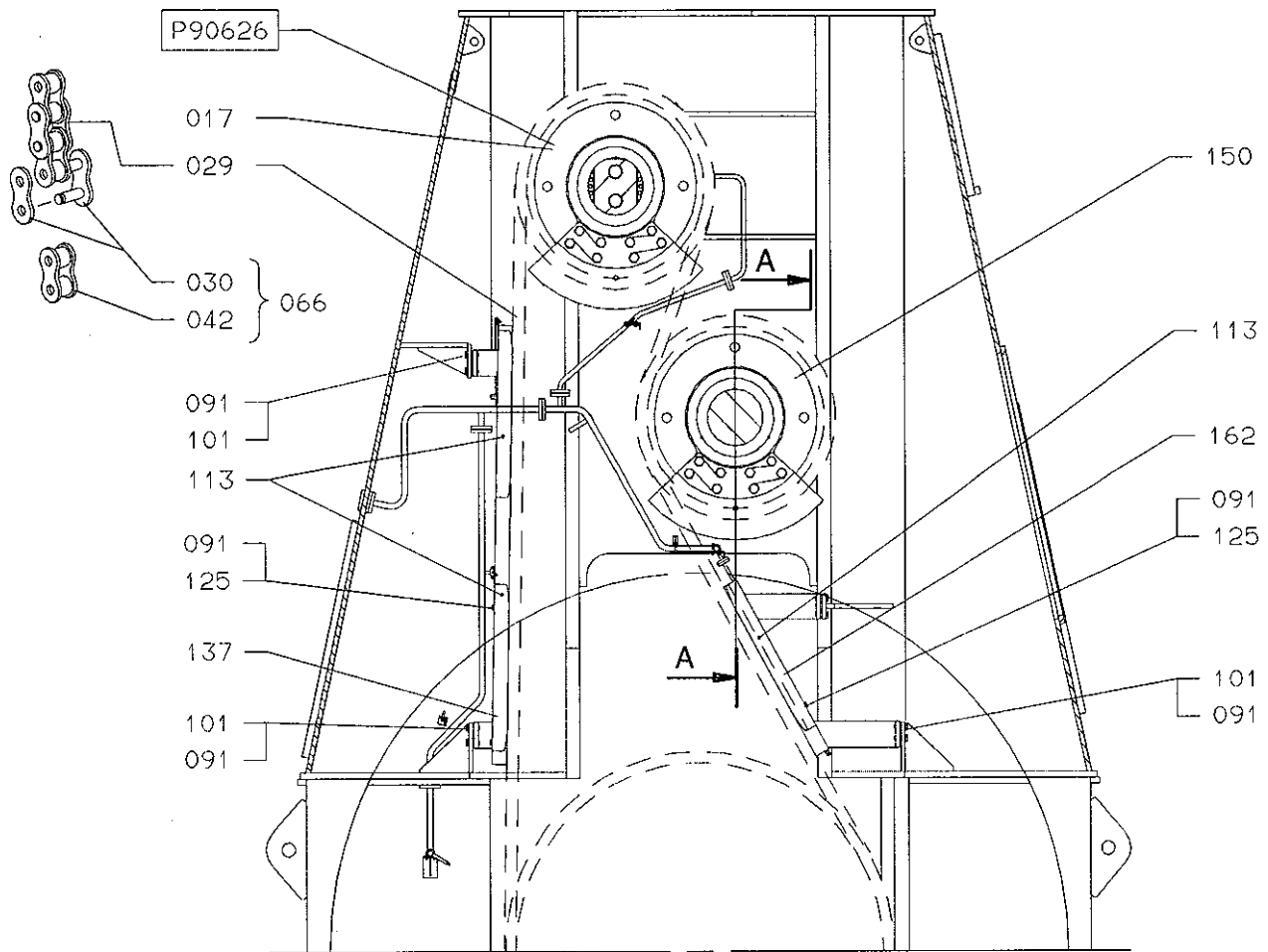


Item No.	Item Description
012	Screw
024	Locking wire
048	Screw
061	Cam lock washer*
073	Distance piece
085	Flyweight
107	Sealing ring
119	Shaft
132	Chain wheel
144	Bushing
168	Distance piece
181	Screw
203	Hollow-point screw
215	Bushing
239	Nut
240	Sealing ring
252	Stud
	Notes:
	* Cam lock washers are to be supplied by MAN Diesel only.

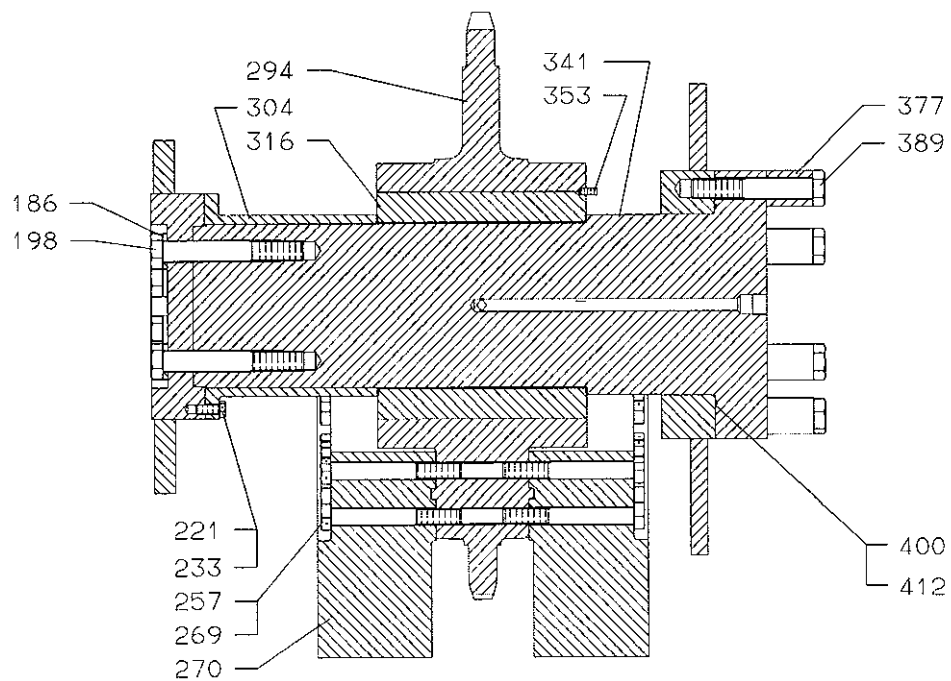
Item No.	Item Description



Item No.	Item Description	Item No.	Item Description
016	PMI system users manual		
028	PMI software		
041	Storage case		
053	PMI install and start-up manual		
065	Converter box		
077	PMI controller box, complete		
089	Junction box		
090	Handle		
100	Pressure transducer, complete		



A - A



Item No.	Item Description
017	Chain tightener, complete
029	Chain, complete
030	Outer link
042	Inner link
066	Chain link
091	Locking wire
101	Screw
113	Guidebar
125	Screw
137	Beam for guidebar
150	Intermediate shaft complete
162	Beam for guidebar
186	Distance piece
198	Screw
221	Screw
233	Locking wire
257	Screw
269	Locking wire
270	Flyweight
294	Chain wheel for counterweights
304	Bushing
316	Bushing
341	Shaft
353	Screw
377	Distance piece
389	Screw
400	Sealing ring
412	Adhesive

Item No.	Item Description

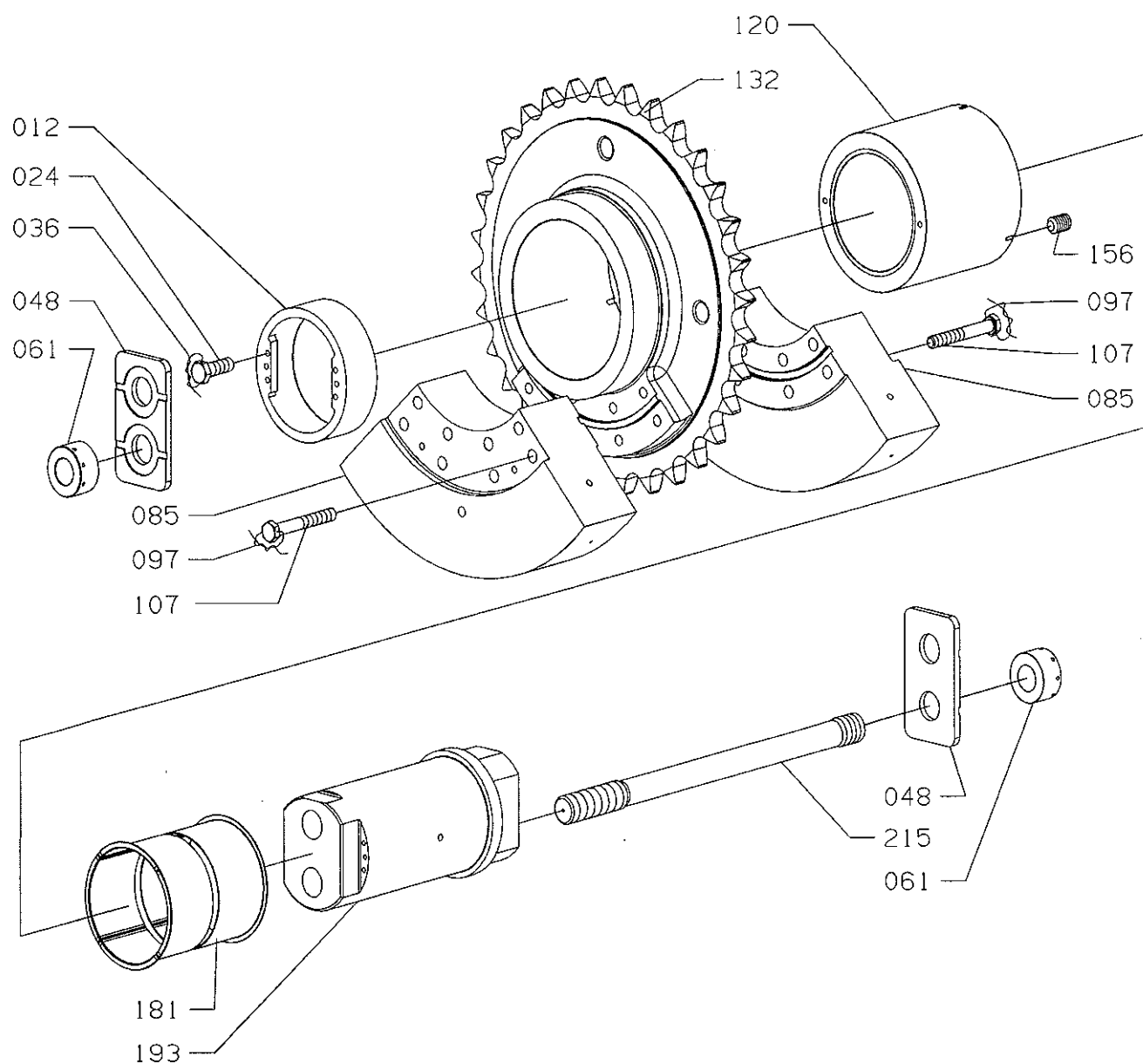
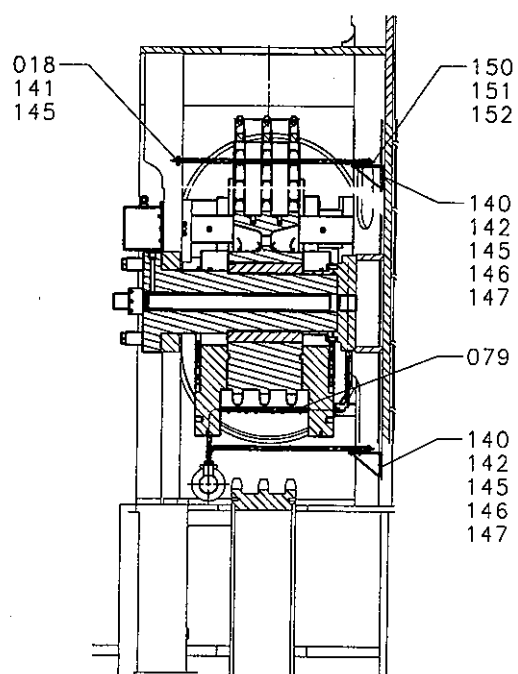
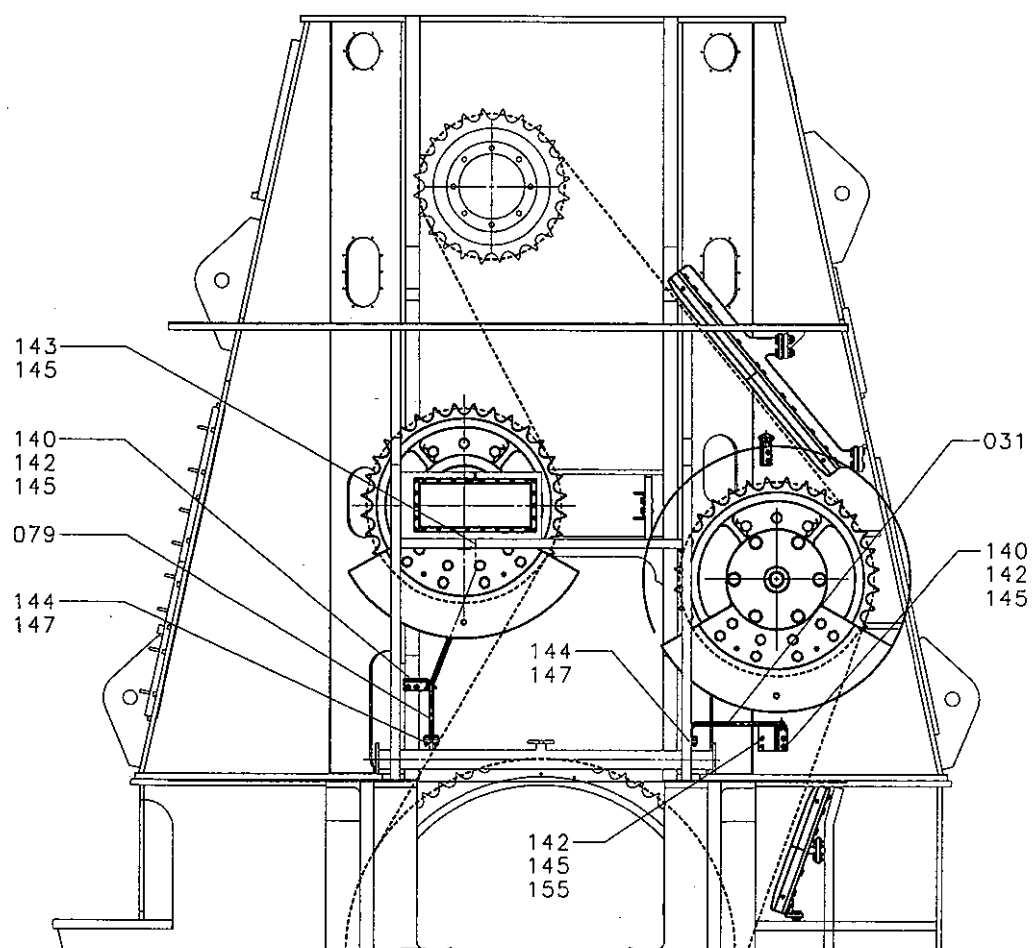


Plate P90626-0043 Chain Tightener for Moment Compensator

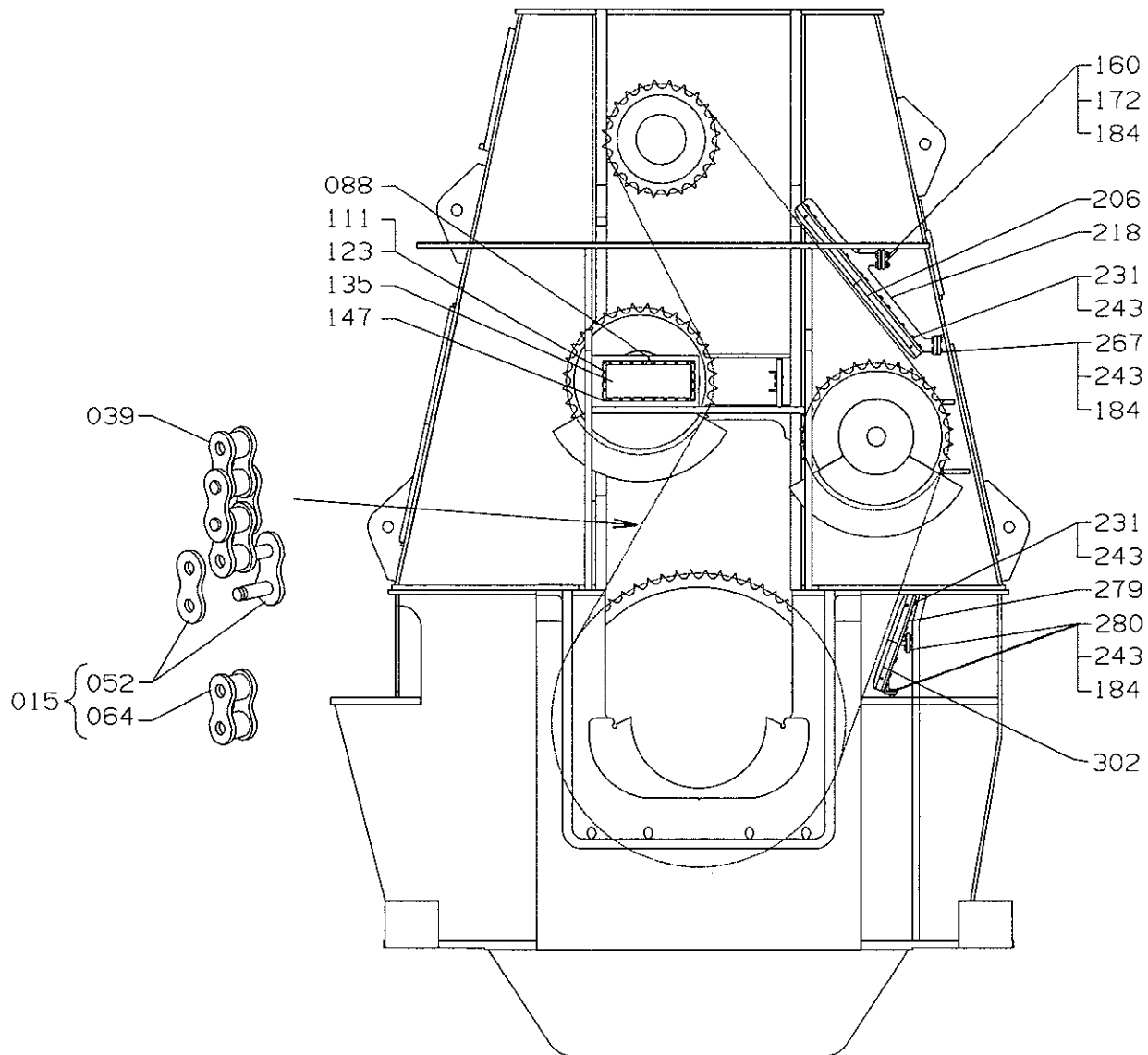
Item No.	Item Description
012	Bushing
024	Screw
036	Locking wire
048	Disc
061	Nut
085	Flyweight
097	Locking wire
107	Screw
120	Bushing
132	Chain wheel
156	Screw
181	White metal
193	Shaft
215	Stud

Item No.	Item Description



Item No.	Item Description
018	Spray pipe
031	Spray pipe
079	Spray pipe
092	Spray pipe
114	Spray pipe
126	Lubricating pipe
138	Spray pipe
140	Support
141	Screw
142	Screw
143	Screw
144	Screw
145	Locking wire
146	Clamp
147	Self locking nut
150	plug
151	Locking plate
152	Gasket
155	Support

Item No.	Item Description



Item No.	Item Description	Item No.	Item Description
015	Chain link, complete		
039	Chain, complete		
052	Outer link		
064	Inner link		
088	Eye-bolt		
111	Stud		
123	Self-locking nut		
135	Cover, complete		
147	Screw		
160	Screw		
172	Self-locking nut		
184	Disc		
206	Guidebar		
218	Beam for guidebar		
231	Screw		
243	Locking wire		
267	Screw		
279	Beam for guidebar		
280	Screw		
302	Guidebar		

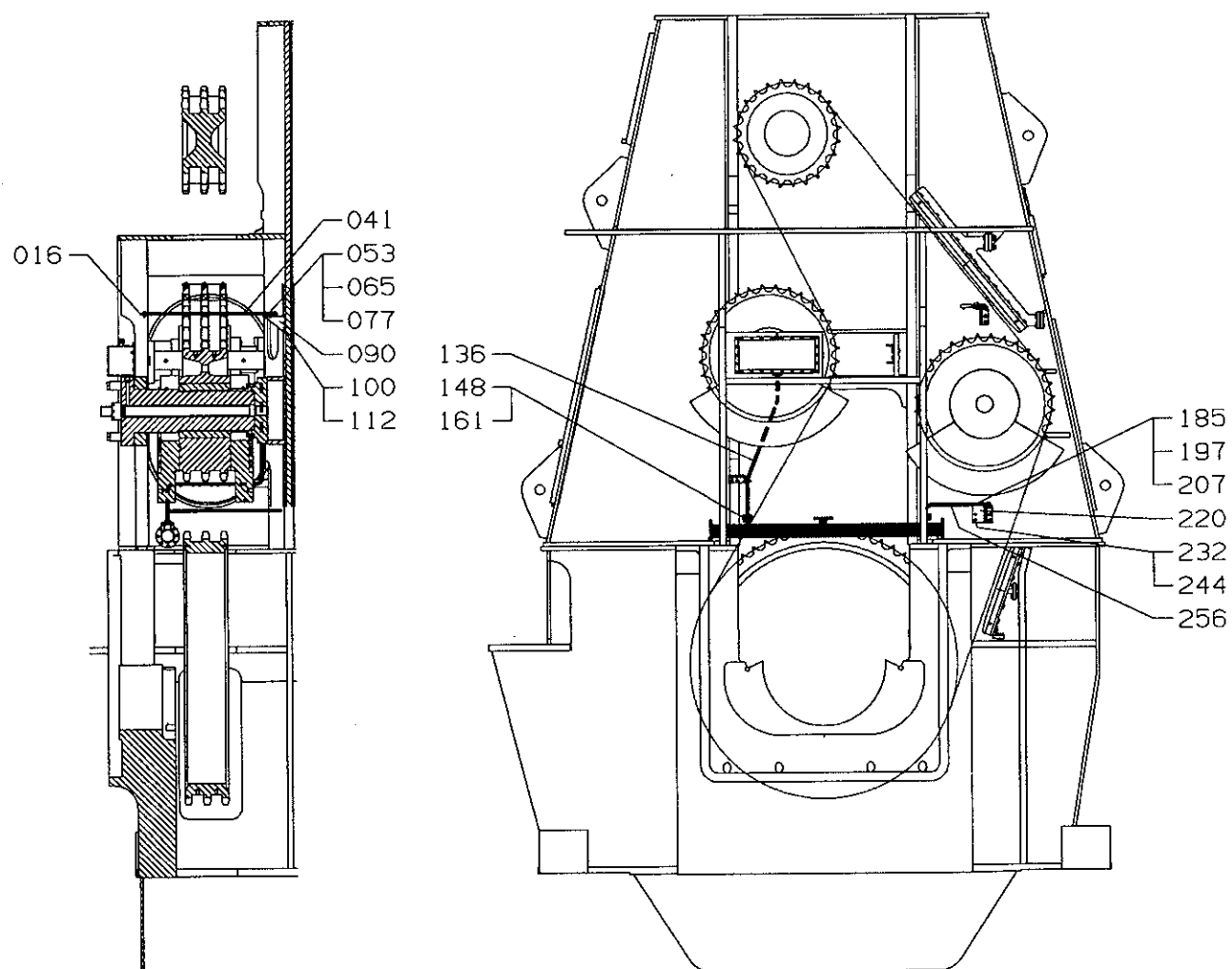


Plate 90634-0025 Chain Drive Lubrication - Lower Part

Item No.	Item Description	Item No.	Item Description
016	Screw		
041	Lubricating pipe		
053	Pipe holder		
065	Self-locking nut		
077	Screw		
090	Support, complete		
100	Screw		
112	Locking wire		
136	Lubricating pipe		
148	Screw		
161	Self-locking nut		
185	Pipe holder		
197	Screw		
207	Self-locking nut		
220	Support, complete		
232	Screw		
244	Locking wire		
256	Lubricating pipe		

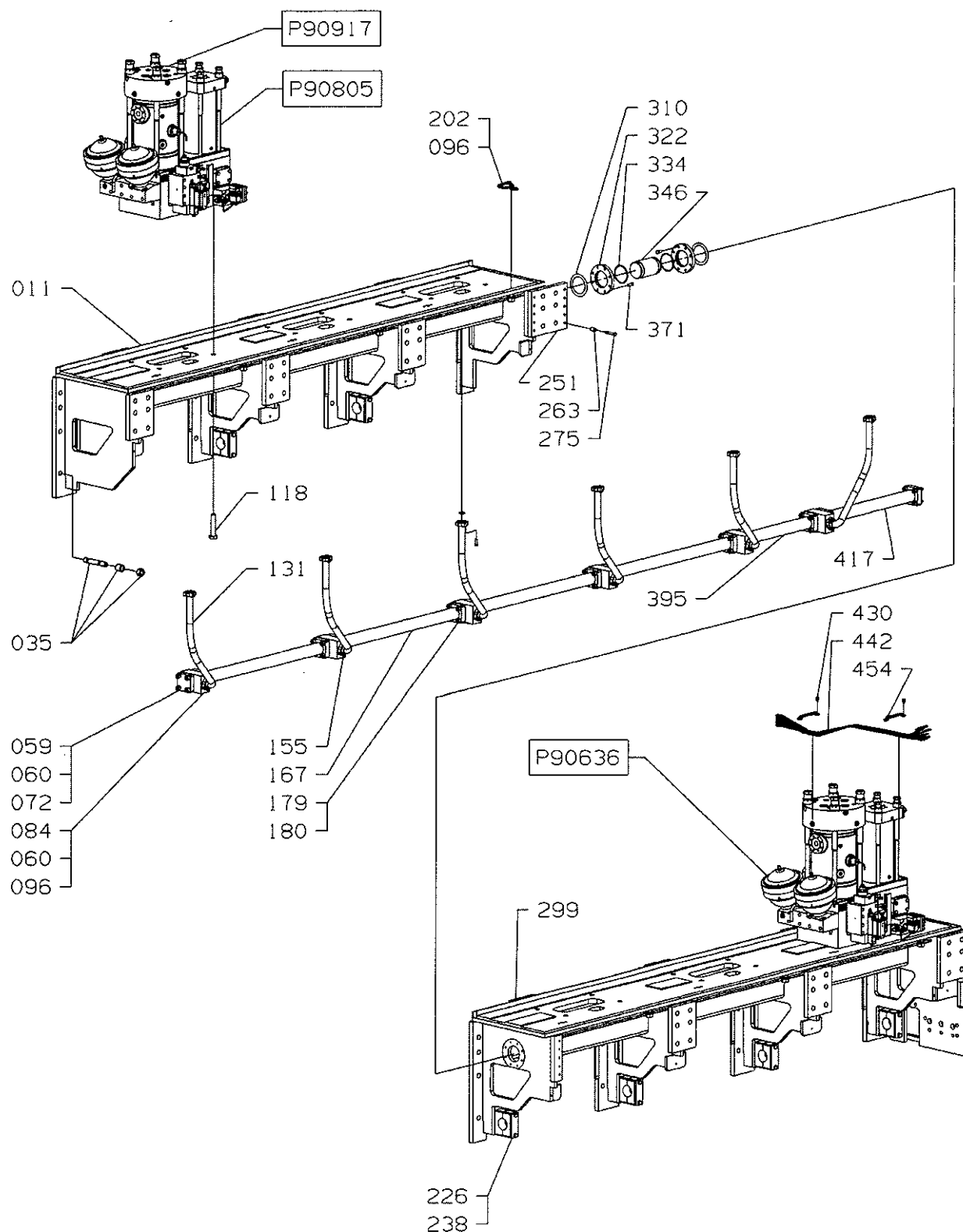
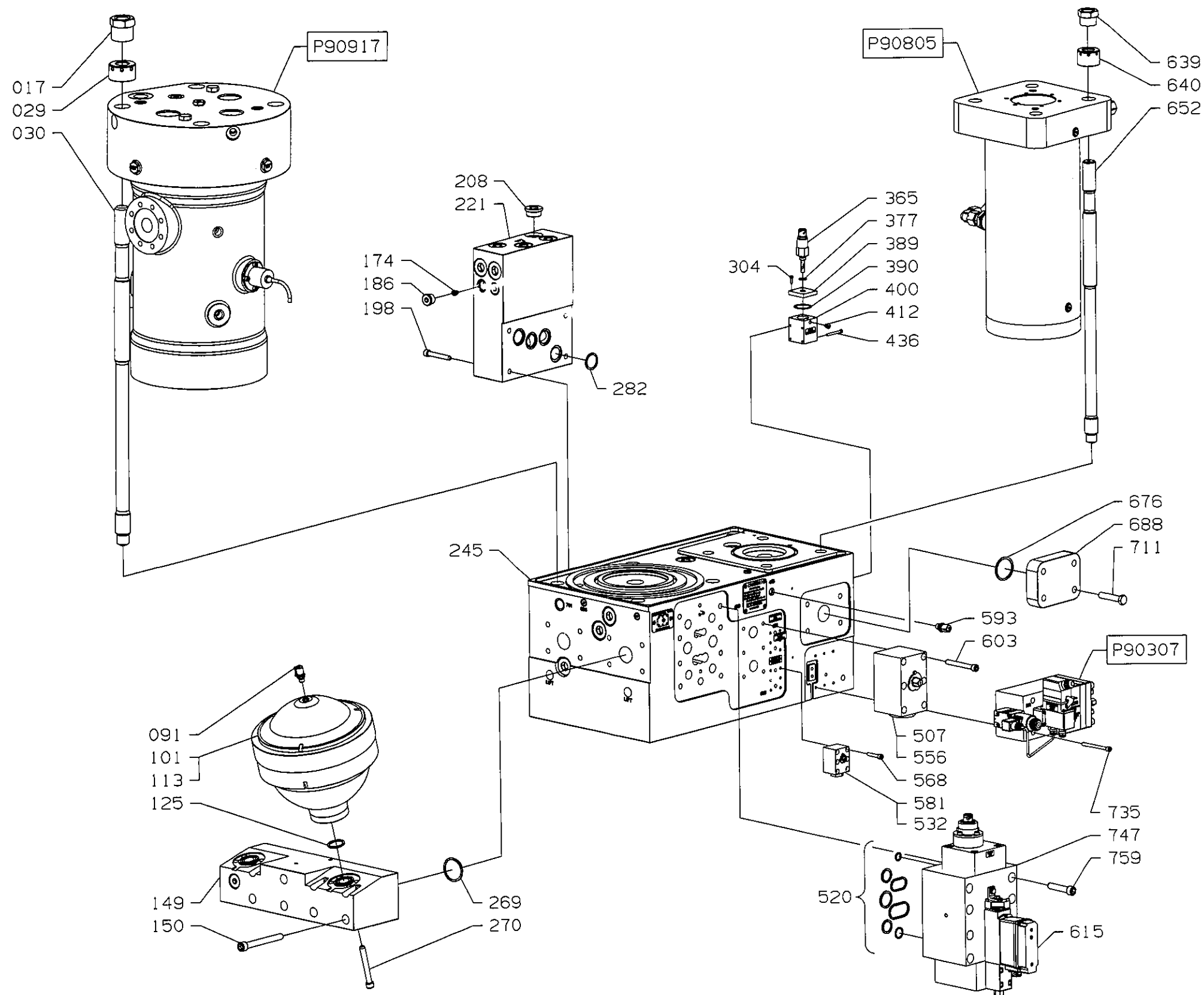
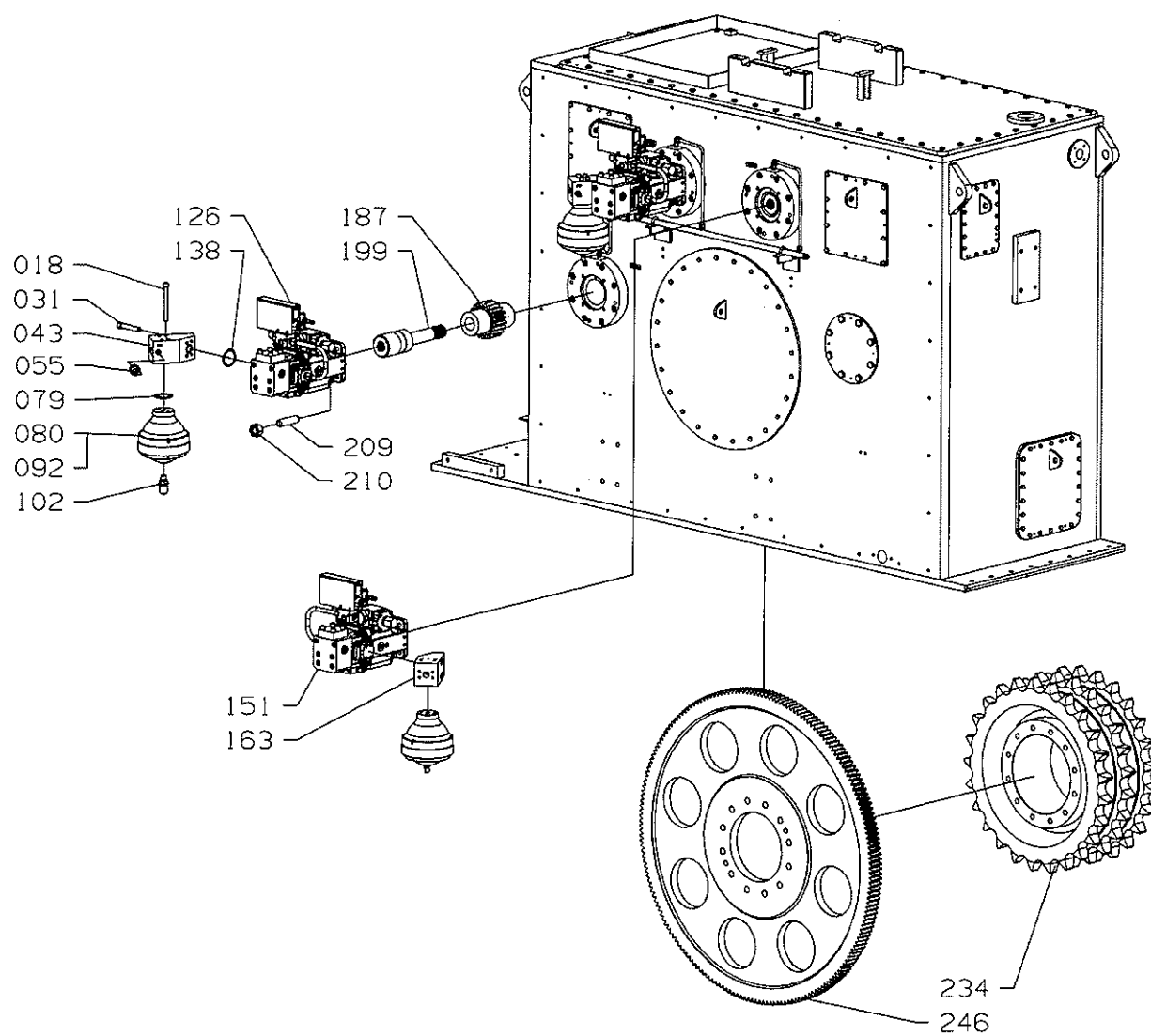


Plate P90635-0050**Hydraulic Cylinder Unit**

Item No.	Item Description	Item No.	Item Description
011	Base plate		
035	Assembly kit		
059	Flange		
060	Gasket		
072	Screw		
084	Retaining ring		
096	Assembly kit		
118	Screw		
131	Hose		
155	Flange		
167	High pressure pipe		
179	Flange		
180	Screw		
202	Filter screen		
226	Pipe clamp		
238	Screw		
251	Face		
263	Spacer,tubular		
275	Screw		
299	Base plate		
310	Packing		
322	Bush		
334	Sealing ring		
346	Pipe		
371	Screw		
395	High pressure pipe		
417	High pressure pipe		
430	Screw		
442	Steel pipe		
454	Support		

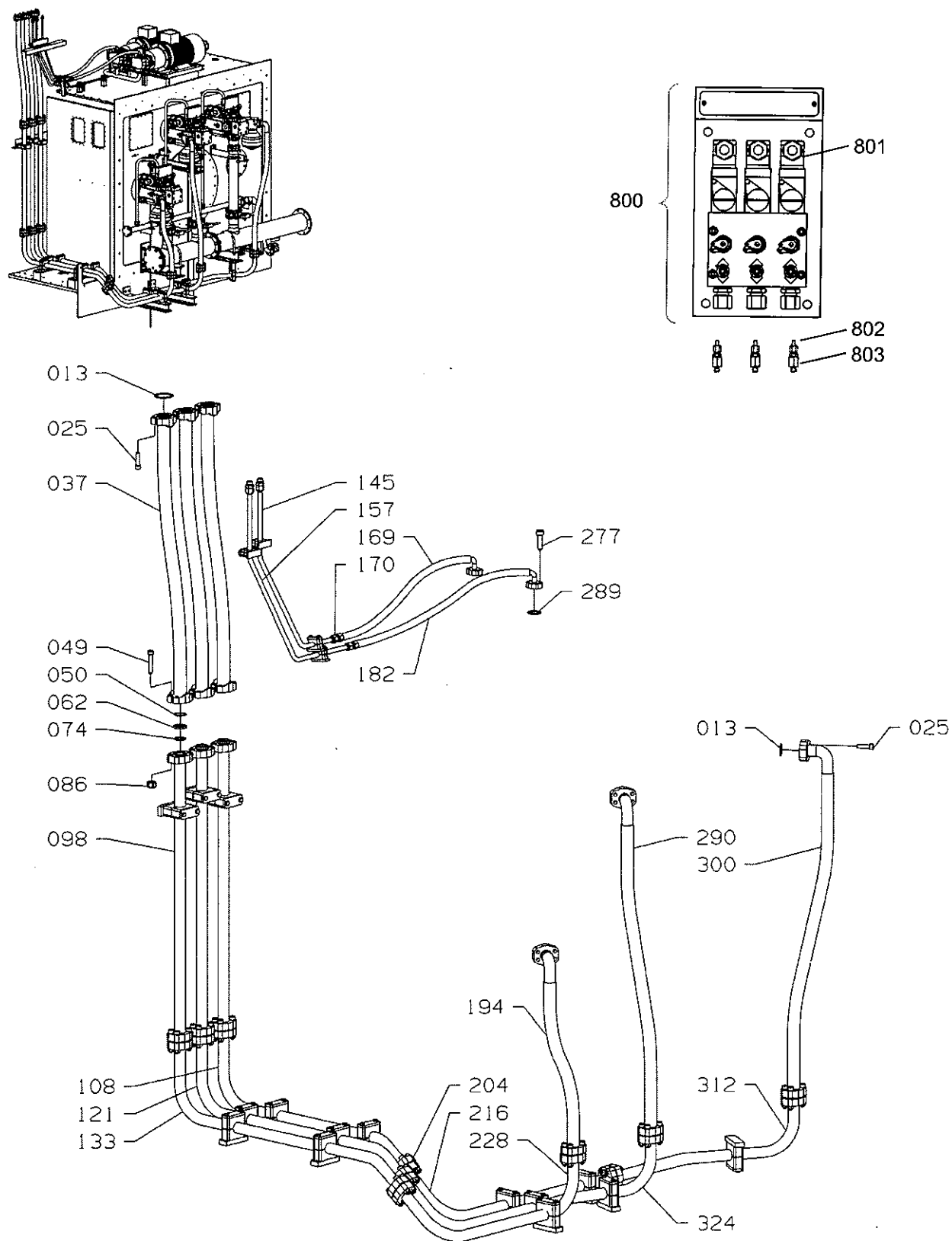


Item No.	Item Description	Item No.	Item Description
017	Nut, special		turer's part no.
029	Nut		
030	Stud		
091	Quick coupling, minimess		
101	Membrane accumulator		
113	Repair kit		
125	Sealing ring		
149	Flange		
150	Screw		
174	Orifice plug		
186	Plug screw		
198	Screw		
208	Plug screw		
221	Return oil standpipe, complete		
245	Distributor block		
269	Sealing ring		
270	Screw		
282	Sealing ring		
304	Screw		
365	Level switch		
377	Sealing ring		
389	Plate		
390	Sealing ring		
400	Plate		
412	Plug screw		
436	Screw		
507	O-ring		
520	Repair kit		
532	O-ring		
556	Ball valve		
568	Screw		
581	Ball valve		
593	Quick coupling, minimess		
603	Screw		
615	Control valve*		
639	Nut, special		
640	Nut		
652	Stud		
676	Sealing ring		
688	Flange		
711	Screw		
735	Screw		
747	Multi-way valve, complete*		
759	Screw		
	Note:		
	* When ordering spare parts for this item, please state manufac-		

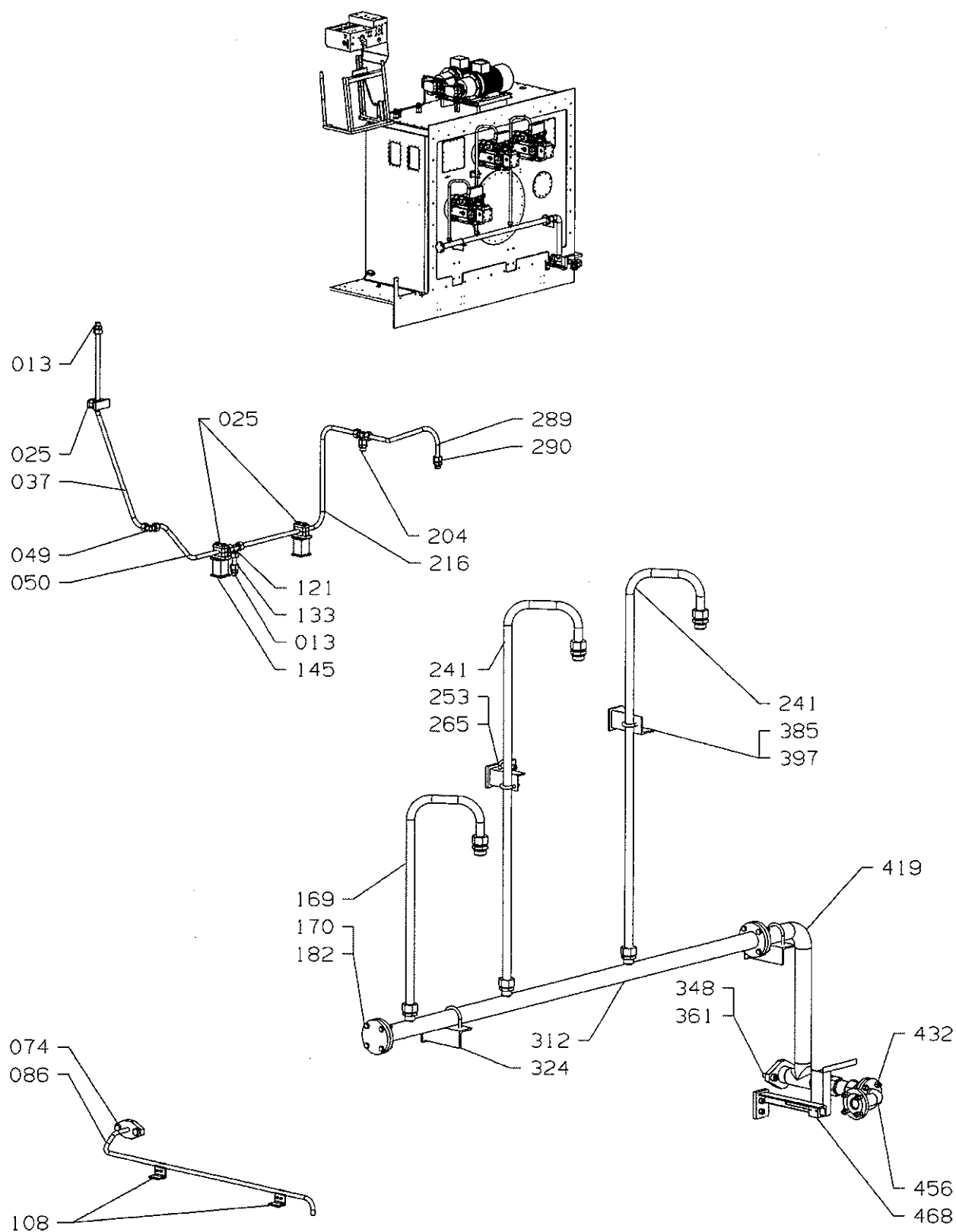


Item No.	Item Description
018	Screw
031	Screw
043	Accumulator block
055	Quick coupling, minimess
079	Sealing ring
080	Membrane accumulator
092	Repair kit
102	Quick coupling, minimess
126	Hydraulic oil pump
138	O-ring
151	Hydraulic oil pump
163	Accumulator block
187	Gear wheel, drive shaft
199	Drive shaft
209	Stud
210	Nut
234	Chain wheel
246	Gear wheel

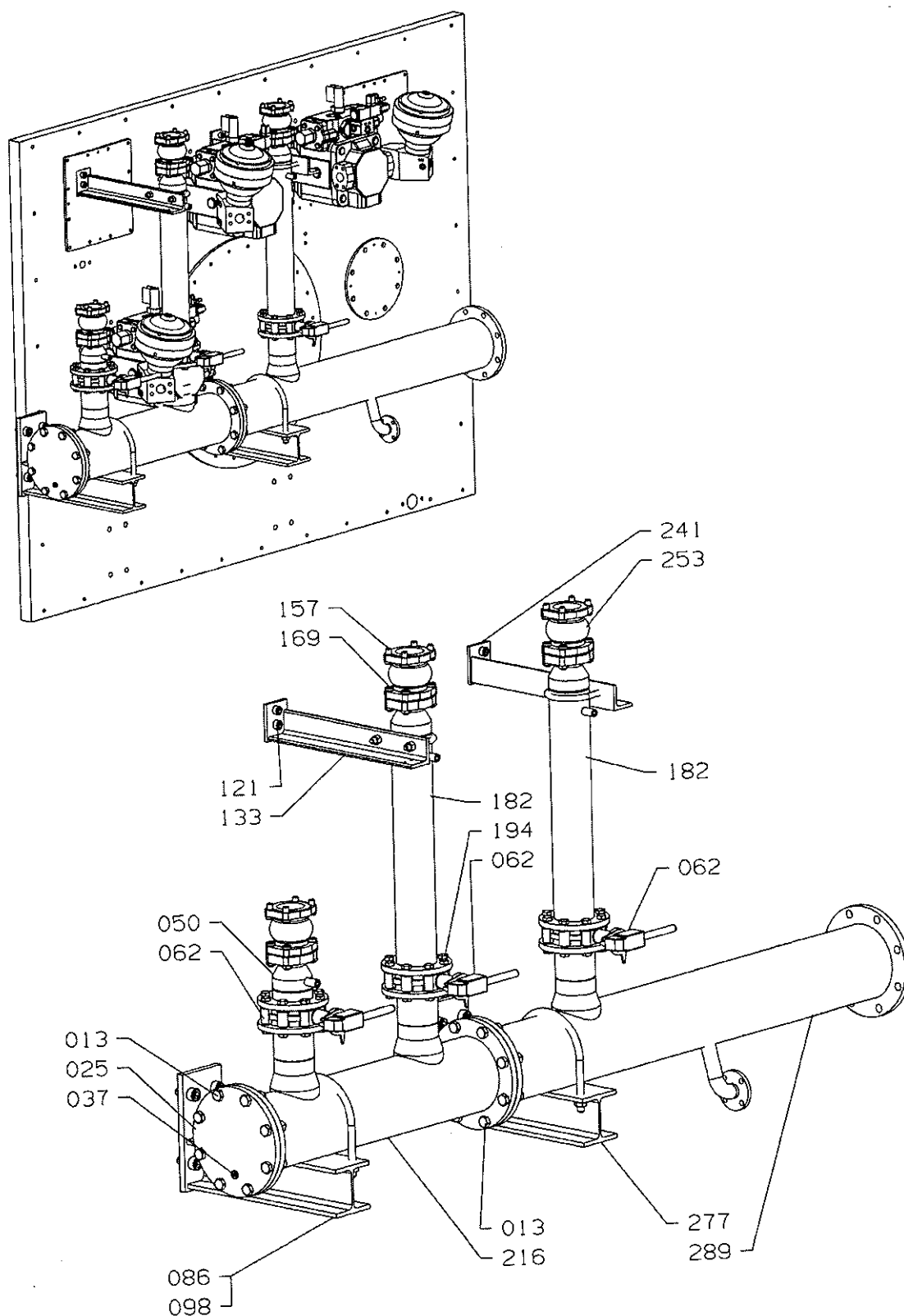
Item No.	Item Description



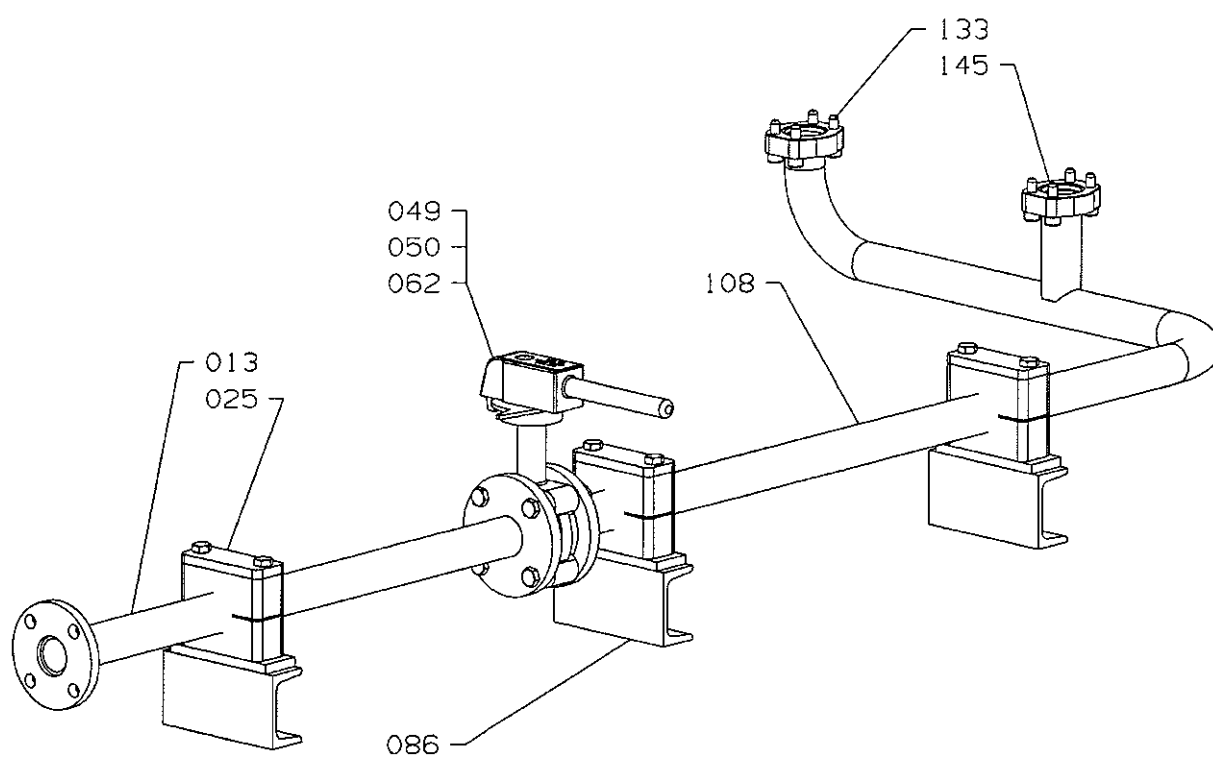
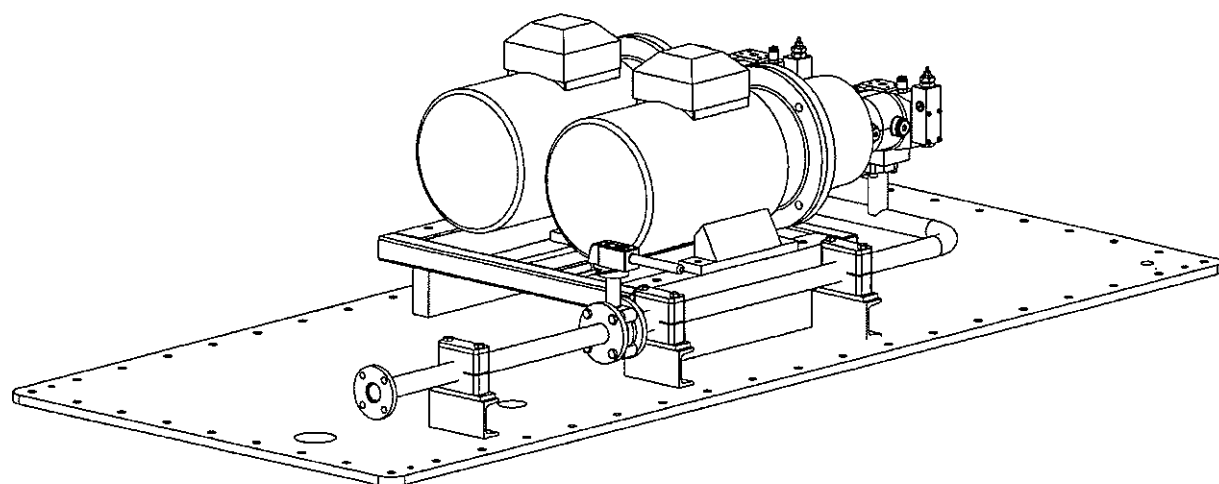
Item No.	Item Description	Item No.	Item Description
013	Pipe		
025	Screw		
037	High pressure hose		
049	Screw		
050	O-ring		
062	Adaptor		
074	Gasket		
086	Nut		
098	High pressure pipe		
108	High pressure pipe		
121	High pressure pipe		
133	High pressure pipe		
145	High pressure pipe		
157	High pressure pipe		
169	High pressure hose		
170	Adapter		
182	High pressure hose		
194	High pressure hose		
204	O-ring		
216	High pressure pipe		
228	High pressure pipe		
277	Screw		
289	O-ring		
290	High pressure hose		
300	High pressure hose		
312	High pressure pipe		
324	High pressure pipe		
800	Pressure switch, complete		
801	Pressure switch, complete		
802	Stud coupling		
803	Pressure equalizer		



Item No.	Item Description	Item No.	Item Description
013	Straight stud coupling		
025	Pipe clamp		
037	Drain pipe		
049	Elbow coupling		
050	Drain pipe		
074	Screw		
086	Drain pipe		
108	Support		
121	T-coupling		
133	Steel pipe		
145	Support		
169	Drain pipe		
170	Flange		
182	En-std. kit (screw-nut-packing)		
204	Adjustable t-coupling		
216	Drain pipe		
241	Drain pipe		
253	Support		
265	Screw		
289	Drain pipe		
290	Straight stud coupling		
312	Drain pipe		
324	Support		
348	Packing		
361	Screw		
385	Support		
397	Screw		
419	Drain pipe		
432	En-std.kit(screw-nut-packing)		
456	Drain pipe		
468	Support		

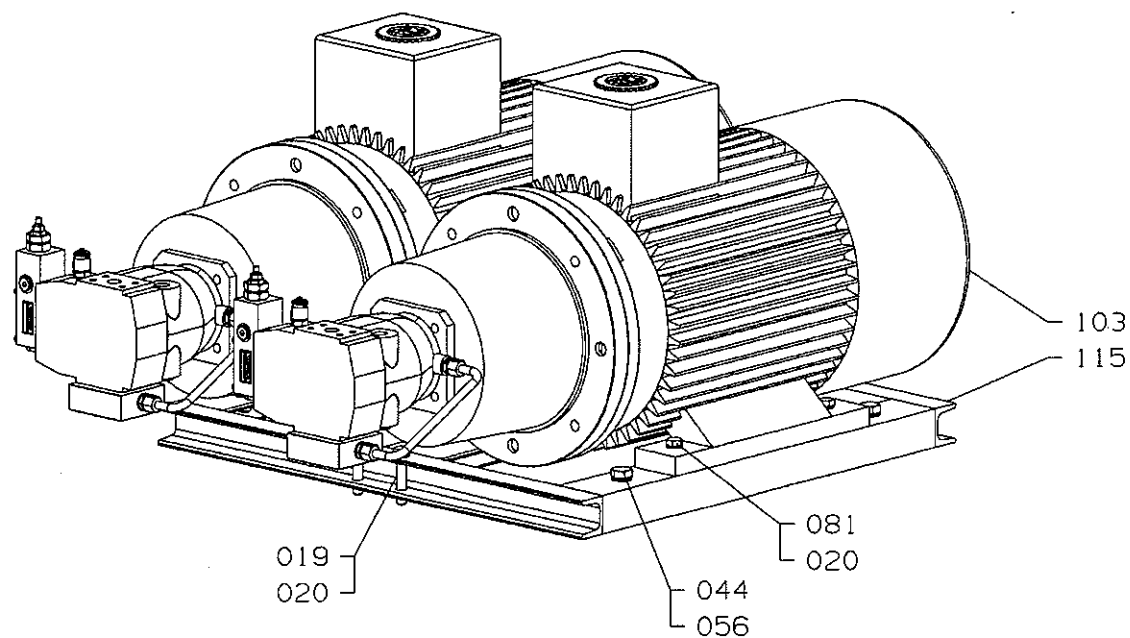


Item No.	Item Description	Item No.	Item Description
013	En-std. kit (screw-nut-packing)		
025	Flange		
037	Plug screw		
050	Lube oil pipe		
062	Butterfly valve		
086	Support		
098	Screw		
121	Screw		
133	Support		
157	Assembly kit (screw)		
169	Assembly kit (screw-nut-packing)		
182	Lube oil pipe		
194	En-std.kit (screw-nut-packing)		
216	Lube oil pipe		
241	Support		
253	Support		
277	Support		
289	Lube oil pipe		



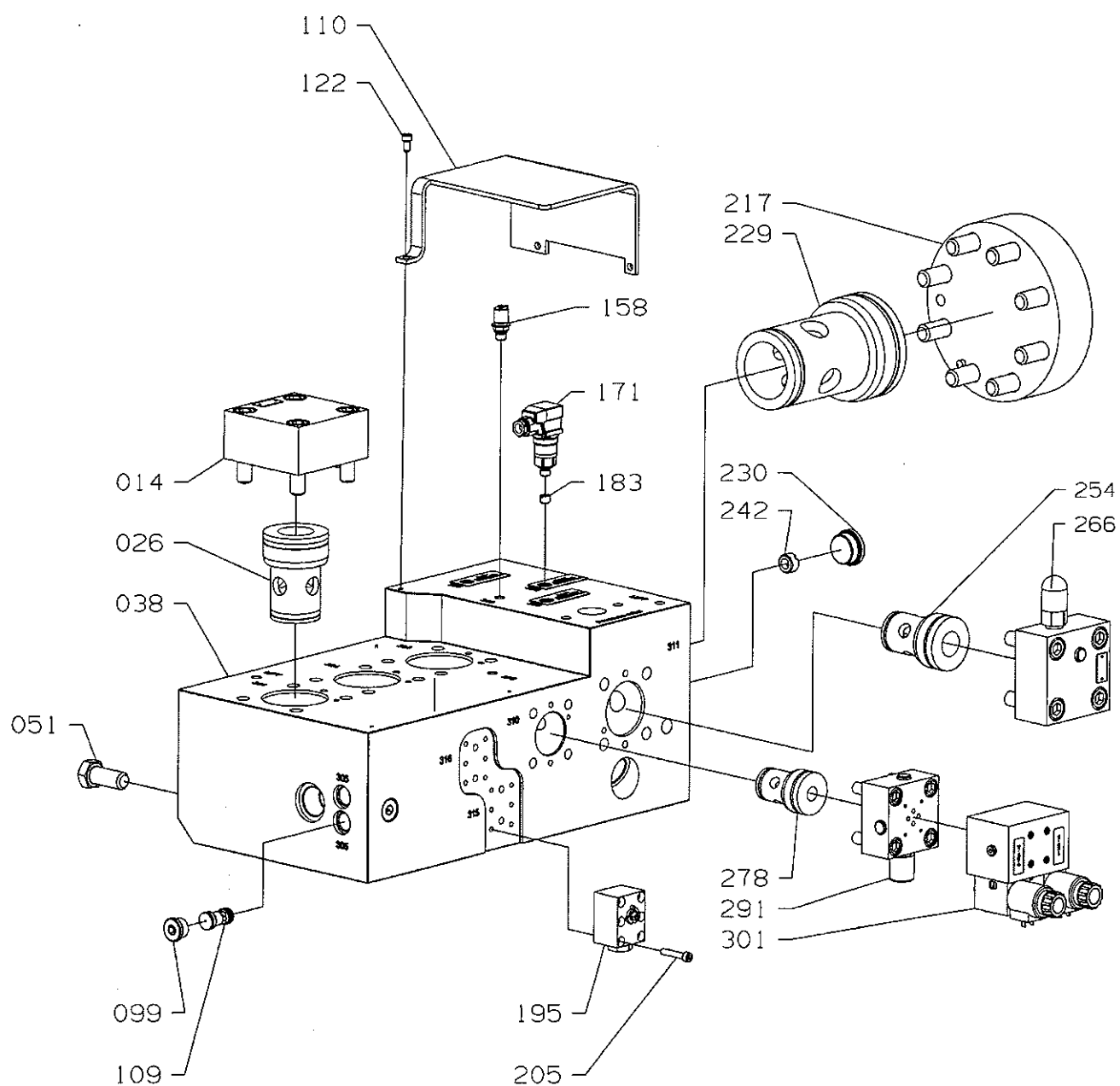
Hydraulic Power Supply - Drive, Details

Item No.	Item Description	Item No.	Item Description
013	Hydrauliccoil inlet		
025	Pipe clamp		
049	Butterfly valve		
050	Screw		
062	Packing ring		
086	Support		
108	Hydrauliccoil inlet		
133	Screw		
145	Packing		



Item No.	Item Description
019	Screw
020	Cam lock washer*
044	Screw
056	Cam lock washer*
081	Screw
103	Hydraulic pump station
115	Support
	Notes:
	* Cam lock washers are to be supplied by MAN Diesel only.

Item No.	Item Description



Item No.	Item Description	Item No.	Item Description
014	Control cover		
026	Cartridge valve		
038	Accumulator block		
051	Screw		
099	Plug screw		
109	Cartridge valve		
110	Cover		
122	Screw		
158	Quick coupling		
171	Pressure transducer		
183	Orifice plate		
195	Ball valve		
205	Screw		
217	Control cover		
229	Cartridge valve		
230	Plug screw		
242	Orifice plug		
254	Cartridge valve		
266	Control cover,cartridge v		
278	Cartridge valve		
291	Control cover		
301	Cartridge valve		

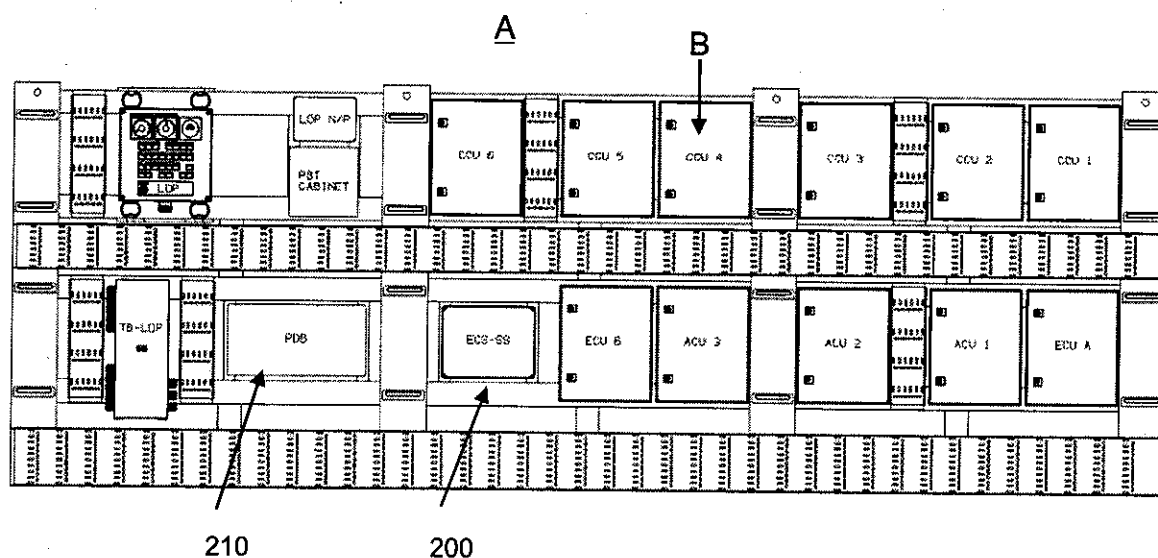
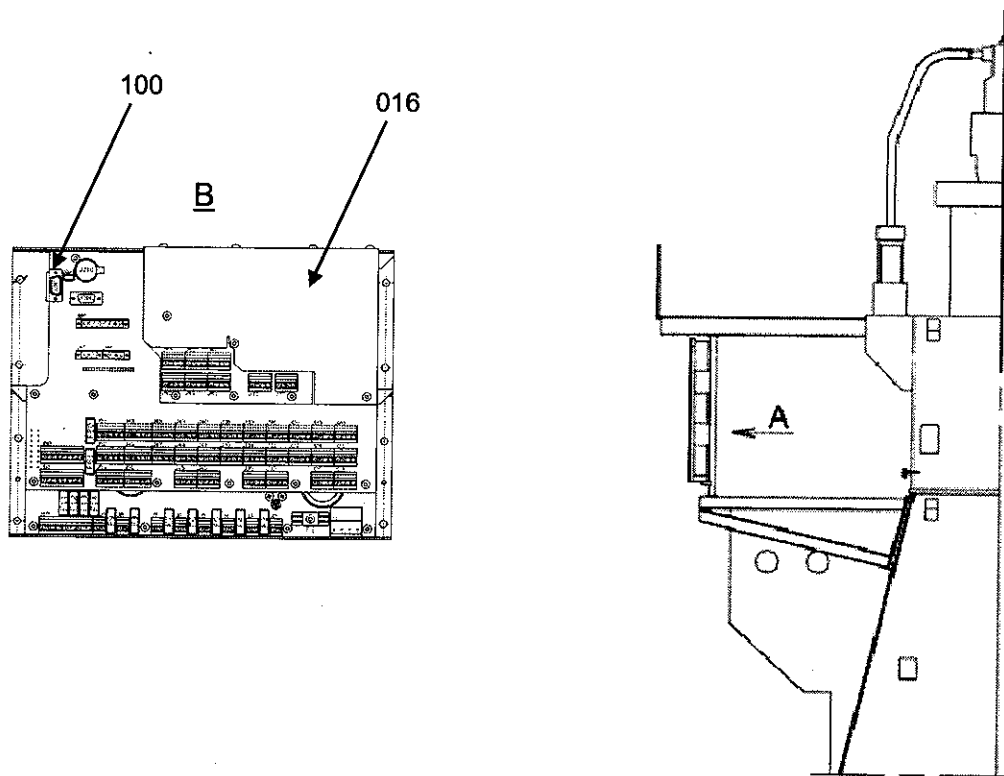
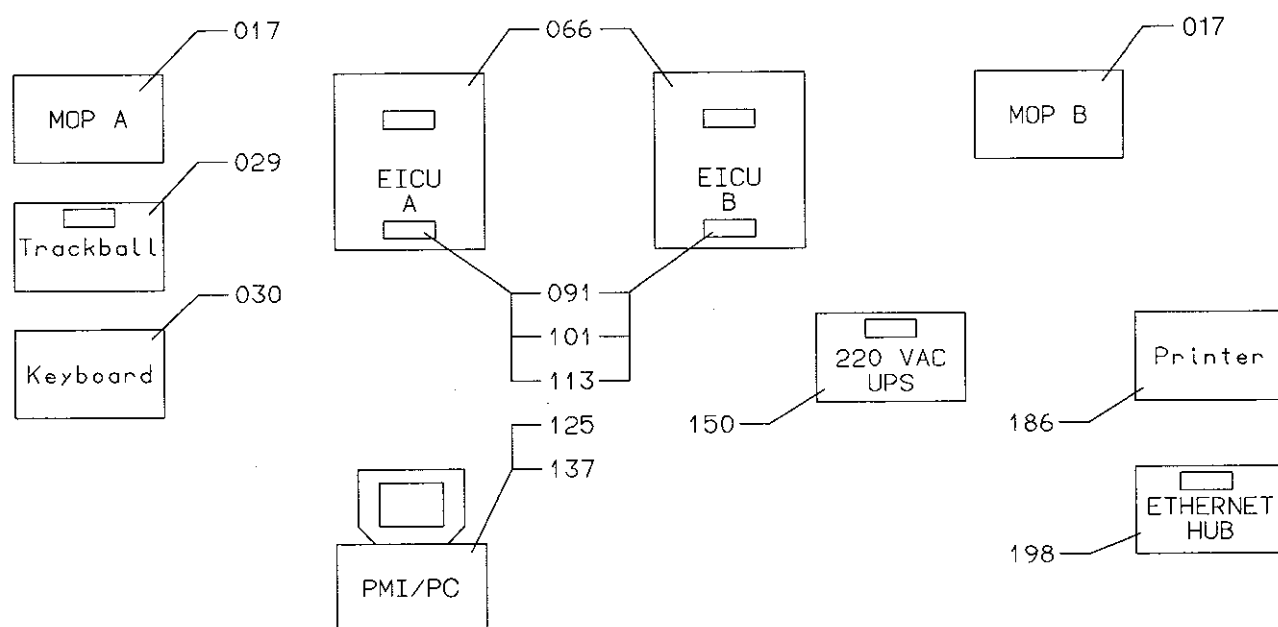


Plate 90645-0011 Engine Control System - Electronic Components

Item No.	Item Description
016	Multi purpose controller
100	I-D-key
200	ECS-SS junction box
210	Power distribution box

Item No.	Item Description



Item No.	Item Description
017	HMI panel
029	PC hardware
030	PC hardware
066	Enclosure
091	Multi purpose controller
101	Printer circuitboard assy
113	Connector - PCB, kit
125	PC hardware
137	PC hardware
150	PC hardware
186	Printer
198	PC hardware

Item No.	Item Description

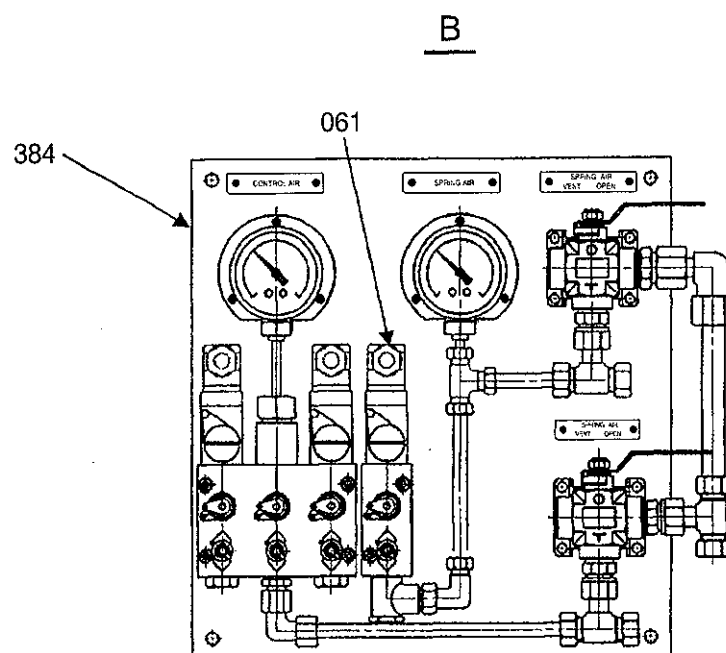
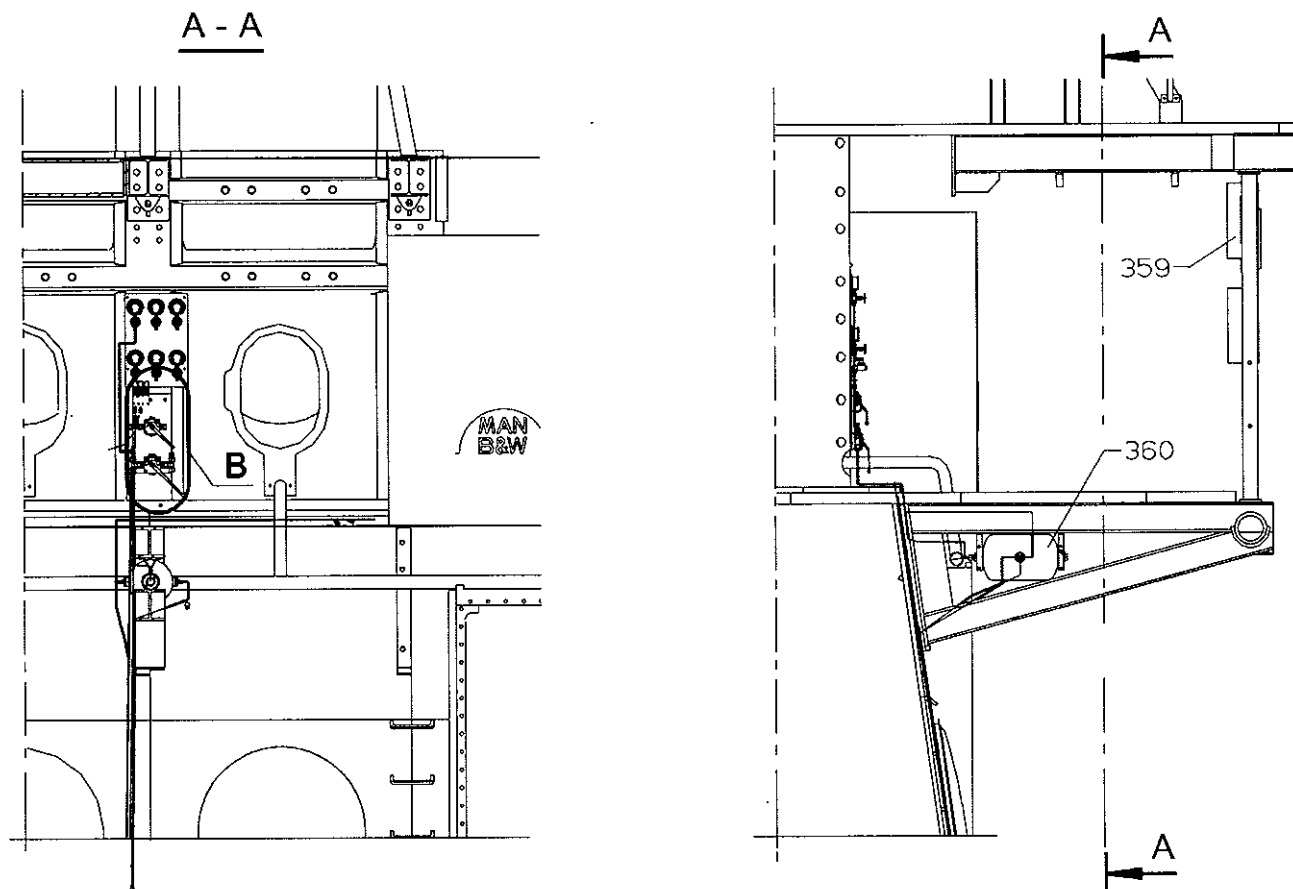
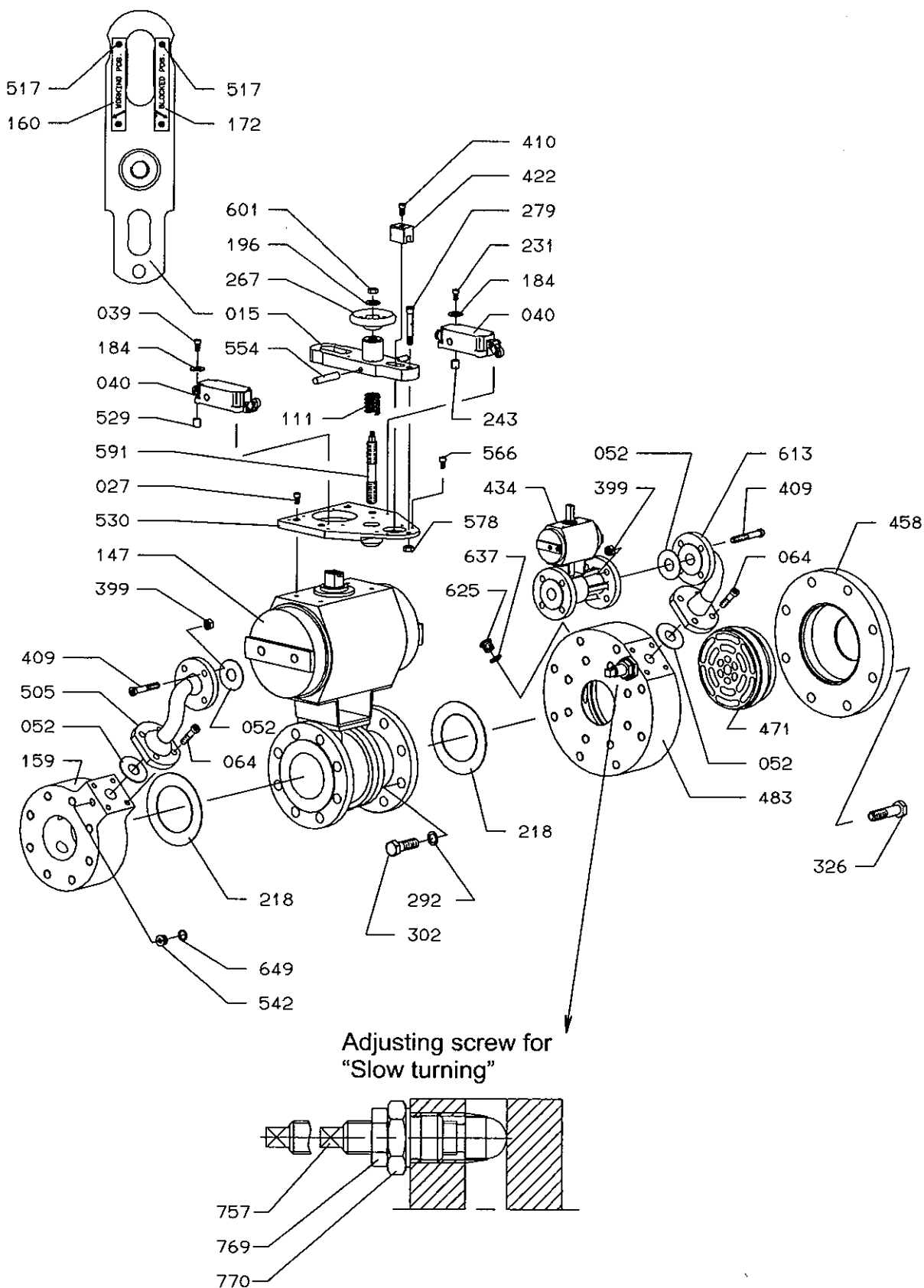


Plate 90648-0004

Pneumatic Components

Item No.	Item Description
061	Pressure transducer
359	Local control box
360	Air reciever
384	Plate with pneumatics, complete

Item No.	Item Description



Item No.	Item Description	Item No.	Item Description
015	Locking plate		
027	Screw		
039	Screw		
040	Switch		
052	Packing		
064	Screw		
111	Spring		
147	Ball valve		
159	Intermediate piece		
160	Name plate		
172	Name plate		
184	Washer		
196	Washer		
218	Packing		
231	Screw		
243	Distance piece		
267	Handwheel		
279	Guide pin		
292	Washer		
302	Screw		
326	Screw		
399	Nut		
409	Screw		
410	Screw		
422	Guide		
434	Ball valve		
458	Housing		
471	Non-return valve		
483	Housing		
505	Starting air pipe		
517	Screw		
529	Distance pipe		
530	Plate		
542	Plug screw		
554	Pin		
566	Screw		
578	Nut		
591	Spindle		
601	Nut		
613	Starting air pipe		
625	Plug screw		
637	Packing		
649	Packing		
757	Valve spindle		
769	Nut		
770	Reducing adapter		

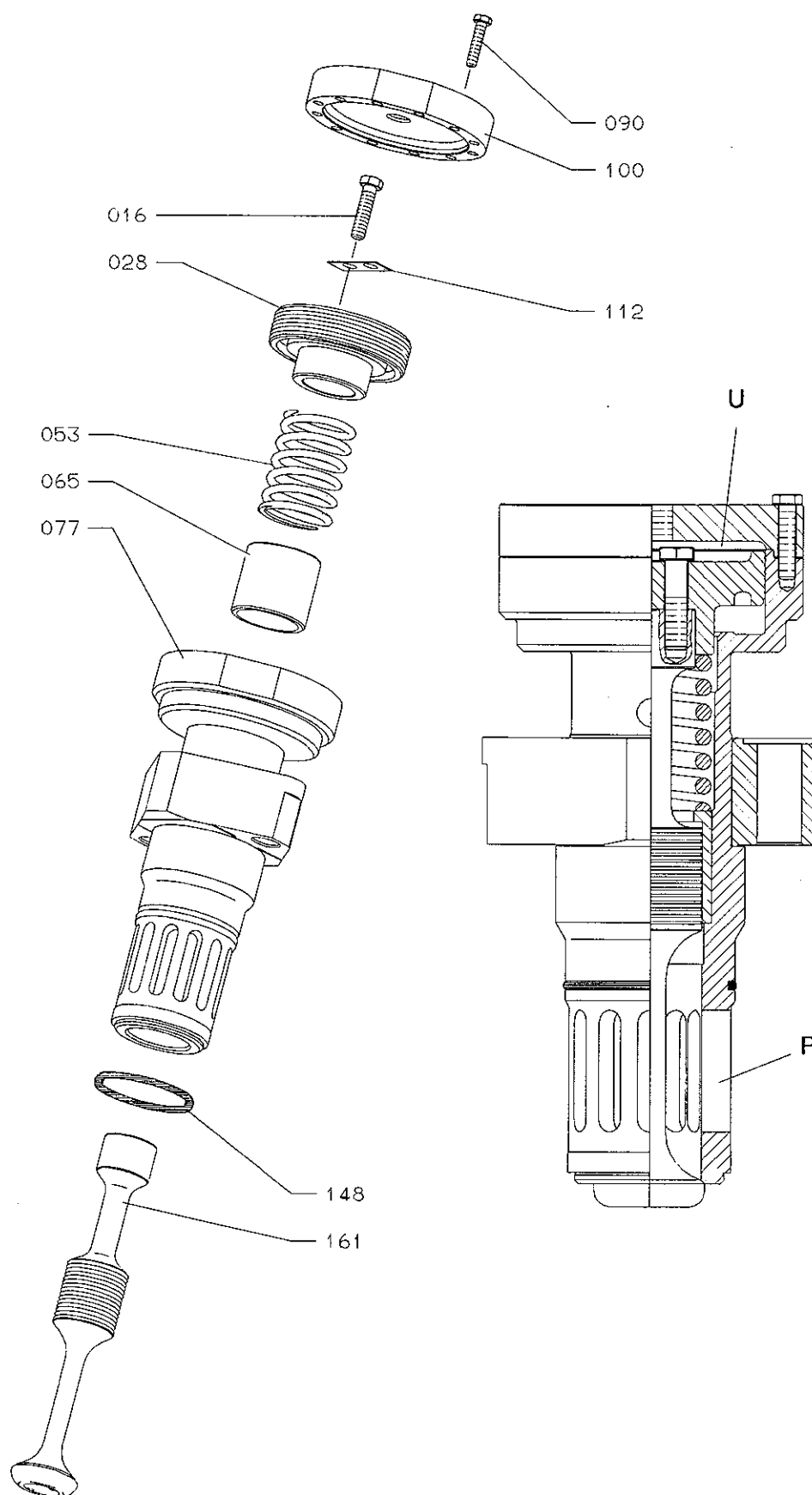
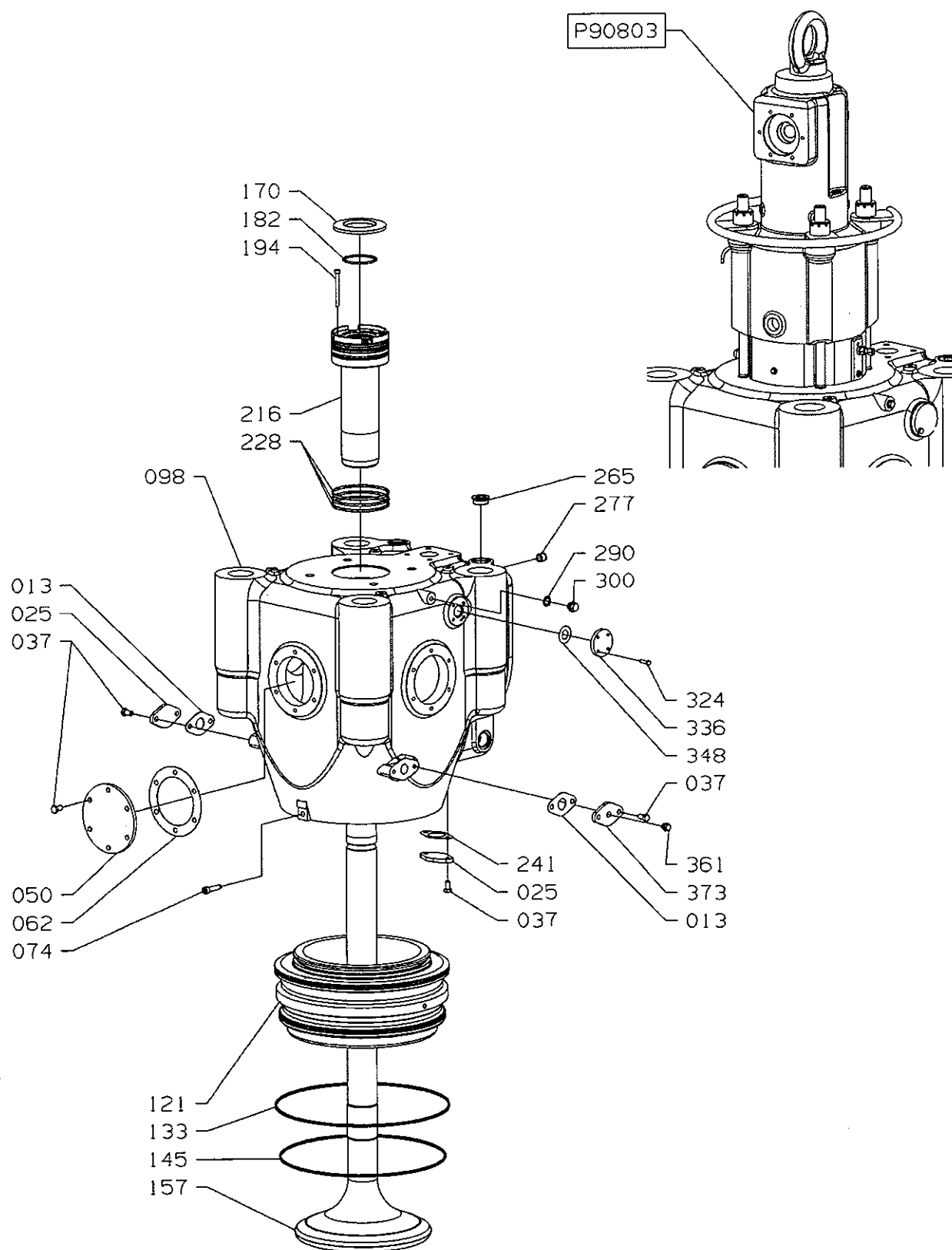


Plate P90704-0053E

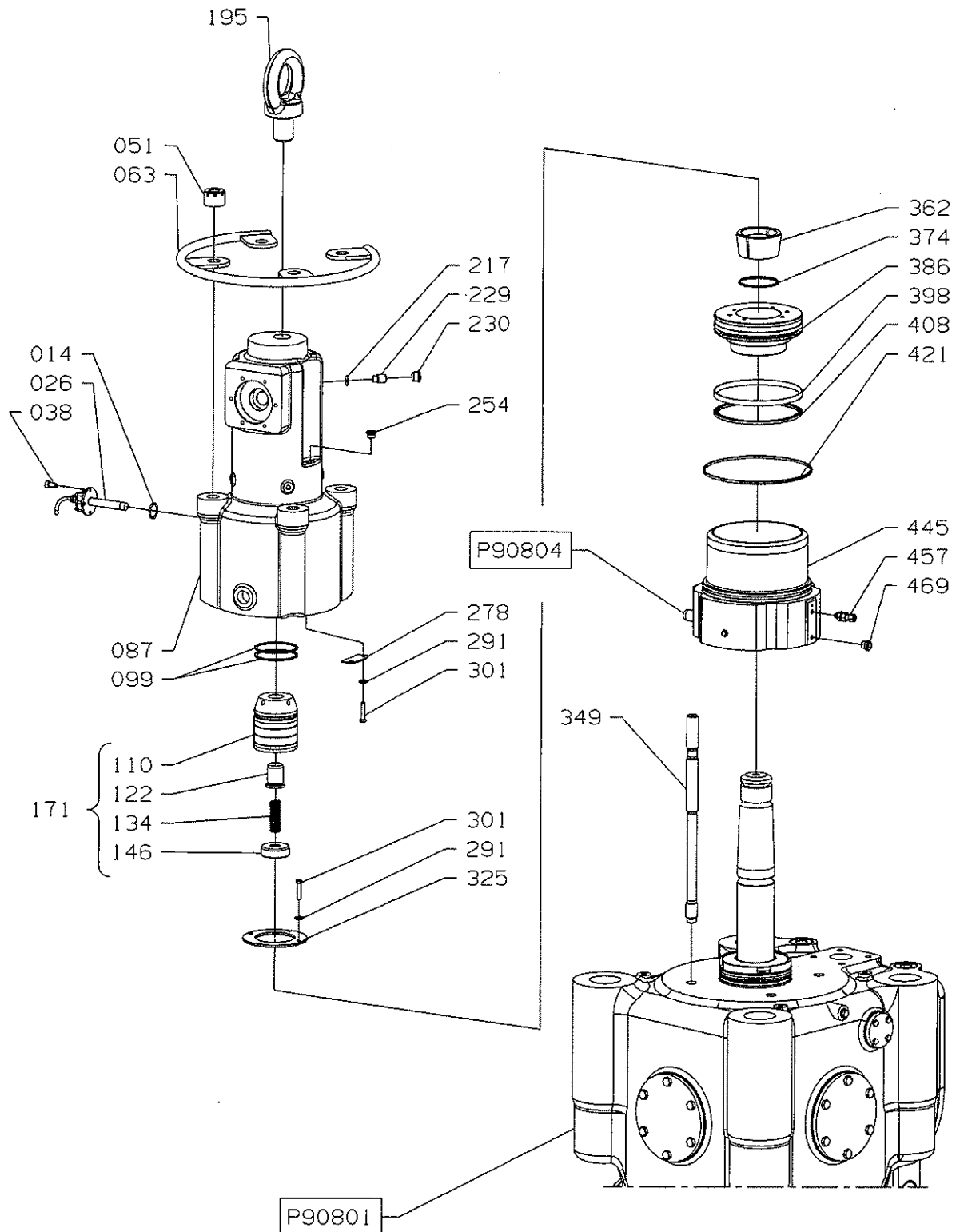
Starting Valve

Item No.	Item Description	Item No.	Item Description
016	Screw		
028	Piston		
053	Spring		
065	Bushing		
077	Valve housing		
090	Screw		
100	Cover		
112	Locking plate		
148	Sealing ring		
161	Spindle		



Item No.	Item Description
013	Packing
025	Flange
037	Screw
050	Cover
062	Packing
074	Screw
098	Exhaust valve housing
121	Bottom piece
133	O-ring
145	O-ring
157	Valve spindle
170	Disc spring
182	Sealing ring
194	Screw
216	Spindle guide
228	Sealing ring
241	Packing
265	Plug screw
277	Thread insert
290	Packing
300	Plug screw
324	Screw
336	Blank flange
348	Packing
361	Plug screw
373	Flange

Item No.	Item Description



Item No.	Item Description
014	Sealing ring
026	Inductive sensor
038	Screw
051	Nut
063	Safety handrail
087	Oil cylinder
099	Piston ring
110	Piston, actuator
122	Piston
134	Spring
146	Disc
171	Piston actuator, complete
195	Eye bolt
217	Disc
229	Orifice plug
230	Plug screw
254	Plug screw
278	Disc
291	Cam lock washer*
301	Screw
325	Flange
349	Stud
362	Cone
374	Sealing ring
386	Piston, air cylinder
398	Sliding bearing
408	Sealing ring
421	Sealing ring
445	Air cylinder, complete
457	Non-return valve
469	Plug screw

Item No.	Item Description

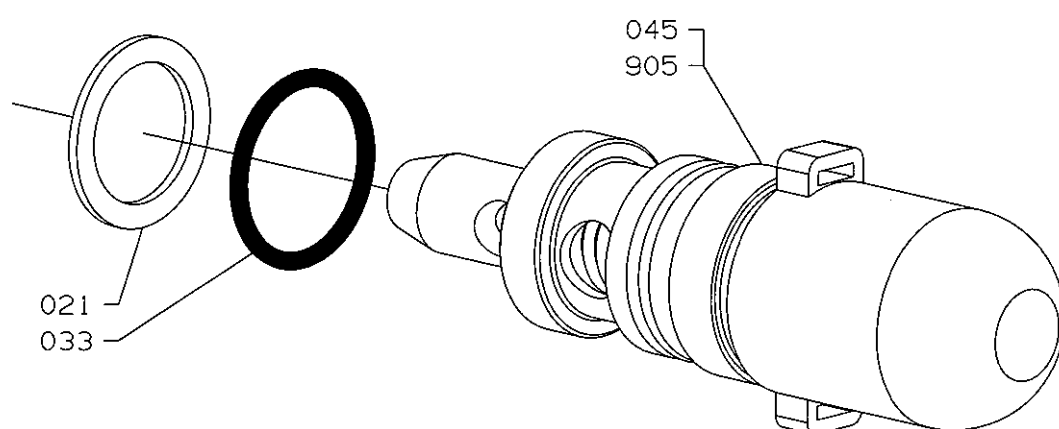
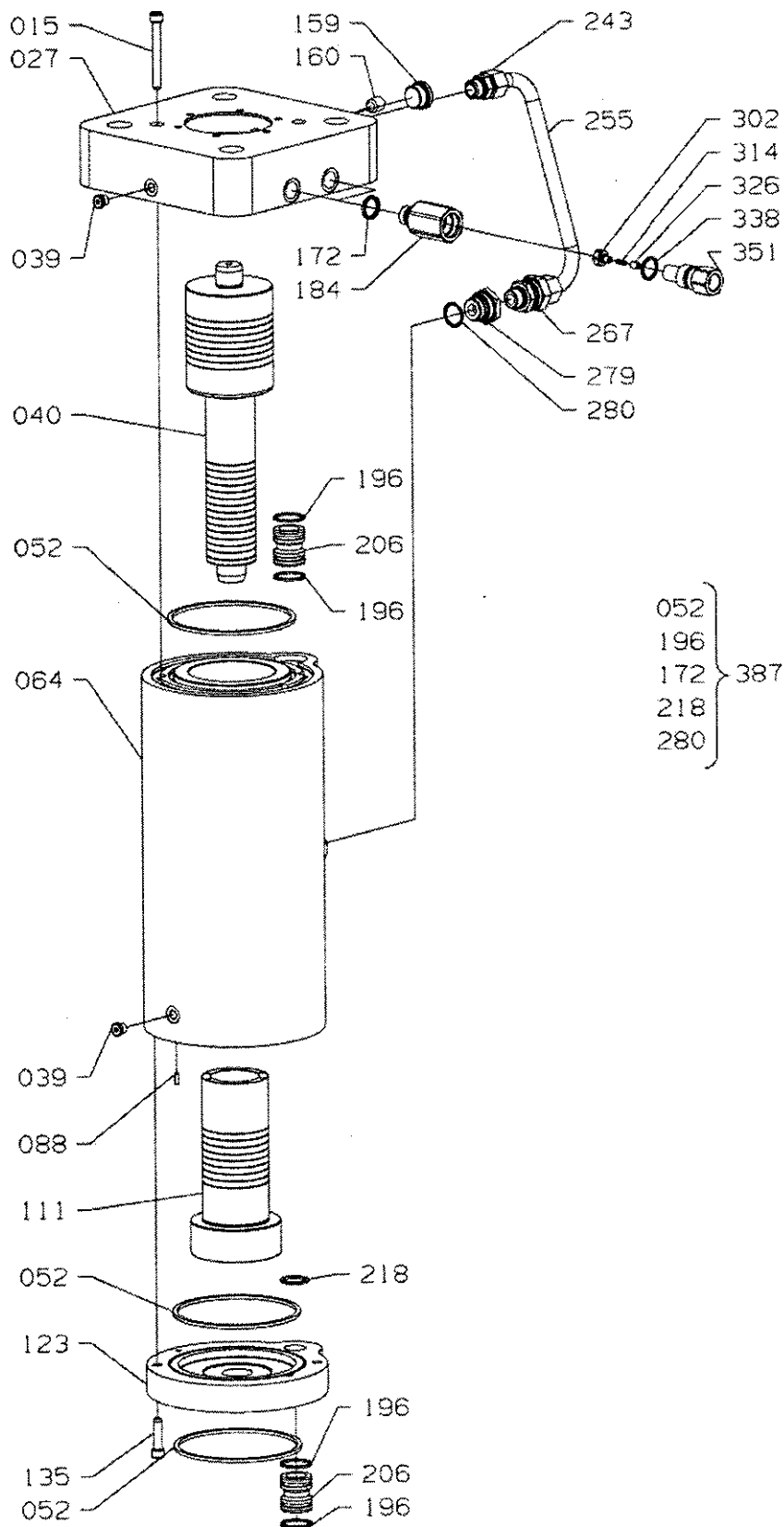


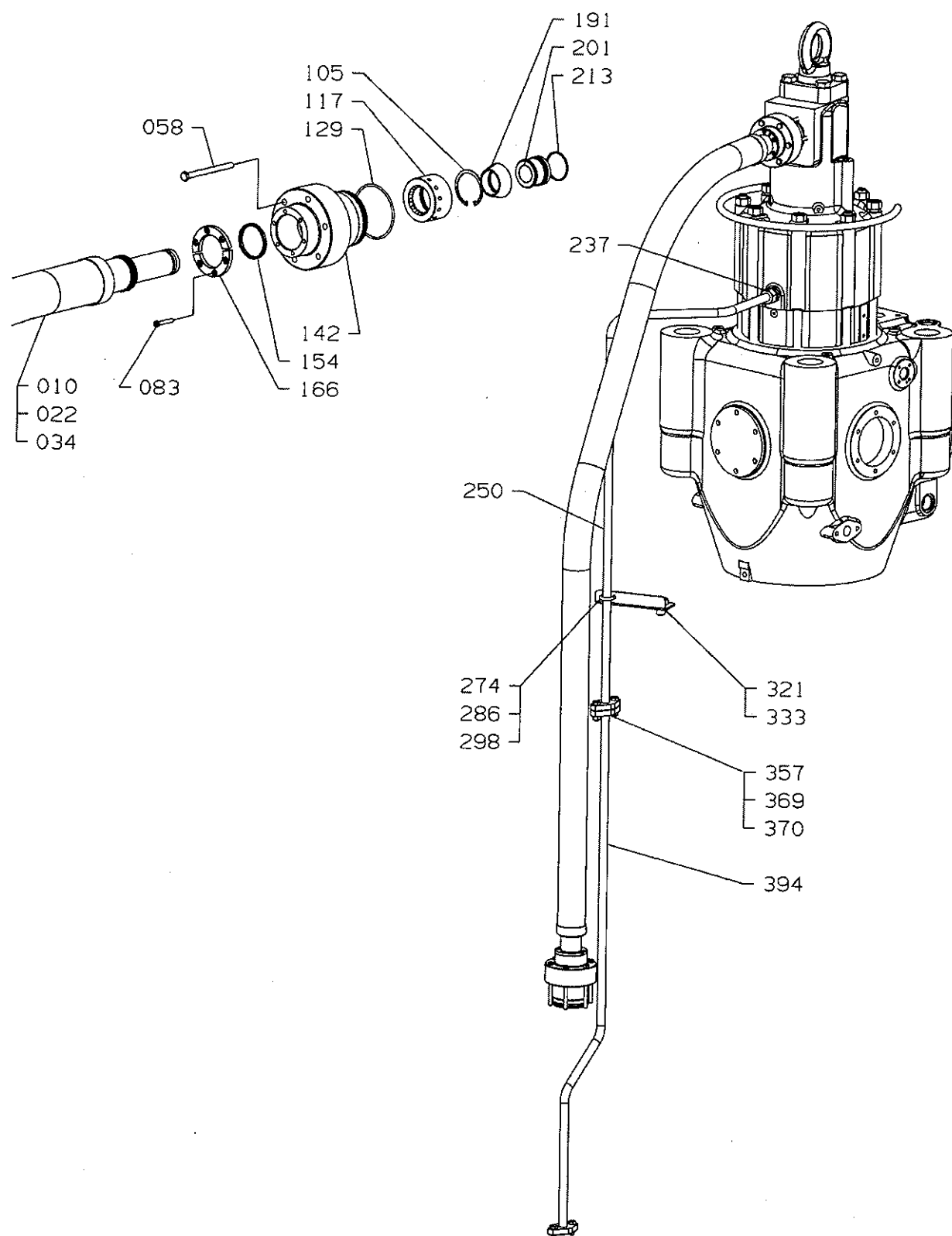
Plate P90804-0018 Exhaust Valve Upper Parts - Details

Item No.	Item Description	Item No.	Item Description
021	Packing		
033	O-ring		
045	Safety valve		
905	O-ring*		
	Note:		
	* Optional extras.		



Item No.	Item Description
015	Screw
027	Top piece
039	Plug screw
040	Piston
052	Square-section sealing ring
064	Oil cylinder
088	Guide pin
111	Piston
123	Bottom piece
135	Screw
159	Plug screw
160	Orifice plug
172	Gasket
184	Valve housing
196	Square-section sealing ring
206	Bushing
218	Square-section sealing ring
243	Straight stud coupling
255	Steel pipe
267	Non-return valve
279	Adapter straight
280	Square-section sealing ring
302	Spring guide
314	Pressure spring
326	Spindle
338	Square-section sealing ring
351	Valve housing
387	Repair kit

Item No.	Item Description



Item No.	Item Description	Item No.	Item Description
010	Hydraulic pipe		
022	Hose complete		
034	Protective pipe		
058	Screw		
083	Screw		
105	Retaining ring		
117	Cone		
129	Sealing ring		
142	Thrust flange		
154	Sealing ring		
166	Disc with incision		
191	Cone		
201	Disc special		
213	Sealing ring		
237	Coupling		
250	Drain pipe		
274	Clamp		
286	Nut		
298	Washer		
321	Support		
333	Screw		
357	Screw		
369	Nut		
370	Packing		
394	Drain pipe		

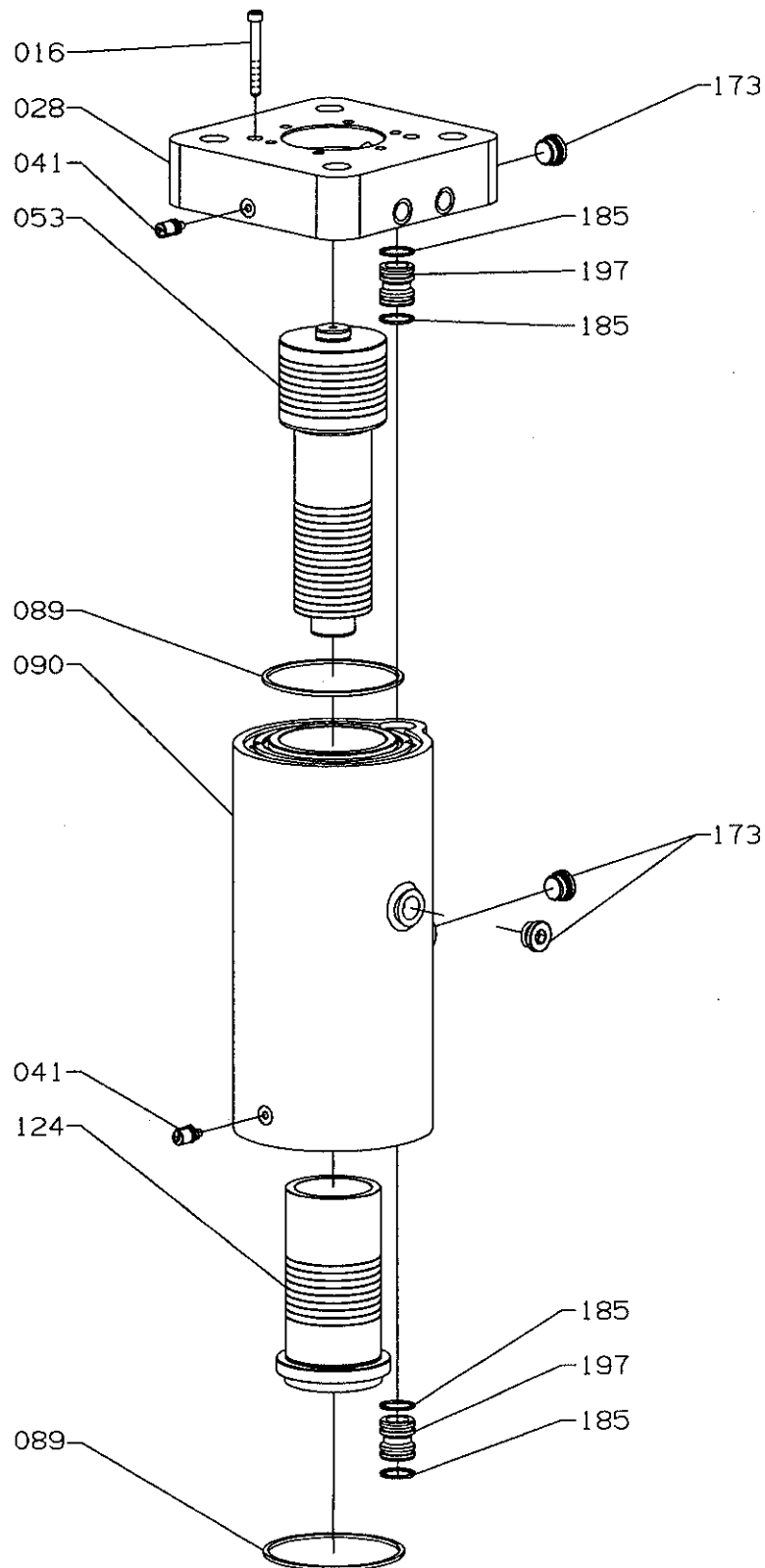
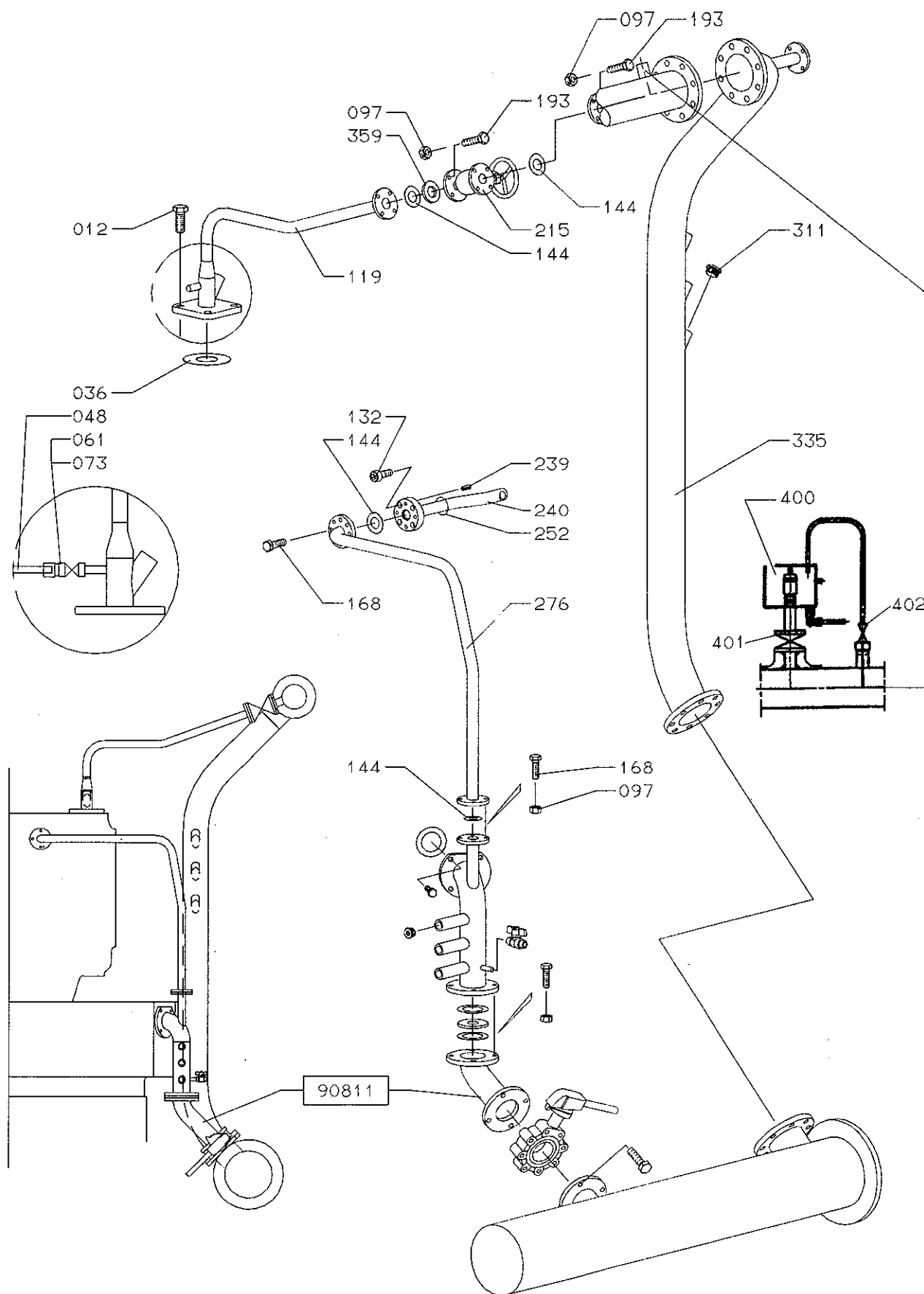


Plate 90807-0005

Exhaust Valve Actuator

Item No.	Item Description	Item No.	Item Description
016	Screw		
028	Top piece		
041	Quick coupling		
053	Piston		
089	Sealing ring		
090	Oil cylinder		
124	Piston		
173	Plug screw		
185	Sealing ring		
197	Bushing		



Item No.	Item Description	Item No.	Item Description
012	Screw		
036	Gasket		
048	Steel pipe		
061	Ball valve		
073	Coupling		
097	Nut		
119	Outlet pipe		
132	Screw		
144	Gasket		
168	Screw		
193	Screw		
215	Globe valve		
239	Spring pin		
240	Inlet pipe		
252	Sealing ring		
276	Inlet pipe		
311	Plug screw		
335	Main pipe		
359	Orifice plate		
400	Auto-venting valve		
401	Ball valve		
402	Stop valve		

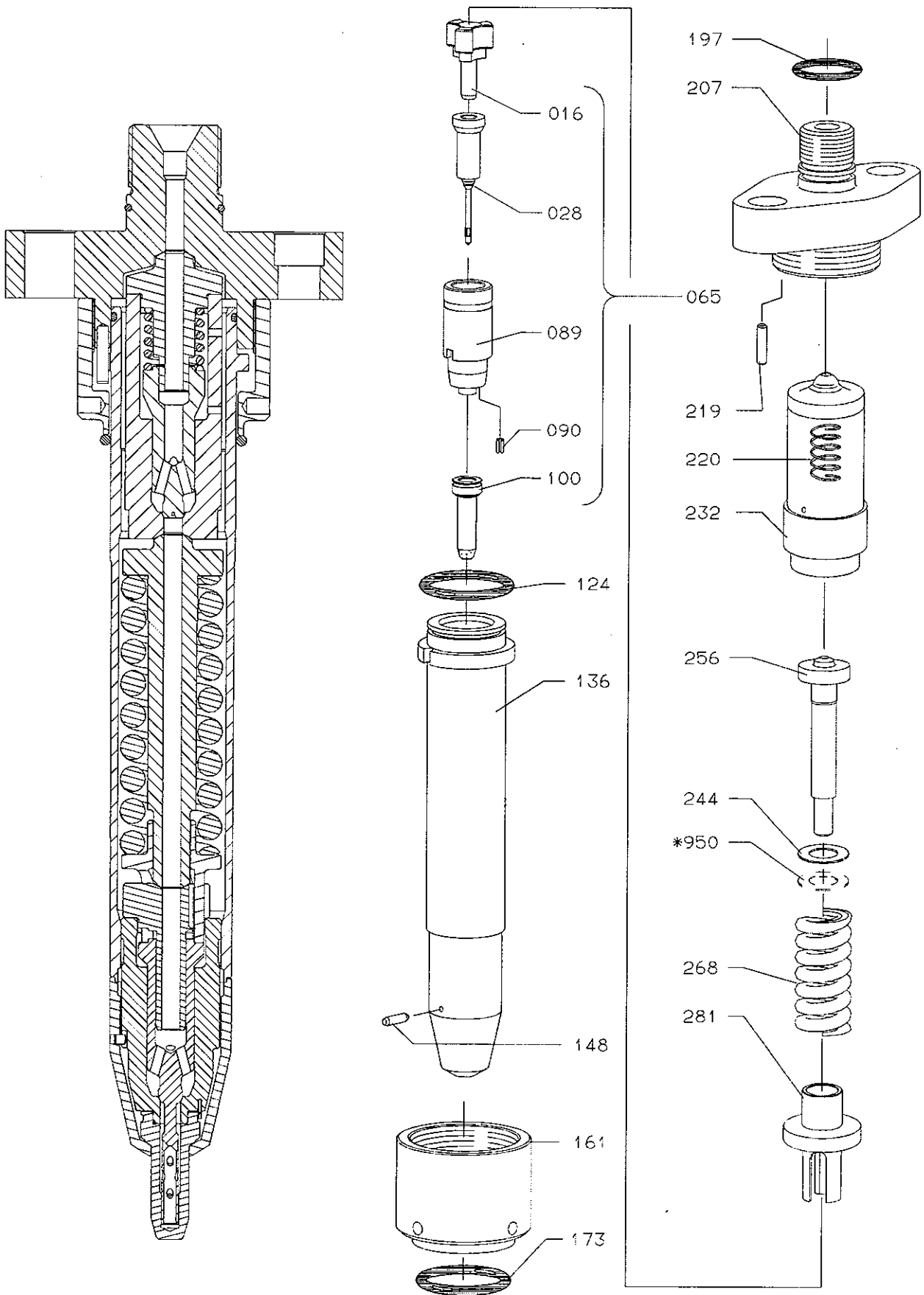


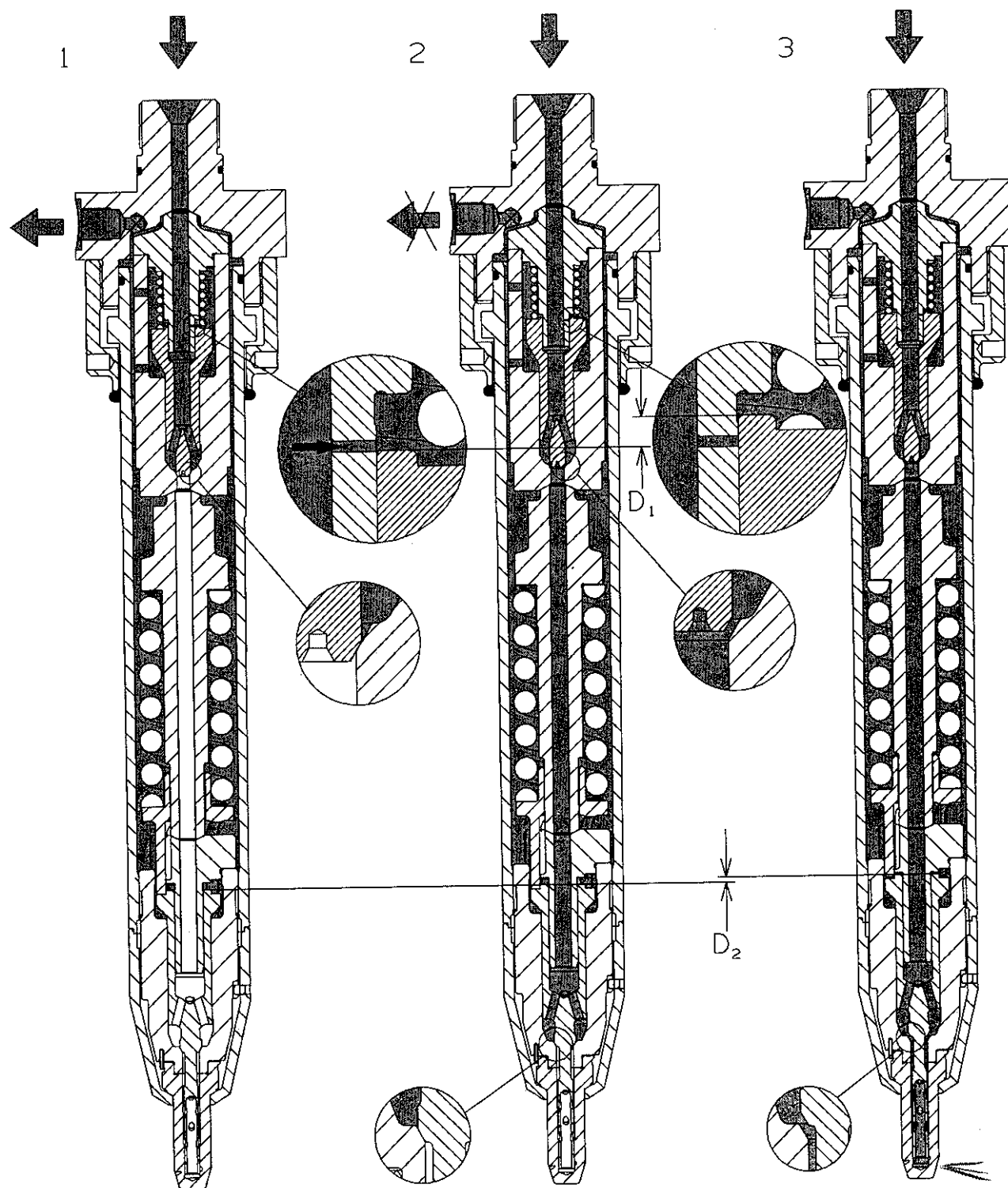
Plate 90910-0137

Fuel Valve

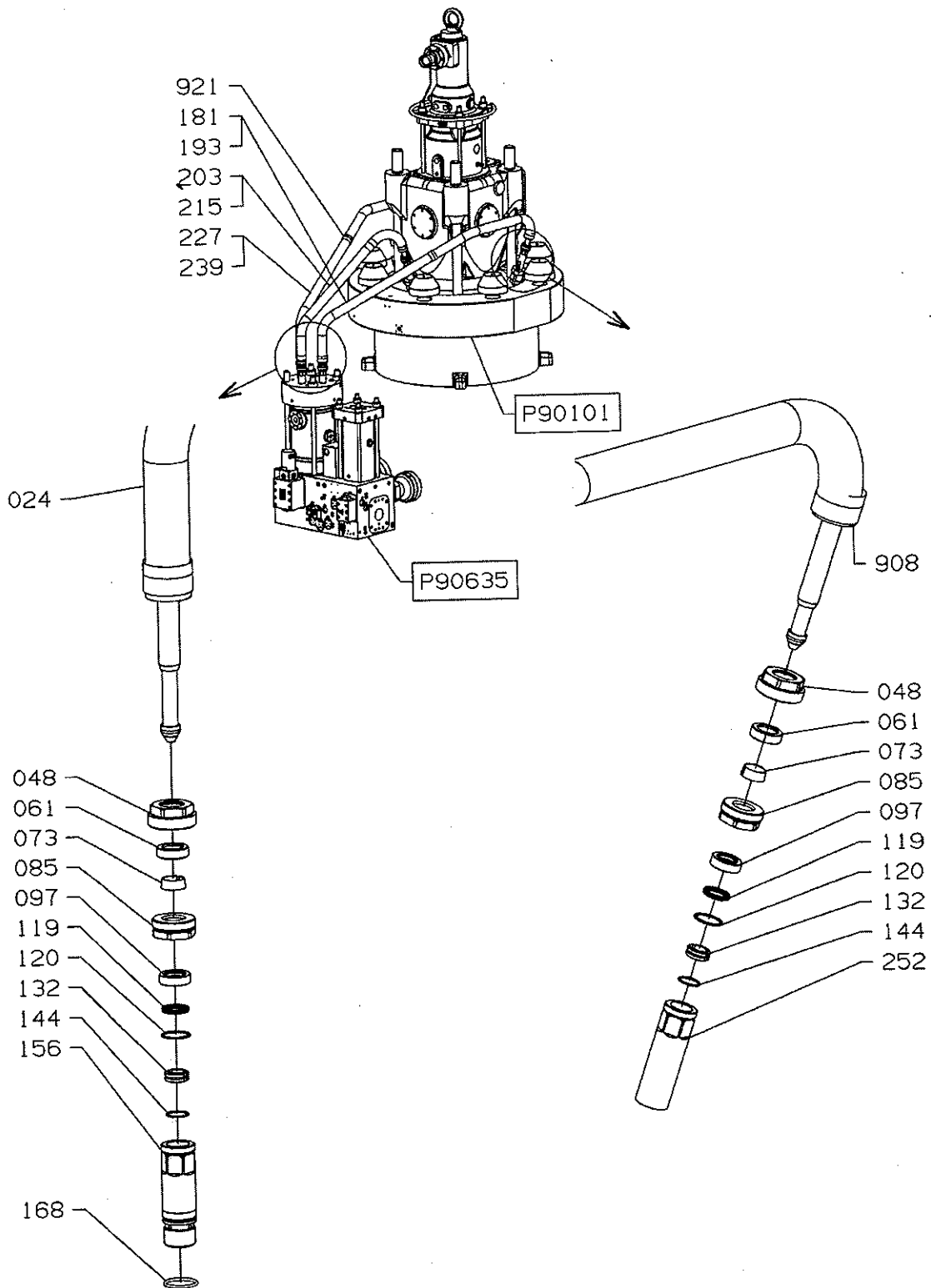
Item No.	Item Description
016	Thrust piece
028	Cut-off shaft
065	Spindle guide, complete
089	Spindle guide
090	Spring pin
100	Nozzle
124	O-ring
136	Holder
148	Guide pin
161	Union nut
173	O-ring
197	O-ring
207	Valve head
219	Guide pin
220	Spring
232	Non-return valve
244	Disc
256	Thrust spindle
268	Spring
281	Thrust foot
950	Disc *
	Note :
	* Optional extras.

Item No.	Item Description

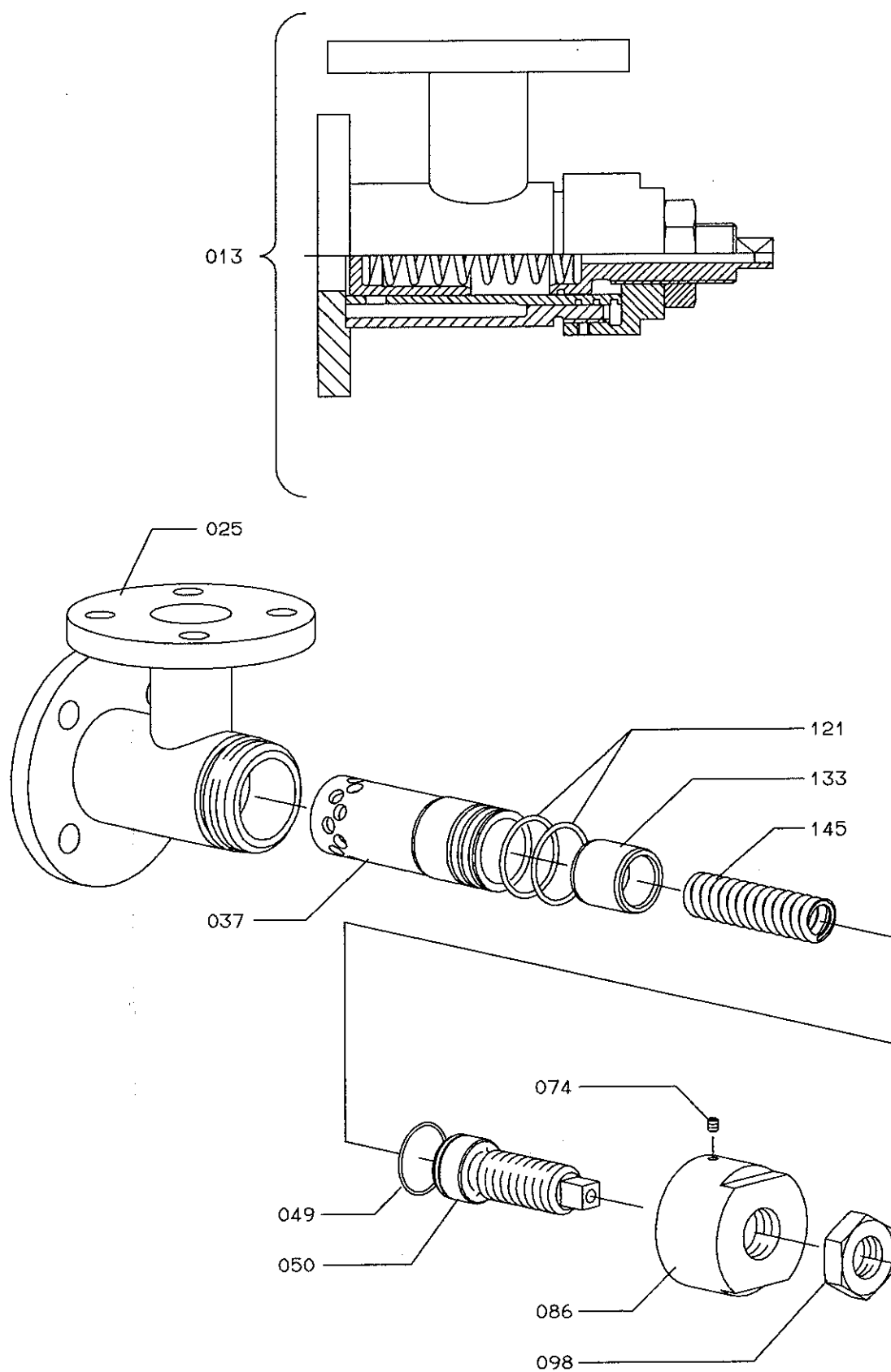
*) Optional extras



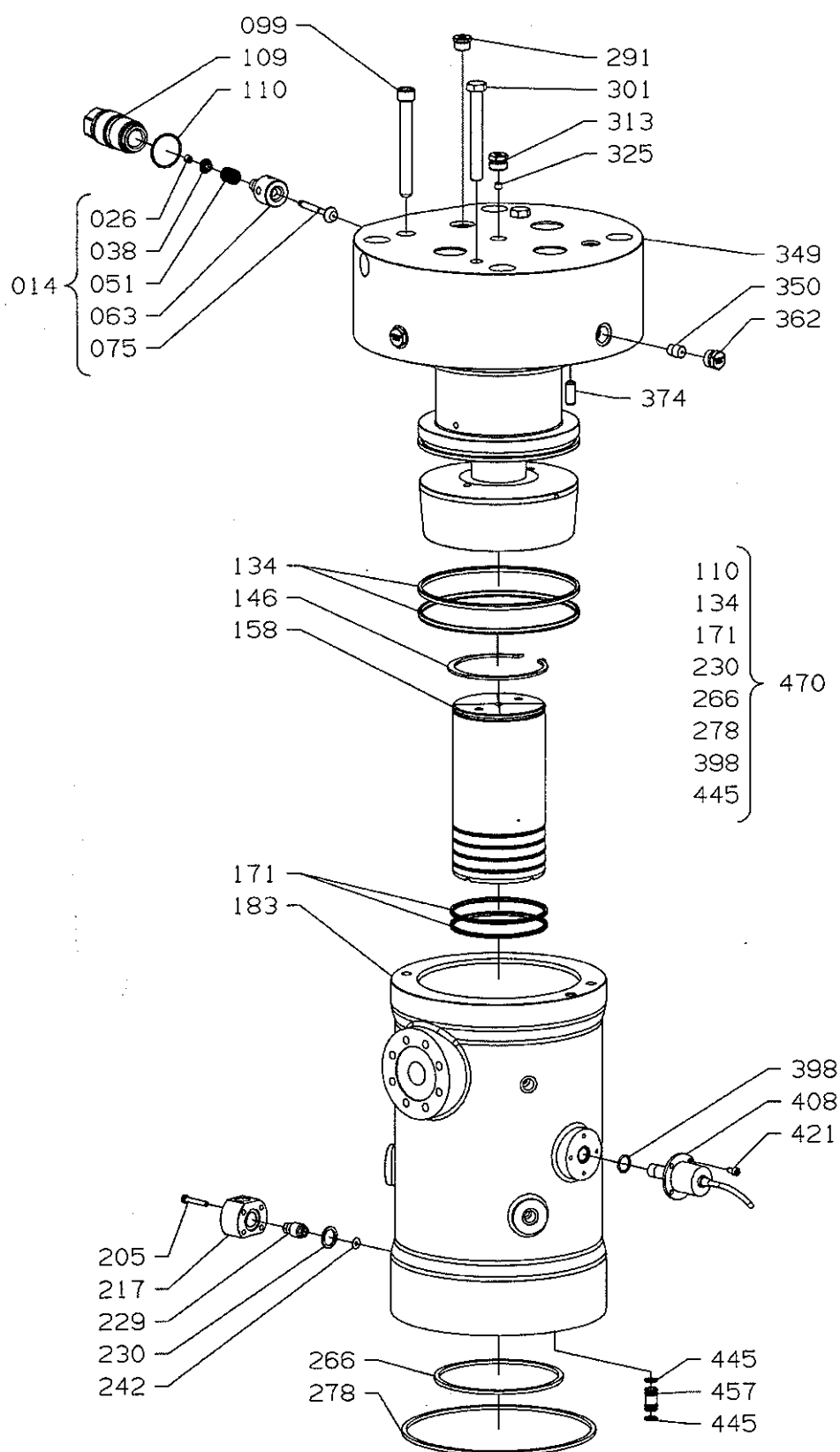
Item No.	Item Description	Item No.	Item Description
	Note : D1 = Predetermined closing value for non-return valve D2 = Predetermined opening value for cut-off spindle		



Item No.	Item Description	Item No.	Item Description
024	Insulation, pipe*		
048	Union nut		
061	Cone		
073	Cone		
085	Union nut		
097	Housing		
119	O-ring		
120	Sealing ring		
132	Sleeve in 2/2		
144	Retaining ring		
156	Union nipple		
168	O-ring		
181	High pressure pipe, complete		
193	High pressure pipe		
203	High pressure pipe, complete		
215	High pressure pipe		
227	High pressure pipe, complete		
239	High pressure pipe		
252	Union nipple		
908	Pipe end insulation sleeve, roll**		
921	Tape, roll**		
	Notes:		
	* Pipe end insulation sleeve and tape is not included.		
	** Optional extras		



Item No.	Item Description	Item No.	Item Description
013	By-pass valve, complete		
025	Valve housing		
037	Valve housing		
049	Sealing ring		
050	Spring guide		
074	Screw		
086	Union nut		
098	Nut		
121	Sealing ring		
133	Piston		
145	Spring		



Item No.	Item Description	Item No.	Item Description
014	Suction valve, complete		
026	Conical ring 2/2		
038	Cone		
051	Spring		
063	Housing, suction valve		
075	Spindle		
099	Screw		
109	Union nut and plug screw		
110	Sealing ring		
134	Sealing ring		
146	Retaining ring for shaft		
158	Hydraulic plunger		
171	Sealing ring		
183	Housing		
205	Screw		
217	Flange		
229	Throttle valve		
230	Sealing ring		
242	Disc		
266	Sealing ring		
278	Sealing ring		
291	Plug screw		
301	Screw		
313	Plug screw		
325	Disc		
349	Top cover, complete		
350	Plug		
362	Plug screw		
374	Guide pin		
398	Sealing ring		
408	Inductive sensor		
421	Screw		
445	Sealing ring		
457	Bushing		
470	Repair kit		

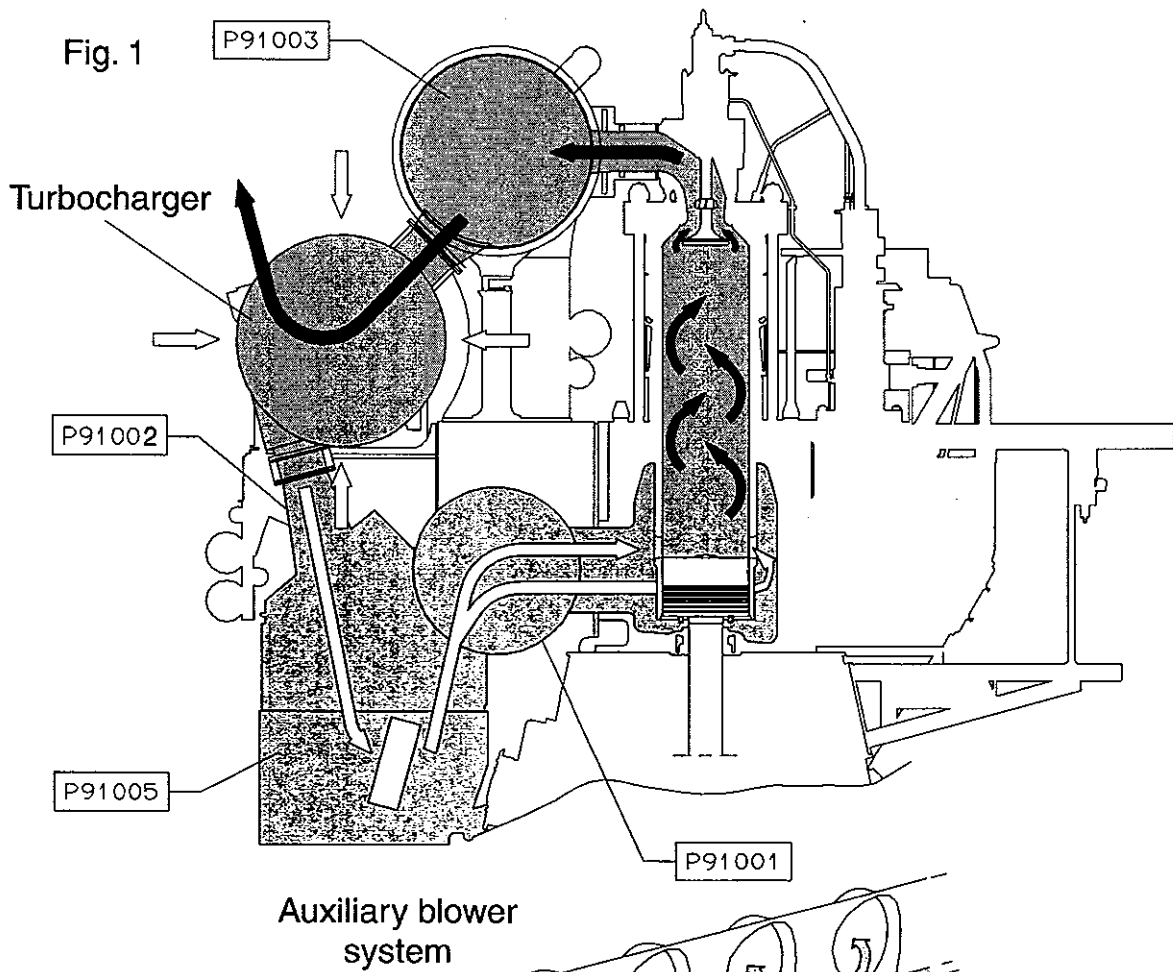


Fig. 2

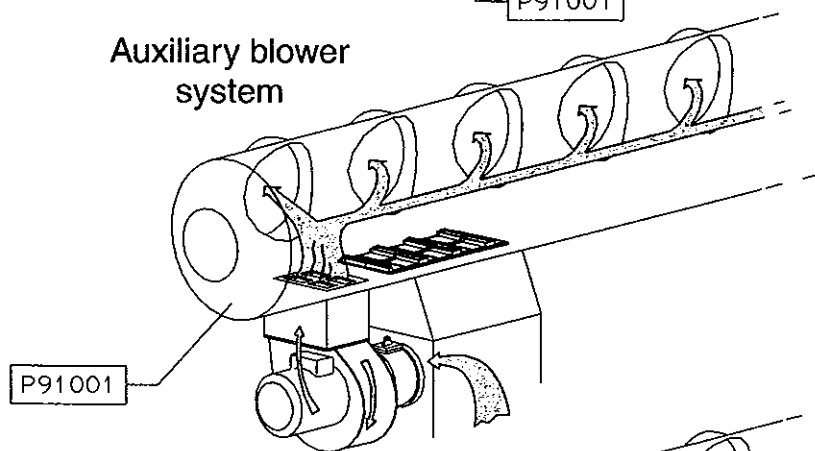
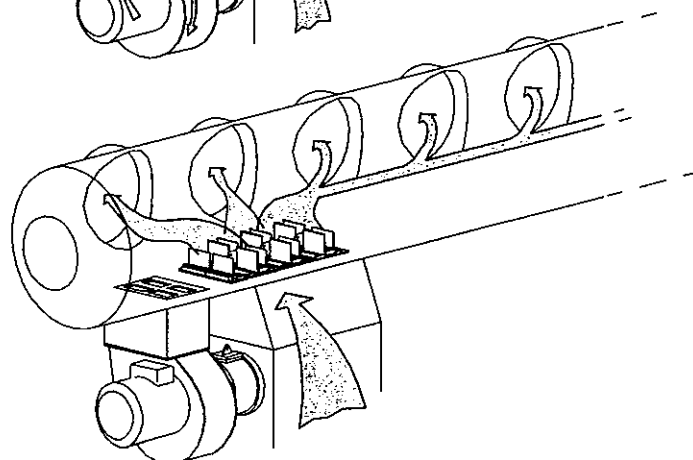
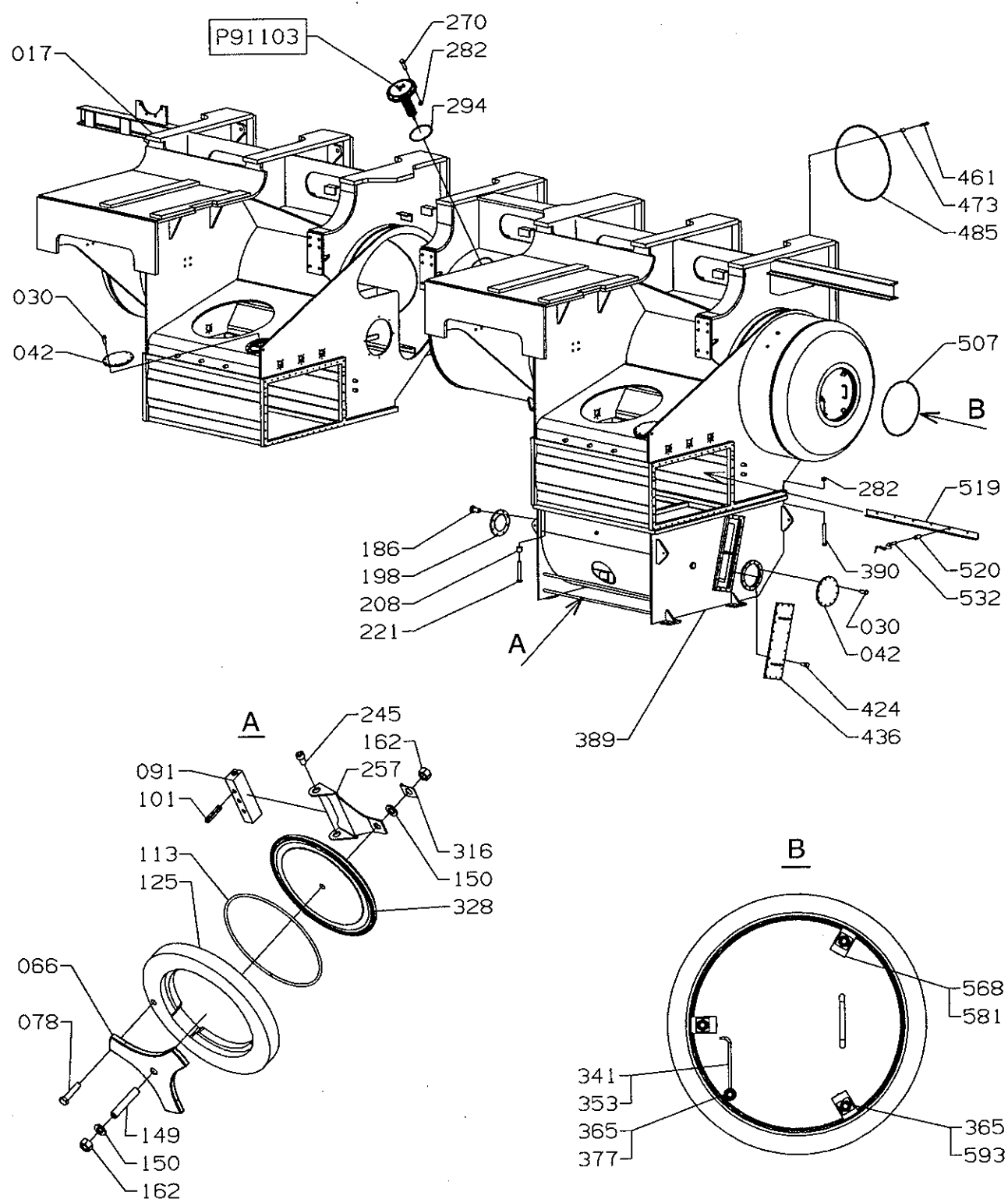


Fig. 3





Item No.	Item Description	Item No.	Item Description
017	Scavenge air receiver		
030	Screw		
042	Cover		
066	Cross member		
078	Screw		
091	Support		
101	Spring pin		
113	O-ring		
125	Flange		
149	Stud		
150	Washer		
162	Nut		
186	Screw		
198	Cover		
208	Distance pipe		
221	Screw		
245	Screw		
257	Hinge		
270	Screw		
282	Nut		
294	O-ring		
316	Locking plate		
328	Cover		
341	Sectional iron		
353	Sectional iron		
365	Nut		
377	Stud		
389	Airflow reversing chamber		
390	Screw		
424	Screw		
436	Cover		
461	Screw		
473	Distance pipe		
485	O-ring		
507	O-ring		
519	Air cooler housing sealing		
520	Distance pipe		
532	Screw		
568	Plate		
581	Plate		
593	Stud		

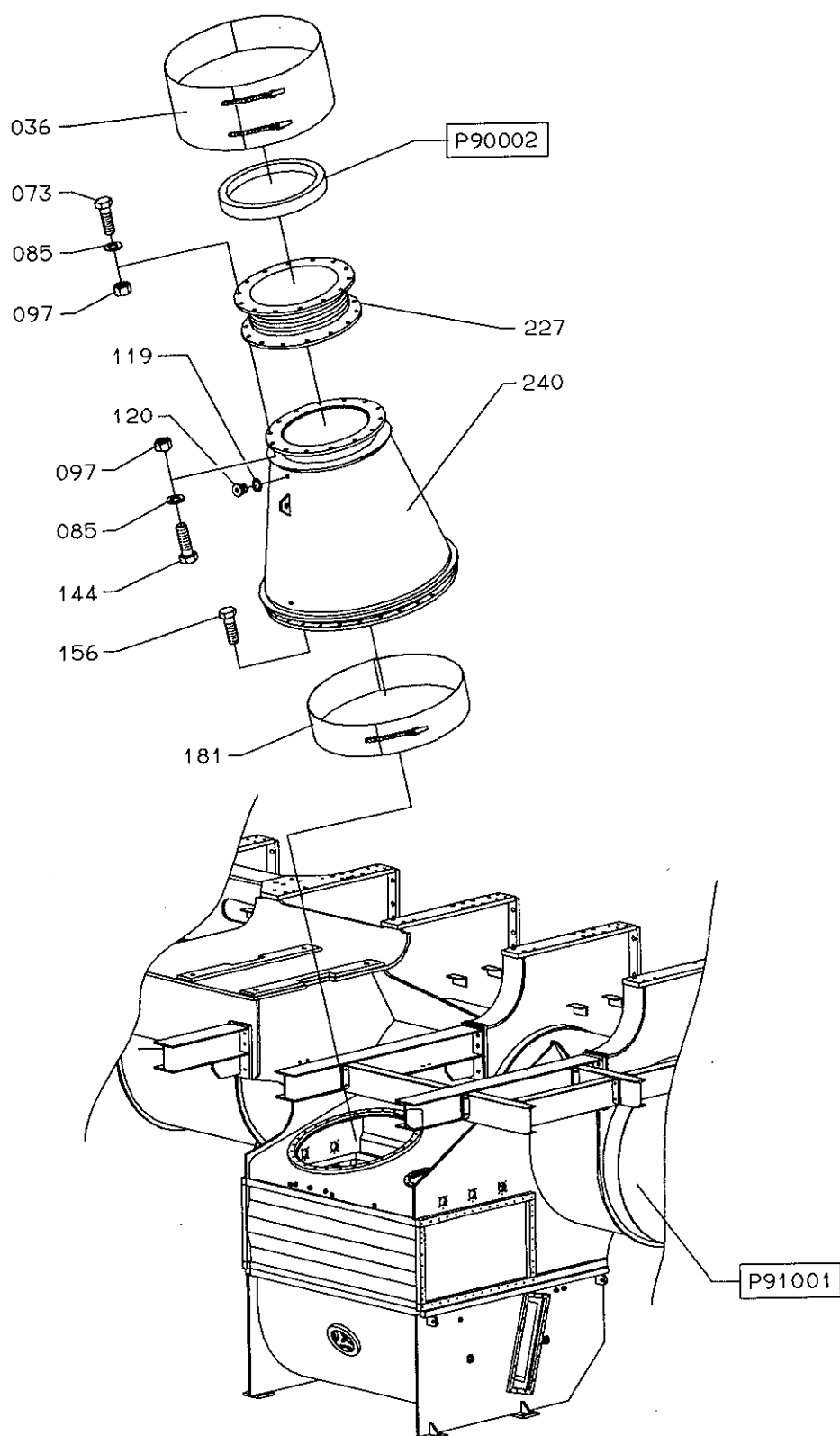
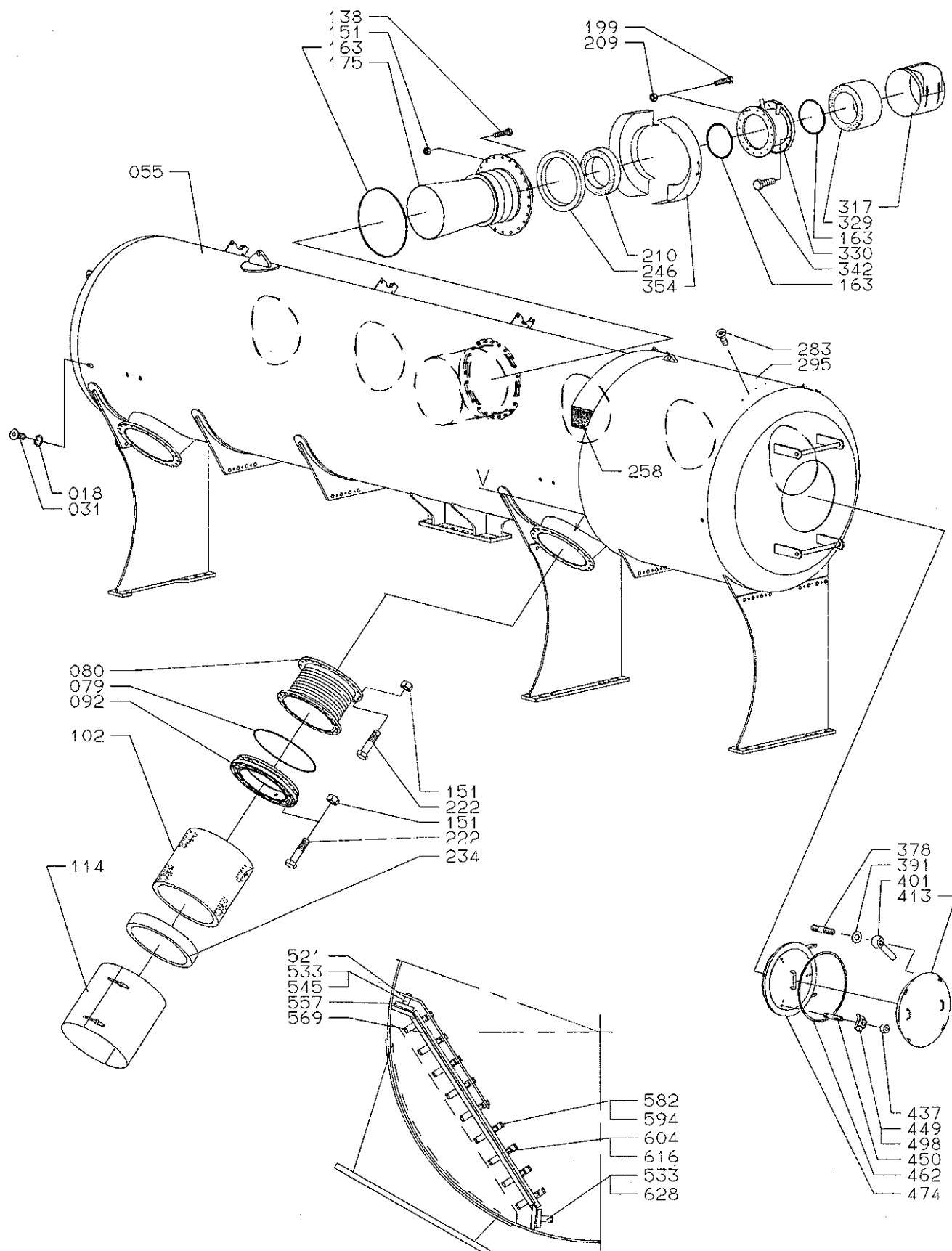


Plate 91002-0131 Arrangement of Charging Air Pipe

Item No.	Item Description	Item No.	Item Description
036	Insulation cover		
073	Screw		
085	Screw		
097	Nut		
119	Packing		
120	Plug screw		
144	Screw		
156	Screw		
181	Insulation cover		
227	Compensator		
240	Charging air pipe		

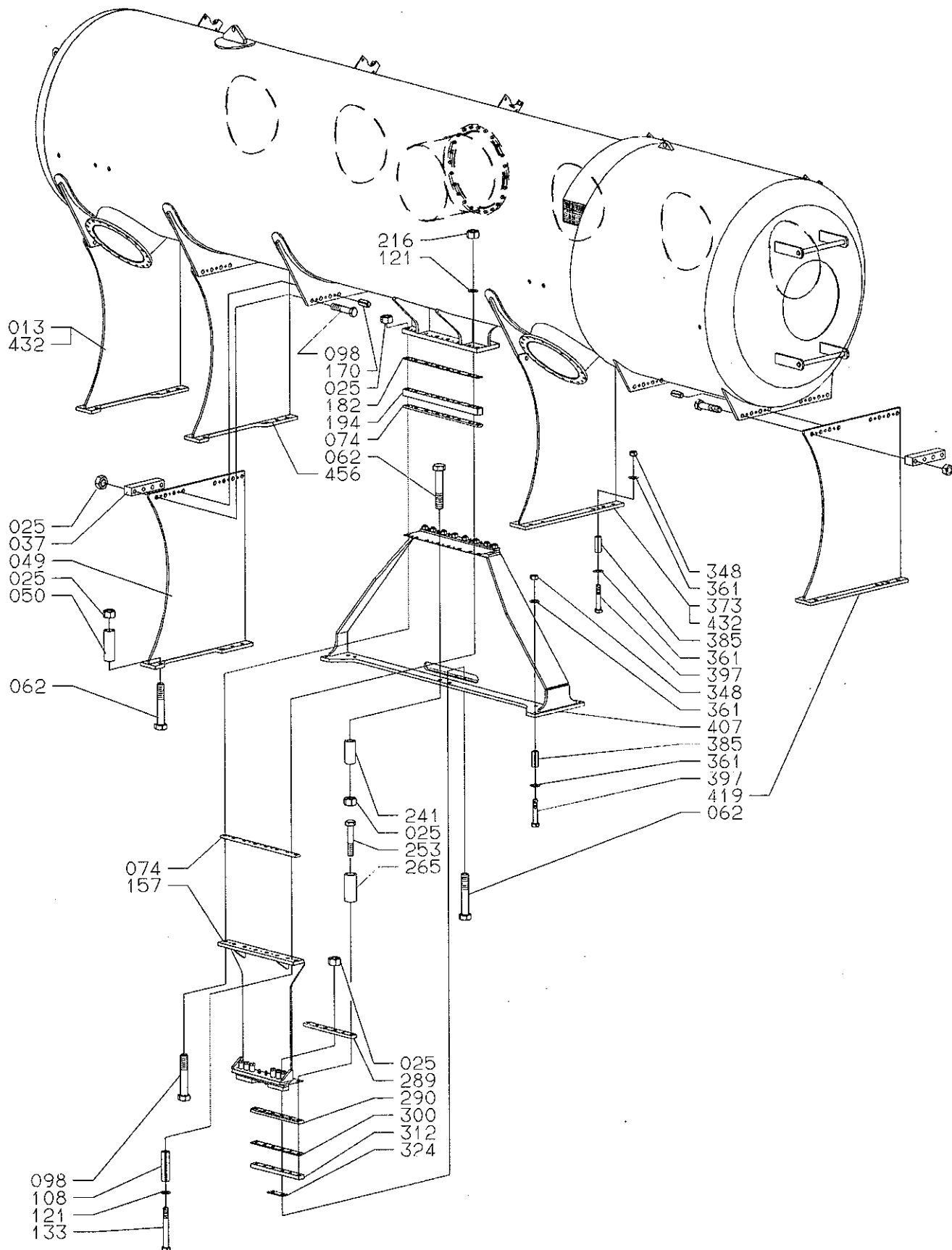


Exhaust Pipes and Receiver

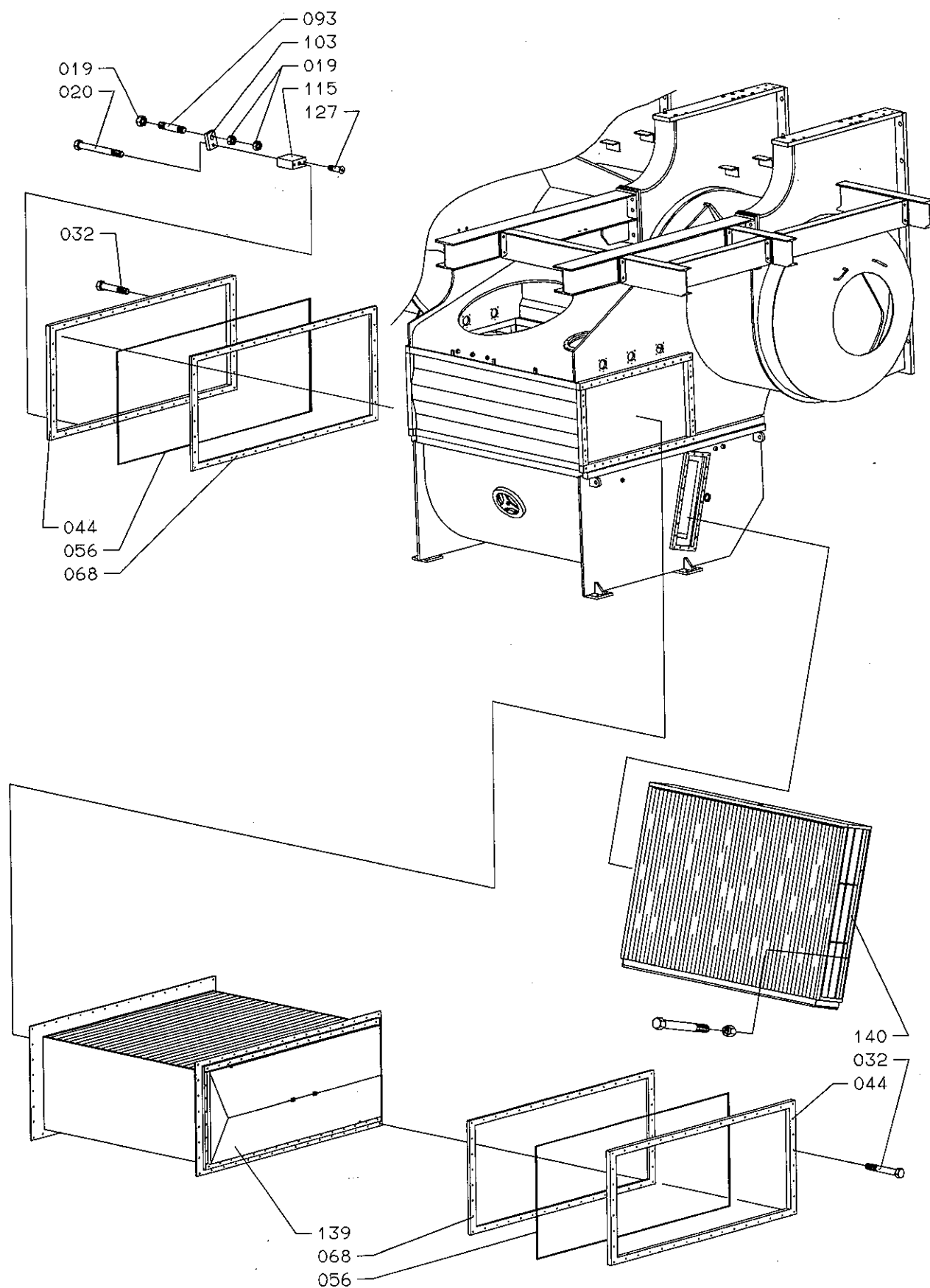
Item No.	Item Description
018	Packing
031	Plug screw
055	Exhaust receiver
079	Packing
080	Compensator
092	Gas inlet
102	Insulation material
114	Insulation cover
138	Screw *
151	Nut
163	Packing
175	Compensator
199	Screw *
209	Nut
210	Insulation material
222	Screw *
234	Insulation material
246	Insulation material
258	Insulation material
283	Screw
295	Insulation cover
317	Insulation cover
329	Insulation material
330	Pipe
342	Screw *
354	Insulation cover
378	Stud
391	Washer
401	Wing nut
413	Insulation cover
437	Nut
449	Clamp
450	Stud
462	Packing
474	Manhole cover
498	Clamp
521	Plate
533	Screw *
545	Distance pipe
557	Bar for grid
569	Wire gauze
582	Screw *
594	Distance pipe
604	Screw
616	Spacer tubular
628	Distance pipe

Item No.	Item Description

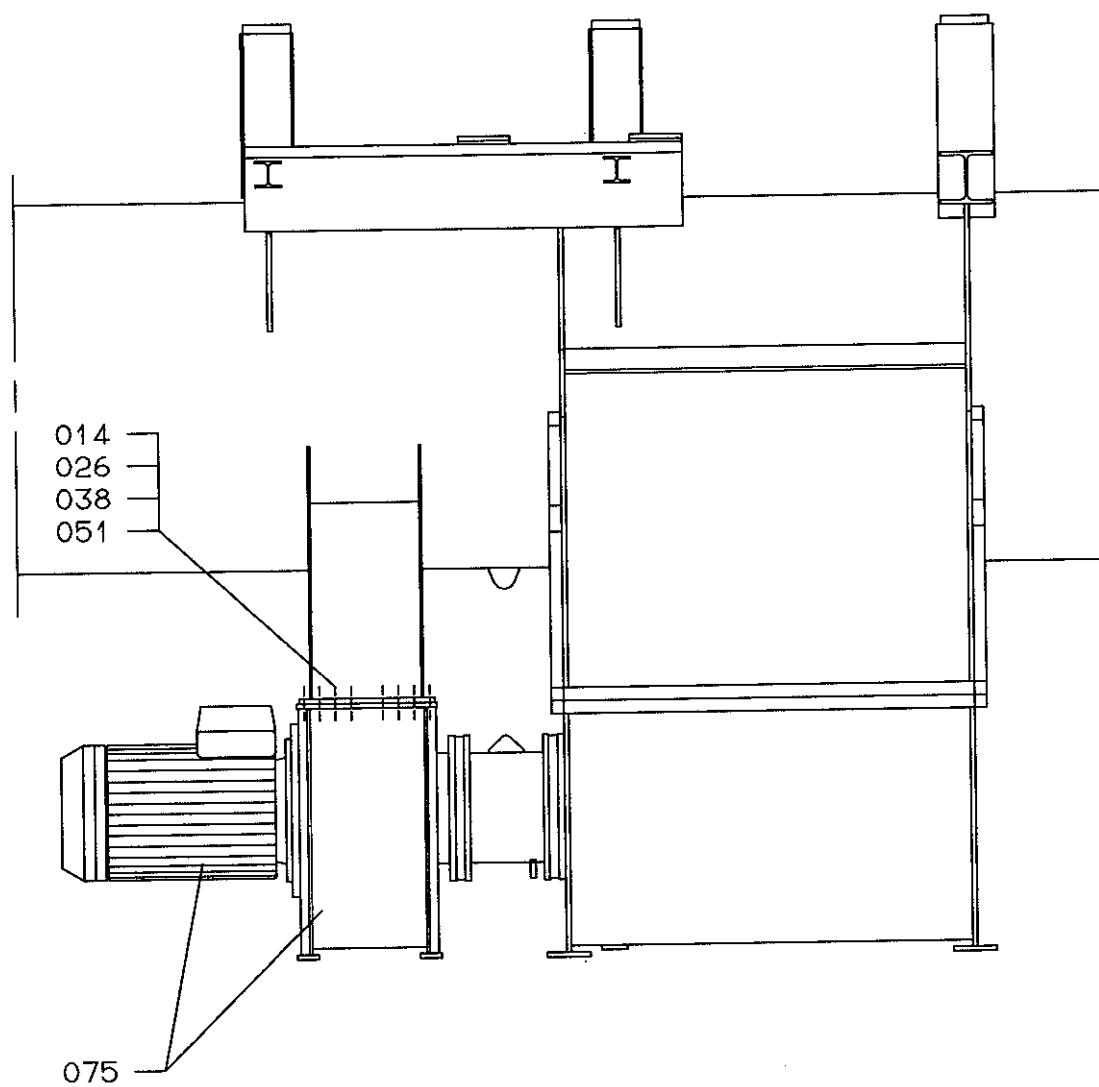
Note :
 *These screws are special screws for hot joints, they are marked with a "T", and **MUST NOT** be used elsewhere!



Item No.	Item Description	Item No.	Item Description
013	Support		
025	Nut		
037	Clamp		
049	Support		
050	Distance pipe, L=100		
062	Screw		
074	Clamp		
098	Screw		
108	Spring pin		
121	Washer		
133	Screw		
157	Support		
170	Spring pin		
182	Shim		
194	Clamp		
216	Nut		
241	Distance pipe, L=100		
253	Screw		
265	Distance pipe, L=70		
289	Clamp		
290	Clamp		
300	Shim		
312	Clamp		
324	Clamp		
348	Nut		
361	Washer		
373	Support		
385	Spring pin		
397	Screw		
407	Support		
419	Support		
432	Clamp		
456	Support		
Note : *These screws are special screws for hot joints, they are marked with a "T", and MUST NOT be used elsewhere!			

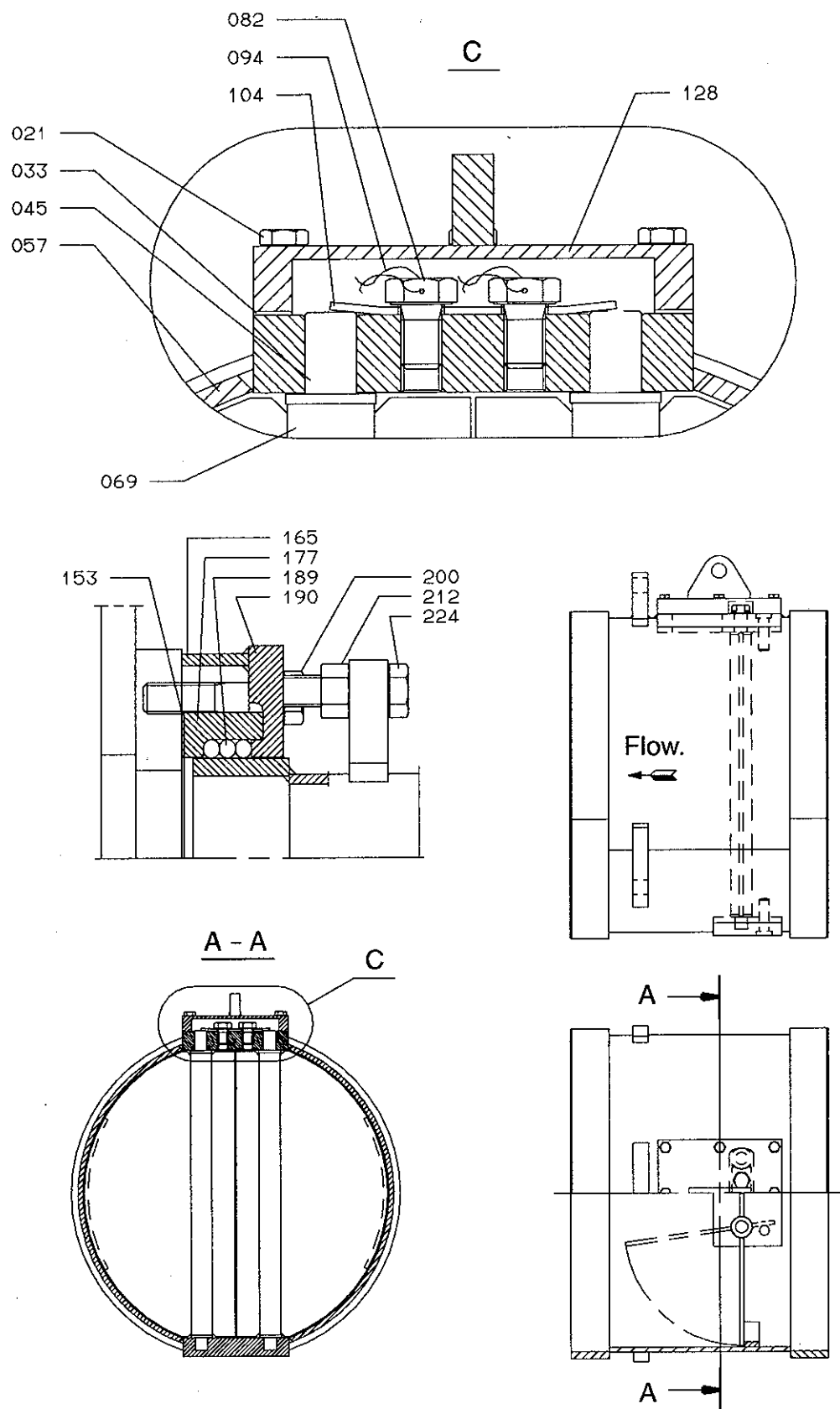


Item No.	Item Description	Item No.	Item Description
019	Nut		
020	Screw		
032	Screw		
044	Frame		
056	O-ring		
068	Frame		
093	Stud		
103	Support		
115	Support		
127	Screw		
139	Cooler insert		
140	Water mist catcher		



Arrangement of Auxiliary Blower

Item No.	Item Description
014	Packing
026	Distance pipe
038	Screw
051	Nut
075	Auxiliary blower



Item No.	Item Description	Item No.	Item Description
021	Screw		
033	Packing		
045	Shaft		
057	Valve housing		
069	Valve flap		
082	Screw		
094	Locking wire		
104	Locking device		
128	Cover		
153	Packing		
165	Pipe		
177	Disc		
189	O-ring		
190	Plate		
200	Screw		
212	Nut		
224	Screw		

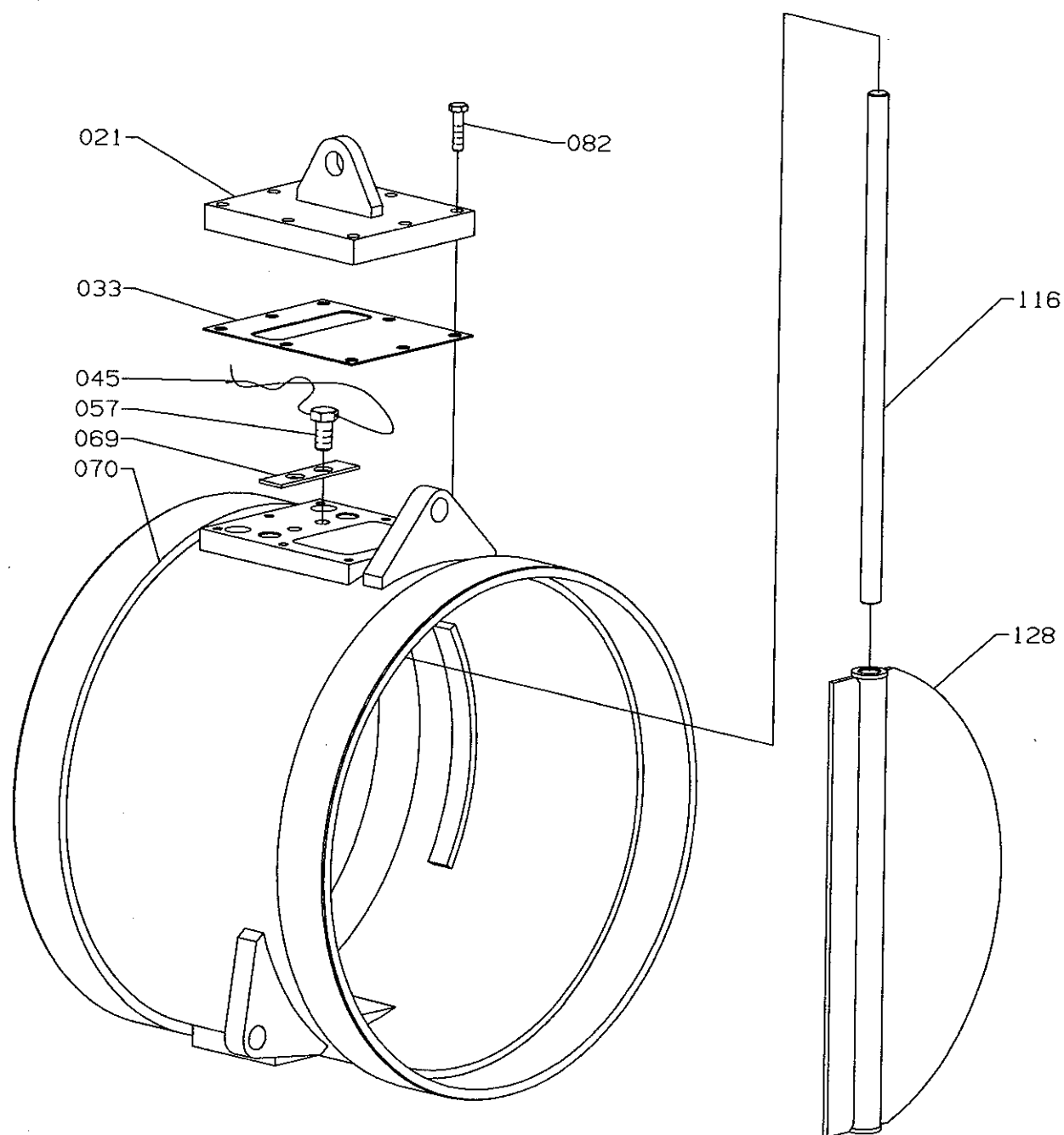
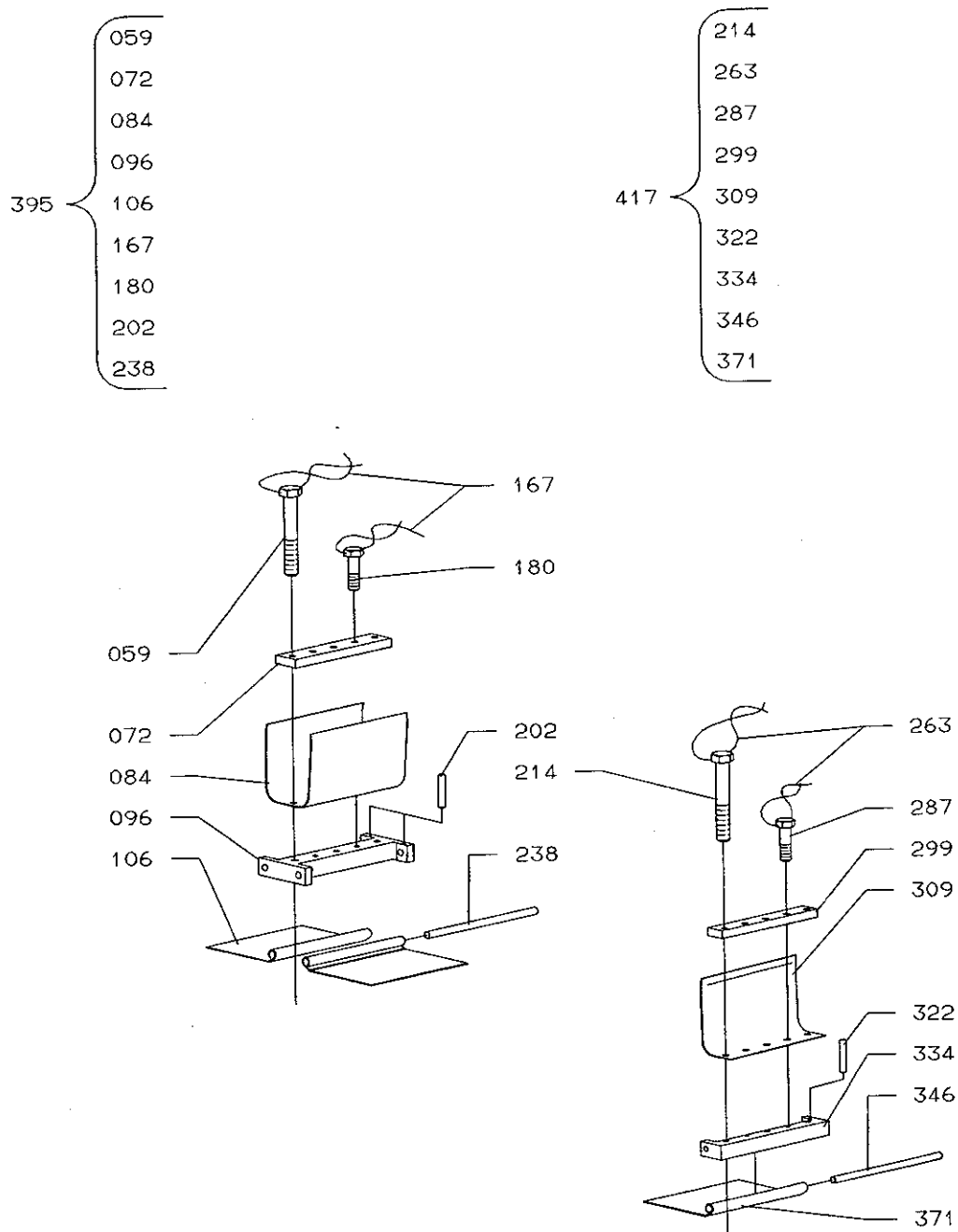


Plate 91007-0018

Butterfly Valve

Item No.	Item Description	Item No.	Item Description
021	Cover		
033	Packing		
045	Locking wire		
057	Screw		
069	Locking plate		
070	Housing		
082	Screw		
116	Shaft		
128	Flap		



Item No.	Item Description	Item No.	Item Description
059	Screw		
072	Support		
084	Clamp		
096	Support		
106	Valve flap		
167	Locking wire		
180	Screw		
202	Spring pin		
214	Screw		
238	Shaft		
263	Locking wire		
287	Screw		
299	Support		
309	Clamp		
322	Spring pin		
334	Support		
346	Shaft		
371	Valve flap		
395	Non-return valve, complete		
417	Non-return valve, complete		

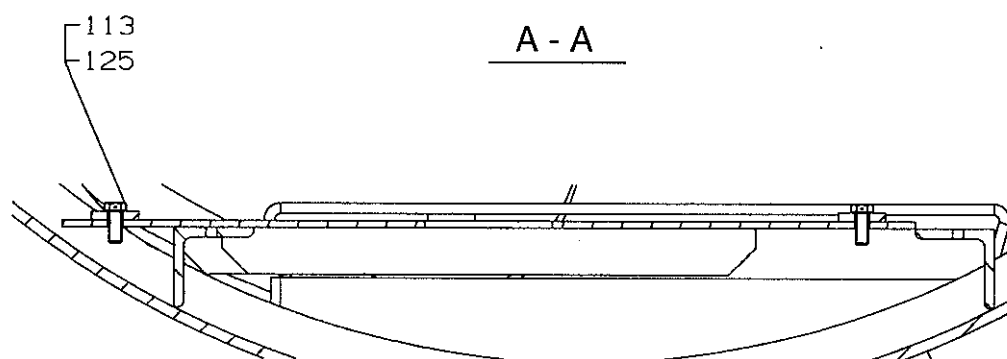
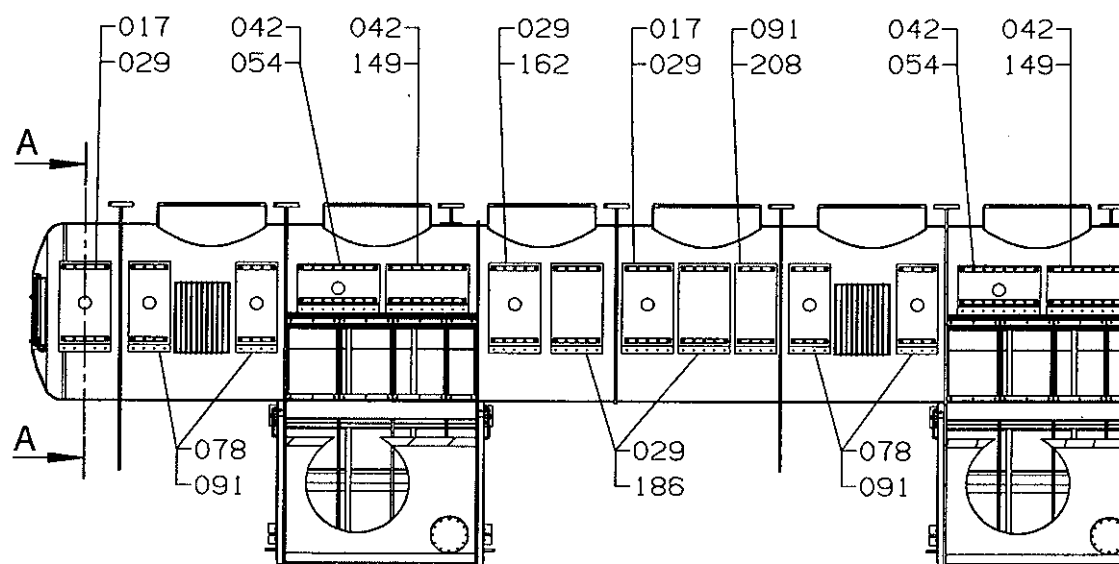
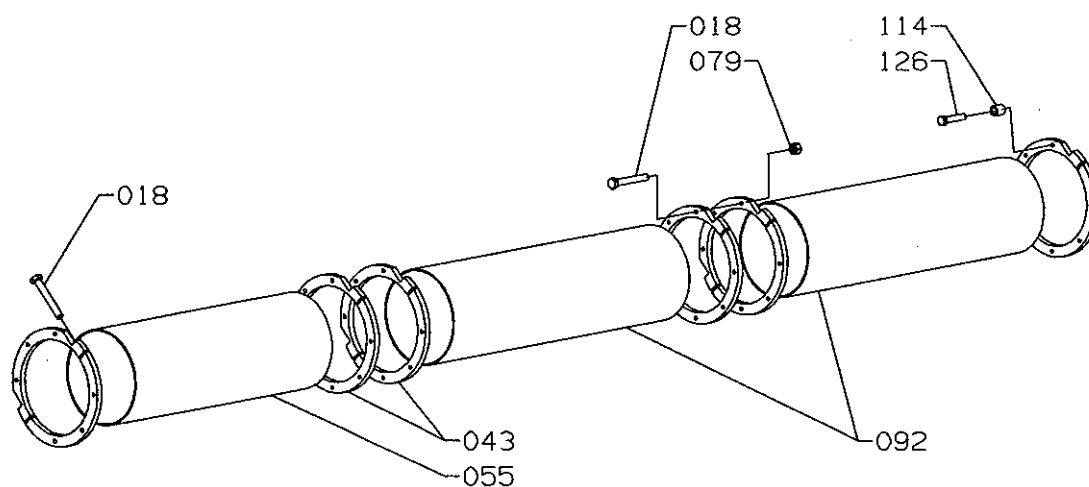
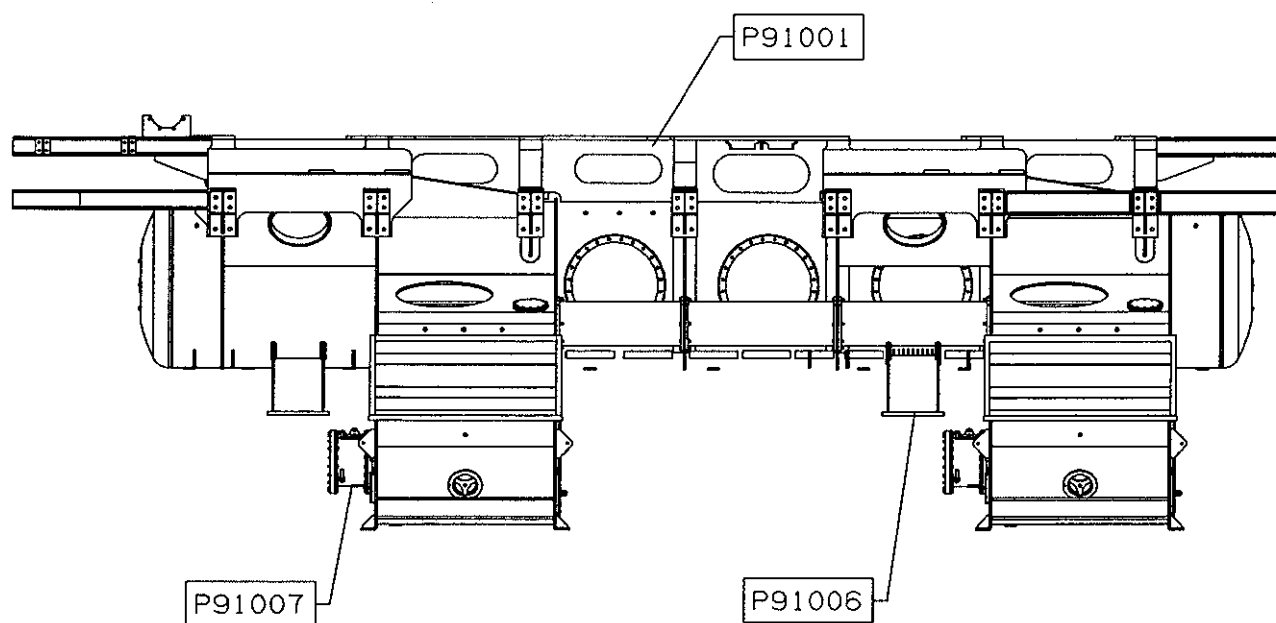


Plate 91012-0032

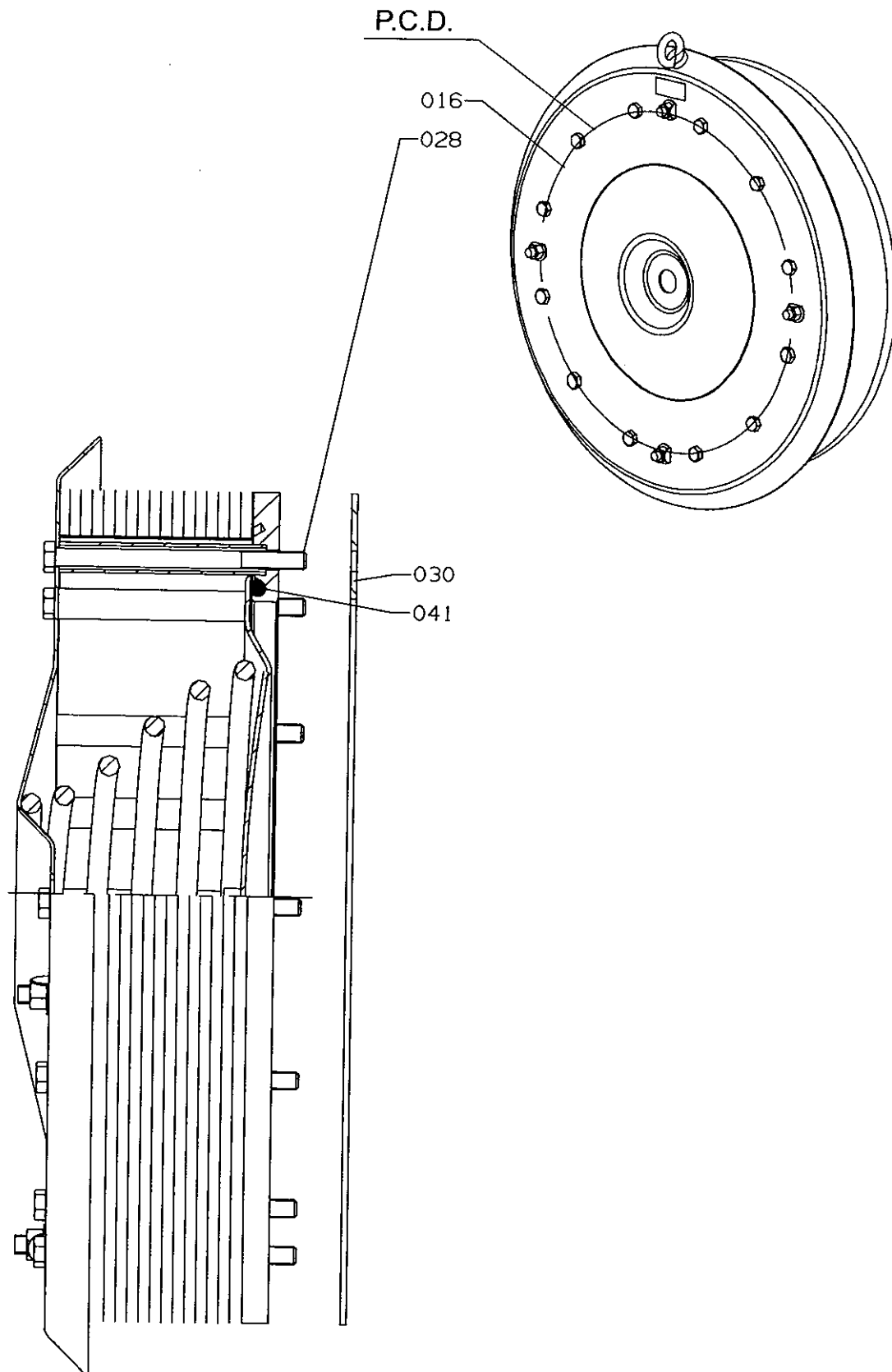
**Arrangement of Floor Plates -
Scavenge Air Receiver**

Item No.	Item Description	Item No.	Item Description
017	Platform		
029	Plate		
042	Plate		
054	Platform		
078	Platform		
091	Plate		
113	Screw		
125	Locking wire		
149	Platform		
162	Platform		
186	Platform		
208	Platform		

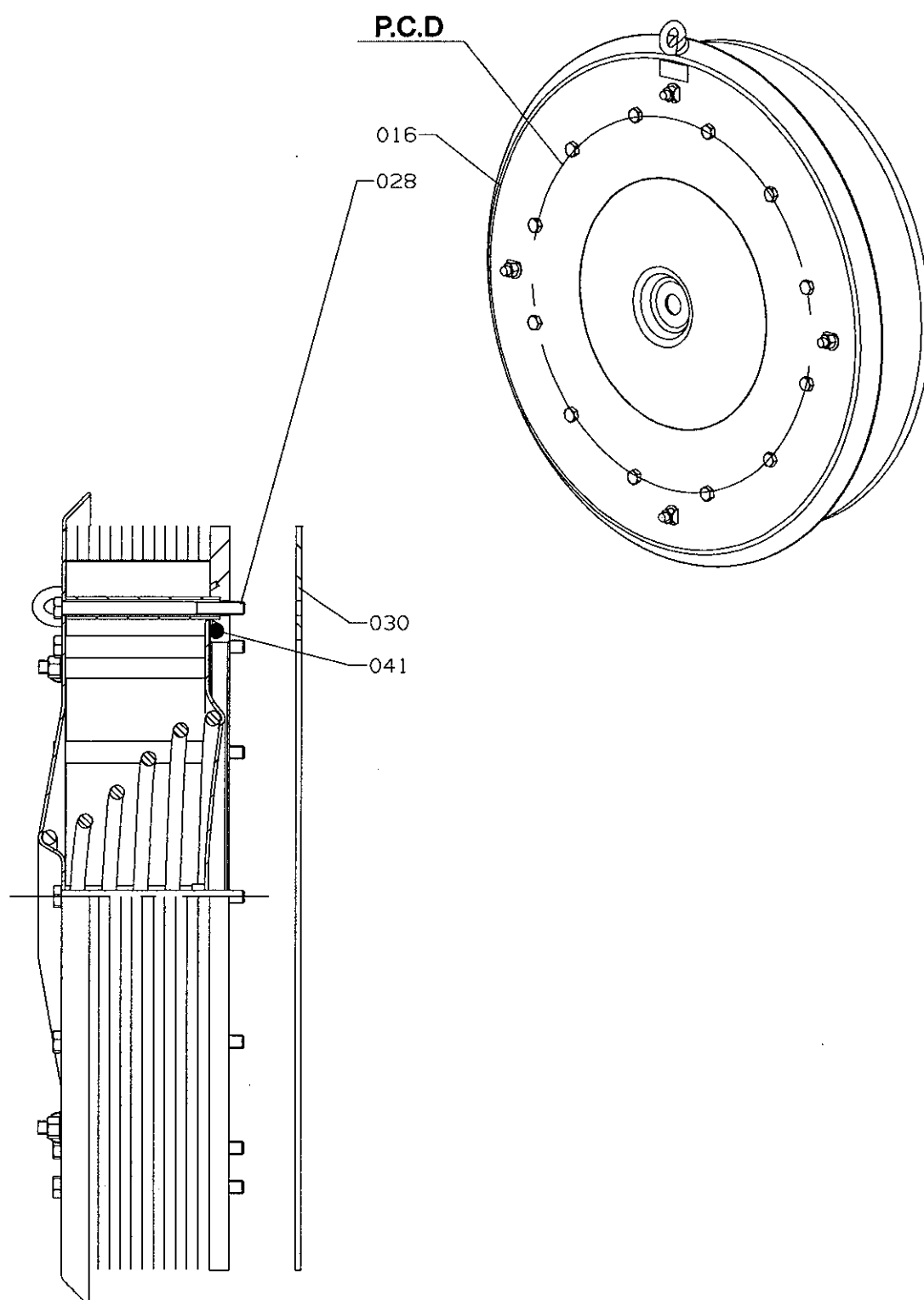


Arrangement of Suction Pipe

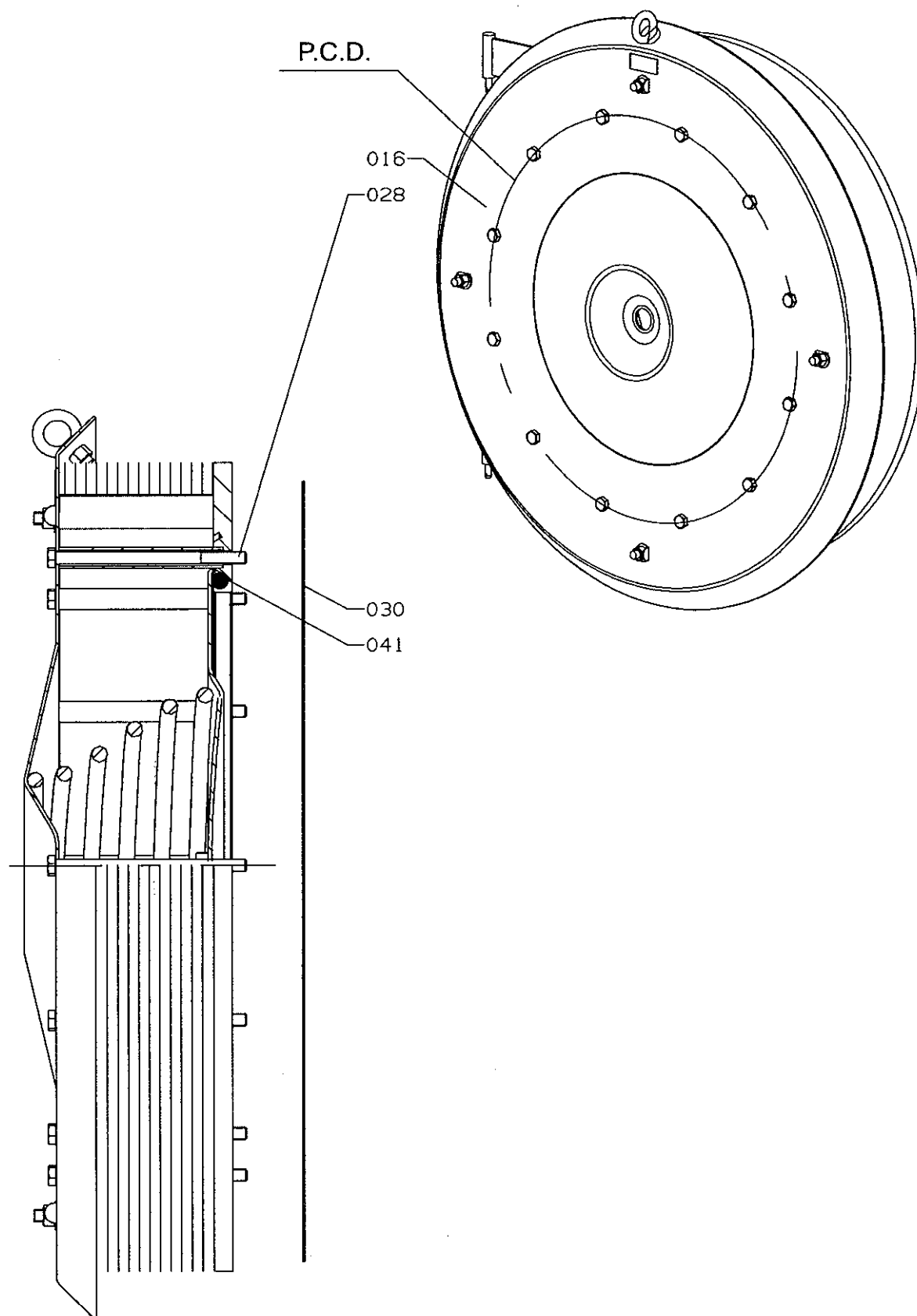
Item No.	Item Description	Item No.	Item Description
018	Screw		
043	Disc		
055	Suction pipe		
079	Nut		
092	Suction pipe		
114	Distance pipe		
126	Screw		



Item No.	Item Description	Item No.	Item Description
016	Relief valve (P.C.D. 615mm)*		
028	Screw*		
030	Packing*		
041	O-ring*		
	Note: *When ordering, please state manufacturer of Relief Valve and P.C.D. xxx mm		

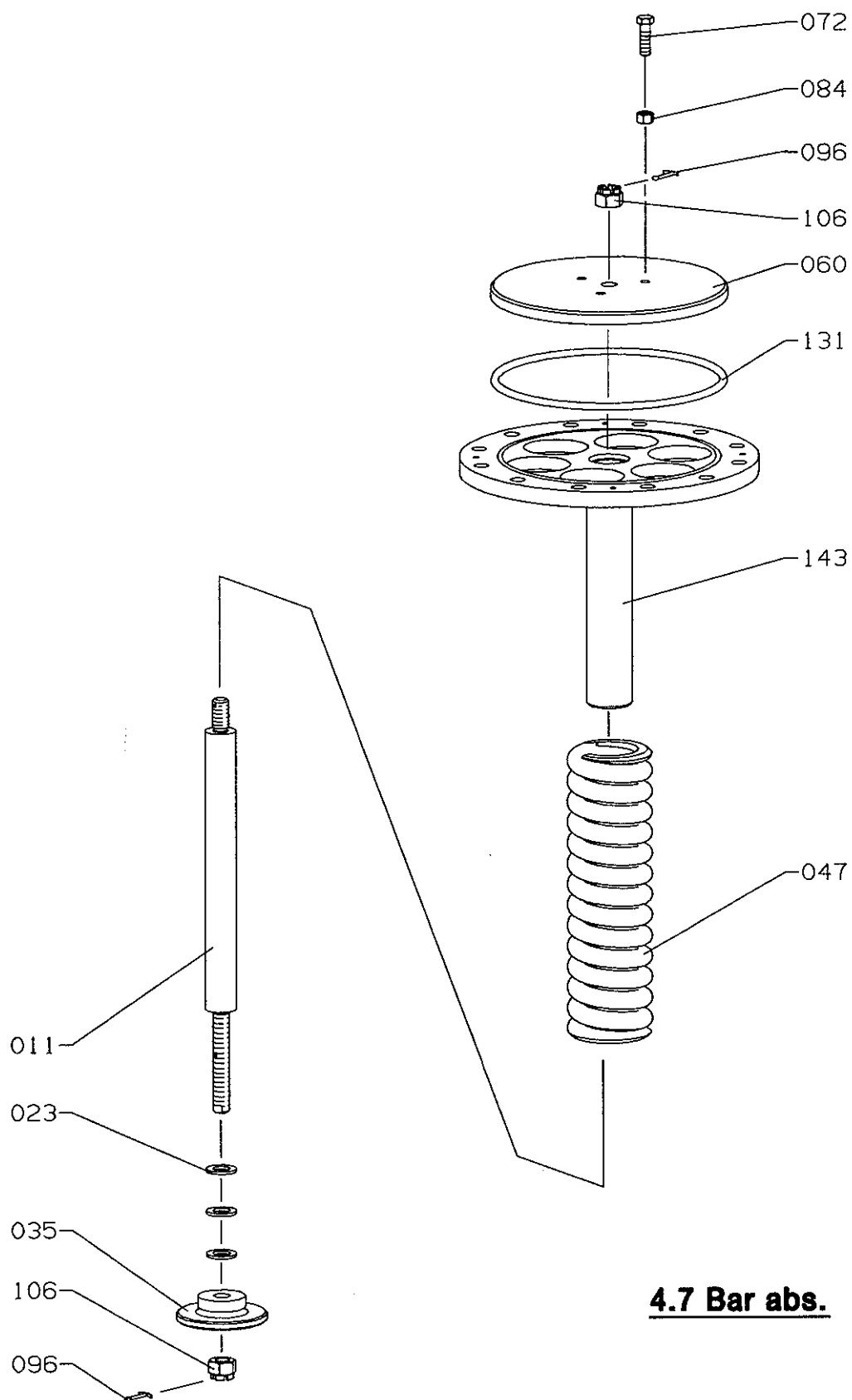


Item No.	Item Description	Item No.	Item Description
016	Relief valve (P.C.D 700 mm)		
028	Screw*		
030	Packing*		
041	O-ring*		
	Note:		
	* When ordering, please state manufacturer of Relief Valve and P.C.D. xxx mm		



Item No.	Item Description
016	Relief valve (P.C.D. 795mm)*
028	Screw*
030	Packing*
041	O-ring*
	Note: *When ordering, please state manufacturer of Relief Valve and P.C.D. xxx mm

Item No.	Item Description



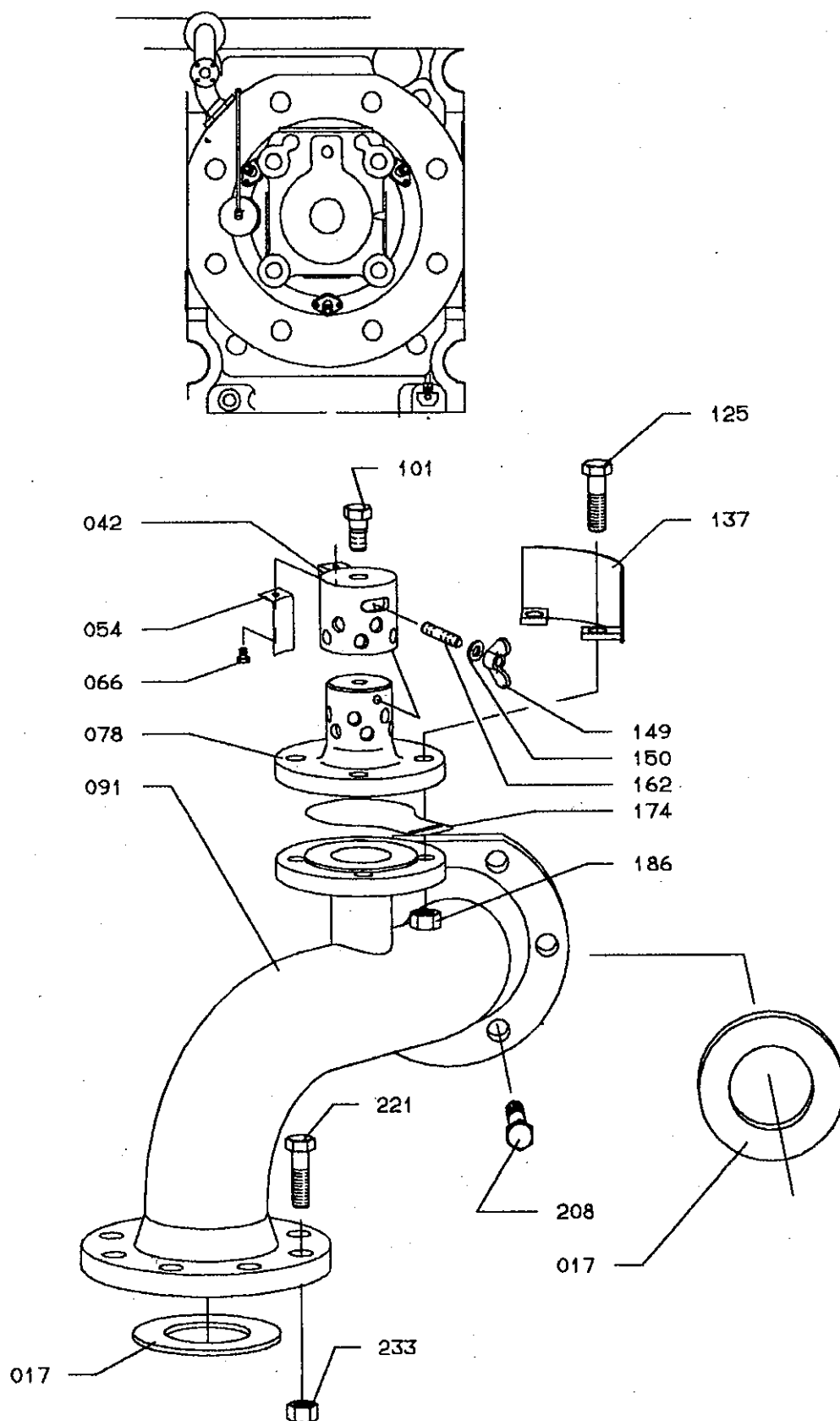
4.7 Bar abs.

Plate 91103-0015

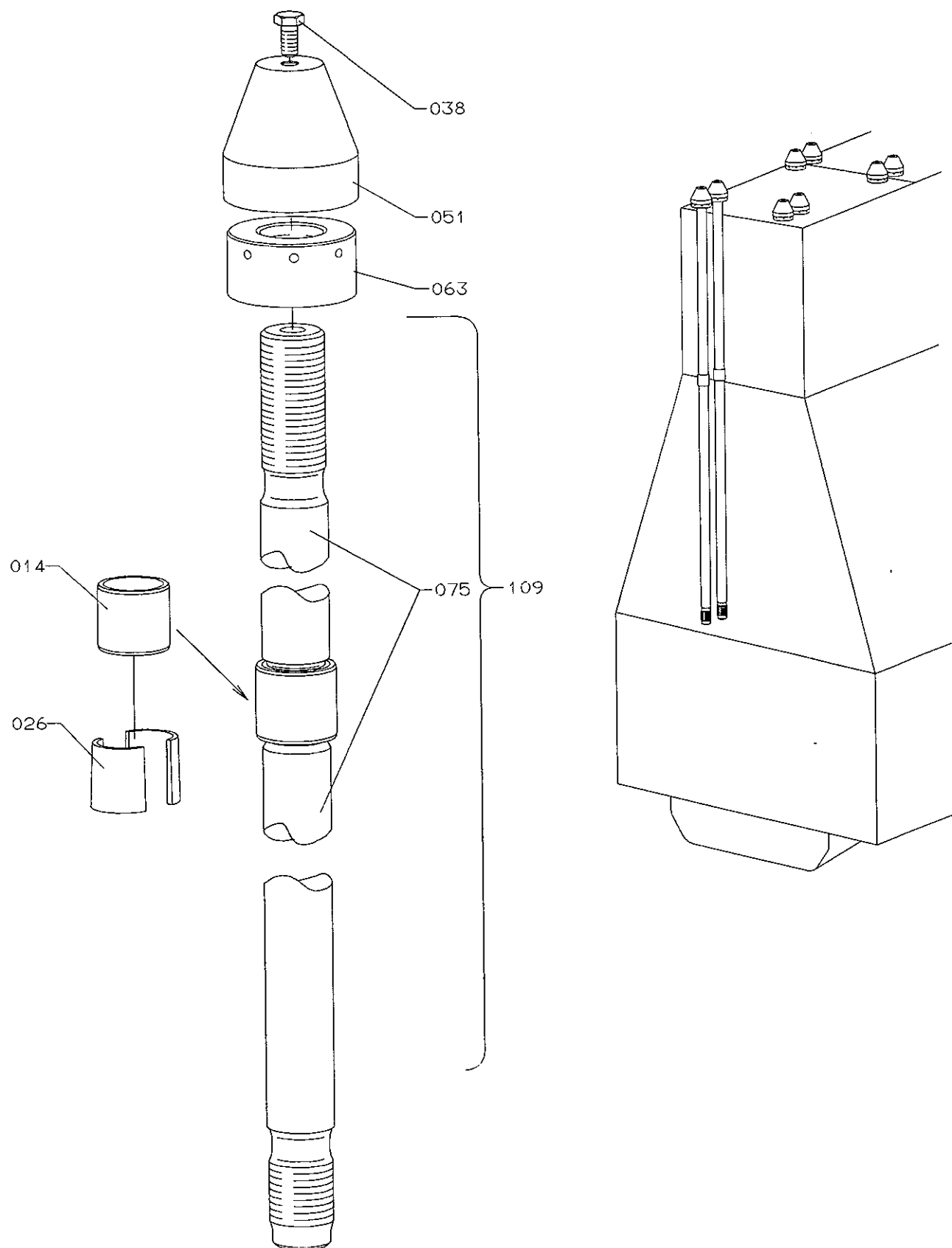
Safety Valve, Scavenge Air System

Item No.	Item Description
011	Spindle
023	Washer
035	Spring retainer
047	Spring
060	Valve flap
072	Screw
084	Nut
096	Split pin
106	Castle nut
131	Seal
143	Valve seat

Item No.	Item Description

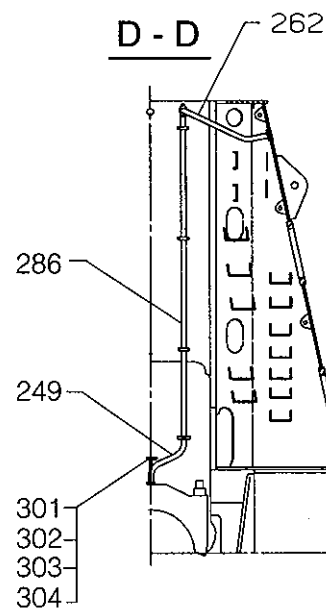
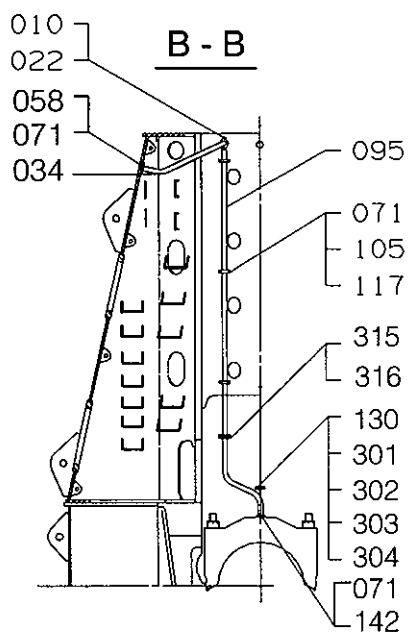
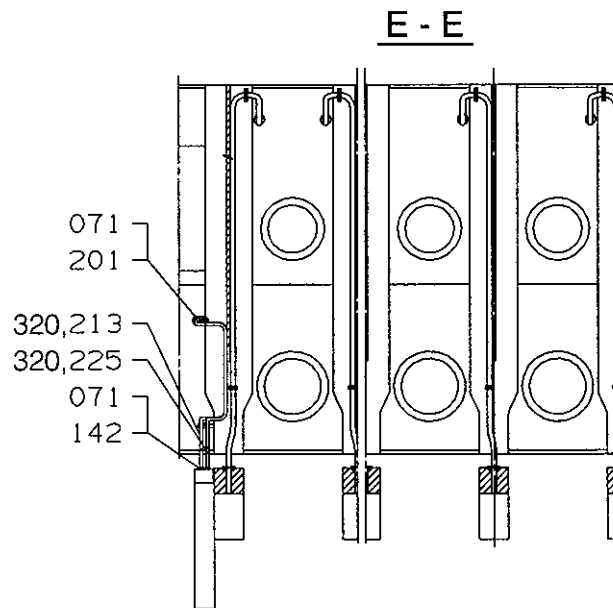
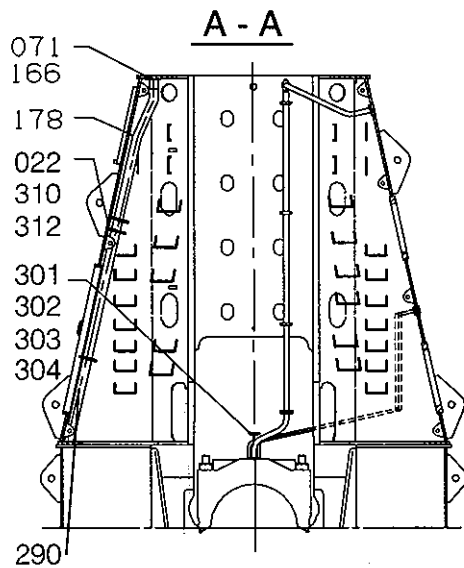
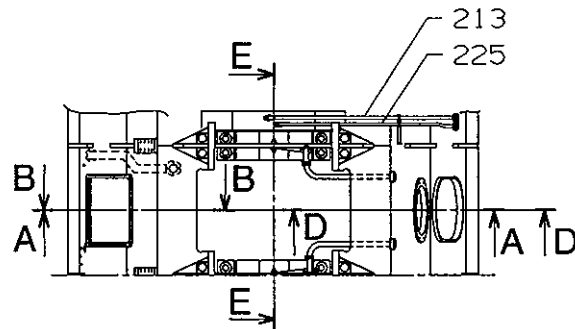


Item No.	Part Description	Item No.	Part Description
017	Gasket		
042	Bursting cap		
054	Check plate		
066	Screw		
078	Perforated cylinder		
091	Starting air pipe		
101	Fitted bolt		
125	Screw		
137	Protecting guard		
149	Wing nut		
150	Washer		
162	Stud		
174	Bursting disc		
186	Nut		
208	Screw		
221	Screw		
233	Nut		

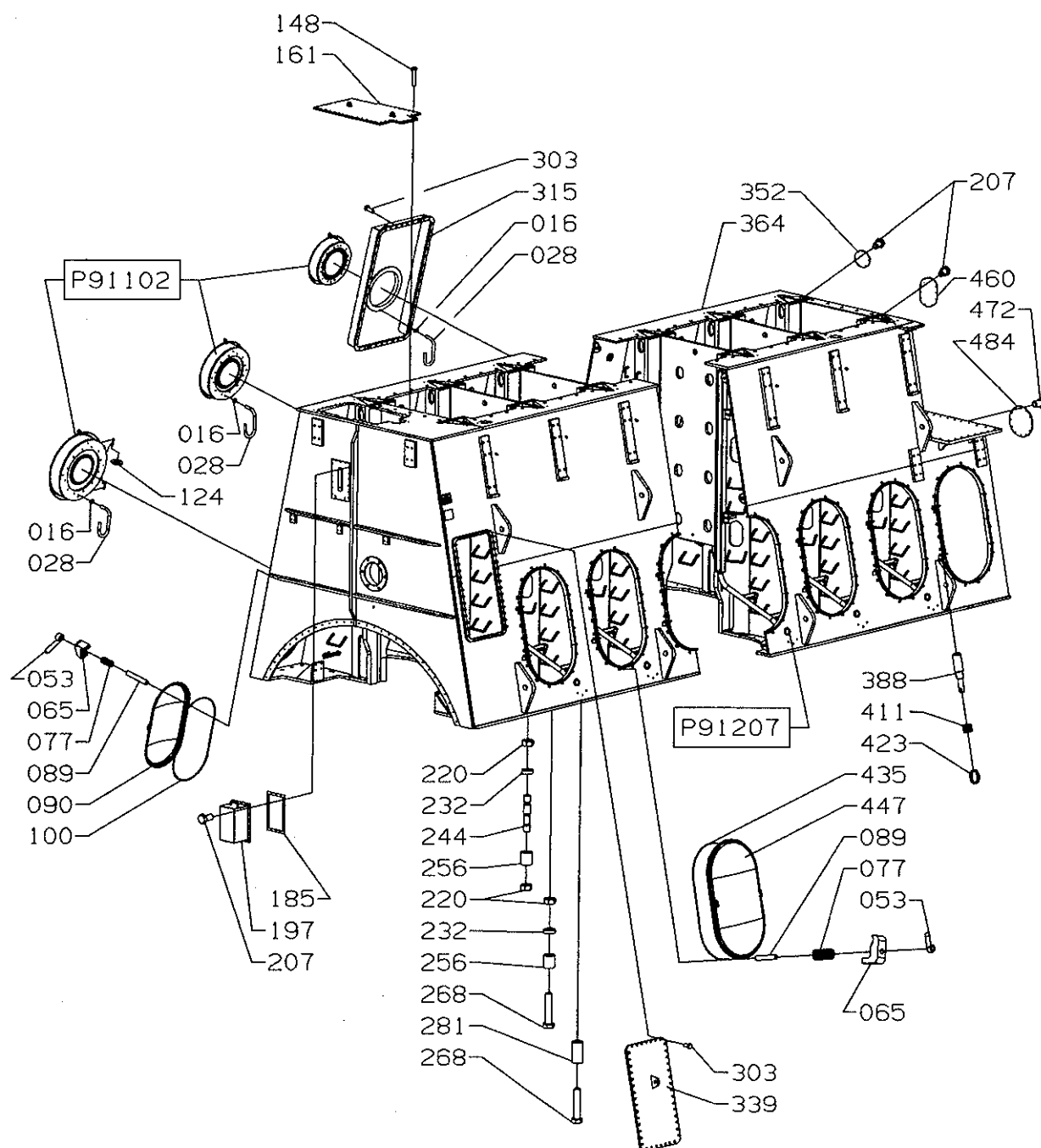


Arrangement of Stay Bolts

Item No.	Item Description	Item No.	Item Description
014	Guide bushing		
026	Guide bushing		
038	Screw		
051	Protective cap		
063	Nut		
075	Stay bolt - upper part		
109	Stay bolt, complete		



Item No.	Item Description	Item No.	Item Description
010	Screw		
022	Self-locking nut		
034	Lubricating oil pipe		
058	Screw		
071	Locking wire		
095	Lubricating oil pipe		
105	Pipe holder		
117	Screw		
142	Screw		
166	Screw		
178	Drain pipe		
201	Screw		
213	Damper, oil pipe		
225	Damper, oil pipe		
249	Lubricating oil pipe		
262	Lubricating oil pipe		
286	Lubricating oil pipe		
290	Lubricating oil pipe		
301	Screw		
302	Self-locking nut		
303	Packing		
304	Bl.flange		
310	Screw		
312	Packing		
315	Screw		
316	Self-locking nut		
320	Coupling		



Item No.	Item Description	Item No.	Item Description
016	Nut		
028	Drain pipe		
053	Wing nut		
065	Door fastener		
077	Spring		
089	Stud		
090	Frame box door		
100	Sealing ring		
124	Washer		
148	Screw		
161	Cover		
185	Gasket		
197	Cover		
207	Screw		
220	Nut		
232	Distance pipe		
244	Fitted stud		
256	Distance pipe		
268	Screw		
281	Distance pipe		
303	Screw		
315	Cover on exhaust side		
339	Cover		
352	Cover		
364	Frame box		
388	Locking pin		
411	Spring		
423	Key ring		
435	Sealing ring		
447	Frame box door		
460	Cover		
472	Screw		
484	Cover		

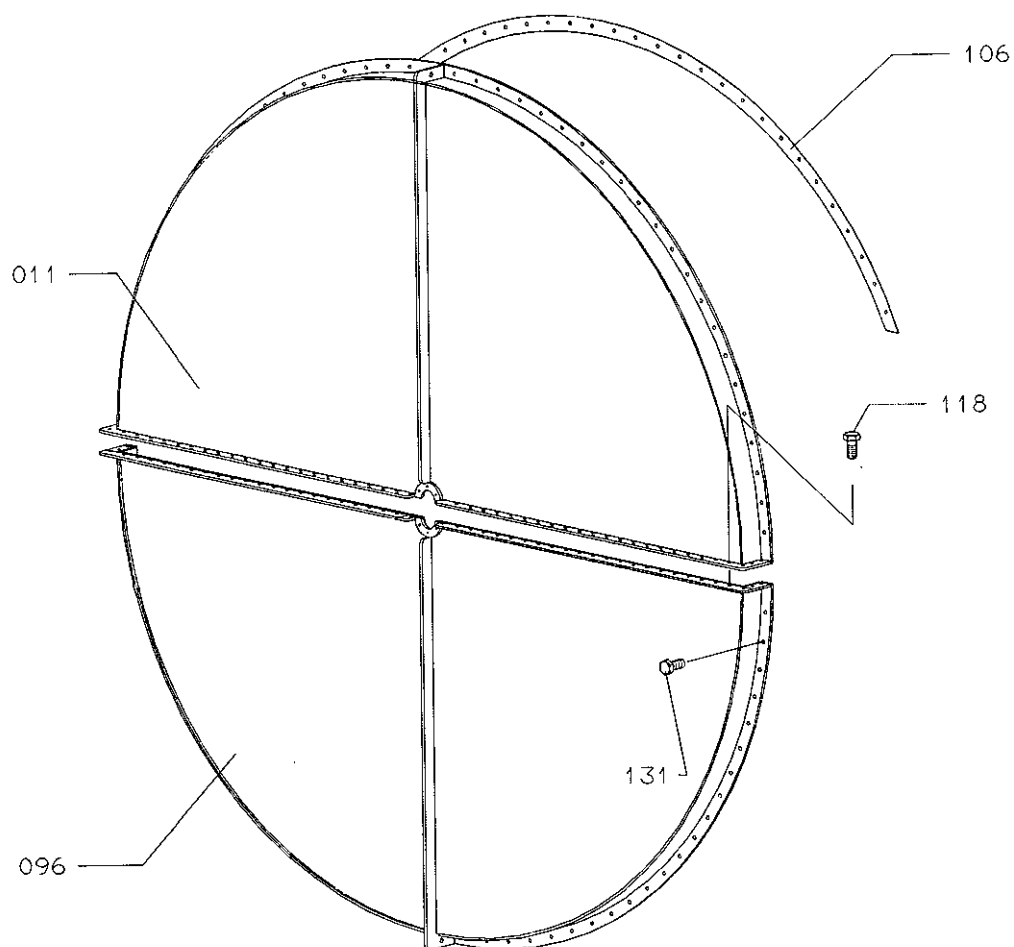
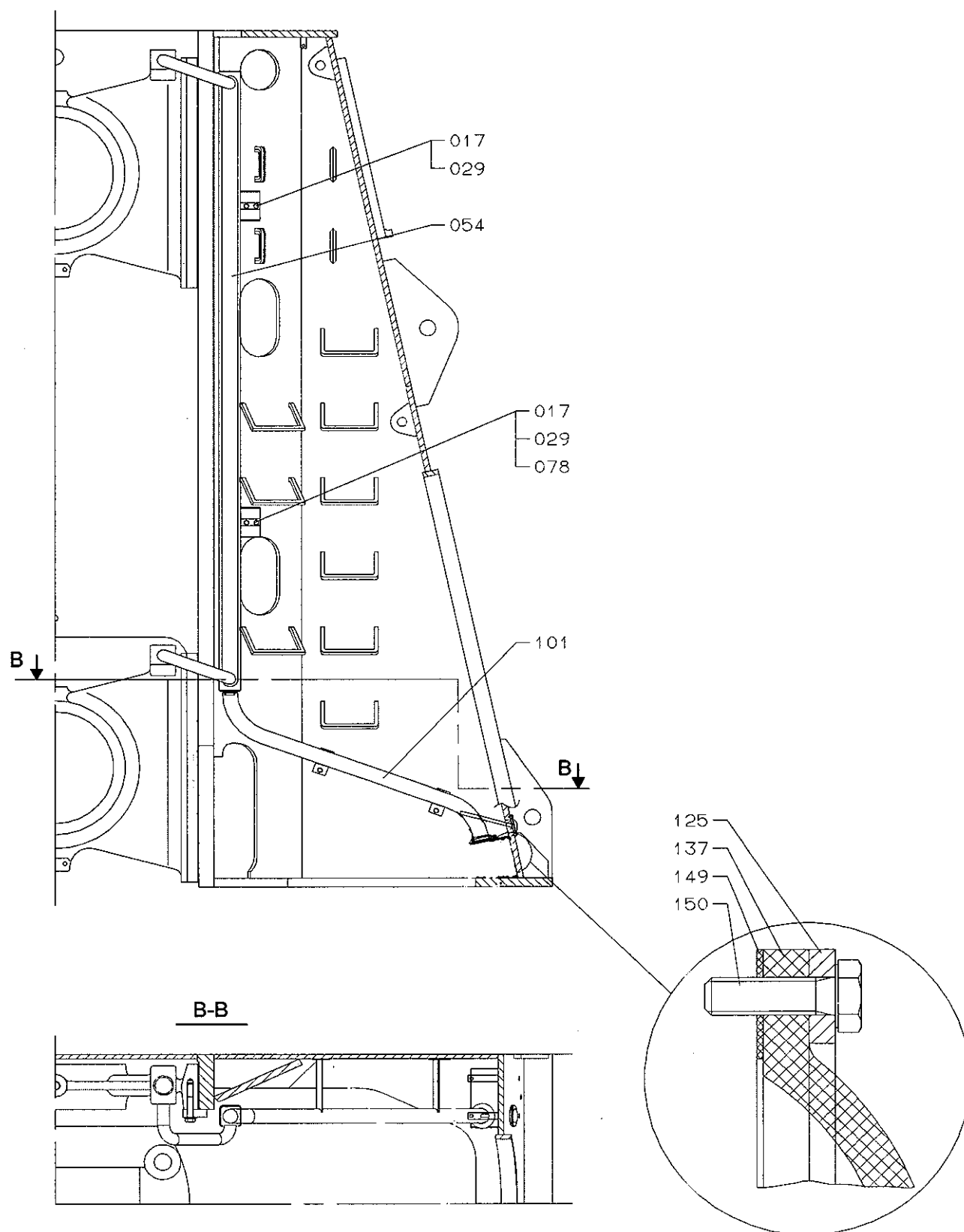


Plate 91206-0102

End Shields

Item No.	Item Description
011	Shield upper
096	Shield lower
106	Gasket
118	Screw
131	Screw

Item No.	item Description



Item No.	Item Description
054	Drain pipe
078	Washer
101	Drain pipe
125	Flange
137	Sight glass
149	Packing
150	Screw

Item No.	Item Description

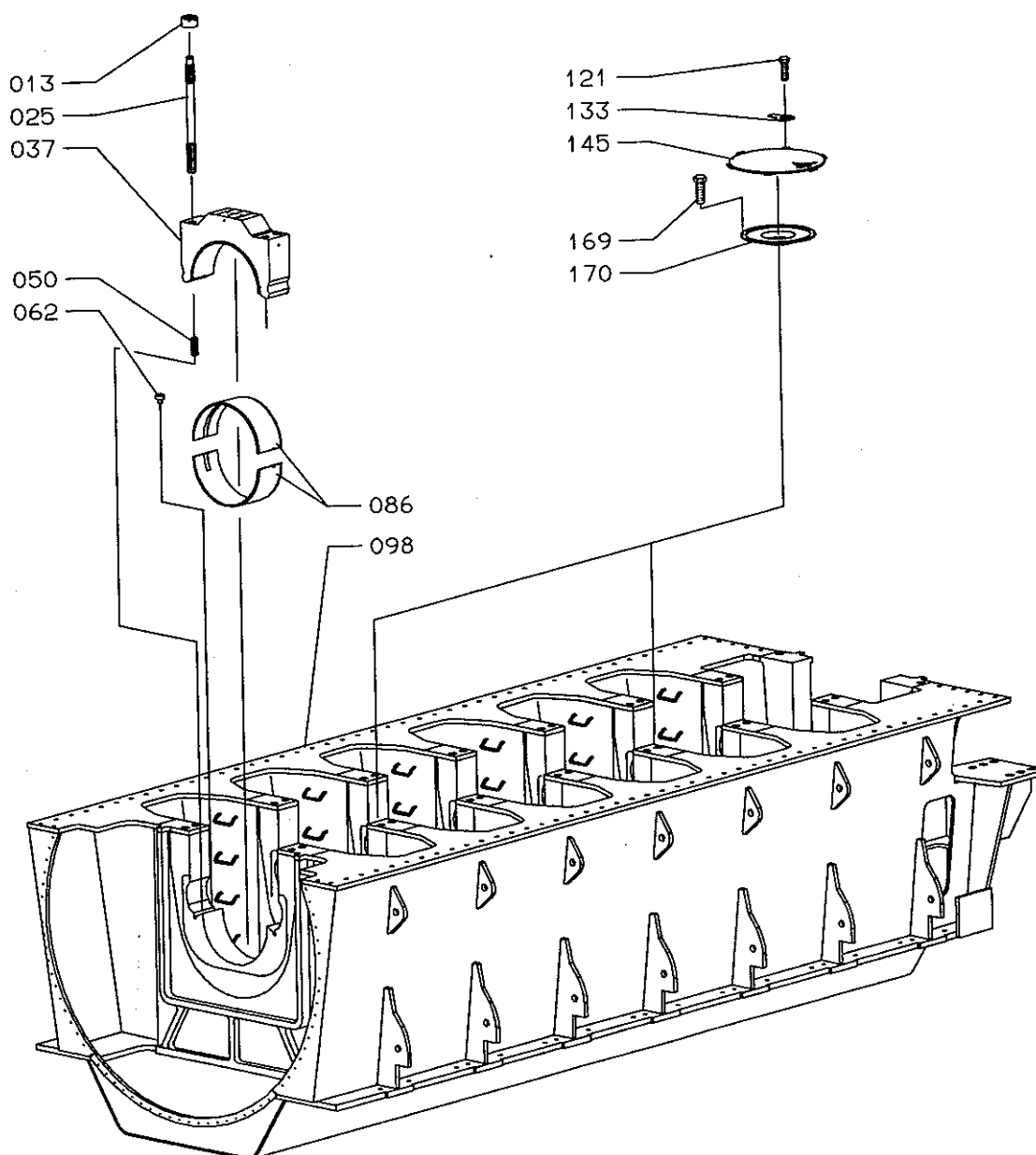
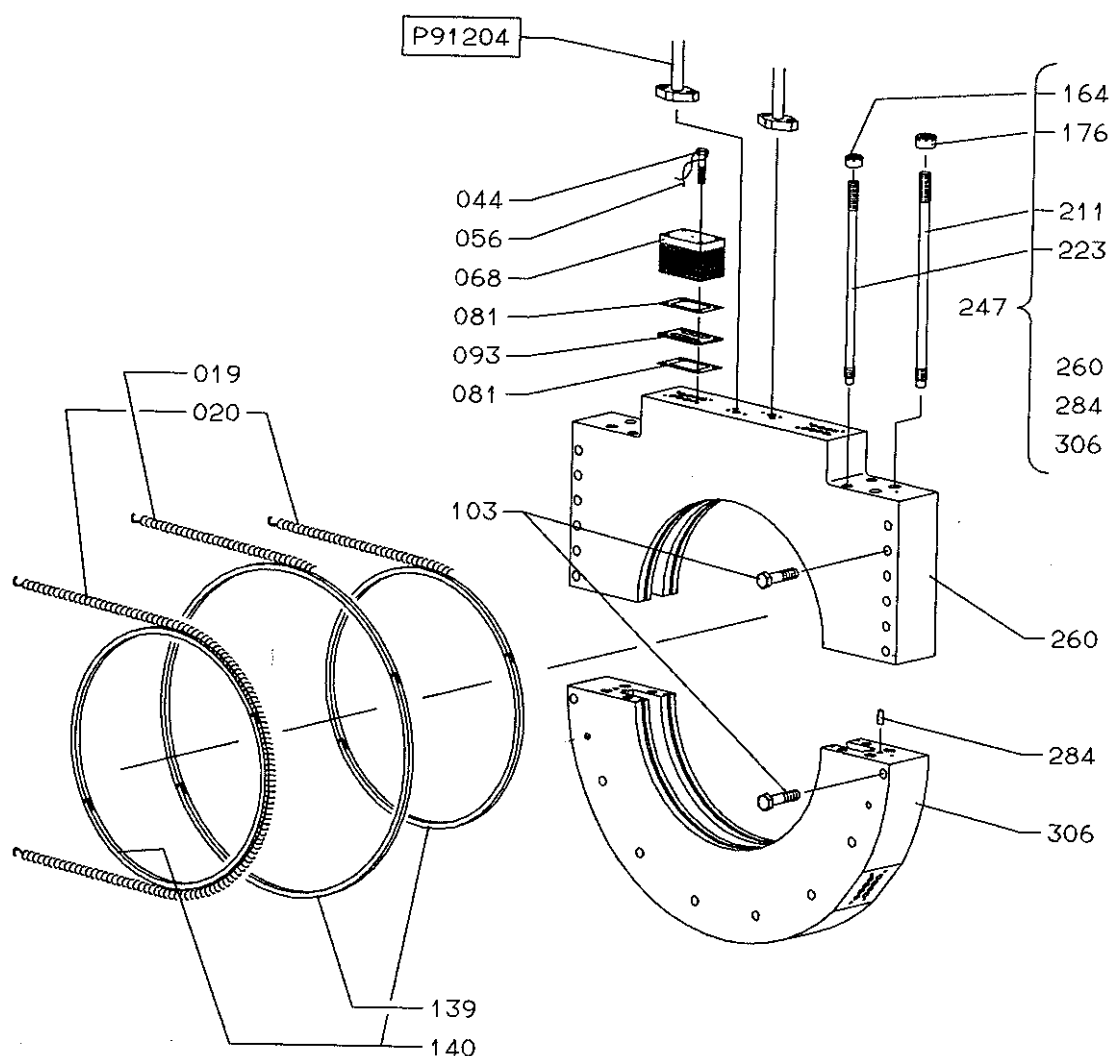


Plate 91210-0180**Bedplate**

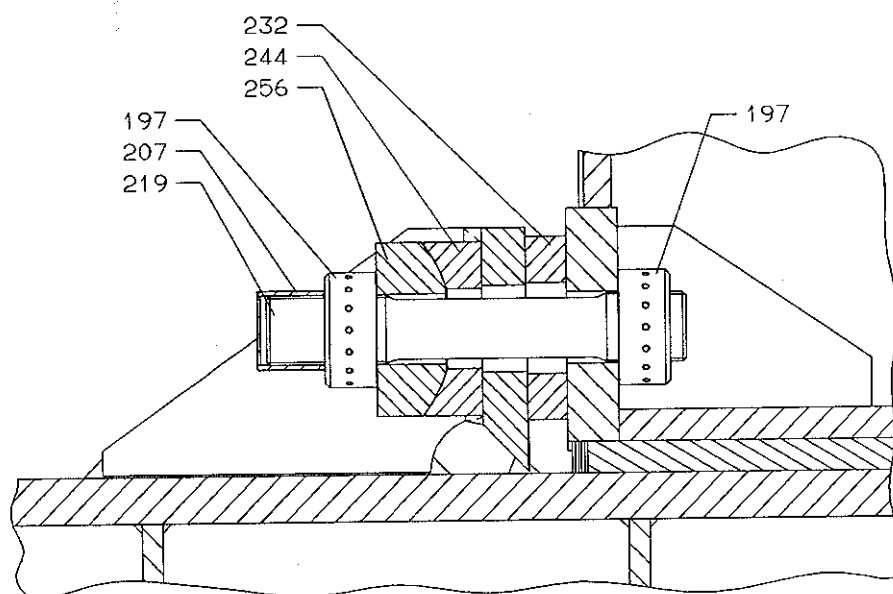
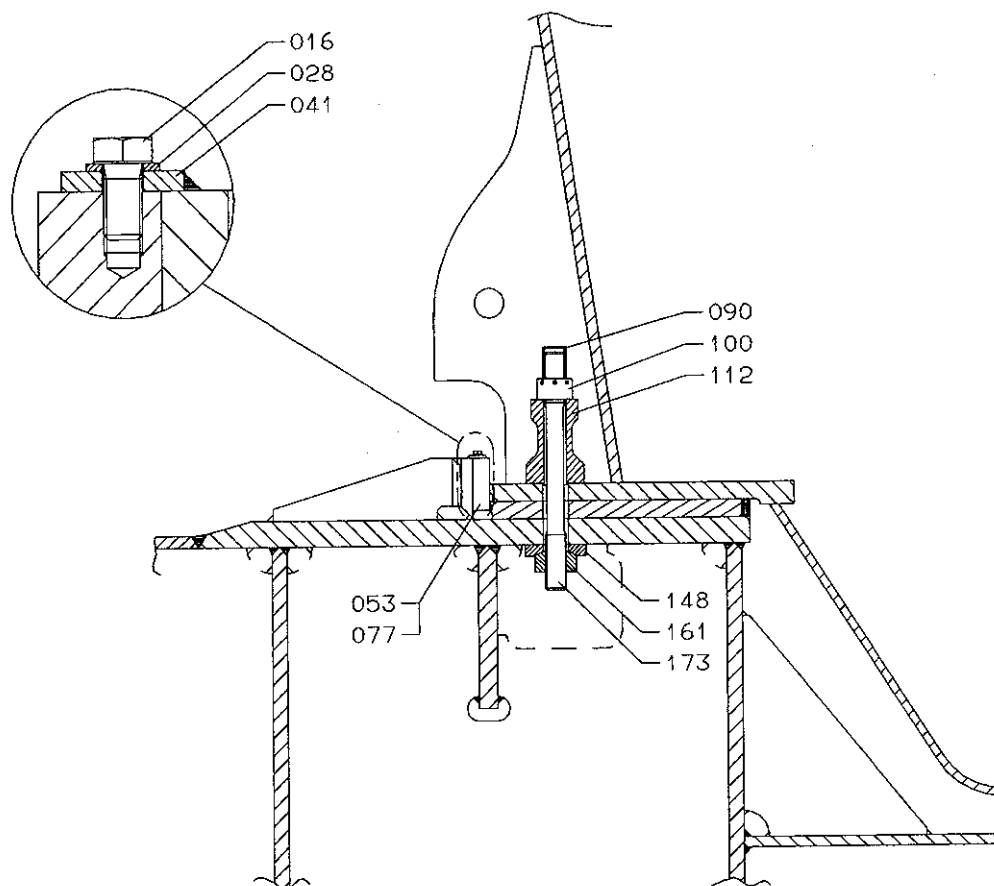
Item No.	Item Description
013	Nut
025	Stud
037	Main bearing cap
050	Spring pin
062	Screw
086	Main bearing
098	Bedplate
121	Screw
133	Locking plate
145	Cover
169	Screw
170	Grate

Item No.	Item Description



Item No.	Item Description
019	Spring
020	Spring
044	Screw
056	Locking wire
068	Restriction for damper
081	Restriction for damper
093	Restriction for damper
103	Screw
139	Oil seal in 2/2
140	Oil seal in 2/2
164	Nut
176	Nut
211	Stud
223	Stud
247	Axial vibration damper, complete
260	Damper, upper part
284	Guide pin
306	Damper, lower part

Item No.	Item Description



**Plate 91216-0014 Holding-Down Bolts and End-Chock Bolts
(Epoxy Chocks)**

Item No.	Item Description	Item No.	Item Description
016	Screw		
028	Washer		
041	Locking plate		
053	Liner, port side		
077	Liner, starboard side		
090	Protective cap		
100	Nut		
112	Distance pipe		
148	Spherical washer		
161	Spherical nut		
173	Holding-down bolt		
197	Nut		
207	Protective cap		
219	End chock bolt		
232	Liner for end chock		
244	Spherical washer		
256	Spherical washer		