

Track chain

2796427

Releasing track tension



WARNING

Read and observe "Safety instructions" before starting work on the track chain and the chain tensioning device.

Wear protective glasses.

The chain tension grease is under high pressure. Therefore, release the filler valve carefully.

The grease flows out into the crawler member. This prevents grease being ejected uncontrolledly.

- Clean the track unit as described in section "Cleaning the track unit".
- Park the machine on a dry level surface.

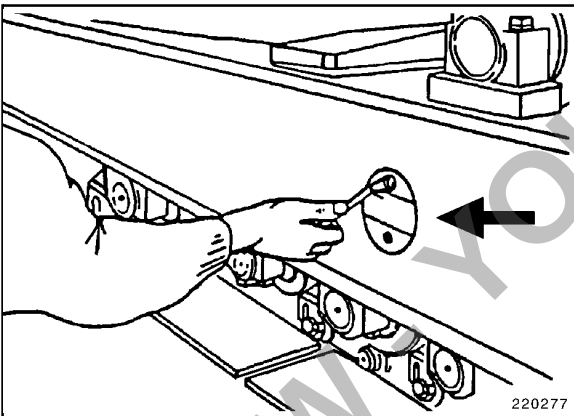


Fig. 1

- Remove cover (Fig. 1).

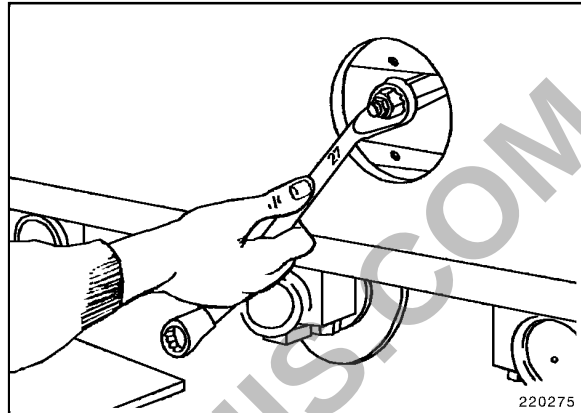


Fig. 2

- Place a ring spanner on the filler valve (Fig. 2).
- Screw out filler valve, maximum two rotations. Grease from the chain tensioning device flows out at the thread of the filler valve.

The track chain tension has been released when grease no longer flows out of the filler valve and maximum track chain sag is present between the top rollers, and between top roller and driven wheel/front idler.

- Remove grease from track member and dispose of it in an environmentally responsible manner.
- Close filler valve securely.
- Tension track chain as described in section "Tensioning the track chain".
- Reattach cover (Fig. 1).
- Tension track chain of other track unit using the same procedure.
The sag of both track chains should be identical. □



Item	Quan.	Description	Weight kg / lb	Torque				
				Thread size	Material grade	Wrench size mm	M _A Nm	Torque lbft.
1	56	Hex. bolt		M 16	12.9	24	300	221
2	14	Bottom roller	33 / 75					
3	2	Track chain	349 / 786					
4	16	Hex. bolt		M 16	10.9	24	250	184
5	4	Top roller	18 / 41					
6	90	Track pad	15 / 33					
7	360	Nut		M 14 x 1,5				
8	360	Hex. bolt		M 14 x 1.5	12.9	22	235	174
9	2	Master pin						
10	1	Chain segment						
11	4	Sealing washer						
12	4	End washer						
13	2	End bushing						

Schrauben mit Regelfgewinde nach DIN 13 - 13
Bolts with standard thread DIN 13 - 13

Gewinde- Nenn Ø Thread nominal Ø	Festigkeits- klasse Material quality	Anziehdrehmomente M _A in Nm Tightening torques M _A in Nm		
		gesamt total 0,10 ¹⁾	gesamt total 0,12 ²⁾	gesamt total 0,16 (L) ³⁾
M 5	8.8	4,9	5,5	6,5
	10.9	7,3	8,1	9,5
	12.9	8,5	9,5	11,2
M 6	8.8	8,5	9,5	11,2
	10.9	12,5	14	16,5
	12.9	14,5	16,5	19,5
M 8	8.8	20,5	23	27
	10.9	30	34	40
	12.9	35	40	47
M 10	8.8	41	46	55
	10.9	60	68	80
	12.9	71	79	94
M 12	8.8	71	79	94
	10.9	104	117	140
	12.9	195	215	260
M 16	8.8	170	195	230
	10.9	250	280	340
	12.9	300	330	400
M 20	8.8	350	390	470
	10.9	490	560	670
	12.9	580	650	780
M 24	8.8	600	670	800
	10.9	850	960	1140
	12.9	1000	1120	1350
M 30	8.8	1190	1350	1600
	10.9	1700	1900	2300
	12.9	2000	2250	2700
M 36	8.8	2100	2350	2800
	10.9	3000	3300	4000
	12.9	3500	3900	4700

¹⁾ Schraube und/oder Mutter galvanisch verzinkt (A3B).
Screw and/or nut electro-galvanized.

²⁾ Schraube schwarz vergütet oder phosphatiert, Gewinde geölt.
Screw black-plated or phosphatized, thread oiled.

³⁾ Schrauben mit flüssiger Schraubensicherung z.B. Loctite 242, 243.
Screws with liquid screw fixer, e.g. Loctite 242, 243.

Troubleshooting guide

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The troubleshooting guide covers the detection and elimination of faults in the event of a malfunction.

It is possible that a malfunction may have other causes not listed here.

In such a case where a fault cannot be located, contact your Service Dept.

	Fault	Possible cause	Remedy
1.	No working, travel and swinging functions possible	<p>No servo control pressure</p> <ul style="list-style-type: none"> • PRV servo control pressure defective • Servo control circuit filter contaminated • Servo control pump not pumping oil • Servo control oil escaping to tank through defective servo control valve or pedal <p>Servo control pressure o.k.</p> <ul style="list-style-type: none"> • Servo control pressure cutout solenoid defective 	<p>Check; repair and adjust if necessary.</p> <p>Replace filter cartridge.</p> <p>Check drive; repair if necessary.</p> <p>Check pump; replace if necessary.</p> <p>Check which valve is leaking. Repair or replace defective valve.</p> <p>Check whether LED in plug is illuminated; if not, repair electrical system or work with manual standby activation.</p>
2.	Working, travel and swinging functions slow	<p>Diesel engine speed</p> <p>Output stage</p> <p>Servo control pressure too low</p>	<p>Check speed adjustment or control PMS programming.</p> <p>Switch over output stage.</p> <p>Check and correct.</p>
3.	Working and travel function slow. Swinging function o.k.	<p>Insufficient diesel engine output, speed o.k.</p> <ul style="list-style-type: none"> • PMS reducing output of working pumps. No fault display • PMS reducing output of working pumps. Fault code display <p>Regulators of working pumps receiving incorrect pressure demand signals</p>	<p>Check air filter, fuel filter etc.; replace/change if necessary.</p> <p>Locate fault from fault code table and eliminate problem.</p> <p>Check pressure demand control, determine and eliminate fault.</p>

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Sealing, protective, checking and cleaning agents

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SAFETY PRECAUTION INFORMATION

UNSAFE OPERATING PRACTICES AND IMPROPER USE OF THE MACHINE AND ITS ATTACHMENTS ON THE PART OF THE OPERATOR OR SERVICE TECHNICIAN CAN RESULT IN INJURIES. OBSERVE THE FOLLOWING SAFETY PRECAUTIONS AT ALL TIMES:

- 1. FOR SERVICING, THE MACHINE SHOULD BE ON LEVEL TERRAIN, ENGINE STOPPED WITH THE WHEELS BLOCKED OR THE ENTIRE MACHINE SOLIDLY SUPPORTED WITH THE WHEELS OFF THE GROUND BEFORE SERVICING ANY COMPONENT OF THE DRIVETRAIN.**
- 2. FOR SERVICING UNDER THE MOVABLE EQUIPMENT, SUCH AS OPERATOR'S SEAT, ENGINE HOODS, ETC. MOVE THE EQUIPMENT ASSEMBLY TO THE LATCHED POSITION AND SECURELY LATCH.**
- 3. DO NOT OPERATE THE MACHINE UNLESS ALL MOVABLE EQUIPMENT IS LATCHED IN THE OPERATE POSITION.**
- 4. DO NOT SERVICE THE MACHINE WITH A RAISED HYDRAULIC EQUIPMENT UNLESS THE HYDRAULIC EQUIPMENT IS RESTING ON LOCK PINS OR CYLINDER LOCKING TOOLS OR FIXTURES.**
- 5. DO NOT SERVICE THE MACHINE WITH THE ENGINE RUNNING UNLESS THE MACHINE IS PROPERLY AND SECURELY SUPPORTED WITH ALL FOUR WHEELS OFF THE GROUND.**
- 6. USE CAUTION WHEN SERVICING THE UNIT AROUND MOVING PARTS.**
- 7. DO NOT TILT ANY MOVABLE EQUIPMENT WITHOUT PROPER INSTRUCTION.**
- 8. DO NOT TILT ANY MOVABLE EQUIPMENT WITHOUT USING THE PROPER TOOLS.**
- 9. REINSTALL ALL SHIELDS REMOVED FOR SERVICE.**
- 10. NEVER LOOSEN ANY HYDRAULIC CONNECTIONS BEFORE RELIEVING THE PRESSURE IN THE HYDRAULIC SYSTEM.**
- 11. WEAR EYE PROTECTION SUCH AS GOGGLES, ETC.**
- 12. WEAR EAR PROTECTION SUCH AS EARPLUGS, ETC. WHEN YOU FEEL THE NOISE LEVEL IS UNCOMFORTABLE.**
- 13. IF ANY SERVICING OR ADJUSTMENTS REQUIRE THE BATTERY TO BE DISCONNECTED, DISCONNECT THE (-) NEGATIVE GROUND CABLE.**
- 14. WHEN SERVICING ELECTRICAL COMPONENTS, DISCONNECT THE (-) NEGATIVE GROUND CABLE.**
- 15. IF AN ELECTRONIC EQUIPMENT REQUIRES REMOVAL FROM THE DASH AREA OR THE MACHINE, DISCONNECT THE (-) NEGATIVE GROUND BATTERY CABLE. THIS WILL SHUT OFF POWER TO THE ELECTRICAL SYSTEM AND PREVENT DAMAGE TO THE ELECTRICAL SYSTEM.**
- 16. IF WELDING IS REQUIRED ON THE MACHINE, DISCONNECT THE (-) NEGATIVE GROUND CABLE. FAILURE TO DISCONNECT THE BATTERY MAY RESULT IN DAMAGE TO THE ELECTRICAL SYSTEM, MONITORING SYSTEM AND/OR OTHER ELECTRICAL COMPONENTS.**
- 17. IF WELDING IS REQUIRED ON AN ATTACHMENT, REMOVE THE ATTACHMENT FROM THE MACHINE.**

TO THE OWNER:

The warranty coverage that is extended to your machine is explained in the Warranty and Limitation of Liability form. Your dealer will provide you with a copy of the warranty and retain a copy which you have signed. After you read the warranty, ask your dealer to explain any points that you may not understand.

The machine was designed to power and propel itself. It is intended to move material in the normal and customary applications.

Do not modify or alter or permit anyone else to modify or alter this machine or any of its components mechanical function with first consulting an authorized New Holland Construction dealer. If you have any questions regarding machine modifications, contact New Holland Construction, 245 E. North Ave., Carol Stream, IL 60188.

Your safety and the safety of those around you depend upon the care and good judgment you use while operating this equipment. Read the safety precautions carefully.

After you have operated the machine for 50 hours, take your machine and this manual to your selling dealer. He will perform the factory recommended 50-hour service. You will be responsible for the cost of lubricants, fluids, filters and other items replaced as part of normal maintenance. Prior to taking the machine to your selling dealer for service, it is recommended that you contact them to determine any other charges for which you may be responsible.

All data given in this book is subject to product variations. Dimensions and weights are approximate only and the illustrations do not necessarily show machines in standard condition. For exact information about any particular machine, please consult your New Holland Construction dealer.



CAUTION: THIS SYMBOL IS USED THROUGHOUT THIS BOOK WHENEVER PERSONAL SAFETY IS INVOLVED. TAKE TIME TO READ AND FOLLOW THE INSTRUCTIONS. BE CAREFUL!

CAUTION: PICTURES IN THIS MANUAL MAY SHOW PROTECTIVE SHIELDING OPEN OR REMOVED TO BETTER ILLUSTRATE A PARTICULAR FEATURE OR ADJUSTMENT.

BE CERTAIN, HOWEVER, TO CLOSE OR REPLACE ALL SHIELDING BEFORE OPERATING THE MACHINE.

IMPROVEMENTS

New Holland Construction is continually striving to improve its products. We reserve the right to make improvements or changes when it becomes practical and possible to do so, without incurring any obligation to make changes or additions to the equipment sold previously.

SERVICE DATEN / SERVICE DATA

Nm	0	1	2	3	4	5	6	7	8	9
4210	3105.127	3105.865	3106.603	3107.340	3108.078	3108.815	3109.553	3110.290	3111.028	3111.765
4220	3112.503	3113.240	3113.978	3114.716	3115.453	3116.191	3116.928	3117.666	3118.404	3119.141
4230	3119.879	3120.616	3121.354	3122.091	3122.829	3123.566	3124.304	3125.042	3125.779	3126.517
4240	3127.254	3127.992	3128.729	3129.467	3130.204	3130.942	3131.679	3132.417	3133.155	3133.892
4250	3134.630	3135.367	3136.105	3136.843	3137.580	3138.318	3139.055	3139.793	3140.530	3141.268
4260	3142.005	3142.743	3143.480	3144.218	3144.956	3145.693	3146.431	3147.168	3147.906	3148.643
4270	3149.381	3150.118	3150.856	3151.594	3152.331	3153.069	3153.806	3154.544	3155.281	3156.019
4280	3156.757	3157.494	3158.232	3158.969	3159.707	3160.444	3161.182	3161.919	3162.657	3163.395
4290	3164.132	3164.870	3165.607	3166.345	3167.083	3167.820	3168.558	3169.295	3170.033	3170.770
4300	3171.508	3172.245	3172.983	3173.720	3174.458	3175.196	3175.933	3176.671	3177.408	3178.146
4310	3178.883	3179.621	3180.358	3181.096	3181.833	3182.571	3183.309	3184.046	3184.784	3185.521
4320	3186.259	3186.997	3187.734	3188.472	3189.209	3189.947	3190.684	3191.422	3192.159	3192.897
4330	3193.635	3194.372	3195.110	3195.847	3196.585	3197.322	3198.060	3198.798	3199.535	3200.273
4340	3201.010	3201.748	3202.485	3203.223	3203.960	3204.698	3205.436	3206.173	3206.911	3207.648
4350	3208.386	3209.123	3209.861	3210.598	3211.336	3212.073	3212.811	3213.549	3214.286	3215.024
4360	3215.761	3216.499	3217.237	3217.974	3218.712	3219.449	3220.187	3220.924	3221.662	3222.399
4370	3223.137	3223.875	3224.612	3225.350	3226.087	3226.825	3227.562	3228.300	3229.037	3229.775
4380	3230.512	3231.250	3231.988	3232.725	3233.463	3234.200	3234.938	3235.676	3236.413	3237.151
4390	3237.888	3238.626	3239.363	3240.101	3240.838	3241.576	3242.313	3243.051	3243.789	3244.526
4400	3245.264	3246.001	3246.739	3247.477	3248.214	3248.952	3249.689	3250.427	3251.164	3251.902
4410	3252.639	3253.377	3254.115	3254.852	3255.590	3256.327	3257.065	3257.802	3258.540	3259.277
4420	3260.015	3260.752	3261.490	3262.228	3262.965	3263.703	3264.440	3265.178	3265.916	3266.653
4430	3267.391	3268.128	3268.866	3269.603	3270.341	3271.078	3271.816	3272.553	3273.291	3274.029
4440	3274.766	3275.504	3276.241	3276.979	3277.716	3278.454	3279.191	3279.929	3280.667	3281.404
4450	3282.142	3282.879	3283.617	3284.354	3285.092	3285.830	3286.567	3287.305	3288.042	3288.780
4460	3289.517	3290.255	3290.992	3291.730	3292.468	3293.205	3293.943	3294.680	3295.418	3296.156
4470	3296.893	3297.631	3298.368	3299.106	3299.843	3300.581	3301.318	3302.056	3302.793	3303.531
4480	3304.269	3305.006	3305.744	3306.481	3307.219	3307.956	3308.694	3309.431	3310.169	3310.906
4490	3311.644	3312.382	3313.119	3313.857	3314.594	3315.332	3316.070	3316.807	3317.545	3318.282
4500	3319.020	3319.757	3320.495	3321.232	3321.970	3322.708	3323.445	3324.183	3324.920	3325.658
4510	3326.395	3327.133	3327.870	3328.608	3329.346	3330.083	3330.821	3331.558	3332.296	3333.033
4520	3333.771	3334.509	3335.246	3335.984	3336.721	3337.459	3338.196	3338.934	3339.671	3340.409
4530	3341.146	3341.884	3342.622	3343.359	3344.097	3344.834	3345.572	3346.310	3347.047	3347.785
4540	3348.522	3349.260	3349.997	3350.735	3351.472	3352.210	3352.948	3353.685	3354.423	3355.160
4550	3355.898	3356.635	3357.373	3358.110	3358.848	3359.585	3360.323	3361.061	3361.798	3362.536
4560	3363.273	3364.011	3364.749	3365.486	3366.224	3366.961	3367.699	3368.436	3369.174	3369.911
4570	3370.649	3371.386	3372.124	3372.862	3373.599	3374.337	3375.074	3375.812	3376.550	3377.287
4580	3378.025	3378.762	3379.500	3380.237	3380.975	3381.712	3382.450	3383.187	3383.925	3384.663
4590	3385.400	3386.138	3386.875	3387.613	3388.350	3389.088	3389.825	3390.563	3391.301	3392.038
4600	3392.776	3393.513	3394.251	3394.989	3395.726	3396.464	3397.201	3397.939	3398.676	3399.414
4610	3400.151	3400.889	3401.626	3402.364	3403.102	3403.839	3404.577	3405.314	3406.052	3406.789
4620	3407.527	3408.264	3409.002	3409.740	3410.477	3411.215	3411.952	3412.690	3413.427	3414.165
4630	3414.903	3415.640	3416.378	3417.115	3417.853	3418.590	3419.328	3420.065	3420.803	3421.541
4640	3422.278	3423.016	3423.753	3424.491	3425.229	3425.966	3426.704	3427.441	3428.179	3428.916
4650	3429.654	3430.391	3431.129	3431.866	3432.604	3433.342	3434.079	3434.817	3435.554	3436.292
4660	3437.029	3437.767	3438.504	3439.242	3439.979	3440.717	3441.455	3442.192	3442.930	3443.667
4670	3444.405	3445.143	3445.880	3446.618	3447.355	3448.093	3448.830	3449.568	3450.305	3451.043
4680	3451.781	3452.518	3453.256	3453.993	3454.731	3455.468	3456.206	3456.943	3457.681	3458.419
4690	3459.156	3459.894	3460.631	3461.369	3462.106	3462.844	3463.582	3464.319	3465.057	3465.794
4700	3466.532	3467.269	3468.007	3468.744	3469.482	3470.219	3470.957	3471.695	3472.432	3473.170
4710	3473.907	3474.645	3475.383	3476.120	3476.858	3477.595	3478.333	3479.070	3479.808	3480.545
4720	3481.283	3482.021	3482.758	3483.496	3484.233	3484.971	3485.708	3486.446	3487.183	3487.921
4730	3488.658	3489.396	3490.134	3490.871	3491.609	3492.346	3493.084	3493.822	3494.559	3495.297
4740	3496.034	3496.772	3497.509	3498.247	3498.984	3499.722	3500.459	3501.197	3501.935	3502.672
4750	3503.410	3504.147	3504.885	3505.622	3506.360	3507.098	3507.835	3508.573	3509.310	3510.048
4760	3510.785	3511.523	3512.260	3512.998	3513.736	3514.473	3515.211	3515.948	3516.686	3517.423
4770	3518.161	3518.898	3519.636	3520.374	3521.111	3521.849	3522.586	3523.324	3524.062	3524.799
4780	3525.537	3526.274	3527.012	3527.749	3528.487	3529.224	3529.962	3530.699	3531.437	3532.175
4790	3532.912	3533.650	3534.387	3535.125	3535.862	3536.600	3537.337	3538.075	3538.813	3539.550
4800	3540.288	3541.025	3541.763	3542.500	3543.238	3543.976	3544.713	3545.451	3546.188	3546.926
4810	3547.663	3548.401	3549.138	3549.876	3550.614	3551.351	3552.089	3552.826	3553.564	3554.302
4820	3555.039	3555.777	3556.514	3557.252	3557.989	3558.727	3559.464	3560.202	3560.939	3561.677
4830	3562.415	3563.152	3563.890	3564.627	3565.365	3566.102	3566.840	3567.577	3568.315	3569.052
4840	3569.790	3570.528	3571.265	3572.003	3572.740	3573.478	3574.216	3574.953	3575.691	3576.428
4850	3577.166	3577.903	3578.641	3579.378	3580.116	3580.854	3581.591	3582.329	3583.066	3583.804
4860	3584.541	3585.279	3586.016	3586.754	3587.492	3588.229	3588.967	3589.704	3590.442	3591.179
4870	3591.917	3592.655	3593.392	3594.130	3594.867	3595.605	3596.342	3597.080	3597.817	3598.555
4880	3599.292	3600.030	3600.768	3601.505	3602.243	3602.980	3603.718	3604.456	3605.193	3605.931
4890	3606.668	3607.406	3608.143	3608.881	3609.618	3610.356	3611.094	3611.831	3612.569	3613.306
4900	3614.044	3614.781	3615.519	3616.256	3616.994	3617.731	3618.469	3619.207	3619.944	3620.682

PCS tester (Fig.1)

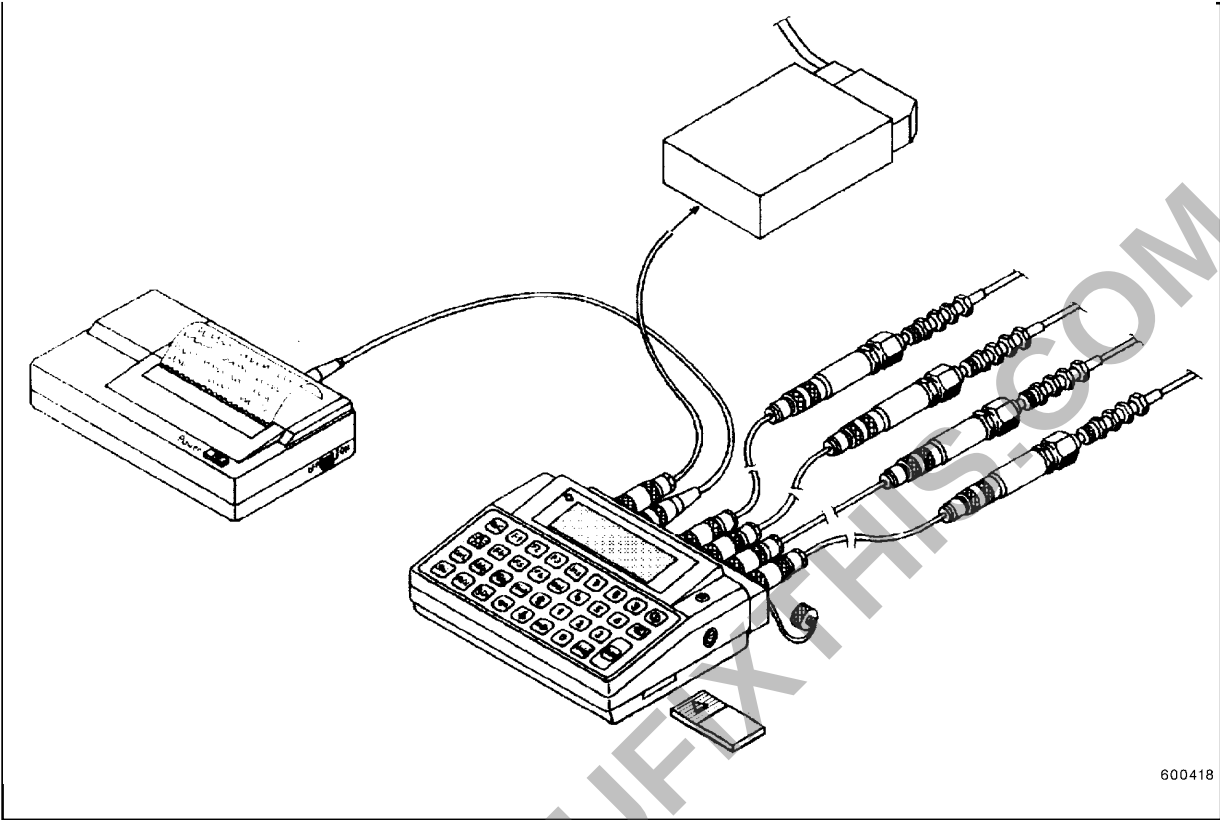


Fig. 1

Big leather test case with contents

Individual parts

PCS - tester with leather case:	73175280	Couplings:	4 x 73175288
Printer :	73177879	Mains adapter:	73180157
Printer power supply :	73180160	RAM-Card, multi-lingual	73175292
Battery printer :	73180161	Case, big:	73175291
Printing paper, spare roll:	73175286	Case, small (for tester only):	73176679
Cable - printer:	73175285	Leather case:	73176680
Adapter cable - printer :	73177880		
Cable - OOC:	73175281		
Cable - sensors:	4 x 73175284		
Measuring hose:	4 x 73175289		
Pressure sensor 600 bars:	2 x 73175283		
Pressure sensor 90 bars:	2 x 73175282		
Pressure gauge connection:	4 x 73175287		



WARNING

Conversions or modifications to the machine

Unauthorized conversions or modifications of the hydraulic excavator are forbidden for reasons of safety.

The nominal pressure of the pressure relief valves must not be modified.

Do not remove the lead seals from pressure-relief valves and pressure accumulators.



CAUTION

Recommissioning

Prior to recommissioning:

- Grease all lubricating points.
- Check all oil levels and make the necessary corrections.
- Carry out function checks of all repaired components.
- Check all functions of the excavator including the brakes during a test run. Release the hydraulic excavator for recommissioning only after all functions have been found to work perfectly.

□

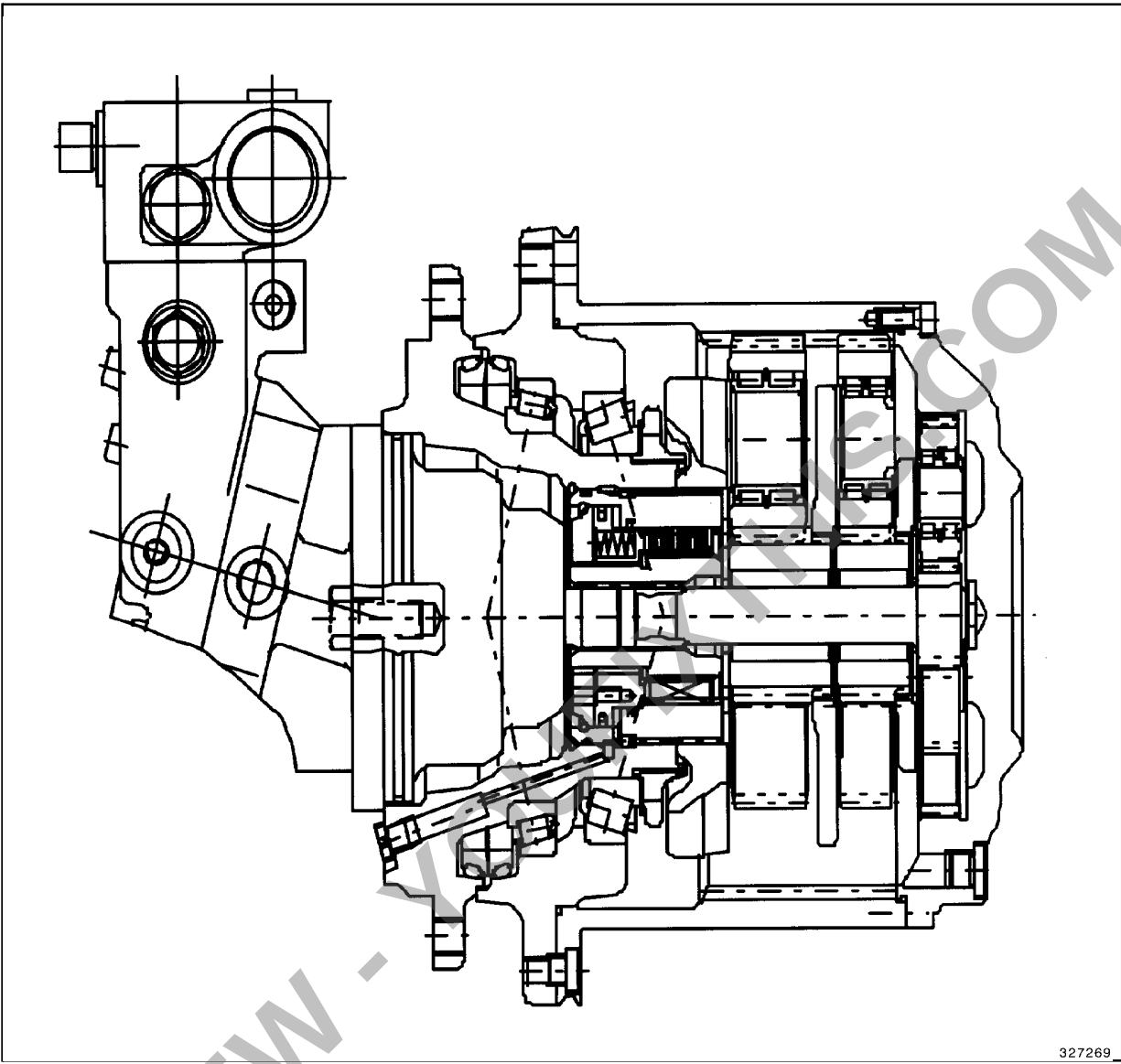


Fig. 1

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FOREWORD

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All swing gearboxes are subject to the same assembly procedures. They differ only in dimension, weight, filling quantities and also in the number of individual parts and therefore require different setting tolerances, tightening torques and special tools.

The gearboxes may deviate from those shown in the pictures. □

SWING GEARBOX

Screws, tightening torques and screw fixer

Swing gearbox S 5, S 10

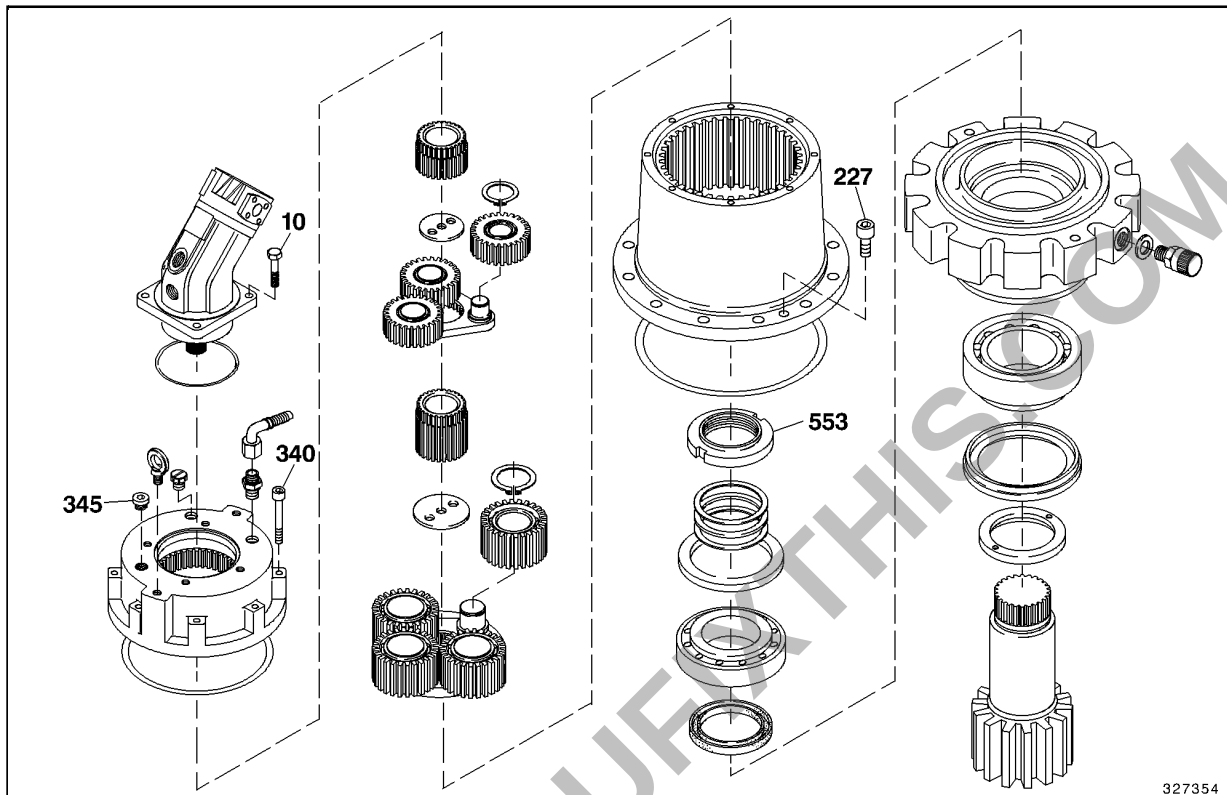


Fig. 5

Swing gearbox S 13, S 16

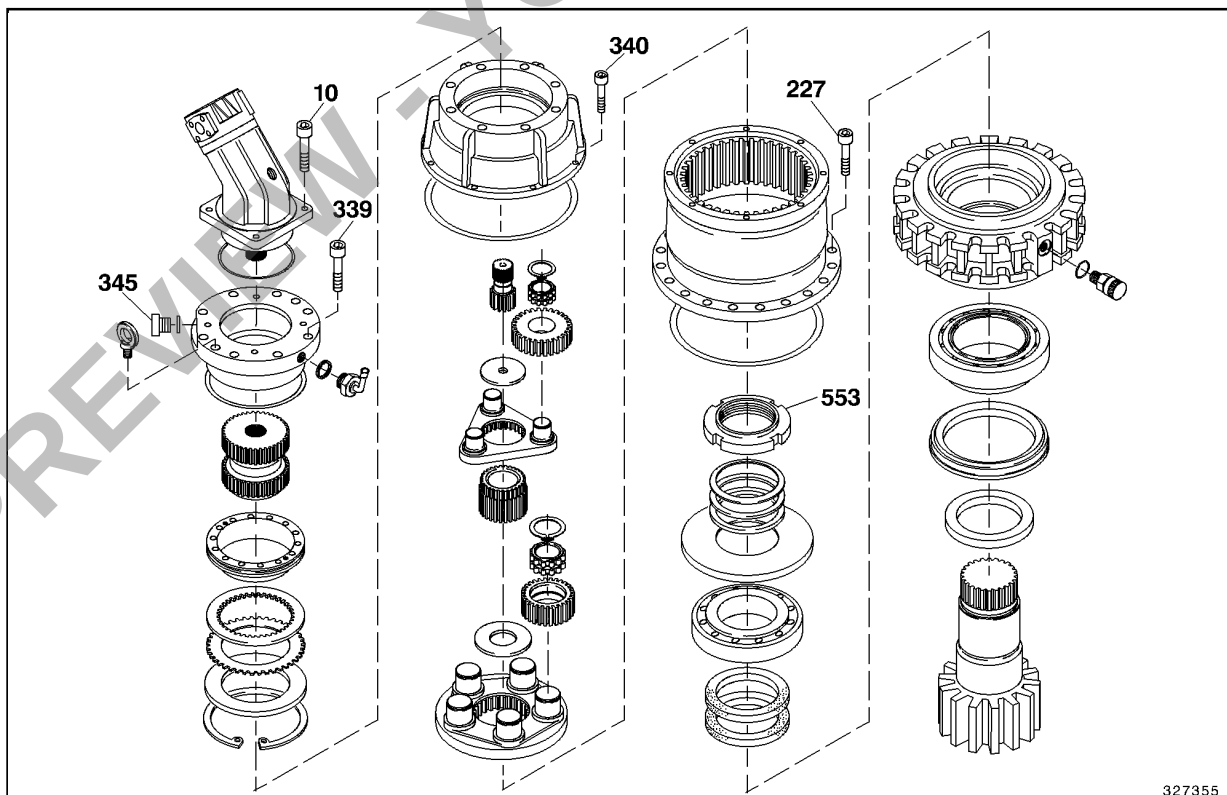


Fig. 6

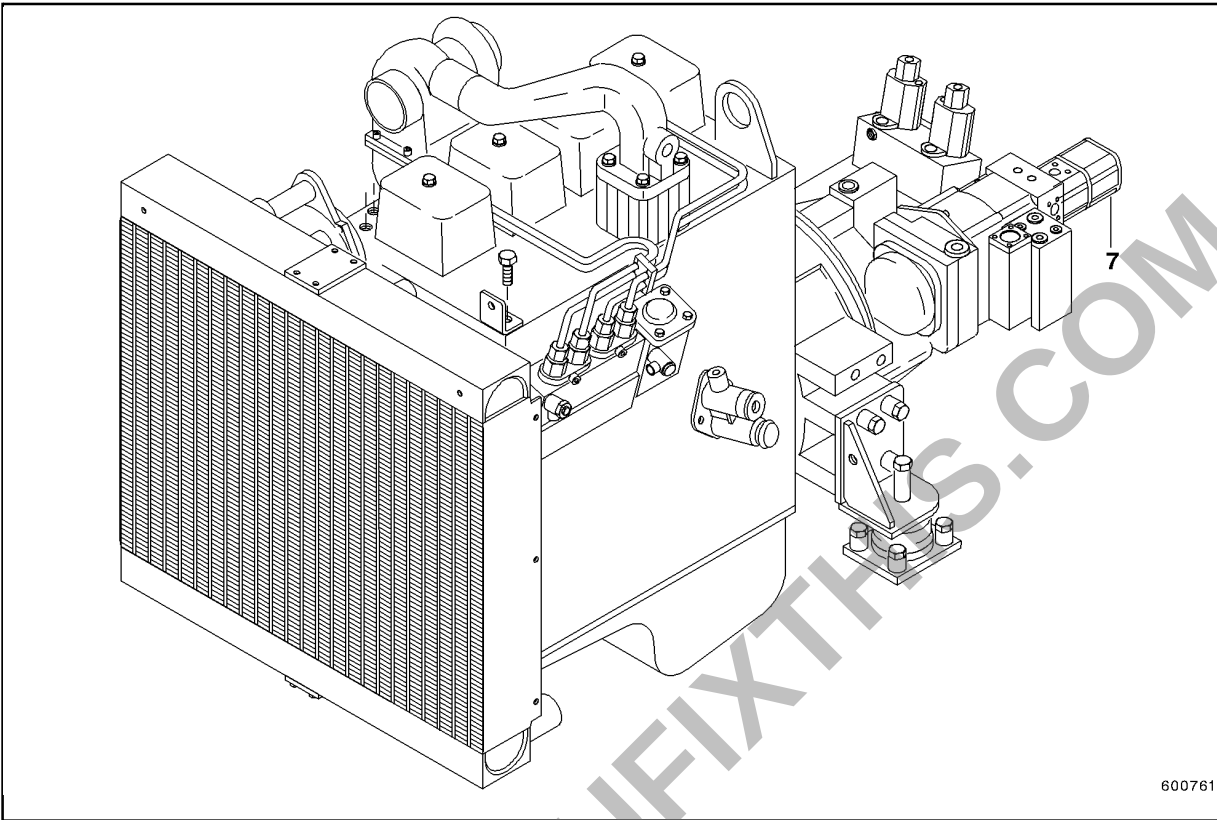


Fig. 4

Twin gear pump (7, Fig. 4)

The pump is flange-mounted on the swing pump connection to the gearbox and supplies the following circuits:

- fan drive unit
- servo control

General

All cylinder components are perfectly matched. Long-term and trouble-free operation can therefore only be ensured when **original spare parts** are used.

The wear and spare parts required for repairing hydraulic cylinders can be inferred from the spare-parts list belonging to your machine.

This chapter does not contain any information on how to rework damaged components of hydraulic cylinders.

Only specialized workshops can say whether a damaged component can be reworked and what procedures are required to do so.

Work carried out in your own workshop should therefore be limited to the installation of new wear and spare parts.

All activities involved must be performed carefully and in a clean environment.

Negligence can cause severe consequential damage to the whole hydraulic system.

Hydraulic cylinders must be vented after repairs prior to recommissioning. In certain operating conditions, entrapped air together with hydraulic fluid can burn away due to self-ignition (diesel effect) and cause serious damage to the cylinder already after a short time.

The whole hydraulic system must be flushed when impurities or even metal particles are found in a defective cylinder, at the magnetic rod or in the filters.

Trouble	Cause	Remedy
6. Insufficient service life of the battery	1. Battery too often and exhaustively discharged	Use battery with greater capacity considering using special "S" type batteries
	2. Battery gets too warm	Install at a better suited location
	3. Battery vibrations too heavy	Install at a better suited location
	4. Battery possibly "sulphated"	cf. 5.6
	5. Battery acid containing impurities	Replace the battery
7. Battery charge permanently insufficient	1. Defective alternator, voltage regulator or line connections	Increase alternator capacity or repair resp. replace alternator and voltage regulator; fasten connections properly
	2. V-belt loose	Retension the belt or replace
	3. Too many consumers connected to the battery	Install bigger battery. Consider using a stronger alternator; consult specialized workshops
8. Permanent overcharge	Voltage regulator and possibly alternator defective	Replace voltage regulator or change regulator setting; check alternator
9. Switch contacts in voltage regulator burnt (in case of d.c. generators)	Battery incorrectly connected (wrong polarity)	Connect battery with correct polarity. Replace voltage regulator
10. Rectifier diodes destroyed (in case of alternators)	Battery incorrectly connected (wrong polarity)	Connect battery with correct polarity. Replace rectifier diodes

Explanation of the wiring diagram

(sample page shown in fig. 1 is sheet 1 of 19 sheets)

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Page 1/2

1. Current paths

The current-path numbers are given at the upper margin of the path diagram sheet. They apparently subdivide the sheet into ten vertical columns (0 to 9).

Reference to the sheet number and the current-path number facilitates the search of components and the orientation in the wiring diagram.

2. Main circuits

The main circuits are shown as horizontal lines at the top and the bottom of the wiring diagram. Positive potential main circuits are shown at the top and negative potential circuits are shown at the bottom.

Example:

- 30/2.0** = Plus (switched). The main circuit continues on sheet 2 of the circuit diagram with current path 0.
- 15/2.0** = Plus (switched). The main circuit continues on sheet 2 of the circuit diagram with current path 0.
- 31/2.0** = Minus (ground). The main circuit continues on sheet 2 of the circuit diagram with current path 0.

3. Branches

Current-path branches together with the letters and numbers indicate the additional connection of current paths on other sheets of the wiring diagram.

Example:

Label **Z5** means:
3.9

This branch is connected to point Z5 in current path 9 on page 3 of the wiring diagram.

4. Relay contacts

Numbers on the relay contacts indicate the sheet number of the wiring diagram and the current path where the exciter coil for this contact can be found.

Example:

Label **K5** means:
.3

The exciter coil for this make contact can be found in current path 3 on the same sheet of the current diagram.

5. Cross reference to other current paths

Relays whose make, break or change-over contacts are located in other current paths have numbers under the current path of the exciter coil indicating in which current paths these contacts are located.

Example:

The wiring diagram label indicates that the relay **K 1.5** on the same sheet of the current wiring diagram in current circuit path has a make contact at circuit path 2.

6. Contacts of plug-in connectors

Plug-in connectors are identified by the number of the connector and the number of the plug-in contact.

Example:

Label **X101/2** refers to:
contact 2 in connector X101.



Sequence of operations

- Engine warm-up
 - PCS is configured for warm-up
 - Control Panel reads the option during the starting phase
 - PCS recognizes warm-up phase < 40°C
 - PCS sends information to Control Panel
 - PCS sets engine and pumps to LIFT mode
 - Control Panel displays warm-up
 - Control Panel displays ECO
- POWER mode HEAVY
 - Operator selects the HEAVY mode
 - Control Panel sends information to PCS
 - PCS sets pump and engine to the HEAVY mode
 - PICKUP sends speed information to PCS
 - Load information to PCS from S10.1 and/or S10.2
 - PCS determines nominal rpm
 - PCS starts load regulation by means of Y10
 - ODC monitors the temperatures
 - PCS detects no-load condition
 - PCS sets engine to low-level reduction
 - PCS sets engine to idling after 10 seconds (default setting)
- Power Boost
 - Activated when:
 - the PCS has been configured for "Power Boost"
 - the excavator is working in ECO or HEAVY mode
 - the pushbutton in the control lever has been depressed
 - the Power Boost time has not yet elapsed
 - Response:
 - the Control Panel sends information to PCS
 - the Control Panel and PCS set outputs for "Power Boost" operation
 - the PCS presets maximum machine power output (HEAVY mode)
 - the machine works with increased pressure.



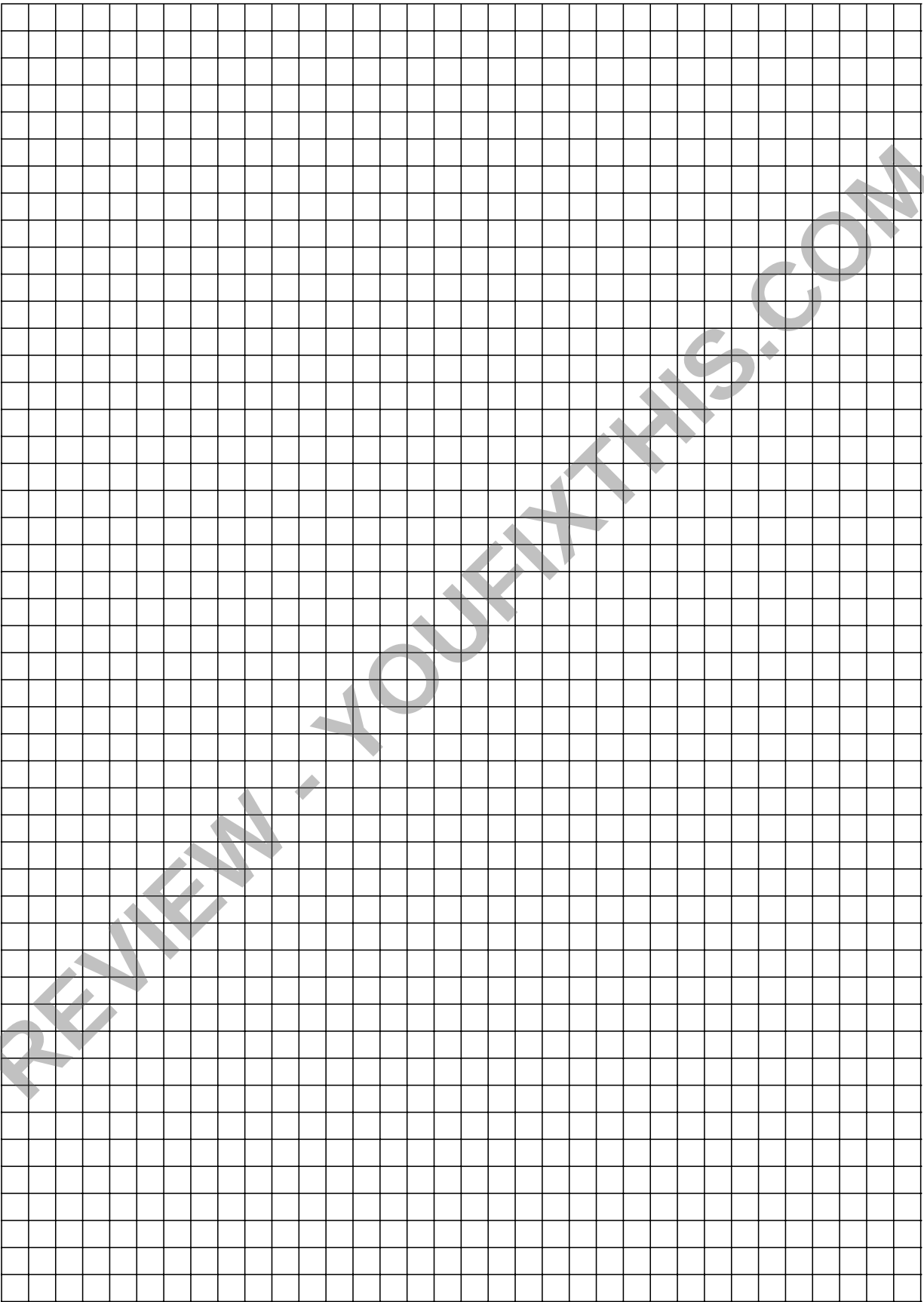
INTRODUCTION

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The various units of a machine are interconnected by pipe or hose lines so that the transfer of consumables, energy and control commands becomes possible. The hydraulic, brake and fuel supply systems of a machine are just such units.

Numerous line and coupling systems are available, especially in the spheres of hydraulics and pneumatics.

This handbook is intended to give an impression of the pipe and hose lines, as well as their coupling elements. Working directions are also included for servicing procedures which involve the re-routing or changing of such line and coupling systems.



REPAIR WELDING TECHNIQUES

3.5 Recommended groove shapes for manual welding with electrodes

For repairs or welding work carried out in the field, the following weld groove configurations should be preferred.

These groove configurations can be employed for plate thicknesses up to 30 mm. The dimensions shown in the drawings are applicable up to this thickness.

For gas metal-arc welding, the weld preparation angle can be reduced to 45°.

For greater plate thicknesses, the weld preparation angles must be reduced so as to leave a maximum opening width of abt. 30 mm. Except for the sharp-edge seam, all grooves should be gouged out, ground and counter-welded, if possible.

3.5.1 Butt joints

Recommended weld groove shapes:

- V-butt weld (fig. 39)
- Double-V butt weld (fig. 40)
- Single-bevel butt weld (fig. 41)
- Double-bevel butt weld (fig. 42)
- Square-edge butt weld (fig. 43)

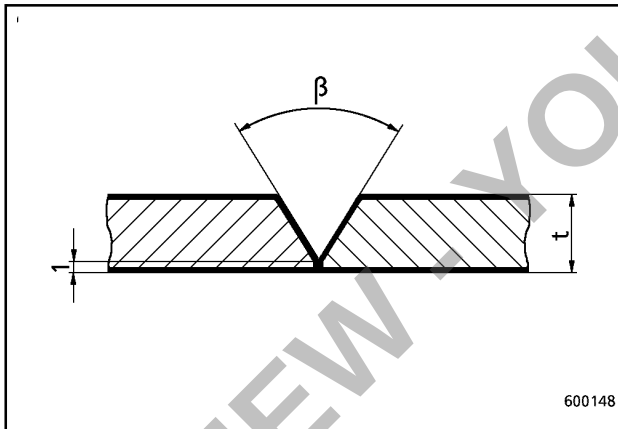


Fig. 39

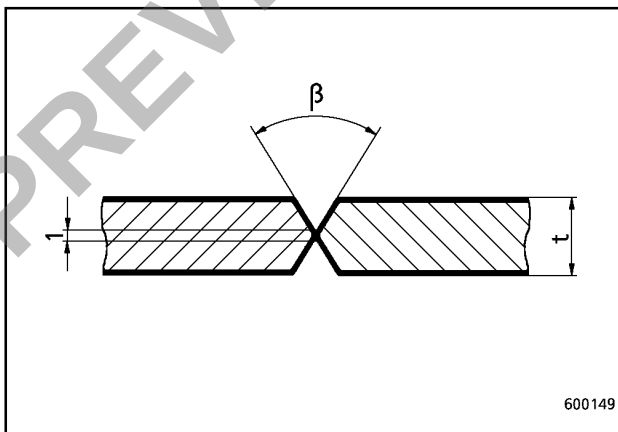


Fig. 40

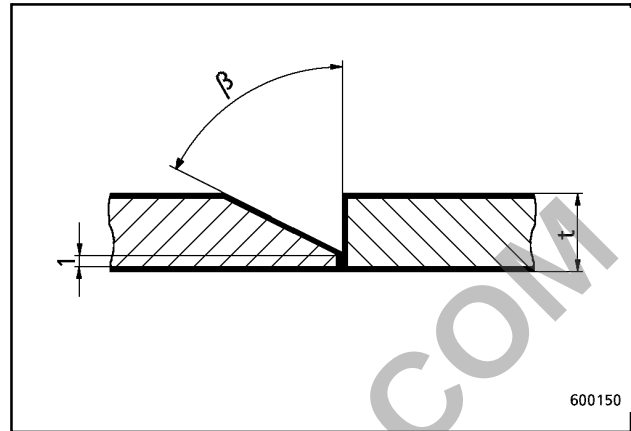


Fig. 41

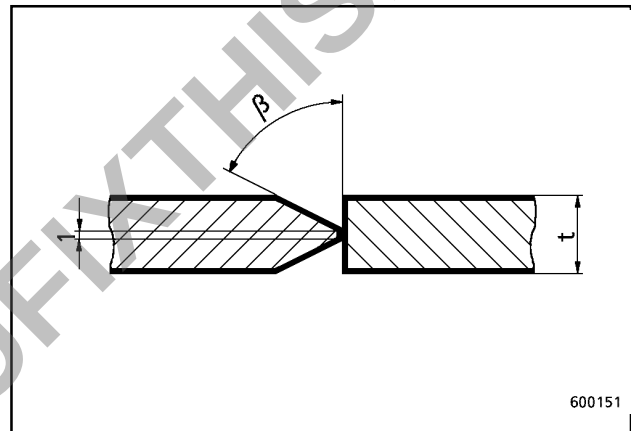


Fig. 42

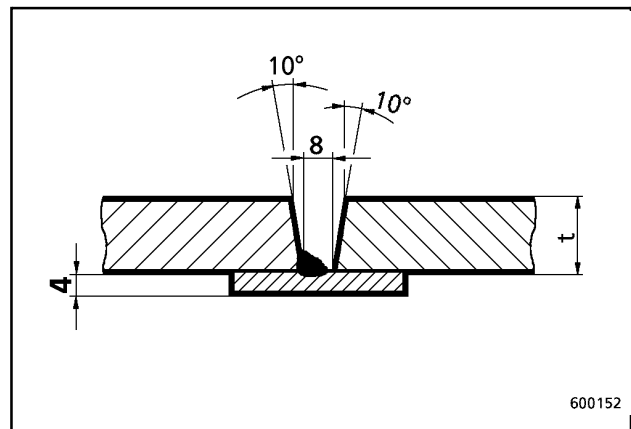


Fig. 43

Welding technique	Symbol EN 24 063	Opening angle β
E	111	60
MAGM	135	45
Solid wire	136	45

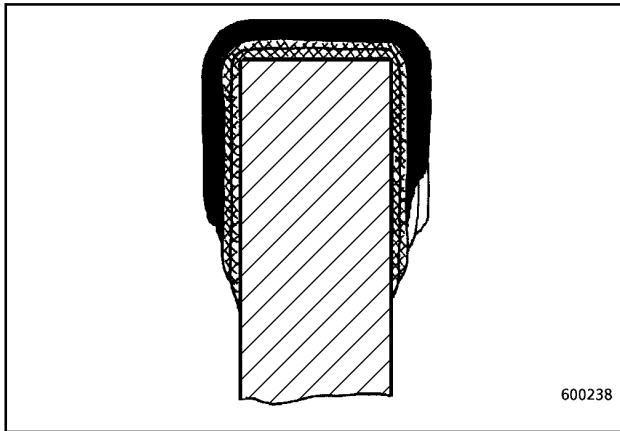


Fig. 2

The hard-facing build-up weld must always lie exactly on the buffer layer in order to avoid the risk of cracks in the base metal (fig. 2).

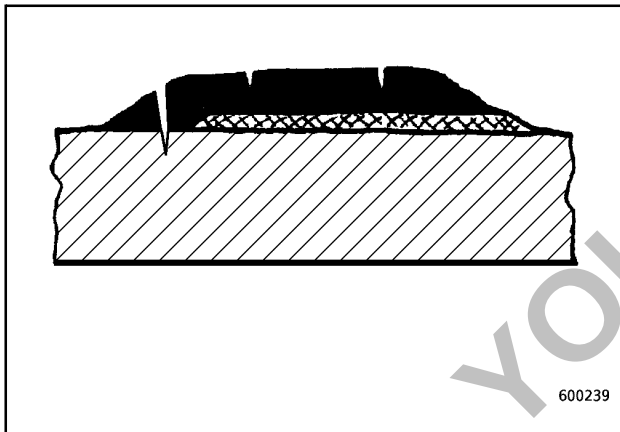


Fig. 3

9.2.1 Build-up welding patterns

Spot pattern. The spot pattern is suitable for large areas which are subject to a relatively low risk of wear (fig. 4).

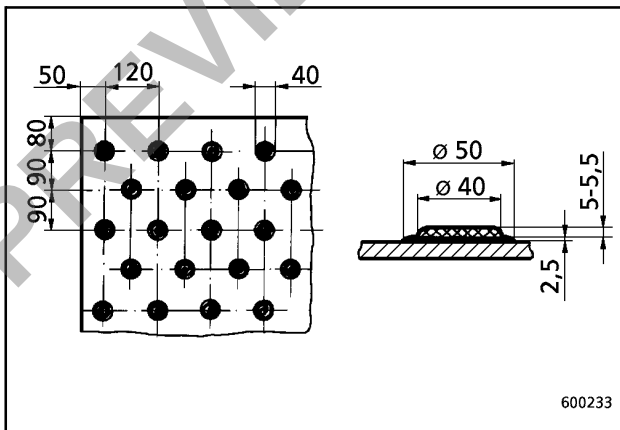


Fig. 4

As to the arrangement of the welding spots, it is important to take account of the direction of flow of the medium causing the wear (fig. 5).

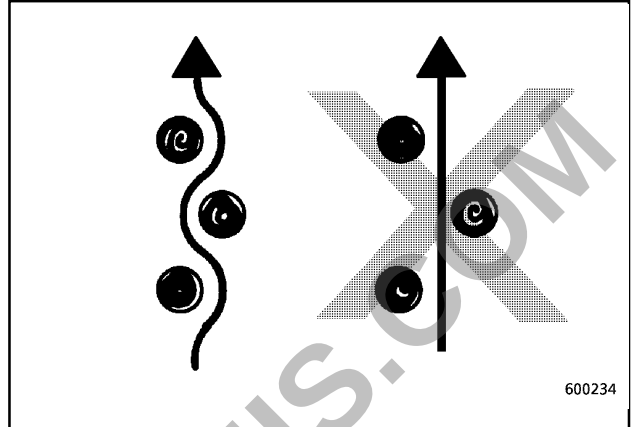


Fig. 5

Incorrect placing of the spots may lead to scoring between the rows of spots.

Criss-cross pattern. The criss-cross pattern is to be applied on smaller surfaces subject to high wear.

On a criss-cross pattern, soft loading material can be deposited in the intermediate spaces and thus provide an extra wear protection for the base metal (fig. 6).

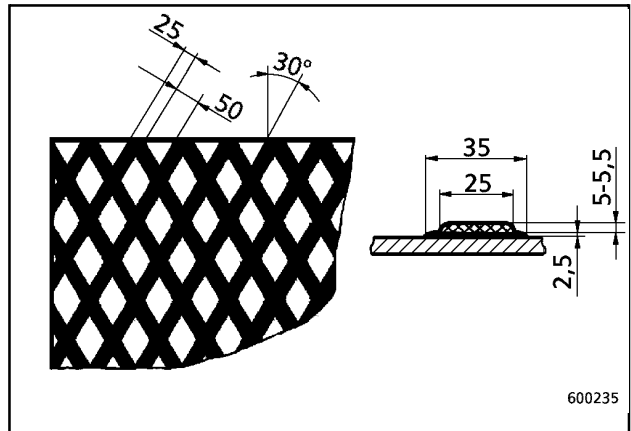


Fig. 6

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