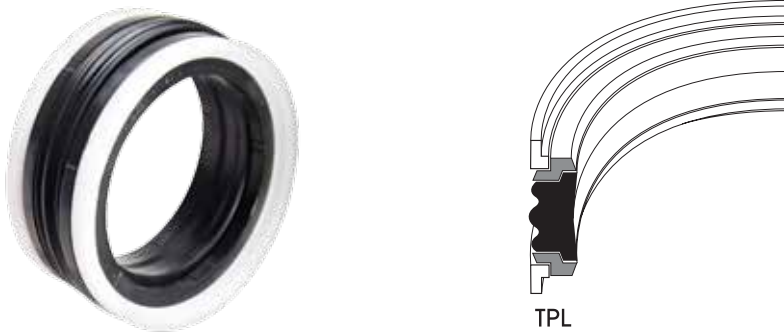


## Piston Seals (Double Acting)

TPL

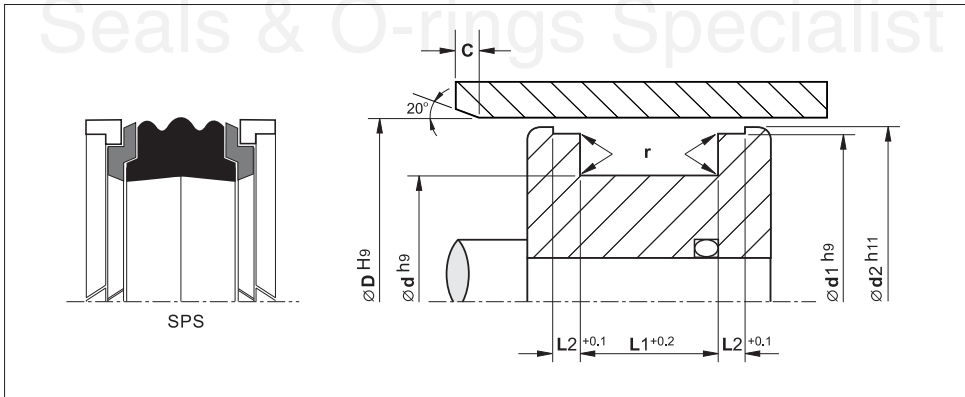
(Metric Size)



Material	Pressure (Bar)	Temp. (°c)	Speed (m/s)
NBR-Polyester-POM	350	-30 +120	0.5

- Good sealing effect, also suitable for holding cylinders.
- Capable of installation in closed grooves.
- Economic and efficient sealing solution.
- Simple snap installation.
- High resistance to gap extrusion.

### Installation Recommendation



Surface roughness	Ra	Rt	Chamfers	
Sliding surface	≤ 0.3 μm	≤ 4 μm	D	C
Surface of housing	≤ 1.8 μm	≤ 10 μm	< 60	4.0
Sides of housing	≤ 3.0 μm	≤ 16 μm	60-120	5.0
			120-180	6.5
			180-250	7.5
			250-320	10.0

# Compact Seal

(Metric Size)

Bore Dia.	Groove Dimensions						Reference	Reference	Reference	
	D	d	L1	L2	d1	d2				r max
20.00	11.00	13.50	2.10	17.00	19.00	0.40	KGD 020-011	DAS 020-011	TPL 020-011	
22.00	13.00	13.50	2.10	19.00	21.00	0.40		DAS 022-013	TPL 022-013	
25.00	15.00	12.50	4.00	21.00	23.00	0.40		DAS 025-015/1		
25.00	15.00	12.50	4.00	22.00	24.00	0.40		DAS 025-015/2	TPM 098-059/S-ISO	
25.00	15.00	16.40	6.35	21.45	23.50	0.40		KGD 025-015	DAS 025-015	TPM 098-059
25.00	16.00	13.50	2.10	22.00	24.00	0.40	KGD 025-016	DAS 025-016	TPL 025-016	
25.00	17.00	8.00	4.00	22.10	24.00	0.40			H53-2249212	
25.00	17.00	10.00	4.00	22.00	24.00	0.40			TPM 098-066-ISO	
25.00	17.00	13.50	3.20	21.00	24.40	0.40			TPS/G 025-017	
25.00	17.50	8.80	3.10	21.30	24.00	0.40			SPS 098-068	
28.00	19.00	13.50	2.10	25.00	27.00	0.40	KGD 030-017 KGD 030-021	DAS 028-019	TPL 028-019	
30.00	17.00	15.40	6.35	26.50	28.50	0.40				
30.00	21.00	13.50	2.10	27.00	29.00	0.40		DAS 030-021	TPL 030-021	
30.00	22.00	13.50	3.20	26.00	29.40	0.40			TPS/G 030-022	
32.00	22.00	10.00	5.00	28.50	31.00	0.40			H53-2249312	
32.00	22.00	11.00	4.00	27.50	31.00	0.40	KGD 032-022/A KGD 032-022	DAS 032-022/1 DAS 032-022	H65-2218110	
32.00	22.00	12.50	4.00	29.00	31.00	0.40				TPM 125-086-ISO
32.00	22.00	15.50	2.60	28.00	31.00	0.40				TPL 032-022
32.00	22.00	16.40	6.35	28.50	30.50	0.40				TPM 125-086
32.00	24.00	10.00	4.00	29.00	31.00	0.40				TPM 125-094-ISO
32.00	24.00	15.50	3.20	28.00	31.40	0.40	KGD 032-024	DAS 032-024	TPS/G 032-024	
35.00	25.00	15.50	2.60	31.00	34.00	0.40	KGD 035-025/A	DAS 035-025/1	TPL 035-025	
35.00	25.00	16.40	6.35	31.40	33.50	0.40	KGD 035-025	DAS 035-025	TPM 137-098	
35.00	27.00	15.50	3.20	31.00	34.40	0.40			TPS/G 035-027	
36.00	26.00	15.50	2.60	32.00	35.00	0.40			TPL 036-026	
40.00	24.00	18.40	6.35	35.40	38.50	0.40	KGD 040-024	DAS 040-024	TPM 157-094	
40.00	26.00	15.50	2.60	36.00	39.00	0.40	KGD 040-026	DAS 040-026	TPL 040-026	
40.00	30.00	10.00	5.00	36.50	39.00	0.40			H53-2249412	
40.00	30.00	11.30	4.00	35.40	38.00	0.40			TPM 157-118/1D	
40.00	30.00	12.50	4.00	36.00	38.00	0.40	KGD 040-030/A	DAS 040-030/1		
40.00	30.00	12.50	4.00	37.00	39.00	0.40	KGD 040-030/B	DAS 040-030/2	TPM 157-118/S-ISO	
40.00	30.00	16.40	6.35	35.40	38.50	0.40	KGD 040-030	DAS 040-030	TPM 157-118	
40.00	32.00	10.00	4.00	37.00	39.00	0.40			TPM 157-125-ISO	
40.00	32.00	15.50	3.20	36.00	39.40	0.40	KGD 040-032	DAS 040-032	TPS/G 040-032	
42.00	28.00	15.50	2.60	38.00	41.00	0.40		DAS 042-028	TPL 042-028	
45.00	29.00	18.40	6.35	40.40	43.70	0.40		DAS 045-029	TPM 177-114	
45.00	31.00	15.50	2.60	41.00	44.00	0.40	KGD 045-031	DAS 045-031	TPL 045-031	
45.00	35.00	16.40	6.35	40.40	43.50	0.40	KGD 045-035	DAS 045-035	TPM 177-137	
45.00	37.00	15.50	3.20	41.00	44.40	0.40			TPS/G 045-037	
50.00	34.00	18.40	6.35	45.40	48.50	0.40	KGD 050-034	DAS 050-034	TPM 196-133	

\* For order processing, the computer code will be  
e.g. CS 020-011 KGD, CS 020-011 DAS, CS 020-011 TPL

## (Metric Size)

Bore Dia.	Groove Dimensions						Reference	Reference	Reference
	D	d	L1	L2	d1	d2			
50.00	34.00	20.50	3.10	46.00	49.00	0.40	KGD 050-034/A	DAS 050-034/1	TPL 050-034
50.00	35.00	20.00	5.00	46.00	48.50	0.40			TPM 196-137/SK-ISO
50.00	38.00	20.50	4.20	46.00	49.40	0.40	KGD 050-038	DAS 050-038	TPS/G 050-038
50.00	40.00	11.30	4.00	45.40	49.00	0.40			TPM 196-157
50.00	40.00	12.50	4.00	47.00	49.00	0.40			TPM 196-157-ISO
55.00	39.00	18.40	6.35	50.36	53.50	0.40	KGD 055-039	DAS 055-039	TPM 216-153
55.00	39.00	20.50	3.10	51.00	54.00	0.40	KGD 055-039/A	DAS 055-039/1	TPL 055-039
55.00	43.00	20.50	4.20	51.00	54.40	0.40			TPS/G 055-043
55.00	45.00	11.30	4.00	50.50	54.00	0.40			SPS 216-177
55.00	45.00	12.50	4.00	52.00	54.00	0.40			TPM 216-177-ISO
56.00	40.00	20.50	3.10	52.00	55.00	0.40		DAS 056-040	TPL 056-040
60.00	44.00	18.40	6.35	55.40	58.50	0.40	KGD 060-044	DAS 060-044	TPM 236-173
60.00	44.00	20.50	3.10	56.00	59.00	0.40	KGD 060-044/A	DAS 060-044/1	TPL 060-044
60.00	45.00	23.00	-	-	-	0.40			MHM 236-177 P
60.00	48.00	20.50	4.20	56.00	59.40	0.40	KGD 060-048	DAS 060-048	TPS/G 060-048
63.00	47.00	18.40	6.35	58.40	61.50	0.40	KGD 063-047	DAS 063-047	TPM 248-185
63.00	47.00	19.40	6.35	58.40	61.50	0.40	KGD 063-047/B	DAS 063-047/2	TPM 248-185/2S
63.00	47.00	20.50	3.10	59.00	62.00	0.40	KGD 063-047/A	DAS 063-047/1	TPL 063-047
63.00	48.00	20.00	5.00	59.00	61.50	0.40			TPM 248-188-ISO
63.00	51.00	20.50	4.20	59.00	62.40	0.40	KGD 063-051	DAS 063-051	TPS/G 063-051
63.00	53.00	11.40	4.00	58.50	61.50	0.40			SPS 248-208
63.00	53.00	12.50	4.00	60.00	62.00	0.40			TPM 248-208-ISO
65.00	49.00	20.50	3.10	61.00	64.00	0.40	KGD 065-049	DAS 065-049	TPL 065-049
65.00	50.00	18.40	6.35	60.40	63.50	0.40	KGD 065-050	DAS 065-050	TPM 255-196
65.00	53.00	20.50	4.20	61.00	64.40	0.40			TPS/G 065-053
70.00	50.00	22.00	10.00	64.00	68.00	0.40			H53-0075112
70.00	50.00	22.40	6.35	64.20	68.30	0.40	KGD 070-050	DAS 070-050	TPM 275-196
70.00	54.00	20.50	3.10	66.00	69.00	0.40	KGD 070-054	DAS 070-054	TPL 070-054
70.00	55.00	20.00	5.00	66.00	69.00	0.40			TPM 275-216-ISO
70.00	55.00	23.00	-	-	-	0.40			MHM 275-216 P
70.00	58.00	20.50	4.20	66.00	69.40	0.40	KGD 070-058	DAS 070-058	TPS/G 070-058
75.00	55.00	22.00	10.00	69.00	73.00	0.40			H53-0075612
75.00	55.00	22.40	6.35	69.20	73.30	0.40	KGD 075-055	DAS 075-055	TPM 295-216
75.00	59.00	20.50	3.10	71.00	74.00	0.40		DAS 075-059	TPL 075-059
75.00	63.00	20.50	4.20	71.00	74.40	0.40			TPS/G 075-063
80.00	60.00	22.40	6.35	74.15	78.30	0.40	KGD 080-060	DAS 080-060	TPM 314-236
80.00	60.00	25.00	6.30	75.00	78.00	0.40			TPM 314-236-ISO
80.00	62.00	22.50	3.60	76.00	79.00	0.40	KGD 080-062	DAS 080-062	TPL 080-062
80.00	65.00	20.00	5.00	76.00	78.50	0.40			TPM 314-255-ISO
80.00	65.00	23.00	-	-	-	0.40			MHM 314-255 P

\* For order processing, the computer code will be  
e.g. CS 020-011 KGD, CS 020-011 DAS, CS 020-011 TPL

# Compact Seal



(Metric Size)

Bore Dia.	Groove Dimensions						Reference	Reference	Reference
	D	d	L1	L2	d1	d2			
80.00	66.00	22.50	5.20	76.00	79.40	0.40	KGD 080-066	DAS 080-066	TPS/G 080-066
80.00	70.00	11.30	4.00	75.50	78.50	0.40			SPS 314-275
85.00	65.00	22.40	6.35	79.15	83.30	0.40	KGD 085-065	DAS 085-065	TPM 334-255
90.00	70.00	22.00	10.00	84.00	88.00	0.40			H53-0075812
90.00	70.00	22.40	6.35	84.15	88.30	0.40	KGD 090-070	DAS 090-070	TPM 354-275
90.00	70.00	30.50	-	-	-	0.40	KGD 090-072	DAS 090-072	MHM 354-275 P
90.00	72.00	22.50	3.60	86.00	89.00	0.40			TPL 090-072
90.00	75.00	20.00	-	-	-	0.40	KGD 090-076	DAS 090-076	TPM 354-295 P
90.00	76.00	22.50	5.20	86.00	89.40	0.40			TPS/G 090-076
92.00	82.00	11.00	4.00	87.50	90.50	0.40			H65-2240410
92.00	82.00	13.00	6.40	88.00	90.30	0.40	KGD 095-075	DAS 095-075	MHM 362-322
95.00	75.00	22.40	6.35	89.15	93.30	0.40			TPM 374-295
100.00	75.00	22.40	6.35	93.13	98.00	0.40	KGD 100-075	DAS 100-075	TPM 393-295
100.00	80.00	22.00	10.00	94.00	98.00	0.40	KGD 100-080	DAS 100-075	H53-0083612
100.00	80.00	25.00	6.30	95.00	98.00	0.40			TPM 393-314-ISO
100.00	80.00	30.50	-	-	-	0.40	KGD 100-082	DAS 100-082	MHM 393-314 P
100.00	82.00	22.50	3.60	96.00	99.00	0.40			TPL 100-082
100.00	85.00	20.00	5.00	96.00	98.50	0.40	KGD 100-086	DAS 100-086	TPM 393-334-ISO
100.00	86.00	22.50	5.20	96.00	99.40	0.40			TPS/G 100-086
100.00	87.00	14.30	6.00	93.80	98.50	0.40			SPS 393-342
105.00	80.00	22.40	6.35	98.10	103.00	0.40	KGD 105-080	DAS 105-080	TPM 413-314
105.00	92.50	14.70	6.40	95.15	103.30	0.40			MHM 413-364
110.00	85.00	22.40	6.35	103.10	108.00	0.40	KGD 110-085	DAS 110-085	TPM 433-334
110.00	85.00	25.30	6.40	103.10	108.00	0.40			TPM 433-334/1
110.00	90.00	25.30	6.40	104.10	108.30	0.40			TPM 433-354-ISO
110.00	90.00	30.50	-	-	-	0.40	KGD 110-092	DAS 110-092	MHM 433-354 P
110.00	92.00	22.50	3.60	106.00	109.00	0.40			TPL 110-092
110.00	95.00	20.00	5.00	105.00	108.50	0.40	KGD 110-096	DAS 110-096	TPM 433-374-ISO
110.00	96.00	22.50	5.20	106.00	109.40	0.40			TPS/G 110-096
115.00	90.00	22.40	6.35	108.10	113.00	0.40			KGD 115-090
115.00	97.00	22.50	3.60	111.00	114.00	0.40	KGD 120-095	DAS 115-097	TPL 115-097
120.00	95.00	22.40	6.35	113.10	118.00	0.80			DAS 120-095
120.00	106.00	22.50	5.20	116.00	119.40	0.80	KGD 120-106	DAS 120-106	TPS/G 120-106-S
125.00	100.00	25.40	6.35	118.10	123.00	0.80	KGD 125-100	DAS 125-100	TPM 492-393
125.00	100.00	32.00	10.00	119.00	123.00	0.80			TPM 492-393-ISO
125.00	103.00	26.50	5.10	121.00	124.00	0.80	KGD 125-108	DAS 125-103	TPL 125-103
125.00	105.00	25.30	6.40	119.10	123.30	0.80			TPM 492-413
125.00	105.00	25.00	6.30	120.00	123.00	0.80			TPM 492-413-ISO
125.00	108.00	26.50	7.20	121.00	124.40	0.80			TPS/G 125-108
125.00	112.00	14.30	6.00	118.80	123.50	0.80			SPS 492-440

\* For order processing, the computer code will be  
 e.g. CS 020-011 KGD, CS 020-011 DAS, CS 020-011 TPL

## (Metric Size)

Bore Dia.	Groove Dimensions						Reference	Reference	Reference
	D	d	L1	L2	d1	d2			
130.00	105.00	25.40	9.50	122.60	127.50	0.80	KGD 130-105	DAS 130-105	TPM 511-413
130.00	105.00	25.40	6.35	123.10	128.00	0.80	KGD 130-105/A	DAS 130-105/1	TPM 511-413/1
130.00	113.00	26.50	7.20	126.00	129.40	0.80		DAS 130-113	
135.00	110.00	25.00	12.70	128.00	133.00	0.80			H53-0091212
135.00	110.00	25.40	9.50	127.60	132.50	0.80	KGD 135-110	DAS 135-110	TPM 531-433
135.00	110.00	25.40	6.35	128.10	133.00	0.80	KGD 135-110/A	DAS 135-110/1	TPM 531-433/1
140.00	115.00	25.40	9.50	132.60	137.50	0.80	KGD 140-115	DAS 140-115	TPM 551-452
140.00	115.00	25.40	6.35	133.00	138.00	0.80	KGD 140-115/A	DAS 140-115/1	TPM 551-452/1
140.00	118.00	26.50	5.10	136.00	139.00	0.80		DAS 140-118	TPL 140-118
140.00	120.00	25.00	6.30	135.00	138.00	0.80			TPM 551-472-ISO
140.00	123.00	26.50	7.20	136.00	139.40	0.80		DAS 140-123	TPS/G 140-123
140.00	124.00	17.50	8.75	132.00	138.50	0.80			H65-0317710
145.00	120.00	25.40	9.50	137.60	142.50	0.80	KGD 145-120	DAS 145-120	TPM 570-472
145.00	120.00	25.40	6.35	138.30	142.95	0.80	KGD 145-120/A	DAS 145-120/1	TPM 570-472/1
150.00	125.00	25.00	12.70	143.00	148.00	0.80			H53-0091512
150.00	125.00	25.40	9.50	142.60	147.50	0.80	KGD 150-125	DAS 150-125	TPM 590-492
150.00	125.00	25.40	6.35	143.00	148.00	0.80	KGD 150-125/A	DAS 150-125/1	TPM 590-492/1
150.00	128.00	26.50	5.10	146.00	149.00	0.80		DAS 150-128	TPL 150-128
150.00	130.00	25.40	6.35	144.10	148.30	0.80			TPM 590-511-ISO
150.00	133.00	26.50	7.20	146.00	149.40	0.80		DAS 150-133	TPS/G 150-133-S
155.00	130.00	25.40	9.50	147.60	152.50	0.80	KGD 155-130	DAS 155-130	TPM 610-511
155.00	130.00	25.40	6.35	148.00	153.00	0.80	KGD 155-130/A	DAS 155-130/1	TPM 610-511/1
160.00	130.00	25.40	6.35	153.00	157.50	0.80	KGD 160-130	DAS 160-130	TPM 629-511
160.00	130.00	25.40	9.50	152.60	157.50	0.80	KGD 160-130/A	DAS 160-130/1	
160.00	135.00	25.40	9.50	152.60	157.50	0.80	KGD 160-135	DAS 160-135	TPM 629-531
160.00	130.00	32.00	10.00	154.00	158.00	0.80			TPM 629-531-ISO
160.00	138.00	26.50	5.10	156.00	159.00	0.80		DAS 160-138	TPL 160-138
160.00	140.00	25.00	6.30	155.00	158.00	0.80			TPM 629-551
160.00	140.00	25.00	12.50	151.40	158.50	0.80			H65-0315910
160.00	143.00	26.50	7.20	156.00	159.40	0.80		DAS 160-143	TPS/G 160-143-S
165.00	140.00	25.00	12.70	158.00	163.00	0.80			H53-1257612
165.00	140.00	25.40	9.50	157.60	162.50	0.80	KGD 165-140	DAS 165-140	TPM 649-551
165.00	145.00	25.40	6.40	159.15	163.30	0.80			MHM 649-570
170.00	140.00	25.40	6.40	162.95	167.90	0.80			MHM 669-551
170.00	145.00	25.40	12.70	161.70	167.10	0.80	KGD 170-145	DAS 170-145	TPM 669-570
170.00	148.00	26.50	5.10	166.00	169.00	0.80		DAS 170-148	TPL 170-148
175.00	150.00	25.40	12.70	166.70	172.10	0.80	KGD 175-150	DAS 175- 150	TPM 688-590
180.00	150.00	35.40	6.35	172.95	177.87	0.80		DAS 180-150	TPM 708-590
180.00	150.00	36.00	12.50	-	-	0.80			TPM 708-590-NF
180.00	155.00	25.40	12.70	171.70	177.10	0.80	KGD 180-155	DAS 180-155	TPM 708-610

\* For order processing, the computer code will be  
e.g. CS 020-011 KGD, CS 020-011 DAS, CS 020-011 TPL

# Compact Seal

(Metric Size)

Bore Dia.	Groove Dimensions						Reference	Reference	Reference
	D	d	L1	L2	d1	d2			
180.00	160.00	25.00	12.50	171.40	178.50	0.80			H65-0316010
180.00	163.00	26.50	7.20	176.00	179.40	0.80			TPS/G 180-163
185.00	160.00	25.40	12.70	176.70	182.10	0.80	KGD 185-160	DAS 185-160	TPM 728-629
190.00	165.00	25.40	12.70	181.70	187.00	0.80	KGD 190-165	DAS 190-165	TPM 748-649
190.00	170.00	30.50	6.40	182.90	187.90	0.80			MHM 748-669
195.00	170.00	25.40	12.70	186.70	192.00	0.80	KGD 195-170	DAS 195-170	TPM 767-669
200.00	170.00	30.00	15.00	192.00	197.00	0.80			H53-1270112
200.00	170.00	35.30	6.40	193.00	198.00	0.80			TPM 787-669
200.00	170.00	36.00	12.50	192.00	197.00	0.80			TPM 787-669-ISO
200.00	175.00	25.40	12.70	191.60	197.00	0.80	KGD 200-175	DAS 200-175	TPM 787-688
200.00	180.00	25.00	12.50	191.40	198.50	0.80			H65-0316910
200.00	180.00	31.50	9.20	196.00	199.40	0.80			TPS/G 200-180
210.00	185.00	25.40	12.70	201.60	207.00	0.80	KGD 210-185	DAS 210-185	TPM 826-728
220.00	190.00	30.00	15.00	212.00	217.00	0.80			H53-1714810
220.00	190.00	35.40	6.35	212.70	217.90	0.80		DAS 220-190	TPM 866-748
220.00	190.00	36.00	12.50	212.00	217.00	0.80			TPM 866-748-NF
220.00	195.00	25.40	12.70	211.60	217.00	0.80	KGD 220-195	DAS 220-195	TPM 866-767
230.00	205.00	25.40	12.70	221.60	227.00	0.80	KGD 230-205	DAS 230-205	TPM 905-807
240.00	215.00	25.40	12.70	231.60	237.00	0.80	KGD 240-215	DAS 240-215	TPM 944-846
250.00	220.00	30.00	15.00	242.00	247.00	0.80			H53-1264312
250.00	220.00	35.40	6.35	242.90	247.85	0.80	KGD 250-220	DAS 250-220	TPM 984-866
250.00	220.00	36.00	12.50	242.00	247.00	0.80			TPM 984-866b- ISO
250.00	225.00	25.40	12.70	241.60	247.00	0.80	KGD 250-225	DAS 250-225	TPM 984-886- ISO
250.00	225.00	31.50	6.60	246.00	249.00	0.80			H64-6601400
260.00	235.00	35.10	12.70	252.90	257.00	0.80			TPM 1024-925
280.00	250.00	30.00	15.00	272.00	274.00	0.80			H53-1261712
280.00	250.00	36.00	12.50	272.00	277.00	0.80			TPM 1102-984-NF
280.00	250.00	35.40	9.52	272.90	277.00	0.80			TPM 1102-984- ISO
320.00	290.00	36.00	12.50	312.00	317.00	0.80			TPM 1259-1141- ISO

\* For order processing, the computer code will be  
e.g. CS 020-011 KGD, CS 020-011 DAS, CS 020-011 TPL